FORENSICS DETECTORS

Sewer & Combustible Gas Leak Detector



User Manual

Model: FD-90E-YELLOW

Manual Print Version: 2.0

CE UKCA RoHS MADE IN CHINA FC

SPECIFICATIONS

Sewer Gases and Combustibles: Sewer Gases, Acetone, acetylene, alcohol, ammonia, benzene, butane, diesel vapors, ethanol, ethylene, oxide, gasoline vapors, hexane, isopropanol methane, naphtha, natural gas, paint thinners, propane, flammable solvents, sewer gases, and hundreds of other combustible gases.

Sampling Method:	natural diffusion (no pump)
Combustible Gas (LEL) Detection:	0 - 10,000 ppm (methane)
Resolution:	1 ppm resolution
Recommended Calibration Period:	12 months
Gas Sensor Type:	Semiconducting Metal Oxide (Tin Oxide)
Gas Sensor Life:	5 years
Error:	≤ ± 5% F.S
Response Time:	T < 30 sec
Alarm:	LED, Buzzer, and vibration
Operating Temperature:	14F - 122F
Operating Humidity:	< 95% RH non-condensing
Voltage:	DC 3.7V Li-battery 2800 mAh
Working Time:	> 10 hours
Charging Time:	3 hours
Protection Category:	IP65
Explosion Rating:	ATEX certified Ex ib IIB T3 Gb
Weight:	11 oz / 300 g (including battery)
Dimensions:	4.3 x 2.3 x 1.7 inches

OUR STORY

Forensics Detectors is a California-based technology leader in advanced gas sensing and measurement solutions. Our mission is to deliver cutting-edge air quality monitoring technology that protects lives and the environment. Based in the stunning Palos Verdes Peninsula of Los Angeles in California, we blend precision engineering with a commitment to safety. Our dedication to excellence drives us to create reliable gas detection systems that set industry standards for accuracy and performance.

INTRODUTION

You have purchased the FD-90E-YELLOW sewer and combustibles gas leak detector by FORENSICS DETECTORS™. This gas leak detector quickly detects sewer leaks and leaks of methane, propane, natural gas, and hazardous combustible gases in homes, businesses, and industrial settings. Early detection allows for immediate action, preventing potential explosions, fires, and health risks associated with gas exposure. Ideal for monitoring basements, garages, near gas appliances, and plumbing.

FAQ

need to follow 1inch per second

What's the best way to use the FD-90E-YELLOW detector?
Move the probe slowly (about 1 inch per second) around potential leak points, keeping the probe tip close to the suspected leak surface.

What safety precautions should be taken?
Ensure that a suspected leak area is well-ventilated with an open door or window within 10 feet of work so quick access can occur if feeling unwell.

What type of leaks can the detector find?
The FD-90E-YELLOW is perfect to find sewer gas leaks in bathrooms, kitchens and drain locations.

