Instruction Sheet: Source Water Monitoring Panel

Safety Information

Please read this entire document before unpacking, setting up, or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment. To ensure that the protection provided by this equipment is not impaired, do not use or install this equipment in any manner other than that specified in this document.

Use of Hazard Information

DANGER: Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation that may result in minor or moderate injury.

Important Note: Information that requires special emphasis.

Note: Information that supplements points in the main text.

Precautionary Labels: Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol, if noted on the instrument, will be included with a danger or caution statement in the manual.

	This symbol, if noted on the instrument, references the instruction manual for operation and/or safety information.
	This symbol, when noted on the product, indicates a heavy object and risk of muscle strain or back injury.
	Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the Producer for disposal at no charge to the user. ***Note:*** *For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxiliary items for proper disposal.*

General Information

The Source Water Monitoring Panel holds an sc1000 Controller and up to seven digital sensors. The panel includes a float switch that can alert the user to a problem with sample flow(when connected to an external device). The panel also contains a port for optional connection to a TOC analyzer. 2

Unpacking

CAUTION: Heavy Object. Can cause muscle strain or back injury. Use lifting aids and proper lifting techniques when moving.

DANGER: The Source Water Monitoring Panel sc is not suitable for installation in hazardous locations.

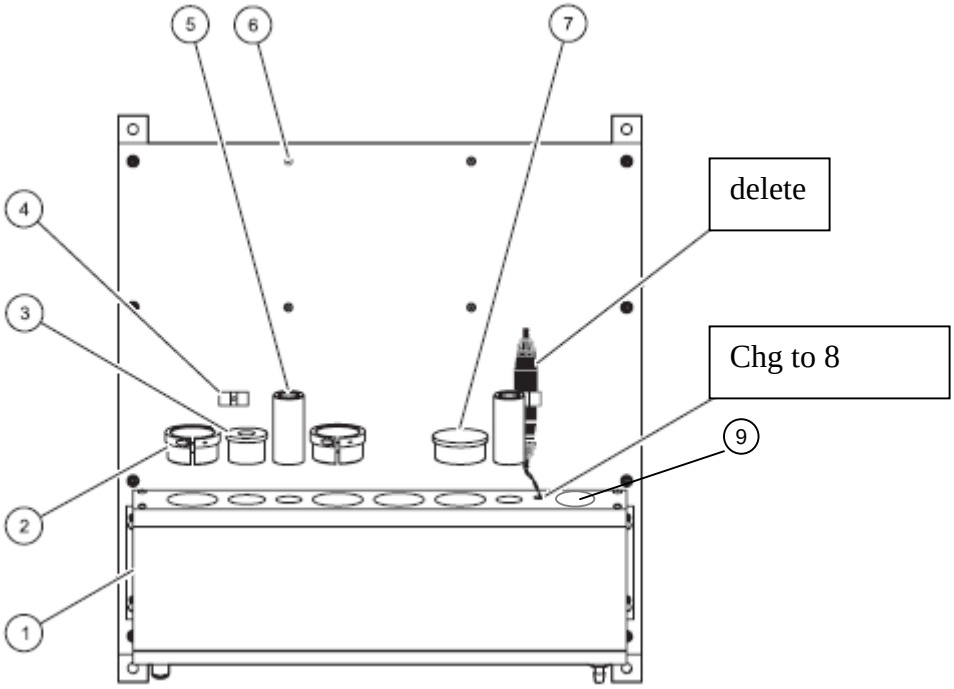
The following components are included with the Source Water Monitoring Panel (SWMP) (Figure1):

- Back Panel with flow chamber
- Required probe adapters and clamps (depending on sensors ordered)
- Plug(s) for unused mounting hole(s)
- Mounting screws for sc1000controller: ¼-20 socket head screws (4x)
- Float switch with housing for unterminated wires

1. Select a sampling point and mount the panel and the sc1000 controller to a wall.

Note: *The SWMP sc can be mounted to an optional free-standing panel rack for installations where some degree of portability or permanent wall mounting is not feasible. The rack is wheeled for easy repositioning of the system. Contact your Hach Regional Sales Manager for information about the rack.*

2. Identify a source of power (100 to 230 Vac, 50/60 Hz, 75 W)
3. Identify a sample source. The flow requirement is 900-1500 ml/min., 20 – 80 psig. The panel inlet is 3/8" FNPT supplied with ½" OD tubing quick-connect fitting.
   a. For the best sample, the SWMP should be located as close as practical to the sample point. Avoid long sample lines when possible.
   b. When possible, especially if a long sample line is required, provide a sample by-pass to ensure fresh sample at all times and minimal sample delay
   c. Use the smallest sample line that will carry sufficient sample (yet large enough to carry solids without clogging) and maintain a high velocity to discourage accumulation of sediment on the walls of the sample line.
4. Identify a free-flowing gravity sample drain point (sewer, sump, etc.). The panel drain is 3/4 FNPT supplied with 3/4 barb fitting. No not use drain tubing or piping smaller than ¾" as it may inhibit the free discharge from the panel. thus causing the sample flow chamber to overflow. As much as practical, limit the length of drain tubing before the waste stream freely discharges to the receiving sewer or sump.



