



SCOUT™

pH Monitoring System

Installation, Operation, & Maintenance Guide

OVERVIEW

Striem's Scout™ is a pH monitoring system designed to be used in conjunction with Striem's Sensor Placement Kit (SPK). The system actively monitors and records the pH of wastewater and provides high/low alarms when out of a specified range.

WARRANTY

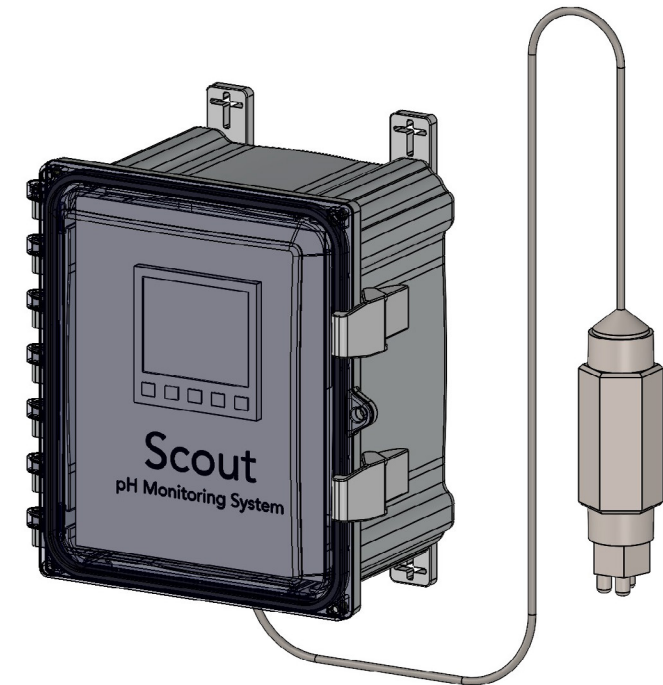
This product shall have a one year warranty from the date of shipment. FAILURE TO INSTALL IN ACCORDANCE WITH THE INSTALLATION, OPERATION, AND MAINTENANCE GUIDE WILL VOID YOUR WARRANTY.

SCOUT™

pH Monitoring System

Installation, Operation, & Maintenance Guide

INCLUDED ACCESSORIES & COMPONENTS



913-222-1500 HELP@STRIEMCO.COM STRIEMCO.COM

CUSTOMER SERVICE HOURS: 8 AM - 5 PM CST



WARNING: FAILURE TO INSTALL IN ACCORDANCE WITH THE INSTALLATION, OPERATION, AND MAINTENANCE GUIDE WILL VOID YOUR WARRANTY.

