

# 900MAX PORTABLE SAMPLERS

## Applications

- Wastewater
- Collections



**The Hach Sigma 900MAX Portable Sampler's advanced technology and comprehensive customer service can be summarized in five key concepts: accuracy, simplicity, flexibility, reliability, and economy.**

Easy, menu-type programming uses a large backlit display. Use the Hach Sigma 900MAX sampler to monitor and log rainfall, level, flow, velocity, temperature, pH or ORP, with 12 data logging channels. Depending on model, up to seven external analog signals can also be logged. As many as 116,000 readings may be recorded.

### **Unique Constant Time/ Variable Volume Sampling**

The patented Constant Time/Variable Volume sampling method varies sample size in proportion to flow rate. This feature takes regularly timed, proportional samples depending on the flow rate, ensuring that representative samples are taken at even intervals throughout the sampling period.

### **Field Convertible for Compact or Discrete Sampling**

Weighing only 28 pounds (12.7 kg), the 900MAX Portable Sampler is designed for accuracy and convenience. Quickly switch between composite and discrete sampling in the field. Configurable for single- or multiple-bottle applications, it is specifically designed for use in 18-inch manholes.

### **Reliable Peristaltic Pump Technology**

The 900MAX sampler uses a positive displacement peristaltic pump made of corrosion-resistant Delrin® material. While other peristaltic pumps fail to meet EPA1 criteria for representative intake velocity, Hach samplers produce a 3.3 ft./s velocity at 3 ft. lift in a 3/8-in. ID intake line.

### **Advanced Liquid Detection Techniques**

The non-contact ultrasonic liquid sensing system guarantees volume accuracy and repeatability. Reduce cross-contamination with a line rinse; 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.

### **Customizable Set Points**

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.

### **Easy Data Management Software**

Powerful, user-friendly software makes it easy to analyze the data and produce presentation-quality reports for any time period, or generate customized reports integrating sample collections with a variety of parameters.



## Specifications\*

### General

<b>Sampler Housing</b>	Impact resistant ABS plastic, 3-section construction  Double-walled base with 1 in. (2.54 cm) insulation, direct ice contact with bottles	<b>Set Point Sample Trigger</b>	When equipped with integral flow meter or pH/temperature/ORP meter options, sampling can be triggered by an upset condition when field-selectable limits are exceeded.
<b>Controller Housing</b>	High-Impact, injection-molded ABS; submersible, watertight, dust-tight, corrosion, and ice resistant; NEMA 4X, 6	<b>Sampling Modes</b>	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
<b>Temperature</b>	General Use: 0 to 49 °C (32 to 120°F)  Liquid Crystal Display (LCD): -10 to 70°C (-14 to 158°F)  Storage: -40 to 80°C (-40 to 176°F)	<b>Overload Protection</b>	5 amp dc line fuse for pump; 5 amp dc line fuse for ac power converter
<b>Power Requirements</b>	12 Vdc supplied by optional a/c power converter or battery. Average current with pump running: 2.25 amps dc  Certification: CSA, UL, CE	<b>Diagnostics</b>	Tests keypad, RAM, ROM, pump, distributor, liquid sensor, and velocity signal
<b>ac Power Backup (Pump Controller Only)</b>	Rechargeable 6 amp-hour gel lead acid battery takes over automatically with ac line power failure  Integral trickle charger maintains battery as full charge (factory installed option)	<b>Program Languages</b>	Czech, Danish, Dutch, English, French, German, Spanish, Swedish
<b>Solar Power Panel/Backup</b>	12 Vdc regulated supply voltage, 5 watts minimum; optional 12 Vdc lead-acid or gel-electrolyte battery backup	<b>Program Lock</b>	Access code protection prevents tampering
<b>Internal Battery</b>	Two 1.5 V dc "C" cells; maintains program logic and real time clock for five years	<b>Dimensions</b>	Standard and 12 Bottle Base: 50.5 cm x 69.4 cm (10.9 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.)
<b>Graphics Display</b>	8 line x 40 character alphanumeric, back-lit liquid-crystal graphics display  Self prompting/menu driven program	<b>Weight</b>	Standard and 12 bottle base: 15 kg (35.6 lb.) with (24) 1-L polyethylene bottles 14.8 kg (32.6 lb.) with 3-gal polyethylene container  Compact Base: 12.2 kg (27 lb.) with (24) 575-mL polyethylene bottles 12.9 kg (28.3 lb.) with 3-gal polyethylene container  Composite Base: 15 kg (36 lb.) with (12) 950-mL glass bottles
<b>User Interface</b>	21 key membrane switch keypad with 4 multiple function soft keys		
<b>Data Logging</b>	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.  Up to 200 events logged, including alarm conditions, program run/stop events, etc.		

