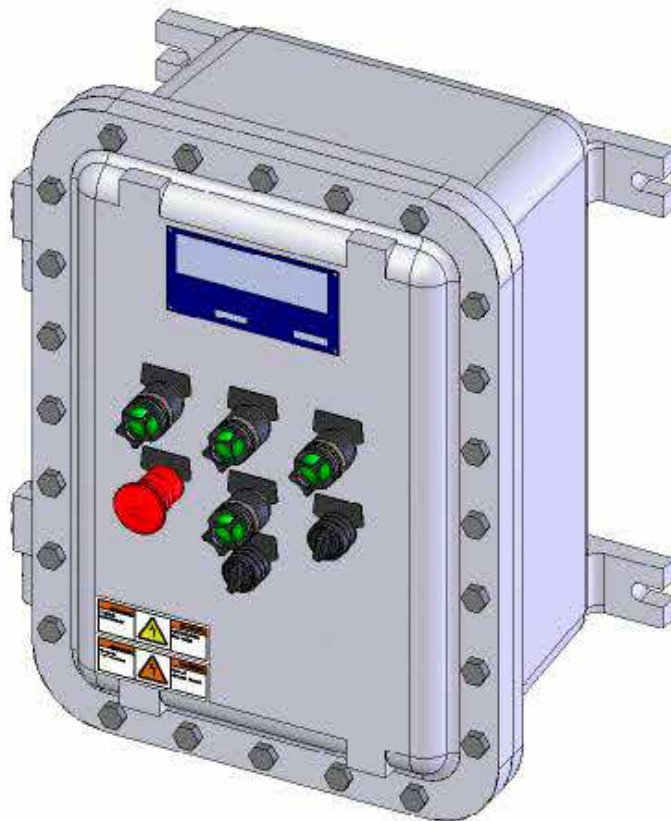


# Installation, Operation & Maintenance Manual


## Sentry B1 Hazardous Controller Sampler Controllers

S-AS-IOM-00489-3 12-17



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 Do not install, maintain, or operate this equipment without reading, understanding, and following the appropriate Sentry Equipment Corp instructions. Otherwise, injury, damage, or both may result.

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## Note

The information contained in this document is subject to change without notice.

# Safety Information

Please read the entire manual before attempting to unpack, set up, or operate this product. Pay careful attention to all Warnings, Cautions, and Notes. Failure to do so could result in serious personal injury and/or equipment damage.

## Use of Hazard Information

If multiple hazards exist, the signal word corresponding to the greatest hazard shall be used.

## Definitions

### **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

### **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

### **CAUTION**

**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

### **NOTICE**

**NOTICE** is used to address practices not related to personal injury.

### **NOTE**

Information that requires special emphasis.

### **TIP**

Alternate techniques or clarifying information.

**SHALL:** This word is understood to be mandatory.

**SHOULD:** This word is understood to be advisory.

## General Safety Precautions

### Product Selection, Installation, and Use

#### **WARNING**

Improper selection, installation, or use can cause personal injury or property damage. It is solely the responsibility of users, through their own analysis and testing, to select products suitable for their specific application requirements, ensure they are properly maintained, and limit their use to their intended purpose.

Follow proper local, state, and federal regulations for proper installation and operational requirements.

# General Description

The Sentry® B1 Hazardous Controller is a hazardous location controller used to operate a Sentry B1 sampler. When signaled from the controller, the motor energizes and turns the auger in the Purge direction. After a delay to allow the motor to stop, direction of the auger is reversed and a sample is taken. The controller can be used to control size and frequency of the sample. The sample timer controls the size. The cycle timer controls the frequency.

## Installation

### WARNING

This instrument should be installed by qualified technical personnel to ensure adherence to all applicable electrical codes.

To ensure the protection provided by this equipment is not impaired, this equipment must not be installed or used in any manner other than that which is specified in this manual.

## Unpacking

1. Carefully remove the controller from its shipping carton.
2. Inspect it for any damage.
3. Report damages to the shipper at once.

## Mounting

- If the sampler controller is to be mounted near the sampler, then the controller must meet the National Electrical Code for the area. Sentry Equipment supplies electrical components to meet the standards specified by the customer. For example: Class, division and group as outlined in the National Electrical Code.

