

# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™


## INDUSTRIAL SPEC GAS ANALYZER BUILT-IN PUMP

Leak Testing  
Purity Testing  
Point Sampling  
Continuous Sampling

Model: FD-311  
Manual Print Version: 2.0

## USER MANUAL



<b>FORENSICS</b> DETECTORS 	
Checklist	
Serial #	
He (0-100%) sensor	
Ar (0-100%) sensor	
H2 (0-100%) sensor	
Other?	
Telescopic Probe Kit	
1ft Probe	
2" Probe	
Other?	
Analyzer	
Hard Carry Case	
USB Charger	
USB Cable	
QC/CAL Certificate	
User Manual	

# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## GAS SENSOR RANGES DEFAULT ALARM SET POINTS

Target Gas	Range	Resolution	Low Alarm	High Alarm
Helium (He)	0-100%vol	0.1%vol	20%	50%
Argon (Ar)	0-100%vol	0.1%vol	20%	50%
Helium (H2)	0-100%vol	0.1%vol	20%	50%



# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## ANALYZER SPECIFICATIONS

Warranty:	1-year limited warranty
Sensor:	Thermal Conductivity Sensor
Sensor Life:	> 10 years
Error:	$\leq \pm 3\%$ F.S.
Response Time:	$\leq 20$ seconds
Store/Oper. Temp:	0°F - 122°F
Store/Oper. Humidity:	<95%RH
Battery:	DC3.7V Li-Ion battery 2000mAh
Charging Time:	4 hours
Operation Time:	> 6 hours
Dimension/Weight:	9.5 x 2.5 x 1.7 inches, 440grams
Rating:	IP65
Explosion Proof:	Ex ib IIB T3 Gb
Pump Noise:	<70dB
Pump Flow:	0.5 LPM
Inlet Air Barb:	5mm diameter
Display:	High- Resolution Color LCD
Alarms:	LED, Buzzer, and Vibration
Recharge:	USB Charger (5V @ 1A) with USB mini cable

## CARRY CASE DETAILS

Weight:	2lb with analyzer & accessories
Dimension:	11 x 8 x 4 inches

# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## PRODUCT FEATURES

- 32bit microprocessor, color display, and built-in-pump
- Rugged industrial design and build
- ABS and rubber housing, explosion proof
- Rechargeable Lithium-ion battery via easy USB charger
- Professional Hard Case
- Built-in pump and easy barb hose connector

## 1. INTRODUCTION

You have purchased the FD-311 **INDUSTRIAL GAS DETECTOR** by **FORENSICS DETECTORS™**. The detector is factory calibrated, **TURN ON AND GO!** This product is an **INDUSTRIAL** gas analyzer made with a robust ABS design using a high-quality thermal conductivity sensor. This detector is made for industrial use for engineering professionals, technicians, contractors, energy inspectors, researchers, and labs.

## 2. QUICK SETUP

1. Ensure all components are included.
2. Ensure analyzer is fully charged. If not, please charge the battery first.
3. Double check all tubing is well connected and in place. Check all connections.
4. Turn **ON** the detector. After countdown and self-check the pump turns **ON** and **READY** to use when the instantaneous gas concentration is shown.
5. Start measuring. Real-time measurements are shown on the **HOME** screen.
6. Read this manual and familiarize yourself with the operation.
7. Always be safe.
8. Before turning **OFF**, flush/purge the air out the detector by allowing the pump to run for 60 secs to allow fresh air to purge the instrument.
9. Ensure tubing and items are clean before storing as to avoid any contamination, residual odors or toxic gases that may poison the sensor.



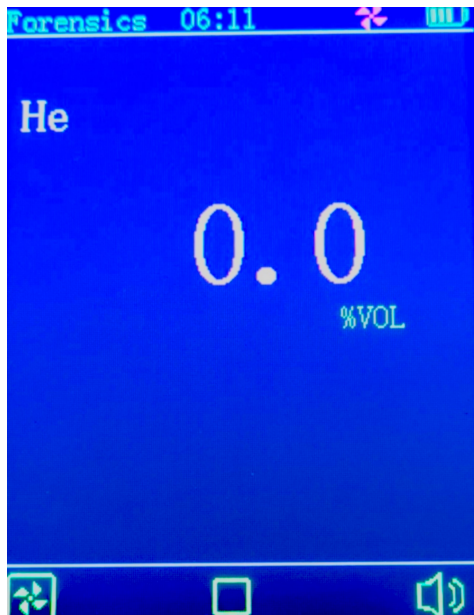
# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## 3. ANALYZER OPERATION

