INDUSTRIAL FIXED GAS DETECTOR

Model: FD-60

Manual Print Version: 6.0

USER MANUAL

FORENSICS DETECTORS

Serial #:

Gas Sensor	
Remote Control	
Hex Tool	
24V Wall Adapter	
Gas Detector	
Power Cable	
LED/Buzzer Fixture	
Calibration Cap	
QC/CAL Certificate	
User Manual	
Other?	

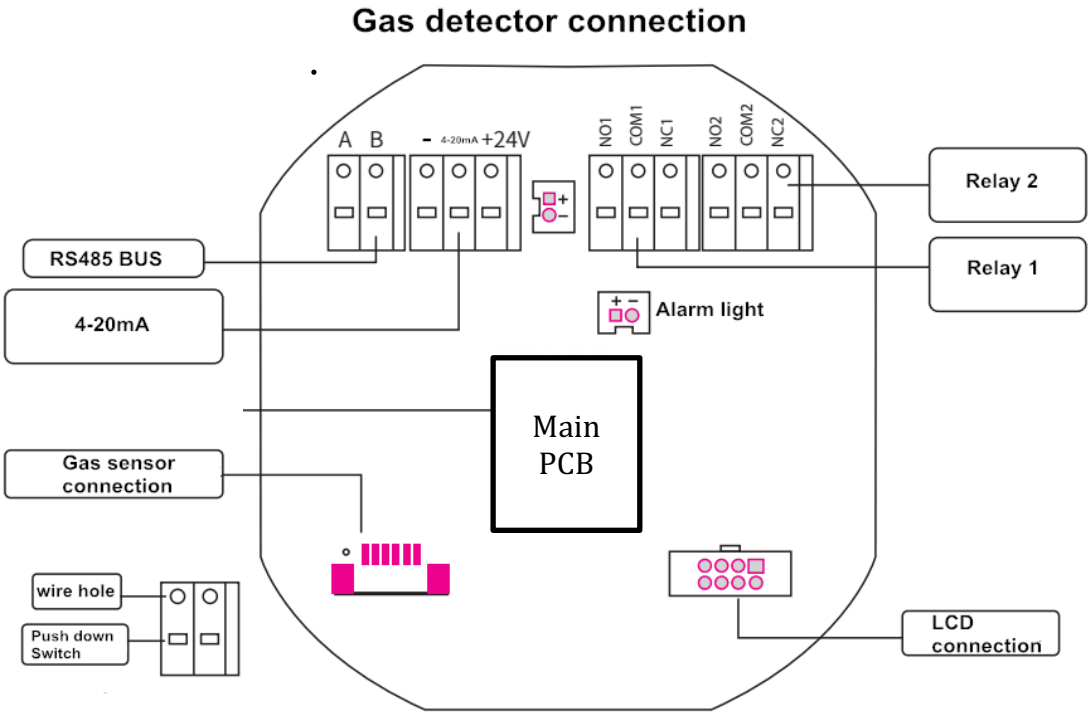
1. INTRODUCTION

The **FORENSICS DETECTORS FD-60 FIXED GAS DETECTOR** is the most advanced wall mount fixed gas detector available and adopts an advanced electrochemical gas sensor which can detect the gas concentration in the air to a digital readout signal output. The detector can be used to detect gas in various industrial environments such factory, refinery, chemical plant, process rooms, exhaust prone facilities, toxic gas exhaust and rooms, boiler rooms, painting plants/rooms and other places where toxic gas exists. Please note, these types of detectors are referred to as "fixed gas", since they are fixed at one location when mounted.