1. Sample Flow Chamber	**6. Mounting Screws for sc1000, ¼"-20 (4 provided)**
2. Probe Adapter, clamp-type, Solitax or LDO probe (provided if needed)	**7. Plug for unused mounting hole(s)**
3. Probe Adapter, screw-type, conductivity sensor (provided if needed)	**8. Opening for switch wires**
4. Clamp for mounting the conductivity sensor gateway	**9. Weir cleaning access hole.**
5. Probe Adapter, screw-type, pH or ORP probes (provided if needed)	

Figure 1: SWMP Components

Mounting the panel

CAUTION: Heavy Object. Can cause muscle strain or back injury. Use lifting aids and proper lifting techniques when moving.

Secure the panel rails to a wall (or optional rack) using four bolts. Refer to Figure 2 for proper mounting dimensions. ¼" mounting hardware is suggested.

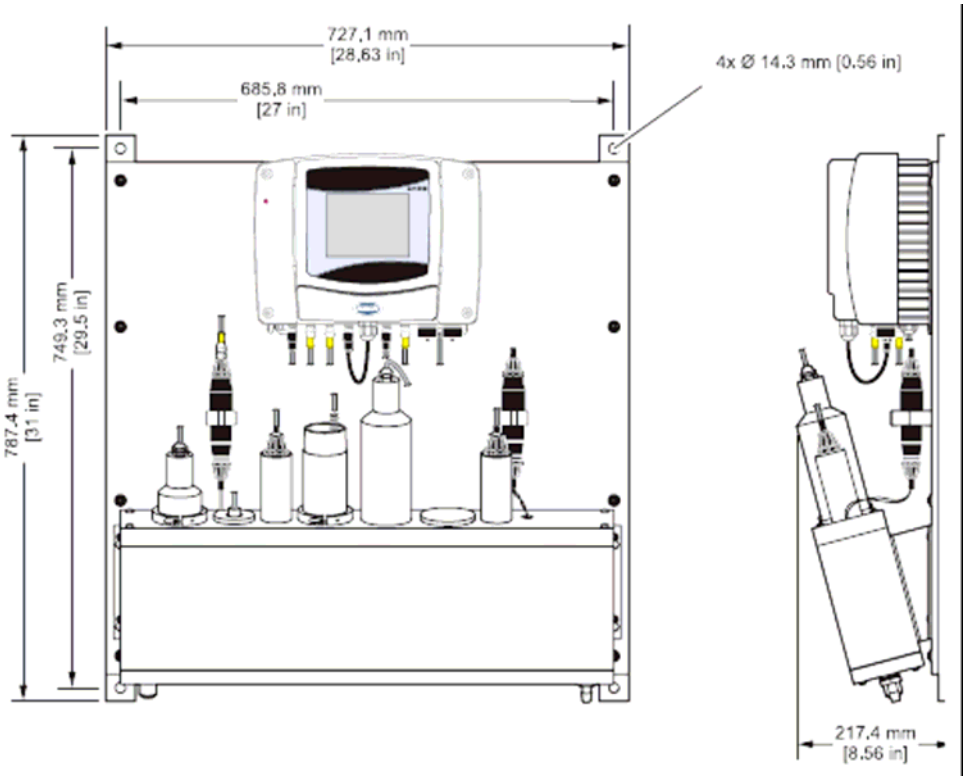


Figure 2: SWMP Mounting Dimensions

Mounting the sc1000 Controller

Position the sc1000 Controller over the four mounting screws. Hang the controller on the mounting screws and hand-tighten the bottom screws. The sc1000 Controller power can be wired via conduit or modular cord depending on local requirements.

Mounting the sensors

Note: The Source Water Monitoring Panel is a special order Engineered System. All sensors ordered for the system are supplied pre-mounted with the adapters described below. Instructions below are necessary only if a sensor is added or replaced.

Mount the following sensors in the sample flow chamber as follows:

Inductive (electrode less) conductivity: Screw the small screw-type adapter on to the top of the probe and hand-tighten to secure. Place the probe into the second mounting hole (Figure 4, item 2). Attach the gateway to the clamps on the panel above the sensor.

