Hach Sigma SD900 Portable Sampler

Features and Benefits

Easy to Use

The simplified keypad with intuitive icons and scrolling menu on the Hach Sigma SD900 Portable Sampler assures easy setup. Program set up—even for first time users—is typically less than two minutes. Large keys accommodate gloved hands. 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 that 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 uses a positive displacement peristaltic pump. Flow is induced by squeezing a flexible 3/8 in tube. A positive displacement peristaltic pump induces flow by squeezing a flexible 3/8-inch tube. The spring loaded 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— Including SDI-12 Communications

The SD900 sampler is ideal for NPDES stormwater compliance, stormwater runoff monitoring, pretreatment compliance, CSO studies and monitoring, industrial wastewater discharge, and WWTP process control. Program the sampler for time-based, flow-based, composite and multiple bottle sampling setups. Up to three separate sampling programs can be stored simultaneously for optimal sampling flexibility.

The optional SDI-12 communication interface can connect to devices such as Hydrolab MS5 and DS5 water quality sensors to collect data that can be used as triggers in setpoint sampling applications.

Modify in the Field for Composite or Discrete Sampling

Quickly switch between composite and discrete sampling right in the field using the interchangeable compact or standard sized base. The distributor arm and full bottle shut-off device can be changed in minutes by simply

loosening a thumbscrew—no tools are necessary. Program setup takes less than two minutes or recall a saved template using the SampleView program.

Durable, Heavy-Duty Construction Tolerates Harsh Environments

The molded ABS/PC exterior of the SD900 controller enclosure is tough. The controller is tightly sealed to withstand humidity and hostile, 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. The sealed connectors and pump shaft seal further ensure the unit's environmental integrity.

Protected Samples

Collected samples are protected from impact and extreme ambient conditions inside the double-walled insulated base. The compact and standard base holds 8.5 and 32 pounds of ice, respectively, with the sample bottles in place. Carrying the sampler is easy with the exterior, flip-up handles that nest flush to the base when not in use. The SD900 sampler is designed for use in 18-inch manholes.

Advanced Liquid Detection Techniques

The ultrasonic liquid sensing system used in the Sigma SD900 Portable 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.

The Hach Sigma SD900 Portable Sampler sets up easily and quickly in the field. Reduced maintenance and reliable results are assured.

DW

WW

IW

E

C

FB

DW = drinking water *WW = wastewater municipal* *PW = pure water / power*
IW = industrial water *E = environmental* *C = collections* *FB = food and beverage*

HACH®

Be Right™

Specifications*

General

Controller Housing
High impact injection-molded,
ABS/PC plastic
Submersible, watertight, dust-tight, corrosion-
and ice-resistant
NEMA 4X, 6, IP67

Base Housing
Impact resistant ABS plastic
3-section construction
Double-walled base with 2.54-cm
(1-in.) insulation
Direct ice contact with bottles

Temperature
General Use: 0 to 50°C (32 to 122°F)
Storage: -30 to 60°C (-22 to 140°F)

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

Power Requirements
12 Vdc supplied by optional a/c power supply
or battery
Average current with pump running: 2 Vdc

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

Internal Clock
Indicates real time and date

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

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

Data Logging
Store up to 510 entries in Sample History log
including 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, SDI-12
communication errors, set point high on/off,
set point low on/off.

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 setpoint

Overload Protection
Internal software-protected 7 amp fuse

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

Program Languages
English, Spanish, French, German, Italian,
Czech, Turkish, Portuguese

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

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

Dimensions
Standard Base:
50.5 x 69.4 cm (19.9 x 27.3 in.)
Compact Base:
44.1 x 61 cm (17.4 x 24 in.)
Composite Base:
50.28 x 79.75 cm (19.8 x 31.4 in.)

Capacities
Standard Base Capacity
(24) 1-L polyethylene or 350-mL glass bottles
(8) 2.3-L polyethylene or 1.9-L glass bottles
(4) 3.8-L polyethylene or 3.8-L glass bottles
(2) 3.8-L polyethylene or 3.8-L glass bottles
or (1) 15.1-L (4-gal.)
polyethylene composite bottle
or (1) 20.8-L (5.5-gal.)
polyethylene bottle
or (1) 9.5-L (2.5-gal.)
polyethylene or glass bottle
or (1) 9.5-L (2.5-gal.) glass bottle
Compact Base Capacity
(24) 575-mL (1.2-pint) polyethylene bottles
(8) 950-mL glass bottles
(1) 9.5-L (2.5-gal.) polyethylene or glass bottle