### NOTE

When penetrating the controller enclosure, use tubes and fittings that maintain the environmental rating of the enclosure.

- Installation should be performed by qualified personal in accordance with local codes and procedures.
- Mount the controller in a location that is easily accessible and within view of the sampler.
- Mount the controller in a vibration-free location and have a qualified electrician wire the controller to the electrical supply.
- Surge suppression and filtering are recommended but not required.
- Hard wire the sampler controller to instrument-quality power using appropriate certified conduit, fittings, and wiring or cable.
- Use a suitable external over-current protection device, such as a fuse or circuit breaker (15 A), and disconnect device.
- The over-current protection and disconnect devices shall be installed on both the hot (L) and neutral (N) leads.
- The disconnect device shall be located near the equipment and marked with appropriate ON(I) OFF(O) markings as specified by local codes.
- For fixed wiring methods, the ground conductor shall have green with a yellow stripe as the insulation.

# Operation

## WARNING

To ensure the protection provided by this equipment is not impaired, this equipment must not be installed or used in any manner other than that which is specified in this manual.

Do not open control box until incoming power is removed at the supply source. Emergency stop removes power to the control circuit, however, live power is still entering the box.

The controller is designed to operate the sampler. The control logic includes:

1. Cycle time: Determines the duration between samples.
2. Sample time: Determines the duration the auger turns in the sample direction. Setting this timer determines the sample volume collected per cycle.
3. Purge time: Determines the duration the auger turns in the purge direction.
4. SAMPLE Light: Indicates sampler is currently sampling.
5. PURGE Light: Indicates auger is turning in the Purge direction.
6. POWER Light: Indicates live power is entering control box.
7. BATCH COMPLETE Light: Indicates that the preset number of samples has been collected.
8. EMERGENCY STOP: Removes power to the control circuit.

## Sequence of Operation

The controller operates in two modes, HAND and AUTO.

- When the selector switch is momentarily held in the HAND position, a single sample mode is activated.
  - The Purge timer is started; the motor is energized causing the auger to rotate in the purge direction.
  - When the Purge timer expires, the motor is deenergized. A delay of 6 seconds is started.
  - After 3 seconds, the relay controlling motor direction is energized, switching the motor leads to reverse the direction of the auger.
  - When the Delay timer expires, the Sample Timer is started.
  - The motor is energized. This time the auger will rotate in the sample direction.
  - When the sample timer expires, the motor and direction relay are deenergized. The auger stops turning.
  - A single sample has been taken, complete with a purge cycle.
- When the controller is placed in AUTO mode, the sampling cycle is started.
  - The Purge timer is started; the motor is energized causing the auger to rotate in the purge direction.
  - When the Purge timer expires, the motor is deenergized. A delay of 5 seconds is started.
  - After 3 seconds, the relay controlling motor direction is energized, switching the motor leads to reverse the direction of the auger.
  - When the Delay timer expires, the Sample Timer is started.
  - The motor is energized. This time the auger rotates in the sample direction.
  - When the sample timer expires, the motor and direction relay are deenergized and the Cycle Timer is activated.
  - When the Cycle Timer expires, the Sample and Purge Timers are reset and the Sample Cycle is started again.
  - Sampling continues until the controller is turned OFF or the optional batch count is met.

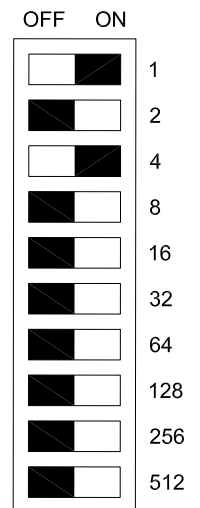
## Starting and Operating the Controller

- After installing in accordance with local codes and requirements, Sample, Cycle, and Purge Timers must be set. Sample, Cycle and Purge Timers should be set with the default factory settings of 5 seconds.
- The timers are set by placing the dip switches in the ON or OFF position. The value next to the dip switch displays the seconds value of the dip switch. To determine the timer setting, add all the seconds values for dip switches in the ON position.

