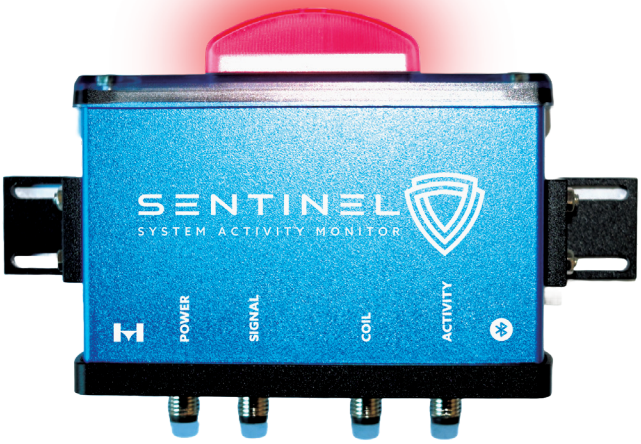
HANSEN TECHNOLOGIES

Bulletin P131a
April 2026

Specifications, Applications, Service Instructions & Parts

SENTINEL™ SYSTEM ACTIVITY MONITOR

For Refrigeration Systems



SNTL ANALYZER

INTRODUCTION

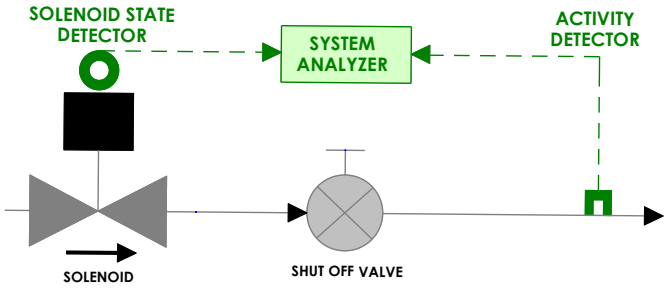
The Sentinel System Activity Monitor is a device which can confirm and compare desired state vs. actual state of refrigerant flow in an industrial refrigeration system. It can improve energy efficiency by promptly identifying valves that are not functioning properly, such as hot gas supply valves that remain partially open/bleed-by during normal refrigeration mode. It can also enhance safety by confirming liquid feed valves are closed completely before initiating hot gas defrost steps. In essence, Sentinel provides true condition feedback, not simply valve position feedback.

Sentinel consists of a specialty activity detector located downstream of a valve or series of valves being monitored to determine the presence of liquid or gas flow. It is paired with a solenoid state detector/indicator to determine and indicate when flow is desired. These environmentally rugged, non-intrusive detectors do not require any pressure piping penetration or changes to existing solenoid electrical wiring. This makes installation on most manufacturer's valves extremely easy and straight forward. The advanced signals created by the detectors are interpreted by the patented algorithms located in the Analyzer. Status is communicated visually via a bright LED indicator for local status and remotely via Modbus or analog/digital output when connected to a plant PLC or cloud-based monitoring solution. The Analyzer also has Bluetooth connectivity for wireless setup and access to status details with alarm history.

APPLICATIONS

The most common application is to monitor liquid feed and hot gas supply valves for proper function on liquid overfeed and direct expansion evaporators. Sentinel is also suitable for monitoring liquid make-up valves to flooded evaporator surge drums, pump recirculators and chillers. Furthermore, Sentinel can be used to functionally test & document any valves critical to safety which might be required to isolate vessels, mains/branches during emergency shut-downs or leaks to atmosphere (such as King valves).

A fully integrated Sentinel system can provide differentiated dashboards for technicians, refrigeration/ plant managers and leadership roles in corporate Engineering, Compliance, Health & Safety



PRINCIPLES OF OPERATION

1. The Analyzer assembly receives input from the Coil Detector and Activity Detector and uses patented algorithms to determine if Activity (flow/no-flow) and Coil (energized/de-energized) are in matching states. The Analyzer then indicates status via several output methods. See Levels of Monitoring section.

2. The Activity Detector is mounted on the pipe at the outlet of a solenoid valve to detect when there is flow through the pipe. The Activity Detector electronics convert the activity signal which is transmitted to the Analyzer. A self-test circuit periodically checks the function of the detector to prevent a false-negative condition.

3. The Coil State Detector is mounted to a solenoid coil to detect when the coil is energized and de-energized. The Coil Detector electronics convert the coil signal which is transmitted to the Analyzer. A self-test circuit periodically checks the function of the detector to prevent a false-negative condition. In addition, the detector assembly has an integrated visual indicator via two LEDs thereby replacing the function of traditional pilot lights.

.

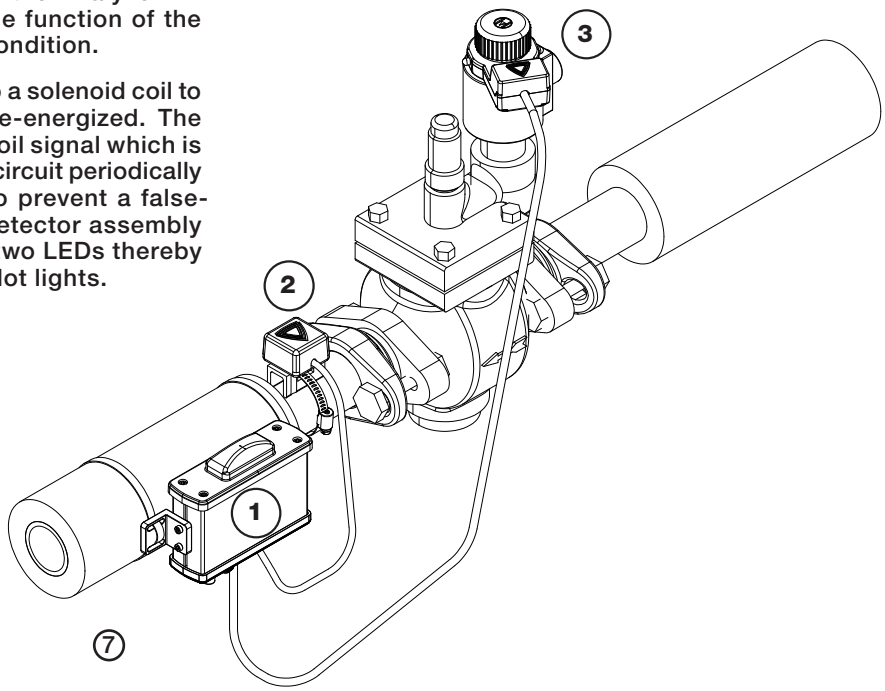
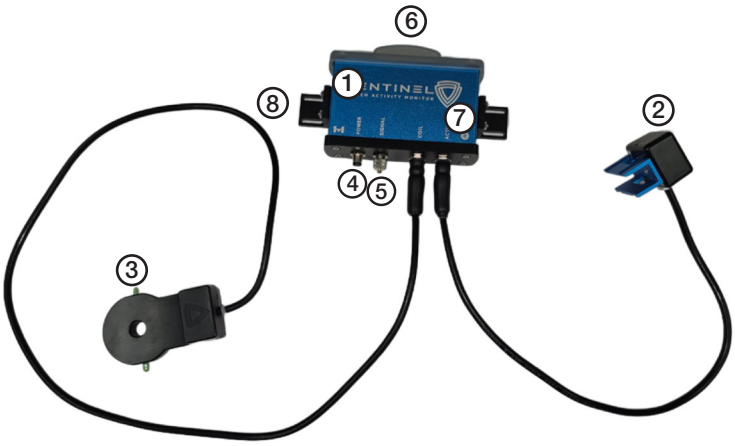


Figure 1. Assembly of a Sentinel system on a valve.



#	Component Description
1	Analyzer
2	Activity Detector
3	Coil State Detector
4	Power and Modbus RTU Connector
5	Analog/Digital Signal Connector
6	LED Indicator
7	Bluetooth Module Location
8	Mounting Brackets (x2)

Figure 2. Sentinel and its key components.

ELECTRICAL REQUIREMENTS

- Device Voltage: 24VDC (-20% / +10%)
- Current Draw: 154mA
- Output Signal Types
    - o 4-20mA
    - o 0-10V
    - o RS485 MODBUS RTU
    - o NPN/PNP
        - ▪ Output 1 only: Status
        - ▪ Output 1 & 2: Status & Alarm
- Compatible with both AC and DC solenoid coils
- Cabling: Minimum of 16AWG wire for power and 22AWG twisted and shielded for the RS485 communication and analog/digital signal lines. Cable can be individually specified for each connection type. Alternatively, Hansen offers a connectorized cable system; see page 17. Consult an electrician to ensure compliance with all local and national electrical codes and suitability for each connection type.