Luminescence Dissolved Oxygen (LDO) process: Place a clamp-type adapter onto the probe with the large ring containing the screw towards the top of the probe. Position the bottom of the large ring 6 inches from the bottom of the probe (Figure 3) and tighten to secure. Place the probe into one of the large mounting holes (Figure 4, item 4)

NITRATAX sc: Place the probe directly into one of the large mounting holes (Figure 4, item 4) with the measurement slit facing up (towards the panel). No adapter is necessary.

UVAS sc: Place the probe directly into one of the large mounting holes (Figure 4, item 4) with the measurement slit facing up (towards the panel). No adapter is necessary.

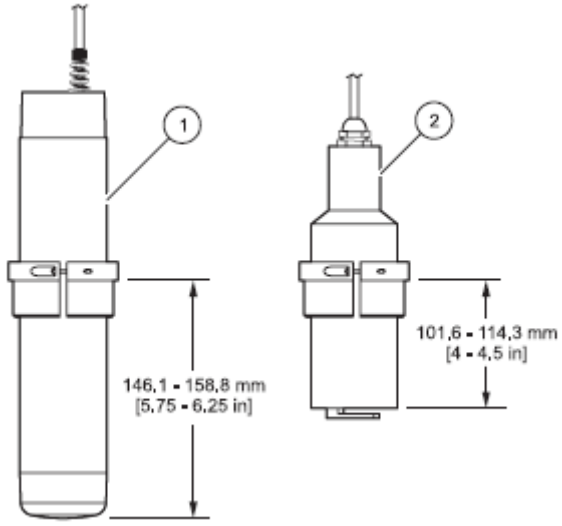
pHD ORP sc: Screw a large screw-type adapter onto the top of the probe and hand-tighten to secure. Place the probe into one of the small mounting holes (Figure4, item 3).

pHD pH sc: Screw a large screw-type adapter onto the top of the probe and hand-tighten to secure. Place the probe into one of the small mounting holes (Figure4, item 3).

SOLITAX sc: Place a clamp-type adapter onto the probe with the large ring containing the screw towards the top of the probe. Position the bottom of the large ring 6 inches from the bottom of the probe (Figure 3) and tighten to secure. Place the probe into the far left mounting hole (Figure 4, item 1).

NH4D sc Ammonium Probe: Place a clamp-type adapter onto the probe with the NH4D ring containing the screw towards the top of the probe. Position the bottom of the NH4D ring 6 inches from the bottom of the probe (Figure 3) and tighten to secure. Place the probe into one of the large mounting holes (Figure 4, item 4)

Cover any unused mounting holes with the supplied plug.

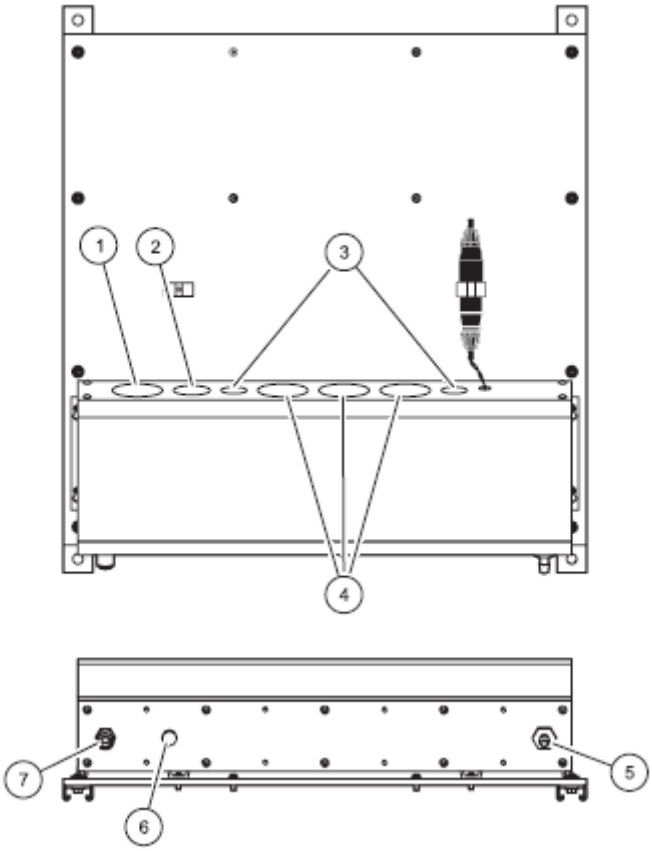


1. Luminescent Dissolved Oxygen (LDO) Sensor	2. Solitax Sensor

Figure 3: LDO and Solitax Probe Adapter Placement

Connect each of the sensor cables to one of the sc sensor connectors on the sc1000 Controller. No particular order is necessary. Any of the sensors can be connected to any of the sc sensor connectors.