Example: In the figure (right), the device is set for  $1 + 4 = 5$  seconds.

- Set the Sample, Cycle and Purge timers to the desired value. The delay timer has a fixed value of 5 seconds.
- Once the timers (and optional batch counters) have been set, make sure the selector switch is in the OFF position. Pull out the emergency stop button to power the controller.
- To place the controller in Auto, place the selector switch in the AUTO position.
  - This starts the sampler and immediately initiates the purge cycle as indicated by the PURGE light. The motor is energized, causing the auger to rotate in the purge direction.
  - The Purge timer expires and the motor is deenergized.
  - A delay timer starts. This delay time is fixed and cannot be changed. In the middle of this delay the motor leads are reversed in preparation for sampling.
  - The Delay timer expires and the sample timer starts. The motor is energized and the auger turns in the sampling direction. The SAMPLE light will be lit.
  - When the sample timer expires, the motor and direction control relay are deenergized. The Cycle Timer starts.
  - When the Cycle Timer expires, the sampler enters Purge Mode once again and repeats until the controller is taken out of AUTO using the selector switch, or until the optional batch count is met.
- A manual sample can be taken whenever the sampler is not running in AUTO. To take a manual sample, momentarily place the selector switch in HAND. A single sample mode is activated.
  - The purge cycle is started as indicated by the PURGE light. The motor is energized causing the auger to rotate in the purge direction.
  - The Purge timer expires and the motor is deenergized. A delay timer starts. This delay time is fixed and cannot be changed.
  - In the middle of this delay the motor leads are reversed in preparation for sampling.
  - The Delay timer expires and the sample timer starts. The motor is energized and the auger turns in the sampling direction. The SAMPLE light will be lit.
  - When the sample timer expires, the motor and direction control relay are deenergized.
  - A single sample has been taken complete with a purge cycle.

### CTR106



## Stopping the controller

To stop the program and disable the sampler, place the selector switch in the OFF position.

Any time the controller is placed in the OFF position, or the Remote Start signal is removed, the optional counter is reset to zero.

# Standard Warranty

Sentry Equipment Corp (“Seller”) warrants products manufactured by it and supplied hereunder (“Products”) to be free from defects in workmanship and, to the extent materials are selected by Seller, to be free from defects in materials, in each case for a period as defined in the table below:

Product Line	Product Category	Warranty Period
Sentry®	1. Automatic Sampling 2. Corrosion Monitoring 3. Manual Sampling 4. Sample Conditioning 5. Sampling & Analysis Systems 6. Replacement Parts (without expiration dates)	Eighteen months from date of shipment or twelve months from startup, whichever occurs first
Waters Equipment	1. Sampling & Analysis Systems 2. Replacement Parts (without expiration dates)	Twelve months from date of shipment

To view the full warranty, go to [www.sentry-equip.com/warranty](http://www.sentry-equip.com/warranty).

## Customer Support

With proven sampling expertise since 1924, Sentry products and services provide business operations the critical insights to optimize process control and product quality. We deliver true representative sampling and analysis techniques to customers around the globe, empowering them to accurately monitor and measure processes for improved production efficiency, output, and safety. Standing behind our commitments, we are determined to tackle any application, anywhere.

We know that running an efficient operation isn’t easy. It requires thorough, careful analysis of controlled, real-time data achieved through reliable, accurate, and repeatable process monitoring, and measuring. By effectively conditioning, sampling, and measuring gas, liquid, slurry, powder, solids, steam, or water within their production environments, our customers obtain the critical insights they need to control and optimize their processes.

Yet, controlling your processes also means reliable customer support throughout the life cycle of your equipment.

- Customer Service—General information, warranty claims, order management.
- Installation Service—For systems that require specialized expertise upon installation.
- Technical Support—Troubleshooting, training, and technical manuals.
- Field Service & Retrofits—When a problem needs immediate attention.
- Replacements Parts & Consumables—Order your replacement parts and consumables.
- Sentry ProShield Services – select from four ProShield Guardian service plans providing different levels of support to protect your large system investments with regularly scheduled maintenance.

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