Weight		
Item	**Kilograms**	**Pounds**
Standard Base Configurations:		
with (24) 1-L polyethylene bottles	15	33.1
with (1) 2.5-gal. polyethylene container	14.8	32.6
Compact Base Configurations:		
with (24) 575-mL polyethylene bottles	12.2	26.9
with (1) 2.5-gal. polyethylene container	12.9	28.4
Composite Base Configurations:		
with (1) 5.5-gal polyethylene container	15	33.1
Top cover	1.29	2.85
Center section with controller	8.71	19.20
Distributor	0.75	1.65
Compact base	2.47	5.45
Standard base	3.88	8.55
20-L (5.5-gal.) polyethylene bottle without liquid	1.77	3.90
15-L (4-gal.) polyethylene bottle	1.45	3.20
10-L (2.5-gal.) polyethylene bottle	1.32	2.90
(24) 1-L polyethylene bottles with retainer	2.49	5.50
(24) 575-mL (1.2 pint) polyethylene bottles with retainer	1.45	3.20
(12) 950-mL (2 pint) glass bottles with retainer	4.58	10.10

Sampling Features

Multiple Programs
Stores up to 3 sampling programs

Cascade
For two 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
10 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 Modes
Continuous and non-continuous
Bottles per sample or samples per bottle

Manual Grab Sample
Deliver a grab sample to a specific bottle
location

Timed Bottle Sets
Enables a single sampler to function like
multiple samplers by segregating a
bottle set

Specifications *continued*

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

SDI-12 Connectivity
Plug-and-play interface to Hydrolab DS5 and MS5 sondes to provide measurement data in setpoint sampling applications

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
Perform firmware upgrades in field

Sample Pump, Intake Tubing, and Intake Strainer

Sample Pump
High speed peristaltic
4 rollers with spring tension
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, 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
80 mL/s at 0.91 m (3 ft.) vertical lift in 0.95-cm (3/8-in.) ID intake line

Liquid Sensor
Ultrasonic

Intake Purge
Air purged automatically before and after each sample
Duration automatically compensates for varying intake line lengths

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

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

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

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

Solar Power Panel
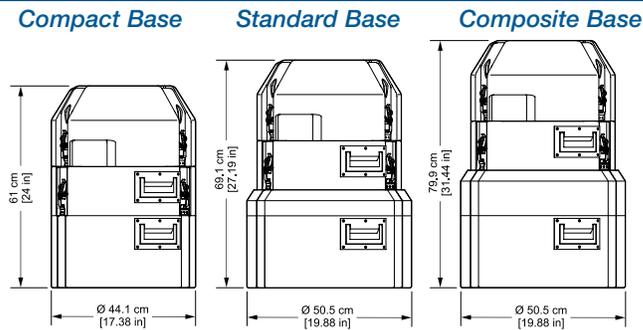12 Vdc regulated supply voltage, 5 watts minimum

Teflon® is a registered trademark of DuPont or its affiliates.

*Specifications subject to change without notice.

Engineering Specifications

1. The sampler shall be suitable for the representative collection of toxic and conventional pollutants.
2. The sampler shall incorporate a high-speed peristaltic pump for collection of the sample liquid.
3. 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.
4. All electromechanical components shall be protected within a totally sealed housing conforming to NEMA 4X, 6 and IP 67 standards for submersible, watertight, dust-tight, and corrosion resistant operation.
5. The sampler shall have interchangeable compact and standard bases.
6. The sampler base shall be double wall insulated constructed of ABS plastic.
7. The sampler shall be convertible to discrete operation by installing a modular distribution assembly and bottle set.
8. The sampler shall be convertible to composite operation by installing a composite container and full bottle shut off.
9. The sampler pump tubing shall be 3/8-inch ID and 5/8-inch OD medical grade silicone.
10. The sampler shall be provided with (select: 10 ft, 25 ft., or 100 ft.) of 3/8-inch ID (select: Teflon lined polyethylene or vinyl) intake tubing and a weighted strainer constructed of 316 stainless steel and Teflon.
11. The sampler shall have a hermetically sealed 13 key, multiple function keypad and self-prompting 5-line128 x 64 dot matrix, backlit liquid crystal graphics display.
12. The sampler shall have the capability of retaining up to three complete sampling programs in memory and be equipped with data management software (SampleView™).
13. The sampler shall be capable of operation in a times or flow proportional mode.
14. 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.
15. In the event that sample liquid is not obtained on the initial attempt, the sampler shall optionally purge and repeat the collection cycle.
16. To permit sampling during work shifts or other specific periods, the sampler shall be programmable for up to 12 start/stop interval pairs.
17. The sampler base shall be of high impact vacuum-formed ABS plastic, 3-section construction.
18. The base shall hold (select) standard base; 32 pounds of ice with the 350-mL glass bottles in place, compact base; 8.5 pounds of ice with the 575-mL polyethylene bottles in place.
19. The sampler shall be provided with a 4-20mA interface allowing flow proportional sampling from an external flow meter analog output.
20. The sampler shall be available with optional SDI-12 plug and play interface to Hydrolab DS5 and MS5 sondes to provide measurement data in setpoint sampling applications.
21. An optional AC power supply shall be UL, CE and CSA certified.
22. The sampler shall be the Sigma Model SD900 Portable Sampler, manufactured by Hach Company.

