



**INSTRUMENTS**

# **SDM-6000 Docking Station PC Controlled Configuration Operator's Manual**

**Part Number: 71-0386**

**Revision: B**

**Released: 7/7/17**

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## Warranty

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|                            |                 |
|----------------------------|-----------------|
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| Pump diaphragms and valves | Filter elements |
| Fuses                      |                 |

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This warranty covers instruments and parts sold to users only by authorized distributors, dealers, and representatives as appointed by RKI Instruments, Inc.

We do not assume indemnification for any accident or damage caused by the operation of this gas monitor and our warranty is limited to replacement of parts or our complete goods.

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**CAUTION:**    *Read and understand this manual before using the SDM-6000. Also read and understand the GX-6000 Operator's Manual.*

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# Chapter 1: Introduction

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## Overview

This section briefly describes the SDM-6000 Docking Station and the SDM-PC2 Docking Station PC Controller Program. This section also describes the *SDM-6000 Docking Station PC Controlled Configuration Operator's Manual* (this document). Table 1 at the end of this chapter lists the SDM-6000's specifications.

The SDM-6000 Docking Station is an advanced, reliable system that can charge, bump test, calibrate, alarm check, and provide test records for up to 10 GX-6000 portable gas monitors at once. It is designed to save the test records to an SDHC card (standalone functionality) or to be connected directly to a computer (PC controlled functionality). If test records are stored to an SDHC card while operating in the standalone configuration, the PC Controller Program can then be used with a Windows-based personal computer to retrieve test data files from the SDHC card or from the computer's hard drive if the files have been transferred to the hard drive from the SDHC card. If you are using the PC Controller Program while operating in the PC Controlled configuration, you may retrieve instrument data, bump test, calibrate, and alarm check instruments. Instrument information and data for each instrument can be viewed directly using the PC Controller Program and can be printed from the PC Controller Program. For instructions to use the SDM-6000 in the Standalone configuration, see the *SDM-6000 Docking Station Standalone Configuration Operator's Manual*.

The purpose of this manual is to explain how to set up and use the SDM-6000 in PC Controlled configuration. It also explains how to use the SDM-PC2 Docking Station PC Controller Program. You will learn how to:

- install and launch the SDM-PC2 Docking Station PC Controller Program
- setup the SDM-PC2 Docking Station PC Controller Program for use with the SDM-6000
- prepare the SDM-6000 for use
- bump test and calibrate up to 10 GX-6000s using the PC Controlled configuration
- use the SDM-6000 to charge a GX-6000
- view, print, and export calibration, bump test, and alarm check records
- view instrument information and data using the PC Controller Program
- update instrument parameters using the PC Controller Program

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**CAUTION:** *The GX-6000 detects oxygen deficiency and elevated levels of oxygen, combustible gases, carbon monoxide, and hydrogen sulfide, all of which can be dangerous or life threatening. When using the GX-6000, you must follow the instructions and warnings in the GX-6000 Operator's Manual to assure proper and safe operation of the GX-6000 and to minimize the risk of personal injury.*

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**CAUTION:** *The operator of this instrument is advised that if the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.*

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## System Requirements

To use the SDM-PC2 Docking Station PC Controller Software, your personal computer must meet the following requirements:

- **Operating Systems:** Windows<sup>®</sup> 7, Windows<sup>®</sup> 8, Windows<sup>®</sup> 10
- **Processor:** IBM<sup>®</sup> compatible PC running Pentium<sup>®</sup> 2 processor or equivalent minimum
- **Memory:** 32 MB RAM minimum
- **Hard Disk Space:** 32 MB minimum
- **Available USB Port**

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## About this Manual

The *SDM-6000 Docking Station PC Controlled Configuration Operator's Manual* uses the following conventions for notes, cautions, and warnings.

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**NOTE:** Describes additional or critical information.

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**CAUTION:** *Describes potential damage to equipment.*

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**WARNING:** *Describes potential danger that can result in injury or death.*

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## Cautions & Safety Information

- Use only polyurethane sample tubing with the SDM-6000. Consult RKI Instruments, Inc. for other materials.
- Do not subject the SDM-6000 to infrared or intense light. This may cause communication errors.
- Do not expose the SDM-6000 to water.
- Do not subject the SDM-6000 to any hard impact.

## Specifications

**Table 1: SDM-6000 Specifications**

|                                     |  |
|-------------------------------------|--|
| Input Power                         | 24 VDC   |
| Environmental Conditions            | <ul style="list-style-type: none"> <li>• For Indoor Use Only</li> <li>• 0° C to 40° C, below 95% Relative Humidity, Non-Condensing</li> </ul>  |
| Applicable Instrument               | GX-6000  |
| Memory Capacity                     | Dependent on capacity of installed SDHC card, Standalone configuration only  |
| Record Size                         | 1.1 KB (bump test + calibration + alarm check), Standalone configuration only  |
| Maximum Number of Records Saved     | Dependent on capacity of installed SDHC card, Standalone configuration only  |
| Number of Calibration Gas Cylinders | <ul style="list-style-type: none"> <li>• <b>SV-3 not connected:</b> Up to three calibration gas cylinders per bump test or calibration at a time</li> <li>• <b>SV-3 connected:</b> Up to six calibration gas cylinders per bump test or calibration at a time</li> </ul>   |
| Standard Accessories                | <ul style="list-style-type: none"> <li>• Instruction Manual*</li> <li>• SDM-PC2 Docking Station PC Controller Software*</li> <li>• Inlet Air Filter</li> <li>• 10 Foot Long Exhaust Tube</li> <li>• Connection Brackets</li> </ul>   |
| Available Accessories               | <ul style="list-style-type: none"> <li>• AC Adapter</li> <li>• USB Cable, Type A to Type B</li> <li>• Ethernet Cable</li> <li>• SDHC Card and SD to USB Reader</li> <li>• Demand Flow Regulator</li> <li>• 3-Foot Long Calibration Tubing</li> <li>• Calibration Gas Cylinder</li> <li>• SV-3</li> <li>• Printer</li> <li>• Wall Mounting Brackets</li> <li>• CO<sub>2</sub> Scrubber</li> </ul> |

\* Not sent with SDM-6000. Download from [www.rkiinstruments.com/sdm6000](http://www.rkiinstruments.com/sdm6000).

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## How to Build a System

Various accessories are included with the SDM-6000 depending on what SDM-6000 bundle is ordered. See the table below for what's included with each basic bundle. Other bundles are available that include different calibration gas cylinders than the 4-gas mix included in the 81-SDM6000-04. The accessories are described in more detail in "Chapter 2: Description" on page 7.

Every installation needs only 1 each of the starred (\*) items. There are 2 AC adapters listed. If you have a single-station system, you only need the single-station AC adapter (indicated by \*<sup>a</sup>). If you have multi-station system, you only need the multi-station AC adapter (indicated by \*<sup>b</sup>).

For example, if you have 5 separate single-station systems where none of the 5 stations are connected together, each system will need 1 each of the starred items which means you will have a total of 5 each of the starred items. For this system, you would need to order 5 81-SDM6000-01 bundles, 5 81-SDM6000-03 bundles, or 5 81-SDM6000-04 bundles depending on additional accessories desired.

If you have 1 multi-station system with 5 SDM-6000s connected together, you will only need 1 each of the starred items in order to operate all 5 SDM-6000s. For this system, you would need to order 1 81-SDM6000-02 bundle and 4 81-SDM6000 bundles. Any additional accessories would need to be ordered separately.

**Table 2: SDM-6000 Bundle Options**

| Included Items \ Bundle Part Numbers  | 81-SDM6000 | 81-SDM6000-01 | 81-SDM6000-02 | 81-SDM6000-03 | 81-SDM6000-04 |
|---|------------|---------------|---------------|---------------|---------------|
| Docking Station   | X          | X             | X             | X             | X             |
| Exhaust Tube, 10 ft. Length   | X          | X             | X             | X             | X             |
| USB Cable*  |            | X             | X             | X             | X             |
| Ethernet Cable, 5 ft. Length*   |            | X             | X             | X             | X             |
| Single-Station AC Adapter* <sup>a</sup>   |            | X             |               | X             | X             |
| Multi-Station AC Adapter* <sup>b</sup>  |            |               | X             |               |               |
| SDHC Card with SD to USB Reader*  |            | X             | X             | X             | X             |
| Demand Flow Regulator   |            |               |               | X             | X             |
| Calibration Tubing, 3 ft. Length  |            |               |               | X             | X             |
| Calibration Cylinder Holder   |            |               |               |               | X             |
| Calibration Cylinder**  |            |               |               |               | X             |
| <p>* Each system needs only one each of these.<br/> <sup>a</sup> Used only for single-station systems.<br/> <sup>b</sup> Used only for multi-station systems.<br/> ** Type of calibration cylinder depends on bundle ordered.</p> |            |               |               |               |               |

## Chapter 2: Description

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### Overview

This section describes the SDM-6000 docking station's components, various accessories that may or may not be included depending on what bundle was ordered, and optional accessories that are not included in any bundles.

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### SDM-6000 Components

The SDM-6000 consists of the touch screen, status LED, instrument cradle, gas in/gas out cover, left panel, mating slave connections, exhaust fitting, air filter, exhaust tubing, and connection brackets.

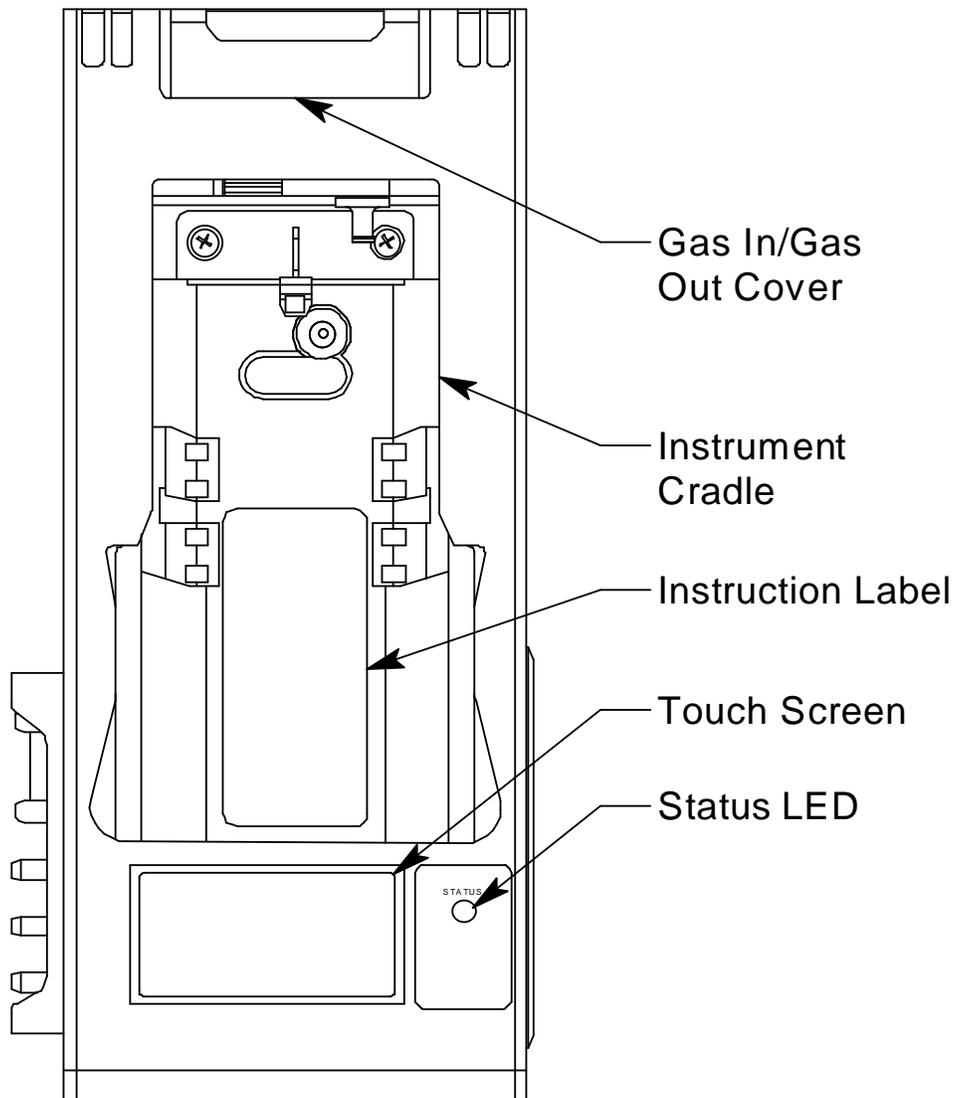
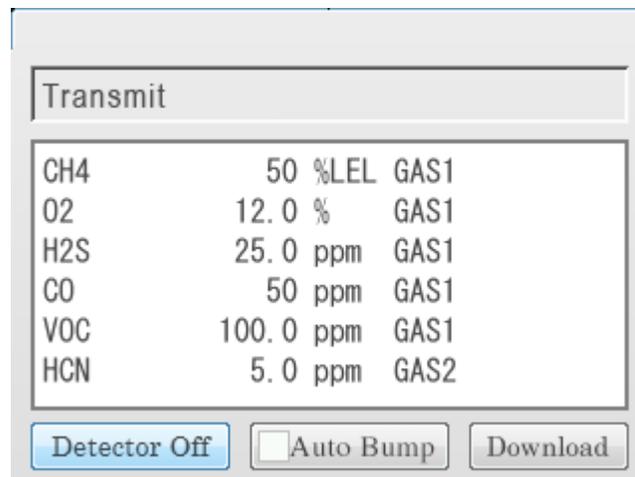


Figure 1: SDM-6000 Component Location

## Touch Screen

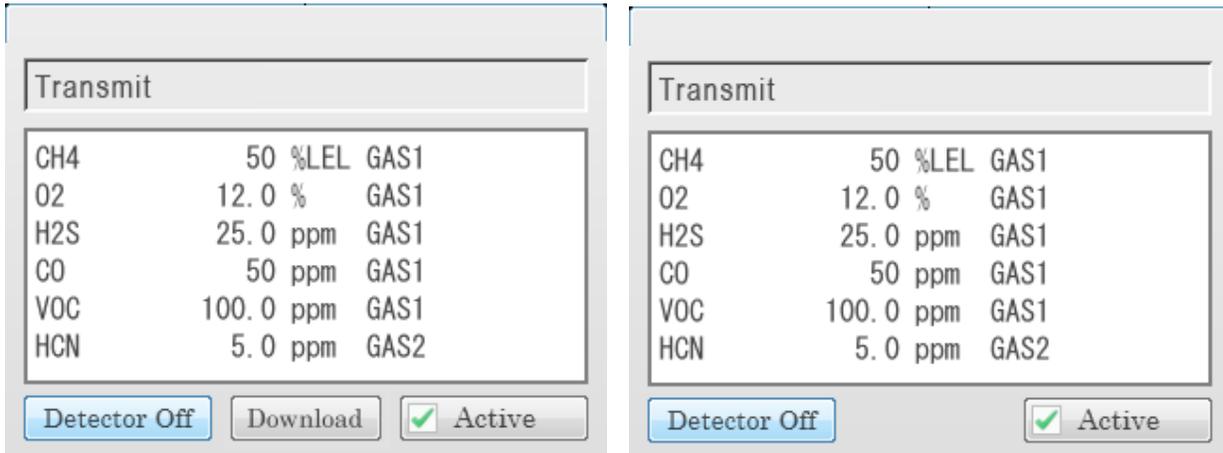
The LCD touch screen is located at the bottom front of the SDM-6000. It's appearance depends on whether the SDM-6000 is a single station system or part of a multi-station system. In either type of system, it shows the gas combination of a connected GX-6000 along with autocalibration values and the pass/fail status of any tests. The text field at the top of the screen shows instrument or station status. The Detector On/Detector Off button in the lower left turns the GX-6000 on and off.

In a single station system, the Auto Bump selection box appears at the bottom middle of the screen. The Auto Bump selection box cannot be selected or deselected using the SDM-6000 screen if the SDM-6000 is connected to the PC Controller Program but the parameter can be changed in the Bump & Cal 1 Tab of the SDM Window. If selected, a bump test will automatically begin as soon as an instrument is connected. If deselected, a bump test will not automatically begin when an instrument is connected. The Download button appears in the lower right corner of the screen. In PC controlled operation, the Download button is greyed out and has no function.



**Figure 2: Single SDM-6000 System Touchscreen**

In a multi-station system, the Auto Bump selection box does not appear on the SDM-6000 screen or in the Bump & Cal 1 Tab of the SDM Window. The first SDM-6000 in the system has the Download button at the bottom middle of the screen and the Active selection box in the bottom right corner of the screen. Additional SDM-6000s look the same as the first one with the exception that they do not include the Download button. The Active selection box cannot be deselected in PC Controlled operation. The area around it is greyed out and the box has a green check indicating the SDM-6000 is active..



**Figure 3: Multi-SDM-6000 System Touchscreens**

### Status LED

The Status LED is located to the right of the touch screen. The table below summarizes the meaning of the LED's different colors.

**Table 3: Status LED Colors**

| Status LED Color | Meaning  |
|------------------|--|
| Solid Green      | No GX-6000 installed                                 |
| Blinking Green   | GX-6000 installed and IrDA communication established |
| Blinking Orange  | Charging   |
| Solid Orange     | Charging complete OR SDM-6000 starting up            |
| Solid Red        | SDM-6000 problem detected                            |

### Instrument Cradle

The instrument cradle is a recessed area in the middle of the SDM-6000 that is designed to accept the GX-6000. Insert the GX-6000 in the instrument cradle with the belt clip facing out before you perform a bump test, calibration, alarm check or charge a GX-6000. Follow the instructions in this manual and at the center of the instrument cradle for installing the GX-6000. An infrared (IR) port at the rear of the panel lines up with the GX-6000's IR port when it is inserted in the cradle and is used to communicate with the GX-6000. Charging contacts in the bottom of the cradle line up with the GX-6000's charging contacts.

## Gas In/Gas Out Cover

The red gas in/gas out cover mates to the GX-6000's inlet and exhaust fittings and routes calibration gas to and from the GX-6000. The cover is spring loaded. To connect the cover to the GX-6000, push it down until it touches the GX-6000 and then release it. It should lock into place. To release the cover, push it toward the GX-6000 and then release it. It should return to its unconnected position at the top of the SDM-6000.

## Left Panel Components

The SDM-6000's left panel includes the SD card slot, the USB PC connector, the USB printer connector, the LAN connector, the on/off switch, the power jack, an electrical connector, and the sample fittings.

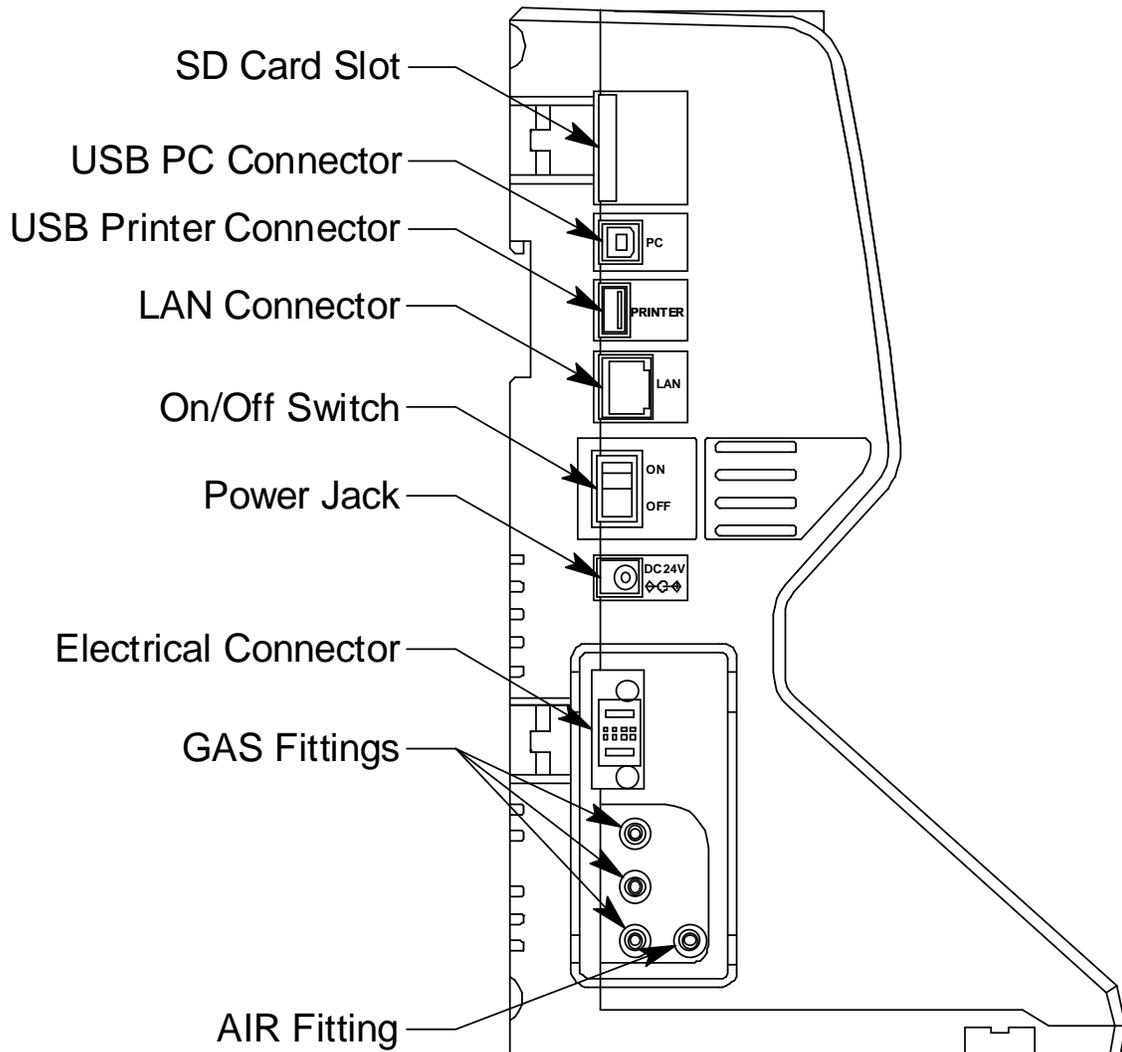


Figure 4: Left Panel Component Location

### ***SD Card Slot***

The SD card slot at the top of the left side of the SDM-6000 allows for the installation of an SDHC card. When used in the PC Controlled Mode, bump test, calibration, and alarm check test data is saved to the PC Controller Program. If an SD card is installed in the SD card slot, that test data will also be saved to the SD card. If a **Download Logs** operation is performed in PC Controlled Mode, that data (interval trend, alarm trend, etc.) will not be saved to an installed SD card.

### ***USB PC Connector***

A type B USB connection allows for the SDM-6000 to be connected to a PC using a Type A to Type B USB cable.

### ***USB Printer Connector***

The USB printer connector allows for the optional printer accessory to be connected to the SDM-6000.

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**NOTE:** The SDM-6000 only supports the Seiko Instruments, Inc. DPU-S245 USB printer. See “Printer” on page 17 for more information.

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### ***LAN Connector***

The LAN connector allows for the SDM-6000 to be connected to a building’s network using an Ethernet cable. This function allows for the SD card’s data to be downloaded to a computer connected to the same network.

### ***On/Off Switch***

The white on/off switch turns the station on or off. Push the top of the switch toward the station to turn it on. Push the bottom of the switch toward the station to turn it off.

### ***Power Jack***

The round power jack is located below the on/off switch. The plug on the end of the AC adapter cable mates to it.