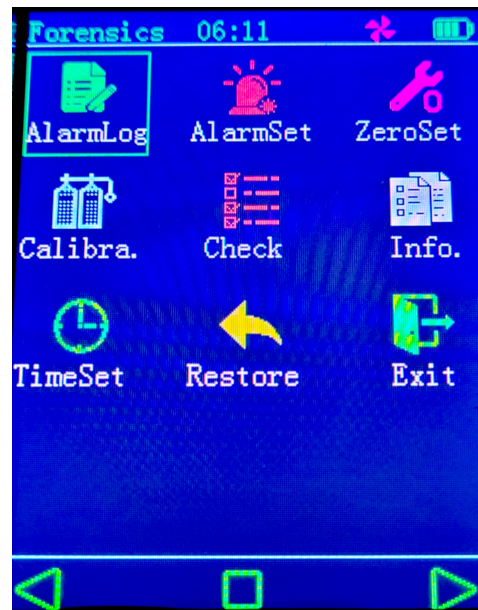
**ON/OFF:** Press MIDDLE button for 3 seconds. After 60 sec countdown gas detection begins, pump is ON and real time detected gas levels is show on the **HOME SCREEN**. The home screen displays Time, Fan Icon, Battery Level Icon, Gas and Gas Concentration. You will hear the pump and you are ready to start taking measurements. To turn OFF, press MIDDLE button for 3 secs. Press the left button to Turn off/on the PUMP. Press the right button to Mute. When in normal operation, the Home Screen will appear like below on the left image.

**MENU:** Press the MIDDLE button. Enter the passcode 1 1 1 1. Use the arrows and middle buttons. Then you will enter the MENU SCREEN. The menu screen is shown below right. Use LEFT and RIGHT buttons to make your selection, press MIDDLE button to select.

### HOME SCREEN



### MENU SCREEN

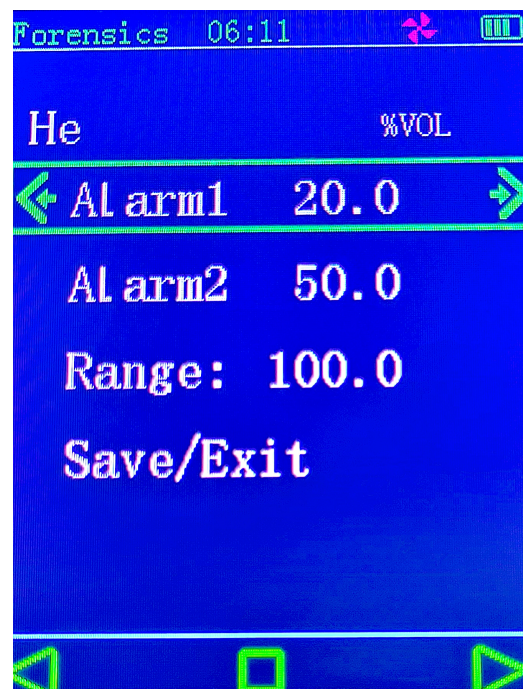


# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## ALARM SETTINGS

**AlarmSet:** Alarms are triggered (LED flashes, Buzzer and Vibration) when alarms points are met/exceeded. To change the alarm set points select AlarmSet in the Main Menu (see prior section). You can change the preset alarm level to your desired level by using the left and right buttons.

## ALARM SET



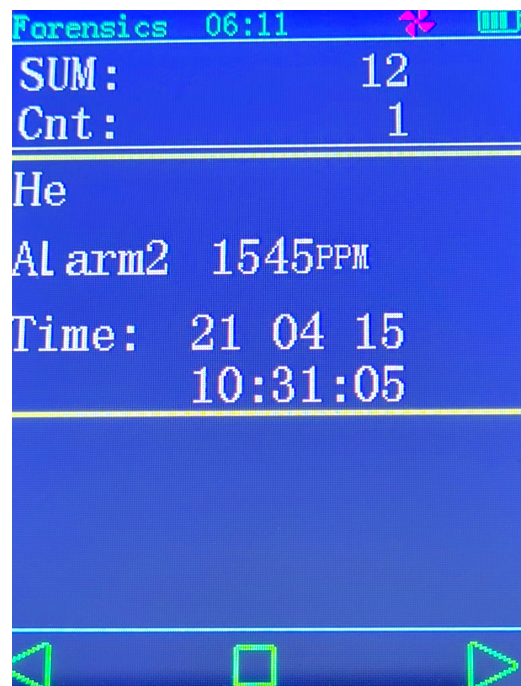
**NOTE:** If ALARM triggers are critical to your application, always check the alarm setting to ensure you are protected and alarm settings are as you anticipate to avoid harmful exposure levels.