ENVIRONMENTAL SPECIFICATIONS

Devices and Connectors are IP67 and NEMA 3R rated

Ambient Operating Temperature: -40° F (- 40° C) to +122° F (+50° C)

Operation Humidity: 10 to 100% RH (condensing)

LEVELS OF MONITORING

Ⓐ Local- via onboard LED indicator and/or Bluetooth App

Monitoring to Advise/Alarm - Bring specific functional deviation to the attention of operator/technician to investigate/repair; such as leaking hot gas valve

Ⓑ Facility- via PLC or computer

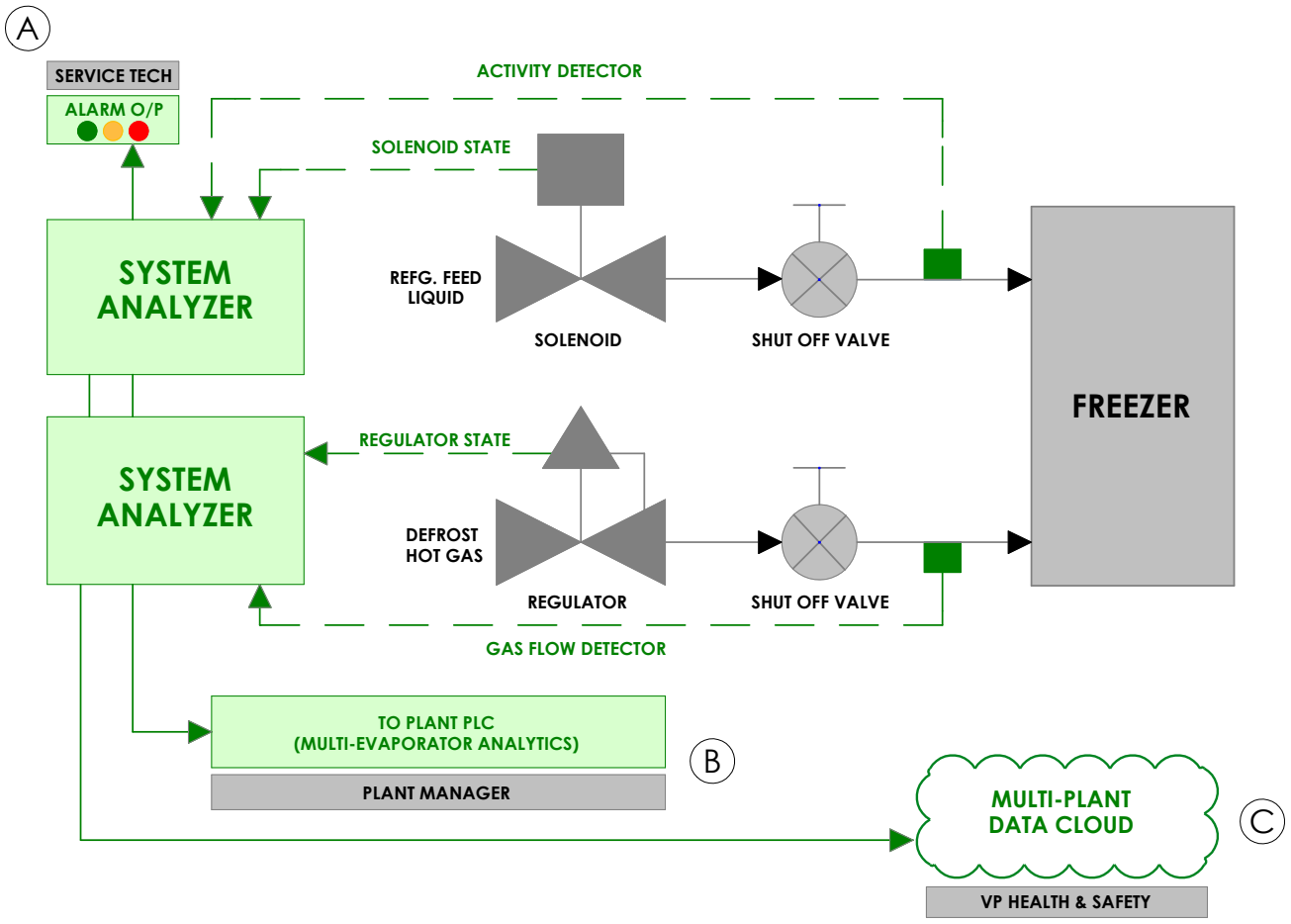
Monitoring to Respond/Control – in addition to the above features you can: Compare valve state vs. activity/flow state to ensure that they are in sync with process and actively prevent unsafe condition from occurring while at same time alerting technicians to investigate/repair; such as a liquid valve stuck open as coil enters defrost hot gas stage.

Ⓒ Remote- Cloud based

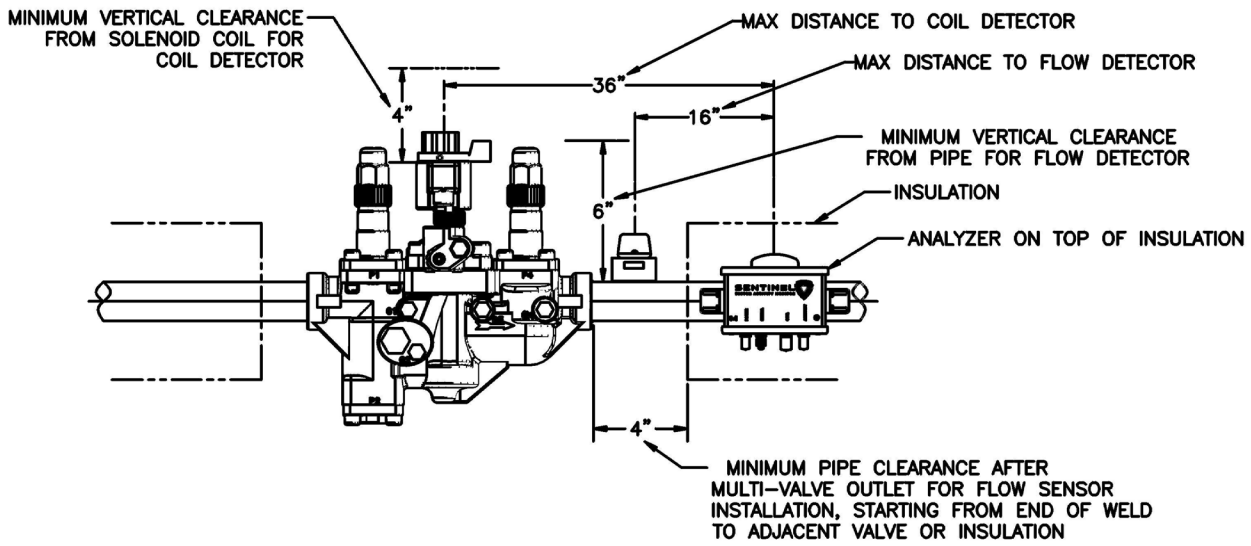
Monitor to Understand – In addition to the above features you can:Track and analyze operational behavior of individual valves (life-cycle, determination of performance) and evaporators for differences in performance or operational characteristics (for example: diminished flow due to strainer debris). Cloud-based monitoring facilitates:

- Sitewide monitoring
- Multisite monitoring
- Customized dashboards for key personnel

LEVELS OF MONITORING



INSTALLATION DIMENSIONS



MULTI– VALVE CONFIGURATION

Figure 3

For Coil State Detector (Hansen Coils):

Vertical clearance from top of solenoid coil: 4” minimum
Parker Coils - See Alternate Coils Figure 9 & 10
Danfoss Coils - See Alternate Coils Figure 11

For Activity Detector:

When installing ensure pipe section is clear of ice, safely remove the ice/frost from pipe surface. Insulation clearance from outlet of control valve should be 4” minimum to allow for installation of detector.

INSTALLATION

Installing the Coil Detector

1.Remove the coil knob (and pilot light if present) from the top of the solenoid coil (Figure 4).