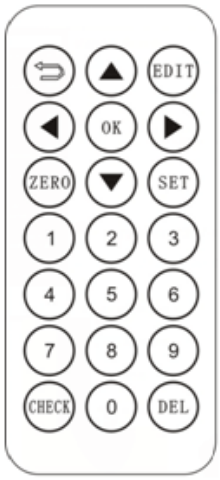
FEATURES

- **INDUSTRIAL:** Heavy duty fixed gas detector. Comes FACTORY CALIBRATED. Mount and Operate.
- **USE:** Remote Control up to 8 meters, Analog Output (4-20mA), 2 x relay alarm triggered switch (1kW) to control fans, pumps, electrical items, garage doors or additional alarms.
- **FEATURES:** Large LED alarm and buzzer. Adjustable audio, visual. Alarm digital time stamp. Remote Control.
- **ROBUST:** Explosion, dust, water, and flame resistant. Explosion proof grade: Exd IIC T6 Gb with IP65 housing protection.
- **SAFE:** With over-voltage protection, lightning protection, short circuit protection, reverse connection protection, anti-static dry disturbance, anti-magnetic field interference.
- **SMART:** Two-point calibration to ensure the accuracy and linearity of the monitor;
- **REMOTE:** Can be operated with infrared remote control, no need to open the wall fixture.
- **TRUST:** ** 1-year limited warranty ** Arrives with calibration and QA certificate ** 100% product test and verification in the USA ** 100% quality guaranteed **

PCB Connections



Remote Control



	Return
	Direction key
EDIT	Edit
OK	Confirm
ZERO	Zero calibration
SET	Set
CHECK	Calibration
DEL	Delete
0	Number

2. DETECTOR SPECIFICATIONS

Target gas	AS PURCHASED – See Next Table
Range	AS PURCHASED – See Next Table
Sampling method	Natural diffusion
Alarm point	AS PURCHASED – See Next Table
Detection Error	≤±5% F.S.
Zero Shift	≤ ±1% (F.S./year)
Alarm Type	Audible buzzer alarm; Visual LED light alarm; Relay x 2
Warm-up time	60 seconds
Response time	AS PURCHASED – See Next Table
Protection level	IP65
Explosion-proof grade	Ex d IIC T6 GB
Sensor type	electrochemical sensor or pellistor sensor (EX only)
Sensor life	2 to 3 years for Electrochemical & Catalytic >5 years for CO2 NDIR
Power supply	DC 24V±15%
Working condition	Temperature: 0-122F Humidity: ≤95% RH with no condensation.
Storage condition	Temperature: 0-122F Humidity: ≤85% RH
Connection	G1 / 2 male proof hose pipe thread size - Thread size M20x1.5mm. Sensor housing cap M37 x 1.5.
Electrical Output	2 x relay contact output, max power 1kW
Communication	4-20mA (only) and RS485 (see YouTube video)
Weight	Approx. 3 pounds.
Dimension	200×180×90mm
Warranty	1-year limited warranty
Key Recommendations	**Normal Indoor Environment:** • Monthly Bump Testing • Every 6-12month Calibration **Harsh Environments:** • Weekly Bump Testing • Monthly Calibration We recommend purchasing the necessary gas bottle to undertake bump testing and calibration. Recommended gas bottles are on our FORENSICS DETECTORS website or email us for a list to be sent to you.

3. GAS SPECIFIC SPECIFICATIONS

GAS SENSOR RANGES, RESOLUTION & DEFAULT ALARM SET POINTS

(check which sensor(s) your Monitor is equipped with by checking the serial label)

Gas	Range	Detection Accuracy	90% Response Time	Minimum Readout	Alarm Set Point Low/High
O2	0-30%vol	±5%(F.S)	≤15s	0.10%	19.5%/23.0%
EX	0-100%LEL	±5%(F.S)	≤5s	1%LEL	25.0%/50.0%LEL
CO	0-1000ppm	±5%(F.S)	≤25s	1ppm	50ppm/100ppm
CO2	0-5000ppm	±5%(F.S)	≤25s	1ppm	1000ppm/2000ppm
H2S	0-100ppm	±5%(F.S)	≤30s	1ppm	10ppm/20ppm
CL2	0-20ppm	±5%(F.S)	≤30s	0.1ppm	1ppm/10ppm
NH3	0-100ppm	±5%(F.S)	≤50s	1ppm	25ppm/50ppm
H2	0-1000ppm	±5%(F.S)	≤60s	1ppm	50ppm/10ppm
CH4	0-100%LEL	±5%(F.S)	≤5s	1%LEL	25.0%/50.0%LEL
VOC	0-100ppm	±5%(F.S)	≤60s	1ppm	20ppm/50ppm
O3	0-20ppm	±5%(F.S)	≤60s	0.1ppm	5ppm/10ppm
O3 (low)	0-5ppm	±5%(F.S)	≤60s	0.01ppm	1ppm/3ppm

