Hach Sigma SD900 All Weather Refrigerated Sampler

The Hach Sigma SD900 All Weather Refrigerated Sampler is easy to set up and program, delivering reliable results and reduced maintenance.

Features and Benefits

Easy to Use

The simplified keypad with intuitive icons and scrolling menu on the Hach Sigma SD900 All Weather Refrigerated Sampler assures easy setup. Color coded power/stop buttons are easy to identify. The large, 5-line, transflective LED backlit display stays readable in bright or subdued lighting.

Reduced Maintenance

Extended pump tubing life reduces maintenance costs and pump downtime. The rugged, see-through pump cover stands up to daily use and makes visual inspection and troubleshooting quick and convenient. The desiccant tube—mounted on the side of the controller—and the pump tubing are readily accessible and can be changed in minutes (versus other desiccant chamber designs which require disassembly to reach the desiccant).

Reliable Peristaltic Pump Technology

The strong pump draw and spring loaded rollers ensure that large particulates will not interfere with sample collection. The SD900 sampler uses a positive displacement peristaltic pump. Spring mounted rollers reduce pump tubing wear and help prevent pump jams. The life time of the pump tubing is 20,000 cycles compared to only 1,000 cycles on other samplers.

Maximize Data with Minimal Effort

Use Hach's SampleView™ software to remotely program the controller, view and download sample history to a computer, save templates, upgrade firmware in the field, and download event logs. Reduce time required for manual record-keeping.

Wide Variety of Applications

The SD900 sampler can be programmed for time-based, flow-based, composite, and multiple bottle sampling set-ups. Up to three separate sampling programs can be stored simultaneously for optimal sampling flexibility.

Built Better from the Top Down with a Top-mounted Compressor

This sampler is designed specifically to endure humid and highly corrosive environments by placing the compressor at the top of the cabinet—away from corrosive gases, rodents, and standing water that may occur at floor level. The molded ABS/PC exterior of the SD900 controller enclosure is tough. The controller is tightly sealed for maximum protection from the elements and corrosive environments. The NEMA 4X, 6, IP67 housing isolates all electro-mechanical components. The keypad, switches, and display are covered by a waterproof, corrosion-resistant polyester membrane. Sealed connectors and pump shaft further guarantee environmental integrity. Collected samples are protected and preserved inside the refrigerated base.

Accurate Temperatures Assured with Microprocessor Thermal Control System

The custom-designed air-sensing thermostat controls temperature in accordance with USEPA and international guidelines. A high efficiency compressor/condenser assembly, wraparound evaporator, and rigid foam insulation ensure optimum 4°C (39°F) sample temperature.

Advanced Liquid Detection Techniques

The ultrasonic liquid sensing system used in the Sigma SD900 Indoor Refrigerated Sampler delivers repeatable and accurate sample volumes.

Rinse/Sample Retry

The intake line is thoroughly purged before and after every collection to obtain representative samples. Up to three optional line rinses precondition the intake tubing to reduce cross-contamination of the source liquid prior to sample collection. In the event that a plugged intake prevents collection, the sampler detects the failed attempt and can be optionally programmed to repeat the cycle up to three times, starting with a purge.

Specifications*

General

Housing
Controller: high impact injection molded ABS, submersible, watertight, dust tight, corrosion- and ice-resistant, NEMA 4X, 6, IP67
Refrigerated Cabinet: fiberglass reinforced plastic with UV-inhibited polymer laminate

Refrigeration Components and Copper Plumbing
Corrosion protected with conformal coating, exposed copper tubing insulated to avoid sweating and condensation

Sample Cooling
Top mounted compressor and fan-forced air cooled condenser
1/10 HP, 75 Watt, 400 BTU/hr compressor
3-sided wraparound plate type evaporator
Rigid foam insulation, 2 in.
Microprocessor controlled thermostat maintains sample liquid at 4±1°C (39±1°F); frost free; non-CFC R134A refrigerant; compression gasket
Lockable lid to prevent tampering with programming
Recovery Time (door open): 1 min. in 24°C (75°F) ambient and 4°C sample temperature, 5 minutes
Pull Down Time: from 24°C (75°F) to 4°C (39°F), 15 minutes

Sample Containers
Glass: (2) 2-1/2 gal; (4) 2-1/2 gal; (8) 1.9 L; (24) 350 mL
Polyethylene: (4) 2-1/2 gal., ((2) 2-1/2 gal; (8) 2.3 L; (1) 5-1/2 gal.; (24) 1 L

