

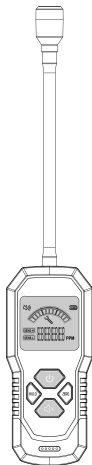


PROFESSIONAL-GRADE GAS DETECTION

REFRIGERANT GAS LEAK DETECTOR

SFD201 ALSO DETECTS COMBUSTIBLE GAS

SFD200 / SFD201



USER MANUAL

Read this manual before use. Keep it for future reference.

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Before you decide it is not working, read section 9.2. A brand-new sensor, or one that has been in storage, needs to run for a while before it reaches full sensitivity. This is normal.

**WARNING**

- This detector is a **hand-held inspection tool**. It is not a gas alarm and must never be relied on to protect sleeping or unattended people. See section 2.
- **It is not intrinsically safe.** Never use it where an explosive atmosphere may already have built up – the instrument is itself a source of ignition. Ventilate first, then search.
- **It cannot detect gas during the first 30 seconds after power-on**, and it takes its zero from whatever air it is switched on in. Always switch it on in clean, fresh air, away from the suspected leak.
- Do not rely on this detector alone to decide that a space is safe. Follow the safety procedure that applies to the work you are doing.
- Never attempt to repair or modify the detector, and do not open the case at any time. There are no user-serviceable parts inside.
- Do not draw liquid, oil or solvent into the probe. It will contaminate the sensor, and the damage is permanent.

Refrigerants

Displace oxygen and can cause asphyxiation in a confined space. Several decompose into toxic products over a flame or a hot surface. Liquid refrigerant causes frostbite – wear gloves and eye protection.

Combustible gases**SFD201 ONLY**

Natural gas, LPG, propane, gasoline vapor and alcohol are flammable and can explode once they accumulate in an enclosed space.

False responses

Moving air, steam, solvent, perfume and strong odors all disturb the sensor. See section 9.3.

**IF YOU CAN SMELL GAS**

Do not switch anything on or off – including this detector. Leave the building, take everyone with you, and call the gas utility or emergency services **from outside**. A leak detector is for pinpointing a leak you are already managing safely, not for deciding whether to stay in the room.

AFTER YOU FIND IT

Repairing the system is outside the scope of this manual. Refrigerant recovery and repair are regulated work – in the United States, handling refrigerant requires **EPA Section 608 certification**. Have it done by a qualified technician, under the rules that apply where you are.

What this instrument is for is the step after: once the system has been repaired and brought back up to pressure, **re-check the joint** using the technique in section 9.3 before the job is called finished.

This manual covers both models. Anything marked **SFD201 ONLY** does not apply to the SFD200, which detects refrigerants and does not respond to combustible gases.

**THIS IS NOT A GAS ALARM**

The SFD200 and SFD201 are professional hand-held leak-location instruments for manual inspection. They are **not** single- or multiple-station gas alarms, are **not** within the scope of UL 1484 (*Standard for Residential Gas Detectors*), and are **not** a substitute for a listed gas alarm.

Install a listed gas alarm for continuous life-safety protection in dwellings.

WHAT THIS DETECTOR IS FOR

Finding *where* a leak is, while you are holding the probe and watching the display. Typical work:

- Locating refrigerant leaks on split systems, heat pumps, chillers, refrigeration packs and vehicle air conditioning.
- Checking flare nuts, service valves, brazed joints, coil bends and hose crimps after installation or repair.
- Verifying a repair by re-testing a pressurized joint.
- Tracing combustible gas at pipework joints and appliance connections. **SFD201 ONLY**

Understand these before you rely on a reading.

Warm-up	No gas detection at all for the first 30 seconds after power-on.
Conditioning	A new detector, or one that has been stored, needs 1 to 24 hours of running before the sensor reaches full sensitivity (section 9.2).
Relative, not absolute	The ppm figure shows how the concentration is changing as you move the probe. It is an aid to locating a leak, not a calibrated measurement of any one gas.
Not gas-selective	The sensor responds to many vapors. It cannot tell you <i>which</i> gas it has found.
Attended use only	Designed to be held and watched. No logging, and not for continuous or unattended monitoring.
Model coverage	SFD200 does not respond to combustible or HC gases. Only the SFD201 does (section 4).
Not intrinsically safe	Must not be used in an atmosphere that may already be explosive.
Sensor ageing	The metal-oxide sensor has a 5-year working life and loses sensitivity as it ages. Test it regularly (section 11).