### ***Electrical Connector***

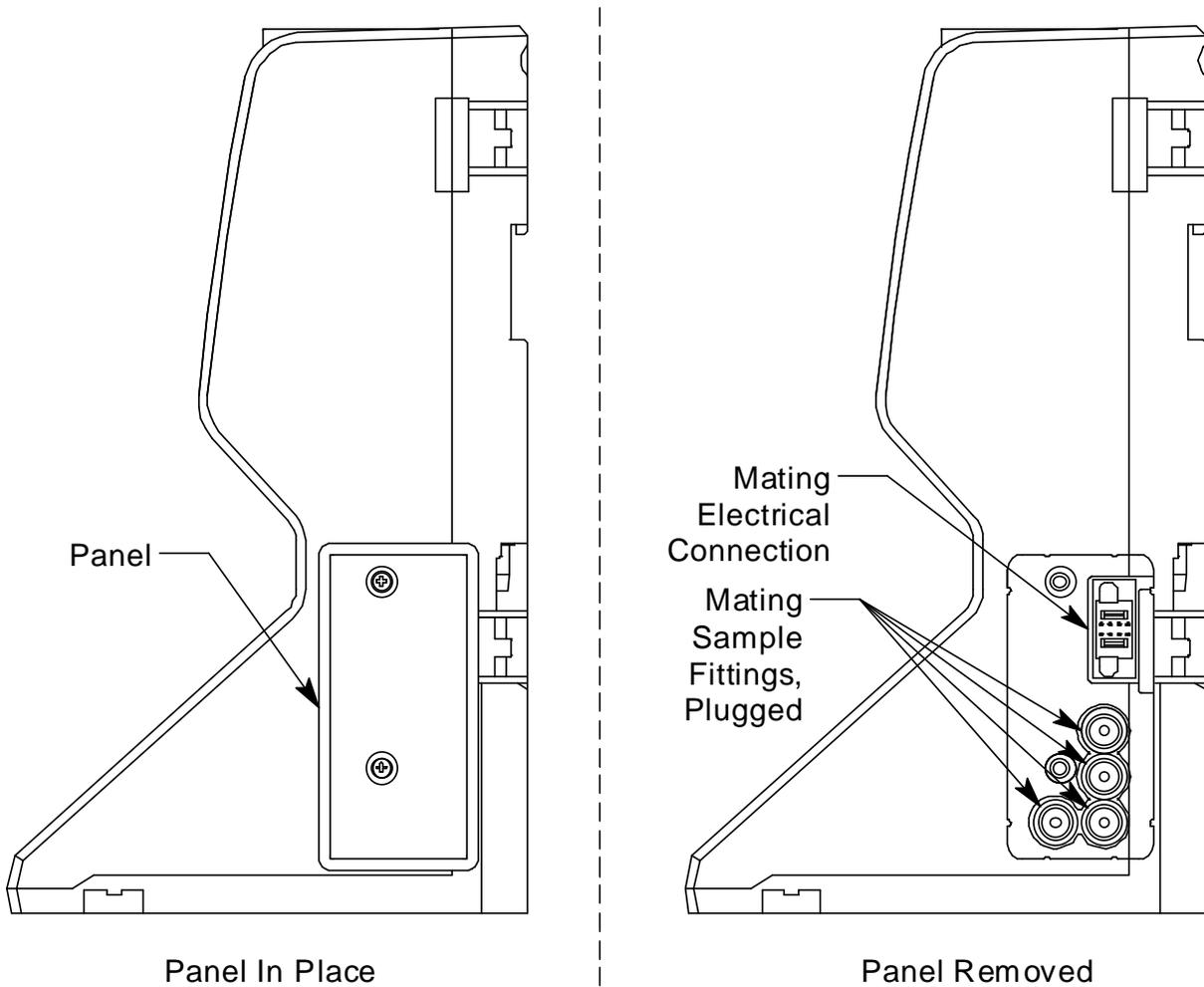
The black electrical connector allows for an electrical connection to another SDM-6000 or to an SV-3.

### ***Sample Fittings***

Four sample fittings are located on the left side of the SDM-6000. The AIR fitting is the rightmost fitting and the GAS fittings are arranged in a column to the left of the AIR fitting. The bottom to top order is GAS1, GAS 2, and GAS 3. All four fittings accept 3/16 inch ID tubing.

## Mating Slave Connections

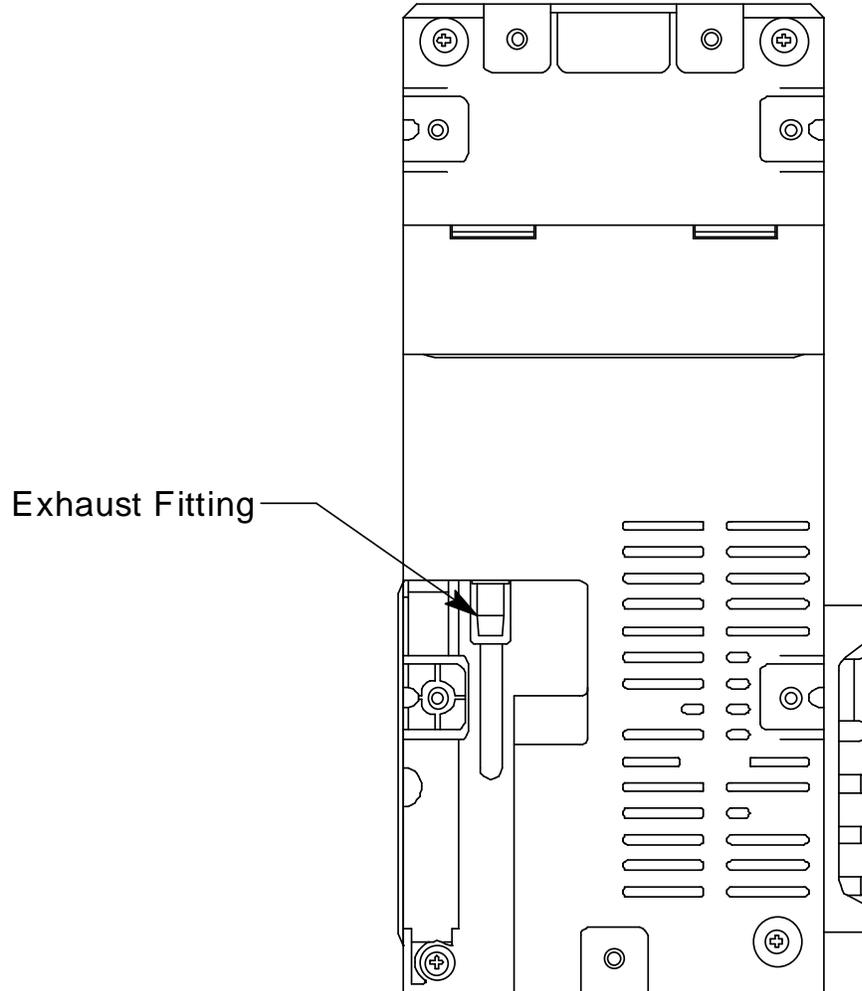
The right side of the SDM-6000 is shipped from the factory with a small panel attached to it with two screws. That panel should remain in place if the SDM-6000 is being used alone or if it is the right-most station in a bank of connected stations. The panel needs to be removed in order to connect another SDM-6000 to it. Beneath the panel is a mating electrical connection and plugged mating sample fitting connections.



**Figure 5: Right Panel Component Location**

## Exhaust Fitting

An exhaust fitting is located on the SDM-6000's back panel. It allows routing of the exhausted calibration gas to a convenient location. This fitting accepts 5/16 inch ID tubing. Even though the exhaust gas can be routed to an area to be safely dispersed, the docking station should still be installed in a well ventilated area.

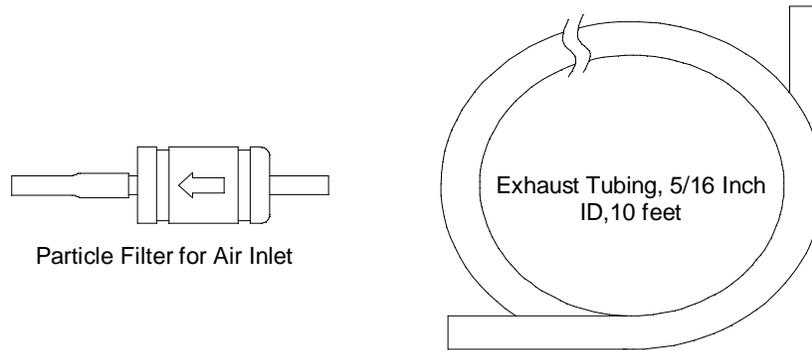


**Figure 6: Back Panel Component Location**

## Air Filter and Exhaust Tubing

A cylindrical particle filter with a short length of tubing is supplied with the SDM-6000 for installation to the AIR fitting on the left panel. The filter keeps particulate contamination out of the docking station.

A 10 foot length of 5/16 inch ID polyurethane tubing is provided for connection to the exhaust fitting on the back panel to allow routing of the exhaust to a location such as an open window where the exhaust can disperse.



**Figure 7: Air Filter & Exhaust Tubing**

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**WARNING:** *Do not use an exhaust tube that is longer than 15 feet. The increased flow restriction caused by a longer tube may affect gas response and cause inaccurate calibration and bump test results.*

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## Connection Brackets

Each SDM-6000 is provided with 3 connection brackets that are used to mechanically connect one SDM-6000 to another.

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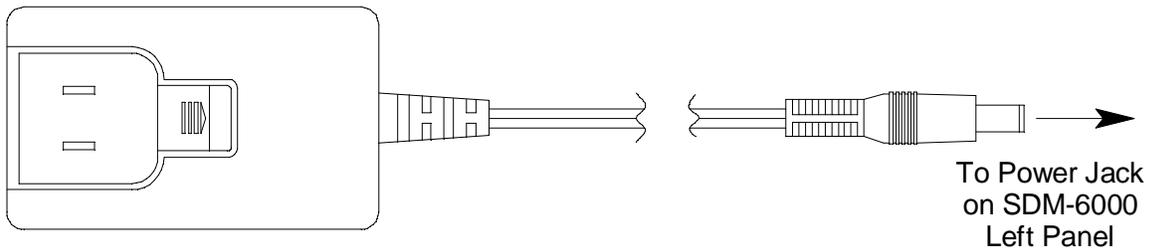
## Accessories Included in Various Bundles

This section describes all of the accessories that are included as standard with the SDM-6000, depending on the SDM-6000 bundle purchased. These include: AC adapter, Type A to Type B USB cable, Ethernet cable, SD card, SD to USB reader, demand flow regulator, calibration tubing, and a calibration cylinder. You do not need 1 of each of these accessories for every SDM-6000 in your installation but every installation needs 1 of each accessory. See “How to Build a System” on page 5 for information about what SDM-6000 bundles include these items.

### AC Adapter

#### *Single-Station AC Adapter*

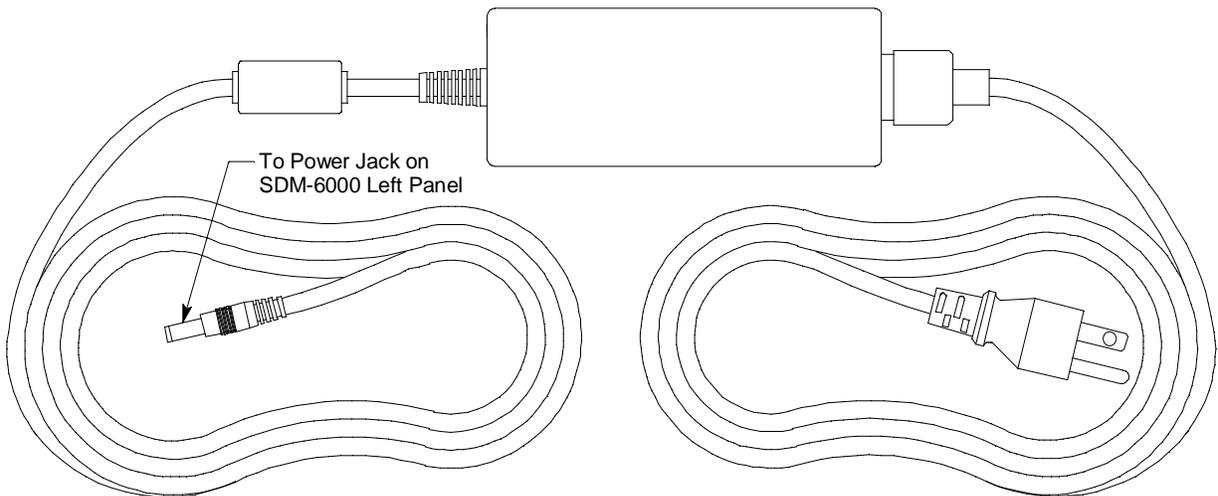
The single-station AC adapter is a wall plug style adapter with a 5 foot cable. The end of the cable has a plug that connects to the SDM-6000’s power jack. The AC adapter is rated 100 - 240 VAC input, 24 VDC 0.63 A output.



**Figure 8: Single-Station AC Adapter**

#### *Multi-Station AC Adapter*

The multi-station AC adapter is a larger adapter with a separate power cord and a plug that connects to the SDM-6000’s power jack. The adapter is intended to be used when more than 1 SDM-6000 are connected together. Only the master SDM-6000 needs to be plugged into power. The AC adapter is rated 100 - 240 VAC input, 24 VDC 4.17 A output.



**Figure 9: Multi-Station AC Adapter**

## USB Cable

A Type A to Type B USB cable is used to connect the SDM-6000 to a PC which is required for using the SDM-6000 in the PC Controlled configuration. If you have a multi-station system, the USB cable only needs to be plugged into the master (leftmost) station.

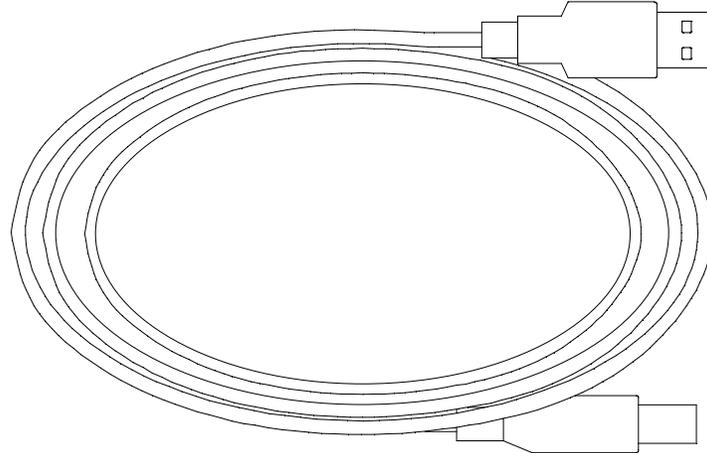


Figure 10: USB Cable

## Ethernet Cable

A 5 foot length of black Ethernet cable allows for the LAN connectivity function of the SDM-6000 to be used. One end of the cable is plugged into the LAN port on the left side of the SDM-6000 and the other end is plugged into one of the building's network ports. If you have a multi-station system, the Ethernet cable only needs to be plugged into the master (leftmost) station.

## SD Card and SD to USB Reader

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**NOTE:** Since data is saved to the PC Controller Program when the SDM-6000 is used in PC Controlled Mode, the SD card provided with the SDM-6000 is not necessary. If it is installed, data will be saved to the PC Controller Program and to the SD card.

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If the SDHC card is installed in the SD card slot, data will be saved to it in addition to being saved to the PC Controller Program. If you have a multi-station system, the SD card only needs to be inserted into the master (leftmost) station's SD card slot.

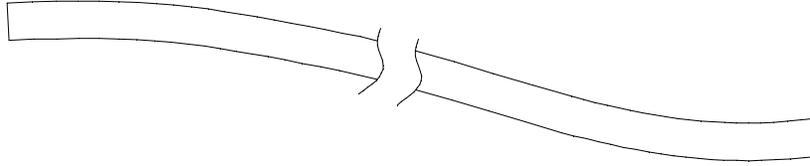
The SDHC card can be directly inserted into a computer's SD card slot if the computer is equipped with one. If the computer does not have an SD card slot, the provided SD to USB reader must be used.

## Demand Flow Regulator

The demand flow regulator is screwed into the calibration gas cylinder and allows the SDM-6000 to draw gas from the cylinder when the regulator is connected to the SDM-6000 using the 3 feet of calibration tubing.

## Calibration Tubing

A 3 foot length of 3/16 inch ID polyurethane tubing is provided with bundles that include a demand flow regulator. This calibration tubing is used to connect the regulator to gas fitting on the left side of the SDM-6000 or on the left side of the SV-3.



Calibration Gas Sample Tubing, 3/16  
Inch ID, 3 feet

**Figure 11: Calibration Tubing**

## Calibration Cylinder

The calibration gas cylinder must be used to calibrate the applicable sensors in a GX-6000. The particular calibration gas cylinder provided depends on which bundle is ordered.

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## Optional Accessories, Not Included in Any Bundles

### SV-3

The SV-3 increases the number of calibration cylinders that can be used with the SDM-6000 from 3 to 6. It connects to the sample fittings and electrical connector on the left side of the SDM-6000. If you have multiple SDM-6000s connected together, the SV-3 will be installed on the left-most SDM-6000.

The SV-3 comes with 2 connection brackets that are used to mechanically connect the SV-3 to the left-most SDM-6000.

### Printer

The printer supported by the SDM-6000 is the Seiko Instruments, Inc. DPU-S245 USB printer. It allows for quick printing of bump test or calibration results. The printer comes with an AC adapter and power cord, a battery pack, a USB cable, and a roll of paper. It is connected to the SDM-6000 via the USB Printer connection on the left side of the SDM-6000.

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**NOTE:** For questions about the printer, contact Seiko Instruments, Inc. at <http://www.sii.co.jp/sps/eg/contact.html>.

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### Wall Mounting Brackets

The SDM-6000 can be mounted to the wall, if desired, using 3 mounting brackets. See “Wall Mounting the SDM-6000, Optional” on page 24 for a description of how many wall mounting brackets are needed depending on how many SDM-6000s are in your system.

## Chapter 3: Hardware Setup

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### Overview

Setting up the SDM-6000 for use in its PC Controlled Mode includes: connecting multiple SDM-6000s together (optional), connecting the SV-3 (optional), connecting the printer (optional), connecting the AC adapter, air filter, and exhaust tubing, wall mounting the station (optional), connecting calibration gas, setting operational parameters, and setting up the LAN connectivity (optional). Instructions to complete each of these tasks is in this section.

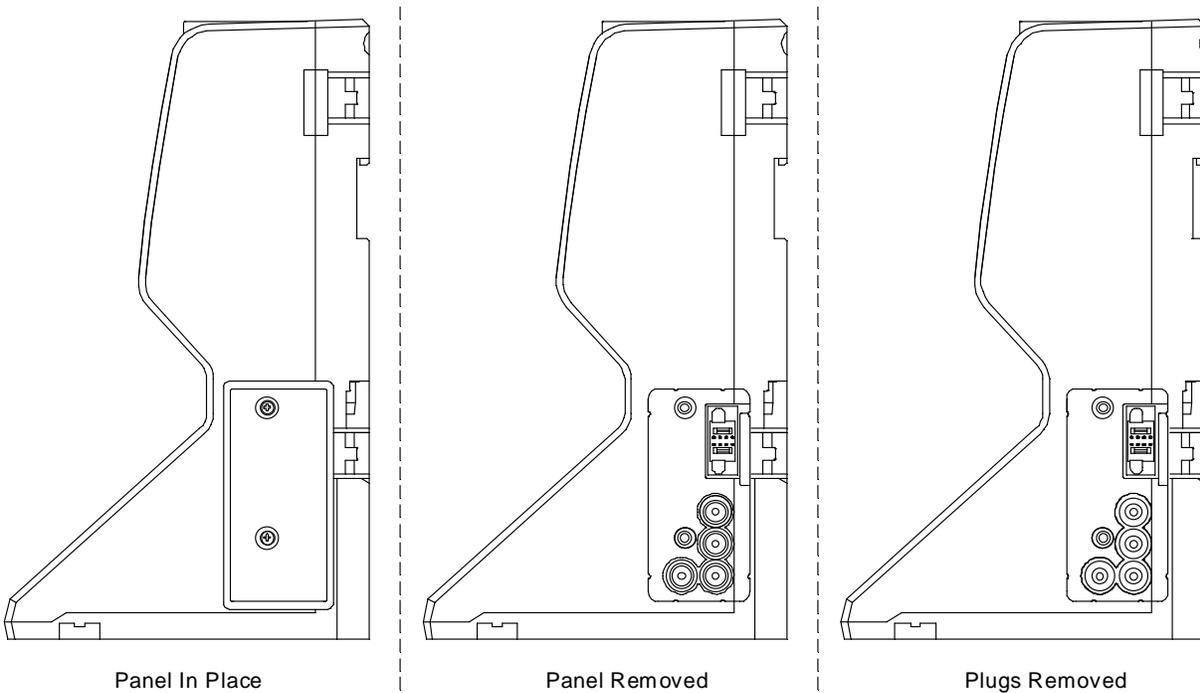
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### Connecting Multiple SDM-6000s Together

Up to 10 SDM-6000s can be connected together. The leftmost SDM-6000 is the master station and the remaining stations are slave stations. If you remove the leftmost SDM-6000 from the setup, the station that is now the leftmost station becomes the master but does not retain any of the settings that the old master had.

- 1 . Be sure that the SDM-6000s are not connected to power.
- 2 . For every station except the one that will be located on the far right side of the bank:
  - a. Unscrew the two screws that retain the panel on the right side of the station. The screws are not captive. Be sure not to lose them.
  - b. Pull the panel away from the SDM-6000.
  - c. Use needle nosed pliers to remove the clear plugs that are installed in the four mating sample fittings.

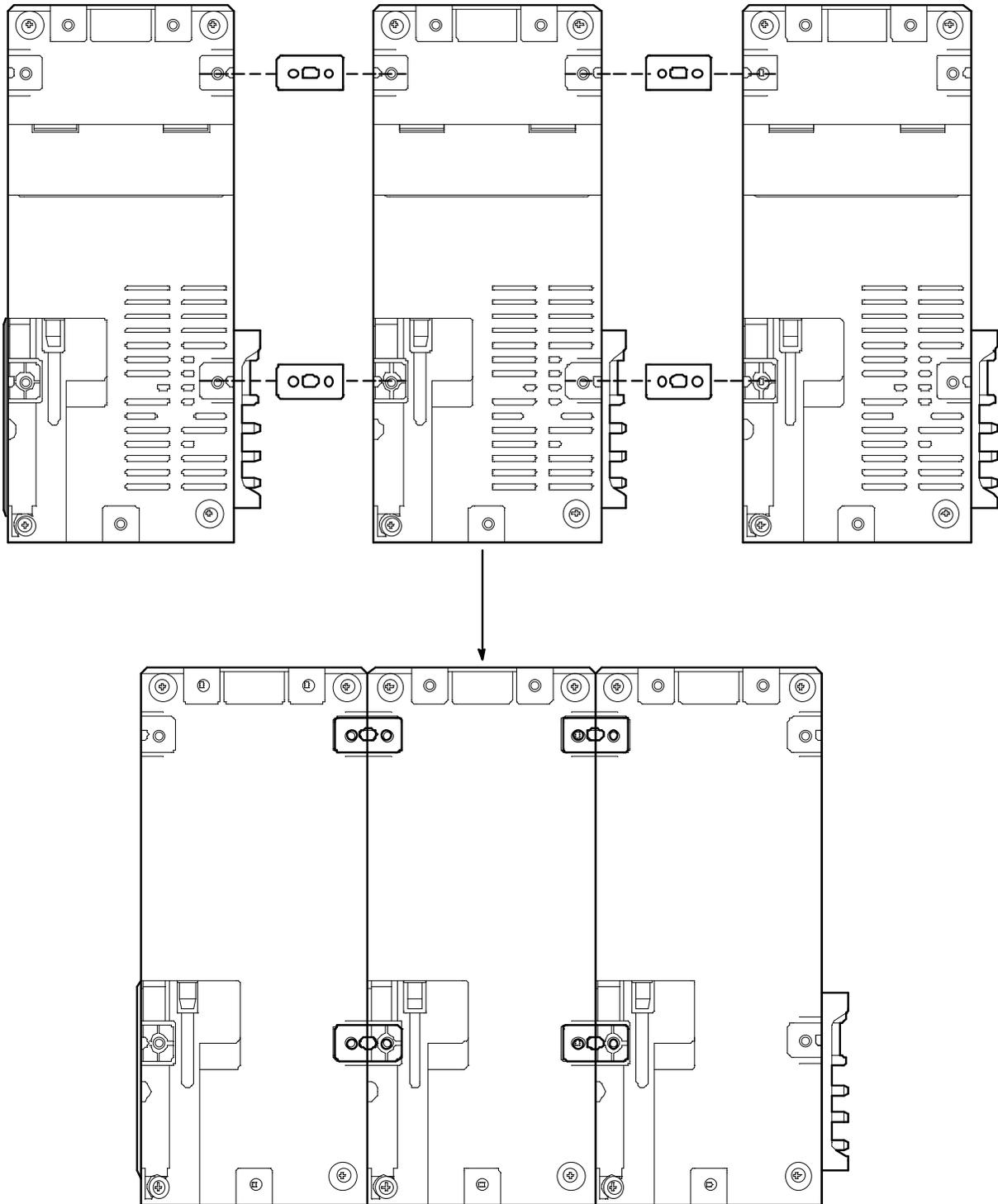
d. Save the panel, the screws, and the four plugs in a safe place.



