Hach Sigma 900MAX All Weather Refrigerated Sampler

Features and Benefits

Resists Corrosion

The Hach Sigma 900MAX All Weather Refigerated (AWR) sampler is designed to endure humid and highly corrosive environments. The compressor is at the top of the unit to minimize damage caused by corrosive gases, rodents, and standing water which may occur at floor level. The NEMA 4X, 6 housing isolates all electro-mechanical components while the keypad, switches, and display are covered by a waterproof, corrosion resistant polyester membrane. Sealed connectors and pump shaft further guarantee environmental integrity.

Applications

Hach Sigma 900MAX All Weather Refrigerated (AWR) Samplers are ideal for NPDES stormwater compliance, pretreatment compliance, CSO studies and monitoring, industrial wastewater discharge, and WWTP process control.

Monitor and Manage

Easy, menu-type programming is made via a large 8-line by 40-character backlit display. The Hach Sigma 900Max AWR sampler can be equipped with a variety of factory-installed options to monitor and log, for example, rainfall, level, temperature, pH or ORP, and dissolved oxygen. Depending on model, up to seven external analog signals can also be logged. As many as 116,000 readings may be recorded. RAM memory is automatically allocated as necessary during operation. Flash memory is used to install software enhancements (available on the Internet), without returning the sampler to the factory.

Unique Constant Time/Variable Volume Sampling

The patented* Constant Time/Variable Volume sampling method varies sample size in proportion to flow rate— flow-weighted samples are captured on the first try. This method closely simulates manual grab samples. Limitations of conventional samplers, such as insufficient sample volumes during low flow periods or truncated sample time during high flow periods, make capturing short-lived, illicit discharges, or significant storm events difficult. The Constant Time/Variable Volume feature takes regularly timed, proportional samples depending on the flow rate— sample volume increases and decreases with the flow, ensuring that representative samples are taken at even intervals throughout the sampling period. (The factory-installed integral flow meter is required for CT/VV sampling.)

Patent #5587926

Customizable Set Points

Use the Hach Sigma 900MAX AWR sampler to collect samples in response to changing levels of selected parameters—set high and low trip points to immediately collect when a parameter exceeds preset limits. Samples

The full-featured Hach Sigma 900MAX All Weather Refrigerated Sampler stands up to environmental extremes without a secondary enclosure.

may also be taken only when the parameter exceeds these settings. Out-of-limit sample can then be segregated from normal samples to help quickly identify problem sources.

Accurate Temperatures

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. A forced air blower and front ventilation provide the flexibility to position the sampler either against a wall or inside a sampler enclosure.

Reliable Peristaltic Pump Technology

The Hach Sigma 900MAX AWR sampler uses a positive displacement peristaltic pump made of corrosion-resistant Delrin® material. Flow is induced by squeezing a flexible 3/8-in. tube (only the tubing is in contact with the liquid). The pump tubing is protected from the elements under the lockable, easy-lift lid.

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

HACH®

Be Right™

Features and Benefits *continued*

Advanced Liquid Detection Techniques

The non-contact ultrasonic liquid sensing system guarantees volume accuracy and repeatability regardless of changes in head or composition of the waste stream or temperature variations in the sample liquid. Samples are compromised less often when the intake line is thoroughly purged before and after every sample collection. Reduce cross-contamination with a line rinse where the intake is preconditioned with the source liquid prior to collection. In the event that a plugged intake prevents collection, the unit detects the failed attempt and immediately repeats the cycle starting with a high-pressure purge.

Easy Data Management Software

Powerful and user-friendly software makes it easy to analyze the data and produce presentation-quality reports—report maximums, minimums, totals, and averages for any time period. Also, generate customized reports integrating sample collections with flow, level, rainfall, other water quality parameters such as pH, ORP, temperature, conductivity, or dissolved oxygen.

Three Ways to Download Data

Sampler to DTU to PC—the palm-sized and waterproof Data Transfer Unit (DTU) is faster, easier, and more economical than a laptop computer to get data from up to 20 samplers to the office.

