

FD-600 CO₂ Gas Analyzer

Purpose This procedure provides instructions for the operation of Forensics Detectors FD-600 CO₂ Gas Analyzer.

Principal and Clinical Significance The Forensics Detectors FD-600 is an industrial gas analyzer to measure the CO₂ percentage in CO₂ incubators. The detector uses a high-quality electrochemical sensor that has a range of 0-100% CO₂ with a resolution of 0.01%. The detector has a built-in pump, hose connector, rechargeable lithium-ion battery via USB charger, and aluminum storage case.

Policy Statements This procedure applies to Microbiologists who perform culture set-up and plate reading.

Materials	Equipment
	<ul style="list-style-type: none">• FD-600 Gas Analyzer serial #250563015 BioMed # 043336• USB charger• Hose• Storage case

Frequency

- CO₂ levels in each CO₂ incubator are monitored with the FD-600 analyzer at weekly intervals.

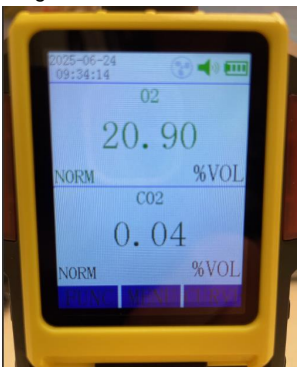
Special Safety Precautions Microbiologists are subject to occupational risks associated with specimen handling. Refer to the safety policies located in the safety section of the *Microbiology Procedure Manual*.

- [Biohazard Containment](#)
- [Biohazardous Spills](#)
- [Safety in the Microbiology Laboratory](#)

Procedure

1. Obtain FD-600 Gas Analyzer and hose from storage case.
2. Press the middle button for 3 seconds to turn on.
3. After a 60 second countdown, gas detection begins, the pump is on and real time detected gas levels are shown on the home detection screen.

Image 1 60 second countdown to prepare Image 2 Home Detection Screen showing Co₂ %



4. Attach thin end of the hose to the hose connector on the analyzer.
5. Attach thick end of the hose connector to incubator hose port.
6. Take CO₂ reading after the number has stabilized and document on the Microbiology Temperature and Maintenance chart.
7. Disconnect the hose from the incubator and move to the next incubator.

8. When all incubators are analyzed, flush/purge the air out of the detector by allowing the pump to run for 60 seconds to allow fresh air to purge the instrument. The CO₂ reading should be near 0.00 when flushed.
9. To turn off/Shutdown, press the middle button for 3 seconds.
10. Document readings weekly on Microbiology Temperature and Maintenance chart.
11. Acceptable reading is 4-10%. If out of range:
 1. Repeat the procedure after the incubator is closed for 30 minutes.
 2. Verify that the incubator's water level is acceptable.
 3. If unable to resolve, notify Microbiology Technical Specialist and BioMed by submitting a Soleran request.
12. Check battery level before storing. It is in the upper right corner of Home Detection Screen. Charge if needed.
13. Remove tubing and place instrument and tubing in case for storage.

Home and Options Screen Menu

1. The Home screen will display the gas reading.
 - In normal ambient fresh air, the CO₂ should read approximately zero and the O₂ is normally 20.9%. We are not monitoring the O₂.
 - Function Set Screen, Menu Screen and Curve Plot Screen buttons are on the bottom of the Home Screen.

Image 3 Home Detection Screen



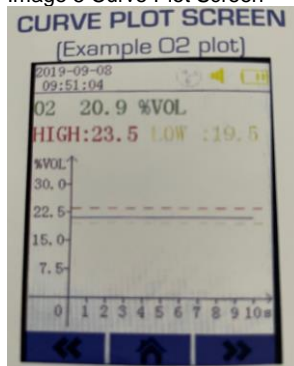
- **Function Set Screen - FUNC** button allows you to control the Pump ON/OFF and MUTE ON/OFF. Use the left and right buttons to select and toggle. Press the middle button to go back to the Home screen.
 - Turn the PUMP OFF to preserve battery life when appropriate. Can be used in between readings if desired.
 - When the pump is under load, the pump icon will turn red and a few beeps will be heard.

Image 4 Function Set Screen



- **Curve Plot Screen - CURVE** button allows you to see the concentration of the sensor data being plotted in real time over 10 seconds. Press the middle button to go back to the Home screen.
 - The dashed line is at the alarm levels that are set by the user.
 - To toggle to another gas plot, press the right or left button to find the desired gas plot.

Image 5 Curve Plot Screen



2. **Menu Screen** - Press the Menu button (middle of bottom row, dark blue button) to enter the Menu screen. Use left and right buttons to make a selection. Press the middle button to select. Most of these options are not needed for routine use. Please discuss any Menu or Setting changes with the Microbiology Technical Specialist.

Image 6 Main Menu



- Shutdown: can be used to shut down the device
- Setting:
 - ChannelSet: Summarizes the sensor channel information for each sensor. Can be used to change the displayed concentration unit of measure.
 - AirPump: This is a load calibration value. If a value is >70, the pump is under load and will beep to let the user know too much load is being experienced by the pump. Check for blockage or kinks in the tubing.
 - ClearRec: Password 1111 then enter. This option allows the user to clear the alarm records in the memory of the device.
 - Language: Language options
 - Backlight: Select the time for the screen to remain on or Auto OFF delay.
 - SystemInf: Summaries alarm point and maximum detection limits.
- Alarm Set: Used to change the alarm set points. Select the gas and EDIT to change the alarm set points.

- Alarms are triggered when the alarm points are met/exceeded and are displayed on the Home detections screen. Green is within set points, yellow is low alarm and red if high alarm.
- Record: When alarms are triggered, they are automatically recorded with the date and time.
- GasZero: should not be used 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 gas to zero, expose to fresh air for 1 minute, then press SAVE.
- GasCheck: used to calibrate the device. Calibration will be done by an outside vendor, contracted by the BioMed department.
- Set Time: Select EDIT to adjust the date and time

Maintenance

1. Annual calibration is managed by the BioMed department.
2. The analyzer has a built-in lithium-ion battery that is charged via micro-USB port.
 - Turn off the analyzer before charging.
 - Charging takes about 4 hours.
 - LOW BATTERY will display on the screen along with 2 beeps/minute.

Method Performance Specifications

1. When the instrument is ON, after the display has switched OFF, the LED will flash every 20 seconds to reassure the user that the detector is still on and operating.
2. Before turning off the detector, flush/purge the detector by allowing the pump to run for 60 seconds to allow clean air to purge.
3. The sensor has a rated life of 2-3 years.
4. Keep detector away from electromagnetic and magnetic interferences (phones and magnets)
5. Store detector in storage case.
6. For customer support: www.forensicsdetectors.com or email sarah@forensicsdetectors.com

References

Forensics Detectors FD-600 Gas Analyzers User Manual. Forensics LLC 2025.
www.forensicsdetectors.com

Training Plan/ Competency Assessment

Training Plan	Initial Competency Assessment
<ol style="list-style-type: none"> 1. Employee must read the procedure. 2. Employee will observe trainer performing the procedure. 3. Employee will demonstrate the ability to perform procedure, record results and document corrective action after instruction by the trainer. 	<ol style="list-style-type: none"> 1. Direct observation.

Historical Record

Version	Written/Revised by:	Effective Date:	Summary of Revisions
1	Susan DeMeyere	8/4/2025	Initial Version