*\*Subject to change without notice.*

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## Specifications\*

### Communications

<b>EPROM Flash Memory</b>	Via RS232; permits embedded software upgrades in the field; requires ac power
<b>Serial Interface</b>	RS-232 compatible; allows on-site collection of stored data
<b>Program Delay</b>	1 to 9,999 minutes or external flow pulses in one unit increments  Sampler start time/date and time/day  Sampler start on external 12 Volt or contact closure input

### Sample Bottle Capacity

<b>Standard Base Capacity</b>	(24) 1 L polyethylene and/or 350-mL glass bottles  (8) 2.3 L polyethylene and/o 1.9 L glass bottles  (4) 3.8 L (1 gal) polyethylene and/or (4) 3.8 L (1 gal) glass bottles  (2) 3.8 L (1 gal) polyethylene and/or (2) 3.8 L (1 gal) glass bottles  20.8 L (5.5 gal) polyethylene composite container or (1) 15.1 L (4 gal) polyethylene composite container or (1) 20 L (6 gal) polyethylene or (1) 10 L (3 gal) polyethylene or (1) 9.5 L (2.5 gal) glass
<b>Compact Base Capacity</b>	(24) 575 mL polyethylene bottles  (8) 950 mL glass bottles  11.4 L (3 gal) polyethylene bottle  9.5 L (2.5 gal) glass bottle
<b>12 Bottle Base Capacity</b>	(12) 950 mL glass bottles  10 L (3 gal) polyethylene bottle  9.5 L (2.5 gal) glass bottle
<b>Composite Base Capacity</b>	22.7 L (6 gal) polyethylene bottle
<b>Ice Capacity</b>	Compact Base: 3.9 kg (8.5 lb.) with (24) 575 mL PE bottles  Standard Base: 14.5 kg (32 lb.) with (24) 350 mL glass bottles

### Sampling Features

<b>Multiple Programs</b>	Stores up to five sampling programs
<b>Cascade</b>	Allows use of two samplers in combination; at the completion of its program, the first sampler initiates the second
<b>Upset Sampling</b>	When equipped with integral flow meter or pH/temperature/ORP monitoring options, or triggered from an external control device, sampling can be started in an upset condition when field-selectable limits are exceeded. Concurrent with normal sampling routine, sample liquid is deposited in designated "Trouble Bottle(s)"
<b>Status Display</b>	Alerts operator to low main battery, low memory battery, plugged intake, jammed distributor arm, sample collected, and purge failure
<b>Automatic Shutdown</b>	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.
<b>Sample Volume</b>	Programmed in one mL increments from 10 to 9,999 mL
<b>Sample Volume Repeatability</b>	±5% typical
<b>Interval Between Samples</b>	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
<b>Multiplex (Multiple Bottle Mode)</b>	Programming allows multiple samples per bottle and/or multiple bottles per sample collection

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## Specifications\*

### Sample Pump and Strainer

<b>Sample Pump</b>	High-speed peristaltic, dual roller, with 0.95 ID x 0.16 OD cm 3/8 ID x 5/8 in. OD) pump tube
<b>Pump Body</b>	Impact/corrosion resistant, glass reinforced Delrin®
<b>Vertical Lift</b>	8.23 m (27 ft.) maximum  <i>Note: Remote Pump Option recommended for lifts from 6.7 to 10.7 m (22 to 35 ft.)</i>
<b>Sample Transport Velocity</b>	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
<b>Pump Flow Rate</b>	60 mL/s at 0.91 m (3 ft.) vertical lift in a 0.95 cm (3/8-in.) ID intake line
<b>Liquid Sensor</b>	Non-wetted, non-contact, ultrasonic
<b>Intake Purge</b>	Air purged automatically before and after each sample; duration automatically compensates for varying intake line lengths
<b>Pump/Controller Housing</b>	High impact injection molded ABS; submersible, watertight, dust tight, corrosion and ice resistant; NEMA 4X, 6
<b>Internal Clock</b>	Indicates real time and date; 0.007% time base accuracy
<b>Manual Sample</b>	Initiates a sample collection independent of program in progress
<b>Intake Rinse</b>	Intake line automatically rinsed with source liquid prior to each sample, from 1 to 3 rinses
<b>Intake Retries</b>	Sample collection cycle automatically repeated from 1 to 3 times if sample not obtained on initial attempt
<b>Intake Tubing</b>	9.5 mm (3/8 in.) ID vinyl or 9.5 mm 3/8 in.) ID Teflon® lined polyethylene
<b>Intake Strainers</b>	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