Sampler to Modem to PC—a built-in modem transmits data via telephone right to the office. Automatically "call" the sampler at predetermined times to retrieve data, or retrieve data on demand. Also, alarm conditions may be sent to up to three pagers or a central monitoring computer.

Sampler to PC—link directly to a PC using the standard built-in RS-232 serial port.

Specifications*

General

Sampler Housing
Controller: High impact injection molded ABS, submersible, watertight, dust tight, corrosion and ice resistant; NEMA 4X,6

Cabinet: Linear, low-density polyethylene, UV inhibitor; rated IP 24

Refrigeration components and copper plumbing: corrosion protected with conformal coating; all exposed copper tubing is 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: 3 in. sides, 5 in. top, 6 in. bottom

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: Sampler temperature recovers to 4°C within 5 minutes after door has been held open for one minute in 24°C (75°F) ambient environment while in an active cooling cycle.

Pull Down Time: From 24°C (75°F) to 4°C (39°F), 20 minutes

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

Polyethylene: (1) 6 gal., (2) 3 gal., (4) 3 gal., (8) 2.3 L, (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)

With heater and AC battery back up: -15 to 40°C (5 to 104°F)

Storage: -30 to 60°C (-22 to 140°F)

Power Requirements
60 Hz Model: 115 Vac, includes 1/5 Hp compressor, 4.2 A, 6.4 A with optional controller compartment heater

50 Hz Model: 230 Vac, includes 1/5 Hp compressor. 2.7 A, 4.1 A with optional controller compartment heater

115 Vac Model: 115ºC thermal overload protector, 7.1 A locked rotor

230 Vac Model: 120ºC thermal overload protector, 7.6 peak start current

Overload Protection: 115 Vac model: 7.5 A circuit breaker; 230 Vac model: 5.0 A circuit breaker

ac Power Backup
(Pump Controller Only)
Rechargeable 6 amp-hour gel lead acid battery takes over automatically with ac line power failure

Integral trickle charger maintains battery as full charge

Internal Battery
5 year lithium battery maintains program settings and real time clock

Graphics Display
8 line x 40 character alphanumeric, back-lit liquid-crystal graphics display

Self prompting/menu driven program

User Interface
21 key membrane switch keypad with 4 multiple function soft keys

Data Logging
Records program start time and date, sample volume collected, sample volume remaining, stores up to 400 sample collection times/dates, all program entries, operational status including number of minutes or pulses to next sample, bottle number, number of samplers collected, number remaining, sample volume collected, volume remaining, sample identification, and all logged data (i.e. level, flow velocity, rainfall, stream temperature, pH or ORP, any logged external inputs)

Set Point Sample Trigger
When equipped with integral flow meter, pH/temperature/ORP meter, conductivity, and/or DO monitoring options, sampling can be triggered upon an upset condition when field selectable limits are exceeded

Diagnostics
Tests keypad, display, ROM, pump, distributor

Program Languages
Czech, Danish, Dutch, English, French, German, Italian, Spanish, Swedish

Program Lock
Access code protection prevents tampering

Dimensions
130 x 76 x 81 cm (51 x 30x 32 in.)

Weight
86 kg (190 lbs.)

Specifications *continued*

Communications

EPROM Flash Memory
Via RS232; permits embedded software upgrades in the field; requires ac power

Serial Interface
RS-232 compatible; 19,200 baud maximum, allows on-site collection of stored data

Modem
14,400 bps, V.32 bis, V.42, MNP2-4 error correction

V 0.42 bis MNP5 data compression

Program Delay
1 to 9,999 minutes or external flow pulses in one unit increments

Programmable start time/day and time/day/week

Pager
Alarm codes sent to up to three separate pager telephone numbers

Sampling Features

Multiple Programs
Stores up to five sampling programs

Cascade
Allows using two samplers in combination where the first sampler at the completion of the program initiates the second sampler

Sampling Modes
Multiple bottle time, multiple bottle flow, composite time, composite flow, composite multiple bottle time, composite multiple bottle flow, flow with time override, variable interval, start/stop, and level actuation

Mode 1: Sampling can be triggered upon an upset condition when field selectable limits are exceeded

Mode 2: Concurrent with normal sampling routine, sample liquid is deposited in designated "Trouble" bottle(s)