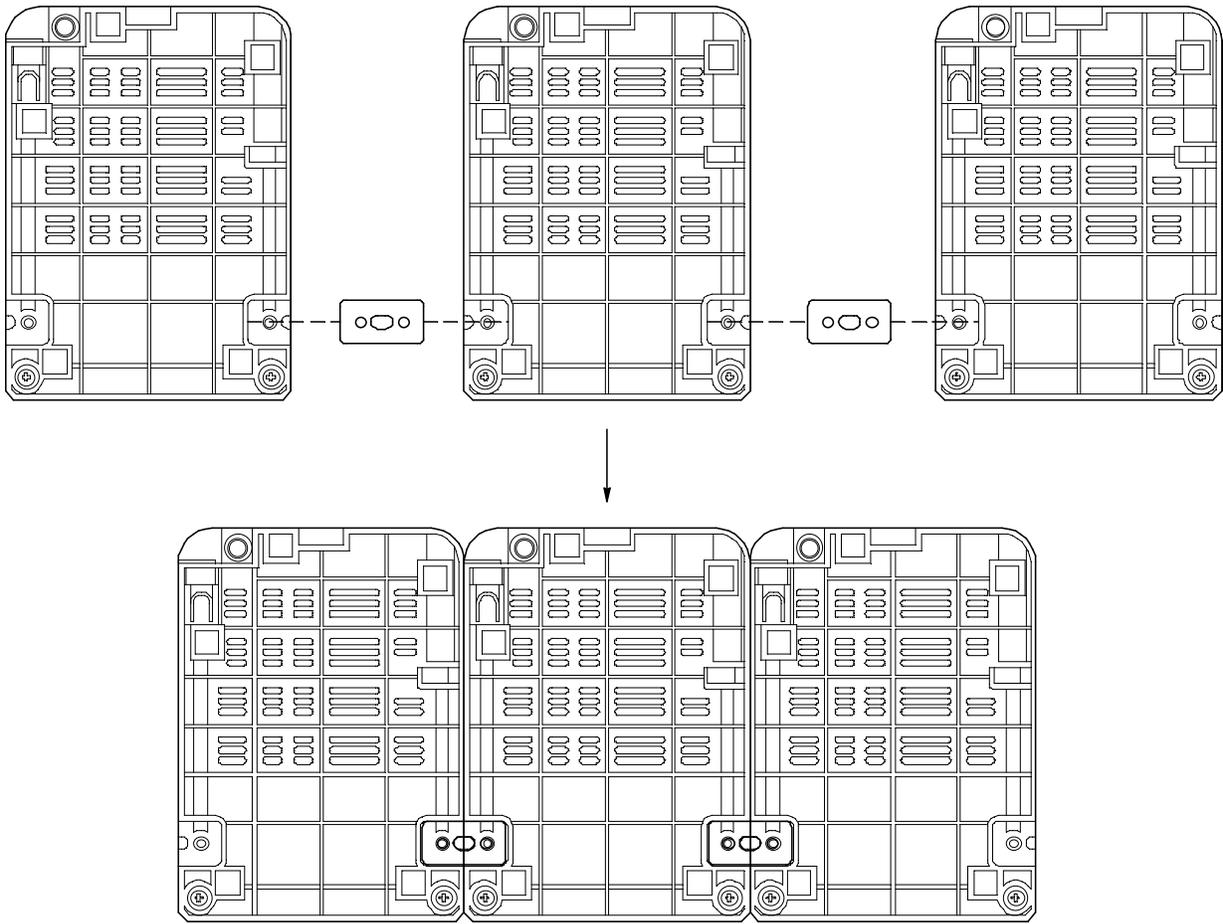
**Figure 12: Panel and Plug Removal**

- 3 . Starting with the two left-most stations, line up the mating electrical connections and sample fitting connections and push the two stations together until the housings are touching.
- 4 . Add stations to the right side of the bank using the same procedure. The last station installed should be the one that still has a panel on the right side.

- 5 . Use the provided metal connection brackets and screws to secure the two connection points on each side of the SDM-6000's back panel and on the bottom of the SDM-6000 to each other.



**Figure 13: Connecting SDM-6000s Together, Back Panel**

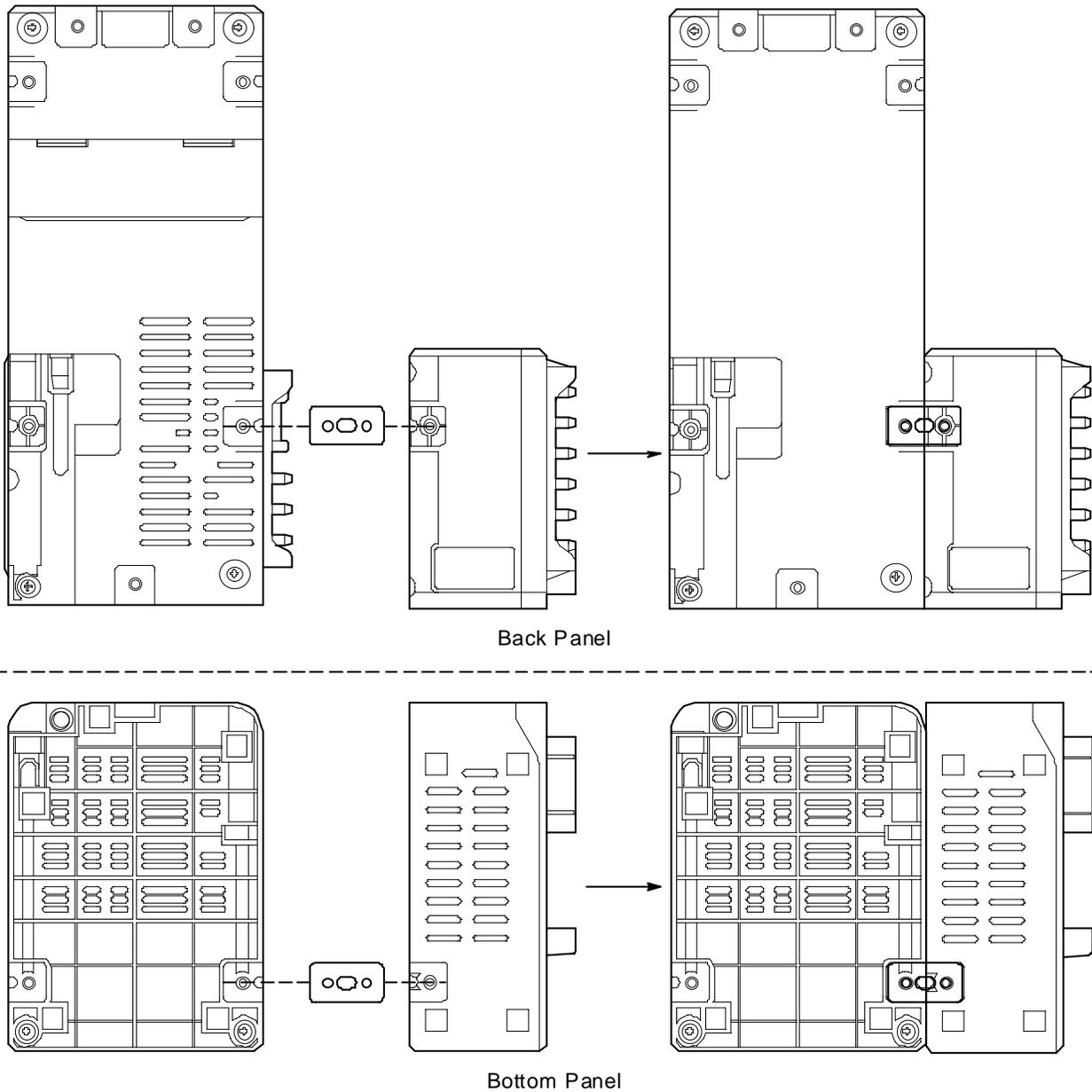


**Figure 14: Connecting Multiple SDM-6000s Together, Bottom Panel**

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## Connecting the SV-3, Optional

1. Be sure that the SDM-6000(s) are not connected to power.
2. Line up the mating electrical connection and mating sample fitting connections on the SV-3 with the electrical connector and sample fittings on the left side of the left-most SDM-6000.
3. Push the SV-3 toward the SDM-6000 until the housings are touching.
4. Use the provided metal connection brackets and screws to secure the back and bottom of the SV-3 to the SDM-6000.



**Figure 15: Connecting the SV-3**

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## Connecting the Printer, Optional

- 1 . If you want to power the printer with the battery pack, install the battery pack.
- 2 . If you want to power the printer with AC power, plug the printer AC adapter's wall plug into a wall AC socket.
- 3 . Connect the AC adapter to the printer's power jack using the provided cord.
- 4 . Connect one end of the printer's USB cable into the printer's USB connection. Plug the other end of the printer's USB cable into the USB printer connector on the left side of the SDM-6000. Be sure to use the USB cable provided with the printer. The USB cable provided with the SDM-6000 does not have appropriately sized USB connections for the printer.

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**NOTE:** If you have any problems setting up the printer, contact Seiko Instruments, Inc. at <http://www.sii.co.jp/sps/eg/contact.html>.

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## Connecting the AC Adapter, Air Filter, and Exhaust Tubing

Perform the following to connect the AC adapter, install the air filter, and connect the exhaust tubing.

- 1 . Place the SDM-6000(s) on a convenient table top near an AC wall socket in a well ventilated area. A location near a window that can be opened is best so that the exhaust can be routed to the window.
- 2 . Connect the AC adapter's wall plug into a wall AC socket.
- 3 . Insert the round plug on the end of the AC adapter's output cable into the power jack on the left side of the SDM-6000.

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**NOTE:** If you have multiple SDM-6000s connected to each other, be sure to plug the multi-station AC adapter into the master station.

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- 4 . Install the air filter so that the arrow on the filter that indicates direction of flow is pointing towards the AIR fitting.
  - a. If you are installing the air filter on an SDM-6000, put the green tubing stub that comes with it on the end with the arrow pointing to it and install the other end of the green tubing stub on the SDM-6000's AIR fitting.

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**NOTE:** If you are testing a GX-6000 with an IR CO<sub>2</sub> sensor in the 0-10,000 ppm or 0-10.00 %vol range, be sure to replace the air filter at the AIR inlet fitting with the CO<sub>2</sub> scrubber to ensure that the CO<sub>2</sub> present in fresh air is scrubbed out. The arrow on the CO<sub>2</sub> scrubber should be pointing toward the AIR inlet fitting.

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**NOTE:** If you are testing a GX-6000 with a PID sensor and if you suspect any low-level VOC background in the area, be sure to replace the air filter at the AIR inlet fitting with the VOC zero filter. The arrow on the VOC zero filter should be pointing toward the AIR inlet fitting.

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- b. If you are installing the air filter on an SV-3, the green tubing stub does not need to be used. Orient the air filter with the arrow pointing toward the SV-3 and insert the air filter into the AIR recess at the front of the SV-3's left side and push it in until the SV-3's latch secures it in place.
- 

**NOTE:** If you are testing a GX-6000 with an IR CO<sub>2</sub> sensor in the 0-10,000 ppm or 0-10.00 %vol range, be sure to attach the CO<sub>2</sub> scrubber to the air filter to ensure that the CO<sub>2</sub> present in fresh air is scrubbed out. The arrow on the CO<sub>2</sub> scrubber should be pointing toward the air filter.

---

**NOTE:** If you are testing a GX-6000 with a PID sensor and if you suspect any low-level VOC background in the area, be sure to attach the VOC zero filter to the air filter. The arrow on the VOC zero filter should be pointing toward the air filter.

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5. Install the 10 foot long 5/16 inch ID flexible tube that is included with the SDM-6000 on the exhaust fitting. Route the tube to an area where the exhaust can be safely dispersed, such as an open window.
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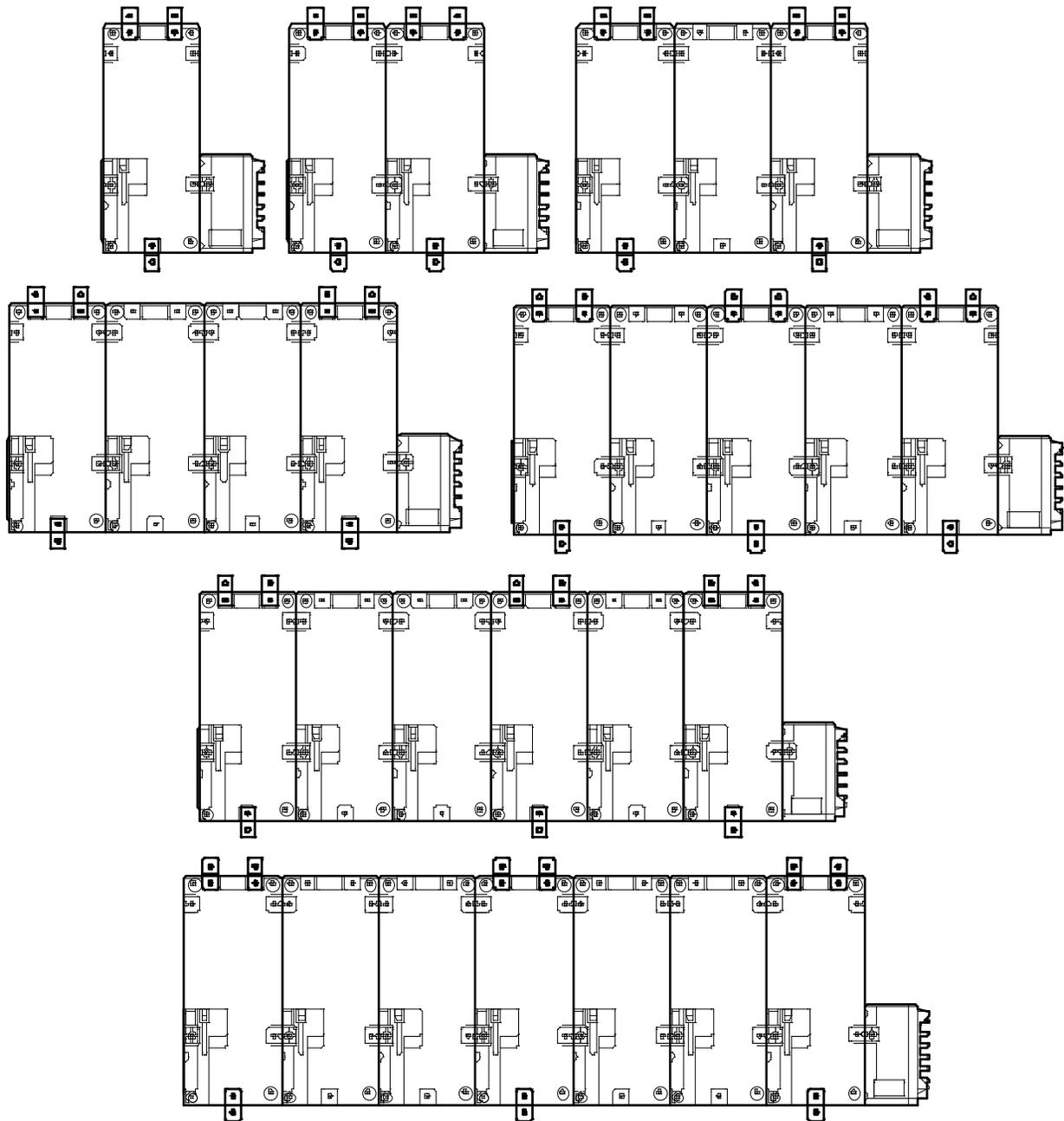
**CAUTION:** *The maximum recommended length for the exhaust tube is 15 feet. Do not use more than 15 feet of tubing or tubing with an ID of less than 5/16 inch for the exhaust tube or the bump test and calibration accuracy may be adversely affected. The tube that is shipped with the SDM-6000 has an ID of 5/16 inch and is 10 feet long.*

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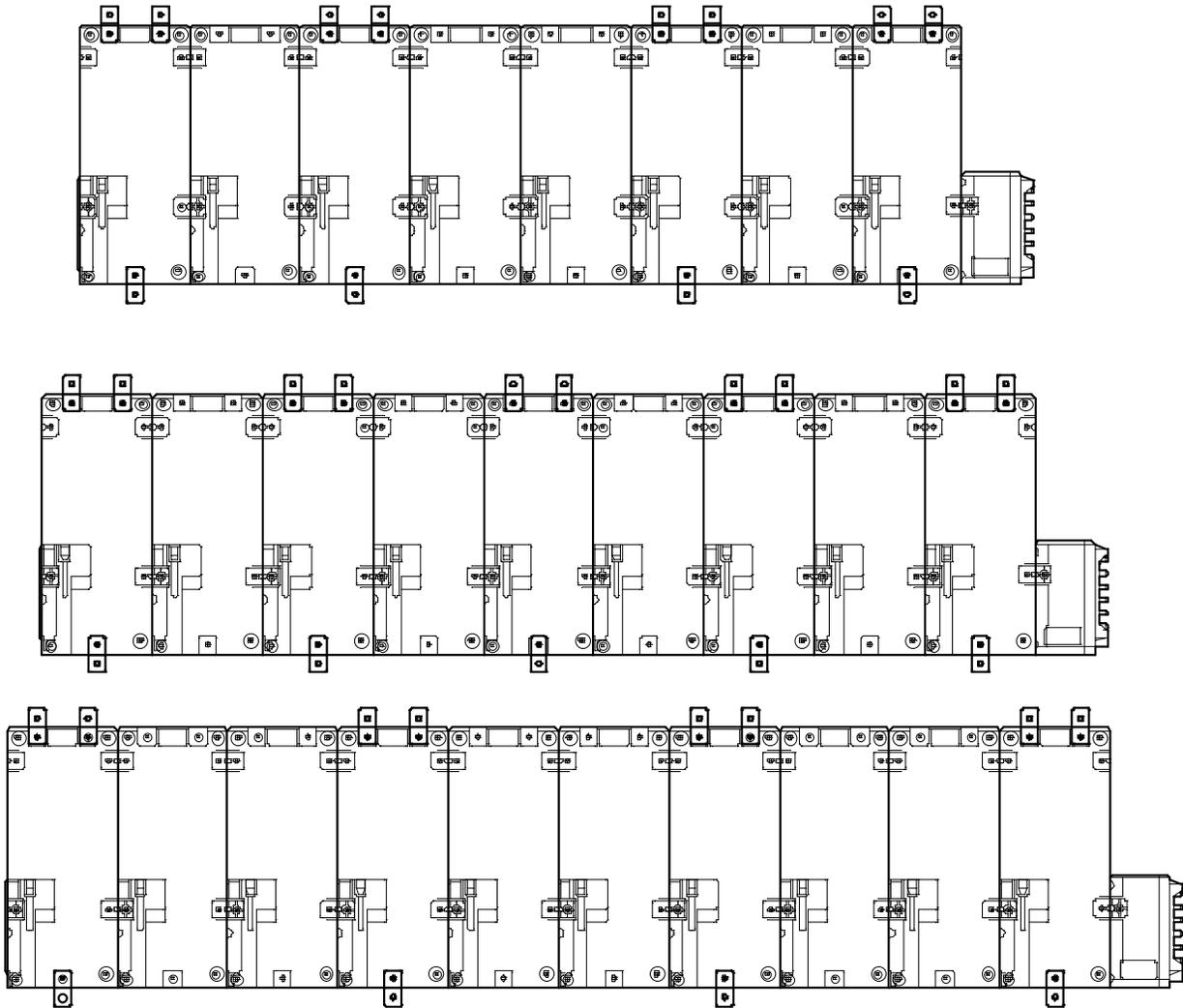
## Wall Mounting the SDM-6000, Optional

Single SDM-6000s or multiple SDM-6000s connected together as described in "Connecting Multiple SDM-6000s Together" on page 18 can be mounted to the wall using mounting brackets. The wall mounting brackets are not supplied as standard with the SDM-6000. If you are wall mounting a bank of SDM-6000s, not every SDM-6000 will need wall mounting brackets but each SDM-6000 that will use wall mounting brackets needs 3. See the figure below to determine how many wall mounting brackets you need to order.



| # of SDM-6000s w/ SV-3 or w/o SV-3 | Total # of wall mounting brackets necessary |
|------------------------------------|---|
| 1 SDM-6000                         | 3 wall mounting brackets                    |
| 2-4 SDM-6000s                      | 6 wall mounting brackets                    |
| 5-7 SDM-6000s                      | 9 wall mounting brackets                    |

**Figure 16: Wall Mounting 1-7 SDM-6000s**



| # of SDM-6000s<br>w/ SV-3 or w/o SV-3 | Total # of wall mounting<br>brackets necessary |
|---------------------------------------|--|
| 8-10 SDM-6000s                        | 12 wall mounting brackets                      |

**Figure 17: Wall Mounting 8-10 SDM-6000s**

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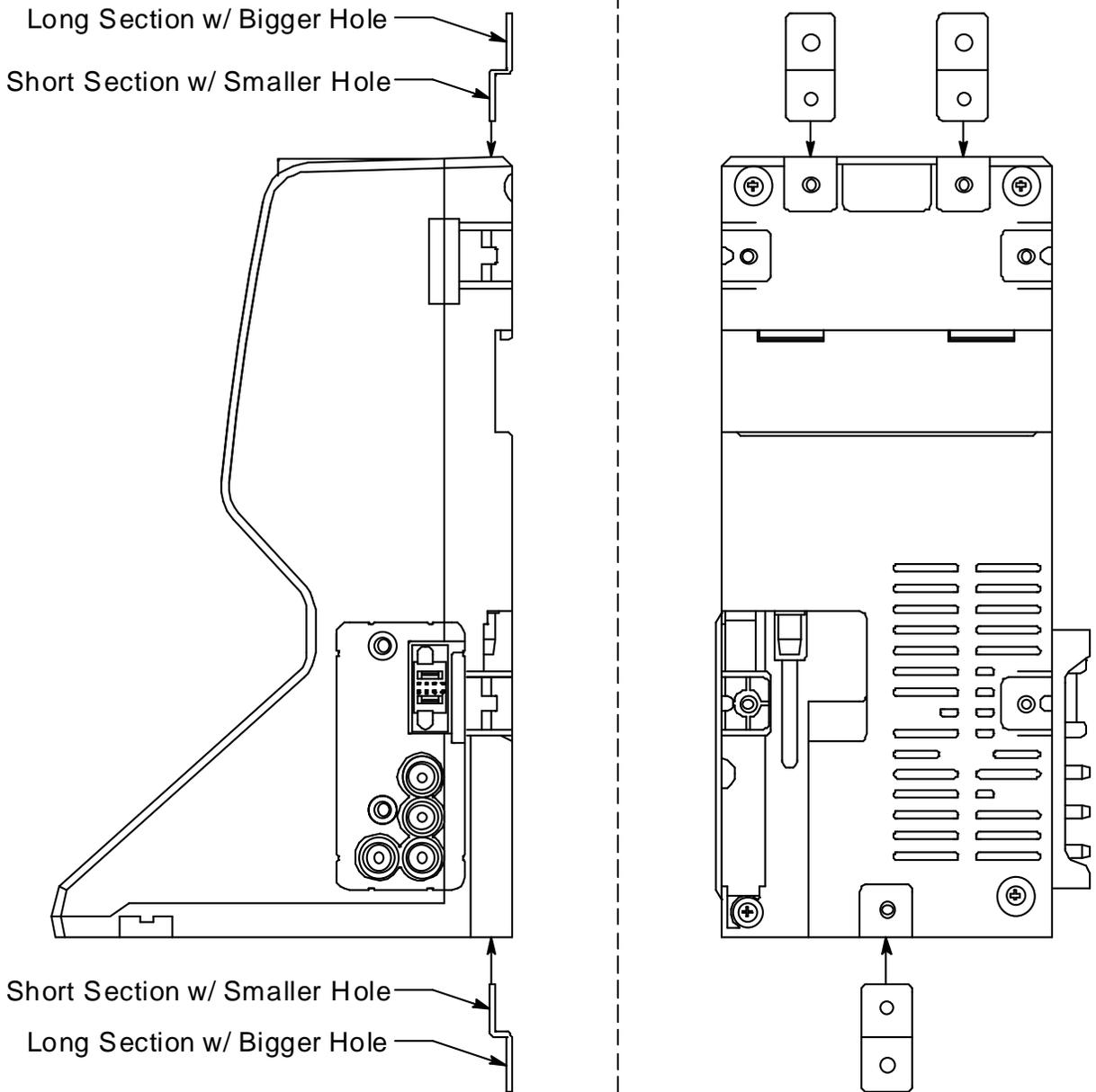
**NOTE:** Be sure that you have installed the exhaust line for each SDM-6000 you intend to wall mount since access to the exhaust fitting will be very limited once the SDM-6000 is mounted to the wall.

