PLEASE NOTE: In an attempt to reduce our company carbon footprint, this manual is normally supplied in an electronic format. If you require a printed copy, please ask your sales contact.

Tel: 770-449-6233  
Tel (US): 800-442-8722  
Fax: 770-447-0889  
email: Chemtrac@chemtrac.com  
Web: www.chemtrac.com
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</table>
SAFETY PRECAUTIONS

BEFORE ATTEMPTING TO UNPACK, SET UP, OR OPERATE THIS INSTRUMENT, PLEASE READ THIS ENTIRE MANUAL.

MAKE CERTAIN THE UNIT IS DISCONNECTED FROM THE POWER SOURCE BEFORE ATTEMPTING TO SERVICE OR REMOVE ANY COMPONENT.

MAKE CERTAIN THE UNIT IS DISCONNECTED FROM OTHER SOURCES OF FORCE OR PRESSURE (FOR EXAMPLE, PNEUMATIC OR HYDRAULIC), BEFORE ATTEMPTING TO SERVICE OR REMOVE ANY COMPONENT.

FAILURE TO FOLLOW THESE PRECAUTIONS COULD RESULT IN PERSONAL INJURY AND DAMAGE TO THE EQUIPMENT.
1.0 Theory of Operation

The total chlorine probe measures free chlorine and chlorine that is combined as chloramines. It does this using a 3-electrode amperometric sensor insulated from the water supply by a hydrophilic membrane. The total chlorine diffuses through the membrane and is reduced at the cathode generating a small current that is proportional to the concentration of total chlorine. The sensor is held at an offset potential which negates the need for a zero routine. The probes are available for a variety of ranges which are specified at the time of purchase. The sensor incorporates automatic temperature compensation (ATC).

1.1 Specification

1.1.1 SENSOR

<table>
<thead>
<tr>
<th>Type:</th>
<th>Membrane covered amperometric potentiostatic three-electrode system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement:</td>
<td>Total Chlorine</td>
</tr>
<tr>
<td>Range:</td>
<td>0-2, 0-5, 0-10mg/l (ppm)</td>
</tr>
<tr>
<td>Resolution:</td>
<td>0.01mg/l (ppm)</td>
</tr>
<tr>
<td>Reproducibility:</td>
<td>±5 %</td>
</tr>
<tr>
<td>Stability:</td>
<td>-2 % per month (without calibration)</td>
</tr>
<tr>
<td>Working electrode:</td>
<td>Cathode made of gold</td>
</tr>
<tr>
<td>Counter electrode:</td>
<td>Anode made of stainless steel</td>
</tr>
<tr>
<td>Reference electrode:</td>
<td>Silver / silver halide</td>
</tr>
<tr>
<td>Membrane material:</td>
<td>Micro-porous hydrophilic membrane</td>
</tr>
<tr>
<td>Flow rate:</td>
<td>0.5 l/min (0.13 gallon/minute [US])</td>
</tr>
<tr>
<td>Temperature range:</td>
<td>&gt;5 and &lt;45° C</td>
</tr>
<tr>
<td>Temperature compensation:</td>
<td>Automatically by an integrated thermistor (ATC)</td>
</tr>
<tr>
<td>pH-range:</td>
<td>pH 4 up to pH 9.5</td>
</tr>
<tr>
<td>Permissible overpressure:</td>
<td>7 psi (0.5 bar)</td>
</tr>
<tr>
<td>First-polarisation time:</td>
<td>120 min</td>
</tr>
<tr>
<td>Re-polarisation time:</td>
<td>30 min</td>
</tr>
<tr>
<td>Response time:</td>
<td>( T_{90} ): approx. 2 min</td>
</tr>
<tr>
<td>Zero-point adjustment:</td>
<td>Not necessary</td>
</tr>
<tr>
<td>Zero running:</td>
<td>Running at zero de-polarizes the probe</td>
</tr>
<tr>
<td>Calibration:</td>
<td>Manual using DPD or Automatic (Autocal)</td>
</tr>
<tr>
<td>Housing material:</td>
<td>PVC, silicone, polycarbonate, stainless steel, perspex</td>
</tr>
<tr>
<td>Dimensions:</td>
<td>Diameter approx. 25mm (1&quot;), length 175mm (7&quot;)</td>
</tr>
<tr>
<td>Maintenance intervals:</td>
<td>Calibration: On control applications it is a week to a month and on non-control it is 1 to 3 months.</td>
</tr>
<tr>
<td></td>
<td>Electrolyte: Quarterly</td>
</tr>
<tr>
<td></td>
<td>Membrane: Yearly</td>
</tr>
<tr>
<td>Interferences:</td>
<td>High levels of other oxidants such as Ozone and Chlorine Dioxide</td>
</tr>
</tbody>
</table>