### Factory-Installed Options

pH/TEMPERATURE/ORP METER	
<b>Control/Logging</b>	Field selectable to log pH/temperature or ORP independent of sample operation or to control sample collection in response to exceeding setpoints
<b>pH/Temperature Sensor</b>	Temperature compensated; impact resistant ABS plastic body  Combination electrode with porous Teflon® junction
<b>Measurement Range</b>	pH: 2 to 12 pH  Temperature: -10 to 105°C (-14 to 221°F)
<b>Operating Temperature</b>	-18 to 80°C (0 to 176°F)
<b>Dimensions</b>	1.9 x 15.2 cm (0.75 x 6 in.) with 1.9 cm (0.75 in.) MPT cable end
SUBMERGED PRESSURE TRANSDUCER	
<b>Material</b>	Epoxy body with stainless steel diaphragm
<b>Cable</b>	Polyurethane sensor cable with air vent  Length: 7.6 m (25 ft.) standard; 20 m (15.24 ft.) optional
<b>Sensor Dimensions</b>	2 x 3.8 x 12.7 cm (0.8 x 1.5 x 5 in.)
<b>Maximum Range</b>	2.5 psi, 0 to 1.75 mm (0 to 5.76 ft.)
<b>Maximum Allowable Level</b>	3x over pressure
<b>Operating Temperature</b>	0 to 71°C (32 to 160°F)
<b>Compensated Temperature Range</b>	0 to 30°C (32 to 86°F)
<b>Air Intake</b>	Atmospheric pressure reference is desiccant protected

\*Subject to change without notice.

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## Specifications\*

### Factory-Installed Options (continued)

#### SUBMERGED DEPTH/VELOCITY PROBE

##### Velocity Measurement

<b>Range</b>	-1.52 to 6.10 m/s (-5 to 20 ft./s)
<b>Zero Stability</b>	0.015 m/s (<0.05 ft./s)
<b>Accuracy</b>	±2% of reading
<b>Operating Temperature</b>	-18 to 60°C (0 to 140°F)
<b>Typical Depth</b>	2 cm (0.8 in.) minimum for velocity
<b>Method</b>	Doppler ultrasonic
<b>Transducer Type</b>	Twin 1 MHz piezoelectric crystals

##### Level Measurement

<b>Range</b>	Standard: 0 to 3 m (0 to 10 ft.) Extended: 0 to 9 m (0 to 30 ft.)
<b>Accuracy</b>	±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 160 °F)
<b>Allowable Level</b>	Standard: 10.5 m (34.5 ft.) maximum Extended: 31.5 m (103.5 ft.) maximum
<b>Air Intake</b>	Atmospheric pressure reference is desiccant protected
<b>Method</b>	Pressure transducer with stainless steel diaphragm