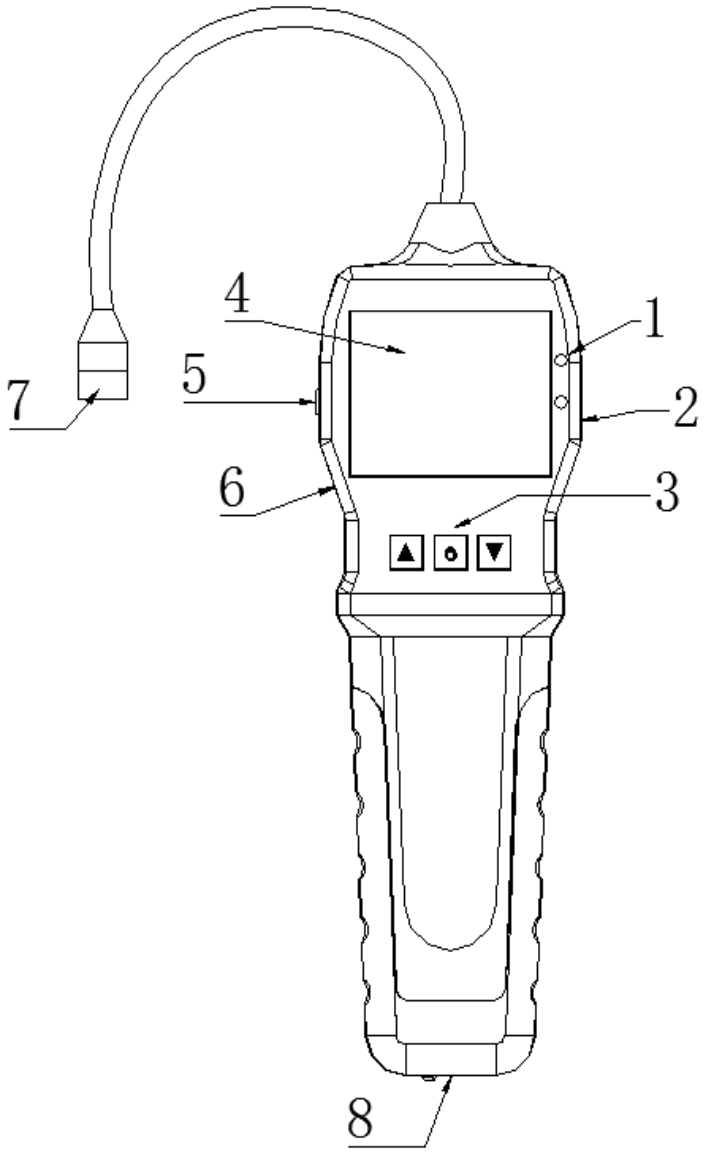
Why does my detector give false alarms?
False alarms can be triggered by cleaning solvents, exhaust fumes, cigarette smoke, or strong air currents. The unit is very sensitive and responds to many combustible gases, include high humidity and high temperature.

Why does my detector give a reading in fresh air?
The unit may need a quick ZERO CALIBRATION. Undertake a zero calibration to confirm and set a new zero baseline and ensure this is undertaken in fresh air.

Which gas leaks are dangerous? Which numbers are concerning?
Even a small combustible or sewer gas leak should be taken seriously as it can increase with time (like a water leak) and cause an explosive environment or adverse health effects to occupants.

DESIGN

Component Number	Component Name
1	LED lights
2	USB Charging socket
3	Operation buttons
4	LCD screen
5	Label (back)
6	Buzzer hole
7	Gas sensor



OPERATION

Turn-On: Press the button ⏻ for 2 seconds and release. The unit will go through self-testing protocols and once done after 60 seconds warm up will enter normal detection mode and show the HOME DISPLAY.



Home Display: The home display is made up of various icons and digits. The main reading of gas is the largest digit. The below table highlights the various items on the Home Display.

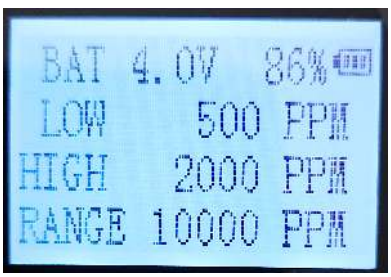
71.8 F	**Temperature**	02:20	**Time**
	Full voltage	0 PPM	**Concentration value**
	Low voltage	Norm.	**Status**
REC	**Alarm record**		**Sound**
Info	**Information**		**Muting**

Button Operation:

- UP BUTTON: press the UP button for the **RECORD Display Screen**
- MIDDLE BUTTON: press the MIDDLE button to toggle **MUTE**
- DOWN BUTTON: press DOWN button to INFO Display. Shows battery power, low value, high value and range.



RECORD DISPLAY



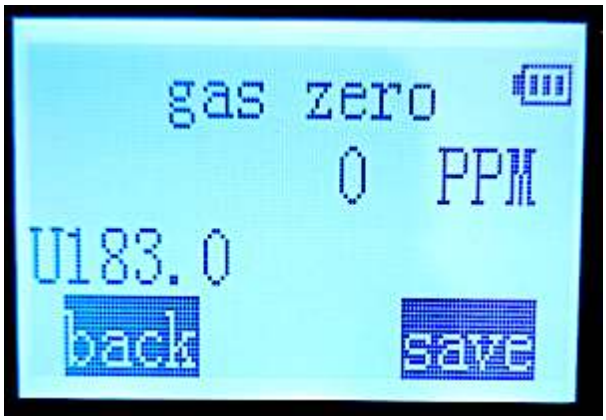
INFO DISPLAY

MAIN MENU

Press the button ▼▲ (press both together) to enter into the Main Menu. Here you can select a Sub-Menu. Below we describe the function and options that are provided to you.