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1. If you are mounting multiple SDM-6000s, be sure your SDM-6000s are properly connected and secured to each other. If you are using an SV-3, be

sure that it is connected and secured to the left-most SDM-6000.

2. Connect the wall mounting brackets to the SDM-6000(s) using the provided screws. The wall mounting brackets are not straight. They have a short section and a long section. The short section has a smaller hole than the long section. Screw the short section into the SDM-6000 making sure that the long section goes away from the station and is flush with the back of the SDM-6000.



**Figure 18: Wall Mounting Bracket Installation**

3. Position the SDM-6000(s) on the wall where you intend to mount them.
4. Screw the wall mounting brackets into the wall. Make sure the mounting screws and the material they are screwed into are appropriate to support the weight of the system.

## Connecting Calibration Gas, No SV-3 Attached

The GAS 1, GAS 2, and GAS 3 fittings on the left side of the docking station are designed to be used with a calibration gas cylinder that is fitted with a demand flow regulator. The AIR fitting may be used with a demand flow regulator and a cylinder of zero emissions air, but this is not normally necessary since the docking station will generally be in a fresh air area.

The type of calibration gas cylinder used for the GAS 1 fitting depends on the gas sensors installed in the GX-6000. A 4-gas mix, LEL/Oxygen/CO/H<sub>2</sub>S, is used for the GAS 1 fitting if the instrument being used with the docking station contains the standard 4 sensors or is a version that has less than the 4 standard sensors but still has an H<sub>2</sub>S sensor. If the instrument does not have an H<sub>2</sub>S sensor, then a 3-gas mix, LEL/Oxygen/CO, should be used for the GAS 1 fitting in order to protect the CO sensor's charcoal filter.

The GAS 2 and GAS 3 fittings are normally used for smart sensors (i.e. PID, ESS-03, etc.). If you have a smart sensor installed (i.e. PID, ESS-03, etc.), a special cylinder for the target gas of that sensor needs to be used for calibration. See the tables below for examples of needed cylinders for various instrument combinations. Keep in mind that if you are going to use a 5-gas cylinder to calibrate one of the smart sensors, make sure that the special sensor is assigned to GAS 1 (see "Setting Up Cylinders in the Cylinders Window" on page 51). See "Spare Parts List" on page 171 for part numbers of available cylinders.

If your instrument has no standard sensors, then the GAS 1 fitting may be used for gas to test a smart sensor.

**Table 4: Recommended Gas Cylinders and Gas Ports for Single-Station Use**

| Instrument Types   | Recommended Calibration Gas Cylinder and Gas Inlet Selection  |
|--|---|
| 3-gas (LEL/Oxy/CO) + low range PID                           | <b>GAS 1:</b> 3-gas mix with LEL/Oxy/CO<br><b>GAS 2:</b> 10 ppm IBL   |
| 3-gas (LEL/Oxy/CO) + high range PID                          | <b>GAS 1:</b> 3-gas mix with LEL/Oxy/CO<br><b>GAS 2:</b> 100 ppm IBL  |
| Standard 4-gas (LEL/Oxy/H <sub>2</sub> S/CO) + low range PID | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H <sub>2</sub> S/CO<br><b>GAS 2:</b> 10 ppm IBL                                  |
| Standard 4-gas + high range PID                              | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H <sub>2</sub> S/IBL  |
| Standard 4-gas + NH <sub>3</sub>                             | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H <sub>2</sub> S/CO<br><b>GAS 2:</b> NH <sub>3</sub>                             |
| Standard 4-gas + low range PID + NH <sub>3</sub>             | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H <sub>2</sub> S/CO<br><b>GAS 2:</b> 10 ppm IBL<br><b>GAS 3:</b> NH <sub>3</sub> |
| Standard 4-gas + high range PID + NH <sub>3</sub>            | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H <sub>2</sub> S/IBL<br><b>GAS 2:</b> NH <sub>3</sub>                         |

**Table 4: Recommended Gas Cylinders and Gas Ports for Single-Station Use**

| Instrument Types                 | Recommended Calibration Gas Cylinder and Gas Inlet Selection             |
|----------------------------------|--|
| Standard 4-gas + SO <sub>2</sub> | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H <sub>2</sub> S/SO <sub>2</sub> |

If you are connecting multiple SDM-6000s together, it is possible to test instruments with different gas combinations at the same time. In order to completely calibrate all instruments, you cannot need more than 3 cylinders since the SDM-6000 only has 3 gas ports on its left side. If testing different instrument combinations at once requires more than 3 cylinders, you will have to test instruments one at a time and reassign the gas inlets when you change gases or test the gases common to all instruments at once and then test additional gases separately. The table below shows some examples of instrument combinations that could be tested together if you have multiple SDM-6000s connected together. Up to 10 SDM-6000s can be connected together. The table below only uses 2 GX-6000s as examples.

**Table 5: Recommended Gas Cylinders and Gas Ports for Multi-Station Use**

| Instrument Types   | Recommended Calibration Gas Cylinder and Gas Inlet Selection   |
|--|--|
| <b>Instrument 1:</b> 3-gas + low range PID<br><b>Instrument 2:</b> 3-gas + high range PID  | <b>GAS 1:</b> 3-gas mix with LEL/Oxy/CO<br><b>GAS 2:</b> 10 ppm IBL<br><b>GAS 3:</b> 100 ppm IBL                           |
| <b>Instrument 1:</b> 3-gas + high range PID<br><b>Instrument 2:</b> 3-gas + NH <sub>3</sub>                                      | <b>GAS 1:</b> 3-gas mix with LEL/Oxy/CO<br><b>GAS 2:</b> 100 ppm IBL<br><b>GAS 3:</b> NH <sub>3</sub>                      |
| <b>Instrument 1:</b> Standard 4-gas + low range PID<br><b>Instrument 2:</b> Standard 4-gas + high range PID                      | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H <sub>2</sub> S/CO<br><b>GAS 2:</b> 10 ppm IBL<br><b>GAS 3:</b> 100 ppm IBL          |
| <b>Instrument 1:</b> Standard 4-gas + high range PID<br><b>Instrument 2:</b> Standard 4-gas + high range PID + NH <sub>3</sub>   | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H <sub>2</sub> S/IBL<br><b>GAS 2:</b> NH <sub>3</sub>                              |
| <b>Instrument 1:</b> Standard 4-gas + NH <sub>3</sub><br><b>Instrument 2:</b> Standard 4-gas + SO <sub>2</sub>                   | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H <sub>2</sub> S/CO<br><b>GAS 2:</b> NH <sub>3</sub><br><b>GAS 3:</b> SO <sub>2</sub> |
| <b>Instrument 1:</b> Standard 4-gas + SO <sub>2</sub><br><b>Instrument 2:</b> Standard 4-gas + SO <sub>2</sub> + NH <sub>3</sub> | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H <sub>2</sub> S/SO <sub>2</sub><br><b>GAS 2:</b> NH <sub>3</sub>                  |

| Instrument Types  | Recommended Calibration Gas Cylinder and Gas Inlet Selection   |
|---|--|
| Instrument 1 and 2: Standard 4-gas + low range PID + NH <sub>3</sub>  | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/<br>H <sub>2</sub> S/CO<br><b>GAS 2:</b> IBL<br><b>GAS 3:</b> NH <sub>3</sub> |
| Instrument 1 and 2: Standard 4-gas + high range PID + NH <sub>3</sub> | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/<br>CO/H <sub>2</sub> S/IBL<br><b>GAS 2:</b> NH <sub>3</sub>                  |

To connect calibration gas to the SDM-6000, do the following:

- 1 . If the area around the docking station is not considered a fresh air area (an area free of combustible and toxic gases and of normal oxygen content, 20.9%) install a tube not longer than 10 feet on the filter attached to the AIR fitting on the left side of the docking station and route it to a fresh air area or connect a cylinder of zero air with a demand flow regulator to the AIR fitting.

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**NOTE:** If you are testing a GX-6000 with an IR CO<sub>2</sub> sensor in the 0-10,000 ppm or 0-10.00 %vol range, a CO<sub>2</sub> scrubber will have to be installed somewhere in the air line while testing the IR CO<sub>2</sub> instrument.

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**NOTE:** If you are testing a GX-6000 with a PID sensor and if you suspect any low-level VOC background in the area, a VOC zero filter will have to be installed somewhere in the air line while testing the PID instrument.

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- 2 . Install the demand flow regulator(s) on the calibration gas cylinder(s).

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**NOTE:** Do not connect pressurized gas directly to the SDM-6000. Be sure to install a demand flow regulator on the cylinder before connecting it to the SDM-6000.

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**NOTE:** RKI Instruments, Inc. recommends that you dedicate a regulator for use with chlorine (Cl<sub>2</sub>) gas and that you do not use that dedicated regulator for any other gases, particularly hydrogen sulfide (H<sub>2</sub>S).

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- 3 . Connect the demand flow regulator to the appropriate inlet fitting using 3/16 inch ID sample tubing.

## Connecting Calibration Gas, SV-3 Attached

The GAS 1, GAS 2, GAS 3, GAS 4, GAS 5, and GAS 6 fittings on the left side of the SV-3 are designed to be used with a calibration gas cylinder that is fitted with a demand flow regulator. The AIR fitting may be used with a demand flow regulator and a cylinder of zero emissions air, but this is not normally necessary since the docking station will generally be in a fresh air area.

The type of calibration gas cylinder used for the GAS 1 fitting depends on the gas sensors installed in the GX-6000. A 4-gas mix, LEL/Oxygen/CO/H<sub>2</sub>S, is used for the GAS 1 fitting if the GX-6000 being used with the docking station contains the standard 4 sensors or is a version that has less than the 4 standard sensors but still has an H<sub>2</sub>S sensor. If the GX-6000 does not have an H<sub>2</sub>S sensor, then a 3-gas mix, LEL/Oxygen/CO, should be used for the GAS 1 fitting in order to protect the CO sensor's charcoal filter.

The GAS 2, GAS 3, GAS 4, GAS 5, and GAS 6 fittings are normally used for smart sensors (i.e. PID, ESS-03, etc.). If you have a smart sensor installed (i.e. PID, ESS-03, etc.), a special cylinder for the target gas of that sensor needs to be used for calibration. See the table below for examples of needed cylinders for various GX-6000 combinations. Keep in mind that if you are going to use a 5-gas cylinder to calibrate one of the smart sensors, make sure that the special sensor is assigned to GAS 1 (see "Setting Up Cylinders in the Cylinders Window" on page 51). See "Spare Parts List" on page 171 for part numbers of available cylinders.

If your instrument has no standard sensors, then the GAS 1 fitting may be used for gas to test a smart sensor.

The SV-3 is useful for single-station use or multi-station use. If you have multiple GX-6000 configurations, instead of having to reassign GAS 2 or GAS 3 every time you test a different configuration like you would have to do if an SV-3 was not installed, you can assign the different gases to GAS 4, GAS 5, or GAS 6.

The gas inlets can be assigned as desired. The table below provides recommendations.

**Table 6: Recommended Gas Cylinders and Gas Ports for Single- and Multi-Station Use**

| Instrument Types  | Recommended Calibration Gas Cylinder and Gas Inlet Selection   |
|---|--|
| <b>Instrument 1:</b> 3-gas + low range PID<br><b>Instrument 2:</b> 3-gas + high range PID<br><b>Instrument 3:</b> 3-gas + NH <sub>3</sub>   | <b>GAS 1:</b> 3-gas mix with LEL/Oxy/CO<br><b>GAS 2:</b> 10 ppm IBL<br><b>GAS 3:</b> 100 ppm IBL<br><b>GAS 4:</b> NH <sub>3</sub>      |
| <b>Instrument 1:</b> 3-gas + high range PID<br><b>Instrument 2:</b> 3-gas + NH <sub>3</sub><br><b>Instrument 3:</b> 3-gas + SO <sub>2</sub> | <b>GAS 1:</b> 3-gas mix with LEL/Oxy/CO<br><b>GAS 2:</b> 100 ppm IBL<br><b>GAS 3:</b> NH <sub>3</sub><br><b>GAS 4:</b> SO <sub>2</sub> |

| Instrument Types  | Recommended Calibration Gas Cylinder and Gas Inlet Selection  |
|---|---|
| <b>Instrument 1:</b> Standard 4-gas + low range PID<br><b>Instrument 2:</b> Standard 4-gas + high range PID<br><b>Instrument 3:</b> Standard 4-gas + high range PID + NH3 | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H2S/CO<br><b>GAS 2:</b> 10 ppm IBL<br><b>GAS 3:</b> 100 ppm IBL<br><b>GAS 4:</b> NH3               |
| <b>Instrument 1:</b> Standard 4-gas + high range PID<br><b>Instrument 2:</b> Standard 4-gas + high range PID + NH3<br><b>Instrument 3:</b> Standard 4-gas + SO2 + NO2     | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H2S/IBL<br><b>GAS 2:</b> NH3<br><b>GAS 3:</b> SO2<br><b>GAS 4:</b> NO2                          |
| <b>Instrument 1:</b> Standard 4-gas + NH3<br><b>Instrument 2:</b> Standard 4-gas + SO2<br><b>Instrument 3:</b> High range PID + NO2                                       | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H2S/CO<br><b>GAS 2:</b> NH3<br><b>GAS 3:</b> SO2<br><b>GAS 4:</b> 100 ppm IBL<br><b>GAS 5:</b> NO2 |
| <b>Instrument 1:</b> Standard 4-gas + SO2<br><b>Instrument 2:</b> Standard 4-gas + SO2 + NH3<br><b>Instrument 3:</b> Low range PID + NO2                                  | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H2S/SO2<br><b>GAS 2:</b> NH3<br><b>GAS 3:</b> 10 ppm IBL<br><b>GAS 4:</b> NO2                   |
| <b>Instrument 1 and 2:</b> Standard 4-gas + low range PID + NH3   | <b>GAS 1:</b> 4-gas mix with LEL/Oxy/H2S/CO<br><b>GAS 2:</b> IBL<br><b>GAS 3:</b> NH3   |
| <b>Instrument 1 and 2:</b> Standard 4-gas + high range PID + NH3  | <b>GAS 1:</b> 5-gas mix with LEL/Oxy/CO/H2S/IBL<br><b>GAS 2:</b> NH3  |

To connect calibration gas to the SDM-6000, do the following:

1. If the area around the docking station is not considered a fresh air area (an area free of combustible and toxic gases and of normal oxygen content, 20.9%) install a tube not longer than 10 feet on the SV-3's particle filter and route it to a fresh air area or connect a cylinder of zero air with a demand flow regulator to the SV-3's particle filter.

---

**NOTE:** If you are testing a GX-6000 with an IR CO<sub>2</sub> sensor in the 0-10,000 ppm or 0-10.00 %vol range, a CO<sub>2</sub> scrubber will have to be installed somewhere in the air line while testing the IR CO<sub>2</sub> instrument.

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**NOTE:** If you are testing a GX-6000 with a PID sensor and if you suspect any low-level VOC background in the area, a VOC zero filter will have to be installed somewhere in the air line while testing the PID instrument.

---

2 . Install the demand flow regulator(s) on the calibration gas cylinder(s).

---

**NOTE:** Do not connect pressurized gas directly to the SDM-6000. Be sure to install a demand flow regulator on the cylinder before connecting it to the SDM-6000.

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**NOTE:** RKI Instruments, Inc. recommends that you dedicate a regulator for use with chlorine (Cl<sub>2</sub>) gas and that you do not use that dedicated regulator for any other gases, particularly hydrogen sulfide (H<sub>2</sub>S).

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3 . Connect the demand flow regulator to the appropriate inlet fitting using 3/16 inch ID sample tubing.

# Chapter 4: Program Setup

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## Overview

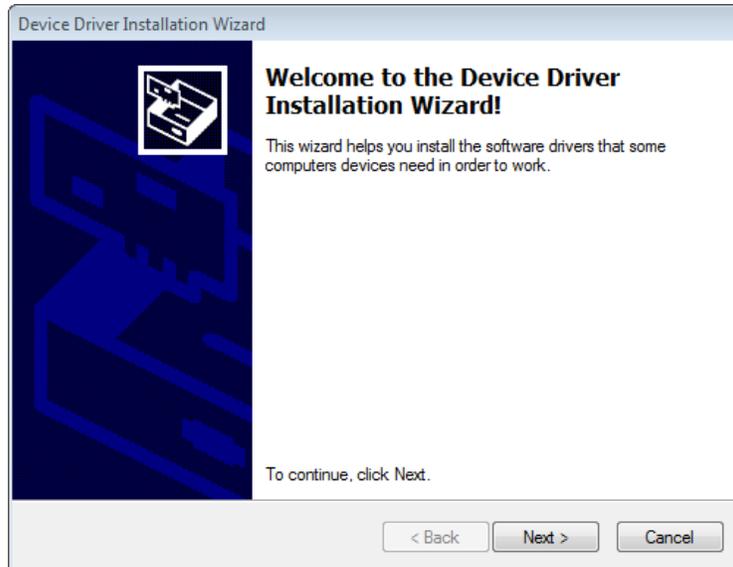
This chapter describes how to install the SDM-PC2 Docking Station PC Controller Program, launch the program, set parameters in the SDM Window, set up cylinders in the Cylinders Window, and make any database or password changes.

---

## Installing the SDM-PC2 Docking Station PC Controller Software

1. Launch Windows®.
2. Exit from all applications and open windows.
3. Go to [www.rkiinstruments.com/sdm6000](http://www.rkiinstruments.com/sdm6000).
4. Click on the **Download** tab.
5. Click the **SDM-PC2 PC Controller Software** link.
6. A .zip file will begin to download. Select whether you want to open or save the .zip file.
7. Extract the contents of the .zip file.
8. Double click the setup.exe file.
9. The SDM-PC2 Docking Station PC Controller InstallShield Wizard comes up to guide you through installation. Click **Next** to proceed to the License Agreement window.
10. Read the license agreement and click the agreement acceptance selection box, then click **Next** to proceed to the Customer Information window.
11. Enter a user name and organization and select if you want to install the program for all users on the computer or just for your user account, then click **Next** to proceed to the Destination Folder window.
12. The default installation folder (C:\Program Files\SDM-PC2\) is displayed. If you want to install the software in the default folder continue with step 13. If you want to install the software in a different location, click **Change** and choose a new installation folder and then continue with step 13.
13. Click **Next** to proceed to the Ready to Install the Program window.
14. Review the installation settings. If they are OK, click **Install** and the installation process will begin. If you want to change installation settings, click **Back** and change them to the desired settings.
15. During software installation, the installation program may find newer versions of Windows files on your computer than those in the downloaded .zip file. If

- this happens, the installation software will ask you if you want to keep these newer files. Click **Yes** to do so.
16. A Device Driver Window will appear prompting you to install necessary drivers. You cannot continue the installation without installing the drivers.



**Figure 19: Device Driver Installation**

17. Click **Next** to install the drivers. The Wizard will find the appropriate drivers.
18. Click **Finish** once the drivers are successfully installed.



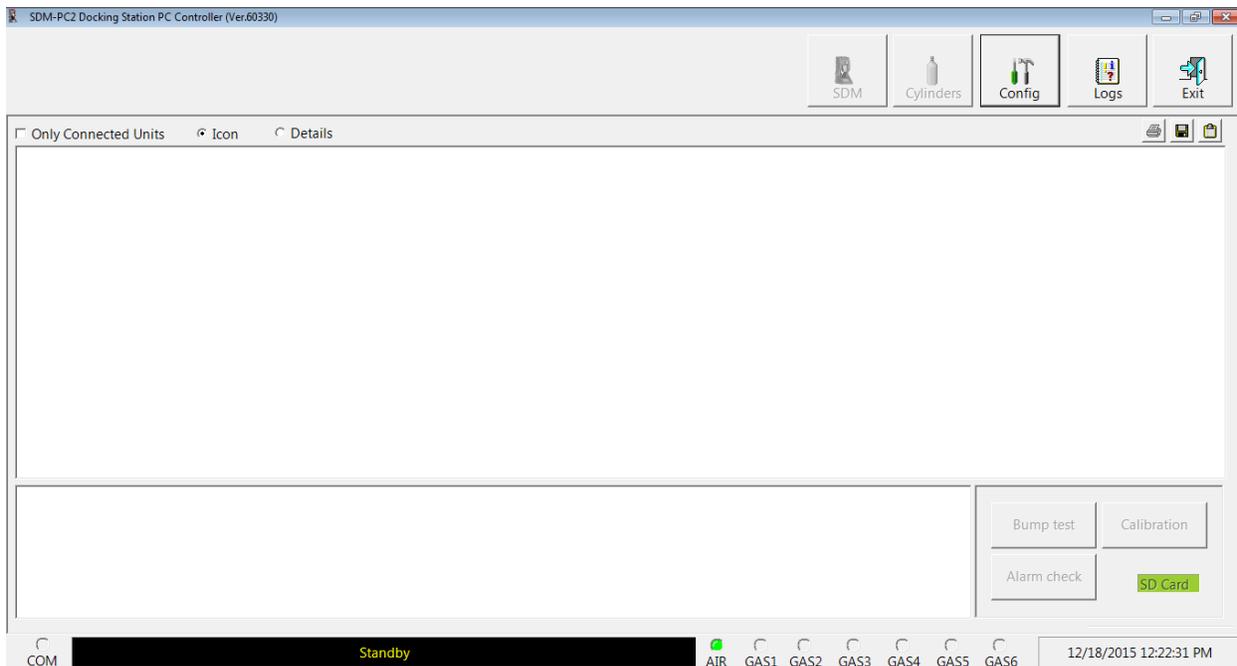
**Figure 20: Finish Device Driver Installation**

- The installation will continue.
19. Follow the on-screen instructions to complete software installation.

20. To complete the driver installation, ensure that your docking station (or the master docking station if you plan to have a bank of them) are connected to your computer.
21. Turn on the docking station by flipping the power switch to the ON position.
22. The first time an SDM-6000 is turned on after being connected to the computer, the SDM-6000 needs some time to be recognized by the computer. The status bar will indicate that the drivers are being configured and will alert you when the SDM-6000 is ready to use.

## Launching the SDM-PC2 Docking Station PC Controller Program

1. Click **Start** on the Windows Icon Tray, then select **Programs/SDM-PC2**. You may also double click the shortcut created on your desktop. The SDM-PC2 Docking Station PC Controller Program is launched and the main program window appears.



**Figure 21: Main Program Window**

2. If you are starting the software for the first time, a message window appears informing you that a database has been created. Click **OK** in that window. When starting the software for the first time, or if you wish to change the software setup, proceed to “Setting Parameters in the SDM Window” on page 37.

If you have already performed the software setup, proceed to “Connecting GX-6000s to the PC Controller Program” on page 73.

---

## Setting Parameters in the SDM Window

The parameters available for editing in the SDM Window are parameters that are saved in the SDM-6000. With the exception of the **Auto bump if due** and **Auto cal if due** parameters that are located on the Bump & Cal 1 Tab, the parameters in the SDM Window affect both PC Controller Program operation and Standalone Mode operation.

See “Parameter Tab” on page 62 for a description of parameters that affect only operation of the PC Controller Program.

The SDM Window has 4 tabs:

- Bump & Cal 1
- Bump & Cal 2
- Internal
- Automatic

A station’s settings can be saved to a file and a saved settings file can be imported using this window.