##### General

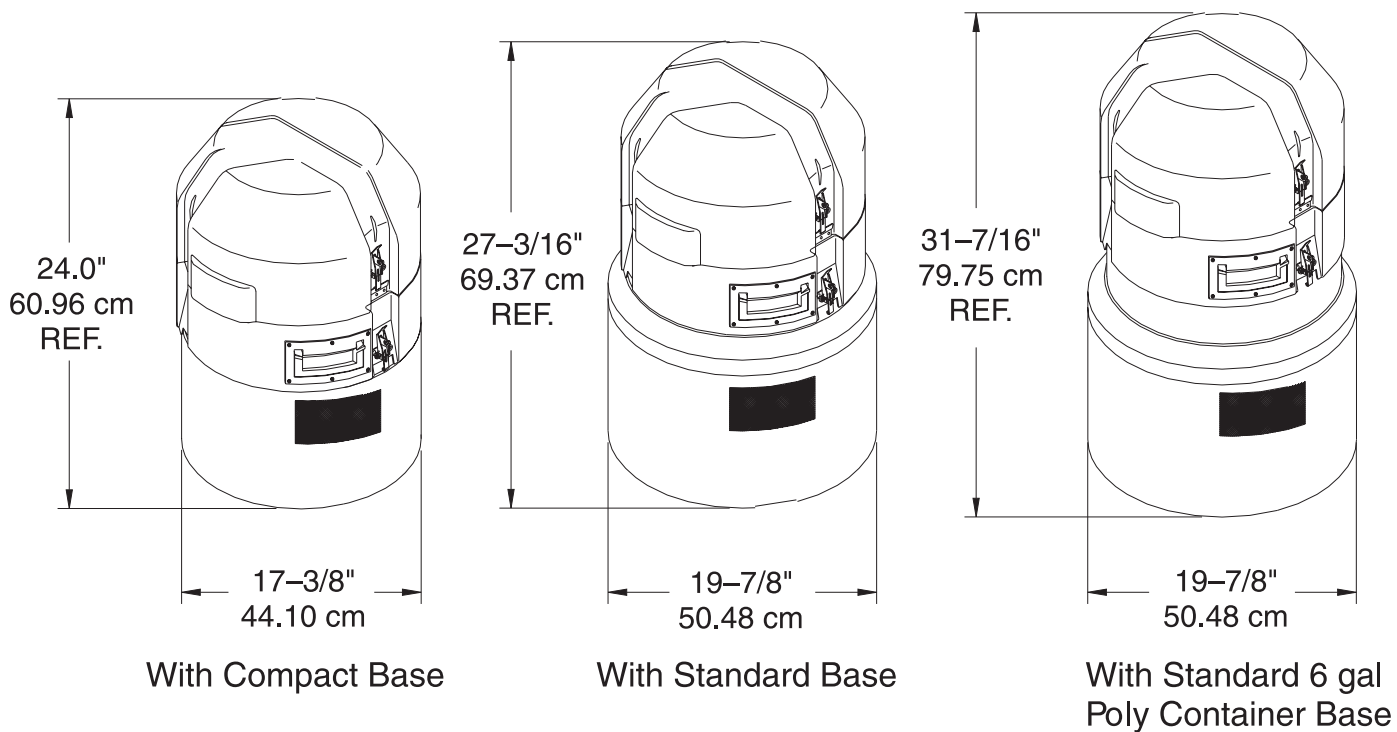
<b>Material</b>	Noryl® plastic outer shell with epoxy potting
<b>Power Consumption</b>	~1.2 W at 12 Vdc
<b>Cable</b>	Urethane sensor cable with air vent
<b>Connector</b>	Hard anodized (satisfies Military Spec 5015)
<b>Cable Length</b>	Standard: 9, 15, 23, and 30.5 m (30, 50, 75 and 100 ft.) Custom: greater than 30.5 m (100 ft.) Maximum: 76 m (250 ft.)
<b>Cable Diameter</b>	0.91 cm (0.36 in.)
<b>Sensor Dimensions</b>	2.3 x 3.8 x 13.5 cm (0.9 x 1.5 x 5.3 in.)

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## Dimensions

The Hach Sigma 900MAX Portable Sampler is designed for indoor or 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

### Sigma 900MAX Portable Sampler Bundles

- 6249300** 900MAX Portable pH Bundle, with 3 gallon bottle
- 6249400** 900MAX Portable pH Bundle, with 6 gallon bottle
- 6249500** 900MAX Portable pH Bundle, with (8) 2.3 liter bottles
- 6249600** 900MAX Portable pH Bundle, with (24) 575 liter bottles

### Controller and Base Options

- 8930** Sigma 900MAX Portable Sampler, with controller, center sections, and top cover (complete sampler requires adding a base option)
- 8975** Compact Insulated Base
- 8976** Standard Insulated Base
- 8958** 12 Bottle Base
- 8561** Composite Insulated Base