Gas Zero: This is the zero calibration function. You may need to zero calibrate from time to time to ensure the unit has a good ZERO baseline. If it is flickering with low numbers when in fresh air, that is a tell-tale sign that a ZERO calibration is required. To begin, keep this unit in fresh air for 10 minutes. Then press **save** to register the Zero reading. You may need to do this from time to time.



Low Alarm: Low Alarm set point. Follow screen instructions. Move cursor and adjust alarm levels. When gas level exceeds this level, it will trigger the alarm.

High Alarm: High Alarm set point. Move cursor and adjust alarm levels. This is the second alarm.

Gas Calib: Enter passcode 1111. This is the span calibration. Enter CAL gas concentration – usually mid point of detection range (5000) or lowest alarm level. Expose to CAL air for 2 minutes using certified gas. Maintain a flow of 0.5L/min when using gas bottles and use the sensor cap provided to deliver the gas to the detector. Make sure to view the YouTube video on this

procedure since it is an advanced task and calibration should be undertaken once per year and not a frequent activity.

Time Set: Allows user to edit the time.

Shutdown: Turn off the unit.

Language: Select English or Chinese.

OPERATIONAL TIPS

Sewer gas leak are usually found in bathrooms, kitchens and drains. Please be patient when testing. Although your nose can smell the sewer gas, the leak detector need more time to pin-point the leak location.

Sewer LEAK Detection: When the analyzer is in the ON state, it is presenting the live, continuously gas sensor concentration readings. The data displayed updates twice per second.

Maximum Concentration: When you have reached the maximum detection limit of the sensor, it will read "**10000".** When this occurs, seek fresh air otherwise the sensor can be damaged and poisoned.

HOW TO OPERATE?

1. Turn On the unit and ensure screen is reading 0 ppm in fresh air.
2. Slowly approach the suspected gas leak area or sewer leak area.
3. Adjust the gooseneck sensor head is directed on the suspected location.
4. Place the sensor head as close to the area of inspection and hold for a few seconds. Move the sensor head across suspected gas lines or area at a speed of about 1 inch per second.
5. Move around connections, piping, and other areas very slowly. Make sure there is no cross wind or ventilation that will dilute any leaks.
6. Depending on the size of the leak, reaction times will vary depending on gas, leak size, ventilation, dilution effects and many others. If a crosswind or draft is present, be slow and more careful.
7. If a reading and/or alarm is triggered take the gas leak seriously. Act responsibly and be safe.
8. Press the POWER button to turn OFF.

CALIBRATION

Your FD-90E-YELLOW comes already calibrated. However, calibration is an important function to be performed to ensure your gas detector operates accurately. We recommend annual calibration to maintain performance specification. If not done annually, performance and accuracy will be degraded, but still functional. Accuracy and calibration drift can happen over time because of chemical degradation of sensors. There are two parts to the calibration, ZERO Calibration and SPAN Calibration.

ZERO CALIBRATION: Ensures a good baseline to ZERO target gas exposure. This ensures the detector reads a true ZERO. For sewer gas leak detectors, this is performed in fresh air, with NO combustible gas present.

1. Power on the analyzer and wait until the countdown. Ensure this procedure occurs in fresh air or outdoor fresh air.
2. Before ZERO calibration, please wait another 5 minutes to ensure the thermal equilibrium of the metal oxide semiconducting sensor.
3. Press the left and right buttons at the same time to go to the main menu.
4. Select the "gas zero" option, then press "save".
5. Done! Then go back to the main menu by selecting "ESC".
6. The main display will now be reading 0 ppm.

SPAN CALIBRATION: Ensures accurate gas concentration reading (i.e. ensure that the display reading in ppm is accurate and true). This is a technical task and required reference gas, calibration gas bottle regulator and tubing. Our YouTube library shows you how to calibrate this unit.

