



SST4 Pump IR Automatic Calibration Procedure - Applies to SST4 Mini/Pump firmware version 13.93

IMPORTANT SAFETY WARNING

AutoCal must only be initiated when the correct calibration gas mixture is immediately available and ready for application.

Unlike calibration using an SST Dock or the WatchGas Device Link App, the AutoCal function **does not display the gas concentrations expected by the detector**.

The detector expects the same calibration gas concentrations are being used as were programmed during the **last successful calibration performed using an SST Dock or the WatchGas Device Link App**.

Applying different gas concentrations during AutoCal may result in a failed calibration.

Recommended Calibration Gas Mixtures

The following gas mixtures are the factory-recommended calibration gases for the SST4 Pump.

Gas	Europe (Factory Recommendation)	North America (Factory Recommendation)
H ₂ S	25 ppm	25 ppm
CO	100 ppm	100 ppm
CH ₄	2.2 vol.% Methane (50% LEL)	2.5 vol.% Methane (50% LEL)
O ₂	18.0 vol.% Oxygen	18.0 vol.% Oxygen

These are the standard calibration gas mixtures supplied with most WatchGas calibration kits.

IMPORTANT WARNING – Gas Concentration

WARNING

AutoCal **does not verify** which calibration gas cylinder is connected.

It also **does not display** the concentrations that are expected.

The detector simply expects the operator is using the same gas concentrations that were used during the most recent calibration performed using an SST Dock or the WatchGas Device Link App.

If different gas concentrations are applied, the calibration may fail and the detector may display **ERR** indications.

Example

If the detector was last calibrated using:

- H₂S = 25 ppm
- CO = 100 ppm
- CH₄ = 2.2 vol.% (Europe)
- O₂ = 18.0 vol.%



AutoCal must be performed using **exactly those same gas concentrations**.

Applying a **2.5 vol.% methane gas mixture** instead of **2.2 vol.%,** or using a different oxygen concentration, **could cause the calibration to fail.**

Likewise, if the detector was configured in North America using **2.5 vol.% methane,** applying **2.2 vol.% methane** during AutoCal **could also cause the calibration to fail.**

IMPORTANT WARNING – Incorrect Gas Type

WARNING

The IR combustible sensor is calibrated/linearized specifically for methane.

Propane, butane, pentane or any other combustible gas must never be used during AutoCal. The detector expects methane only.

Using any other combustible gas will result in a failed calibration.

IMPORTANT WARNING – Failed AutoCal

WARNING

After the operator confirms the span calibration step, the detector starts a **90-second countdown.**

During this period, the operator must:

- Open the regulator or connect the DFR (Demand flow regulator for pumped models).
- Allow the correct calibration gas mixture to reach the detector.

The detector uses this period to stabilize on the applied gases before completing the span calibration.

If the required calibration gas mixture is not detected before the countdown expires, AutoCal will fail and the detector may display **ERR** indications.

Recovery requires calibration using an SST Dock or the WatchGas Device Link App with the correct calibration gas mixture.

The detector must not be returned into service until a successful calibration has been completed.

IMPORTANT NOTE – Calibration Records

AutoCal is intended as a rapid field calibration method.

AutoCal **does not generate an electronic calibration certificate or calibration record. It registers the event in the datalogger.**

Where electronic calibration records or traceability are required by company procedures or quality systems, calibration shall be performed using an SST Dock. Device Link App or another approved calibration management solution capable of recording calibration results.

Required Equipment:

- SST4 Mini/Pump with IR Methane sensor
- Certified calibration gas mixture matching the detector's last recorded calibration
- Calibration cap
- Calibration tubing
- **Demand Flow Regulator (DFR) or Fixed Flow Regulator (FFR) (approximately 0.5 L/min), as specified for the calibration gas cylinder. The factory recommends using a DFR for pumped models, and FFR for Diffusion models (Mini).**
- Fresh air environment



AutoCal Procedure

Step 1 – Prepare the Detector

Move to a known fresh-air location.

Ensure the atmosphere is free from combustible gases and toxic contaminants.

Step 2 – Inspect the Detector

Verify:

- Battery is adequately charged.
- Pump is operating correctly (execute a pump block).
- Sample inlet is clean.
- Filter is clean.
- Water trap is empty.
- Tubing is undamaged.
- Calibration cap/adaptor is available.

Do not calibrate a damaged detector.

Step 3 – Verify Pump Operation

Before starting AutoCal, verify that the sampling pump is operating correctly.

Perform a pump block by momentarily blocking the sample inlet with a finger.

Confirm that the detector generates a **Pump Blocked** alarm or warning.

Remove the finger blocking the inlet and verify that the alarm clears and normal pump operation resumes.

Do not perform AutoCal if the pump does not respond correctly.

Step 4 – Verify the Calibration Gas Mixture

Before continuing, verify that the calibration gas cylinder contains **exactly the same gas concentrations** as those used during the detector's previous successful calibration using an SST Dock or the WatchGas Device Link App.

Do **not** assume the detector will indicate the required concentrations.

If there is any uncertainty regarding the required calibration gas concentrations, perform the calibration using an SST Dock or the WatchGas Device Link App instead of AutoCal.