Dimensions

Compact Base   Standard Base   Composite Base

61 cm [24 in]
69.1 cm [27.19 in]
79.9 cm [31.44 in]

Ø 44.1 cm [17.38 in]   Ø 50.5 cm [19.88 in]   Ø 50.5 cm [19.88 in]

The Hach Sigma SD900 Portable Sampler is designed for indoor and outdoor use. No secondary enclosure is required when operated within the specified temperature range. The sampler consists of three main sections—the top cover, the center control system, and the bottle/base section—held together by stainless steel latches which serve as the connection point for the optional suspension harness. The lockable top cover protects the controller from extreme weather and unauthorized use.

Ordering Information

SD900 Portable Sampler Bundles

Bundles include; 6 amp-hour 12 Vdc battery, 115 Vac power converter/battery charger, sample bottle(s), vinyl intake tubing (25 ft.), and Teflon/stainless steel strainer. To order components separately, please contact Hach.

900SDPC1   Compact Portable Sampler with SD900 Controller; includes 10 L (2.5 gal) PE container and full-bottle shut off

900SDPC24   Compact Portable Sampler with SD900 Controller; includes 24 575-mL PE bottles with retainer and distributor

900SDPS1   Standard Portable Sampler with SD900 Controller; includes 10 L (2.5 gal) PE container and full-bottle shut off

900SDPS24   Standard Portable Sampler with SD900 Controller; includes 24 1-L PE bottles with retainer and distributor

Intake Tubing and Strainers

922   Teflon-lined Polyethylene Tubing, 25 ft., 3/8 in. ID (requires Prod. No. 2186 Connection Kit)

2186   Connector Kit, for Teflon-lined polyethylene tubing

920   Vinyl Intake Tubing, 25 ft., 3/8 in. ID

2070   Strainer, all 316 Stainless Steel

2071   Strainer, for shallow depth applications, all 316 Stainless Steel

4652   Strainer, for high velocity and shallow depth applications

Pump Tubing

4600-15   Pump Tubing, 15 ft., bulk

8753800   Pump Tube Insert, pre-cut length

Power

8754400   Lead Acid Battery, with 3-pin connector

8753500US   Lead Acid Battery Universal Smart Charger, 3-pin

8754500US   U.S. Power Supply, 100-120 Vac, 3 pin

Cables and Interfaces

8739400   Power Adaptor Cable; SD900, 2- to 3-pin

8757100   Multi-purpose Full Cable, 10 ft., 7-pin, connects SD900 sampler to Hach flow meter

8756900   Multi-purpose Half Cable, 10 ft., 7-pin

8758200   Sampler or Flow Meter to PC DB9 Cable, 3 m, 7-pin

8757500   SampleView CD with PC DB9 cable, 3 m, 7-pin

87390SD   SDI-12 Receptacle (factory-installed option)

8762400   SDI-12 Cable, for Hydrolab DS5/MS5 to SD900 connection, 50 ft.

8762500   SDI-12 Cable, for Hydrolab SD5/MS5 to SD900 connection, 100 ft.

8760600   Universal Junction Box, 4-20 mA input

Accessories

1355   Suspension Harness, to suspend the sampler

9542   Manhole Support Bracket/Spanner, 18- to 28-in.

9557   Manhole Support Bracket/Spanner, 28- to 48-in.

5713000   Manhole Support Bracket, 18- to 27-in.

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.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

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