Align the coil detector (Figure 5) then install the provided coil knob (Figure 6).
NOTE: For defrost systems that use a “soft” gas defrost, the Sentinel coil detector must be installed on the “soft” gas solenoid which must remain energized during the “hot” gas defrost stage. For your reference, the Hansen HS4D Two-Step solenoid valve, the “soft” gas solenoid is located on the inlet side of the valve. For your reference, the Hansen MVP-1SD Multi-Valve Platform with 2-step solenoid option, the “soft” gas solenoid is located on the right side of the valve when looking downstream (opposite the outlet equalization tubing) See Figure 7

Figure 4

Figure 5

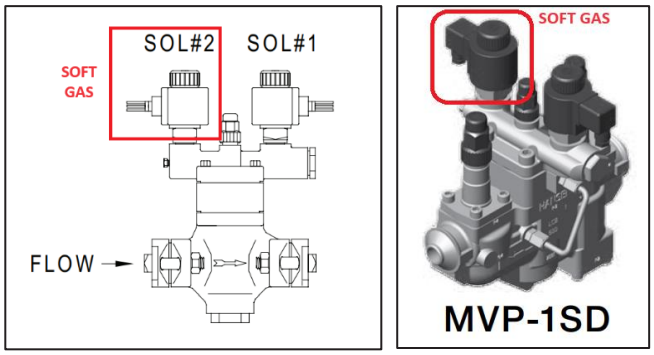


Figure 7 (Hansen HS4D and MVP-1SD)

Figure 6

ALTERNATE COIL TYPES

PARKER REFRIGERATING SPECIALTIES

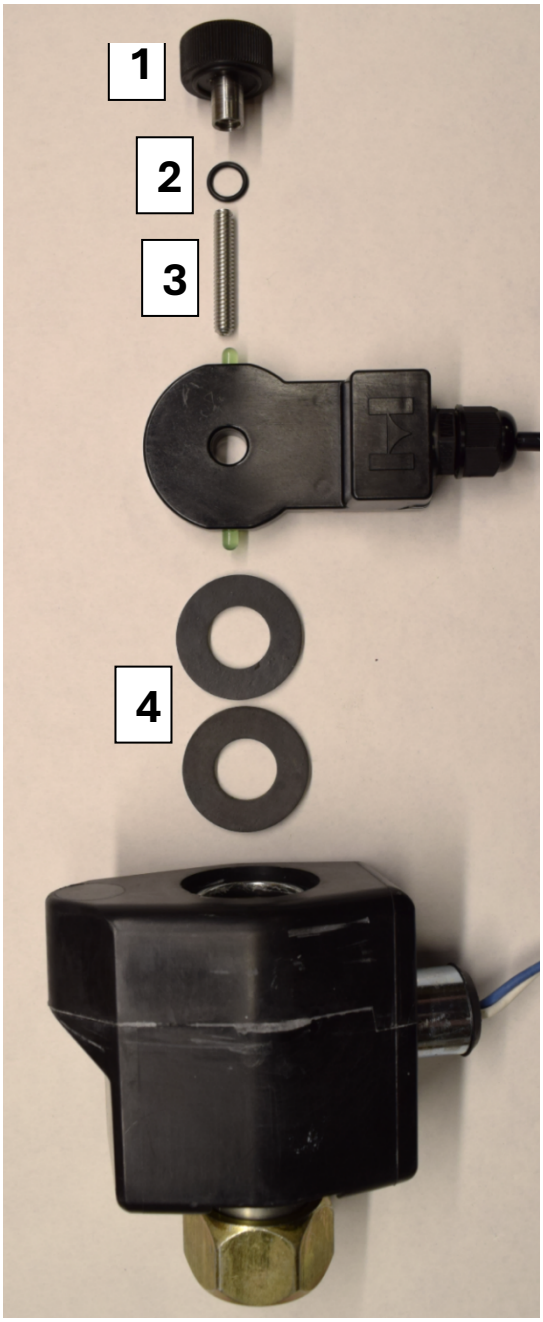


Figure 8

Installation instructions

1. Remove the Parker pilot light knob
2. Place the two rubber washers [4] on the top of the solenoid coil
3. Place the coil detector on the top of the rubber washers [4]
4. Screw on the ¼-20 stud [3]
5. Insert the O-ring [2] onto the pilot light knob [1]
6. Screw on (hand tight) the pilot light knob [1] on the top of the coil detector

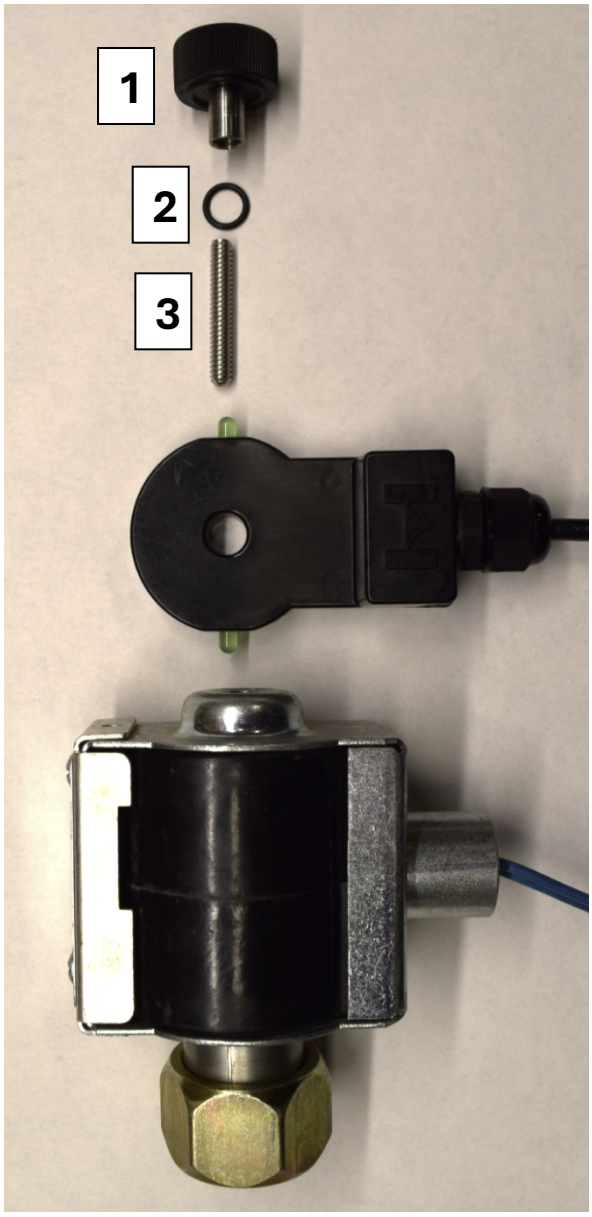


Figure 9

Installation instructions

1. Remove the Parker pilot light knob
2. Place the coil detector on the top of the solenoid coil
3. Screw on the ¼-20 stud [3]
4. Insert the O-ring [2] onto the pilot light knob [1]
5. Screw on (hand tight) the pilot light knob [1] on the top of the coil detector

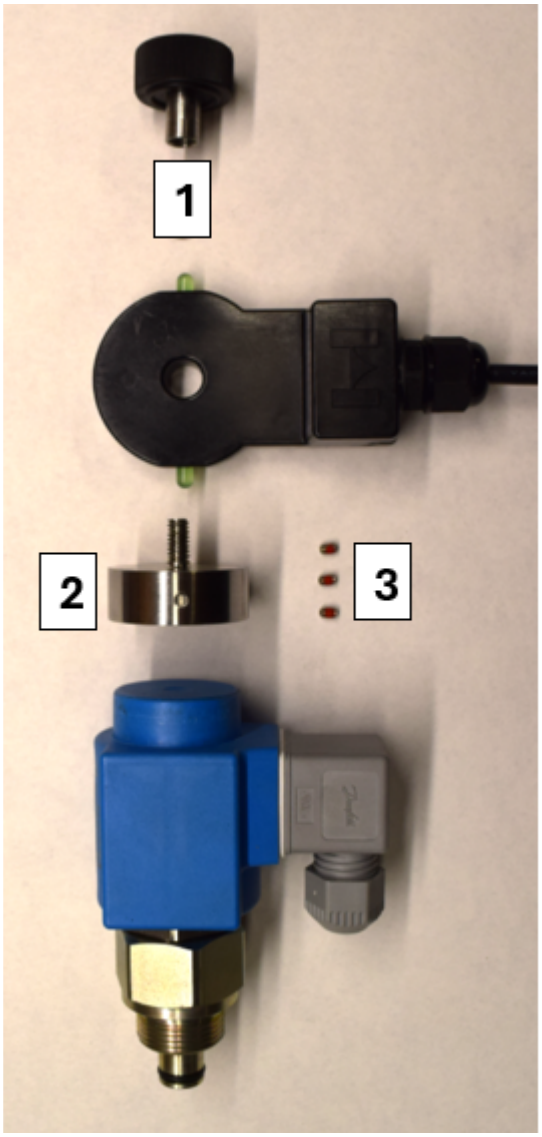


Figure 10

Installation instructions

1. Place adaptor 2 on the top of the solenoid coil
2. Screw on securely the set screws 3 to the adaptor 2
3. Place the coil detector on top of the Adaptor 2
4. Screw on (hand tight) the pilot light knob 1 on the top of the coil detector

Installing the Activity Detector

1. Insulation clearance from outlet of valve: 4” minimum. Pipe section is clear of ice. Safely remove the ice/frost from pipe surface.