### Bottle Options

- 6559** 2.5 Gallon Glass, with Teflon-lined cap
- 1918** 3 Gallon Polyethylene, with cap
- 6494** 6 Gallon Polyethylene, with cap
- 1502** Container Support
- 8996** Retainer/Full Container Shut-off
- 737** Set of (24) 1 Liter Polyethylene, with caps
- 1369** Set of (24) 575 mL Polyethylene, with caps
- 2348** Set of (8) 950 mL Glass, with Teflon lined caps
- 2217** Set of (4) 1 Gallon Polyethylene, with caps
- 2216** Set of (4) 1 Gallon Glass, with Teflon lined caps
- 2215** Set of (2) 1 Gallon Polyethylene, with caps
- 2214** Set of (2) 1 Gallon Glass, with Teflon lined caps

### Bottle Retainers (for multiple bottles)

- 2620** Retainer for (12) 950 mL Glass Bottles
- 2189** Retainer for (24) 350 mL Glass Bottles
- 1422** Retainer for (8) Glass, (8) Poly, (24) 575 mL Poly, and (24) 1 Liter Poly Bottles
- 2347** Retainer for (8) 950 mL Glass Bottles
- 2190** Retainer for 1 Gallon Glass and 1 Gallon Polyethylene Bottles

### Distributors

- 8582** Distributor with Arm for 24 Bottle, Standard Case and 12 Bottle Base
- 8580** Distributor with Arm for 24 Bottle Compact Base
- 8584** Distributor with Arm for 2, 4 and 8 Bottle Standard Base and 8 Bottle Compact Base
- 8583** Distributor Arm only for 24 Bottle Standard Base and 12 Bottle Base, requires distributor assembly
- 8581** Distributor Arm for 24 Bottle with Compact Base, requires distributor assembly
- 8585** Distributor Arm for 2, 4 and 8 Bottle with Standard Base, requires distributor assembly

### Intake Tubing and Strainers

- 922** 25 ft. Teflon Lined Polyethylene Tubing, 3/8-in. ID (requires Prod. No. 2186 Connection Kit)
- 2186** Connector Kit, for Teflon lined polyethylene tubing
- 920** 25 ft. Vinyl Intake Tubing, 3/8-in ID
- 2070** Strainer, all 316 stainless steel
- 2071** Strainer, for shallow depth applications, all 316 stainless steel
- 4652** Strainer, high velocity and shallow depth

### Pump Tubing

- 460015** Pump Tubing, 15 ft.
- 8964** Pump Tube Insert

### Integral Water Quality Parameters

- 8793** Integral pH-Temp/ORP Option, factory installed
- 3328** pH-Temperature Probe (grounded), with 25 ft. cable
- 5172** pH-Temperature Probe; grounded, with 50 ft. cable
- 2080** ORP Probe; with 25 ft. cable
- 5174** ORP Probe; with 50 ft. cable

### 4-20 mA Input

- 8795** Three (3) Analog Input Data Logging Channels

### 4-20 mA Output

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

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## Ordering Information (continued)

### Alarm Relays

**8984** Four (4) Alarm Relays

### Rain Gauge

**8800** Rain Gauge Receptacle, factory installed

### Cables and Interfaces

**1727-10** PC Cable for Sampler or Flow Meter, 10 ft.

**3358** RS-232 Extension Cable

### Accessories

**1355** Suspension Harness (suspends 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.

**943-25** Liquid Level Actuator, 25 ft. cable

**6987** Weatherguard Fiberglass Enclosure,  
89 x 89 x 86 cm (35 x 35 x 34 in.)

**6992** Weatherguard Fiberglass Enclosure,  
91 x 66 x 135 cm (36 x 26 x 53 in.)

**8713200** Solar Module, with 10 W panel and 12 Vdc regulator

**8713300** Solar Module, with 20 W panel and 12 Vdc regulator

**8713400** Solar Module, with 30 W panel and 12 Vdc regulator

**8713500** Solar Module, with 40 W panel and 12 Vdc regulator

**8713600** Solar Module, with 50 W panel and 12 Vdc regulator

**8712400** Gel Battery, 12 volt, 12 amp hour

**8712500** Gel Battery, 12 volt, 26 amp hour



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