1.1.2 FLOW CELL

| Inlet: | ¼" or 6mm barb fitting, or 8mm pipe push-fitting |
| Outlet: | ½" or 12mm barb fitting |
| No. of probes: | Single and double flow cells available |
| Service isolation: | Ball valve |
| Flow: | 0-1.4 l/min (preferred flow rate 0.5 l/min) |
| Inlet pressure: | 7 psi (0.5 bar) |
| Flow cell pressure: | Effectively zero, cell open to atmosphere |
| Weight: | 2 lb / 1kg (single), 3 lb / 1.5kg (double) |
| Filter (if fitted): | 100um |
| Flow switch: | available as an option to give a low flow alarm if sample flow is lost. |
2.0 Installation

As with all instrumentation the installation and commissioning of this instrument is crucial to its safe and accurate function. This instrument must be used only for its purpose as outlined in this manual and must be installed and commissioned in accordance with this manual and by trained and qualified personnel.

2.1 Site Selection

Please choose a suitable location for the installation of the probe and the electronics. The choice of installation point on any site is a compromise and is best undertaken by experienced installation personnel. The following is a list of the factors that need to be taken into consideration. This list is not intended as a checklist neither is it implied that the list is complete.

Ensure that the mounting allows access to all serviceable parts.
Try to mount the electronics in a position where they are not habitually hosed down in a cleaning process.
Consider the length of wiring runs when mounting the instrument.
Try to keep the electronics away from substations or other large EMI emitters.
Consider whether the sample will be representative and well mixed.
Consider sample return points.
In a plastic run, with a low conductivity sample consider earthing the sample.

2.2 Unpacking

Please have a copy of your order with you when you unpack your instrument. All orders are checked when they leave the factory. Please double check that you have all the parts that were ordered as soon as you open the box. This may include (but not necessarily);

Probe
Probe mounting overflow cell.
Electrolyte
Membrane
Abrasive paper (blue)
Manual
CO₂ Buffer kit - option

If anything is missing, or damaged, please contact your sales outlet immediately.
2.3 Mounting

For mounting of the flow cell (single or double), with its backplate (9mm thick), please refer to the drawings below.

2.4 Water connections

The incoming water sample connection is to the flowcell lower barb or push fitting.

In all cases the incoming water sample should be regulated to 0.5 l/min (0.13 gallon/minute [US]). The flow cell is open to atmosphere, large changes in water pressure can cause water leaks. If the pressure within the flowcell exceeds 0.5 bar, there is a possibility of unstable readings.

The incoming fitting is a ¼" or 6mm barb fitting, or an 8mm pipe push-fitting.

The outlet fitting is a ½" or 12mm barb fitting.
3.0 **Operation**

Refer to the instrument menu structure.

3.1 **Calibration**

In order to perform a span of the sensor it is necessary to have an independent method of determining the level of the Measurement, e.g. a DPD test kit to measure Total chlorine in the sample water.

Refer to the appendix of this manual for further calibration information.

Zeroing of this sensor is not required.
4.0 Sensor

**WARNING! WARNING! WARNING! WARNING! WARNING!**

PLEASE READ THE INSTRUCTIONS BELOW BEFORE DOING ANYTHING WITH THIS PROBE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE MEMBRANE CAP AND WARRANTIES FOR THIS DEVICE MAY BE VOIDED.