2. Select the appropriately sized clamp for the pipe size (Two sizes included)

3. Feed clamp through slot in activity detector bracket (Figure 11) and around the pipe on the clean pipe section approximately 1” (25 mm) from the outlet of the valve (Figure 12). The activity detector can be installed in any orientation. Tighten the drive screw with a 5/16” hex drive or flat head screwdriver until the clamp is secure and bracket is rigid against pipe and can’t be rotated by hand (Figure 13).

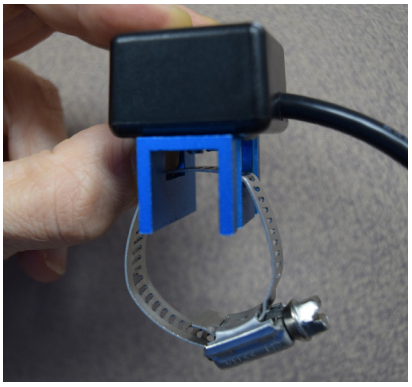


Figure 11

Mounting the Analyzer

1. Identify the mounting location of the analyzer. It can be mounted to the pipe insulation, or pipe that is ice free during all modes of operation. A hanging bracket or alternative mounting location may be needed if pipe insulation is not within 18 inches of activity detector or 36 inches of coil detector. The pressure of ice building behind a Sentinel analyzer can damage the unit, likewise installing a Sentinel on an iced-up section of pipe may cause the Sentinel to fall during shutdowns and high ambient days which may damage the unit. Analyzer should be mounted in a location where the LED indicator is easily visible to operators and technicians.

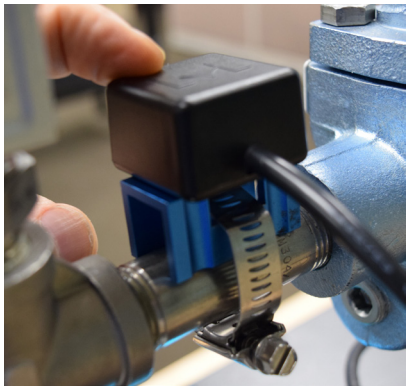


Figure 12

2. Use the two provided stainless steel zip ties and mounting brackets on the sides to mount the analyzer. (Figure 14). Zip ties supplied will mount analyzer on pipe insulation with a diameter of 10 inches or smaller. Larger Insulation diameters will need alternative zip ties, UV rated zip ties are recommended for outdoor applications.

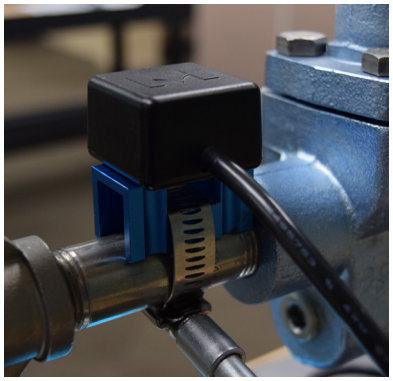


Figure 13

Final Connections and Powering the Analyzer

Sentinel is factory tested and comes assembled with coil state and activity detectors already connected. However, if installation requires the temporary removal of either detector, be advised:

1. With the power OFF ensure both the activity detector and coil detector cable connectors have the keyway aligned, then hand-tighten the M8 connector nut. Leave cap in place for “SIGNAL” connector, if not used.

NOTE: Make sure the keyways of the connectors are aligned before pushing the cables in.

Warning: Never connect or disconnect the coil detector or activity detector, while the Sentinel is powered ON. Damage to the detectors may result.

2. With the power OFF, align and connect power cable to the analyzer in the “Power” position, then hand-tighten the M8 connector nut.

Figure 14

CABLE PINOUT DIAGRAM

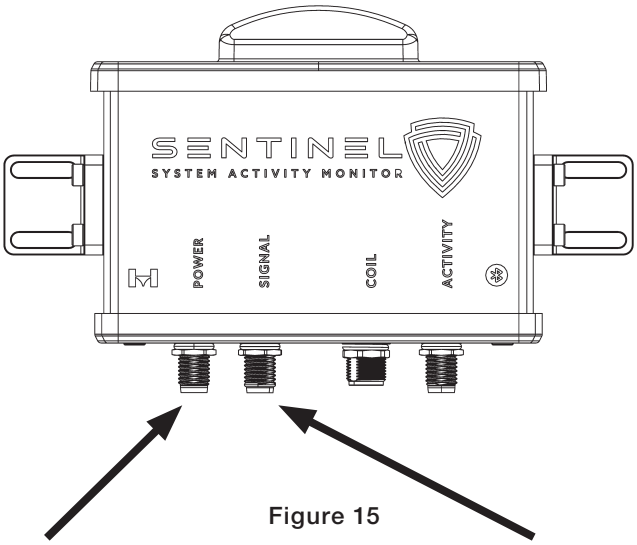
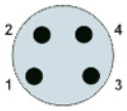


Figure 15

POWER/MODBUS RTU CONNECTOR

Brown		1	+24V DC
White		2	RS485 B
Blue		3	RS485 A
Black		4	Ground



Pin, 4-pos.

ANALOG AND DIGITAL OUTPUT CONNECTOR

Brown		1	Ground
White		2	PNP/NPN OUT
Blue		3	PNP/NPN Alarm
Black		4	4-20mA OUT
Grey		5	4-20mA Supply
Pink		6	0-10V OUT

Pin, 6-pos.

WIRING CONFIGURATIONS

Option 1: RS485 MODBUS RTU

Option 2: PNP/NPN OUT/ALARM

Option 3: 4-20MA SIGNAL WIRE

Option 4: 0-10V SIGNAL WIRE

OPTION 1: RS-485 MODBUS RTU

Communication: minimum 22 AWG shielded Twisted Pair for A+/B- signals
Characteristic Impedance of 120 ohms
Device Power, Minimum 16 AWG for +24VDC/ Ground Power
(Belden1492A is recommended or equivalent).

Shielded wire is required if not run in grounded metal conduit. Shielded wire is recommended for all applications. Shield shall be grounded only at the feed end of the bus (trunk).

Modbus RTU main bus run shall be no longer than 300 meters (1,000 feet). Branch cables out to analyzers from the main bus (trunk) shall be no longer than two meters (6 feet).

Each main bus (trunk) run shall be terminated with a 120 ohm resistor at each end. Bus termination software enabled resistor is integrated on the Sentinel devices and can be enabled via the Bluetooth application (see figure 26) or Modbus interface.

