OmniTrak™ Core Module User Calibration Guide

For VOC-EC sensor (Zero & Span) and CO2 sensor (Span) In-Field Calibration

Why Span?

Purpose: To verify and adjust the sensor's sensitivity so it provides accurate readings to a known concentration across its full measurement range – especially at low concentrations or tracking small changes.

What does spanning do?

- Confirms that when a known concentration is introduced, the sensor reports a value as close as possible to the certified concentration

- Correct for sensor aging, drift, or environmental exposure (i.e.; humidity, temperature, off-gassing, or background contamination)

- Ensure that small but meaningful variations in indoor air quality or industrial environments are measured precisely.

- Compliance for QA/QC protocols or environmental standards

- Confidence in reported values used to make ventilation or health-related decisions

Why Zero VOC?

Purpose: Sets the sensor baseline when VOCs are not present.

What does zeroing do?

- To remove drift caused by environmental exposure or sensor aging.

- Especially important in low-VOC environments or when tracking small changes (i.e., in clean rooms or labs)

User Calibration Guide

1. ## Safety & Handling Notes
   - Use calibration gases in a well-ventilated area.
   - Do not exceed recommended gas concentrations or pressures.
   - Secure gas cylinders upright and use appropriate regulators.
   - Always wear PPE when handling compressed gases.

2. When to Calibrate

- Factory calibration – ensures initial accuracy
    - Annually

- Field calibration – compensates for real-world influences and aging over time
    - At least daily or before each study
    - More frequently if:
        - Readings appear inaccurate or drift beyond expected range.
        - It's exposed to high VOC or CO2 environments, high humidity, dust, or pollutants.
        - Regulatory or certification programs require it.

3. Required Equipment

- OmniTrak™ Core module calibration shroud (7590-84)
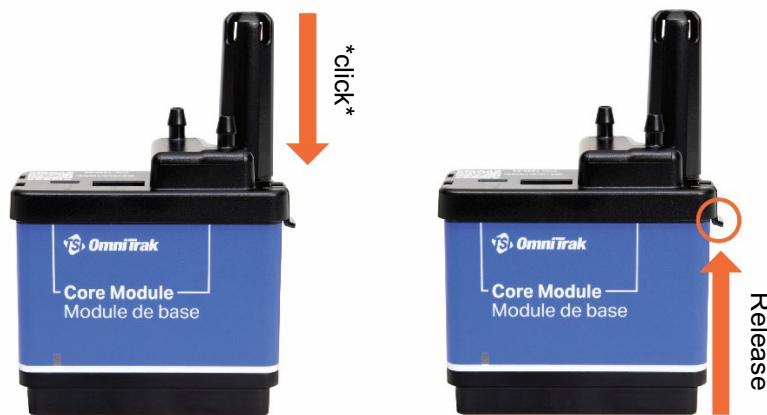
- Zero air source and/or span gas (see Recommended Gases and Concentrations table)
- Gas regulator for ≤ 0.3 L/min
- FEP lined tubing and regulator
- OmniTrak™ Smart Station

4. Setup Instructions

- Start with the Core module paired to the Smart Station
- Attach the calibration shroud to the Core Module next to the probe
- Connect tubing from gas source to the calibration shroud
- On the Smart Station, tap the Connection menu (network icon in the top right corner). Find the Core module to calibrate and tap the kebab (three vertical dots) menu next to the module. Select 'Calibrate' and follow the instructions.
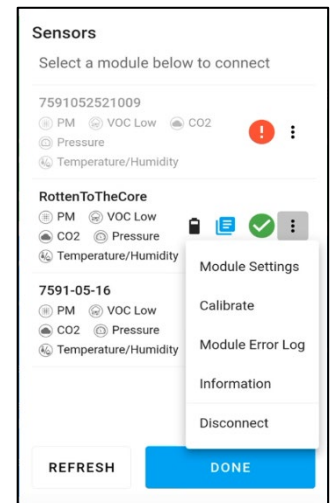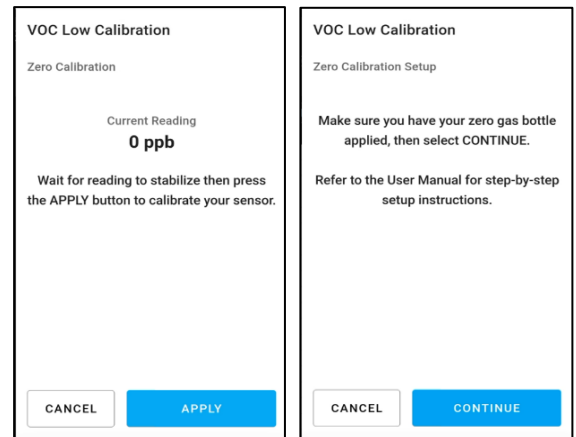
5. **Calibration**