You will find a membrane cap that is loosely screwed onto the end of your probe. DO NOT REMOVE OR TIGHTEN THIS MEMBRANE CAP UNTIL YOU HAVE READ THESE INSTRUCTIONS!

There is an elastic seal around the membrane cap which is used to seal the vent hole on the membrane cap during normal operation. Prior to servicing the probe the elastic seal must be slid down to expose this vent hole. Do not loosen the membrane cap without having the vent hole exposed and unobstructed. If the vent hole is blocked off when the membrane cap is removed, then the membrane may rupture (i.e. develop a tiny tear) and the probe may not produce accurate readings.

When the membrane cap is filled with electrolyte and fastened onto the probe (in accordance with instructions in the operations manual), you will notice some electrolyte bleed out from the vent hole. This is normal. **NOTE: DO NOT INSERT THE PROBE INTO THE FLOW CELL, OR GET IT WET, WITHOUT HAVING THE VENT HOLE COVERED WITH THE ELASTIC SEAL!**

The purpose of the vent hole is to protect the membrane from being exposed to internal pressure or vacuum when the membrane cap is screwed onto or off of the probe tip.

For further assistance please contact your sales and service centre.

- **Elastic Seal**
  This is the position the seal should be in when the probe is inserted into the flow cell.

- **Vent Hole**
  This vent hole must be exposed prior to unscrewing the membrane cap from the probe tip.
The chlorine sensor is a membrane covered potentiostatic 3-electrode system. The measuring electrode is membrane covered and is in the electrolyte area together with the reference electrode. This electrolyte area contains a special electrolyte and is separated by a second membrane from the sample water.

In this measuring method chlorine diffuses out of the sample water, through the membranes and causes an electrical signal at the measuring electrode. The electrical signal at the measuring electrode is proportional to the chlorine concentration and is amplified by the electronics in the sensor. The measuring signal is independent from the temperature of the measuring water due to an integrated temperature compensator.

4.0.1 Installation

Please refer to Site Selection, section 2.1. Ensure the probe housing is mounted vertically, to ensure correct water flow over the sensor. Ensure the installation is stable, secure and away from vibration. Ensure the sample is free from bubbles and is well mixed.
4.0.2 Setup

Caution: When you unscrew the filled (or unfilled) membrane cap, ensure the vent band has been removed from the vent hole, to allow air to enter, otherwise the membrane will be destroyed by the vacuum.

Unscrew the membrane cap from the electrode shaft. Place the membrane cap onto a clean and non-absorptive bench.

Caution: never polish this area of the probe.

Fill the membrane cap up to the edge with the enclosed electrolyte. Be careful so that there are hardly any bubbles. Then replace it onto the bench.

Note: Read the electrolyte MSDS sheet.
Hold the electrode shaft upright and put it on the filled membrane cap. Then screw the membrane cap onto the electrode shaft. Turn it anticlockwise until the thread engages, then screw slowly the electrode shaft clockwise (by hand) onto the membrane cap. Excess electrolyte will escape through a valve (located above the type marking, under the vent band seal) in the membrane cap. Do not close this vent with your finger.

Warning: Electrolyte may spurt from the vent hole. Excess electrolyte, or electrolyte on your skin or in your eye, should be washed off immediately with water.

Check that the membrane cap is completely screwed in up to the stop. There is initial resistance from the o-ring, continue past this to the electrode body. Then ensure the vent band is seated correctly. Wash off the excess electrolyte with water. Initial run-in is 1 hour prior to calibration. Calibration should be repeated after 24 hours. Routine calibration should be weekly.

Caution: When you unscrew the filled membrane cap, ensure the vent band has been removed from the vent hole, to allow air to enter, otherwise the membrane will be destroyed by the vacuum.
4.0.3 Maintenance
Caution: The coating on the electrode finger must not be polished or scraped!
Do not unscrew the metal end ring of the membrane cap, as this will destroy the membrane.