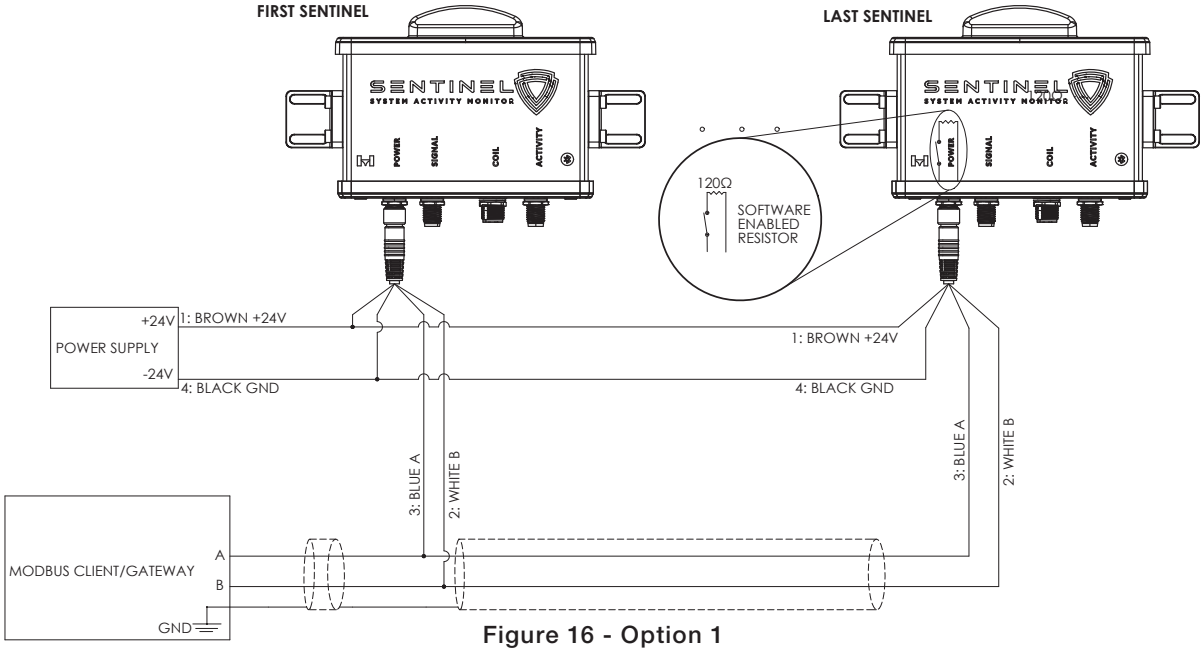


Figure 16 - Option 1

OPTION 2: PNP/NPN OUT/Alarm Signal Wiring

Minimum 22AWG wire. Each Sentinel unit requires its own PNP/NPN input at PLC

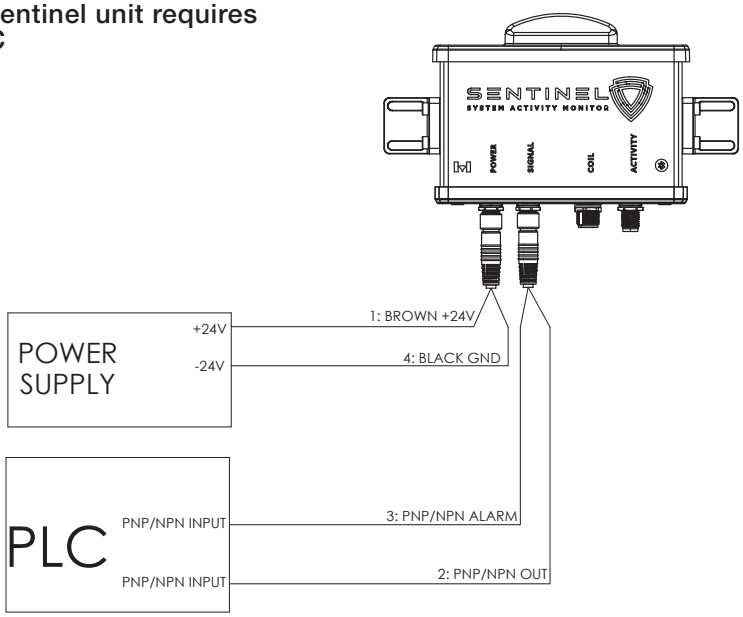


Figure 17 - Option 2

OPTION 3: 4-20 mA SIGNAL WIRING

Minimum 22AWG twisted pair wire preferably shielded with the shield grounded at the PLC end of the connection. Each Sentinel unit requires its own 4-20 mA input at PLC.

Note: Sentinel is not a loop powered device. A separate power supply is required to power 4-20 mA signal.

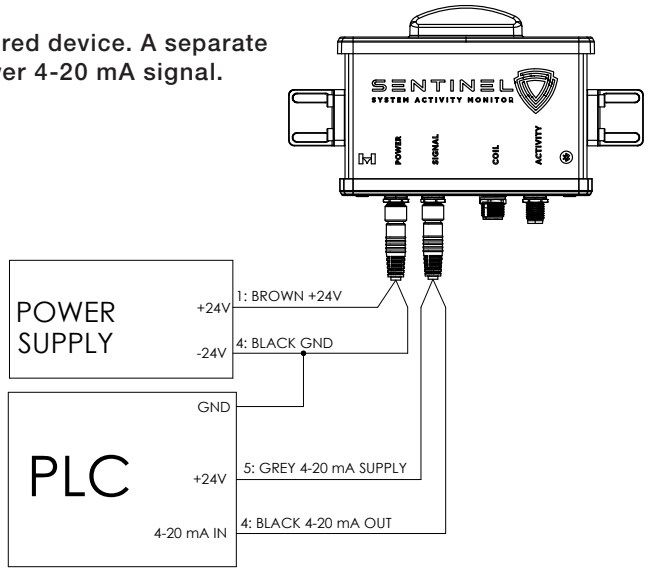


Figure 18 - Option 3

OPTION 4: 0-10V SIGNAL WIRING

Minimum 22AWG twisted pair wire preferably shielded with the shield grounded at the PLC end of the connection. Each Sentinel unit requires its own 0-10 V input at PLC/controller.

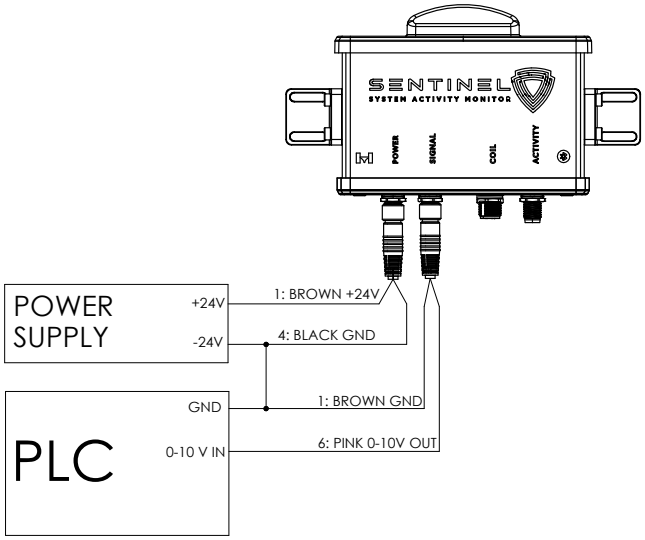


Figure 19 - Option 4

OUTPUT CONFIGURATION TABLE

Output Configuration	Analog Signal			Digital Signal	
Status	4-20mA (OUT 1)	0-10V (OUT 1)	0-5V (OUT 1)	NPN/PNP (OUT 1- SIGNAL)	NPN/PNP (OUT 2 - ALARM)
Coil OFF / Flow OFF	4mA	5V	2.5V	0	0
Coil ON / Flow ON	20mA	10V	5V	1	0
Coil OFF / Flow ON	–	–	–	0	1
Coil ON / Flow OFF	–	–	–	1	1
Calibration Mode	2.5mA	4V	2V	–	–
Device Fault	0.5mA	2.5V	1V	–	–
Alarm	3.5mA	--	--	--	--
Output Connector	Pin 4 - Black	Pin 6 - Pink		Pin 2 - White	Pin 3 - White