### Entering the SDM Window

1. Launch the program as described in “Launching the SDM-PC2 Docking Station PC Controller Program” on page 36.
2. Confirm that the AC adapter is connected to the SDM-6000 and to an AC wall socket. If you have multiple SDM-6000s connected together, only the leftmost SDM-6000 should be connected to power.
3. Connect the Type A to Type B USB cable to the SDM-6000 and to an available USB port on your computer. If you have multiple SDM-6000s connected together, only the leftmost SDM-6000 should be connected to the computer with the USB cable.
4. Flip the SDM-6000’s power switch so that it’s in the ON position. If you have multiple SDM-6000s connected together, only the power switch of the leftmost SDM-6000 needs to be flipped.
5. Click the **SDM** button at the top of the screen.



6. If the Password parameter in the Bump & Cal 2 Tab of the SDM Window is set to **ON**, the program will prompt you for a password to enter the SDM Window. Enter the password and click OK.

7. The SDM Window will open and the Bump & Cal 1 Tab will be displayed. Each tab in the SDM Window is described in the sections that follow.

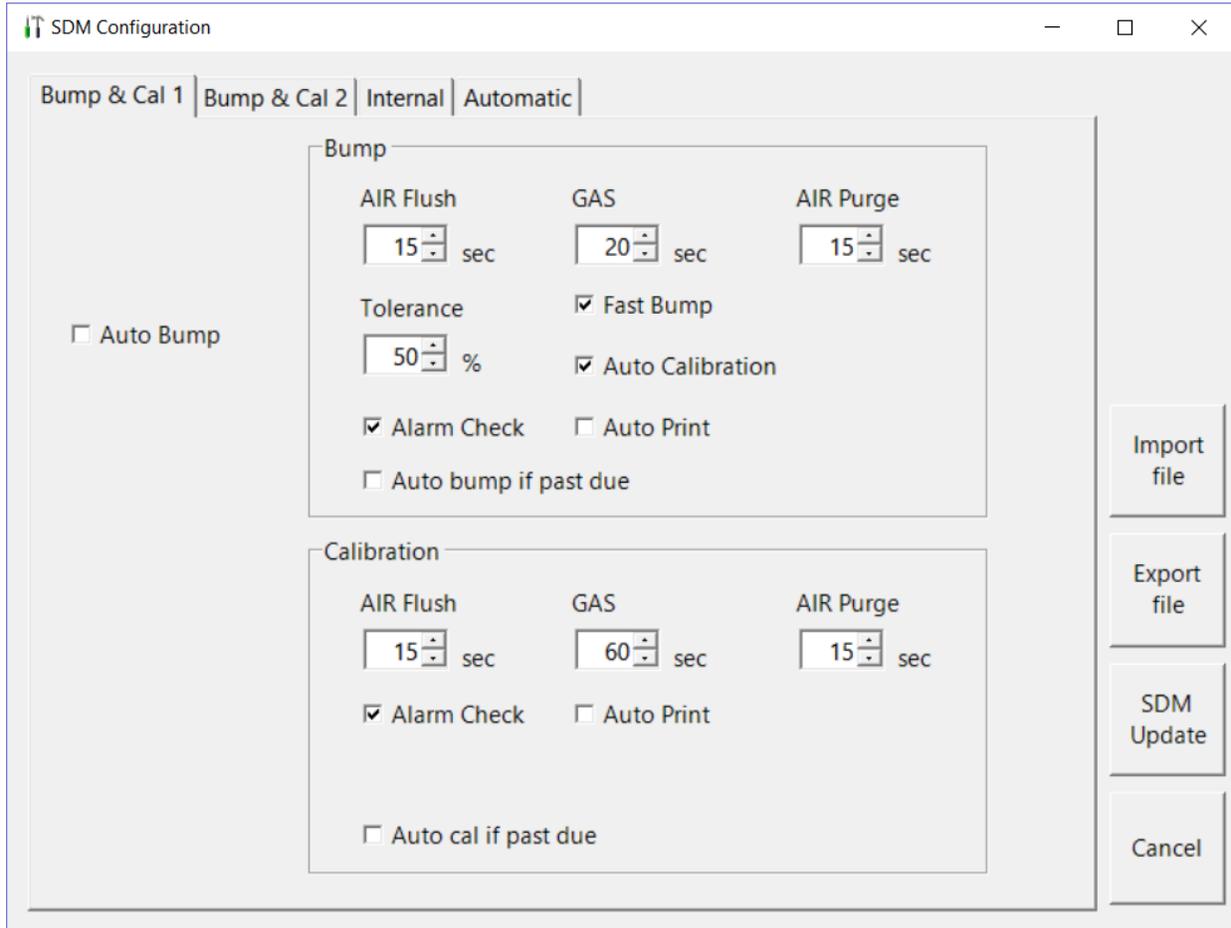
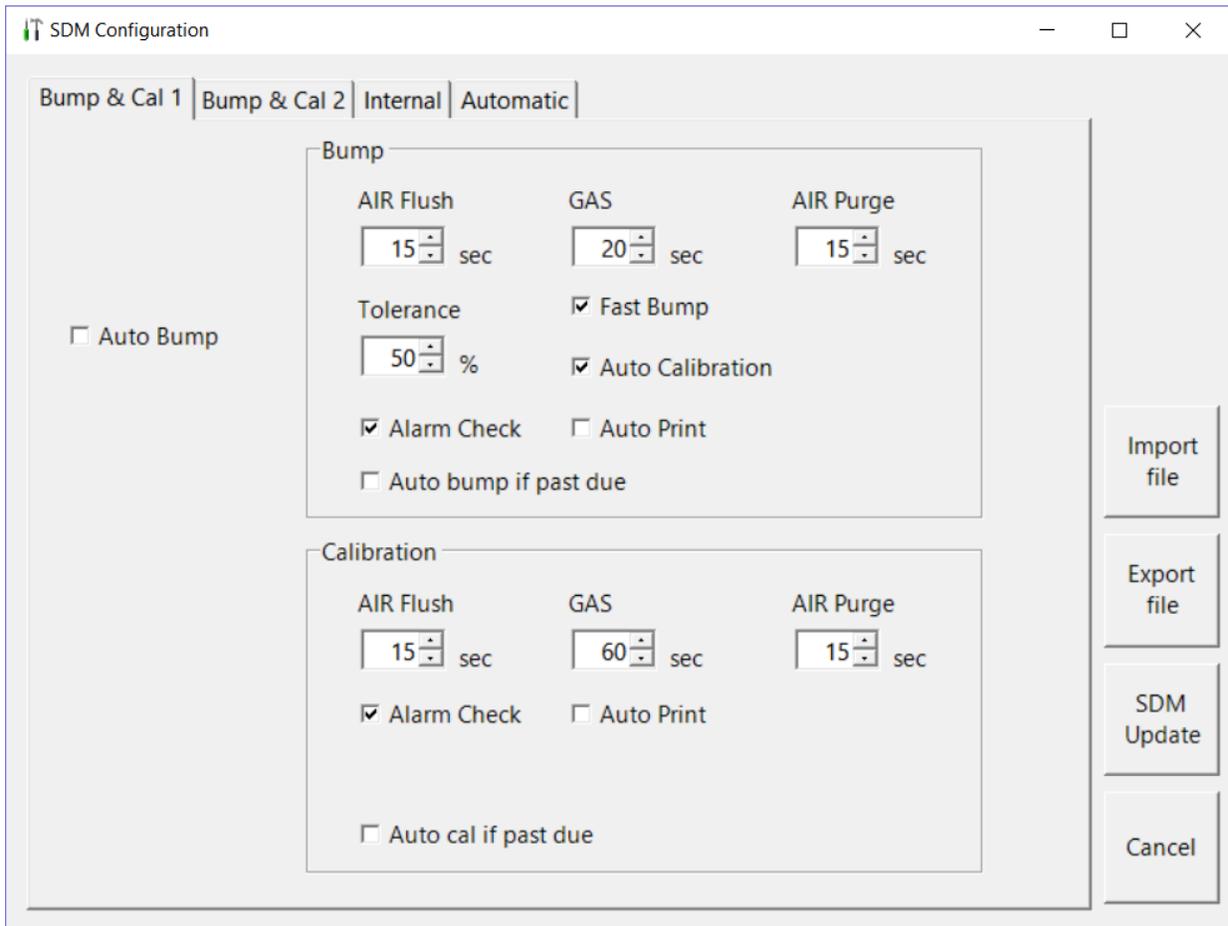


Figure 22: SDM Window

## Bump & Cal 1 Tab

This section describes the Bump & Cal 1 Tab of the SDM Window.



**Figure 23: Bump & Cal 1 Tab**

The parameters available for editing are shown below along with their available options and factory settings.

**Table 7: Bump & Cal 1 Tab Parameters**

| Parameter      | Available Choices   | Factory Setting  | Operation Affected  |
|----------------|---|------------------|---|
| Auto Bump      | <ul style="list-style-type: none"> <li>Selected (On)</li> <li>Deselected (Off)</li> </ul> | Deselected (Off) | <ul style="list-style-type: none"> <li>Standalone</li> <li>PC Controller</li> </ul> |
| Bump AIR Flush | 15 - 120 seconds  | 15 seconds       | <ul style="list-style-type: none"> <li>Standalone</li> <li>PC Controller</li> </ul> |
| Bump GAS       | 20 - 120 seconds  | 20 seconds       | <ul style="list-style-type: none"> <li>Standalone</li> <li>PC Controller</li> </ul> |

**Table 7: Bump & Cal 1 Tab Parameters**

| <b>Parameter</b>        | <b>Available Choices</b>  | <b>Factory Setting</b> | <b>Operation Affected</b>   |
|-------------------------|---|------------------------|---|
| Bump AIR Purge          | 5 - 120 seconds   | 15 seconds             | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Bump Tolerance          | 10 - 50%  | 50%                    | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Bump Fast Bump          | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Selected (On)          | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Bump Auto Calibration   | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Selected (On)          | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Bump Alarm Check        | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Selected (On)          | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Bump Auto Print         | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Deselected (Off)       | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Auto bump if past due   | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Deselected (Off)       | PC Controller   |
| Calibration AIR Flush   | 15 - 120 seconds  | 15 seconds             | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Calibration GAS         | 20 - 120 seconds  | 60 seconds             | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Calibration AIR Purge   | 5 - 120 seconds   | 15 seconds             | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Calibration Alarm Check | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Selected (On)          | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Calibration Auto Print  | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Deselected (Off)       | <ul style="list-style-type: none"> <li>• Standalone</li> <li>• PC Controller</li> </ul> |
| Auto cal if past due    | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul> | Deselected (Off)       | PC Controller   |

***Auto Bump***

If **Auto Bump** is selected, a bump test will automatically begin whenever a GX-6000 is connected to the SDM-6000, whether the instrument is due for a bump test or not. This parameter will only appear if a single SDM-6000 is being used. If multiple stations are connected together, the **Auto Bump** selection box will disappear.

### ***AIR Flush (Bump and Calibration)***

The pre-sample flush time is the length of time that the SDM-6000 will draw air through the AIR fitting before performing an air adjust operation.

### ***GAS (Bump and Calibration)***

The gas sample time is the length of time that the SDM-6000 will draw calibration gas through each of the gas fittings.

### ***AIR Purge (Bump and Calibration)***

The post-sample purge time is the length of time that the SDM-6000 will draw air through the AIR fitting to purge calibration gas from the system.

### ***Tolerance (Bump Only)***

The bump test check tolerance determines how close the GX-6000 gas reading must be to the calibration gas concentration for each channel during a bump test in order to pass the bump test. It is defined as a percentage of the calibration gas concentration. The amount that the GX-6000 gas reading differs from the calibration gas concentration must be equal to or less than this percentage of the calibration gas concentration. For example, if the tolerance is set to 50%, and the %LEL calibration gas concentration is 50% LEL, then the bump test gas reading for the LEL channel on the GX-6000 must be 50% LEL  $\pm$  25% LEL.

### ***Fast Bump (Bump Only)***

If Fast Bump is not selected, the gas application during a bump test will continue for the time period defined by the **GAS** bump test parameter regardless of the sensor reading(s).

If Fast Bump is selected and the gas reading for the sensor(s) being tested is above the lower tolerance and below the upper tolerance within 10 seconds, the sensor(s) pass bump testing, the gas application will be stopped, and the test will move on to the next sensor(s) or to the fresh air purge. If the gas reading on any of the tested channels is below the lower tolerance or above the upper tolerance within 10 seconds, the gas application will continue for the time period defined by the **GAS** bump test parameter, and the pass/fail status of the sensor(s) will be determined at that point. Turning Fast Bump on allows calibration gas to be saved when the tested sensors respond quickly and accurately.

Consider the following scenario as an example.

- 50% LEL methane used for bump testing the combustible gas channel
- **GAS** bump test parameter set to 20 seconds
- **Tolerance** set to  $\pm$  50% LEL, which means that the acceptable reading range is 25% LEL - 75% LEL
- **Fast** selected

The table below shows possible readings at 10 seconds and the effect on the gas application.

**Table 8: Example Fast Bump Scenarios**

| <b>Gas Reading 10 Seconds Into Fast Bump</b> | <b>Outcome</b>   |
|--|--|
| 15% LEL (-70% of 50% LEL)                    | <ul style="list-style-type: none"> <li>• Gas application continues for the full 20 seconds</li> <li>• Pass/fail determined at end of 20 seconds</li> </ul> |
| 30% LEL (-40% of 50% LEL)                    | <ul style="list-style-type: none"> <li>• Gas application stops</li> <li>• Sensor passes bump testing</li> </ul>  |
| 60% LEL (+20% of 50% LEL)                    | <ul style="list-style-type: none"> <li>• Gas application stops</li> <li>• Sensor passes bump testing</li> </ul>  |
| 80% LEL (+60% of 50% LEL)                    | <ul style="list-style-type: none"> <li>• Gas application continues for the full 20 seconds</li> <li>• Pass/fail determined at end of 20 seconds</li> </ul> |

***Auto Calibration (Bump Only)***

**Auto Calibration** only applies to bump testing. It can be set to On or Off. If it is set to On, then the docking station will automatically perform a calibration if a bump test fails.

***Alarm Check (Bump and Calibration)***

If **Alarm Check** is selected, a vibrator, LED, and buzzer test is done on the GX-6000 at the end of the bump test or calibration. The vibrator will vibrate, the LEDs will turn on for a few seconds, the buzzer will sound, and the SDM-6000 will determine if these actions were completed successfully.

***Auto Print (Bump and Calibration)***

The printer must be connected for the **Auto Print** parameter to have any function. If **Auto Print** is selected, the SDM-6000 will automatically print test results at the end of a bump test or calibration. If **Auto Print** is not selected, the SDM-6000 will not automatically print test results but the results can still be printed by pressing the **Print** button at the end of a bump test or calibration.

***Auto bump if past due (Bump Only)***

---

**NOTE:** This parameter only affects SDM-6000 operation and does not affect PC Controller Program operation. See “Parameter Tab” on page 62 for instructions to update an equivalent setting for PC Controller Program operation.

---

If the **Auto bump if past due** parameter is selected and if the connected GX-6000 is due for a bump test, the SDM-6000 will automatically perform a bump test 60 seconds after the GX-6000 is connected. The number of gases used for this bump

test depends on the instrument's B--CHECK setting. If B--CHECK is set to 4GAS, only the standard 4 sensors will be automatically bump tested. If B--CHECK is set to ALL, all sensors will be automatically bump tested.

If the **Auto bump if past due** parameter is deselected, an automatic bump test will not be performed, even if the GX-6000 is due for one.

### ***Auto cal if past due (Calibration Only)***

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**NOTE:** This parameter only affects SDM-6000 operation and does not affect PC Controller Program operation. See "Parameter Tab" on page 62 for instructions to update an equivalent setting for PC Controller Program operation.

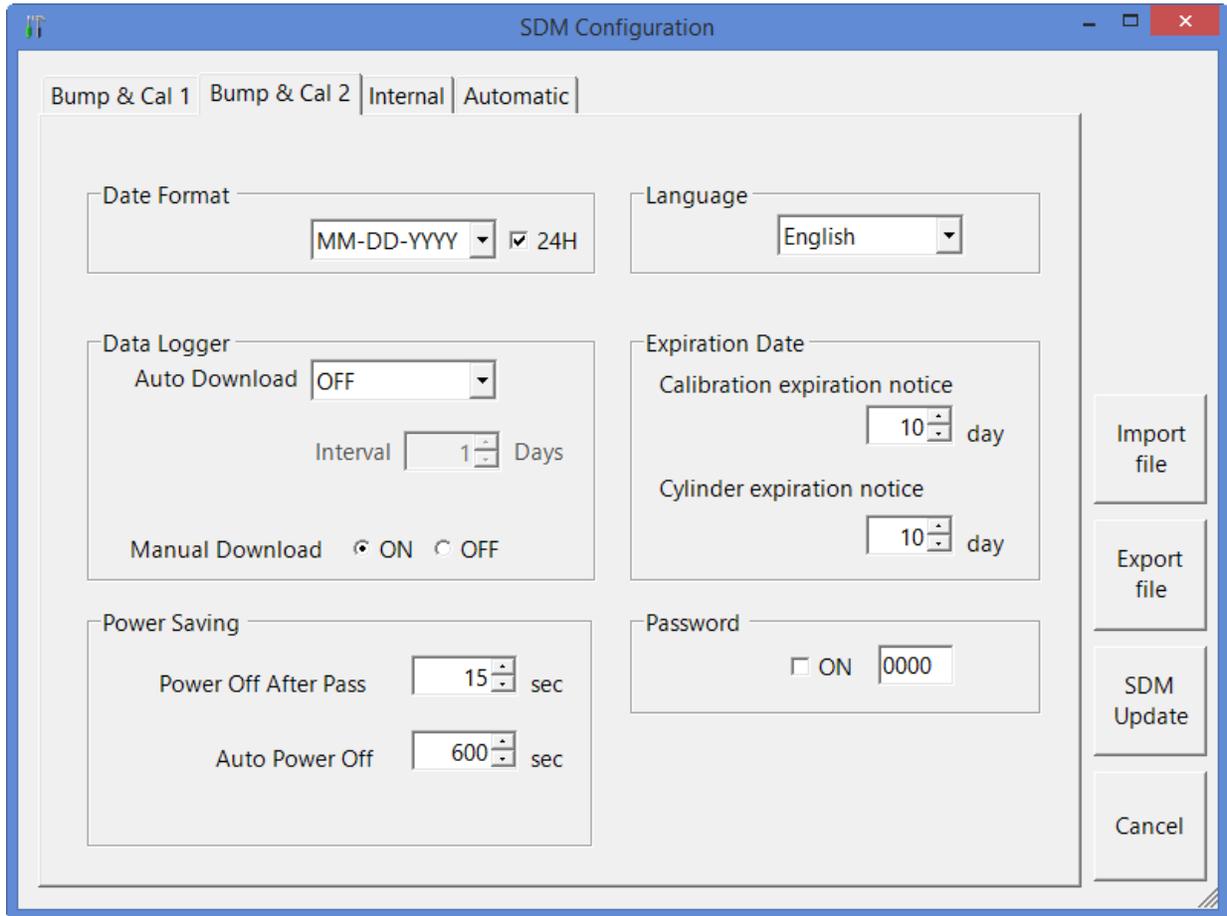
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If the **Auto cal if past due** parameter is selected and if the connected GX-6000 is due for a calibration, the SDM-6000 will automatically perform a calibration 60 seconds after the GX-6000 is connected. The number of gases used for this calibration depends on the instrument's C--CHECK setting. If C--CHECK is set to 4GAS, only the standard 4 sensors will be automatically calibrated. If C--CHECK is set to ALL, all sensors will be automatically calibrated.

If the **Auto cal if past due** parameter is deselected, an automatic calibration will not be performed, even if the GX-6000 is due for one.

## Bump & Cal 2 Tab

This section describes the Bump & Cal 2 Tab of the SDM Window.



**Figure 24: Bump & Cal 2 Tab**

The parameters available for editing are shown below along with their available options and factory settings.

**Table 9: Bump & Cal 2 Tab Parameters**

| Parameter   | Available Choices   | Factory Setting  |
|-------------|---|--|
| Date Format | <ul style="list-style-type: none"> <li>DD-MM-YYYY (day/month/year)</li> <li>YYYY-MM-DD (year/month/day)</li> <li>MM-DD-YYYY (month/day/year)</li> <li>24H selected</li> <li>24H deselected</li> </ul> | <ul style="list-style-type: none"> <li>MM-DD-YYYY AND</li> <li>24H selected</li> </ul> |

**Table 9: Bump & Cal 2 Tab Parameters**

| <b>Parameter</b>  | <b>Available Choices</b>   | <b>Factory Setting</b>     |
|---|--|----------------------------|
| Data Logger Auto Download   | <ul style="list-style-type: none"> <li>• OFF</li> <li>• Every Time</li> <li>• Interval</li> </ul>  | OFF                        |
| Data Logger Interval<br><i>NOTE: Only active if "Interval" is selected for Data Logger Auto Download.</i> | 1 - 60 days  | 1 day                      |
| Manual Download   | <ul style="list-style-type: none"> <li>• ON</li> <li>• OFF</li> </ul>  | ON                         |
| Power Off After Pass  | 0 - 99,999 seconds   | 15 seconds                 |
| Auto Power Off  | 0 - 99,999 seconds   | 600 seconds                |
| Language  | <ul style="list-style-type: none"> <li>• English</li> <li>• French</li> <li>• German</li> <li>• Italian</li> <li>• Japanese</li> <li>• Korean</li> <li>• Portuguese</li> <li>• Russian</li> <li>• Spanish</li> </ul> | English                    |
| Calibration Expiration Notice   | 0 - 180 days   | 10 days                    |
| Cylinder Expiration Notice  | 1 - 180 days   | 10 days                    |
| Password  | <ul style="list-style-type: none"> <li>• Selected (On)</li> <li>• Deselected (Off)</li> </ul>  | Deselected (Off)<br>(0000) |

***Date Format***

This parameter allows you to change how the date and time are displayed on the SDM-6000. Use the drop down menu to select the date format. Select or deselect **24H** to use or not use a 24-hour clock.

***Data Logger Auto Download***

This parameter allows you to turn on an automatic download of a connected GX-6000's saved data. A manual data download can be performed using the PC Controller Program but if a data download is desired in Standalone Mode, it must be set up using this setting.

- **OFF:** No data download to the PC Controller Program or to the SD card, depending on how the SDM-6000 is being used, will be performed when a GX-6000 is connected to the SDM-6000.

- **Every Time:** A data download to the PC Controller Program or to the SD card, depending on how the SDM-6000 is being used, will automatically occur every time a GX-6000 is connected to the SDM-6000.
- **Interval:** A data download to the PC Controller Program or to the SD card, depending on how the SDM-6000 is being used, is performed once per interval. If this option is selected, the **Auto Download Interval** parameter becomes active and needs to be set. The **Interval** parameter is described below.

### ***Data Logger Interval***

The **Data Logger Interval** is the length of time, in days, that will pass before data is automatically downloaded from a GX-6000 if **Data Logger Auto Download** is set to **Interval**. If the GX-6000 is connected to an SDM-6000 before the interval has passed, a data download will not automatically occur. The **Data Logger Interval** can be set anywhere from **1** to **60** days. The factory setting is **1** day. Use the arrows to the right of the current setting to change the interval or highlight the current setting and type in the desired value.

### ***Manual Download***

The Manual Download setting allows you to activate the ability to download data manually from a connected GX-6000 to the system's SD card in Standalone Operation. When set to **ON** (default value), the Download button on the SDM-6000 touchscreen becomes active and a manual download in Standalone Mode of the GX-6000's logger data to the SD card can be performed. When set to **OFF**, the Download button is not active and a manual download of the GX-6000's logger data to the SD card cannot be performed in Standalone Mode. This setting has no effect on PC Controlled Operation.

### ***Power Off After Pass***

This is the length of time that will pass after a successful bump test, calibration, or alarm check before the program will automatically shut off the GX-6000. Use the arrows to the right of the current setting to change the value or highlight the current setting and type in the desired value. It is defined in seconds with a maximum setting of **99,999** seconds. The factory setting is **15** seconds.

### ***Auto Power Off***

This is the length of time that will pass after the last operation is finished before the program will automatically shut off the GX-6000. If a successful bump test, calibration, or alarm check is performed, the program will automatically shut off the GX-6000 in the time defined in **Power Off After Pass** regardless of the **Auto Power Off** setting. Use the arrows to the right of the current setting to change the value or highlight the current setting and type in the desired value. It is defined in seconds with a maximum setting of **99,999** seconds. The factory setting is **600** seconds.