Step 5 – Assemble the Calibration Equipment

Connect:

Calibration Cap

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Calibration Tubing

↓

Demand Flow Regulator or Fixed Flow Regulator

↓

Calibration Gas Cylinder

Leave the regulator closed.



Step 6 – Stabilize the Detector

Allow the detector to stabilize in fresh air.

Verify:

- Combustible gas reading is **0 %LEL**.
- Oxygen reading is normal.
- Toxic sensor readings are stable reading 0 ppm.

Step 7 – Enter AutoCal Mode

With the detector switched **ON**, press and hold the detector button.

The detector will begin the normal shutdown sequence:

OFF

↓

3

↓

2

↓

1

Do not release the button.

Continue holding the button after the countdown reaches zero.

After several additional seconds, the detector enters **AutoCal Mode**.

Common User Mistake

Releasing the button when the display reaches **OFF → 3 → 2 → 1** simply powers the detector OFF.

Continue holding the button until the AutoCal screen is displayed.

Step 8 – Fresh Air (Zero) Calibration

The detector automatically begins the Fresh Air (Zero) Calibration.

Leave the detector in clean fresh air.

Do **not** apply calibration gas during this stage.

Wait until the detector confirms successful completion of the Fresh Air Calibration.

Step 9 – Span Calibration Prompt

After the Fresh Air (Zero) calibration has successfully completed, the detector prompts the operator to begin the span calibration.

At this point, the detector is waiting for the operator's confirmation.

Do not open/connect the regulator yet.

Step 10 – Confirm Span Calibration

Press the detector button to confirm that the calibration gas is ready to be applied.

Immediately after confirmation, the detector starts a **90-second countdown**.

This countdown allows sufficient time to:

- Open/Connect the regulator.
- Allow the calibration gas mixture to reach the detector.
- Stabilize the gas readings before the automatic span calibration is completed.

Waiting too long before applying the calibration gas mixture may cause the countdown to expire, resulting in a failed calibration and **ERR** indications.



Step 11 – Apply the Calibration Gas Mixture

Immediately open/connect the regulator.

Maintain a continuous gas flow of approximately **0.5 L/min.**

Allow the detector to sample the calibration gas mixture.

Step 12 – Automatic Span Calibration

Once stable gas concentrations are detected, the detector automatically performs the span calibration. No further operator action is required.

Maintain a continuous gas flow until the detector indicates that calibration has successfully completed.

Step 13 – Wait for Calibration Completion

Allow the detector to complete the calibration automatically.

Do not interrupt the gas flow or disconnect the calibration equipment.

Step 14 – Calibration Passed

Wait until the detector displays a successful calibration indication.

Step 15 – Stop Gas Flow

Close the regulator or disconnect the Demand Flow Regulator (DFR) connection.

Step 16 – Remove the Calibration Equipment

Disconnect:

- Calibration cap
- Calibration tubing
- Regulator

Step 17 – Purge the Detector

Allow the detector to sample fresh air.

Wait until all sensor readings return to normal operating values.

Step 18 – Verify Detector Status

Confirm:

- No **ERR** messages are displayed.
- No fault indications are present.
- Pump is operating correctly.
- Normal display restored.
- **The compliance (happy face) indicator is displayed.**

The happy face confirms that the detector remains in a compliant operating state following a successful AutoCal.

If the happy face is **not** displayed after calibration, you must investigate the cause before returning the detector into service.

Step 19 – Perform a Functional (Bump) Test

Using the same calibration gas mixture, verify:

- Correct gas response.
- Audible alarm.
- Visual alarm.
- Vibration alarm.
- Pump operation.

If any function does not operate correctly, remove the detector from service.



Step 20 – Record the Calibration and Return the Detector into Service

Because AutoCal does not generate an electronic calibration certificate or calibration record, manually record the following:

- Calibration date.
- Technician name.
- Instrument serial number.
- Calibration gas mixture used.
- Gas cylinder batch number.
- Gas cylinder expiry date.
- Calibration result (PASS/FAIL).

The detector may be returned into service only when all of the following conditions have been met:

- AutoCal completed successfully.
- No ERR or fault indications are present.
- The compliance (happy face) indicator is displayed.
- The detector displays normal readings in fresh air.
- A successful functional (bump) test has been completed.
- The calibration has been recorded in the maintenance log.

Summary of the AutoCal Sequence

Operator Action	Detector Response
Press and hold the button	OFF countdown (3 → 2 → 1) begins
Continue holding the button	AutoCal mode starts
Leave detector in fresh air	Automatic Fresh Air (Zero) Calibration is performed
Fresh Air (Zero) Calibration passes	Detector prompts for Span Calibration. Press the button.
Press button to confirm span calibration	90-second countdown begins
Open regulator and apply the correct calibration gas mixture	Detector samples and stabilizes on the gas mixtures
Detector completes automatic span calibration	PASS indication is displayed
Stop gas flow and purge in fresh air	Detector returns to normal operating mode
Verify happy face indicator	Detector is compliant and ready for service

This procedure applies specifically to the **SST4 Mini/Pump firmware version 13.93** and reflects the AutoCal workflow implemented in that firmware version.

**Regards,
WatchGas Team**