TracePoint 1000

Photoacoustic Infrared Gas Monitor

SINGLE-CHANNEL MONITOR

INSTALLATION | OPERATION | SERVICE

Technical Manual | Revision 1.1 | 05 November 2026



INSTRUMENT IDENTIFICATION

Serial number	_____
Model number	_____
Calibration gas	See approved gas configuration / nameplate
Measurement range	Refer to instrument nameplate (0-300, 0-500 or 0-1000 ppm as configured)
Options	Relay | RS-485 Modbus

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TracePoint 1000 - Single-Channel Monitor

IMPORTANT: Read this entire manual before installing or operating the TracePoint single-channel IR sensor module. Disconnect power before wiring or servicing. Observe all applicable local and national electrical codes.

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01 Unpacking instructions

TracePoint monitors are carefully packed, inspected and delivered to the carrier in good condition. If damage occurs in transit it is the responsibility of the carrier.

Carefully inspect the unit upon receipt. Any damage should be reported to the carrier and an inspection requested. After inspection by the carrier and receipt of acknowledgment of the damage, contact ThermGAS for return authorization (RMA). We cannot file claims for damaged goods on your behalf, but will assist where possible.

To expedite assistance, provide the model number, serial number and purchase date when contacting ThermGAS.

WE CANNOT ACCEPT RETURNS WITHOUT PRIOR APPROVAL.

Before installation

1. Remove the TracePoint IR sensor module from its carton. Check the contents against the packing list. If the shipment is incomplete, contact ThermGAS immediately.

2. Required tools and hardware:

- One #2 Phillips screwdriver, one #1 medium Phillips screwdriver, and one fine jeweler's standard screwdriver.
- Needle-nose electrician's pliers.
- Four No. 8 x 1-inch screws (minimum).
- Digital volt-ohm meter (VOM).

3. Select an appropriate installation location:

- Power: Use the ordered 24 VDC or 120 VAC input. Verify voltage and DC polarity against the approved wiring label/documentation; a DC rating plate is not yet available. Never apply AC power to DC terminals.
- **Sample inlet:** Place the sample pick-up near potential leaks in a quiet area, or downstream from a possible leak source where air moves.
- **Height and tubing:** Locate the sample pick-up approximately 18-24 inches above the floor, or where required by the gas and application. Sample tubing may be extended up to 200 ft; fit an end-of-line filter.
- **Location:** Avoid flooding, impact hazards, and severe temperature/humidity swings, including boiler blow-down and roll-up door locations.
- **Potential interference:** The narrowband infrared detector is selective, but may respond to high concentrations of other refrigerants, paint thinners or cleaning solvents. Select a suitable location or temporarily disable the monitor during interfering activities. Contact ThermGAS regarding specific interferences.

IMPORTANT: Consult local and national electrical codes for special requirements or restrictions before installing the TracePoint IR sensor module.

02 Installation

1. Confirm input against approved unit wiring documentation. 2. Disconnect power before installation.

3. Mount the TracePoint IR sensor module vertically in a location not subject to vibration or extreme temperature/humidity fluctuations. Install the sample pick-up approximately 18-24 inches above the floor and fit a filter.

Securely fasten the unit to a wall or suitable support using appropriate hardware. If the mounting surface vibrates, install rubber grommets between mounting clips and the support.

Inlet/exhaust extension: The sample line may extend up to 200 ft using 0.125-inch OD by 0.093-inch ID nylon, copper, or stainless-steel tubing. Keep sample lines short, free of kinks, and equipped with a 30-micron end-of-line inlet filter.

Exhaust to atmosphere. DO NOT install anything that restricts exhaust airflow.

Mechanical and wiring drawings

Body: 6.75 in. W × 14.44 in. H (approx. 6-3/4 × 14-1/2); depth: 4.49 in. (approx. 4-1/2).
Mounting tabs: 0.851 in. (approx. 7/8). Dimensions confirmed for the enclosure.