### ***Language***

Use this item to change the language of the SDM-6000. Changing this parameter does not change the GX-6000's language or the PC Controller Program's language. Click the arrow to the right of the current setting and use the drop down menu to

select the desired language.

### ***Calibration Expiration Notice***

This is the length of time, in days, before a GX-6000 is due for calibration that the SDM-6000 and PC Controller Program will give an indication that the GX-6000's calibration due date is approaching. So if calibration is due on 12/20/15 and the **Calibration Expiration Notice** is set to **10** days, the impending-calibration indication will begin appearing on 12/10/15. If the GX-6000 is connected to the PC Controller Program within this time period, the GX-6000's information will be highlighted in orange. If the GX-6000 is connected to the SDM-6000 within this time period, "Cal Limit Soon" will display in the grey bar at the top of the Function and Unit Tabs (Standalone operation only).

### ***Cylinder Expiration Notice***

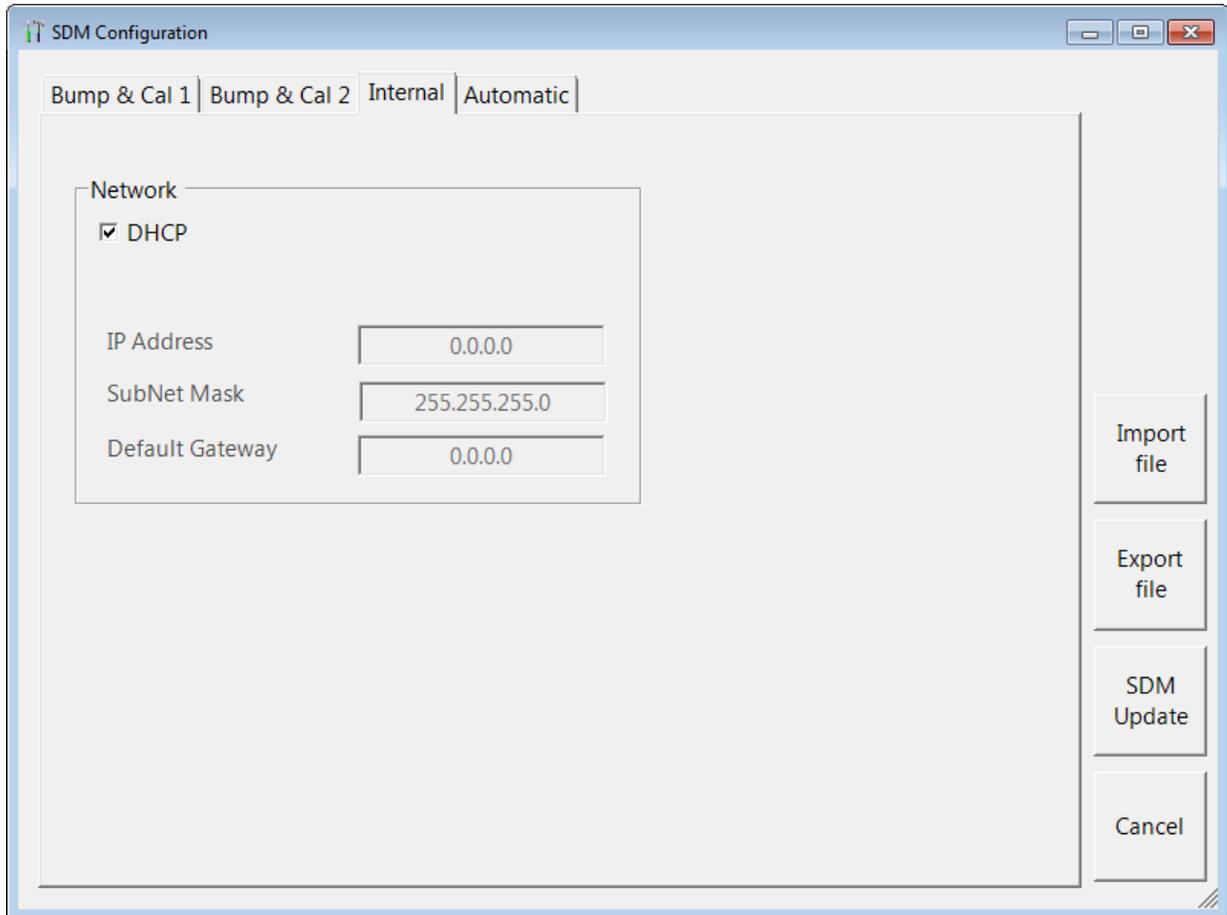
This is the length of time, in days, before a cylinder's expiration date that the SDM-6000 and PC Controller Program will give an indication that the cylinder's expiration date is approaching. So if the cylinder expires on 12/20/15 and the **Cylinder Expiration Notice** is set to **10** days, the cylinder-expiring indication will begin appearing on 12/10/15. The PC Controller Program will show a message in the message window and the cylinder will be highlighted in orange if you open the Cylinders Window. The cylinder icon in the bottom left corner of the SDM-6000's Function Tab will change from green to orange (Standalone operation only).

### ***Password***

Turning the password on adds password protection to the SDM Window and to the Configuration Menu if the SDM-6000 is used in Standalone Mode. The factory set password is "0000" but a user selected password can be entered in the space to the right of the **ON** selection box.

## Internal Tab

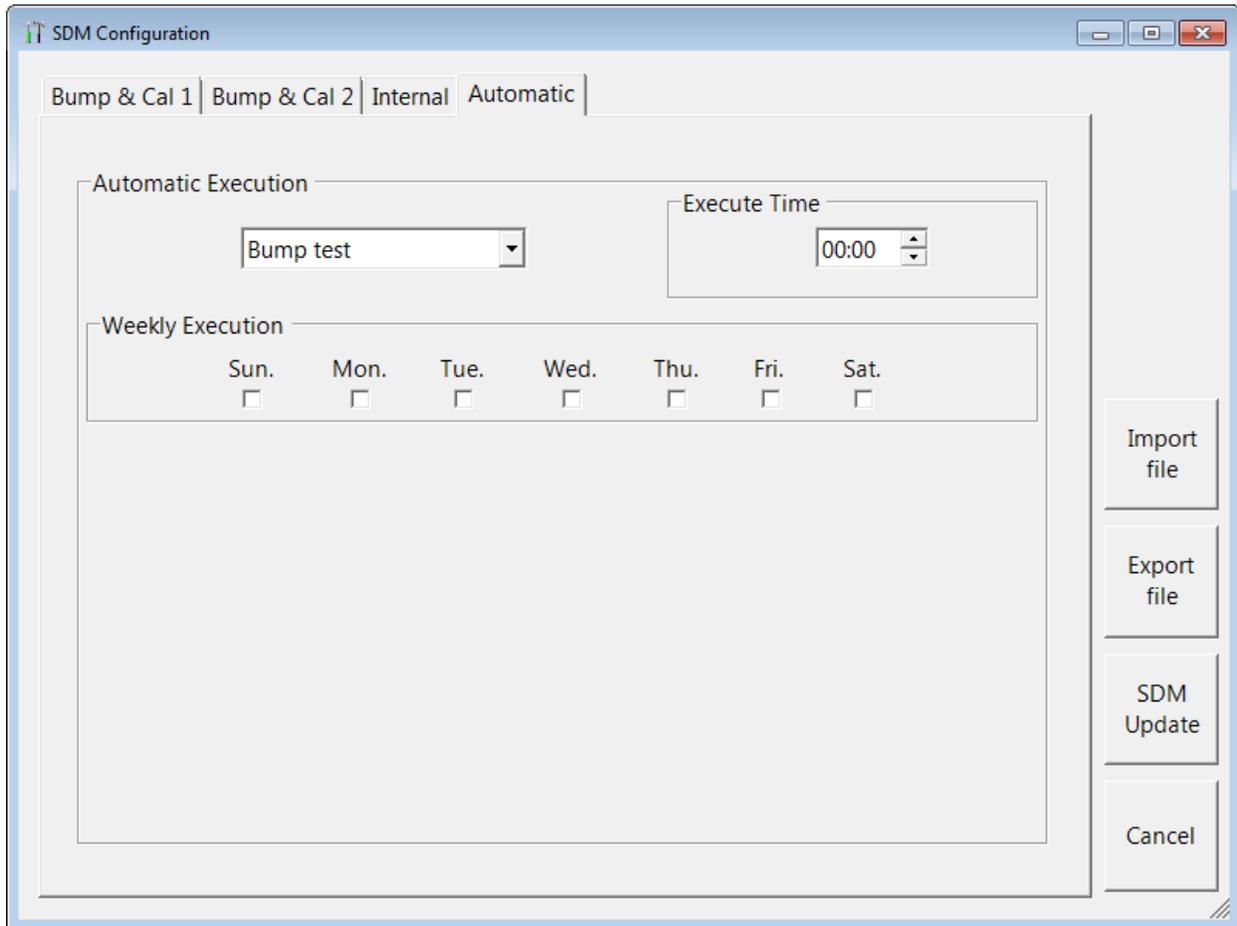
The Internal Tab is used for setting up a LAN connection on a non-DHCP network and does not have any function in the SDM-6000's PC Controlled Configuration. Instructions for using the Internal Tab can be found in the SDM-6000 Standalone Configuration Manual.



**Figure 25: Internal Tab**

## Automatic Tab

This section describes the Automatic Tab of the SDM Window.



**Figure 26: Automatic Tab**

The Automatic Tab allows you to set up a bump test, calibration, or alarm check to automatically occur at a specific time on the desired day(s). If a GX-6000 is installed in an SDM-6000 at the specified day/time, the SDM-6000 will turn the GX-6000 on, perform the test, then turn the GX-6000 off.

1. Use the drop down menu to select **Bump Test**, **Calibration**, or **Alarm Check**. Only 1 test can be selected. Multiple tests cannot be done automatically.
2. Highlight the hours or minutes portion of the **Execute Time** and then use the arrows to change the selection or type in the desired value.
3. Select what day(s) you would like the test to be done.

## Exporting an SDM File

Use the **Export File** button on the right side of the SDM Window to save a parameter configuration file based on a connected SDM-6000's parameter settings. The file can then be uploaded at a later time to another SDM-6000 to make its parameter settings match the original SDM-6000's parameter settings or to restore the parameter

settings of the original SDM-6000 if they have been changed.

The parameter configuration files that are created have a .sdm file extension. These files can only be used by the PC Controller Program. When you use **Export File**, you can save the created files to any accessible location on your hard drive. Make sure to define a convenient location on your hard drive for these files if you use this feature so that you can conveniently find them when you want to upload a file to an SDM-6000. When you select names for these files, you may want to structure the file names so you can identify from which SDM-6000 the file was saved or so that you can identify a particular parameter configuration. Structure the file names so that you can easily identify the files as containing the information that is important to you.

1. Be sure that all of the parameters in the Bump & Cal 1, Bump & Cal 2, and Automatic tabs are appropriately set for your application.
2. Click **Export File**.
3. Choose a destination for the file and type in a file name.
4. Click **Save**.

### Importing an SDM File

Use the **Import File** button on the right side of the SDM Window to load a parameter configuration file that can be uploaded to the SDM-6000. The parameter configuration files have a .sdm extension and are only readable by the PC Controller Program. The parameter configuration files are user-created by using the **Export File** button to save a file based on a connected docking station's parameter settings. See "Exporting an SDM File" on page 49 for a description of how to create and save a parameter configuration file.

When you upload a parameter configuration file, you are uploading SDM-6000 parameters to the SDM-6000. GX-6000 parameters are not affected.

1. Click **Import File**.
2. Navigate to the location of your stored .sdm file.
3. Click **Open**.
4. The parameters in the SDM Window's tabs will automatically be changed, if necessary, to agree with the parameters in the imported .sdm file.

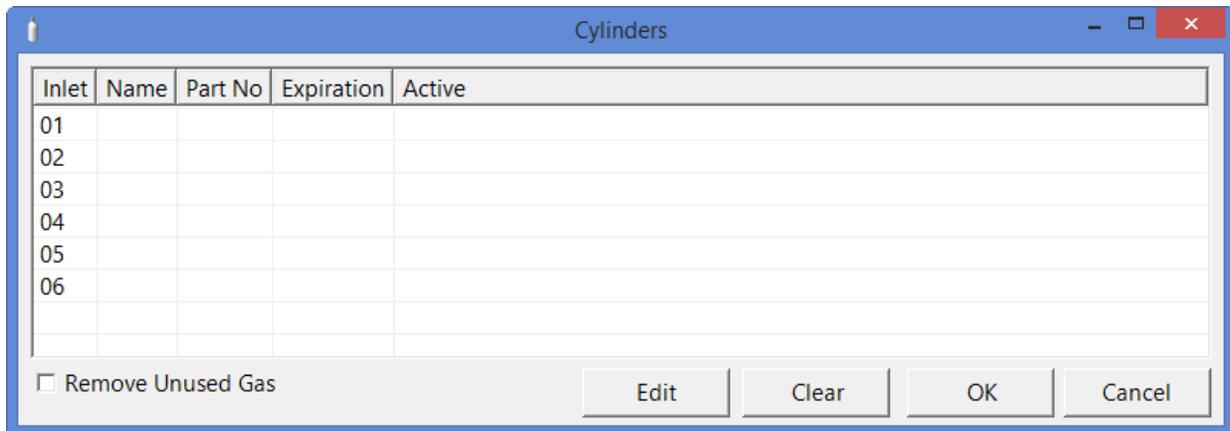
### Returning to the Main Window

1. When you are finished making changes, click **SDM Update**. If you want to save the changes, click **Yes** in the window that comes up. If you do not want to save the changes, click **No** in the window that comes up.

To exit the SDM Window and return to the main program window without saving any changes, click **Cancel** in the SDM Window and click **OK** in the confirmation screen that comes up.

## Setting Up Cylinders in the Cylinders Window

The Cylinders Window allows you to assign cylinders to the SDM-6000 or SV-3's gas inlets. If desired, the window will keep track of those cylinders' expiration dates. If a cylinder's expiration date is nearing or has passed, the PC Controller Program will alert you in the message area of the main program window as soon as the program is started. The Cylinders Window comes with a list of predefined cylinders that are fairly common. If a cylinder that you need to use is not on this list, you can define your own cylinder.



**Figure 27: Cylinders Window**

The Cylinders Window shows the cylinder name, part number, expiration date, and active status for each cylinder.

The settings in the Cylinders Window correlate to the inlet parameter settings done in the SDM-6000's Config Menu. If any settings have been made to the inlet parameters at the SDM-6000, those settings will appear in the Cylinders Window.

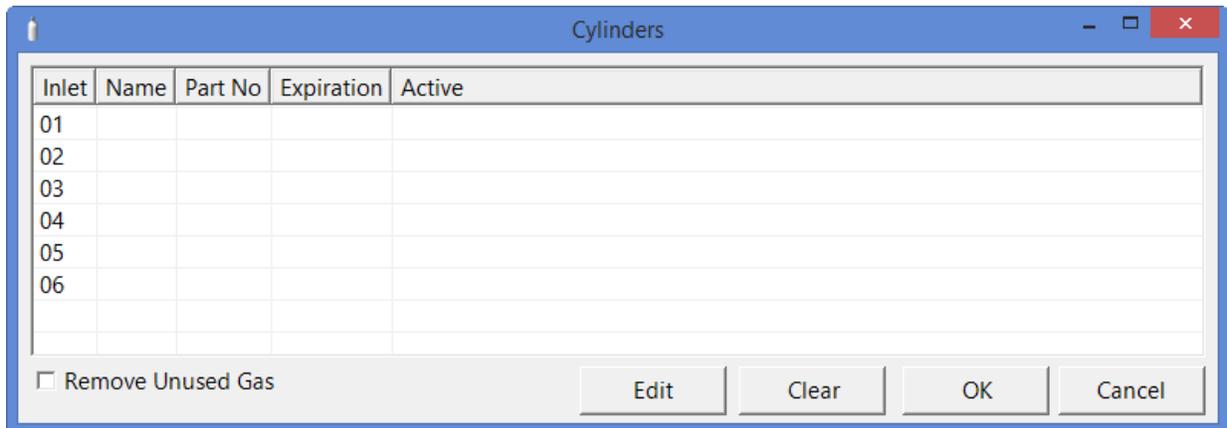
### Selecting a Cylinder from the Predefined List

The Cylinders Window comes with several predefined cylinders that you can choose from.

1. To access the Cylinders Window, click the **Cylinders** button along the top of the main program window.

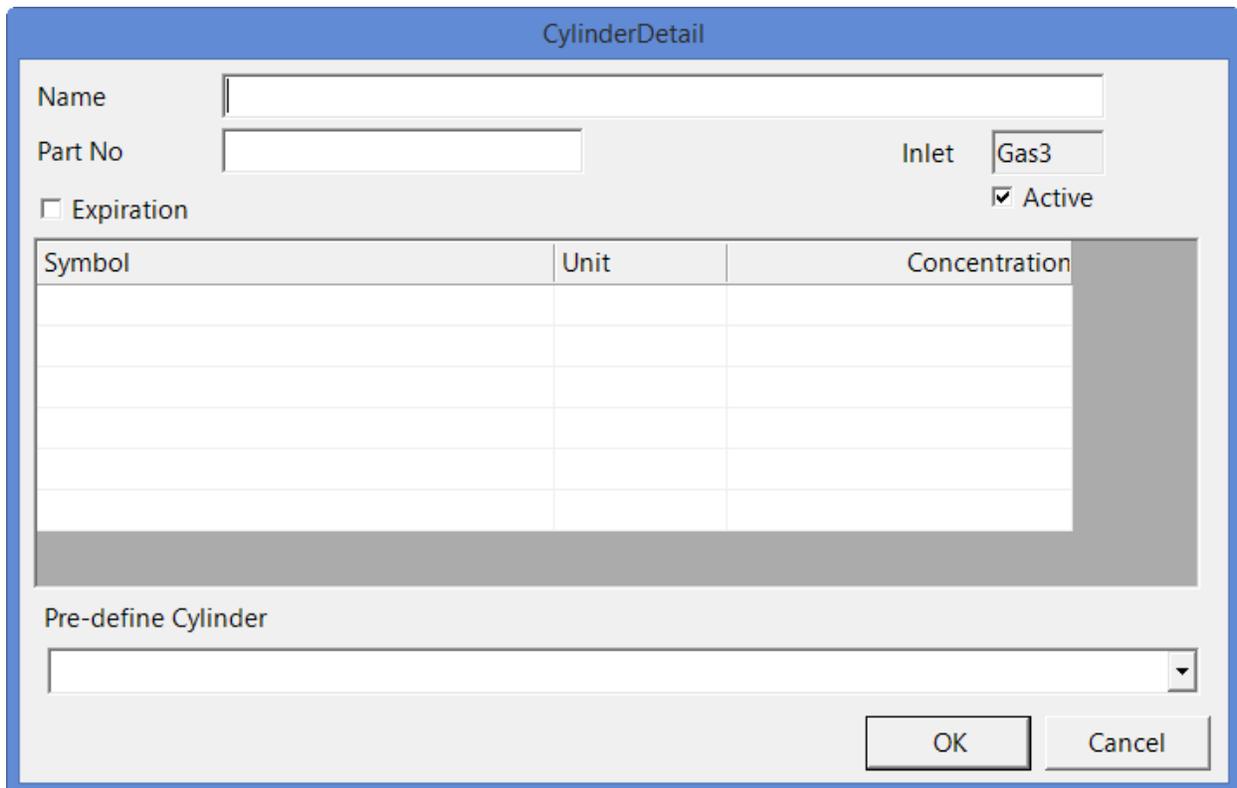


2. The Cylinders Window will appear.



**Figure 28: Cylinders Window**

3. Double click the line (or single click the line and click **Edit**) that corresponds with the gas inlet you'd like to set up. For example, double click line 3 (or single click line 3 and click **Edit**) to set up a cylinder for the GAS 3 inlet on the SDM-6000 or SV-3. The Cylinder Detail window will display.



**Figure 29: Cylinder Detail Window**

4. The pre-defined cylinders list is located in a drop down menu at the bottom of the window. Click the drop down arrow to view the pre-defined cylinders list. Scroll down to view additional cylinders.

The screenshot shows a software window titled "CylinderDetail". It contains several input fields: "Name", "Part No", "Inlet" (set to "Gas3"), and a checked "Active" checkbox. There is also an unchecked "Expiration" checkbox. Below these is a table with three columns: "Symbol", "Unit", and "Concentration". The table is currently empty. At the bottom, there is a "Pre-define Cylinder" dropdown menu that is open, showing a list of pre-defined cylinders with their symbols and concentrations. The first item in the list is highlighted in blue.

| Symbol | Unit | Concentration |
|--------|------|---------------|
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |

Pre-define Cylinder

- 81-0016RK-05 : CH4(100vol%)
- 81-0154RK-02 : CH4(50%LEL)/O2(12%)/H2S(25ppm)/CO(50ppm)
- 81-0143RK-02 : CH4(50%LEL)/O2(12%)/H2S(25ppm)/CO(50ppm)/IBL(100ppm)
- 81-0142RK-02 : CH4(50%LEL)/O2(12%)/H2S(25ppm)/CO(50ppm)/SO2(5ppm)
- 81-0090RK-03 : CH4(50%LEL)/O2(12%)CO(50ppm)
- 81-0190RK-02 : Cl2(5 ppm)
- 81-0073RK-03 : CO2(15vol%)

**Figure 30: Pre-Defined Cylinders List**

5. Click the cylinder you'd like to use. In this example, Cl<sub>2</sub> has been selected. The **Name**, **Part No.**, **Symbol**, **Unit**, and **Concentration** fields will automatically be filled in.

The screenshot shows a software window titled "CylinderDetail". It contains several input fields and a table. The "Name" field is filled with "Cl2(5 ppm)", "Part No." with "81-0190RK-02", and "Inlet" with "Gas3". There is a checkbox for "Expiration" which is unchecked, and a checkbox for "Active" which is checked. Below these is a table with three columns: "Symbol", "Unit", and "Concentration". The first row of the table contains "Cl2", "ppm", and "5". At the bottom, there is a "Pre-define Cylinder" section with a dropdown menu showing "81-0190RK-02 : Cl2(5 ppm)" selected. "OK" and "Cancel" buttons are at the bottom right.

| Symbol | Unit | Concentration |
|--------|------|---------------|
| Cl2    | ppm  | 5             |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |

**Figure 31: Cylinder Detail Window Filled In with Pre-Defined Info**

- If you would like to set an expiration date for the cylinder, select the box next to **Expiration**.

CylinderDetail

Name: Cl2(5 ppm)

Part No: 81-0190RK-02      Inlet: Gas3

Expiration: Wednesday, June 29, 2016       Active

| Symbol | Unit | Concentration |
|--------|------|---------------|
| Cl2    | ppm  | 5             |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |

Pre-define Cylinder: 81-0190RK-02 : Cl2(5 ppm)

OK      Cancel

**Figure 32: Expiration Date**

- Set the expiration date by clicking the drop down menu arrow and selecting a date from the calendar that appears. If the number of days left before the cylinder expires is less than the time defined in the **Cylinder Expiration Notice** parameter in the SDM Window, the line in the Cylinders Window that corresponds to this cylinder will turn orange. The line in the Cylinders Window that corresponds to this cylinder will turn red if the expiration date has passed.
- Select or deselect the **Active** box for each cylinder. If the cylinder is active, the PC Controller Program will alert you at start up if the cylinder has passed its expiration date and will include the associated inlet in testing. If it is not active, the program will not alert you if the cylinder has passed its expiration date and will not include the associated inlet in testing.

If the **Active** box is deselected, the program will not consider it as a cylinder being used and will give you an inlet error if you connect an instrument that requires that cylinder for bump testing or calibration.

- To return to the Cylinders Window and save your changes, click **OK** in the Cylinder Detail Window.

To return to the Cylinders Window without saving your changes, click **Cancel**.

10. Make any necessary updates to other inlets.
11. To return to the Main Window and save your changes, click **OK** and then click **Yes** in the window that comes up.

To return to the Main Window without saving your changes, click **Cancel** and then click **OK** in the window that comes up.