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 one mL increments from 10 to 9,999 mL

Sample Volume Repeatability
±5% typical

Interval Between Samples
Selectable in single increments from 1 to 9,999 flow pulses (momentary contact closure 25 ms or 5 to 12 Vdc pulse; 4-20 mA interface optional), or 1 to 9,999 minutes in one minute increments

Sample Pump and Strainer

Sample Pump
High-speed peristaltic, dual roller, with 0.95 ID x 0.16 OD cm (3/8 ID x 5/8 in. OD) pump tube

Pump Body
Impact/corrosion resistant, glass reinforced Delrin®

Vertical Lift
8.23 m (27 ft.) maximum

Note: Remote Pump Option recommended for lifts from 6.7 to 10.7 m (22 to 35 ft.)

Sample Transport Velocity
0.61 cm/s (2 ft./s) minimum, at 4.6 m (15 ft.) vertical lift in a 0.95 cm (3/8-in.) ID intake tube

Pump Flow Rate
60 mL/s at 0.91 m (3 ft.) vertical lift in a 0.95 cm (3/8-in.) ID intake line

Internal Clock
Indicates real time and date; 0.007% time base accuracy

Manual Sample
Initiates a sample collection independent of program in progress

Intake
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

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

Rinse: Intake line automatically rinsed with source liquid prior to each sample, from 1 to 3 rinses

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

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

Specifications continued

Factory Installed Options

pH/Temperature/ORP Meter

Control/Logging: Field selectable to log pH/temperature or ORP independent of sample operation or to control sample collection in response to exceeding low/high setpoints

pH/Temperature Sensor: Temperature compensated; impact resistant ABS plastic body; combination electrode with porous Teflon® junction

pH Measurement Range: 2 to 12

Operating Temperature:
0 to 80°C (32 to 176°F)

Dimensions: 1.9 x 15.2 cm (0.75 x 6 in.) with 1.9 cm (0.75 in.) MPT cable end

Dissolved Oxygen Meter

Control/Logging: Field selectable to log dissolved oxygen independent of sampler operation or to control sample collection in response to exceeding low/high setpoints

Measurement Method: Galvanic

Sensor: Temperature compensated; impact resistant polypropylene body

Measurement Range: 0 to 20 mg/L

Resolution: 0.01 mg/L

Accuracy: ±3% of reading or 0.1 mg/L

Operating Temperature:
0 to 50°C (32 to 122°F)

Dimensions: 1.7 x 15.7 cm
(0.7 x 6.3 in.) with 1.9 cm (0.75 in.)
MPT cable end

Conductivity Meter

Control/Logging: Field selectable to log conductivity independent of sampler connection or to control sample collection in response to volume exceeding low/high setpoints

Sensor: Temperature compensated; impact resistant polypropylene body

Measurement Range: 0 to 20 mS/cm

Resolution: 0.01 mS/cm or 1 mS/cm

Accuracy: ±2% of reading or 0.01 ms

Operating Temperature:
0 to 50°C (32 to 122°F)

Dimensions: 1.7 x 15.2 cm (0.67 x 6 in.) with 1.9 cm (0.75 in.) MPT cable end

Integral Flow Meter

Control/Logging: Field selectable to log flow/level independent of sampler operation or to pace sample collection in proportion to flow

Operating Temperature:
0 to 65.5°C (32 to 150°F)

Monitoring Intervals: 1, 2, 3, 5, 6, 10, 12, 15, 20, 30, and 60 minutes

Accuracy: 0.2% best straight line for combined nonlinearity, hysteresis, and repeatability

Time Based Accuracy:
±1 second per day

Units of Measurement
    Level: cm, m, in., ft.
    Flow: gps, gpm, gph, Lps, Lpm, Lph, mgd, afd, cfs, cfm, cfh, cfd, m^3s, m^3m, m^3h, m^3d
    Totalized Flow: gal., $ft,^3$, acre-ft., m^3, L

Totalizers: Resettable and non-resettable

Field Selectable Scaling Constant and Flow Units: gal., $ft.^3$, acre-ft., m^3, and L

Data Storage: Capacity: 402 days of level, velocity, and rainfall readings at 15 minute intervals plus 300 events.