3 QUICK START

- 1** Charge the detector fully before first use (section 8).
- 2** **New detector, or one that has been stored?** Leave it switched on in clean air for several hours first – section 9.2. Skipping this is the most common reason a detector seems insensitive.
- 3** Switch on in **clean, fresh air, away from the suspected leak**: hold the power button for 3 seconds and let the 30-second countdown finish.
- 4** Choose the sensitivity with **HI/LO**. Refrigerant: start on **SENS-H**. Combustible gas on the SFD201: start on **SENS-L**.
- 5** Move the probe tip along the joint **no faster than 1 inch (25 mm) per second**, held about ¼ in (6 mm) from the surface. If the reading climbs, take the probe back to clean air, press **ZERO** there, and approach again.

BUTTONS AT A GLANCE

Power	Hold 3 seconds to switch on or off
HI/LO	Switch between high and low sensitivity
ZERO	Re-zero in clean air when the reading has drifted
Mute	Mute and unmute the buzzer

Full instructions start at section 9. Read sections 1 and 2 before you rely on this instrument for anything that matters.

Refrigerants are used in air conditioning, heat pumps, refrigeration and vehicle A/C. Four generations are in service; this detector responds to all of them.

CFC 1ST GENERATION	R11 · R12 · R113 · R114 · R400
HCFC 2ND GENERATION	R21 · R22 · R31 · R121 · R122 · R123 · R124 · R141b · R142b · R221 · R222 · R401a · R402a · R402b · R408a · R409a · R509a
HFC 3RD GENERATION	R23 · R32 · R41 · R125 · R134a · R143a · R152a · R404a · R407c · R410a · R417a · R507 · R508a · R508b
HFO 4TH GENERATION	R-1234yf · R-1234ze · R449a · R452b · R454a · R455a · R456a · R457a · R459a

Lists are representative, not exhaustive. The sensor responds to the halogen content of the vapor rather than to a named product, so blends not listed here generally respond as well.

HOW STRONGLY IT RESPONDS

The sensor does not answer every refrigerant equally. R-22 and R-134a give the strongest response. R-125 gives a distinctly weaker one – and R-125 makes up about half of R-410A, R-404A and R-507.

This changes how you search, not whether you can. On an R-410A system, work on high sensitivity, bring the probe closer, move it more slowly than you would on an R-22 system, and give the reading time to climb before moving on.

SFD200	CFC, HCFC, HFC and HFO refrigerants. Does not detect combustible or HC gases.
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SFD201	Everything the SFD200 detects, plus HC refrigerants and combustible gases.
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HC AND COMBUSTIBLE GASES SFD201 ONLY

R50	Methane – the main component of natural gas
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R170	Ethane
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R290	Propane – also sold as LPG
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R600A	Isobutane – common in domestic refrigerators
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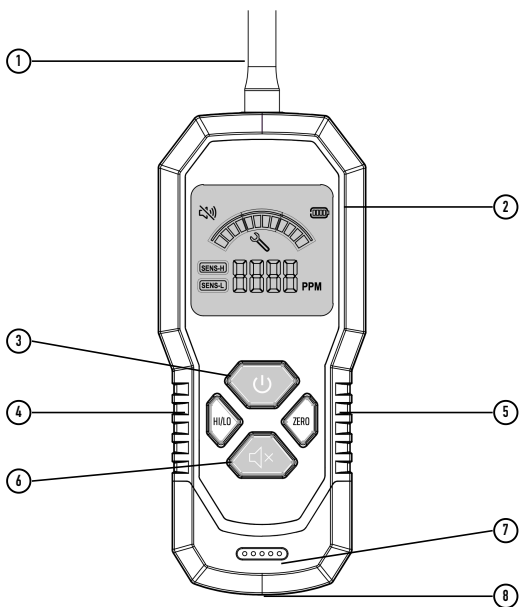
OTHER	Gasoline vapor, alcohol and many solvent vapors
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NOTICE

Start a refrigerant search on high sensitivity (**SENS-H**) and a combustible-gas search on low (**SENS-L**). If a combustible leak does not show up on low, switch to high – but expect more background response.