4.0.3.1 Routine maintenance
The electrolyte should be changed every three months, although it may be possible to extend the period if low levels of chlorine are measured. It may be necessary to use a new membrane cap when changing the electrolyte. In any event, the membrane cap should be changed every 12 months. If your unit has been ordered with the auto calibrator then the calibration reagent should be changed every six months.

4.0.3.2 Diagnostic maintenance
If calibration is impossible due to unstable or low output, remove the sensor, displace the vent seal so that the vent hole opening is free. The membrane cap can then be unscrewed. The electrode finger is cleaned with a clean, dry, soft paper towel. With the special abrasive paper supplied (blue) just the tip of the dry electrode (the working electrode) is cleaned. Place the special abrasive paper on a paper towel (on a flat, dry surface), hold it at the corners and rub the electrode tip of the perpendicularly held probe two or three times across the abrasive paper. Then replace the vent seal onto the vent hole and fill with electrolyte (see section 4.2.2). If necessary, use a new membrane cap. Recommendation: change the electrolyte every 3 months.

4.0.4 Storage
To store the probe the membrane cap is unscrewed (note previous warning). The membrane cap and electrode finger should be rinsed in clean water and dried in a place free of dust with a soft paper towel (do not damage the electrode area). The dry membrane cap is then loosely screwed onto the electrode shaft. The membrane must not rest against the measuring electrode. Do not fully tighten the membrane cap. When putting the probe back into use after storage, the electrode tip must be cleaned with the special abrasive paper supplied (see 4.2.3.2) and a new membrane cap must be used (follow 4.2.2).

4.0.5 Spares
Total Chlorine Membrane cap M48 (PN: 17420)
Total Chlorine Electrolyte ECP1.3/GEL (PN: 17425)

Please contact your local sales organization regarding any other spares.
4.0.6 Single flowcell

The o-ring is first inserted in the 1" opening of the adaptor followed by the PVC shim. Then the 1" PVC threaded end cap is screwed in loosely. The probe is inserted into this prepared probe housing. Then the probe is fixed in place by tightening (hand tight only) the threaded end cap, so the probe cannot move away from its position.
4.0.6.1 Insertion

There should be 25mm (1") of clear space between the tip of the sensor and the conical base of the flowcell tube.
4.0.7 Double flowcell

The sensor fits into the right-hand entry (if used with a pH or ORP probe). The o-ring is first inserted in the 1” opening of the adaptor followed by the PVC shim. Then the 1” PVC threaded end cap is screwed in loosely. The probe is inserted into this prepared probe housing, so the flow passes directly over the probe tip. Then the probe is fixed in place by tightening (hand tight only) the threaded end cap, so the probe cannot move away from its position.

As with the single flowcell, there should be 25mm (1”) of clear space between the tip of the sensor and the conical base of the flowcell tube (refer to 4.0.6.1) if using the left-hand entry.
5.0 Commissioning

It is recommended that the instrument is commissioned by a trained commissioning engineer. During the commissioning the engineer can train the operators in the correct operation of the instrument.

The installation and commissioning should proceed in the following manner:

1) Install the unit.
2) Check the sensor for damage.
3) Make up the sensor.
4) Ensure that water flows through the flowcell and over each sensor’s measuring end.
5) Calibration
   After the Cl sensor has completely polarized (from 2-12 hours of water flow with the electronics turned on and chlorine in the water), calibrate the sensor using a suitable test kit (eg DPD for Cl₂).
6.0 Troubleshooting Guide

Sensor faults will usually show themselves as unexpected readings. Unexpected readings can also be caused by the electronics, so when troubleshooting it is important to determine the cause of the variable readings. Cl₂ sensors can be supplied with an electrochemical probe simulator. If the instrument displays unexpected readings, unplug the probe and plug in the probe simulator. This supplies a fixed constant reading to the analyser. If the reading is not constant, please contact your supplier.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible cause</th>
<th>Possible solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine incorrect</td>
<td>Sensor disconnected</td>
<td>Check sensor connected</td>
</tr>
<tr>
<td></td>
<td>Probe depolarized after extended zero period</td>
<td>Probe will re-polarize after 2-12 hours</td>
</tr>
<tr>
<td></td>
<td>Sensor connected incorrectly</td>
<td>Check sensor connected to correct channel</td>
</tr>
</tbody>
</table>