MODBUS REGISTER TABLE

Input (RO 16 bit)			
Address	Description	Data Type	Additional Info
30001	Flow State	uint16	0: Flow Off / 1: Flow On
30002	Coil State	uint16	0: Coil Off / 1: Coil On
30003	Alarm State	uint16	0: No Alarm / 1: High Alarm / 2: Low Alarm
30004	Superbin Power Level MSB	float32	Sum of all current superbin power levels. Used for determining flow
30005	Superbin Power Level LSB	float32	Sum of all current superbin power levels. Used for determining flow
30016	Operational Mode	uint16	Current state/mode of the algorithm the device is in 0: Coil Detector Learn-in 1: Activity Detector Energize 2: Activity Detector De-Energize 3: Secondary Learn In 4: General Operation 5: Primary Learn-in Failed 6: Secondary Learn-in Failed 7: Valve Polarity Mismatch 8: Activity Detector Recalculation 1 9: Activity Detector Recalculation 2
30068	Learn-In Mode On Threshold MSB	float32	Threshold that superbin power level must be above for flow to be detected as 'On'
30069	Learn-In Mode On Threshold LSB		
30070	Learn-In Mode Off Threshold MSB	float32	Threshold that superbin power level must be above for flow to be detected as 'Off'
30071	Learn-In Mode Off Threshold LSB		
30073	Alarm History Log 1 Type(Most Recent)	uint16	0: No Alarm 1: High Alarm 2: Low Alarm

MODBUS DATA INTERFACE

Serial Parameters: 19200 Baud rate, 8-N-1

Default Device Address: 254 (Hex: 0xFE)

Get the Sentinel App

BLUETOOTH DEVICE SETUP

1 Download the Sentinel App, available at the Google Play Store and iOS App Store.

2 Connect Power “ON” device and connect via Bluetooth App using a magnet as shown in figure 21.

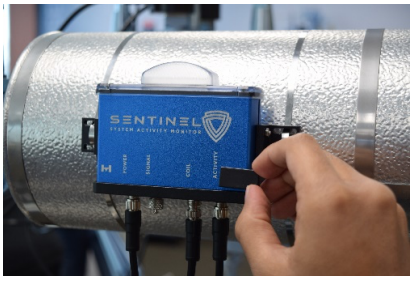


Figure 21

Ensure the analyzer is flashing blue. A device’s default name is “Device 1,” select this device in the app as shown in figure 22

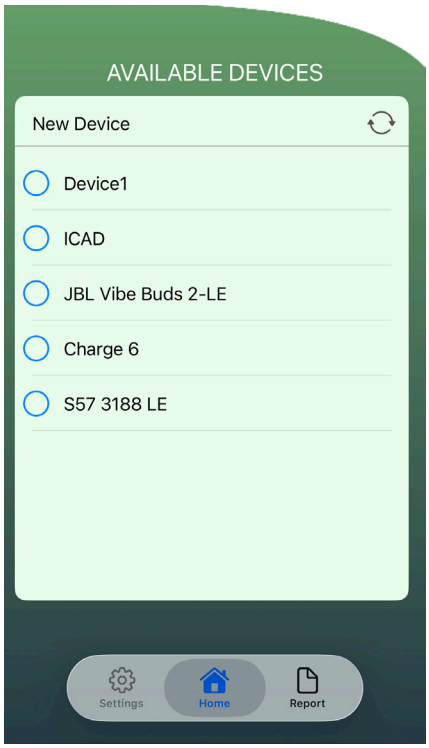


Figure 22

3. Once paired, the analyzer LED should show the Sentinel's current state of operation, if this is a new install it will be flashing magenta as calibration has not occured. See LED table on page 17 for other LED color meanings. and you will be re-directed to the home page, as shown in figure 23.

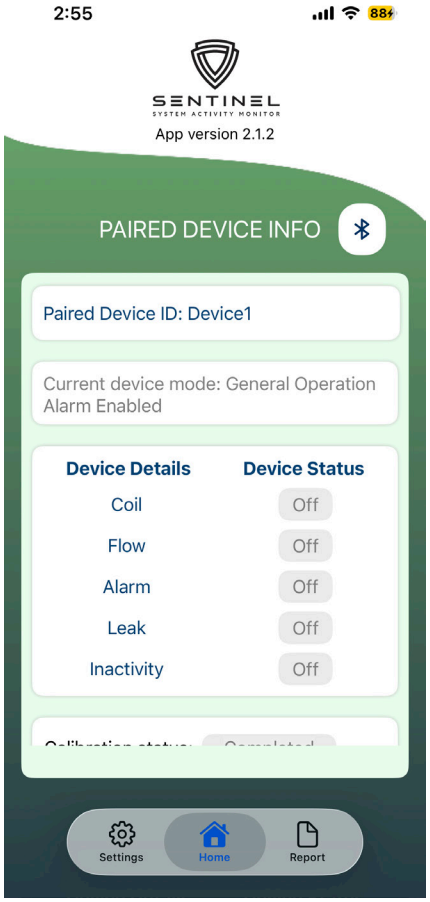


Figure 23

4. Select the gear icon in the lower left corner of the screen as shown in figure 24

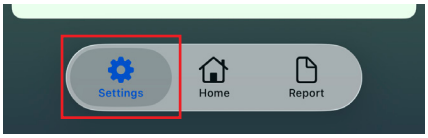


Figure 24

5. Go to "Output Configuration" and ensure all outputs are turned "Off" if communicating via RS-485. If not select appropriate settings for your configuration. As shown in figure 25

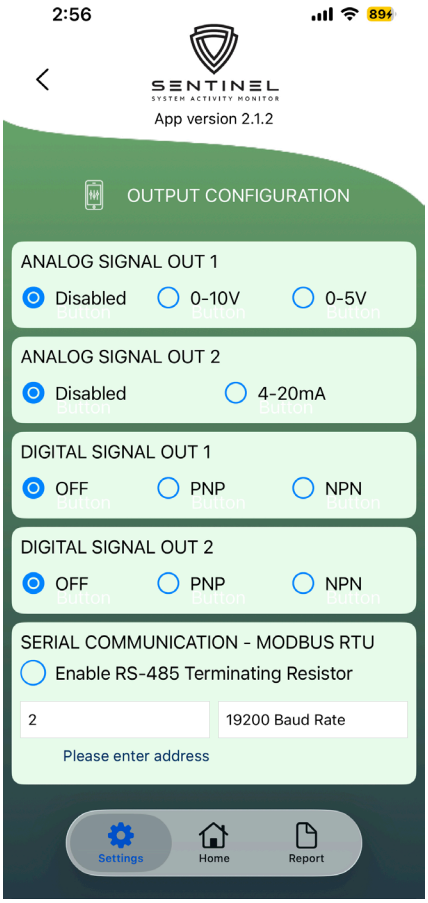


Figure 25

6. Set the address to the number you have selected for this device; it will default to 254. "Enable Terminating Resistor" must be turned ON for the final unit in an RS-485 string. After these steps, press "Next". As shown in figure 26

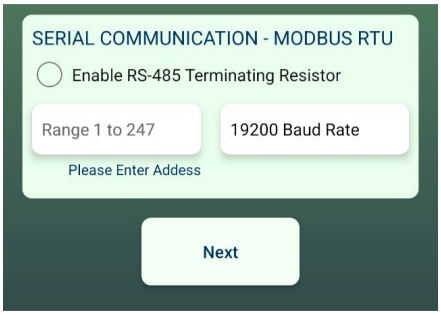


Figure 26

7. Select Normally Open/Closed based on the valve in question. Then press apply to save all settings. See Figure 27..

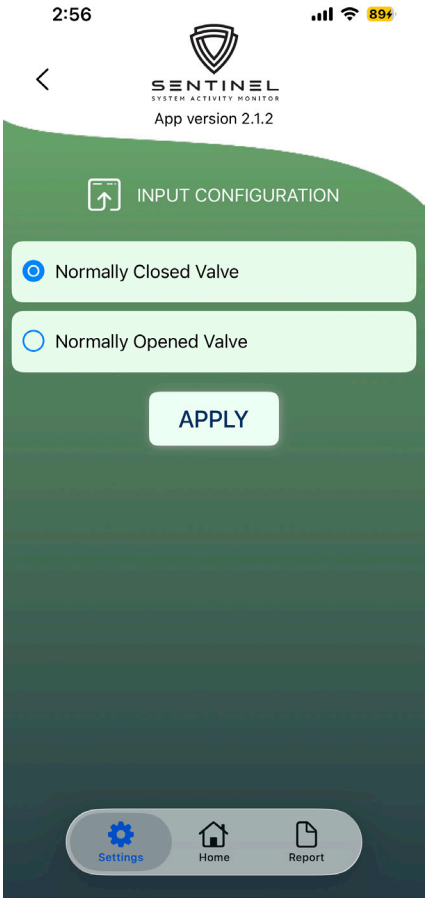


Figure 27

8. Navigate to “DEVICE CUSTOMIZATION” to change the names on the analyzer. This will make it easier to find analyzers in your PLC or cloud portal.

a. Device ID

b. Valve ID

c. Evaporator ID

d. Site ID

With this naming convention, it is easier to determine the name of the analyzer, the type of valve it is sensing, what evaporator (and hence, which refrigeration room) the valve is part of, and which site it is located at (See figure 28).