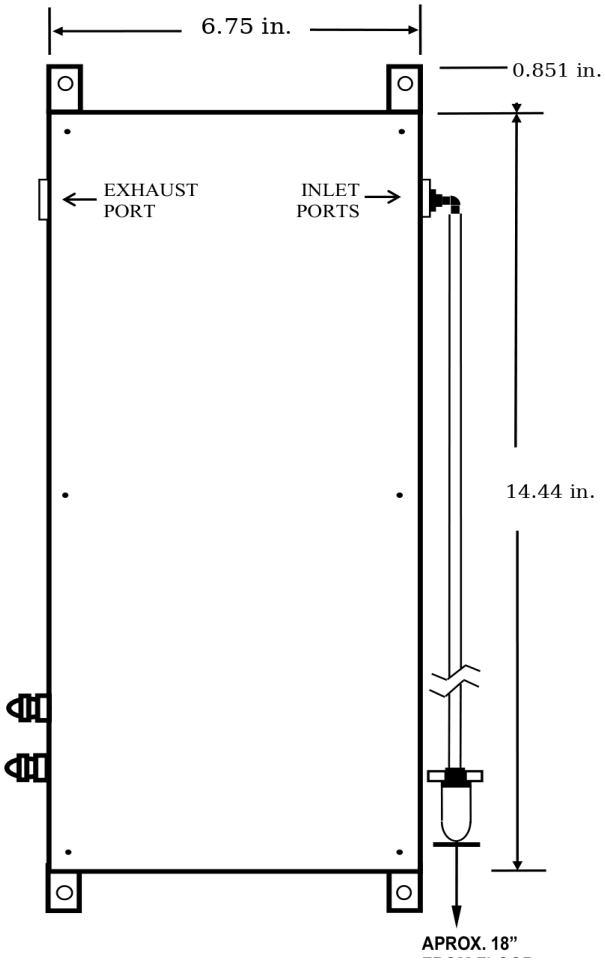


Figure 1 - Layout Drawing

Enclosure depth: 4.49 in.

02.1 Power and Analog Output Wiring

TracePoint 1000 | Single-channel photoacoustic infrared gas monitor

WARNING • ELECTRICAL INSTALLATION

Only qualified personnel may install or service this unit. Disconnect and verify absence of power before opening. Confirm input requirements from approved wiring documentation; the DC rating plate is not yet available.

02.1.1 Power Supply Wiring - 24 VDC or 120 VAC

The TracePoint 1000 is configured for 24 VDC or 120 VAC, depending on the ordered model. Check the approved unit wiring label and order documentation before connection. Observe DC polarity and AC protective-earth and disconnect requirements as applicable.

Never connect 120 VAC to a 24 VDC input.

02.1.2 Analog Output Wiring

The TracePoint 1000 outputs an active sourcing 0–20 mA signal for remote detecting of the PPM and Fault signals. 4mA is 0% of the scale reading and 20mA is 100% of the reading. The signal is linear and proportional between these points. -10% (2.4mA) indicates a FAULT condition. Connect the current loop to the TB2.1, TB2.3 and TB2.5 output terminals identified on the approved TracePoint 1000 wiring label/ drawing. Confirm signal polarity, loop power arrangement, load requirements, and gas-range scaling for the installed interface option. Route signal wiring separately from AC conductors.

Important: Confirm the analog-output terminal numbers against the installed TracePoint 1000 wiring label. Terminal markings in the illustration below are for reference only.