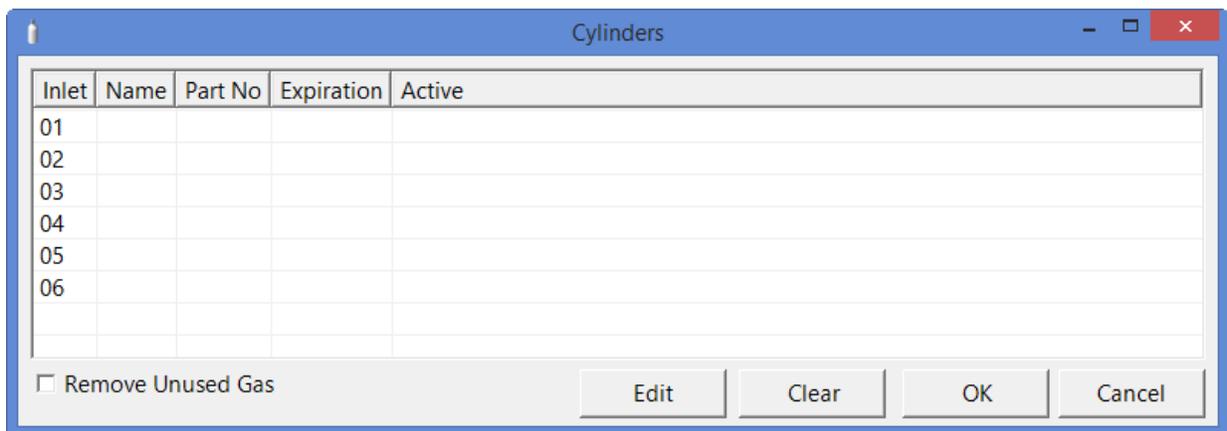
## Defining New Cylinders

If your GX-6000 configuration requires the use of a cylinder that is not in the predefined list, you can add that cylinder by either typing in the information for the cylinder or by editing the information for an existing cylinder.

1. To access the Cylinders Window, click the **Cylinders** button along the top of the main program window.



2. The Cylinders Window will appear.



**Figure 33: Cylinders Window**

3. Double click the line (or single click the line and click **Edit**) that corresponds with the gas inlet you'd like to set up. For example, double click line 3 (or single click line 3 and click **Edit**) to set up a cylinder for the GAS 3 inlet on the SDM-6000 or SV-3. The Cylinder Detail window will display.

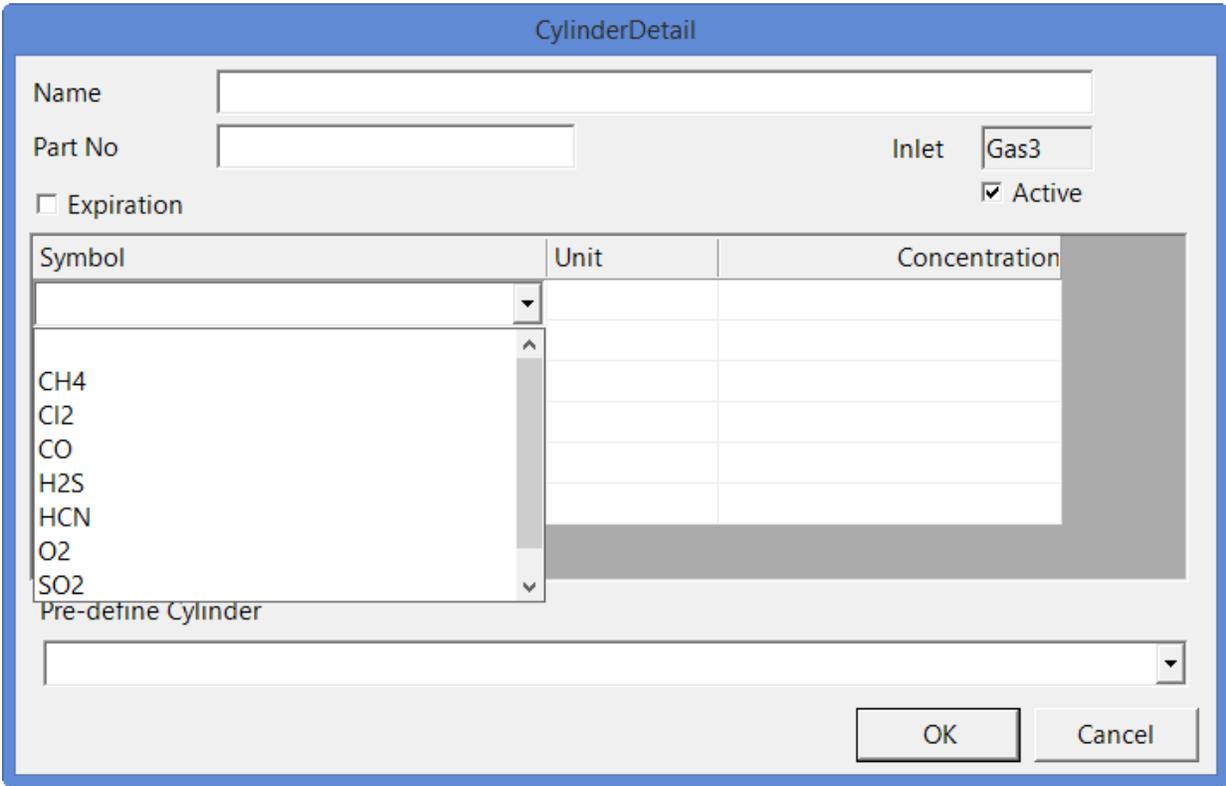
The screenshot shows the 'CylinderDetail' window. It contains the following elements:

- Name:** A text input field.
- Part No:** A text input field.
- Inlet:** A dropdown menu currently set to 'Gas3'.
- Expiration:** A checkbox that is currently unchecked.
- Active:** A checkbox that is currently checked.
- Table:** A table with three columns: 'Symbol', 'Unit', and 'Concentration'. The table is currently empty.
- Pre-define Cylinder:** A dropdown menu.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom right.

**Figure 34: Cylinder Detail Window**

4. Click in the **Name** field and type in a name for the cylinder. Use something descriptive that will help you distinguish it from other cylinders. You can also select a pre-defined cylinder and then edit the name that is automatically generated.
5. If you want to enter a part number for the cylinder, click in the **Part No** field and type in a part number. This field is normally used for an RKI part number.

6. Enter a gas symbol for each cylinder component you want to identify. Click in the **Symbol** field of the desired line and type in characters or click the drop down arrow and select a symbol from the list.



The screenshot shows a dialog box titled "CylinderDetail". It contains several input fields and a table. The "Name" field is empty. The "Part No" field is empty. The "Inlet" dropdown menu is set to "Gas3". There is a checkbox for "Expiration" which is unchecked, and a checkbox for "Active" which is checked. Below these is a table with three columns: "Symbol", "Unit", and "Concentration". The "Symbol" column has a dropdown arrow on the right side. A list of gas symbols is visible in the dropdown: CH4, Cl2, CO, H2S, HCN, O2, and SO2. Below the table is a "Pre-define Cylinder" dropdown menu. At the bottom right are "OK" and "Cancel" buttons.

| Symbol | Unit | Concentration |
|--------|------|---------------|
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |
|        |      |               |

Figure 35: Symbol List

7. Enter the units for the cylinder by clicking in the **Unit** field, clicking the drop down arrow, and selecting units from the list.

The screenshot shows the 'CylinderDetail' dialog box. It has fields for 'Name', 'Part No', 'Inlet' (set to 'Gas3'), and 'Active' (checked). There is an 'Expiration' checkbox. Below these is a table with columns 'Symbol', 'Unit', and 'Concentration'. The 'Unit' column has a dropdown menu open, showing options: 'vol%', '%LEL', 'ppm', 'ppb', and '%'. At the bottom, there is a 'Pre-define Cylinder' dropdown menu and 'OK' and 'Cancel' buttons.

**Figure 36: Unit List**

8. Enter the gas concentration for each cylinder's component by clicking in the **Concentration** field and typing in the characters.
9. Set the expiration date by clicking the drop down menu arrow and selecting a date from the calendar that appears. If the number of days left before the cylinder expires is less than the time defined in the **Cylinder Expiration Notice** parameter in the SDM Window, the line in the Cylinders Window that corresponds to this cylinder will turn orange. The line in the Cylinders Window that corresponds to this cylinder will turn red if the expiration date has passed.
10. Select or deselect the **Active** box for each cylinder. If the cylinder is active, the PC Controller Program will alert you at start up if the cylinder has passed its expiration date and will include the associated inlet in testing. If it is not active, the program will not alert you if the cylinder has passed its expiration date and will not include the associated inlet in testing.

If the **Active** box is deselected, the program will not consider it a cylinder being used and will give you an inlet error if you connect an instrument that requires that cylinder for bump testing or calibration.

11. To return to the Cylinders Window and save your changes, click **OK** in the Cylinder Detail Window.

To return to the Cylinders Window without saving your changes, click **Cancel**.

12. Make any necessary updates to other inlets.
13. To return to the Main Window and save your changes, click **OK** from the Cylinders Window and then click **Yes** in the window that comes up.  
To return to the Main Window without saving your changes, click **Cancel** from the Cylinders Window and then click **OK** in the window that comes up.

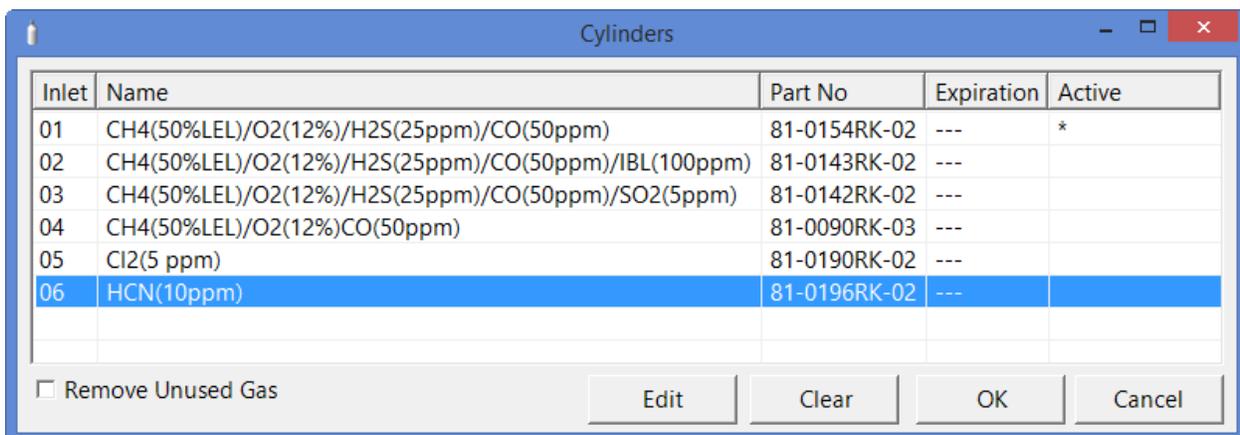
## Clearing Cylinders

Cylinders can be cleared from the Cylinders Window list if they are no longer needed or if you want to clear the old cylinder before defining a new cylinder.

1. Click the **Cylinders** button along the top of the main program window.

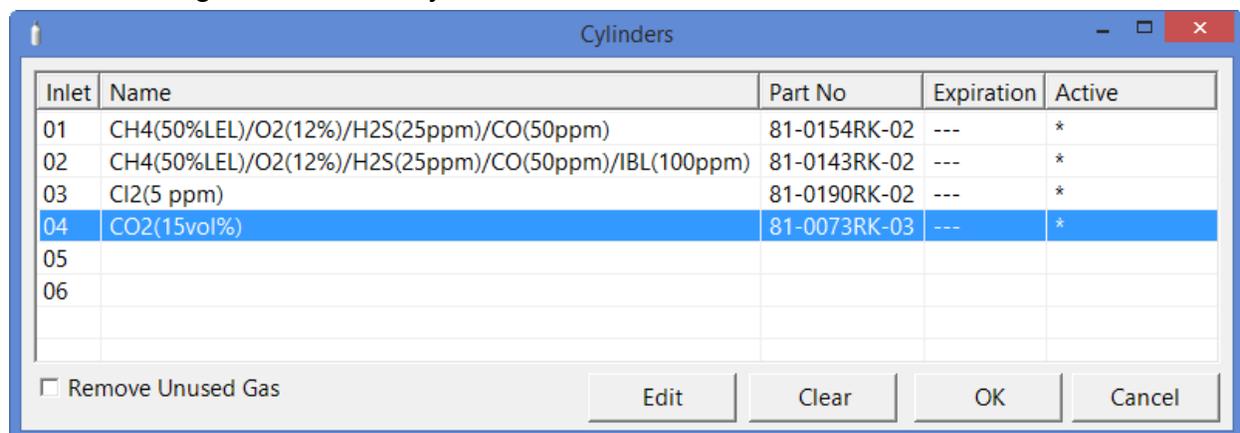


2. The Cylinders Window will appear.



**Figure 37: Cylinders Window**

3. Single click the line you want to clear.



**Figure 38: Cylinder Selected**

4. Click the **Clear** button at the bottom of the screen.
5. Click **OK** in the window that comes up to clear the cylinder. The cylinder will disappear from the Cylinders Window.

## Removing Unused Gases

As you enter cylinder information for the inlets, the **Symbol** drop down menu in the Cylinder Detail Window will populate with those gas names. If you then clear the cylinders from the Cylinders Window, those gas names will still remain in the **Symbol** drop down menu. Selecting **Remove Unused Gas** in the Cylinders Window and then clicking **OK** removes those unused gas names from the **Symbol** drop down menu.

1. Make the desired changes to the Cylinders Window as described in the previous 3 sections.
2. Select the **Remove Unused Gas** box in the bottom left corner of the screen.
3. Click **OK** and then click **Yes** in the window that appears.

---

## Making Parameter, Database, and Password Changes in the Configuration Window

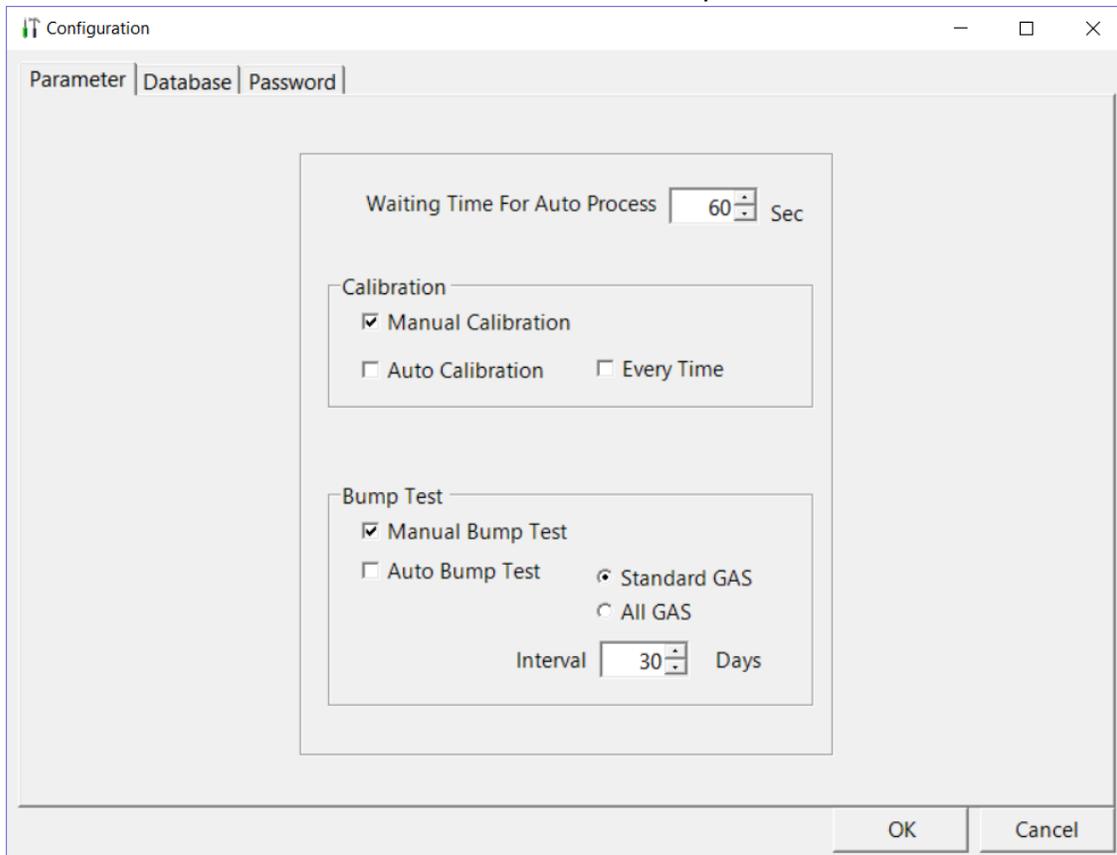
The Configuration Window allows you to update parameters that only affect PC Controller Program operation, view database information, and change the password to enter the Configuration Window.

### Entering the Configuration Window

1. Click the **Config** button.
2. The program will prompt you for a password. The default password is ABCDE. Enter the password and click **OK** keeping in mind that the password is case sensitive. The password can be changed once you enter the Configuration Window.
3. The Parameter Tab of the Configuration Window will be displayed.

## Parameter Tab

The Parameter Tab allows you to view or change bump test and calibration settings that only apply to the PC Controller Program operation. Changing anything in the Parameter Tab of the Config Window does not change any settings in the SDM-6000 and, therefore, does not affect Standalone Mode operation.



**Figure 39: Config Window Parameter Tab**

1. Set the **Waiting Time for Auto Process** value

The **Waiting Time for Auto Process** parameter defines the time delay of an automatic calibration or automatic bump test after an instrument is connected to the docking station. You can set the delay from 0 seconds to 3600 seconds (factory setting is 60 seconds).

2. Select the Calibration options.

In the Calibration section of the Parameter Tab, you can select **Manual Calibration** or **Auto Calibration**.

If **Manual Calibration** is selected, you have to manually select an instrument or instruments in the main program window and click **Calibration** in the lower right corner of the window in order to perform a calibration.

If **Auto Calibration** is selected and **Every Time** is not, if an instrument is due for calibration, a calibration will automatically begin in the time defined by the

**Waiting Time for Auto Process** parameter after that instrument successfully connects to the program and its instrument parameters are retrieved by the program.

If **Auto Calibration** and **Every Time** are selected, a calibration will automatically begin in the time defined by the **Waiting Time for Auto Process** parameter after that instrument successfully connects to the program and its instrument parameters are retrieved by the program regardless of whether a calibration is due.

If neither **Manual Calibration** nor **Auto Calibration** is selected, you will not be able to perform a calibration. The factory setting is **Manual Calibration** selected and **Auto Calibration** deselected. Select the box for the desired operation.

3. Select the Bump Test options.
  - Manual Bump Test/Auto Bump Test

You can select **Manual Bump Test** or **Auto Bump Test**.

If **Manual Bump Test** is selected, you have to manually select an instrument or instruments in the main program window and click **Bump Test** in the lower right corner of the window in order to perform a bump test.

If **Auto Bump Test** is selected, and an instrument is due for bump testing, a bump test will automatically begin in the time defined by the **Waiting Time for Auto Process** parameter after that instrument successfully connects to the program and its instrument parameters are retrieved by the program.

---

**NOTE:** If the instrument's Bump Test Function is set to On, the instrument's information is used to determine if a bump test is needed.

If the instrument's Bump Test Function is set to Off, the PC Controller's Bump Test **Interval** parameter and last successful bump test date are used to determine if a bump test is needed. If a bump test has never been done using the PC Controller Program, an auto bump will be initiated.

---

If neither box is selected, you will not be able to perform a bump test. The factory setting is **Manual Bump Test** selected and **Auto Bump Test** deselected. Select the box for the desired operation.

- Standard GAS/All GAS

The **Auto Bump Test** selection also has a **Standard GAS** and an **All GAS** selection. If **Standard GAS** is selected, only the standard sensors (catalytic LEL, O<sub>2</sub>, CO, and H<sub>2</sub>S) will be bump tested during an automatic bump test. If **All GAS** is selected, all installed sensors will be bump tested during an automatic bump test.

This parameter only affects the operation of the PC Controller Program when used with GX-6000s whose Bump Test Function is set to Off. If the GX-6000's Bump Test Function is set to On, the instrument's B--CHECK setting is used to determine what gases are included in the automatic bump test.

- Interval

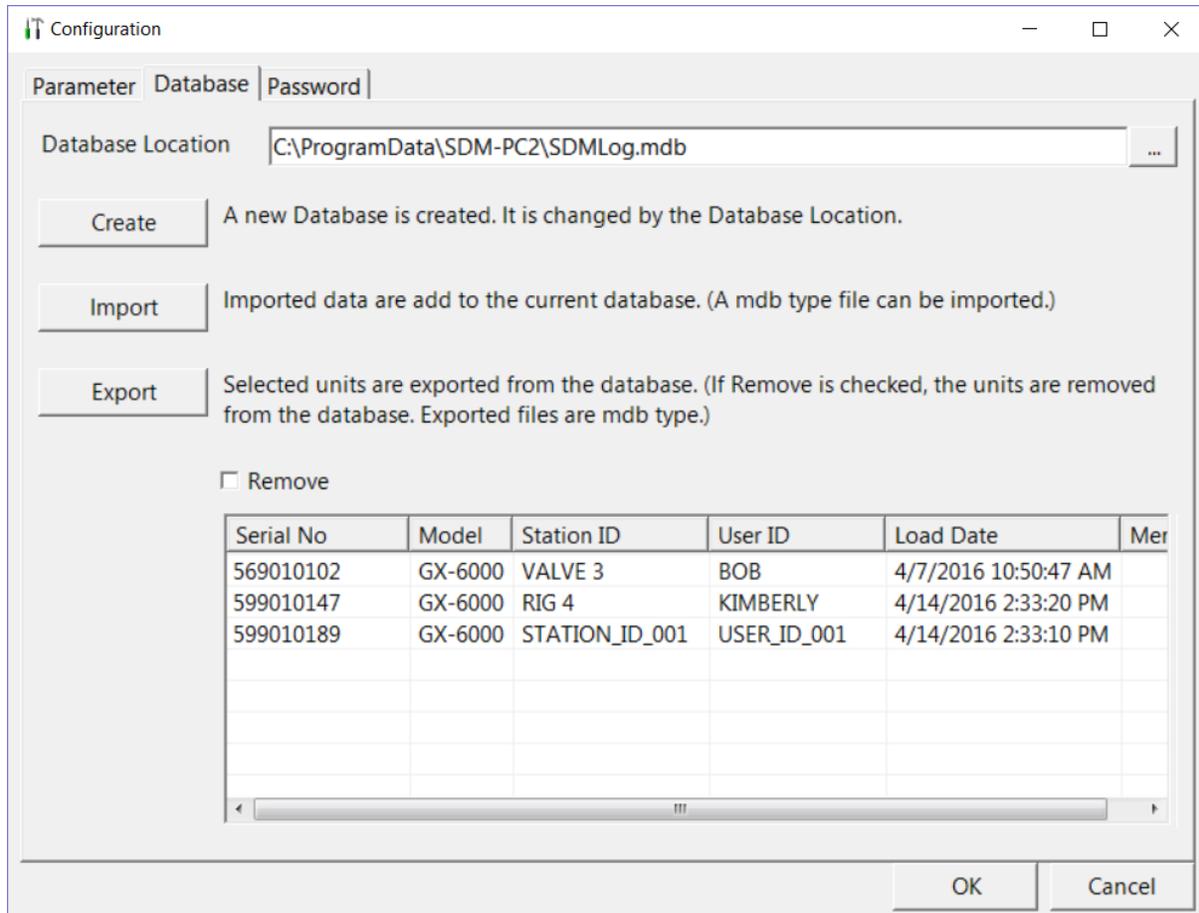
The **Interval** can be set anywhere between 1 and 30 days and is the length of time that can pass before the program will prompt you to perform a bump test. The factory setting is 30 days.

Use the arrows to the right of the current interval or highlight the current setting and type in the desired value. The value you type in must be valid (between 1 and 30 days).

This parameter only affects the operation of the PC Controller Program when used with GX-6000s whose Bump Test Function is set to Off. If the GX-6000's Bump Test Function is set to On, the instrument's bump test interval is used to determine if a bump test is due.