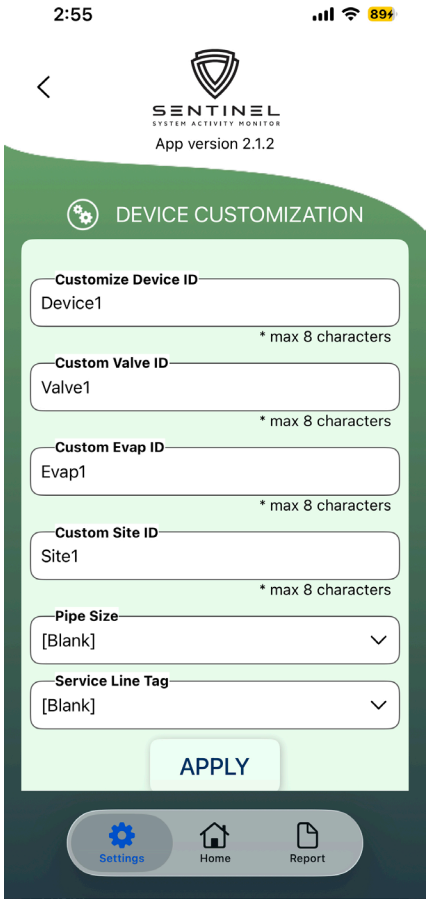


Figure 28

LEARN-IN MODE - CALIBRATION

- If device has not previously been calibrated, learn-in mode will begin automatically (Magenta L.E.D. Reading).
- Primary Learn-In (PLI) – During PLI, the initial on and off power level thresholds are determined for the coil detector and activity detector. After PLI is completed, the algorithm runs Secondary Learn-In.
- Secondary Learn-In (SLI) – During SLI, the device begins outputting coil and activity states based on the thresholds determined in PLI. The SLI algorithm will (over 100 cycles or at least 21 days for slow cycling valves) calculate the optimized power levels, then the device advances to General Operation mode.

ALTERNATIVE MODES OF OPERATION

Absolute Mode

Absolute Mode can be selected in the Device Output. This mode provides immediate feedback on the current state of the valve and coil, making it ideal for diagnostics. There are no alarms generated in Absolute Mode, however LED indicators will change color accordingly. This allows for uninterrupted testing and observation. This mode is specifically designed for valve troubleshooting and demonstration purposes, offering a direct and unfiltered view of component operation.

Compliance Mode

Compliance Mode can be selected in the Device Modes screen. This mode is designed to record the last 30 closing cycles where no alarm for unintended flow was detected. This feature serves as a crucial log for **safety-critical valves**, providing verifiable confirmation of positive shut-off. Within the same screen, you can also select **Manual Compliance Mode**. Once activated, you can close a manual shut-off valve that's in series with the solenoid valve being monitored by the Sentinel. When the manual valve is successfully closed and positive shut-off is confirmed, the app will indicate that you've passed the manual shut-off test. This mode will also log the last 30 tests performed on this manual valve.

Monitor Mode

Monitor Mode can be selected in the Device Modes screen. This mode disables alarms, which can be particularly useful in systems where piping configurations lead to signal contamination from sources like pumps or other evaporators. Such interference can make it difficult to achieve reliable alarm performance. By operating in Monitor Mode, you can still **monitor for open and closed coil states** and **on and off flow states** without experiencing nuisance alarms. However, this mode isn't recommended as a primary solution; it should only be used after several failed "learn in" attempts and after exhausting all other troubleshooting steps for the valve.

RESETTING DATA

The Sentinel system logs various data sets. During system troubleshooting or maintenance, a data reset may be required. Refer to the table below for a comprehensive overview of data types affected by each reset option.

HOW & WHEN TO RESET DATA

How to Reset	Physical	Modbus	App/Modbus	App/Modbus	App/Modbus
Reset Types	**Power Cycle**	**Software Cycle**	**Calibration Reset**	**Cycle Count Reset**	**Factory Reset**
Setup & Valve Information	No	No	No	No	Yes**
Calibration Data	No	No	Yes	No	Yes
Operational Mode	No	Yes/No*	Yes	No	Yes
Cycle Counts	No	No	Yes	Yes	Yes
Alarm Counts	No	No	Yes	Yes	Yes
Alarm Log	No	No	No	No	Yes
Device Run Time	Yes	Yes	No	No	Yes

*Software Cycle Operational Mode, Reset = Yes - If Failed SLI or PLI. Reset = No - If in General Operation Mode (fully through learn ins).

**Note: Modbus Address will reset. Modbus or Cloud communication will stop until address is setup again via App.

When to Reset Data	Reset Type	Timeliness	Description
Valve Repair or Replacement	Calibration Reset	Immediately	Any time a valve is repaired or replaced, do a Calibration Reset to learn-in new parameters and reset alarm/alert counts.
Valve Internal clean/Inspect	Cycle Count Reset	Immediately	When a valve or strainer is cleaned or inspected, resetting Cycle Count helps to distinguish the behavior before/after servicing
System Operational Change	Cycle Count Reset	1-week after	When system operating conditions change significantly. For Example, seasonal changes or product/room temperature changes.
Learn-In failure	Software Cycle or Calibration Reset	Immediately	If Primary Learn-In (PLI) or Secondary Learn-in (SLI) fails, perform a calibration reset. Software Cycle enables this remotely.
Replacing Detectors	Calibration Reset	Immediately	Required when replacing either Solenoid Coil State or Activity Detectors.

MAINTENANCE

Warning: Never connect or disconnect the coil detector or activity detector, while the Sentinel is powered ON. Damage to the detectors or analyzer may result.

REPLACING THE ACTIVITY DETECTOR

1. Power Down: Turn off power to the Sentinel analyzer.
2. Access Connector: Use needle-nose pliers to peel off the heat shrink from the M8 connector. (Figure 1)
3. Disconnect: Unthread and unplug the old Activity Detector cable.
4. Hardware Swap: Using a 5/16” hex driver, remove the worm screw clamp. Mount the new detector to a clean section of pipe and tighten until the bracket is rigid.
5. Critical Connection: Align the M8 cable keyways (Figure 2). Ensure the threaded sleeve is tightened completely to compress the internal O-ring. > Important: Improperly tightened connectors are the leading cause of premature sensor failure due to moisture ingress. A firm, fully-seated connection is required for the IP rating of the device.
6. Final Seal: Apply and shrink new adhesive-lined heat shrink over the connection. (Figure 3)
7. Power Up & Calibration: Restore power. Open the Hansen Sentinel App, navigate to Resetting Data, and select Calibration. Reset to manually restart the Learn-In mode (indicated by a slow flashing magenta LED).

Figure 1

Figure 2

REPLACING THE COIL DETECTOR

1. Power OFF the Analyzer.
2. Unplug the Coil Detector cable from the Analyzer.
3. Unscrew the coil knob and remove the Detector from the top of the coil.
4. Mount the new Detector on the coil.
5. Plug the Coil Detector cable to the Analyzer.
   Note: Ensure the keyways of the connectors are aligned.
6. Power ON the Analyzer.

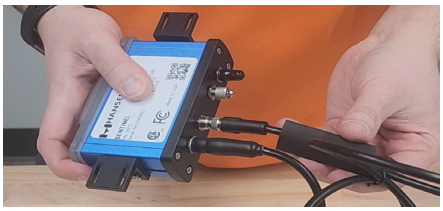


Figure 3

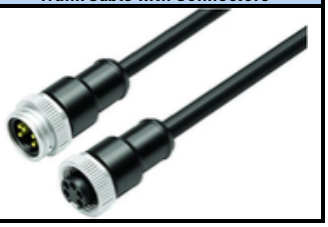
TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	ACTION
LED Indicator does not display	No power to analyzer or wrong voltage.	Remove the power cable from the analyzer and check voltage at pins 1 and 4 of the cable.
Sentinel will not leave operation mode 0 (shown via modbus) and magneta light is flashing	No coil activity	Check to confirm coil has not burned-out. Confirm Coil has cycled. If coil is operating and flow is observed, do a factory or calibration reset. If issue persists, contact factory.
Slow Blinking Magenta/Red LED	Learn-In Mode Failed	Coil is operating, but flow activity is not being sensed. Confirm flow by observation. Cycle the power Off and On and retry Learn-In. If issue persists contact customer support.
MODBUS RTU Comm Issues	Terminating resistor not enabled on final device on bus.	Enable terminating resistor.
	Terminating resistor is enabled on device in middle of bus.	Disable terminating resistor(s).
	Server ID not set	Set server ID
Flashing LED (amber)	Faulty Coil State or Activity Detector.	Power cycle device. If issue persists, open app, check diagnostics screen for detector information. Replace the faulty detector. Be sure to disconnect power before replacing detectors. Be sure to tighten connectors after replacement to ensure no water infiltration.