1. Perform this SPAM calibration after a ZERO calibration.
2. Expose the gas analyzer to the methane 5000 ppm calibration reference gas for 2 minutes or until the reading has stabilized. Use a flow rate of 0.5 LPM and the rubber calibration cap as recommended.
3. The digital display ppm numbers will rise.
4. Press the left and right buttons at the same time to go to the main menu.
5. Select "gas calib" from the Menu Screen.
6. Press "edit" then enter passcode: 1111. Then press "sure".
7. Enter the span reference gas value of 5000 ppm and then press "sure".

8. Press the right button to "save" the span calibration.
9. Done! Then go back to the main menu by selecting "back".
10. Remove the calibration cap and close the regulator gas flow.

What is Bump Testing?

Bump testing is a quick procedure to expose the gas detector to a small amount of “blast” target gas to ensure the detector operates and alarms as programmed. The function of this test is to verify detection operation and build user confidence, particularly in hazardous and critical user applications. Recommended to bump test when first purchased and unpacking detector and before use. You can do this by exposing the gas detector to some natural gas, propane gas or butane gas.

BATTERY CHARGING

The FD-90E-YELLOW has a built-in lithium battery and can be charged via USB cable. USB Charger should be rated >1.0A for fast charging. Before charging, TURN OFF the analyzer to avoid any potential damage. Charging takes about 4 hours. When active in charging, an animated battery icon will appear to indicate charging is in progress. When the battery mark on the screen is full and doesn’t charge any more, it means the charging is complete.

WARNING

- **Read, understand, and adhere to all instructions to ensure safe operation - failure to comply may result in serious injury or death from explosive gases.**
- **Always turn on and calibrate the gas detector in areas known to be free of explosive gases - incorrect calibration in contaminated areas may result in false readings.**
- **Do not use in enclosed rooms with known explosive gas mixtures or near moving machinery that could damage the instrument or harm operators.**
- **Explosive gas detectors are not electrically insulated - avoid contact with conductive components and power off the area before measurements.**
- **Do not store the detector with water, solvents, acids, or corrosive substances - avoid extreme temperatures, high humidity, electromagnetic fields, and intense sunlight.**
- **If detecting gas or feeling unwell, immediately evacuate the area and seek fresh air.**
- **Follow instructions carefully as the detector is highly sensitive to ensure accurate readings and personal safety.**
- **Ensure the analyzer is stored in a room temperature environment with moderate humidity, not exceeding 80%RH with no mechanical vibration.**
- **Ensure the environment is not corrosive, no chemical vapors.**

This product is covered by a one-year limited warranty.
This warranty does not cover damage resulting from accident, misuse, disassembly, abuse or lack of reasonable care of the product, or applications not in accordance with the user manual. It does not cover events and conditions outside of our control, such as Acts of God (fire, severe weather etc.). It does not apply to retail stores, service centers or any distributors or agents. We will not recognize any changes to this warranty by third parties. We shall not be liable for any incidental or consequential damages caused by the breach of any express or implied warranty. Except to the extent prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose is limited in duration for 1 year.

THIS PRODUCT CANNOT BE REPAIRED IF THE UNIT IS TAMPERED WITH IT WILL INVALIDATE THE GUARANTEE. IF THE UNIT IS FAULTY PLEASE RETURN IT TO YOUR ORIGINAL SUPPLIER WITH YOUR PROOF OF PURCHASE.

SUPPORT

Forensics Detectors has a dedicated support team. You can email our Chief Engineer directly at drkoz@forensicsdetectors.com or visit our website for further information.

Web: www.forensicsdetectors.com

Email: sarah@forensicsdetectors.com







FORENSICS DETECTORS

Copyright © 2025, FORENSICS LLC, all rights reserved.
FORENSICS, FORENSICS DETECTORS are registered trademarks of FORENSICS LLC. All other trademarks, trade names, service marks and logos referenced herein belong to their respective companies.

APPLICATION INFORMATION & TROUBLESHOOTING

** Sewer Gas Application Notes **

Model: FD-90E Yellow

What is Sewer Gas?

Sewer gas is composed of: **hydrogen sulfide, ammonia, carbon dioxide, and methane**.
It is a natural by-product of human waste and becomes a problem for homeowners when there are leaks, clogged vents, and/or broken pipes. Most term this the rotten egg smell in house, found commonly in older sewer plumbing and building.