4. OPERATION

SETUP: **Unbox detector. Identify your power source. The detector comes with a power supply that connects to the power cord. To set up the detector remove the 5 hex screws with the hex driver provided. Ensure (1) the power cable is secured on the PCB (2) connect the LED/BUZZER fixture (3) sensor assembly is secure. Please note, for flexibility the power cable and alarm LED/BUZZER fixture can be swapped on either side to accommodate installation and aesthetics.**

4.1 Turn ON/ OFF

Connect 24V power to the detector. The detector enters a 60-second countdown. Once complete, it then enters into normal detection mode. Once first ON, allow 30 minutes for the gas detector to stabilize then the data displayed in the main display is the gas concentration value of instantaneous detection. The detector has been FACTORY calibrated. Hence, it is NOT necessary to perform any CALIBRATION, however do ensure ALARMS are set to the users satisfaction and local exposure limit requirements (as necessary per your safety officer advice or consult with local, state or federal authorities). The detector can be turned off by directly disconnecting the power supply. We recommend BUMP testing to confirm operation of alarms.

4.2 Menu Item Operation Description

The detector should be operated and controlled via the remote control. Otherwise, one can use the detector button control on the main panel, but will need to remove the cover. To do so, with the hex screwdriver delivered, unscrew 5 screws to open the metal cover and display 4 buttons: return, up, down, and OK. Three operation interfaces:

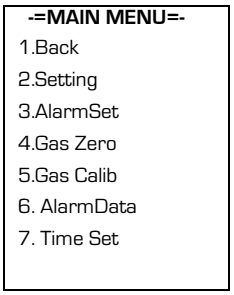
1. Detection interface
2. Function menu
3. Parameter setting interface.

	Detection interface	**Main menu**	**Parameter setting interface**
RETURN	View STEL、TWA data analysis	Return detection interface	Return to last menu
UP		Move up	Move up/plus
DOWN		Move down	Move down/ minus
OK	Enter main menu	Enter Submenu	Ok/select/save

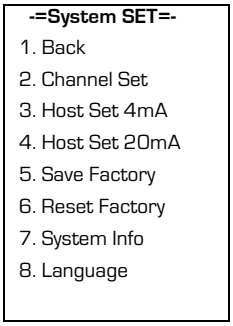
5. MENU DESCRIPTIONS

5.1 MAIN MENU

Press OK on the remote control to enter the MAIN MENU. Use up and down arrows on the remote control to scroll through the menu. Press OK to select.



5.2. "SETTING" Menu



1. Back:	Takes you back to the MAIN MENU
2. Channel Set:	Used to setup MODBUS (see YouTube Video)
3. Host Set 4mA:	Manufacturer only access.
4. Host Set 20mA:	Manufacturer only access.
5. Save Factory:	Manufacturer only access.
6. Reset Factory:	Manufacturer only access.
7. System Info:	Summarized alarms and Software Version.
8. Language:	English or Chinese

5.3. "ALARM SET" Menu

Users can use this option to set the warning value and alarm mode. The detector is equipped with two alarm point settings. The alarm modes are LOW alarm and HIGH alarm values. The corresponding two sets of relays are triggered/switched. The instrument is in a LOW alarm state when the detected concentration is higher than the set LOW detected concentration value. The instrument is in a HIGH alarm state when the detected concentration is higher than the set concentration value. Before leaving the factory, the alarm value has been set. Please check the default settings to ensure they meet your local or preferred exposure alarm levels.