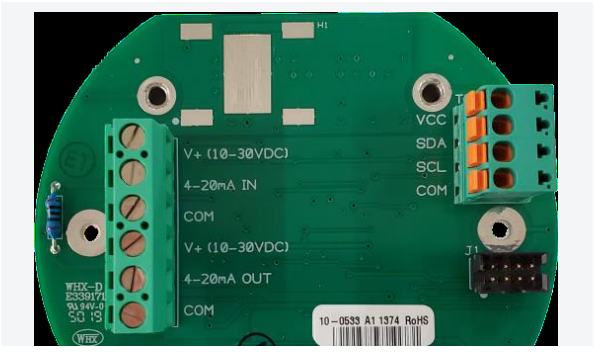
Percentage	Process Reading (0-500)	Output Current
-10%	-50	2.4 mA
0%	0	4.0 mA
25%	125	8.0 mA
50%	250	12.0 mA
100%	500	20.0 mA

Table 1 - Analog output percentage and process readings

Figure 2 - Wiring connection reference

REFERENCE ONLY

The photograph is an example connection area. Use only terminal markings and the approved production drawing supplied with the installed instrument.



ENGINEERING CONFIRMATION REQUIRED

Approved TB2 terminal functions, loop load/polarity, FAULT signaling and production wiring must be validated before installation. Enclosure dimensions are confirmed; the DC rating label remains unverified.

03 Jumper positions and calibration

Three jumper positions are listed below. Refer to circuit-board markings for their locations. A red jumper clip (shunt) is installed in RUN when the unit is supplied.

JUMPER	DEFINITION
RUN	Normal operating mode
J2	INTERNAL COMPANY USE ONLY. (Not used in normal operation in the field.)
SETUP	Calibration mode. Only used during calibration with TracePoint Digital Calibrator.

Table 2 - Jumper positions.

Calibration

TracePoint IR monitors are factory calibrated for the gas of interest. Under typical machine-room conditions, field recalibration is not normally required within the first 12 months unless the drift exceeds 5 ppm within a 30-day period. Follow the calibration schedule specified for the instrument.

An optional digital calibrator and span gas kit can be used to verify factory calibration; instructions are supplied with that kit.

In clean air free of the target gas, the monitor should read 0 ppm. If the display module does not show 0 ppm, perform the following zero-check procedure:

- Fill a clean plastic bag with clean outside air and tie it closed. Avoid outdoor air contaminated by automobile exhaust.
- Allow air to stabilize in the bag for 15-20 minutes, then insert the sample line into the bag. Observe the monitor response after the sample has reached the optical cell; allow sufficient time for the sample to reach the measurement cell.
- Observe the display module: if the PPM reading falls, the monitor may have been sensing target gas or another gas that absorbs infrared light at the same frequency.
- Remove the sample tube from the bag and observe the response. If the reading rises, investigate leaks or possible interfering gases. Relocation may be required. The infrared module may identify leaks below the response threshold of a handheld leak detector.

04 Troubleshooting

With proper maintenance, the TracePoint sensor module is designed for long operating life. Corrosive environments and elevated temperature can substantially shorten service life. Common causes of nuisance alarms and faults include improper installation, inadequate warm-up time and poor sensor location.

Self-diagnostics can identify many failures; use the procedures below. Disconnect power and observe electrical safety precautions before servicing.

CAUTION: Potential electric shock or electrical damage. Only trained personnel should open the sensor enclosure or investigate the power supply. Verify voltage and polarity using the approved wiring label/documentation.

Module appears dead

Indication: No sound from unit; pump and chopper are not running; no power.

1. Check input power to unit.
2. Verify power wiring and supply voltage.
3. Check for loose wires on terminal block.
4. Check low-voltage wiring from power supplies.
5. Replace defective power supply.

No PPM output or unchanging PPM

Indication: Bad calibration, wiring may be loose/broken or the current-output circuit may be defective.

1. Check span gas supply.
2. Check sample bag for leaks.
3. Check all tubing, filters and fittings for leaks.
4. Check calibrator connection.
5. Check current-output wiring and display module connections against the approved terminal label.
6. Measure analog current with a suitable meter and display module disconnected, using the correct device specification.
7. Recalibrate per the applicable calibration procedure; seek service if fault persists.

Calibrator does not communicate with IR module

Indication: IR module will not enter calibration mode.