What is a Sewer Gas Detector?

A Sewer Gas Detector is a electronic handheld device that has a gooseneck with a sensor. The sensor detectors sewer gas coming from your drain in your shower, bathroom or kitchen. The sensor changes electronic signal and sent to the display showing you the gas concentration level detected. Make sure your gas leak detector is reading in the parts per million concentration scale, abbreviated as ppm. Ensure it is NOT showing %LEL, this is not very sensitive.

Why Does My House Smell Like Sewer?

Sewer gas is produced as a result of household and industrial waste. In includes a mixture of several different gases from the decay of such waste. When you smell sewer gas in your home it means you have a leak, the gases are accumulating to the point where your nose can smell it.

What Causes Sewer Gas In a House?

A typical drain system is meant to vent sewer gas. If there is a blockage in your plumbing system, such as a clogged drain or a blocked vent pipe, sewer gas can build up and seep into your home. This can also happen if your plumbing system is not properly vented, allowing sewer gas to escape into your home instead of being vented outside.It also means you have standing sewage in your drain lines. In other words, the waste water is not draining adequately, which allows for organic decay. The decay produces gas which should vent to via a drain vent pipe, but due to some blockage or bad plumbing, it is redirected to a opening in your home. This could be a intended opening like a drain opening, or a unintended opening such as a toilet wax connection not sealed, or a drain pipe that is not sealed or some drain pipe open pathway. Sewer gas is also known as sewage gas, rotten egg smell gas and sometimes professionals refer to it as biogas.

Can Sewer Gas Cause Health Problems?

Yes.
Sewer gas has the potential to cause both minor and serious health effects, as the Wisconsin Department of Health Services details, including:

- **Hydrogen sulfide poisoning:** This poisoning irritates the eyes and respiratory tract and can cause death at high concentrations.
- **Asphyxiation:** The presence of methane can suffocate and cause death when the methane displaces large quantities of oxygen.
- **Burns:** Flammability of certain gases in sewer gas can cause burns to individuals who encounter these fires.

Will Sewer Gas Explode?

Sewer gas does have the potential for creating both fires and explosions due to the presence of certain flammable and unstable gases in the mixture. Gases of particular concern include hydrogen sulfide and methane.

What is the Rotten Egg Smell (Sulfur Smell) in My House?

If you smell sulfur in your house, there are two possible explanations and causes for the foul odor.
First, it could be a sign of a natural gas leak. This can occur in the case of a substantial natural gas leak. The second explanation for this distinctive odor is that it could be a sign of a sewer gas leak--such gas does contain some toxic gas components including methane and hydrogen sulfide.

What is another name for a Sewer Gas Leak Detector?

Another name used for a sewer gas leak detector includes a sewer gas sensor, sewer gas monitor, sewer gas detection equipment, sewer gas sniffer, sewer odor detector and sewage gas detector.

What Does It Smell Like if You Have a Sewer Gas Leak?

In most cases, a sewer gas leak will have a strong sulfur smell which can often translate into a smell reminiscent of rotten eggs. This is primarily due to the presence of sulfur in sewer gas through the gaseous component, hydrogen sulfide.

Does a Gas Leak Detector Find the Sewer Gas Leak?

The first step to finding the source of the smell of sewer gas in the home is the use of sewer odor detection. This can be

accomplished with a **sewer gas leak detector, or sometimes referred to as simply a gas leak detector.** Other methods include calling in a plumber and he will undertake a smoke test to assess where, exactly, the leak may be in the pipes and also undertake a acoustic leak test.
The cheapest way for a landlord or homeowner to track down a sewer gas leak is to use a Sewer Gas Leak Detector.

Is There a Device to Detect Sewer Gas?

A combustible gas leak detector for sewers is a piece of detecting equipment that can be used in order to monitor the presence of multiple kinds of combustible gases that are commonly found in sewer gas. In most cases, these devices will alert the user to the presence of specific types of gases, such as hydrogen sulfide, but not have a broad "sewer gas" detection as a whole.
Instead, the user must be equipped with knowledge of which gases are commonly found in the mixture of gases included in sewer gas and deduce from the combustible gas leak detector whether or not those gases are individually present in a given area.

How Much Does a Sewer Gas Detector Cost?