- Japanese-made metal-oxide semiconductor (MOS) gas sensor.
- 14 in (355 mm) flexible gooseneck probe holds its shape, so you can reach behind a coil and leave both hands free.
- Backlit color LCD: numeric ppm reading plus a bar graph that tracks the concentration as you move.
- High and low sensitivity, selectable while you work.
- Automatic zero at start-up, plus manual **ZERO** to re-zero in clean air if the reading drifts.
- Buzzer can be muted.
- Rechargeable 2500 mAh lithium-ion battery, USB Type-C charging, up to 24 hours of operating time.

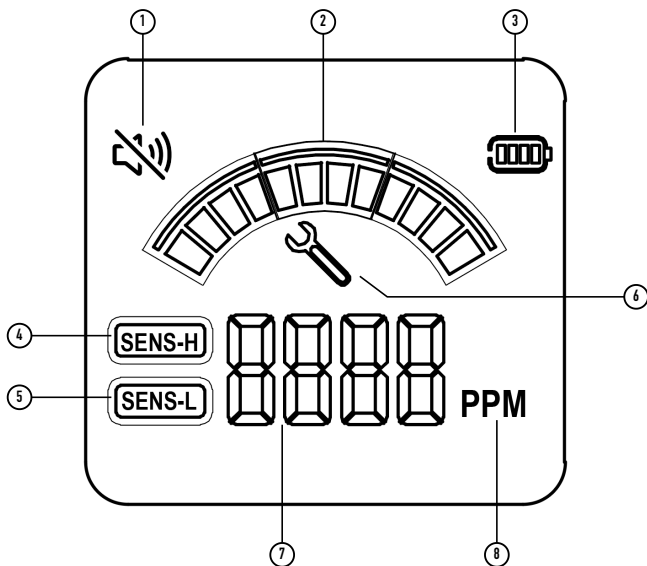
Alert, not alarm. Throughout this manual the audible and visual indications are called *alerts*. They tell the person holding the probe what the sensor is reading right now. They are not the alarm signal of a life-safety device.



PROBE AND GOOSENECK SHOWN SHORTENED

- | | |
|--------------------------------|-------------------------------|
| ① Sensor probe (gooseneck tip) | ⑤ Manual zero (ZERO) |
| ② LCD screen | ⑥ Mute / unmute |
| ③ Power on / off | ⑦ Speaker |
| ④ Sensitivity (HI/LO) | ⑧ USB Type-C charging port |

7 DISPLAY



ALL SEGMENTS SHOWN FOR REFERENCE — THE DISPLAY NEVER SHOWS THEM ALL AT ONCE.

- | | |
|--------------------------------------|-------------------------------------|
| ① Mute indicator | ⑤ Low sensitivity (SENS-L) |
| ② Concentration bar graph | ⑥ Fault indicator |
| ③ Battery level | ⑦ Concentration reading |
| ④ High sensitivity (SENS-H) | ⑧ Unit – parts per million |

The detector contains a built-in 2500 mAh lithium-ion battery. Charge it fully before first use.

- 1** Connect a USB Type-C cable to the charging port on the bottom of the detector (8).
- 2** Connect the other end to a USB power source.
- 3** The battery indicator animates while charging and stops when the battery is full.
- 4** Disconnect when charging is complete.

**BATTERY WARNING**

- Charge from a USB power source that meets USB specifications. Do not charge with a damaged cable or power supply.
- Charge between 32 °F and 113 °F (0 °C to 45 °C), on a hard non-flammable surface, and not on bedding, carpet or upholstery.
- Do not disassemble, crush, puncture, short-circuit, immerse, heat above 140 °F (60 °C) or incinerate the detector or its battery.
- The battery is not user-replaceable. Opening the case voids the warranty and may cause fire.
- Keep the detector away from children.

GETTING THE BEST BATTERY LIFE

- Recharge when the battery indicator shows one segment rather than running it flat.
- If the detector will be stored for more than a month, charge it to about half and top it up every three months.
- Run time falls in cold conditions. This is normal.

**CAUTION**

Stop using the detector and contact support if it becomes hot, swollen, discolored, or gives off an unusual smell during charging.

SENSOR LIFE

The metal-oxide sensor has a working life of 5 years. It loses sensitivity gradually, and long exposure to a high concentration ages it faster – so once you have found a leak, move the probe away rather than leaving it sitting in the plume.

The sensor is not user-replaceable. If the fault indicator (**6**) appears and does not clear after a power cycle in clean air, contact support.