6.1 Further help

For more troubleshooting, please call 770-449-6233 or email Chemtrac@chemtrac.com
Appendix A

General Layout Drawing - Flowcell
Appendix B

Certificates and approvals

CE approval

![CE logo]

Declaration of conformity
The product meets the legal requirements of the harmonised European standards.

Waste electrical and electronic equipment (WEEE)
Important information
Disposal of old electrical & electronic equipment

![WEEE symbol]

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead, it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local council or city office, your waste disposal service or the organization from which you purchased the product.
Appendix C

Warranty

Chemtrac, Inc. warrants its product to be free of defects in material and workmanship for a period of one (1) year from date of shipment to the original customer. Upon receipt of written notice from the customer, Chemtrac, Inc. shall repair or replace (at the discretion of Chemtrac, Inc.) the defective equipment or components. Chemtrac, Inc. assumes no responsibility for equipment damage or failure caused by:
A. Improper installation, operation, or maintenance of the equipment.
B. Abnormal wear and tear on moving parts caused by some processes.
C. Acts of nature (i.e. lightning, flooding, etc.)

This warranty represents the exclusive remedy of damage or failure of the equipment. Under no circumstances shall Chemtrac, Inc. Limited be liable for any special, incidental, or consequential damage, such as loss of production, profits or product quality. The warranty cannot be guaranteed if the customer fails to service and maintain the equipment in accordance with Chemtrac, Inc. Limited written instructions and policies, as stated in the Operations Manual.
# Appendix D

## Safety Data Sheet

**Electrolyte ECP1,3/GEL/Electrolyte TC1 for Total Chlorine Determination Cell TC1**

**Date of print:** 19.08.2002

### 1. Identification of the substance/preparation and the company

**1.1 **

**Product identification:**
- **Product no:** 964642
- **Product name:** Electrolyte ECP1.3/GEL / Electrolyte TC1 for Total Chlorine Determination Cell TC1

**1.2 **

**Manufacturer identification:**
- **Company:** bioanalytic GmbH " Waldmatten 10...13 " D-79224 Umkirch/Freiburg Germany
- **Contact for information:** Fon: (+49) (0)7665-5891, Fax: (+49) +7665-5893, e-Mail: mailoffice@bioanalytic.de
- **Emergency telephone No:** Fon: (+49) (0)7665-5891, poison emergency phone University Freiburg (+49) (0)761-19240

### 2. Composition / Information on ingredients

**2.1 **

**Chemical characterisation:**
- Solution of Potassium iodide and organic gel-substances in water. Contains mold inhibitor.
- **Synonyms:** -
- **Molecular formula:** -
- **Molar mass:** not applicable
- **CAS-No.:** - EINECS-No: - HS-Nr: 3822 0000

**2.2 **

**Hazardous ingredients:**
- **Name according to EC-directives:** Sodium hydroxide
- **Content:** < 0.5%
- **Hazard symbols:** C ; Corrosive
- **R-phrases:** 35 Causes severe burns.
- **EC-Index-No:** 215 - 185 - 5 CAS-No:1310-73-2

**2.3 **

**Hazardous ingredients:**
- **Name according to EC-directives:** Citric acid
- **Content:** < 2%
- **Hazard symbols:** Xi ; Irritant
- **R-phrases:** 36 Irritating to eyes.
- **EC-Index-No:** 201 - 069 - 1 CAS-No:5949-29-1

**2.4 **

**Hazardous ingredients:**
- **Name according to EC-directives:** -
- **Content:** -
- **Hazard symbols:** -
- **R-phrases:** -
- **EC-Index-No:** 201 - 069 - 1 CAS-No:5949-29-1

### 3. Hazards identification

**Non dangerous product in the mind of directions § 67/549/EWG.**
- -
- -

---

Registered Office:
4 Western Avenue, Burnley,
Lancashire, BB11 4JW
Registered in England No. 3554457

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4. First aid measures
   - After inhalation: Fresh air. If person feels unwell, contact a doctor.
   - After skin contact: Rinse enough with water.
   - After eye contact: Rinse out with plenty of water for minimum of 10 minutes.
   - After ingestion: Drink plenty of water. Call a doctor.

