

## Overview

Total Alkalinity (TA) is an important water quality parameter. It can be thought of as the water's pH buffering, i.e. the water's ability to resist changes in pH. An appropriate TA level is an important aspect of maintaining a healthy pool, because when Total Alkalinity is too low the pH of the water will be unstable and difficult to keep constant (i.e. difficult to control). However, if Total Alkalinity is too high it then becomes extremely difficult to adjust the pH, which also makes pH control problematic. Since sanitizer efficacy is a function of pool pH, maintaining appropriate pH and TA levels directly impacts the ability of sanitizer (typically chlorine) to neutralize pathogens and maintain a healthy environment for swimmers.

The BECSys Alkalinity Meter automatically monitors the Total Alkalinity of the water. The TA reading is reported to a BECSys7 or BECSys5 controller via a low voltage RS-485 connection, where it is displayed locally on the front panel of the controller and remotely via BECSys for Windows PC software and the BECSys Now mobile app, available for Apple (IOS) and Android devices. The Total Alkalinity reading is recorded in historical data logs, and TA alarms can generate email and/or text message alarm notifications.

BECSys7 and BECSys5 controllers can also control pool Total Alkalinity by automatically switching between acid (e.g. hydrochloric) and CO<sub>2</sub> for pH control based upon user-defined set points. When the TA reaches the high TA set point the BECSys controller will feed acid to control pH until the TA drops to the low TA set point, at which time the BECSys controller will automatically switch over to CO<sub>2</sub> for pH control.

The Alkalinity Meter determines the Total Alkalinity level by performing a flowing water titration. The precision pump injects reagent at a controlled rate into the mixing chamber. The rate of injection of reagent is varied by the Alkalinity Meter, and compared to the flow rate of pool water into the mixing chamber. The meter monitors the pH in the mixing chamber, and calculates the Total Alkalinity based upon the ratio of flow rates and the pH response.

The Alkalinity Reagent has been specially formulated for use with the BECSys Alkalinity Meter. This formulation is designed with a minimal content (< 3%) of hydrochloric acid, so the reagent has negligible impact on pool water chemistry while providing highly accurate TA readings. To further assure that pool water chemistry is not affected by the reagent, the Alkalinity Meter performs a limited number of measurements per day.

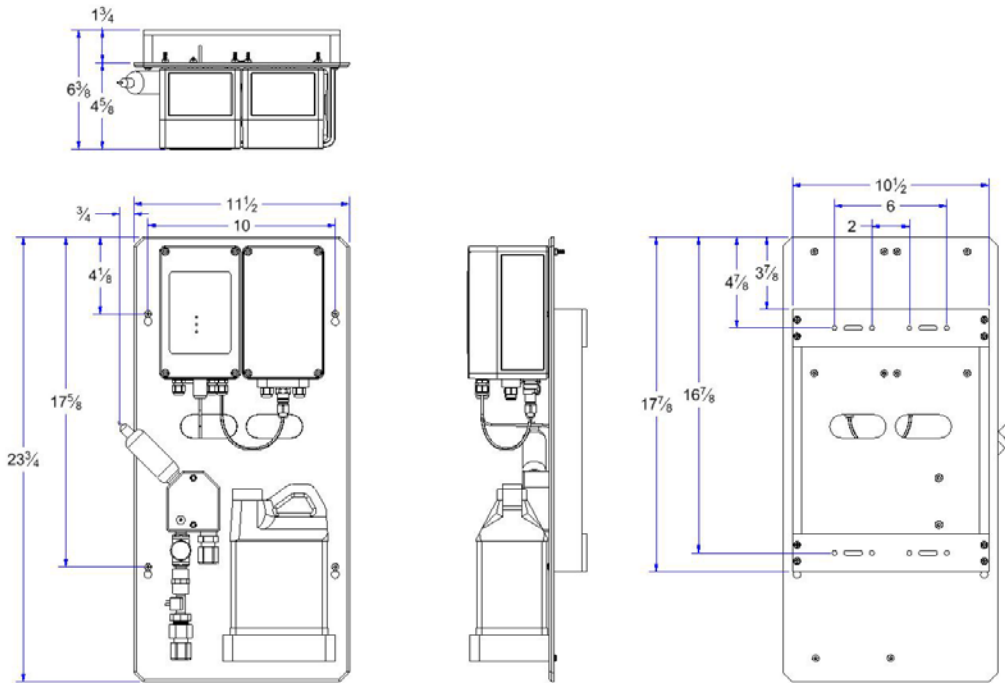
The BECSys Alkalinity Meter electronics are covered by a 5 year manufacturer's warranty. The pH sensor carries a 2 year warranty, and all other components carry a 1 year warranty.

The BECSys Alkalinity Meter is patent pending in the USA and internationally.

## Features & Benefits

- Automatically monitors Total Alkalinity
- Connects to a BECSys7 or BECSys5 controller for display, data logging and control of pool TA
- Highly accurate;  $\pm 5$  ppm
- Low maintenance
  - Clean pH sensor monthly (or as needed)
  - Replace reagent (Alkalinity Meter monitors reagent usage and notifies user when reagent is low)
  - Replace reagent pump tubing (annually)
- Decreased chemical usage – by maintaining appropriate TA and pH levels, sanitizer consumption will be minimized.
- Decreased labor – manual bicarb additions no longer needed in pools with effective TA control





## Specifications

### Part Numbers

BECSys Alkalinity Meter	2100418
Alkalinity Meter Reagent (64 oz)	8680063
Tubing Replacement Kit for reagent pump	2210621

### Physical

Enclosure Material	Glass Reinforced Polycarbonate, NEMA 4X (IP66)
Overlay Material	UV Stabilized Polyester
Mixing Chamber Materials	PVC, ABS, Polypropylene, Stainless Steel
Tubing Material	Clear PVC Plastic with Excellent Chemical Resistance (Tygon)
Connections	1/2" tube fittings
Dimensions	Height: 23.75" Width: 12.25" Depth: 6.375"

### Environmental

Meter Storage Temperature	-40 to 85 °C
Reagent Storage Temperature	5 to 50 °C
Ambient Operating Temperature	5 to 50 °C
Ambient Humidity	95% non-condensing maximum
Maximum Pressure	30 psi
Flow rate	7 – 12 gph

### Electrical

Voltage	90 – 250 VAC, 43 – 63 Hz (power supply is auto-switching)
Phase	Single
Current	0.33 Amp Full Load

### Performance

Range	50 to 150 ppm
Resolution	1 ppm
Accuracy	±5 ppm

## Related Documents

### Reference Information

Reference Information	Format	Document #
Alkalinity Meter Bid Specification	.doc	ENG-6090-DOC
Alkalinity Reagent Safety Data Sheet	.pdf	8620148
BECSys5 Water Chemistry Controller Data Sheet	.pdf	ENG-4262-DOC
BECSys7 Equipment Room Controller Data Sheet	.pdf	ENG-4263-DOC