MADE
IN THE
USA

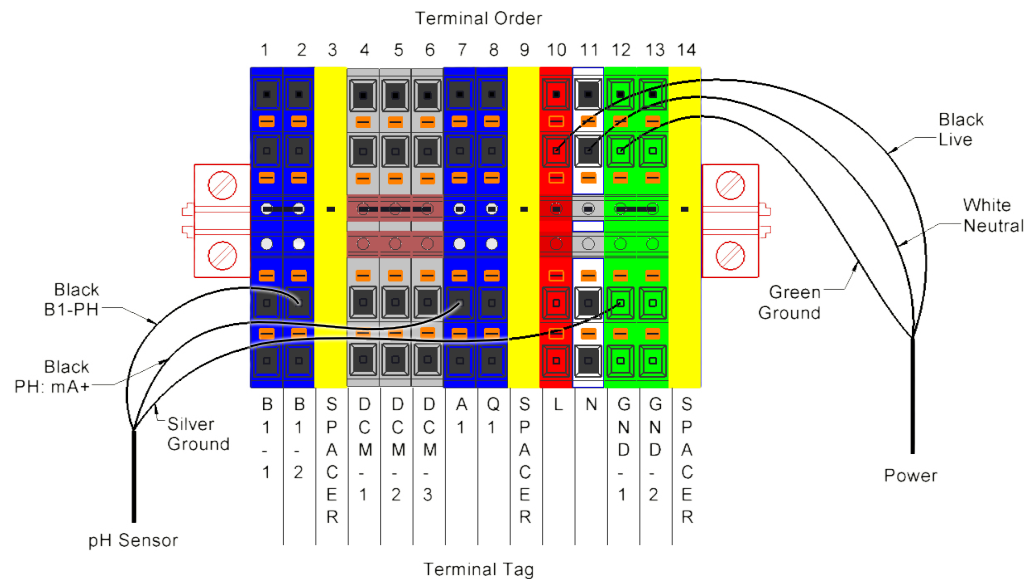
INSTALLATION - CONTROLLER

The Scout should be installed by a licensed electrician. A dedicated 120 VAC power supply is required. The lockable NEMA 4X enclosure is weatherproof and designed for wall-mounted installation. For exterior installations, it is the responsibility of the installing contractor to properly seal all connections made to the enclosure to ensure weather resistance is maintained.

A cable entry system for field wiring is pre-installed at the base of the Scout enclosure.

- 1 To route 120 VAC power, the pH sensor cable, and Ethernet cable (optional), access the interior of the enclosure by first unlatching and opening the clear plastic door, then remove the two thumbscrews on the right-hand side of the metal face plate and swing the face plate open.
- 2 On the bottom of the Scout enclosure, remove the two hex socket screws using a 4mm hex key, then remove the plastic side piece.
- 3 Remove the grommet(s), open it up, and route your cable through it. Reinsert the grommet(s) and replace the plastic side piece, then reinstall and tighten the screws.

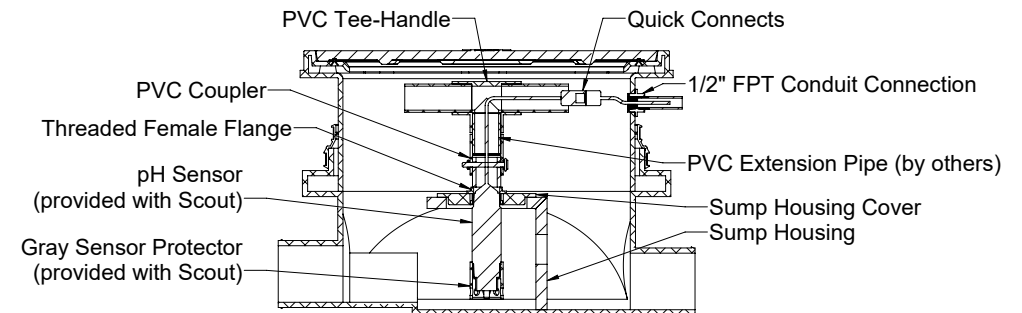
**Note - If you desire to route your cables through conduit, you will need to punch holes into the top of the Scout enclosure and seal the conduit fittings appropriately.*



INSTALLATION - pH SENSOR

Sensor Placement Kit (SPK) sold separately

- 1 Access your Striem SPK, then remove the tee-handle and sump housing cover assembly.
- 2 Starting at the bottom of the sump housing cover, run the pH Sensor cable up through the threaded female flange, PVC coupler, and PVC extension pipe, routing it out an open side of the tee-handle.
- 3 Thread the cable side of the pH sensor to the bottom of the threaded female flange.
- 4 Prefill sump housing with water.
- 5 Remove the rubber protective cap from the sensor to expose the glass electrode and thread the gray sensor protector provided with the Scout to the bottom of the pH sensor.
- 6 Insert the pH sensor into the sump housing, ensuring that the sump housing cover is fully seated on the sump housing. Failure to do so can result in permanent damage from the sensor being left out of water for an extended period of time.
- 7 Run the raw end of the pH Sensor wire through the conduit connection on the side wall of the SPK's cover adapter, from the inside to the outside, leaving the quick connect end on the inside of the SPK.
- 8 Connect the pH sensor's quick connect to the Scout's quick connect (50' cable).
- 9 Ensure cover is properly installed on SPK.



SCREENS, FUNCTIONS, & SETTINGS

HOME SCREEN

The Scout Home screen is the default screen that you see upon power up. The screen shows the live pH value, the high & low alarm setpoints, and the "Settings" button that navigates to the Settings screen.