5. Fire-fighting measures
   - Suitable extinguishing media: Water, foam.
   - Special risks: 
   - Other information: Non-combustible

6. Accidental release measures
   6.1. Person-related precautionary measures:
   - Don't inhale vapours/aerosols.

   6.2. Procedures for cleaning / absorption:
   - Seal up and forward for disposal. Clean up affected area with water.

7. Handling and storage
   7.1. Handling:
   - Be careful like with other reagents/chemicals.

   7.2. Storage:
   - Close well and at room temperature (recommendation +15 to +25°C). Don't store in sunlight or in UV-light.
   - Keep out of reach of children.

8. Exposure controls / personal protection
   8.1. Specific control parameter:
   - MAK: 
   - Personal protective equipment:
     - Respiratory prot.: Recommended when vapours/aerosols are generated.
     - Hand protection: recommended
     - Eye protection: recommended

   8.3. Industrial hygiene:
   - Wash hands after working

9. Physical and chemical properties
   - Form: liquid-gel
   - Colour: colourless
   - Odour: odourless
   - pH-value (20°C): ~ 4
   - Solubility (20°C): In water soluble.
   - Melting temperature: ~ 100°C
   - Boiling temperature: Ignition temperature: not available
   - Flash point: not available
   - Explosion limits lower: not available
   - Explosion limits upper: not available
   - Vapour pressure (20°C): not available
   - Density (20°C): ~ 1.028g/cm³

10. Stability and reactivity
10.1 Conditions to be avoided:
   - Heating > 70°C.

10.2 Substances to be avoided:
   - Alkali metals, ammonia, halogen-halogen compounds, fluorine, hydrogen peroxide.

10.3 Hazardous decomposition products:
   - no information available.

11. Toxic information
11.1 Acute toxicity:
   - no information available
   - Potassium iodide is a therapeutic substance.

11.2 Further toxicological information:
   - After inhalation: of aerosols: resorption.
   - After skin contact: Resorption.
   - After eye contact: Irritation possible. Resorption.
   - After ingestion: After resorption toxicological quantity of KI: blood-pressure: hypotensive, paralysis, agitation, vomit.
12. Ecological Information

12.1 Ecotoxic effects:
Biological effects: ......................... For appropriate use there are no biological effects are be expected.

12.2 Behaviour in environmental compartments:
Do not discharge into drains or the environment.

13. Disposal considerations

13.1 Product:
There are no harmonised regulations on the disposal of chemicals in the member states of the EU. In Germany, the Recycling and Waste Management Act (AbfG) stipulates recycling as a requirement. This means that a distinction must be made between "wastes for recycling" and "wastes for disposal". Particular aspects - in the main concerning delivery - are also governed by the states. Please contact the competent body (authority or waste disposal company) where you will obtain information on recycling or disposal.

13.2 Packaging:
Disposal in compliance with official regulations. Handle contaminated packaging in the same way as the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

14. Transport Information

14.1 Land transport ADR/RID and GGVS/GGVE:
Rail/Road Germany not classified. ADR/RID-class: not classified.
Name of material: 

14.2 River transport ADN/ADNR:
Not examined

14.3 Sea transport IMDG:
EmS: - IMDG class: not classified.
UN-No: - MFAG: -
Correct technical name: - Packing group: -

14.4 Air transport ICAO-TI and IATA-DGR:
UN-AD-No: - ICAO/IATA-class: not classified.
Correct technical name: - Packing group: -

15. Regulatory information

15.1 Labelling according to EC directives:
Hazard symbol: 
R-phrases: - 02 Keep out of reach of children.
S-phrases: - 46 If swallowed, seek medical advice immediately and show this container or label.