Temperature
Operating: 0 to 50°C (32 to 122°F)
With Optional Controller Compartment Heater: -40 to 50°C (-40 to 122°F)
Storage: -30 to 60°C (-22 to 140°F)

Power Requirements
60 Hz Model: 115 Vac, includes 1/5 Hp compressor, 3.6 A, 7.6 A with optional controller compartment heater
50 Hz Model: 230 Vac, includes 1/5 Hp compressor. 2.4 A, 4.8 A with optional controller compartment heater
Compressor: 110°C thermal overload relay
100 and 115 Vac model: 7.1 LRA
230 Vac model: 14.5 LRA
Overload Protection: 100 and 115 Vac model: 10 A circuit breaker 230 Vac model: 7.5 A circuit breaker

Certification
Controller: CE
AC Power Supply: UL/CSA/CE

Internal Battery
Lithium ion battery (maintains real time clock for five years)

Internal Clock
Indicates real time and date

Graphics Display
128 x 64 dot matrix backlit LCD, easily visible in direct sunlight

User Interface
Self prompting/menu driven program
13-key embossed keypad including 1 power key, 4 function keys, 8 navigation keys, and LED indication

Data Logging
Store up to 255 entries in Sample History—includes sample time stamp, bottle number, and status of sample (success, bottle full, rinse error, user abort, distributor error, pump fault, purge fail, sample timeout, power fail and low main battery)

Event Log
Includes: power on, power fail, firmware updated, pump fault, distributor arm error, low memory battery, low main battery, user on, user off, program started, program resumed, program halted, program completed, grab sample, pump tube change required

Sampling Pacing Modes
Composite and discrete multiple bottle time, multiple bottle flow, single bottle time, single bottle flow, flow with time over ride, variable interval, user start/stop and external set point

Diagnostics
Tests pump, distributor, keypad, display, and liquid detect calibration

Program Language
English

Program Lock
Access code protection prevents tampering of program and system settings

Program Delay
Programmable sample start time/date or programmable number of counts to expire before program can start

Dimensions
71 x 71 x 125 cm (28 x 28 x 49 in.)

Weight
790 kg (175 lbs.)

Communications

EPROM Flash Memory
Via RS-232
Permits embedded software upgrades in the field

Serial Interface
RS-232 compatible
115 200 baud maximum
Allows on-site collection of stored data

SampleView Data Management Software
Download, analyze, and report data, save templates, download sample history and event logs, create graphs for reports and presentations

Link directly to PC using serial port and DB 9 cable

Sampling Features

Multiple Programs
Stores up to 3 sampling programs

Cascade
For 2 samplers in combination—the first sampler, at the completion of the program, initiates the second

Program Status Display
Alerts operator to low main battery, low memory battery, plugged intake, jammed distributor arm, sample collected, and purge failure

Automatic Shutdown
Multiple Bottle Mode: After complete revolution of distributor arm (unless continuous mode is selected)
Composite Mode: After preset number of samples have been delivered to composite container, from 1 to 999 samples, or upon full container

Sample Volume
Programmed in 10 mL increments from 100 to 10,000 mL

Sample Volume Repeatability
± 5% of 200 mL sample volume using uncalibrated liquid detect under defined sampling conditions at 15-ft. vertical lift (16 ft. of 3/8-in. vinyl intake tube configured for single bottle using full bottle shut off at 70°F at 5000 ft. elevation)

Pacing Intervals
Selectable in single increments from 1 to 9,999 flow pulses or 1 to 999 hours in 1 minute increments

Sample Distribution Mode
Continuous and non-continuous
Bottles per sample or samples per bottle

Manual Grab Sample
Deliver grab sample to a specific bottle location

Continued on next page.

Specifications *continued*

Sample Pump, Intake Tubing, and Strainers

Sample Pump

High speed peristaltic, spring-mounted Nylatron® rollers
0.95 ID x 0.16 OD cm
(3/8 ID x 5/8 in. OD) pump tube

Pump Enclosure

Rugged, corrosion-resistant polycarbonate door, high impact resistant
Pump enclosure rated IP37; polyphenylene sulfide track

Vertical Lift

Minimum 8.5 m (28 ft.) suction head using 29 ft. of 3/8-in. vinyl intake tube at sea level at 20 to 25°C

Sample Transport Velocity

0.9 m/s (2.9 ft./s) at 4.6 m (15 ft.) vertical lift (16 ft. of 3/8-in. vinyl intake tubing at 70°F, at 5000 ft. elevation)