Alarm State

In an alarm state, the following will occur:

- 1 The pH value will turn **RED**.
- 2 A message stating the type of alarm – High or Low pH – will appear.
- 3 A buzzer will sound.
- 4 The date and time that the alarm occurred will be logged.
- 5 An option to mute the buzzer will appear on screen.

NOTE: You can still navigate to the Settings screen to adjust Alarm Trigger Setpoints if this alarm state is not desired.

SETTINGS SCREEN

The Scout Settings screen includes the option to set both the high and low alarm setpoint values. The alarm will trigger if the wastewater pH value is less than the low alarm set point or above the high alarm set point.

Default Settings

High Alarm Set Point: 9.00
Low Alarm Set Point: 6.00

- Previous and active alarms can be viewed by selecting the "Alarms" button.
- Additional settings can be found by selecting the "Maintenance" button.

MAINTENANCE SCREEN

The Scout Maintenance screen offers the ability to access several additional settings and features:

- 1 The "Calibrate" button initiates the calibration sequence.
- 2 The date of last calibration is outlined on this screen.
- 3 The "Ethernet Settings" button navigates to a page housing all relevant information to connect to the Scout via Ethernet.
- 4 The "Manual" button shows a QR code that when scanned will pull up this manual.

ETHERNET SETTINGS SCREEN

The Scout Ethernet Settings screen displays all relevant information to connect to the Scout via Ethernet. The active IP address, active subnet mask and active gateway can be adjusted from this screen.

The tag names, BACnet® objects, and Modbus® registers are listed.

CALIBRATION SCREENS

The Scout calibration sequence is accessed via the "Calibrate" button within the Maintenance screen. Once selected, follow the steps outlined on the screen.

See pH SENSOR MAINTENANCE section for further details.

LOCAL DATA STORAGE & BUILDING MANAGEMENT SYSTEM (BMS) CONNECTION

LOCAL STORAGE THROUGH MICRO SD CARD:

- 1 A micro SD card comes pre-installed with the Scout. The active pH value is recorded once per minute and stored on the micro SD card.
- 2 The micro SD card is located inside the enclosure on the top right of the digital controller, labeled as "Memory." Depress the micro SD card to release it from its slot.
WARNING: Power to unit is live. Power can be isolated via internal breaker.
- 3 Insert micro SD card into a reader connected to a computer.
- 4 Use your preferred spreadsheet editor to access the .CSV file located on the micro SD card.

DATA MONITORING TO BMS:

The default Ethernet values are as follows:

IP Address: 192.168.254.128
Subnet Mask: 255.255.255.0
Gateway: 0.0.0.0

By default, the Scout controller publishes five (5) data points via BACnet® and Modbus®, shown in the table on right.

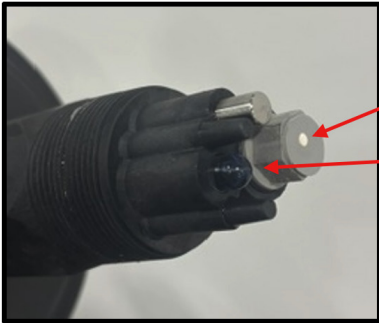
Tag Name	Data Type	Access Level	Description	BACnet® Object	Modbus® Register
pH	REAL	Read	Live pH value	AV-0	43201
pH_SP_High	REAL	Read/write	High pH alarm setpoint value	AV-1	43203
pH_SP_Low	REAL	Read/write	Low pH alarm setpoint value	AV-2	43205
Alarm_High	BOOL	Read	High pH alarm active	BI-1	10001
Alarm_Low	BOOL	Read	Low pH alarm active	BI-2	10002

pH SENSOR MAINTENANCE

Do not discard the protective cap that comes with the sensor. If the sensor is removed from the wastewater stream for an extended period of time, thoroughly clean the sensor, put a cotton ball with a few drops of water into the protective cap and replace it on the sensor. The end of the pH sensor should be submerged in liquid or be damp at all times. Avoid extended periods where it is dry, whether it be during calibration or when it is actively installed in Striem's Sensor Placement Kit.

pH SENSOR CLEANING:

To ensure accurate readings, the process electrode (glass bulb) at the end of the pH sensor needs to be kept reasonably clean, which usually means free of biofilms and/or scaling. The frequency of cleaning depends on how dirty the effluent wastewater is.