1. Ensure the jumper clip is in the SETUP position.
2. Check calibrator wiring against the approved terminal label.
3. Replace calibrator if defective.

Fault

Indication: Fault message on display. Possible causes are listed below.

PUMP FAIL

Indication: Pump may labor or not run. The pump cycles; it is not continuously running.

1. Check pressure switch; adjust or replace if necessary (Appendix A).
2. Check inlet and exhaust ports for particulates.
3. Check end-of-line and internal filters for blockage.
4. Inspect tubing for kinks, leaks, disconnections or clogs.
5. Check any fitted valve openings and optical-cell connection.
6. Inspect pump leads for broken or frayed wiring and confirm plug connection.
7. Cycle the power and observe pump operation.
8. Replace pump if defective.

LOW TEMP

Indication: Internal temperature has fallen below normal operating range, nominally 40°C.

1. Close cover and allow approximately one hour to warm up.
2. Check heater wiring.
3. Check source wiring.
4. If ambient temperature is below approximately 10 C, auxiliary heating may be required.

LAMP FAIL

Indication: No infrared source glow / IR source failure.

1. Check source wiring; terminal-block voltage should be about 5.05 V (+/- 0.05 V).
2. Replace optical source/bench if defective. This operation is not normally performed in the field.

CHOPPER FAIL

Indication: Chopper rotation stopped, slow or erratic.

1. Replace optical cell cover if removed; incident light can cause this condition.
2. Check chopper motor wiring.
3. Check for loose chopper blade.
4. Check for a misaligned or loose optical detector.
5. Replace optical bench/chopper/detector if necessary; not normally a field operation.

Chopper rotates backwards

Indication: Chopper rotates counterclockwise rather than clockwise.

1. A gray, black, green or red chopper-motor wire may be broken inside its insulation, sometimes due to crimp damage.
2. Test gray/black and green/red motor lead pairs; neither pair should read open circuit.

05 Maintenance

The TracePoint IR sensor module is designed for long, trouble-free operation in typical machine-room conditions. It requires limited maintenance, and built-in diagnostics can identify unusual faults. Inspect external end-of-line filters periodically for dust and replace as necessary. Internal sample filters should be inspected at the same time and replaced when dirty.

Annual maintenance checklist

- Inspect internal sample filters for discoloration or dirt build-up; replace as needed.
- Inspect end-of-line filter for accumulated dirt/dust; replace as needed.
- Inspect sample tubing for brittleness, loss of seal and holes; replace as needed.
- Inspect screws and terminal blocks for loose connections; tighten as needed.
- Test pressure switch; adjust or replace as required (Appendix A).
- Expose sensor to clean air and an appropriate span gas; recalibrate where indicated.

Obtaining replacement parts

Contact ThermGAS directly for spare parts, replacement components or technical assistance. Refer to the unit model and serial number when ordering.

ThermGAS | www.thermgas.com | 770-667-3865

Use only genuine approved replacement parts. Unauthorized alteration or repair beyond this manual may impair instrument safety and performance, potentially resulting in severe injury or death.

Replacement parts and accessories

DESCRIPTION	PART NO.	DESCRIPTION	PART NO.
Internal filter element	A702A	Span gas calibration kit	A204
External filter element	A703A	Microprocessor	A704
		Replacement calibrator	A705
Pressure switch	A708		
Power supply	A707B		
Vacuum pump	A709		

06 Service and assistance

To request service, provide the unit **model number**, **serial number** (located on the instrument label) and a description of the problem. Review the troubleshooting guide before requesting return service.

If field procedures do not resolve the problem, request a Return Merchandise Authorization (RMA) from ThermGAS before shipping. Pack carefully to prevent transit damage and mark the RMA number clearly on the carton. Confirm the shipping address with ThermGAS before returning the unit.