For the VOC-LOW sensor, Zero Calibration and Span Calibration are available. If both are performed, Zero Calibration should be completed before Span Calibration.
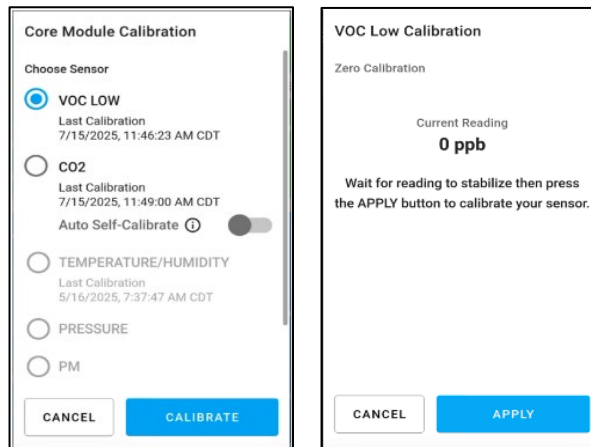

VOC Zero Calibration

- On the Smart Station Core Module Calibration screen:
  - Select 'VOC LOW'
  - Tap 'Calibrate'
  - Tap 'Zero'
- Apply the zero gas bottle. Tap 'Continue.'
- Flow zero air into the sensor at ≤ 0.3 L/min
- Wait at least 2 minutes for reading to stabilize, then press 'Apply'
- Wait for confirmation message that the zero calibration was successful.

VOC Span Calibration

- On the Smart Station Core Module Calibration screen:
  - Select 'VOC LOW'
  - Tap 'Calibrate'
  - Tap 'Span'
- Flow VOC span gas (i.e., 10,000 ppb isobutylene) into the sensor at ≤ 0.3 L/min
- Wait at least 2 minutes for reading to stabilize, then press 'Apply'
- Enter Span Gas Concentration (ppb)
- Wait for confirmation message that the span calibration was successful.
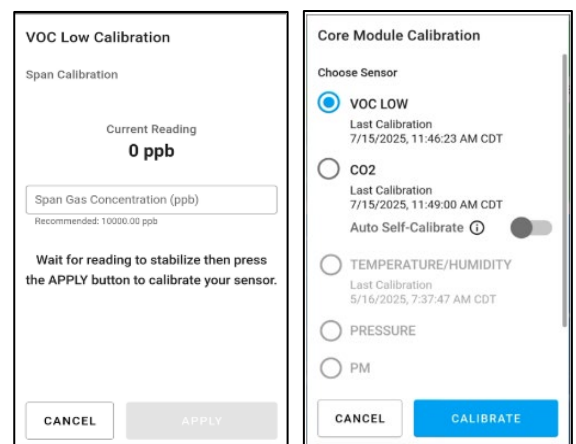
CO2 Span Calibration

- On the Smart Station Core Module Calibration screen:
    - Select 'CO2'
    - Tap 'Calibrate'
    - Tap 'Span'
- Flow CO2 span gas (i.e., 400 ppb CO2) into the sensor at ≤ 0.3 L/min
- Wait at least 2 minutes for reading to stabilize, then press 'Apply'
- Enter Span Gas Concentration (ppm)
- Wait for confirmation message that the span calibration was successful.

6. Post-Calibration Verification

- Flow gas again and confirm sensor is reading within +/- 10% of target
- Return to ambient air and confirm baseline VOC and CO2 return to expected values.

7. Troubleshooting

Issue	Possible Cause	Solution
Calibration failed	Unstable readings	Let readings stabilize before retrying
VOC reading too high post-zero	Contamination in zero air source	Replace or verify zero air source
CO2 span fails	Incorrect gas concentration	Verify gas cylinder and regulator

8. Appendix

Recommended Gases and Concentrations

Sensor Type	Calibration Type	Gas Used	Purpose
VOC	Zero	Air with zero VOCs/reference zero air, ≤ 0.3 L/min	Establish baseline free of ambient VOCs
	Span	Known VOC of interest, isobutylene in air recommended. <10,000 ppb (10 ppm) recommended, ≤ 0.3 L/min	Ensure correct sensitivity to target VOCs
CO2	Span	CO2 in air, 400 to 2000 ppm recommended, ≤ 0.3 L/min	Ensure accurate readings at expected levels

TSI Technical Support

Please contact TSI or your local channel partner to make service arrangements and to receive a Service Request number. To fill out an online Service Request form, visit TSI Incorporated's website at tsi.com/support.

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Knowledge Beyond Measure.