

SIGMA 900 MAX Refrigerated Sampler

Sigma Refrigerated Liquid Sampler Overview

The Corrosion Seal of Approval:

This fixed-site sampler is designed to endure the most humid and highly corrosive environments. American Sigma's Refrigerated Sampler features a sealed controller for maximum protection from the elements and is available with an optional stainless steel refrigerator. A NEMA 4X,6 housing isolates all electromechanical components while the keypad, switches and display are covered by a waterproof, corrosion resistant polyester membrane. The unit's sealed connectors and pump shaft seal further guarantee the Sigma 900's environmental integrity.

Accurate Temperatures:

Refrigeration temperature is controlled in accordance with EPA guidelines by a custom-designed air-sensing thermostat. A high efficiency compressor/condenser assembly, wraparound evaporator, and rigid foam insulation ensure optimum 9°F (4°C) sample temperature. The unit's forced air blower and front ventilation provide the flexibility to position the sampler either against a wall or inside a sampler enclosure.

Sigma 900 Refrigerated Sampler Features

- Highest sample integrity for data you can count on
- Simple to understand, efficient to use
- Refrigerator maintains 4°C
- Sealed controller, corrosion protected... it's built to last
- Sigma 900 and Sigma 900 MAX to meet your needs

Sigma 900 MAX Controller Specifications

900 MAX Controller Specifications

Diagnostics:

- Tests keypad,
- display,
- ROM,
- pump,
- distributor.

Program Delay:

- (1) 1-9,999 minutes or flow pulses in one unit increment
- (2) programmable start time/day,
- (3) programmable time/day/week.

Sampling Modes:

- Multiple Bottle Time,
- Multiple Bottle Flow,
- Composite Multiple Bottle Time,
- Composite Multiple Bottle Flow,
- Composite Time,
- Composite Flow,
- Constant Time / Variable Volume,
- Constant Volume / Variable Time,
- Flow with Time Override,
- Variable Interval,
- Start/Stop,
- Level Actuation.

Temperature Range:

- **General use:** 32° to 120°F, (0° to 49°C)
- **Liquid Crystal Display: Operating :** -14° to 158°F, (-10° to 70°C),
- **Storage:** -40°F to 176°F, (-40° to 80°C).

Serial Interface:

- **RS-232;** up to 19,200 baud; allows on-site collection of stored data.

Internal Battery:

- Two C-cell alkaline batteries; maintains program logic and real time clock for five years. Internal battery draws less than 40 micro amps.

User Interface:

- 21 key membrane switch keypad with 4 multiple function soft keys; 8 line x 40 character alphanumeric, liquid crystal graphics display.
- Self prompting/menu driven program.

Data Logging:

- Records program start time and date, 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 samples collected, number remaining, sample volume collected, volume remaining, sample identification number, and all logged data (i.e., level, flow velocity, rainfall, stream temperature, pH or ORP, and any logged (external inputs).

Set Point Sample Trigger:

- When equipped with data logging options (i.e., level, flow velocity, rainfall, stream temperature, pH or ORP, and any logged external inputs)
- 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)."

Automatic Shutdown:

- **Multiple Bottle Mode:** After complete revolution of distributor arm (unless Continuous

Mode selected).

- **Composite Mode:** After preset number of samples have been delivered to composite container, from 1-999 samples, or upon full container.

Flash Memory:

- **Via RS-232;** permits embedded software upgrades in the field.

900 Sampler Series - General Specifications

- **Pump Body:** High impact, corrosion resistant, glass reinforced Delrin®.
- **Sample Pump:** High speed peristaltic, dual roller, with 3/8" (.95 cm) ID by 5/8" (1.6 cm) OD pump tube.
- **Vertical Lift:** 27' (8.2 m) maximum (note: Remote Pump Option recommended for lifts from 22' (6.7 m) to 35' (10.7 m).
- **Internal Clock:** Indicates real time and date, 0.007% time base accuracy.
- **Liquid Sensor:** Single sensor, non-contact, ultrasonic.
- **Sample Transport Velocity:** 2'/sec. (.6 m/sec.) minimum at 15' (4.6 m) vertical lift in a 3/8" (.95 cm) ID intake tube.
- **Pump Flow Rate:** 60 ml/sec at 3' vertical lift in a 3/8" (.95 cm) ID intake tube.
- **Sample Volume Repeatability:** ±5% typical.
- **Status Output:** Low battery, low memory power, plugged intake, jammed distributor arm, sample collected, and purge failure.
- **Sample Volume:** Programmed in milliliters, in one ml increments from 10 to 9,999 ml.
- **Intake Strainers:** Teflon® and 316 stainless construction. All 316 stainless steel in standard size and low profile for shallow depth applications.
- **Intake Purge:** Air purged automatically before and after each sample; duration automatically compensated for varying intake line lengths.
- **Intake Rinse:** Intake line automatically rinsed with source liquid prior to each sample, from 1 to 3 rinses.
- **Intake Tubing:** 3/8" ID vinyl, 1/4" ID vinyl, 3/8" ID Teflon/polyethylene.
- **Intake Fault:** Sample collection cycle automatically repeated from 1 to 3 times if sample not obtained on initial attempt.
- **Cascade:** Allows using two samplers in combination where the first sampler at the completion of the program initiates the second.
- **Program Languages:** Czech, Danish, Dutch, English, French, German, Italian, Spanish, and Swedish.
- **Manual Sample:** Initiates a sample collection independent of program in progress.
Automatic Shutdown:
- **Multiple Bottle Mode:** After complete revolution of distributor arm (unless Continuous Mode selected).
- **Composite Mode:** After preset number of samples has been delivered, from 1-999 samples, or upon full container.
- **Interval Between Samples:** Selectable in single increments from 1 to 9,999 flow pulses (momentary contact closure 25 msec. or 5-12 VDC pulse; 4-20 mA interface optional), or 1 to 9,999 minutes in one minute increments.
- **Program Lock:** Access code protection precludes tampering.
- **Multiple Programs:** Stores up to five sampling programs.