



InSight™ Smart Sight Glass Troubleshooting Guide

1. Overview

This document outlines the steps to efficiently troubleshoot a system with InSight™ Smart Sight Glass.

⚠ Important: Replacing components should always be a last resort. Work through each troubleshooting step in sequence before replacing any part.

2. Initial Checks — Calibration and Venting

Begin by verifying the analog reading and checking all vent paths. Most InSight™ issues are caused by blocked vents or a failed calibration.

STEP	ACTION
1	Compare the Analog 1 reading on the home screen with the actual sight glass level. A mismatch indicates a bad calibration or a blockage.
2	Check the top of the sight glass vent. Ensure it has a clear, unrestricted path to atmosphere.
3	If the sight glass is completely blocked, a high efficiency alarm will typically appear and the sight glass will refill early.
4	Check the junction box vent. Ensure it is free of debris, open to atmosphere, and pointed downward.
5	Check the tank vent. Confirm it has a clear path to atmosphere.
6	Check the sensor vent tube inside the junction box. Ensure it is not pinched and is open to atmosphere.
7	Check the sight glass and confirm the ball has been removed. A ball stuck at the top or bottom of the sight glass causes slow refill.
8	Recalibrate the system, then monitor for a few minutes. If the issue persists, proceed to Section 3 – Calibration Verification.



3. Calibration Verification

If the initial checks did not resolve the issue, verify the calibration values.

Step 1 — Check scale values

Navigate to Setup → Analog Inputs → Analog In 1. Review the Scale Low and Scale High values. The goal is always to complete a full drawdown during calibration.

If the sight glass is less than half full, drain some chemical from the bleed valve and manually top up the sight glass before attempting a full drawdown calibration.

Step 2 — Check raw mA values

After completing a full calibration, navigate to Analog In 1 and check the Raw Low and Raw High values:

- If Raw Low and Raw High are similar — the sensor detected no change, indicating a blockage on the sensor. Remove the sensor and check for debris.
- When the sight glass is near empty, the Raw Low mA value should read approximately 4 mA. A value above 5 mA indicates a likely blockage on the suction line. Check filters and the suction line.

On controllers running Firmware 2.10 or newer, go to the Diagnostic Menu → I/O Raw Values to view the current mA value directly, which assists in identifying sensor issues.

Step 3 — Diagnose sensor issues

If an Invalid Gauge Data error appears, check the sensor wiring. If the wiring is correct, the sensor may have blown and needs to be replaced.

To verify whether a sensor is blown:

1. Remove the sensor from the valve body, leaving it connected to the controller and open to atmosphere.
2. The reading should be $4 \text{ mA} \pm 0.2 \text{ mA}$. Any value outside this range confirms a blown sensor.

If the home screen shows a negative mA value, the controller is not detecting the sensor signal. This does not necessarily mean the sensor is blown. Check for: bad wiring, a blown analog input on the controller, or a TURCK cable that is not fully tightened.



4. Valve Leak Check

If the calibration and sensor checks did not resolve the issue, the valve may not be sealing correctly.

STEP	ACTION
1	Draw the sight glass down to empty, then turn off the system. The valve should close and no chemical should enter the sight glass.
2	Watch the sight glass for a few minutes. If it begins to fill, the valve is leaking.
3	Remove the valve stem. Clean or replace the valve and seals as required.

5. Coil Energizing Check

If the valve appears to be sealing correctly but the system is still not operating properly, check whether the coil is energizing.

- Ensure the digital output controlling the coil has the hold voltage set to 50%.
- To test the coil, change the logic level in the digital output from Active High to Active Low. This forces the valve open to verify it is working.

⚠ Important: Return the logic level to Active High once the test is complete.

6. Quick Reference — Troubleshooting Summary

Use this table as a quick reference before escalating to a component replacement.

CHECK	EXPECTED RESULTS
All vents clear and unrestricted	Clear path to atmosphere on sight glass vent, junction box vent, tank vent, and sensor vent tube
Calibration completed with full sight glass	Scale Low and Scale High values reflect a full drawdown
Analog 1 value matches actual sight glass level	No mismatch between controller reading and physical level
Raw Low mA value near empty	Approximately 4 mA (± 0.2 mA) when sight glass is near empty
Sensor reading open to atmosphere	4 mA ± 0.2 mA when sensor is removed and open to air



Valve sealing correctly	Sight glass does not fill when system is off and valve is closed
Coil energizing with 50% hold voltage	Valve opens and closes correctly when logic level is toggled

7. Escalation

If all steps in this guide have been completed and the issue remains unresolved, contact the Sirius Technical Support team for further assistance.

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