Data Types: level, velocity, rainfall and water quality

Storage Mode: wrap or slate

Output Conditions: Set point on level, velocity, rainfall, flow, flow rate of change and water quality

Communications: Serial connection to IBM compatible computer with Hach Sigma data analysis software

Integral Temperature Meter

Measures and records ambient or sample stream temperature

Control/Logging: Field selectable to log temperature independent of sampler operation or to control sample collection in response to value exceeding low/high set points

Recording Intervals: 1, 2, 3, 5, 6, 10, 12, 15, 20, 30, and 60 minutes

Sensor: Platinum RTD with 316 stainless steel body

Range: 0 to 100°C (32 to 212°F)

Accuracy: ±1°C (±1.8°F)

Operating Temperature:
0 to 80°C (32 to 176°F)

Dimensions:
0.3 x 20.3 x 1.9 cm (0.125 x 8 x 0.75 in.)

Cable Length: 4.6 m (15 ft.)

Submerged Pressure Transducer

Material: Epoxy body with stainless steel diaphragm

Cable: Polyurethane sensor cable with air vent; 7.6 m (25 ft.) standard; 20 m (15.24 ft.) optional

Sensor Dimensions:
2 x 3.8 x 12.7 cm (0.8 x 1.5 x 5 in.)

Maximum Range: 2.5 psi, 0 to 5.76 ft.

Maximum Allowable Level:
3x over pressure

Operating Temperature:
0 to 71°C (32 to 160°F)

Compensated Temperature Range:
0 to 30°C (32 to 86°F)

Air Intake: Atmospheric pressure reference is desiccant protected

Specifications continued

Submerged Depth/Velocity Sensor Velocity Measurement

VELOCITY MEASUREMENT

Range
-1.52 to 6.10 m/s (-5 to 20 ft./s)

Zero Stability
0.015 m/s (<0.05 ft./s)

Accuracy
±2% of reading

Operating Temperature
0 to 60°C (32 to 140°F)

Typical Minimum Depth for Velocity
2 cm (0.8 in.)

Method
Doppler ultrasonic

Transducer Type
Twin 1 MHz piezoelectric crystals

LEVEL MEASUREMENT

Range
Standard: 0 to 3 m (0 to 10 ft.)

Extended: 0 to 9 m (0 to 30 ft.)

Accuracy
±0.16% full scale ±1.5% of reading at
constant temp (±2.5°C)

±0.20% full scale ±1.75% of reading
from 0 to 30°C (32 to 86°F)

±0.25% full scale ±2.1% of reading from
0 to 70°C (32 to 158°F)

Maximum Allowable Level
Standard: 10.5 m (34.5 ft.)

Extended: 31.5 m (103.5 ft.)

Air Intake
Atmospheric pressure reference is
desiccant protected

Method
Pressure transducer with stainless steel
diaphragm

GENERAL

Material
Noryl® plastic outer shell with epoxy
potting

Power Consumption
~1.2 W at 12 Vdc

Cable
Urethane sensor cable with air vent

Connector
Hard anodized
(satisfies Military Spec 5015)

Cable Length
Standard: 9, 15, 23, and 30.5 m
(30, 50, 75 and 100 ft.)

Custom: greater than 30.5 m (100 ft.)

Maximum: 76 m (250 ft.)

Cable Diameter
0.91 cm (0.36 in.)

Sensor Dimensions
2.3 x 3.8 x 13.5 cm (0.9 x 1.5 x 5.3 in.)

Velocity Sensor and In-Pipe Ultrasonic Level (optional)

Nose Angle
20 degrees from horizontal

Cable Length
Standard: 7.6 m (25 ft.)

Custom: to 76 m (250 ft.)

Cable Diameter
0.57 cm (0.225 in.)

Materials
Sensor: polymer

Cable: urethane

Mounting hardware: stainless steel

Dimensions
1.12 x 3.81 x 6.86 cm
(0.44 x 1.5 x 2.7 in.)