Salt Bridge

Process Electrode

WHEN TO CLEAN:

- Every 1–3 months, or until you understand the typical cleaning frequency required based upon your wastewater characteristics.
- If you suspect your pH sensor is not reading accurately.

HOW TO CLEAN:

- 1 If you are unsure if your sensor is dirty or not, you can perform a quick check:
 - a) Remove sensor from the wastewater stream
 - b) Rinse the end of the sensor in clean water
 - c) Gently dry the sensor
 - d) Insert into 7 pH buffer solution
 - e) If pH reading is 7 ± 0.3, the sensor is still considered clean – return to use
 - f) If pH reading is out of tolerance, continue...
- 2 Remove gray sensor protector so you have access to the process electrode and salt bridge at the end of the sensor.
- 3 Clean sensor – Typical: cleaning solution and soft brush (provided)
Biofilm: bleach soak ~20 minutes
Scaling: weak acid soak (ex. white vinegar) ~10 minutes"
- 4 Rinse sensor thoroughly under clean warm water and gently pat dry.
- 5 Place sensor in 7 pH buffer solution and allow to stabilize – up to 60 seconds.
- 6 If pH reading is 7 ± 0.3, sensor is clean. Replace gray protector and reinstall sensor.
- 7 If pH reading is outside of tolerance, see CALIBRATION section on right.

CALIBRATION:

The calibration sequence is accessed via the "Calibrate" button within the Maintenance screen. Select this button and follow the steps outlined on the screen. It will guide you through a 2-point calibration – one at 7 pH and one at 10 pH (buffer solutions provided).

When you press the CALIBRATE button during the calibration process, the button will turn the color of the buffer solution (yellow or blue) and a pH reading will appear in the bottom right-hand corner of the screen. This pH value is what the controller is reading but we are now telling the controller to recalibrate to the pH value of the solution. If the difference is greater than 0.875, the controller will alert you to "replace salt bridge". A Salt Bridge replacement is required periodically (usually no more than 1x per year). One replacement Salt Bridge comes with the Scout. If you need an additional Salt Bridge, contact Striem.

REPLACE SALT BRIDGE:

- 1 If the Scout controller alerts you to "replace salt bridge", do so at your earliest convenience. This alarm indicates that the pH sensor is losing accuracy.
- 2 Remove sensor from waste stream, remove the gray sensor protector, and rinse the sensor with water.
- 3 Hold the sensor vertically, electrodes and salt bridge up. Remove the used salt bridge (hexagonal-shaped capsule) using a 15 mm socket wrench and discard. The salt bridge chamber inside the sensor should now be exposed.
- 4 Dispose of the used liquid solution inside the salt bridge chamber and flush with 7 pH solution or distilled water.
- 5 Refill the chamber with 7 pH buffer solution, up to the tip of the electrode inside the chamber. DO NOT OVERFILL. It is important to leave space for the salt bridge threads and a small amount of air.
- 6 Hand tighten new salt bridge by threading it into the salt bridge chamber. Now with a 15 mm socket wrench, screw in until the salt bridge edges are flush with the probe face. Be careful not to overtighten past this point.
- 7 Reinstall the gray sensor protector.
- 8 Place sensor in 7 pH buffer solution and allow sensor to stabilize. If pH reads 7 ± 0.3, return sensor to waste stream – you are done. If out of range, calibrate the sensor.
- 9 If pH is out of tolerance, recalibrate the sensor. See CALIBRATION section above.

Striem offers a sensor maintenance kit which provides all components needed for sensor cleaning, calibration, and salt bridge replacement. The maintenance kit includes sensor cleaning solution, 7 pH buffer and 10 pH buffer solution for sensor recalibration, one replacement salt bridge, and sensor brush and protective gloves in a cardboard holding case.