

THE EASY WAY TO MONITOR SURFACE EMISSIONS

SEM5000

PORTABLE METHANE DETECTOR



Frequently Asked Questions

Does the SEM5000 read multiple gases?

No, the SEM5000 is specific to methane. That means that there is no potential for false readings due to cross-gassing.

What technology is used in the SEM5000?

The SEM5000 employs tunable diode laser absorption spectroscopy, which is basically laser technology with an applied electronic signal. The combined signal is tuned to the specific spectrum of absorption for methane and amplified for greater sensitivity.

What is the measurement range for the SEM5000?

The SEM5000 provides a wide range of measurement. We measure from 0.5ppm to 100% of volume, (or 1,000,000ppm). The readout of the SEM5000 will switch automatically from parts per million to percentage of volume above 10,000ppm. This switch is immediate. Some other technologies require a delay of several seconds to make this switch.



We need response times of less than 6 seconds for our SEM device. How fast is the SEM5000?

It's fast! The response time for the SEM5000 is approximately 1.5 seconds from sample introduction into the instrument to final reading. The telescoping probe handle and tubing add an additional 1.5 seconds to the response time. So, the total response time is approximately 3 seconds.

How are my scans tracked and recorded?

The SEM5000 features integral GPS.

How accurate is the GPS?

The GPS technology for the SEM5000 has an accuracy range of 2 to 3 meters.

Do I need an Archer or some other type of handheld device to use GPS?

No. GPS and Bluetooth are both integral to the SEM5000 instrument. That means that you do not need any additional equipment, (such as an Archer or similar device), to complete your work.

How are the GPS coordinates displayed on the report?

GPS coordinates are displayed on the report in degrees and decimals of degrees. The decimals of degrees are carried out to 13 decimal points.

How does the SEM5000 communicate with my PC or laptop?

The SEM5000 is equipped with Bluetooth technology. It can also be connected via wire lead.

Could other Bluetooth enabled devices in the area affect the SEM5000?

No. All Bluetooth protocol requires pairing between devices. So, other devices in the area will have no effect. This is the same reason that a passenger's cell phone has no effect on the driver's connection to the car radio.

Does the SEM5000 meet EPA requirements?

Yes. The SEM5000 was designed to meet all of the requirements for EPA Method 21.

Is the SEM5000 intrinsically safe?

Yes. The SEM5000 is ATEX certified for Zone 1.

How heavy is it?

The SEM5000 weighs approximately 3.5 pounds. That's about 9 pounds less than the average FID. You'll really notice the difference after spending the whole day walking your scan path!

Is it difficult or complicated to use?

Absolutely not! It was important to us that the SEM5000 be easy to use. The single selector dial and auto-save feature makes using the instrument a breeze. Once you completed your field calibration, just turn on the SEM5000 pump and start walking. It's that easy!

What is the Auto-Save feature?

Auto-Save means that when the pump is running, the SEM5000 is automatically taking a reading every second. You also have the ability to customize the Auto-Save option and choose 1 second to 10 second intervals. The Auto-Save feature allows you to simply walk your scan path without having to worry about manually saving a reading at specific intervals.

A reading every second seems like a lot of information. Do I have to download all of it?

Yes, all of the readings will download. One of the advantages of our SEMsoft software is that it allows you to customize your view of the information. So, if you only want to see readings with concentrations above 200ppm, you can set the report up to show that. Another advantage of Auto-Save and SEMsoft is that it shows all concentrations recorded during an event. This can alert you to a potential issue before it becomes a problem.

Can I just save manually, instead of using Auto-Save?

Yes, there is an option to disable Auto-Save and save readings manually.

How long does it take to warm up?

The SEM5000 goes from "Off" to Ready to Work in approximately 30 seconds.

Is it difficult to calibrate the unit before each use?

No it isn't. Field calibration or establishing parameters and an exceedance threshold is very easy. Two gases of known standards are used, (CH₄ and Zero air), for field calibration along with your upwind and downwind tests. The calibration process meets the requirements of sections 7.0 and 8.0 of EPA Method 21.

I notice that the SEM5000 has three exceedance level options; 100ppm, 250ppm or 500ppm. When performing field calibration, would I use 500ppm methane calibration gas for all three exceedance levels?

No. You would only use 500ppm calibration gas if you were setting your exceedance threshold at 500ppm. Otherwise, you would use calibration gas with the corresponding parts per million rating. For example, if you wish to set your exceedance threshold at 250ppm, you will need to perform the field calibration with 250ppm calibration gas.

How often should the unit be factory calibrated?

We recommend that you send the SEM5000 back to the factory for calibration/checkup once every two years.



We really like the Fast-N-Easy Calibration/Repair program for the GEM5000 analyzer. Is that program available for the SEM5000?

Yes, the Fast-N-Easy program is applicable to the SEM5000.

Do I need to carry additional gas bottles, (hydrogen), with me?

No. The laser technology used in the SEM5000 provides a highly accurate reading with a rapid response time. It also eliminates the need for hydrogen bottles and pre-scan calibrations. Since there is no flame, there is no potential for flame out to slow you down. The only gas bottles required are methane and zero air for the pre-scan set up, (and you leave those in the truck!).

Does the SEM5000 come with special software?