9 OPERATION

9.1 POWER ON AND WARM-UP

CAUTION

The detector takes its zero from the air it is switched on in. Switch it on in clean, fresh air, away from the suspected leak – otherwise it treats the leak as normal background and barely responds.

- 1 Press and hold the power button for 3 seconds.
- 2 The LCD briefly shows all segments for one second and the buzzer beeps.
- 3 A 30-second warm-up begins and the LCD counts down. The detector cannot detect gas during this time.
- 4 A second beep marks the end of the countdown. The display shows **0 PPM** and the current sensitivity setting, and the detector is ready.

9.2 CONDITIONING A NEW OR STORED DETECTOR

A metal-oxide sensor that has not been powered for a long time reads low until it has been running for a while. Straight out of the box, or after months in storage, **leave the detector switched on in clean air for 1 to 24 hours** – 6 to 8 hours is usually enough – before you judge its sensitivity. This is normal behavior, not a fault.

9.3 TECHNIQUE

Most reports of “it does not detect anything” come down to technique. Work through this in order.

- 1 Put the system under pressure.** Nothing leaks out of a system that is empty or switched off.
- 2 Wipe the area dry.** Oil, water and cleaning solvent all produce a response of their own – alcohol-based cleaners and leak-detection sprays as strongly as refrigerant itself.
- 3 Still the air.** Switch off fans, close doors, and shield the joint from wind. Moving air carries the leak away before it reaches the probe – this is the single biggest cause of a missed leak.
- 4 Zero in clean air,** away from the system.
- 5 Go slowly.** Move the probe along every joint, valve, weld, flare and coil bend at **no more than 1 inch (25 mm) per second**, held about ¼ in (6 mm) from the surface.
- 6 Work all the way round.** Pass the probe right around each joint rather than along one side. Gas can travel in any direction once it has left the fitting, and a single pass can miss it.
- 7 Take it back to clean air.** When the reading climbs, move the probe away into clean air, let it settle, and press **ZERO there** – not next to the joint.
- 8 Come back in slowly.** Approach the same point again. If the reading rises a second time, the leak is real; where it rises fastest is the source. Repeat as often as you need.

9.4 WHERE LEAKS USUALLY ARE

Split A/C, heat pump

Flare nuts at both ends of the line set, service valves and Schrader cores, brazed joints, coil U-bends, filter drier.

Refrigeration, cold room

Compressor suction and discharge brazing, capillary-to-drier joint, evaporator returns, sight glass.

Vehicle A/C

Compressor shaft seal, hose crimps, condenser (stone damage), service ports, O-ring fittings. For an evaporator, run the blower briefly and then sample the case drain.

Gas pipework**SFD201 ONLY**

Meter and regulator unions, threaded joints, valve stems, appliance connection hoses.

**CAUTION**

Keep the probe out of standing oil and water. Liquid drawn into the tip contaminates the sensor permanently, and that damage is not covered by the warranty.

A joint that shows nothing today can still be leaking slowly. Where a system is losing charge but no leak can be found, pressure-test it or use a trace-gas charge rather than assuming the detector is at fault.

9.5 READING THE DETECTOR

The display shows the concentration in ppm, with the bar graph filling as the reading rises. The buzzer beeps faster as the concentration climbs, so you can keep your eyes on the joint instead of the screen.

9.6 HIGH AND LOW SENSITIVITY

Press **HI/LO** while measuring to change the setting. **SENS-H** on the display is high sensitivity; **SENS-L** is low. Use high to find a small leak, then drop to low to pinpoint it once the whole area is responding.

9.7 MANUAL ZERO

The detector zeroes itself at start-up. After it has been running for a while the reading can drift a little, even in clean air. When that happens, hold the probe in clean air away from the suspected leak and press **ZERO** to bring it back to zero.

Do not press ZERO with the probe near the leak. Zeroing in contaminated air sets the baseline on the very gas you are looking for, and the leak will then read as nothing.

9.8 MUTING THE BUZZER

Press the mute button to silence the buzzer; the mute indicator (**1**) appears on the display. Press it again to restore the buzzer and the indicator disappears.



CAUTION

Muting silences the buzzer only. It does not lower the gas concentration and does not make the area safe.