Pump Flow Rate

4.8 L/min (80 mL/s) at 3 ft. vertical lift in a 3/8-in. ID intake tube

Liquid Sensor

Ultrasonic

Intake

Purge: air purged automatically before and after each sample; duration automatically compensates for varying intake line lengths

Rinse: intake line optionally rinsed with source liquid prior to each sample; from 1 to 3 rinses

Retries or Fault: sample collection cycle optionally repeated from 1 to 3 times if sample not obtained on initial attempt

Tubing: 9.5 mm (3/8 in.) ID vinyl or Teflon® lined polyethylene

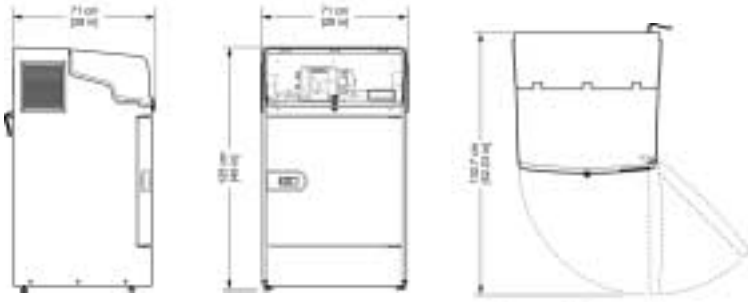
Strainers: choice of Teflon® and 316 stainless steel construction or all 316 stainless steel in standard size, high velocity, and low profile for shallow depth applications

**Specifications subject to change without notice.*

Engineering Specifications

1. The sampler shall be suitable for the representative collection of toxic and conventional pollutants in a single composite bottle or multiple bottles.
2. The sampler shall be a refrigerated wastewater sampler which will operate on AC power.
3. The sampler refrigerator compartment shall be insulated with 2-inch rigid foam insulation on the walls and bottom and five inches on top.
4. The temperature control system shall maintain 4ºC in the refrigerated compartment in ambient temperatures up to 120ºF. The desired temperature shall be entered on the sampler keypad and indicated on the display.
5. All electromechanical components shall be protected within a totally sealed housing conforming to NEMA 4X, 6 and IP67 standards for submersible, watertight, dust-tight, and corrosion resistant operation.
6. The sampler shall incorporate a high-speed peristaltic pump with spring mounted rollers for collection of the sample liquid.
7. The sampler pump body shall be constructed of corrosion resistant materials.
8. The sample liquid shall be under pumped flow and shall not pass through a metering chamber, valves or distribution plate.
9. The sample pump shall produce a minimum intake velocity of 2 feet per second at 25 feet vertical lift in a 3/8-inch ID intake line.
10. The sampler controller shall have a hermetically sealed 13-key, multiple function keypad and self-prompting 5-line, 128 x 64 dot matrix backlit liquid crystal graphics display.
11. The sampler pump shall purge the intake line before and after each sample. The duration of the purge shall be automatically adjusted for varying intake line lengths.
12. The sampler pump tubing shall be 3/8-inch ID and 5/8-inch OD medical grade silicone.
13. The sampler shall be provided with 3/8-inch ID Teflon-lined polyethylene or vinyl intake tubing and weighted strainer.
14. The sampler controller shall be programmable for single bottle and multiple bottle operation. For multiple bottle operation, the controller shall be programmable for 2-, 4-, 8-, and 24-bottle configurations.
15. The sampler shall be convertible to composite operation by removing the modular distribution assembly and replacing the discrete bottle set with a composite container.
16. For composite bottle operation, the sampler shall be furnished with (1) 5.5-gallon polyethylene container.
17. The sampler shall have the capability of retaining up to three complete sampling programs in memory.
18. The sampler shall be capable of operation in a timed or flow proportional mode.
19. The sampler shall be capable of optionally rinsing the intake line with the source liquid immediately prior to sample collection.
20. In the event that sample liquid is not obtained on the initial attempt, the sampler shall optionally purge and repeat the collection cycle.
21. To permit sampling during work shifts or other specific periods, the sampler shall be programmable for up to twelve start/stop interval pairs.
22. The sampler shall be designed for operation outdoors without the use of a separate enclosure.
23. The refrigerated sampler cabinet shall be constructed of corrosion resistant, molded fiberglass with UV inhibitor.
24. The sample compartment door shall have a compressible gasket seal and positive mechanical latch.
25. The sample compartment shall be lockable.
26. The pump tubing shall deliver a minimum of 20,000 cycles (where the conditions of the cycle are: 1 L sample volume, 1 rinse, 6 minutes pacing interval, 16 ft. of 3/8-in. intake tubing, 15 ft. of vertical lift, 70ºF sample temperature).
27. An evaporator plate heater shall assure frost-free operation.
28. For maximized cooling efficiency and to protect the compressor assembly from damage caused by heavy corrosive gases, rodents, and standing water found at floor level, the compressor assembly shall be mounted above the sample compartment. A compressor located at floor level shall not be acceptable.
29. The compressor compartment shall be side vented to allow locating the sampler against a wall.
30. The pump flow rate shall be 1.25 gpm at 3 ft. vertical lift using 3/8-in. intake tubing.
31. There shall be an option to delay the sampling program by either selecting 1 to 9,999 flow pulses or by programming a start time/date.
32. The unit shall be able to perform firmware field upgrades using SampleView™ software.
33. It shall be possible to manually initiate a sample cycle when the program has been halted.
34. The sample volume shall be programmable in 10 mL increments from 100 to 10,000 mL.
35. To prevent sample liquid from freezing in pump tubing and to enhance display readability in cold ambient temperatures, the sampler shall have a controller compartment heater option available.
36. All refrigeration lines shall be protected with a phenolic resin coating.
37. Logged data shall be available for retrieval through optional SampleView software and DTU for reporting and graphing.
38. The thermal control system shall be digital microprocessor-based and shall respond to a system of temperature sensors which shall continually monitor the evaporator plate, controller compartment air temperature, and refrigerated compartment air temperature. Control systems relying on a knob to set "colder or warmer" shall not be acceptable.
39. Refrigerated compartment temperature shall be indicated on the sampler controller display.
40. Sampler operation shall terminate automatically with a completed sample program and shall be accomplished electronically.
41. The sampler shall be the Sigma Model SD900 All Weather Refrigerated Sampler, manufactured by Hach Company.