Our SEMsoft proprietary software package provides multiple, versatile reporting options, customizable concentration indicators and it auto-fills several industry standard SEM reports, (Calibration Procedure and Background Record, Calibration Precision Record and Instrument Response Time Record). Your scan records are exported as .csv files in Excel format. Other reports are provided in pdf format. SEMsoft also gives you the ability to upload your site maps in .shp or .dxf formats.

What happens if I work at more than one landfill in the same day, without downloading data in between?

No problem. All of the SEM5000 readings are based on GPS coordinates. So, once you have established some references in the SEMsoft software, the readings will download as separate locations.

How long does the battery last?

There are two answers to that question. The first is related to the duration of the battery's charge. A fully charged battery will last approximately 10 hours. The second answer is related to the expected lifespan of the battery. The average battery life is 4 years. After that, you should consider replacing the battery.

I have heard that this unit has a "Hot Swap" battery. What does that mean?

You heard correctly. The SEM5000 does feature a "Hot Swap" battery. This means that you charge the battery separately from the instrument and can replace it "on the fly". That translates to more uptime. If you have exhausted the charge on your first battery, (that's about 10 hours of use), and you want to keep working, just remove the battery from the SEM5000, replace it with a fully-charged battery and continue. The SEM5000 will work as long as you do!

Is it difficult to replace the battery?

Not at all. Like everything else with the SEM5000, changing the battery is easy. Since the battery is external, it is easily accessible. It requires the removal of four screws...that's it! Four screws out, Four screws out, fours screws back in and you're ready to go.

Will I lose my scan data when I remove the battery for a “Hot Swap”?

No, you will not lose the data. You must shut the instrument off prior to swapping the battery. When you turn off the SEM5000, it will save all of the data from the scan in progress. If you forget to turn the SEM5000 off before removing the battery or if you work until the battery’s charge is completely depleted, the most that you could lose would be the last eight seconds of scan data. The SEM5000 saves its readings every nine seconds.

How do I know if I have an exceedance? Does the SEM5000 indicate that during the scan or do I have to wait until I download the scan data?

The SEM5000 features an audible alarm if it detects an exceedance. It also features flashing LED lights when the unit alarms. This ensures that you are notified, even in the noisiest conditions. In addition to the alarms on the instrument, the SEMsoft software features color-coded concentration points based on GPS location. Once the data has been downloaded you will have a clear view of what is happening along the scan path.

How much data will it hold?

The memory of the SEM5000 is amazing! The device itself will store up to 480 hours of scan data before it needs to be downloaded. That’s almost three months!

Could I accidentally delete the data, without knowing it?

It would be almost impossible for someone to accidentally delete data. Our “push-scroll-push” method is used to select “Clear Data” from the menu. Once the choice to delete data has been made, the firmware is designed to confirm your desire to delete the data by requiring an additional click. We know how important this data is to you. So, we wanted to be sure that we provided safeguards with regards to deleting it.

How is the SEM5000 protected from water ingress?

The SEM5000 has a hydrophobic water filter at the sample inlet point. The gas sample must pass through this filter. As a safeguard, the SEM5000 will not operate without the filter in place. You also have the option of adding an in-line filter to the sample tubing.

Weather conditions must be reported for SEM events. Does the SEM5000 record weather data?

No, it does not record weather data. However, we have created an online Site Weather Tool that allows you to download accurate weather data for your event. You simply enter the ZIP code of the scan, along with date and time and our Site Weather Tool will report the weather conditions. It accomplishes this by triangulating three underground weather stations based on the ZIP code provided.

Can I view my surface scan in real time on the SEM5000?

Not on the SEM5000 instrument itself. The SEM5000 displays information related to operation mode and sample concentration values. It does not display any sort of map or guide. Maps, scan results and reports are created within the SEMsoft software using the data collected with the SEM5000 instrument.

If you want to view your scan progress in real time, you can do so by loading SEMsoft onto a separate, Windows-based tablet.

In order to support the SEMsoft software, your device must, at a minimum, meet the following specifications:

- Processor: i5
- Disk: 128GB
- Ram: 4GB
- Bluetooth Connection
- USB

SEMsoft is a Windows-based software program. It is recommended that you use a device that supports Microsoft Windows 10 to ensure proper performance.

When deciding on a tablet, it is recommended that you purchase a new device and not a reconditioned unit. Many new tablets contain drivers that are not backwards compatible with previous versions. Those drivers are required for proper operation of the SEMsoft software.

It is recommended that you use a device that is certified by the American National Standards Institute, (ANSI), for use in Class I and II, Division II hazardous locations.

What do I get when I buy the SEM5000?

When you purchase your SEM5000 package, you will receive the following:

- SEM5000 Portable Methane Detector
- SEMsoft Software Package
- Protective Hard Shell Carrying Case
- Soft Carrying Case with Strap
- Telescoping Probe Handle with Windscreen Tip
- Water Filter Kit, (contains 10 Hydrophobic Filters)
- Dust Filter Kit, (contains 25 cellulose dust filters)
- Brass Dust Filter Kit, (Contains 10 sintered dust filters)
- Quick Connect Regulator for Gas Bottles
- Battery Charger
- Spare Battery
- 3mm Allen Wrench (for battery hot swap)