10 SPECIFICATIONS

GAS MEASUREMENT

INDICATION RANGE	10-1000 ppm
RESOLUTION	1 ppm
RESPONSE TIME	30 seconds
WARM-UP TIME	30 seconds
INITIAL CONDITIONING	1-24 hours when new or after prolonged storage
SENSITIVITY SETTINGS	High and low, user-selectable
SENSOR TYPE	Metal-oxide semiconductor (MOS)
SENSOR WORKING LIFE	5 years

GAS COVERAGE

SFD200	CFC, HCFC, HFC and HFO refrigerants
SFD201	As SFD200, plus HC refrigerants and combustible gases

The reading indicates relative concentration for locating a leak. It is not a calibrated measurement of any individual gas.

GENERAL

DISPLAY	Color LCD, numeric and bar graph
ALERT SIGNAL	Display indication and buzzer
BUZZER MUTE	Yes
PROBE	14 in (355 mm) flexible gooseneck
POWER SUPPLY	Rechargeable 2500 mAh lithium-ion battery (3.7 V, 9.25 Wh)
CHARGING	USB Type-C
OPERATING TIME	Up to 24 hours
OPERATING TEMPERATURE	14 °F to 122 °F (–10 °C to 50 °C)
OPERATING HUMIDITY	5 % to 90 % RH
STORAGE TEMPERATURE	14 °F to 140 °F (–10 °C to 60 °C); best 50–68 °F (10–20 °C)
STORAGE HUMIDITY	Below 90 % RH; best 30–50 % RH
DIMENSIONS	5.51 × 2.36 × 0.98 in (140 × 60 × 25 mm), body only
WEIGHT	7.76 oz (220 g)

Specifications are subject to change without notice.

11 CARE AND MAINTENANCE

STORAGE

Store in clean, dry, fresh air, out of direct sunlight, protected from dust and moisture. Do not leave the detector in a vehicle for long periods – the temperature and humidity swings damage the sensor.

REGULAR TESTING

Test the detector against a known source before you depend on it. A brief release from a charged system or a service hose works for refrigerant; on the SFD201, holding an *unlit* gas lighter near the probe for a moment confirms the combustible response. Do this in a ventilated area and keep the release short.

PROTECTING THE SENSOR

Keep the probe out of liquids. Do not leave it sitting in a high concentration once the leak is found, and do not store the detector alongside solvent, fuel or paint.

BATTERY

Check the charge level regularly so the detector is ready when you need it.

NOTICE
Wipe the case with a slightly damp cloth. Never spray cleaner onto the probe – it will damage the sensor. Do not immerse the detector, and do not use solvents, alcohol or abrasive cleaners.

12 TROUBLESHOOTING

SYMPTOM	WHAT TO DO
No response at a leak you are sure is there	Work through section 9.3. In order of likelihood: air movement, moving the probe too fast, the system not under pressure, the detector switched on in contaminated air, or a sensor that has not been conditioned (section 9.2).
Insensitive out of the box	Leave it running in clean air for 6 to 8 hours, then retest. Section 9.2.
Reads a concentration in clean air	Press ZERO . If it will not settle, power off, move to genuinely fresh air, and power on again so it re-zeroes.
Beeps everywhere near the unit	The whole area is contaminated. Ventilate the space and let it clear, or drop to SENS-L (section 9.6).

SYMPTOM	WHAT TO DO
Reading drifts during a search	Normal. Take the probe to clean air, let it settle, then press ZERO there (section 9.7).
E and the spanner icon on the display	The instrument has found an internal fault. Power off and on again in clean air. If it persists, the instrument is not user-serviceable – contact support for a replacement.
Will not power on	Charge for 30 minutes, then press and hold the power button for 3 seconds.
No sound during an alert	The buzzer is muted – the mute indicator (1) is showing. Press mute to restore it.
Battery drains quickly	Run time falls in cold conditions and after years of service. Contact support if it is far below specification.

If the problem is not listed here, email support@getsensyx.com. Have your model number, date of purchase and order number ready.

13 FREQUENTLY ASKED QUESTIONS

Q What gases can this detector sense?

A The SFD200 detects refrigerants. The SFD201 detects refrigerants and also natural gas, LPG, propane, gasoline vapor, alcohol and other combustible gases. See section 4.

Q What should I do before using it?

A Switch it on in clean, calm air away from the leak, so it zeroes on clean air, and let the 30-second countdown finish.

Q Why does it sometimes give a false signal?

A Strong air flow, hot steam, perfume, solvent and strong odors all disturb the sensor.

Q I cannot see the display outdoors in bright sun.