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## ALARM LOGGING

**AlarmLog:** When alarms are triggered they are automatically recorded with a date and time stamp along with the [min or max] alarm data point. This is useful for safety personnel to keep track of exposures for record keeping and exposure analysis purposes.

## ALARM RECORD LIST (Example)



The screenshot shows a handheld device screen with a blue background and white text. At the top, it displays 'Forensics 06:11' and a battery icon. Below this, it shows 'SUM: 12' and 'Cnt: 1'. A horizontal line separates this from the next section, which displays 'He', 'Alarm2 1545PPM', and 'Time: 21 04 15 10:31:05'. At the bottom, there are three navigation icons: a left arrow, a square, and a right arrow.

Gas	Alarm	Value	Time
He	Alarm2	1545PPM	21 04 15 10:31:05

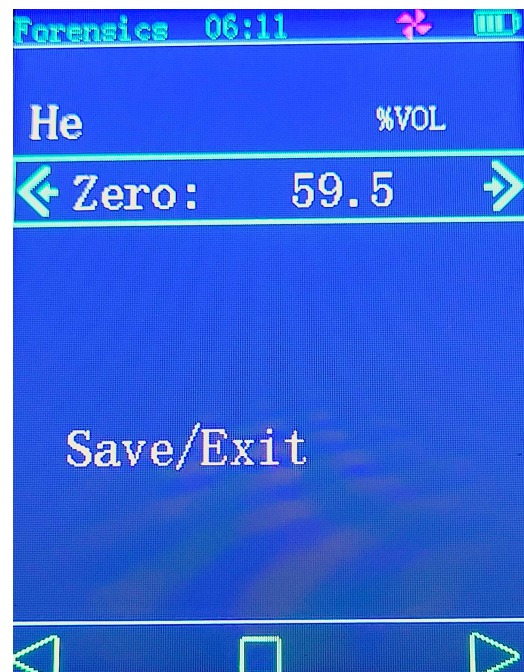
# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## ZERO CALIBRATION

**ZeroSet:** ZeroSet should not be used very often - only if for some reason the baseline zero value of the sensor value is flickering or drifting and does not maintain a zero value.

Select ZeroSet from the Main Menu Screen. Expose to ZERO air for 1 min. Use fresh air. Maintain a flow of > 0.5L/min to deliver the gas to the detector (i.e. via the inlet). Use a T-piece. Excess gas should exit from the free parth (see our YouTube video on calibration for Model FD-311). Then press SAVE button to confirm the zero value. The value next to the zero value should be ignored (it is an internal technical value). Then press Save - when complete, a blue floppy disk icon will appear.

## Gas Zero



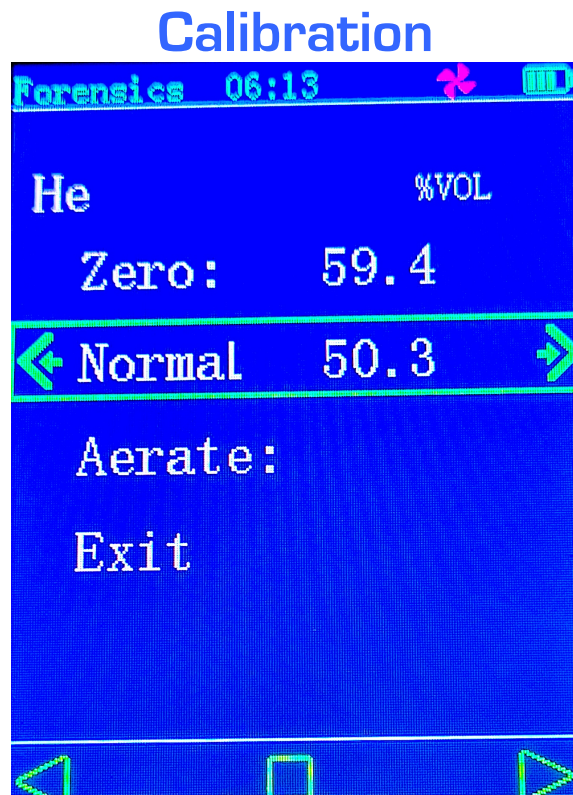


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## SPAN CALIBRATION (see our [YouTube Channel](#) for Calibration tutorial)

**Calibra.:** Span calibration is undertaken to ensure accurate gas concentration reading (i.e. ensure that the display reading is accurate and true). We recommend calibration to be undertaken every 6 months. For analytical and highly specific applications, calibration can be undertaken more often to ensure the highest accuracy. If left beyond 6 months, the accuracy of the analyzer will be compromised.