15.2 German regulations:
Water pollution class: 1 Slightly polluting substance - self ranking
Regulation of inflammable liquids: -
Storage class VCI: -
Data sheet of BG-Chemie: -

15.3 Other national regulations:
Swiss toxic class: 5 Low hazardous substances, colour-code: red

16. Other Information

16.1 Reason for alteration:
General update, Change on labeling.

16.2 Further information:
-

A. Additional information
The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product. The data of this SDS are covered on the stated product of BIOANALYTIC GmbH and cannot be transferred on products of other manufacturers. BIOANALYTIC GmbH excludes each liability especially for damages that in the contact with this product or its product-results can appear.
Appendix E

CALIBRATION

In order to perform a calibration of the sensor it is necessary to have an independent method of determining the level of Total Chlorine, e.g. a DPD test kit to measure Total chlorine in the sample water.

To perform a calibration:

1) If the word “Cal” is shown at the bottom of the main display: press the “Cal” button, log in as a “User” (default pass code is 1), and then proceed to step 3.

2) If the word “Cal” does not appear on the main display: press the “Menu” button, log in as a “User” (default pass code is 1), select “Maintenance”, select “Sensors”, and then select “Calibration”.

3) If the HydroAct is equipped with more than one probe, the user will need to select the channel / probe that is to be calibrated. If the instrument has only one probe this menu will be skipped and the unit will go straight into calibration.

4) A 30 second ‘Collecting calibration data’ countdown will occur, during this time the validity and stability of the probe signal is tested. During this countdown, it will be necessary to test the water (from the sample line feeding the probe flow cell), using the necessary test kit. After 30 seconds, the ‘Enter Calibration Value’ screen, will show a fixed value of the average signal measured. Once the concentration has been determined, use ▲▼ to adjust the reading on the display to equal that of the measured value. At this point press OK to set the span for the probe. The statement ‘Calibration successful’ will appear.

Must log in as User or above to calibrate the unit under Maintenance. Must log in as Tech or above to change sensor settings under Setup.

Note: If it is no longer possible to adjust the span of the probe to the value measured, perform the probe maintenance procedure.

Changing Sensor Setup

To change Sensor setup, press the “Menu” button and log in as a “Tech” user (default pass code is 2). Select “Setup” from the menu, and then select “Sensors”. If the unit is equipped with more than one probe, the user will need to select a probe.

Select Settings / Total Chlorine.

Settings

Select Name / Enabled / Auto-Flush / Source.

Then use the ▲▼ and ▼▲ to adjust.

OK or Cancel.

Exit.

Name – allows customer to identify signals (eg. Chlorine Probe) 1 to 16 characters.

Enabled – Yes / No. No means sensor is turned off.

Auto-Flush – Yes / No. Yes means enabled (optional extra).

Source – select Auto-Flush.

Total Chlorine

Select Type / Units / Abbreviation / Precision / Offline / Minimum / Maximum.

Then use the ▲▼ and ▼▲ to adjust.

OK or Cancel.
Type – allows the user to change the type of probe connected. **Do not alter unless fitting a different probe.**

Units – ug/l, mg/l, g/l, ppb, ppm, ppt, %.

Abbreviation – allows customer to identify signals (eg. Cl) 1 to 5 characters.

Precision – 0 to 5 characters.

Offline – 0 to 10,000. The display (and outputs) will show the value set when the sensor is in error / warm up / not enabled.

Minimum – range of the sensor. (This setting should always be left at zero)

Maximum – range of the sensor. (Must match the probe’s max range as detailed on the probe)

Select Averaging.

Then use the and  to adjust On / Off.

OK or Cancel.

If Averaging is On, use Select Delay / Size.

OK or Cancel.

Delay – 0 to 600 seconds. The value is the averaging loop time.

Size – 1 to 60. Window size for the rolling average.

Exit.