Rain Gauge Input
For use with Hach Sigma Tipping Bucket
Rain Gauge

The Sampler Program can be initiated
upon field selectable rate of rain

Sampler records rainfall data

Each tip = 0.25 mm (0.01in.) of rain

Analog Input Channels
Up to 3 additional data logging channels
record data from external source(s)

Field assignable units

-4.0 to +4.0 Vdc and 0 to 20 mA

4-20 mA Output
Up to 2 output signals available

Optically isolated

600 ohm maximum load per output each

Expanded Memory
Increases memory from 18,432 data
points to 116,736 points (512 K)

Alarm Relays
(4) 10 amp/120 Vac or 5 amp/220 Vac
form C relays

User assignable with settable trip points

*Delrin® and Teflon® are registered trademarks
of E.I. du Pont de Nemours and Company*

Engineering Specifications

1. The sampler shall be capable of representatively collecting and preserving, by refrigeration, of liquid samples.

2. The sampler which shall operate on AC power and incorporate a 12 Vdc back up battery.

3. The sampler shall be designed for operation outdoors without the use of a separate enclosure.

4. The refrigerated sampler cabinet shall be constructed of corrosion resistant, molded linear, low density polythylene. All cabinet exterior surfaces shall be UV resistant and sloped so as to shed water.

5. The sample compartment door shall have a compressible gasket seal and positive mechanical latch.

6. The temperature control system shall maintain 4°C in the refrigerated compartment in ambient temperatures to 120°F. The desired temperature shall be entered on the sampler keypad and indicated on the display.

7. 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, ambient air, and sample liquid. Control systems relying on a knob to set "colder or warmer" shall not be considered equivalent.

8. An evaporator plate heater shall assure frost-free operation.

9. Refrigerated compartment temperature shall be indicated on the sampler controller display. Refrigerator temperature shall be data-logged for future review and compliance confirmation by accessing through the screen.

10. Logged data shall also be available through optional software and DTU for reporting and graphing.

11. For maximized cooling efficiency and to protect the compressor assembly from corrosion caused by heavier than air corrosive gases, the compressor assembly shall be mounted above the sample compartment. A compressor located at floor level shall not be acceptable.

12. The compressor compartment shall be side ventilated to allow locating the sampler against a wall.

13. The refrigerated sample compartment shall have 3 inches of rigid foamed in place insulation on the walls, 6 inches on the bottom, and 5 inches on top.

14. All refrigeration lines shall be protected with a phenolic resin coating.

15. The thermostat/thermal control system shall be housed within a NEMA 4X, 6 enclosure.

16. 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.

17. The sampler shall be capable of receiving a 60 mL/sec flow.

18. The refrigerator compressor for the sampler shall be mounted at the top of the unit.

19. Refrigeration temperature shall be maintained at 4°C (39°F) in a 49°C (120°F) ambient, and controlled by a thermal mass equivalent to 150 mL of water in compliance with EPA methods.

20. The sample and controller compartments shall be lockable.

21. The cabinet shall be equipped with a pull out bottle tray.

22. The front controller compartment and rear compressor compartment shall have a compressible gasket seal to prevent insects and debris from collecting inside the compartments.

23. The sample volume shall be programmable in milliliters, one mL increments from 10 to 9,999 mL.

24. Sample modes shall include multiple bottle time, multiple bottle flow, composite time, composite flow, flow with time override, variable interval, start/stop, and level actuation.

25. Sampler operation shall terminate automatically with a completed sample program and shall be accomplished electronically with no switch or sensor coming in contact with the liquid.

26. It shall be possible to manually initiate a sample cycle without interrupting the program.

27. There shall be a provision to delay the sampling program from 1 to 9,999 minutes.

28. The sampler shall have the built-in and switch selectable capability for both timed cycle and flow proportional sampling.

29. The sampler shall use constant time/variable volume sampling method where regularly timed samples are adjusted for size depending on flow rate.

30. The sampler shall be equipped with Multiplex, which shall, in the 24-bottle mode, allow multiple sample bottles to be filled each interval. Multiplex modes shall be selectable in multiples of 1, 2, 4, 8, and 24.