Dimensions



The Hach Sigma SD900 All Weather Refrigerated Sampler is designed for indoor and outdoor use. For areas with sub-zero temperatures, the optional controller compartment heater is recommended. Allow complete drainage of the intake line to prevent cross-contamination between samples. Install the sampler as close to the sample source as site conditions permit to increase pump tube life and optimize overall sampler performance. Install the sampler above the sample source, with the intake tubing sloping downward to the sample as vertical as possible. (This sampler is not designed for hazardous locations where combustible environments may exist.)

Ordering Information

Sigma SD900 All Weather Refrigerated Sampler (AWRS)/Controller

Controllers include pre-cut section of pump tube insert (PN 8753900)

3540SD Sigma SD900 Controller with All Weather Cabinet, 115 Vac

3542SD Sigma SD900 Controller with All Weather Cabinet, 230 Vac

Bottle Kits for All Weather Refrigerated Sampler

Single bottle kit includes container, cap, and full bottle shut off.

AW010060 Composite Bottle Kit for AWRS, (1) 5.5-gal poly bottle

Multi-bottle kits include containers, caps, retainer, and distributor arm.

AW040030 Discrete Bottle Kit for AWRS, (4) 2.5-gal poly bottles

AW240350 Discrete Bottle Kit for AWRS, (24) 350-mL glass bottles

AW241000 Discreet Bottle Kit for AWRS, (24) 1-L poly bottles

Cables and Accessories

8758000 Auxiliary Adaptor Cable, 6- to 7-pin

8757300 7-Pin Cable for Cascade Sampling, 25 ft.

8758100 7 Pin Multi Purpose Half Cable, 10 ft., 7-pin aux connector one end, open leads other end (connects Sigma SD900 sampler to Sigma 980 flow meter)

8757200 7 Pin, Multi Purpose Half Cable, 25 ft., 7-pin aux connector one end, open leads other end (connects Sigma SD900 sampler to Sigma 980 flow meter)

8757500 SampleView software CD, includes DB9 cable to connect sampler to PC

8935 Anchor Kit Set

8805 Controller Compartment Heater, 115 Vac (factory installed)

Tubing and Strainers

2071 Strainer, all 316 stainless steel, for shallow depths

926 Strainer, Teflon/stainless steel, 5.5-in. long

2070 Strainer, all 316 stainless steel

923 Vinyl Intake Tubing, 3/8-in. ID, 100 ft.

2186 Connector Kit, for Teflon lined tubing

925 Teflon Lined Polyethylene Tubing, 3/8-in. ID, 100 ft. (requires 2186 connector kit)

4600-50 Silicone Pump Tubing, 50 ft.

For additional accessories, cables, strainers and tubing, please call or visit: www.hach.com.

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At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

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