A Shade it with your free hand or with your body – the reading and the bar graph are easiest to read out of direct sunlight. You do not have to watch the screen to work: the buzzer beeps faster as the concentration climbs (section 9.5).

Q Does the sensor need conditioning?

A Yes. Running it for 6–8 hours or longer improves sensitivity, especially when it is new or has been stored.

Q How do I know it is working?

A Test it against a known source – a brief release of refrigerant, or on the SFD201 an unlit gas lighter held near the probe. Section 11.

Q Will it tell me which gas it found?

A No. It responds to a range of gases and reports concentration, not identity.

Q How should I store it?

A Clean, dry, ventilated air – not in a vehicle. Avoid long exposure to gas, which ages the sensor and reduces sensitivity.

14 REGULATORY AND DISPOSAL

BATTERY AND PRODUCT DISPOSAL

This product contains a lithium-ion battery and electronic components. Do not dispose of it in household waste and do not incinerate it. Take it to a battery or electronics recycling collection point, or find one through a recycling program such as Call2Recycle. Local rules may require specific handling – follow them.

CALIFORNIA PROPOSITION 65



WARNING

This product can expose you to chemicals including di(2-ethylhexyl)phthalate (DEHP), which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

15 LIMITED WARRANTY

SENSYX is a brand of SIXPINES PRODUCTS INC, hereafter SENSYX. SENSYX guarantees that for a period of two (2) years from the date of purchase, this product will be free from defects in materials and workmanship. SENSYX, at its discretion, will replace or repair this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or refurbished product or component. If the product is no longer available, a replacement may be made with a similar product of equal or greater value. This is your exclusive remedy under this written warranty. Your replacement unit will be returned to you at no charge and will be covered under this warranty for the balance of the warranty period.

This warranty is valid for the original retail purchaser from the date of initial retail purchase and is not transferable. Keep the original sales receipt. Proof of purchase is required to obtain support under the warranty. Dealers, service centers and retail stores selling SENSYX products have no right to alter, modify or in any way change the terms and conditions of this warranty.

This warranty is available to customers in the United States. If you are outside the United States and need assistance, contact SENSYX support for guidance.

This warranty does not cover negligent use or misuse of the product, use with an improper voltage or current, use contrary to the operating instructions, or disassembly, repair or alteration by anyone other than SENSYX or a party SENSYX authorizes. It does not cover sensor contamination caused by liquid, oil or solvent drawn into the probe, or by prolonged exposure to high gas concentrations. It does not cover acts of God such as fire, flood, hurricanes or tornadoes. It does not cover any product that (a) has been subject to misuse or neglect, or (b) has been used in a manner inconsistent with the warnings and instructions in this manual.

Any implied warranties, including the implied warranties of merchantability and fitness for a particular purpose, are limited in duration to the term of this written warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

SENSYX will not be liable for any loss, damage, or incidental or consequential damages of any kind arising in connection with the sale, use, operation, inoperability, malfunction or repair of this product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

WARRANTY SERVICE

NOTICE

Opening this product for any reason voids the warranty. There are no user-serviceable parts in the case.

If service is required, email **support@getsensyx.com** and we will take it from there. To help us serve you, have the model number, the date of purchase, and your receipt or order number available.

You may also contact the seller you bought from – either route reaches the same warranty.

PRODUCT SUPPORT

support@getsensyx.com

getsensyx.com

Models SFD200 and SFD201 · Gas Leak Detector

Before contacting us about sensitivity, please check section 9.2 and work through section 9.3. Most cases are resolved there in a few minutes.

BEFORE YOU CALL IT FAULTY

- 1 Is it conditioned?** New or long-stored: run it in clean air for 6-8 hours. §9.2
- 2 Did you start it in clean air?** It zeroes on whatever air it is switched on in. §9.1
- 3 Did the 30-second countdown finish?** No detection before it does. §9.1
- 4 Is there a draft?** Fans, wind and open doors carry the leak away from the probe. §9.3
- 5 Are you moving too fast?** 1 inch (25 mm) per second, ¼ in (6 mm) from the surface. §9.3

Still stuck? support@getsensyx.com – model number, date of purchase and order number, please.



SENSYX reserves the right to make changes at any time, without notice or obligation, in colors, specifications, accessories, materials and models.

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SFD200 / SFD201 User Manual · Rev 2026-09-19b