CONNECTORIZED CABLE SYSTEM (OPTIONAL)

In order to facilitate field installation, Hansen created an outdoor rated (IP67) connectorized cable system. This easy to configure system greately reduces installation time and infrastructure costs. Furthermore, it helps to ensure correct field wiring and proper termination. An assortment of standard trunk cables can be combined to create any desired length (upto 400 ft total) from Control Panel to individual Sentinels. Branch cables are used to connect Sentinel Analyzer (M8) connector to (7/8”) connector on the Trunk cable or T-Splitter. Hansen can assist with simple system design intent sketches and create a list of necessary cables and fittings for ordering purposes; see below.

Trunk Cable with Connectors

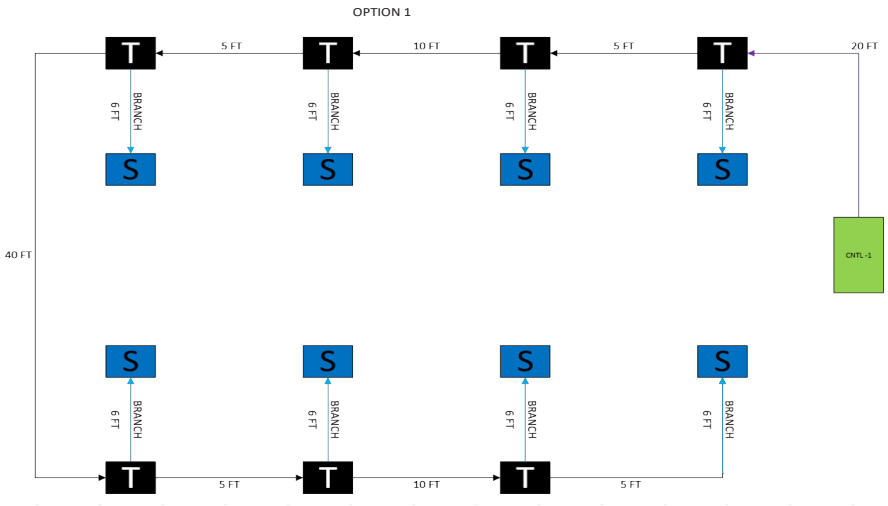


T-Splitter

Branch Cable w/Connectors

Control Panel

CONNECTORIZED CABLE SYSTEM -DESIGN INTENT



Wiring Option 1	
Wiring Cables	
Length (ft)	# of Cables Needed
5	4
10	2
20	1
40	1

Branch Cable 6 ft	8
T-Fittings needed	7

ORDERING INFORMATION ACCESSORIES

Part No.	Description
CNTL	CONTROL PANEL, MONITORING EQUIPMENT, 115V/24VDC PS
CNTL-2	CONTROL PANEL, CK-ATLAS VIRTUAL AGENT, 115V/24VDC PS
RMT-2	REMOTE PANEL, POWER SUPPLY+ETHERNET SWITCH+RTU/TCP
68-0045	BRANCH CABLE, 2M LONG W/M8 TO 7/8" CONNECTORS
68-0047	T-SPLITTER W/5-PIN CONNECTORS
68-0046	5 FT LONG TRUNK CABLE WITH CONNECTORS
68-0048	10 FT LONG TRUNK CABLE WITH CONNECTORS
68-0049	20 FT LONG TRUNK CABLE WITH CONNECTORS
68-0050	40 FT LONG TRUNK CABLE WITH CONNECTORS
INKT	FIELD INSTALLATION KIT, CONNECTORIZED CABLE SYSTEM (INCL. TOOLS, TIES,)
MONSERV	ANNUAL MONITORING SERVICE, DASHBOARDS & ALERTS

Ordering Information: The Control Panel (CNTL) houses communication connections for ModBus RTU/RS485, Cellular, and Ethernet for remote monitoring; such as Hansens cloud-based MONSERV service. Its metal, NEMA 3R outdoor rated enclosure also provides a 24VDC power supply for upto 20 Sentinels and has two (2) pre-wired (7/8") connectors for connectorized cable system. Power requirements: 115VAC, Total 6.0 amp max. Recommended INKT Field Installtion Kit includes mounting ties and necessary tools to ensure proper installation of cable system(suggest ordering one kit per panel)

LED INDICATOR TABLE

Learn-In Progress	Analyzer Detecting State Change?	LED Description	LED Color Example	LED Status Indication
Setting Up				
Before Primary Learn-In Mode (PLI)	N/A	No Light Seen	No Color	No power to the analyzer
	N/A	Slow Flashing Amber		Detector Fault/Wire Connection Issue
Primary Learn-In (PLI)				
During PLI	N/A	Slow Flashing Magenta		Primary Learn-In mode running
After PLI (if PLI failed)	N/A	Slow Flashing Magenta and Red		Primary Learn-In mode failed
Secondary Learn-In (SLI)/General Mode of Operation (GMO)				
During SLI (if PLI passed, SLI starts running) or During GMO (if SLI passed, GMO starts running)	Yes	Fast Flashing White		SLI: flow is turning off
	Yes	Fast Flashing Green		SLI: flow is turning on
	No	Solid White		SLI: flow is currently off
	No	Solid Green		SLI: flow is currently on
	No	Slow Flashing Amber and White		SLI: leak detected, flow is currently off
	No	Slow Flashing Amber and Green		SLI: leak detected, flow is currently on
	No	Solid Amber		SLI: coil is inactive - not cycled last in 7-days (default)
	Yes	Fast Flashing Red		SLI: coil/flow mismatch, checking for match within next 2 mins
	No	Solid Red		Alarm State (high)
If SLI failed after SLI Analysis	N/A	Slow Flashing Magenta and Red		Secondary Learn-In mode failed
Hansen App Controllable Modes and Settings				
Bluetooth Device Pairing	N/A	Fast Flashing Blue		Sentinel is ready to pair via Bluetooth App
Monitor Mode	Yes	Fast Flashing White		Monitor mode: flow activity is turning off
	Yes	Fast Flashing Green		Monitor mode: flow activity is turning on
	No	Slow Flashing Cyan and White		Monitor mode: flow activity is currently off
	No	Slow Flashing Cyan and Green		Monitor mode: flow activity is currently on
Absolute Mode	N/A	Solid White		Absolute mode: flow activity is currently off
	N/A	Solid Green		Absolute mode: flow activity is currently on
	N/A	Solid Red		Alarm State (mismatch)

ORDER TABLE

Description	Cat. No.
Sentinel Activity Monitor System w/detectors & cables	SNTL
OPTIONS	
Sentinel Analog/Digital Output Signal Cable, 2M long	SNTL-SIGC*

*Not Included with SNTL

Ordering Information

Sentinel (SNTL) includes Analyzer, Coil State Detector, Activity Detector and mounting hardware. Also included is the 2 Meter long Power/Communication cable (M8 to wire leads). However, if utilizing analog/digital signal output, order SNTL-SIGC signal cable (M8 to wire leads).

WARRANTY

Hansen Sentinel Activity Monitor electronics are guaranteed against defective materials or workmanship for 90 days F.O.B. factory. All other components are guaranteed for 1 year F.O.B. factory. No consequential damages or field labor is included.

HANSEN TECHNOLOGIES
Hansen Technologies Corporation
681 Commerce Street
Burr Ridge, Illinois 60527 USA
Tel: 630.325.1565 Fax: 630.325.1572 Toll: 866.4HANSEN
Email: sales@hantech.com Web: www.hantech.com
USA · Asia · Europe · India · Latin America · Middle East