- The LOW alarm corresponds to the first set of relay output (COM1 NO1, NC1) on the detector main board.
- The HIGH alarm, the second set of relay output (COM2, NO2, NC2) corresponds to the detector main board.
- The Relay (30VDC 2A/220VAC 2A) COM and NO are normally open, COM and NC are normally closed.

5.4. Gas Zero

Sometimes the gas sensor drifts due to electronics and sensor degradation. Sometimes, the sensor does not return to its ZERO baseline. Also sometimes, the sensor is exposed to HIGH concentrations of toxic gas and the sensor may be permanently "poisoned". Please ensure fresh air is exposed to the sensor for at least 30 minutes, before making this determination. If the zero drift of the sensor is unacceptable, the user can perform a ZERO calibration operation. Pass pure nitrogen or clean air for at least 2 minutes through the sensor. Click on the "3. Gas Zero" menu. Enter into the menu items by selecting your gas then press SAVE after exposure to fresh air or pure nitrogen and a stable reading has been achieved. Please note, if you have a OXYGEN or CARBON DIOXIDE sensor, you will need to use Pure Nitrogen to achieve a ZERO Calibration. Other toxic gases will suffice by exposing the detector to fresh air.

5.5. Gas Calib / Span Calibration

Only perform calibration is you are an experience technician. Otherwise please contact the manufacturer for instructions. We have special calibration cap fittings to undertake precise calibration with (in/out) tube ports.

5.6. AlarmData

The detector can save 1000 alarm records. The interface can view the maximum alarm concentration in the environment recorded in the "detection interface", as well as the time point and alarm state of the highest concentration.

5.7. Time Set

The detector has a back-up battery, edit precise time to save. The detector will remain in accurate operation after the power is turned off.

6. INSTALLATION GUIDE

6.1 Installation Location Considerations

Installing this industrial gas detector will depend on the application. For isolated rooms, ensure the detector is located at head level to allow for visual inspection of the display screen. Locate away from ducts and vents, air turbulence (i.e. doors that may dilute air quality in the room) and in a location that represents the "general" target area air quality. Some gas (depending if they are light of heavy) may be best mounted very high on the ceiling or low closer to the ground. Email us for a recommendation. For example, for H2, since it is a light gas, it is recommended to be installed high close to the indoor ceiling. For heavy gases such as CO2 and Ozone, it is recommended to be installed low to the ground.

- Do not install in areas where the temperature is close to detector extreme specifications. For example, very cold or very hot environment 0-122F.
- Do not install within 5 ft. of heating or cooking appliances.
- Do not install near vents, flues, chimneys or air ventilation openings.
- Do not install near ceiling fans, doors, windows or areas directly exposed to the weather so external air, water or rain reaches the detector.
- Do not install on a switched or dimmer-controlled outlet.
- Do not obstruct the vents located on the alarm and sensor housing. Do not place the alarm where drapes, furniture or other objects block the flow of air to the vents or limit the visual and audible alarms.

6.2 Detector Installation

The detector is designed to be wall mounted. Depending on local code, conduit for power wires / RELAY lines may be required, so please ensure a qualified electrical technician undertakes the installation. Most installation are custom installations, hence please install detectors using qualified technical personnel.

* * WARNING * *

- KEEP DETECTOR **AWAY** FROM SWITCHING ELECTROMAGNETC & MAGNETIC INTERFERENCES
- STORE DETECTOR **WITHIN SPECIFICATIONS**
- IF UNWELL, SEEK CLEAN AIR & MEDICAL HELP
- **ENSURE QUALIFIED PERSONNEL INSTALLS THE UNIT**
- **KEEP AWAY** FROM DUST & PARTICULATE AND NEVER EXPOSE TO EXHAUST GAS or CONCENTRATED VAPORS, HARSH CHEMICALS OR EXTREMELY HIGH CONCENTRATION LEVELS AS IT MAY POISON THE SENSOR (SEE APPENDIX FOR RANGES)
- **FOLLOW INSTRUCTIONS AS THE DETECTOR IS VERY SENSITIVE**
- Don't open the cover when the power is on.

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.

Product Designed in California, USA,
Product Tested, QA/QC in California, USA,
Product Made in China

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