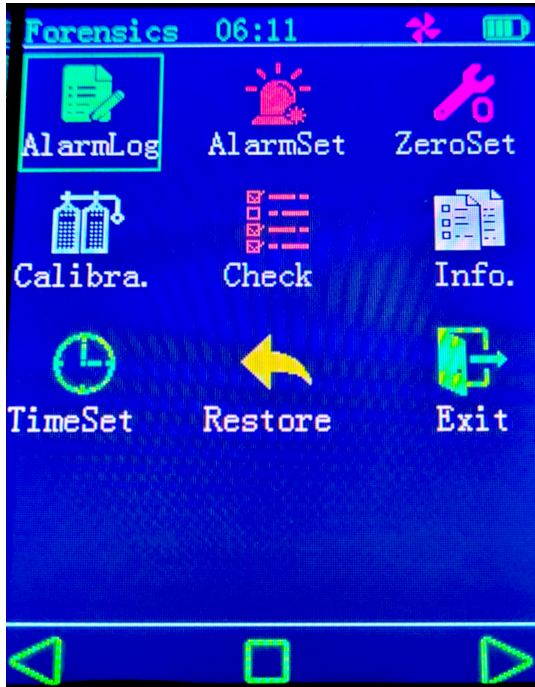
To undertake span calibration from the MENU SCREEN select Calibra. Expose the analyzer to the calibration gas for 1 min. When using calibration gas bottles, maintain a flow of at least 0.5L/min. Edit the gas concentration using left and right buttons so the detector knows the concentration of the calibration gas. After exposure, press EXIT. When complete, a blue floppy disk icon will be displayed.





# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## MENU SCREEN



**Check:** Performs a self-check of the analyzer.

**Info:** Provides the software version information.

**TimeSet:** Allows to set the date and time.

**Restore:** Restores to factory default setting. Email Forensics Detectors to obtain this password.

**Exit:** Switches back to the main screen.

# INDUSTRIAL GAS ANALYZER FD-311

## FORENSICS DETECTORS™

### 4. BATTERY CHARGING

The ANALYZER has a built-in lithium battery and can be charged via mini-USB port. USB Charger must be rated >1.0A for fast charging. Before charging, TURN OFF the analyzer to avoid any potential damage. Charging takes about 4 hours. Do not charge the device in a combustible area. The analyzer has the battery level icon to provide you with an indication of how much battery is left.

### 5. OPERATIONAL TIPS

- ✓ Before turning the detector off don't forget to flush/purge out the detector by allowing the pump to run for 60 secs to allow clean air to purge.
- ✓ Ensure tubing and items are clean before storing as to avoid any contamination, residual odors or toxic gases that may poison the sensor.
- ✓ Ensure periodic calibration every 6 months so that the performance of the detector remains within specification. If the calibration period is >6 months, the detector still operates but accuracy will be compromised.

### **\*\* WARNING \*\***

- KEEP DETECTOR **AWAY** FROM ELECTROMAGNETIC & MAGNETIC INTERFERENCES (i.e. PHONES & MAGNETS)
- STORE DETECTOR **WITHIN SPECIFICATIONS**
- IF UNWELL, SEEK CLEAN AIR & MEDICAL ATTENTION.
- **FOLLOW INSTRUCTIONS AS THE DETECTOR IS VERY SENSITIVE**
- **TO ENSURE ACCURACY, CALIBRATE DEVICE AT LEAST EVERY 6 MONTHS**
- THE DETECTOR IS NOT RECOMMENDED FOR USE IN FLUE GAS AS THE UNIT DOES NOT HAVE A WATER TRAP NOR A NOX FILTER and PROBE WILL NOT WITHSTAND TYPICAL FLUE GAS TEMPERATURES.
- CHECK AND SET ALARM LEVELS APPROPRIATELY TO AVOID HARMFUL EXPOSURE - CONSULT WITH YOUR SAFETY OFFICER OR WITH STATE/FEDERAL AGENCIES.

# INDUSTRIAL GAS ANALYZER FD-311 FORENSICS DETECTORS™

## WARRANTY DISCLAIMERS

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.**

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