Technical specifications

PARAMETER	DETAIL
Detection technology	Photoacoustic Infrared (PAIR)
Electrical supply	24 VDC or 120 VAC (as ordered; verify approved wiring label)
Analog signal	Active sourcing 0-20 mA; 4 mA=0%, 20 mA=100%, 2.4 mA=FAULT
Accuracy	1 ppm over 0-100 ppm; 10 ppm over 100-1000 ppm
Available range	0-300 ppm, 0-500 ppm or 0-1000 ppm (per gas/model configuration)
Typical response	Less than 2.5 minutes per sample
Operating environment	40 to 120 F, non-condensing
Housing design	NEMA/IP rating not established; do not assume NEMA 4 or IP65
Nominal weight	7 lb
Enclosure dimensions	Body 6.75 W × 14.44 H; depth 4.49; tabs 0.851 in.*

*Enclosure dimensions confirmed. Verify approved production drawing for mounting details.

Single-channel operating configuration

A single sample inlet is provided. Refer to the configuration supplied with the unit for the supported gas, range and installed interface options.

Appendix A Pressure-switch adjustment

This appendix provides the procedure for checking and adjusting the pressure switch. A FAULT message on the display may indicate a restriction in the sample airflow path. Flow failure is sensed by an electromechanical pressure switch. The fault may appear intermittently (switch chatter) or remain present (possible switch failure). Other airflow problems can cause similar symptoms.

Check airflow before adjusting the switch

1. The vacuum pump may have failed. Confirm airflow at the exhaust port. Listen for the pump: it cycles on and off rather than running continuously. Inspect pump leads for breakage/fraying and ensure the connector is properly seated.

2. Sample lines or filters may be obstructed. Inspect tubing for crimping and blockages. Check the end-of-line filter for dirt or paint; unscrew the porous filter element and back-blow as instructed in the original procedure. Check internal air filter; replace if dark or dirty.

3. The pressure switch may have failed. The pressure switch is a small (approximately 1 inch square) black/gray component located between the pump and exhaust port. It has two wires on quick disconnects and two small holes opposite the tubing. One exposes a slot adjustment screw; the second is a relief port.

With the pump running, feel for airflow at the relief port. If air leaks from this port, the rubber seal may be damaged and the switch should be replaced.

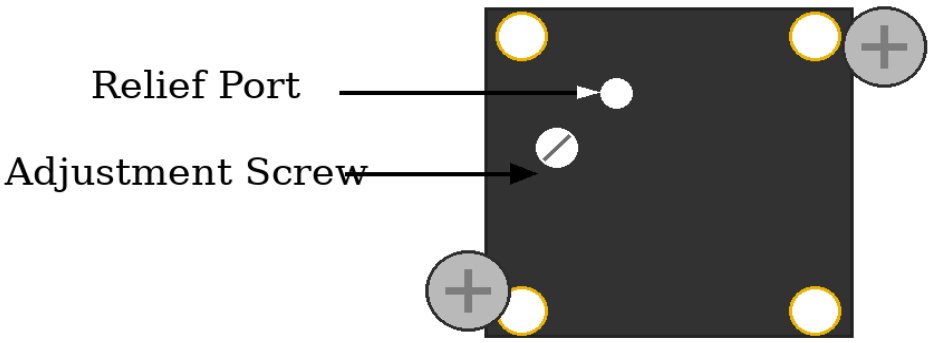


Figure 3 - Pressure switch with relief port and adjustment screw.

4. The pressure switch may be chattering. If the fault appears and disappears repeatedly over a short interval, the switch may bounce or fail to close quickly enough for the detection circuit.

Switch adjustment procedure

1. Connect a DC voltmeter across the quick disconnects. With the pump running, the switch circuit reads approximately 0 VDC; with the pump stopped, approximately 5 VDC.

2. With the pump stopped, turn the brass adjustment screw clockwise until voltage collapses to 0 V; then back it off until voltage just returns. Adjustment should be performed only by trained service personnel.