31. The sampler shall be provided with a 24 bottle discrete assembly including (24) 475 mL polyethylene containers, bottle tray and distributor mechanism or one 6-gallon polyethylene composite container.

32. Factory installed options shall include selections of the following:
    a. Integral pH, temperature or ORP meter
    b. Integral dissolved oxygen meter
    c. Rain gauge input
    d. 4-20 mA outputs
    e. Expanded memory
    f. Integral flow meter
    g. Integral temperature meter
    h. Analog input data logging channels
    i. Modem
    j. Alarm relay
    k. Integral conductivity meter
    l. Integral submerged depth/velocity sensor(s)

33. The sampler shall operate from 115 Vac power.

34. Operating instructions shall be integral to the control panel.

35. The refrigerated sampler shall be the Sigma Model 900MAX All Weather Refrigerated Sampler (or AWRS) manufactured by Hach Company.

Dimensions

The refrigeration compartment door of the Hach Sigma 900MAX All Weather Refrigerated Sampler is lockable (two keys are provided). The lock for the lid is optional.

180 cm
[71 in]

81 cm
[32 in]

91 cm
[36 in]

130 cm
[51 in]

76 cm
[30 in]

149 cm
[59 in]

152 cm
[60 in]
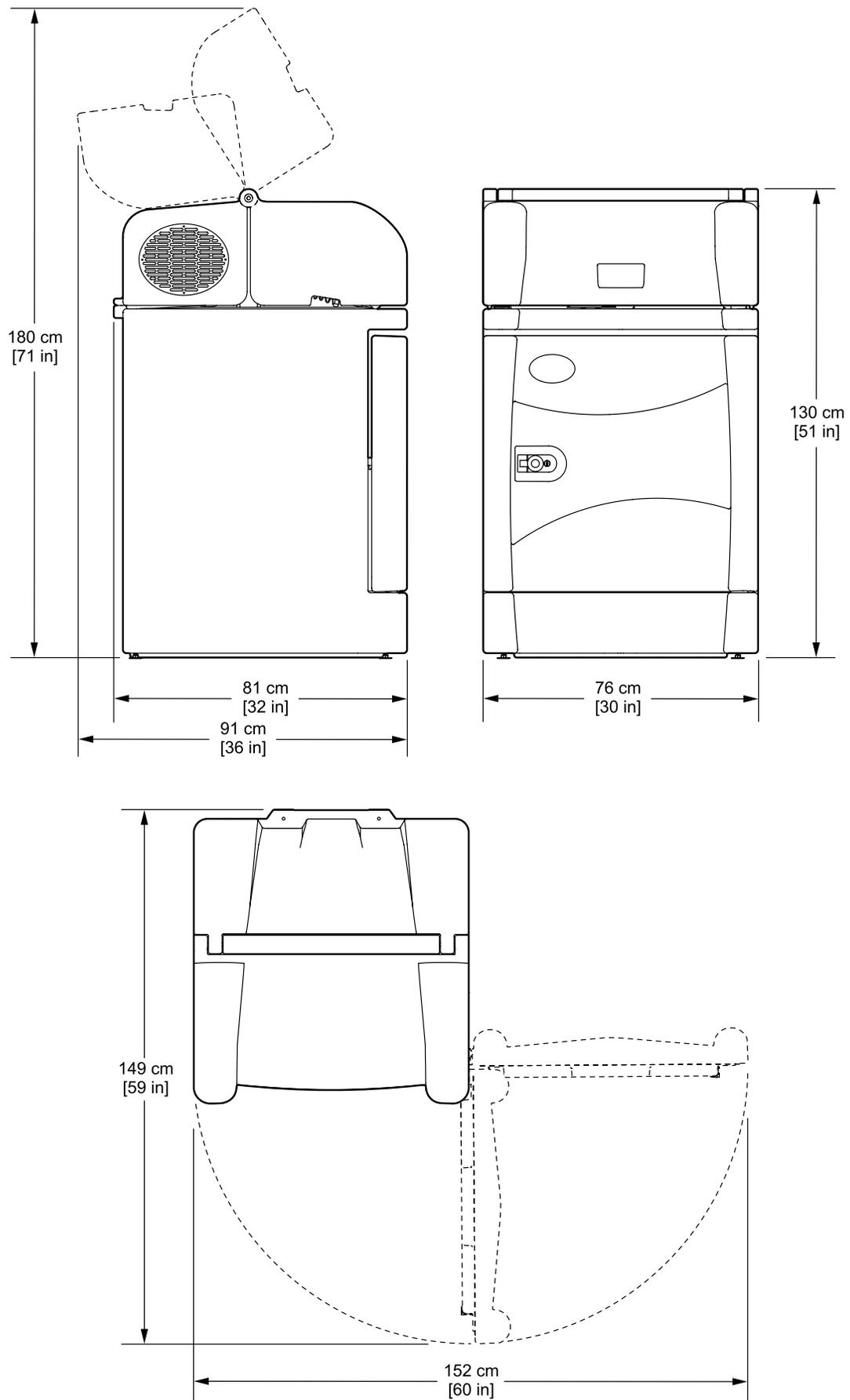
Ordering Information

Hach Sigma 900MAX All Weather Refrigerated (AWR) Samplers

3543R   900MAX Controller with 115 Vac AWR cabinet

3543RH   900MAX Controller with 115 Vac AWR cabinet and controller compartment heater

3545R   900MAX Controller with 230 Vac AWR cabinet

3545RH   900MAX Controller with 230 Vac AWR cabinet and controller compartment heater

Hach Sigma 900MAX All Weather Refrigerated Sampler (AWRS) Bundles

Bundles include AWRS base (115 Vac), sample bottle(s), vinyl intake tubing (25 ft.), and Teflon/stainless steel strainer. To order components separately, please contact Hach Company.

900MAXAWRS1
All Weather Refrigerated Sampler with 900MAX controller; included 21-L (5.5 gal) PE container and full bottle shut off

900MAXAWRS13
All Weather Refrigerated Sampler with 900MAX Controller; includes 10-L (2.5 gal) PE container and full bottle shut off