A sewer gas detector ranges from $30 to $300. The Forensics Detectors Sewer Gas Leak Detector costs less than $100 and comes in both RED and YELLOW versions.

How Long Does a Sewer Gas Detector Last?

A sewer gas detector lasts for over 5 years.

Does a Carbon Monoxide Detector Detect Sewer Gas?

No, it does not.
Carbon monoxide detectors DO NOT detect sewer gas.
These devices are designed to detect only the presence of carbon monoxide, and thus will not pick up on the other gases that are found in a sewer gas mixture.

Is My Nose More Sensitive Than a Sewer Gas Detector?

Yes. The human nose is more sensitive than a ppm type of gas leak detector.
Your nose can detect down to 0.001ppm. A detect that costs about $100 bucks detects down to about 1ppm.
The problem however is that the nose changes sensitivity once it smells a rancid smell such as sewer gas in the home. A process called olfactory fatigue reduces its sensitivity, and as such, is not a reliable objective detector.
So in other words, a sewer gas detector is more effective than the human nose for identifying a sewer leak and a much more objective instrument. But, the initial nose sensitivity is much more sensitive than any gas leak detector on the market.

My Sewer Gas Detector Does not Detect Anything. Whats going on?

To accumulate and detect high levels of sewer gas, a sewer system relies on two key factors.
Firstly, the sewer system must contain stagnant sewage and organic matter, creating the ideal conditions for bacteria and enzymes to work their decomposition magic. Through this process, gases like methane, ammonia, and hydrogen sulfide are produced.

Secondly, the sewer system requires poor ventilation. Insufficient airflow allows these "sewer gases" to build up to measurable levels in parts per million (ppm).
However, some customers may claim that they can smell the gases even when the sewer gas detector registers nothing. In most cases, when there is proper venting, airflow, and access to the outdoors, these gases become diluted, and the typical sewer odor becomes less noticeable. It's important to note that the human nose is incredibly sensitive and can detect gases in parts per billion (ppb), whereas most human-made leak detectors are only designed to detect gases in parts per million (ppm). Thus, the human nose remains a superior detection system for such odors.

What Gases Does a Gas Leak Detector Recognize?

Gas leak detectors can recognize a variety of gases, especially if they are used in the broad sense. Combustible gas detectors can recognize combustible gases, as their name suggests. The Forensics Detectors Gas Leak Detector is intended for combustible gases and, as such, can detect combustible gases including the following:

- Acetone
- Acetylene
- Alcohol
- Ammonia
- Benzene
- Butane
- Ethanol
- Ethylene
- Oxide
- Gasoline
- Methane
- Hydrogen
- Hydrogen Sulfide
- And more

Many gas detectors that are marketed as combustible gas detectors are be able to detect the same gases - combustibles.

Are Sewer Gases Release from Drains?

It depends on your drain configuration.
Sometimes due to sitting sewer water and lack of drain ventilation, sewer gases can accumulate and be release from certain drain openings. In most cases however, if there is venting, airflow, and open access to the outdoor environment, the gases are diluted and the typical sewer smell is not present.

Does Lowes Sell a Sewer Gas Detector?

Yes, Lowe's sells gas leak detection solution and a digital multimeter with the capabilities to detect a number of combustible gases that are found in sewer gas.

Does Home Depot Sell a Sewer Gas Detector?

Yes, Home Depot sells multiple types of combustible gas detectors. Several of these devices have the capability to detect multiple gases found in a sewer gas mixture.

How Do I Get Rid of Sewer Gas Smell in My House?

There are several steps that should be taken to remove sewer gas odor from the home. To start, clean the sink overflow, address the toilet by checking the wax ring and caulking the base, remove bacterial growth from drains, check plumbing systems that are not used frequently, check the garbage disposal, and check for any potential leaks in pipes. The last step on this list may require the assistance of a hired professional if the homeowner is uncomfortable with identifying holes on their own.

What is the Main Cause of Sewer Gas Smell in a Home?

The main causes for sewer gas odor in the home include the following:

- Leaks
- Cracked pipes
- Air vent blockage
- Drain clogs
- Dry plumbing
- Loose toilets
- Standing wast water in drains
- Poor plumbing with P-Traps