Plumbing the panel



1. Mounting hole for SOLITAX probe	5. Drain fitting (3/4” NPTx3/4 hose barb)
2. Mounting hole for electrode less conductivity probe.	6. TOC port
3. Mounting hole for pH or ORP probe (2)	7. Sample inlet fitting (3/8NPT x 3/8” tube)
4. Mounting hole for LDO, UVAS, Nitratax or NH4D sc probes (3x)	

Figure 4: Probe Mounting and plumbing fitting locations

Connect the sample line to the inlet fitting on the bottom left of the panel (Figure 4, item 7). Connect the drain line to the fitting on the bottom right of the panel (Figure 4, item 5).

If connecting to a TOC analyzer, remove the plug from the TOC port (Figure 4, item 6) and install a 3/8 NPT x 3/8 tube fitting.

Wiring

Instructions for wiring are contained in the sc1000 User Manual (Cat. No. DOC023.54.03260). Power for the sc1000 Controller can be via conduit or modular cord as necessary for local requirements.

Panel Operation

Turn on sample flow to the panel and set the flow rate to 1 liter/min. (range 900–1500mL/min.). Make sure that the sample drain is not pinched and that the sample drains freely. The float switch can be connected to an alarm or other device for notification when the water level is too low for proper measurement. The float switch remains closed when the water level is acceptable and opens when the level drops below the minimum needed for measurement. An overflow weir prevents the flow level from rising above a maximum level. The switch activation level is preset and cannot be changed.

Cleaning the panel and sample flow chamber

The flow weir should be visually inspected at least weekly by simply lifting the cap from the Weir cleaning access hole. Periodically the sample flow chamber should be cleaned to remove any accumulated solids, microbiological growth and/or mineral deposits. As source water quality can vary widely, no firm schedule for cleaning can be recommended. Clean the sample flow chamber as often as experience dictates. Initially remove the top of the sample flow chamber at least monthly to determine the need for cleaning. Based on this experience adjust cleaning frequency schedules. At minimum it would be prudent to clean the sample flow chamber at least semiannually. Cleaning more frequently will minimize the opportunity for mineral deposits to become hard and difficult to remove.

Item	**Frequency (*minimum suggested, more often as experience dictates)**	**Cleaning schedule/cleaning material**
sc1000 Controller	Semiannual*	Clean the probe and display modules with a soft, damp cloth. Use mild detergent, if necessary.
Flow weir	Check weekly*	Mild bristled brush or cloth. For stubborn deposits, use cleaning solutions described below for the Sample flow chamber
Back plane of the SWMP	Semiannual*	Clean the back plane with a soft, damp cloth. Use mild detergent, if necessary. Do not use solvents or a high pressure washer.
Sample flow chamber	Semiannual*	Dirt: Mild detergent Hardness (Ca, Mg): Vinegar Microbiological growths: Household bleach Iron and Manganese: A solution of Hach RoVer® Rust Remover according to label directions Do not use solvents or a high pressure washer.

Figure 5: Maintenance schedule for SWMP quick reference

Sensor calibration and maintenance

Follow all calibration and maintenance instruction for each of the sensors used on the SWMP. However, the table below may be used as a quick reference.

Sensor	Activity	Frequency – minimum suggested. More often as experience dictates
pH, ORP and Conductivity	Cleaning	3 months
	Verification	Monthly using a standard solution
	Calibration	3 months following sensor manual instructions
SOLITAX	Cleaning	3 months
	Change wiper blade	6-12 months
	Verification	3 months
	Calibration	When verification is outside of acceptable tolerance
NH4D Ammonium	Cleaning	Monthly
	Verification	Monthly
	Calibration (replace sensor cartridge)	6 months
UVAS and Nitratax	Cleaning	3 months
	Change wiper blade	6-12 months
	Verification	Monthly
	Calibration	When verification is outside of acceptable tolerance
LDO	Cleaning	Monthly
	Verification	Monthly
	Calibration	When verification is outside of acceptable tolerance
	Change sensor cap	Annually

Figure 6: Sensor maintenance quick reference

Parts and Accessories

The Source Water Monitoring Panel is a special order Hach Engineered System. The sensors supplied are standard Hach Company sensors. All parts of the back panel, the sample flow chamber and the adapters for mounting the sensors are special order items. Contact your Hach Company representative for assistance in ordering additional or replacement parts.