900MAXAWRS24
All Weather Refrigerated Sampler with 900MAX Controller; included 24 1-L PE containers with distributor

Intake Tubing and Strainers

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

2186   Connector Kit, for Teflon-lined polyethylene tubing

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

2070   Strainer, 316 stainless steel

2071   Strainer, for shallow depth applications, 316 stainless steel

4652   Strainer, high velocity and shallow depth

Pump Tubing

4600-15   Pump Tubing, 15 ft.
4600-50   Pump Tubing, 50 ft.

Integral Water Quality Parameters

8793   Integral pH-Temp/ORP option, factory installed

3328   pH-Temperature Probe (grounded), with 25 ft. cable

3227   DO and Conductivity receptacle, factory installed

3216   D.O. Probe Kit, with 25 ft. cable

3223   Conductivity Probe only, with 25 ft. cable

4-20mA Input

8795   Analog Input Data Logging channels, qty. 3

4-20mA Output

8797   First 4-20 mA Output
8798   Second 4-20 mA Output

Alarm Relays

8984   Alarm Relays, qty. 4

Modem

1602   Modem, 14,400 baud

Rain Gauge

8800   Rain Gauge receptacle, factory installed

2149   Rain Gauge, with 25 ft. cable and option

Cables and Interfaces

1727   PC Cable, for sampler or flow meter
3358   RS232 Extension Cable

Accessories

2471   Flow-thru Module, with flanged ends
6613100   Anchor Kit Set
943   Liquid Level Actuator, 25 ft. cable

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.

In the United States, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 800-227-4224
Fax: 970-669-2932
E-mail: orders@hach.com
www.hach.com

U.S. exporters and customers in Canada, Latin America, sub-Saharan Africa, Asia, and Australia/New Zealand, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 970-669-3050
Fax: 970-461-3939
E-mail: intl@hach.com
www.hach.com

In Europe, the Middle East, and Mediterranean Africa, contact:

HACH LANGE GmbH
Willstätterstraße 11
D-40549 Düsseldorf
GERMANY
Tel: +49 (0) 211 5288-0
Fax: +49 (0) 211 5288-143
E-mail: info@hach-lange.de
www.hach-lange.com

HACH ®

Be Right™