## Database Tab

The Database Tab allows you to view or change where the data from your SDM-6000 docking stations is saved. It also allows you to create a brand new database, import data from another database, or export saved data.



**Figure 40: Config Window Database Tab**

### ***Changing the Database Location***

1. Click the button to the right of the current location. It has three dots on it.
2. Navigate to a new location where a database exists, click on the database to select it, and click **Open**. The new database location will be displayed in the **Database Location** field.
3. A window will appear telling you to restart the PC Controller Program. Click **OK**.
4. Click **OK** in the Database Tab.
5. Click the **Exit** control button in the upper right corner of the main program window.
6. Reopen the PC Controller Program.

## **Making Parameter, Database, and Password Changes in the Configuration Window**

### ***Creating a New Database***

1. Click the **Create** button located along the left side of the Database Tab window.
2. Choose where you would like the new database to be stored, enter a name for it, and click **Save**. You should include the “.mdb” file extension in the name but if you don’t, the program will add it automatically when you save it. The new database will be created but data will not be stored there until you change the file path as described above.

### ***Importing a .mdb File Into the Database***

1. Click the **Import** button located along the left side of the Database Tab window.
2. Select an existing .mdb file that you wish to import. You can import a .mdb file that was created on another computer and moved to your computer, you can select a file that was generated on your computer using the **Create** button, or you can navigate to another network computer’s .mdb file. If you navigate to another computer’s files, the location for the default .mdb file is in the Program Files folder (ie. C:\Program Data\SDM-PC2). It is named SDMLog.mdb. Hidden folders must be visible on the computer in order to locate the .mdb file. If you wish to import a different .mdb file, it will have a different name and may be in a different location.
3. Once you have selected a .mdb file, click **Open**. The program will indicate that the file is being imported. Once the import is finished, the data from the .mdb file will be added to your current data. New serial numbers/station IDs/user IDs will appear in the Data frame of the Logs Window. Instrument information associated with those new GX-6000s will also be available in the Logs Window.

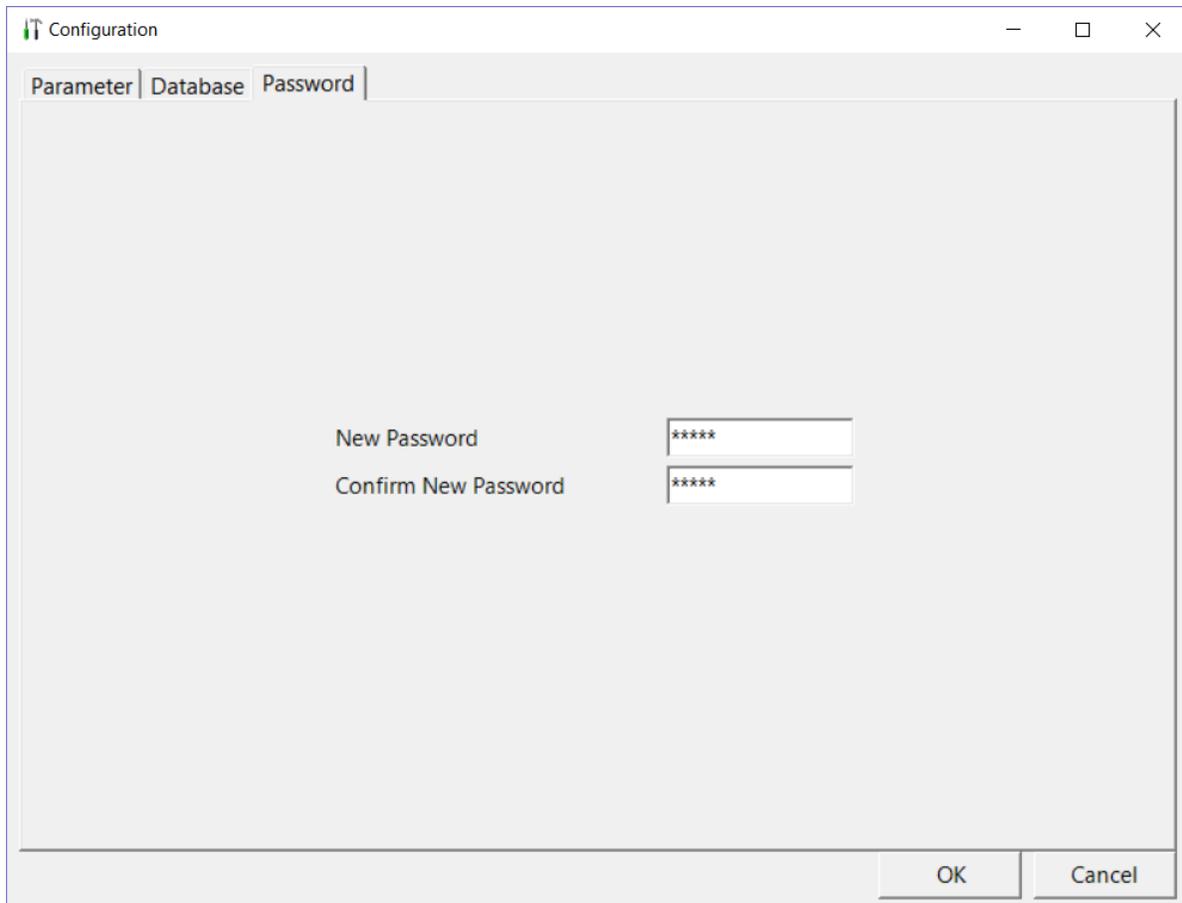
### ***Exporting Data to a .mdb File***

1. Select the desired GX-6000s from the list on the bottom of the Database Tab.
2. Click **Export**. Select where you would like to save the file, and click **Save**. The program will indicate that it is exporting the data and will confirm that it has finished. Click **OK** in the window that comes up.

If you want to remove a GX-6000’s information after it’s been exported, select Remove before selecting **Export**. You cannot remove a GX-6000’s information while it’s connected to the computer so be sure to turn off the GX-6000 before removing data.

## Password Tab

The password Tab allows you to change the Configuration Window password to something other than the factory set ABCDE. The password can be up to 12 characters long and contain any letter, number, or symbol. It is case sensitive.

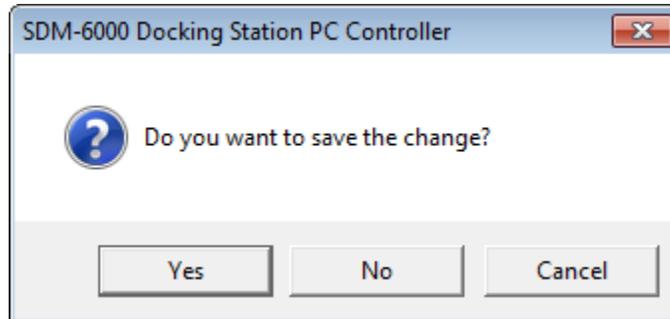


The image shows a screenshot of a software configuration window titled "Configuration". The window has three tabs: "Parameter", "Database", and "Password", with the "Password" tab selected. The main area of the window contains two text input fields. The first field is labeled "New Password" and contains five asterisks (\*\*\*\*\*). The second field is labeled "Confirm New Password" and also contains five asterisks (\*\*\*\*\*). At the bottom right of the window, there are two buttons: "OK" and "Cancel".

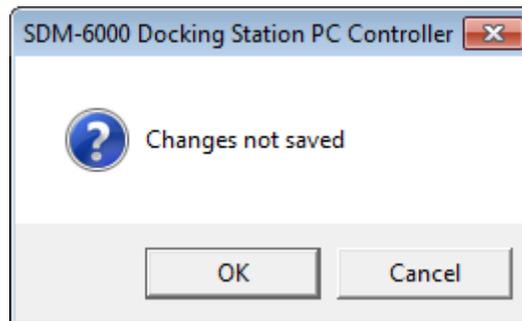
**Figure 41: Configuration Window Password Tab**

To change the password:

1. While in the Configuration Window, click on the Password Tab.
2. Enter the new password in the top box and confirm it in the bottom. Click **OK**. A window will pop up asking you to confirm the change.



- To confirm, click **Yes**.
  - To exit out of Configuration Window without saving the changes, click **No**.
  - To stay in the Password Tab and enter a different password, click **Cancel**.
3. To cancel any changes you have made at any time, click **Cancel** in the main Password Tab. The program will tell you that changes will not be saved. To continue to exit, click **OK**. To return to the Password Tab, click **Cancel**.



# Chapter 5: Operation

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## Overview

This chapter provides a brief overview of the PC Controller Program and describes how to perform a bump test, calibration, and alarm check. It also contains troubleshooting information and instructions for instrument charging.

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## GX-6000, EAGLE 2 and Other GX Type Instrument Connection

There are 3 different versions of the Docking Station PC Controller Program. The SDM-PC2 Docking Station PC Controller Program is intended for use with SDM-6000 docking stations and GX-6000 instruments. The SDM-E2 Docking Station PC Controller Program is intended for use with SDM-E2 docking stations and EAGLE 2 instruments. The SDM-GX Docking Station PC Controller Program is intended for use with other GX type docking stations and GX type instruments (such as the GX-2012, GX-2009, and 03 Series).

Bump tests and calibrations can be performed on multiple GX-6000s, EAGLE 2s, and other GX type instruments at the same time. The SDM-PC2 Docking Station PC Controller Program controls the GX-6000 functions while the SDM-E2 Docking Station PC Controller Program controls the EAGLE 2 functions and the SDM-GX Docking Station PC Controller Program controls the other GX type instrument functions. All 3 programs can be used simultaneously on your PC. Follow all instructions in the appropriate SDM-E2 and SDM-GX type Docking Station PC Controlled Configuration Operator's Manual as well as the instructions in this manual.

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## Overview of the SDM-PC2 Docking Station PC Controller Program

This section provides a brief overview of the program and a description of the main program window. Instructions for using the program are given in other parts of this manual. Use this section to become familiar with the main program window, but before attempting to use the program, make sure to perform the program setup as described in “Setting Parameters in the SDM Window” on page 37 and “Making Parameter, Database, and Password Changes in the Configuration Window” on page 61.

The PC Controller Program is designed to provide manual or automated data downloading, bump testing, calibration, and alarm checking of the GX-6000. It also provides the capability to update GX-6000 parameters such as alarm points. The program compiles a database of the GX-6000s that have been connected to the program which consists of bump test, calibration, and alarm check history, logged data (if a GX-6000's data is downloaded), and memos that record user entered information about a GX-6000 at a particular time.

The GX-6000 is a gas monitoring device for combustible gas, O<sub>2</sub>, H<sub>2</sub>S, CO, and toxic gases. It stores logged data and calibration information in its internal memory. See the GX-6000 Operator's Manual for a complete description of the GX-6000.

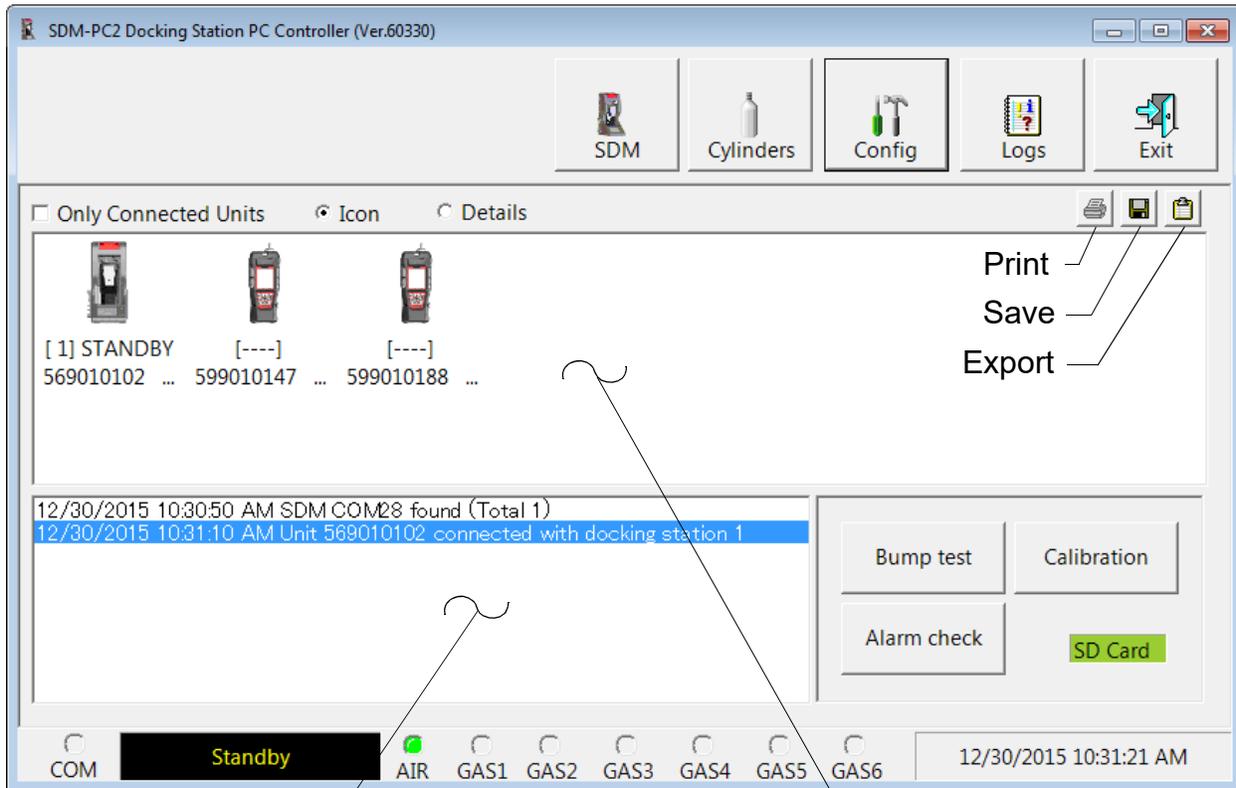
### PC Controller Program Functions

The PC Controller Program has the following basic functions accessed or controlled by buttons in the main program screen.

- Operational setup accessed by the **SDM** control button
- Gas cylinder setup accessed by the **Cylinders** control button
- Program and system configuration accessed by the **Config** control button (this function is password protected)
- Data viewing accessed by the **Logs** control button
- GX-6000 bump testing controlled by the **Bump test** control button
- GX-6000 calibration controlled by the **Calibration** control button
- GX-6000 alarm checking controlled by the **Alarm check** control button

## Main Program Window

The main program window is where the current status of the program operation is shown. Any SDM-6000s and GX-6000s that are currently connected to it and any GX-6000s that have previously been but are not currently connected to it are also shown. The program's various functions are initiated or accessed from this screen. The current date and time are always displayed in the lower right corner of the main program window.



Message Area

SDM-6000/GX-6000  
Display Area

**Figure 42: Parts of the Main Program Window**

### Control Buttons

The **SDM**, **Cylinders**, **Config**, **Logs**, and **Exit** control buttons are located along the top right of the window. The **Bump test**, **Calibration**, and **Alarm check** control buttons are located in the lower right of the window. The use of these control buttons is described in other parts of this manual.

### ***SD Card Indicator***

The SD card indicator is located in the lower right corner of the main program window below the **Calibration** control button and shows the status of an inserted SD card.

**Table 10: SD Card Indicator Colors**

| <b>SD Card Indicator Color</b> | <b>Meaning</b>   |
|--------------------------------|--|
| Gray                           | No SD card inserted.   |
| Green                          | More than 20% of the SD card's memory is available.  |
| Yellow                         | Less than 20% but more than 1 MB (approximately 946 tests) of the SD card's memory is available. |
| Red                            | Less than 1 MB (approximately 946 tests) of the SD card's memory is available.                   |

### ***SDM-6000/GX-6000 Display Area***

The large middle portion of the main program window displays SDM-6000s and GX-6000s that are currently connected to the PC Controller Program and GX-6000s that are in the database. The SDM-6000s are identified by a number. The GX-6000s are identified by their serial number. By selecting either the **Icon** radio button or the **Details** radio button, the SDM-6000s and GX-6000s can be displayed either as icons or in a table format that shows various GX-6000 parameter details such as station ID, user ID, the next scheduled bump test date, and the next scheduled calibration date among others. If the **Only Connected Units** box is checked, then only GX-6000s that are currently connected to the PC Controller Program will be shown.

### ***Program Status***

Three areas of the main program window indicate the program status. The smaller area in the lower left below the SDM-6000/GX-6000 display area is the message area. It displays messages that indicate actions and status of the program.

Below this area is the communications port indicator which shows when the program is communicating with the docking station(s).

To the right of the communications port indicator is the status field. It displays the current status of the program. It can indicate if the software is in standby mode or if it is downloading data among other indications.

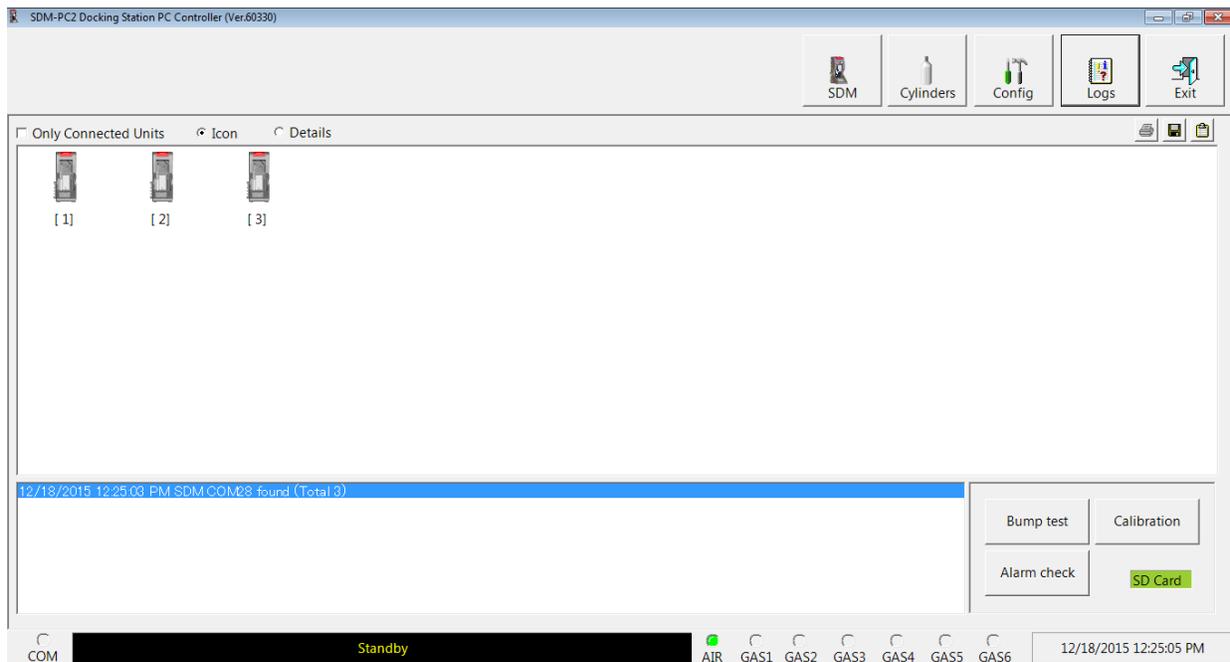
### ***Fitting Indicators***

To the right of the status field are 7 round fitting indicators. They correspond to the AIR and GAS fittings on the left side of the SDM-6000 and the SV-3. They indicate whether the corresponding solenoid is activated so it can allow gas to flow through the fitting it controls. When the indicator is green, the fitting is active. When the indicator is blank, the fitting is not active.

## Connecting GX-6000s to the PC Controller Program

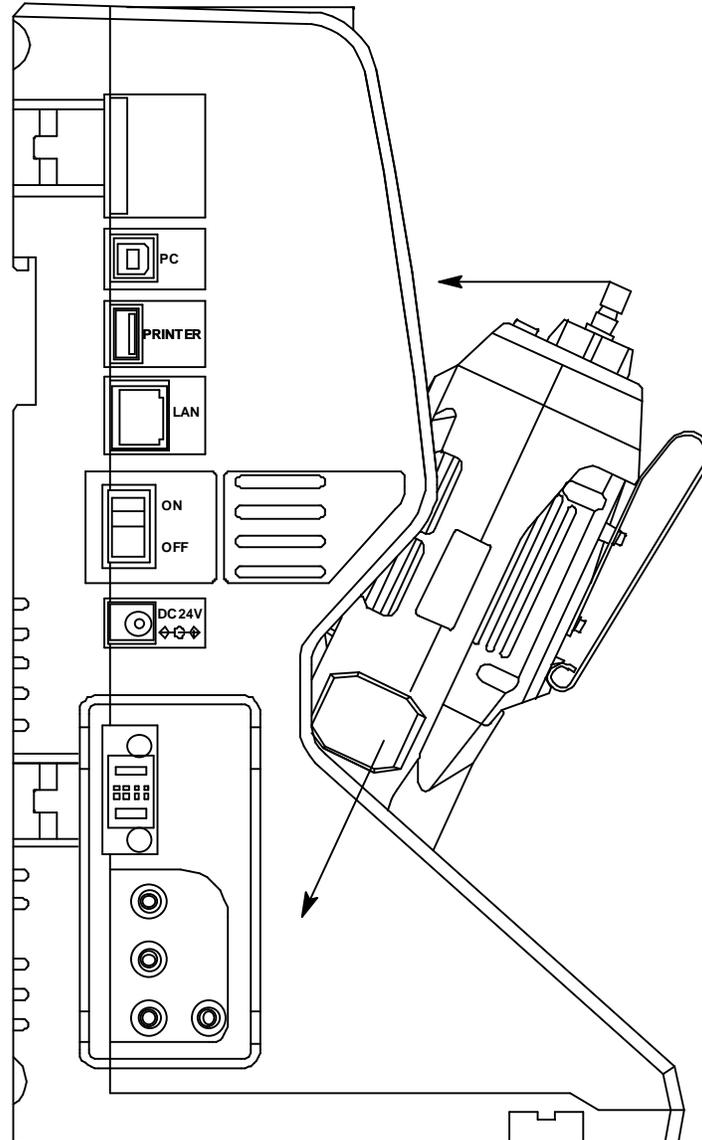
Do the following to turn on the SDM-6000s and establish a connection with the GX-6000s in your system:

1. Confirm that the AC adapter is connected to the SDM-6000 and to an AC wall socket. If you have a multi-station system only the leftmost SDM-6000 should be connected to power.
2. Connect the Type A to Type B USB cable to the SDM-6000 and to an available USB port on your computer. If you have a multi-station system, only the leftmost SDM-6000 should be connected to the computer with the USB cable.
3. Launch the SDM-PC2 Docking Station PC Controller Software as described in “Launching the SDM-PC2 Docking Station PC Controller Program” on page 36.
4. Flip the SDM-6000’s power switch so that it’s in the ON position. If you have a multi-station system, only the power switch of the leftmost SDM-6000 needs to be flipped.
5. The SDM-6000’s Status LED will be solid green if it is operating properly or solid red if there is a system failure.
6. When a connection has been established between the SDM-PC2 Docking Station PC Controller Program and all of the SDM-6000s, the main program window will appear as shown below.



**Figure 43: SDM-6000 Connection**

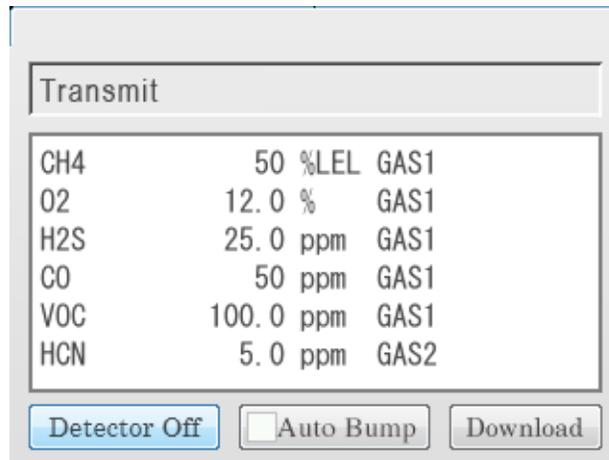
- 7 . Install a GX-6000 in the instrument cradle. Orient the GX-6000 so the belt clip is facing away from the SDM-6000. Set the bottom of the GX-6000 in the bottom of the instrument cradle and push the top of the GX-6000 toward the SDM-6000.



**Figure 44: Inserting the GX-6000**

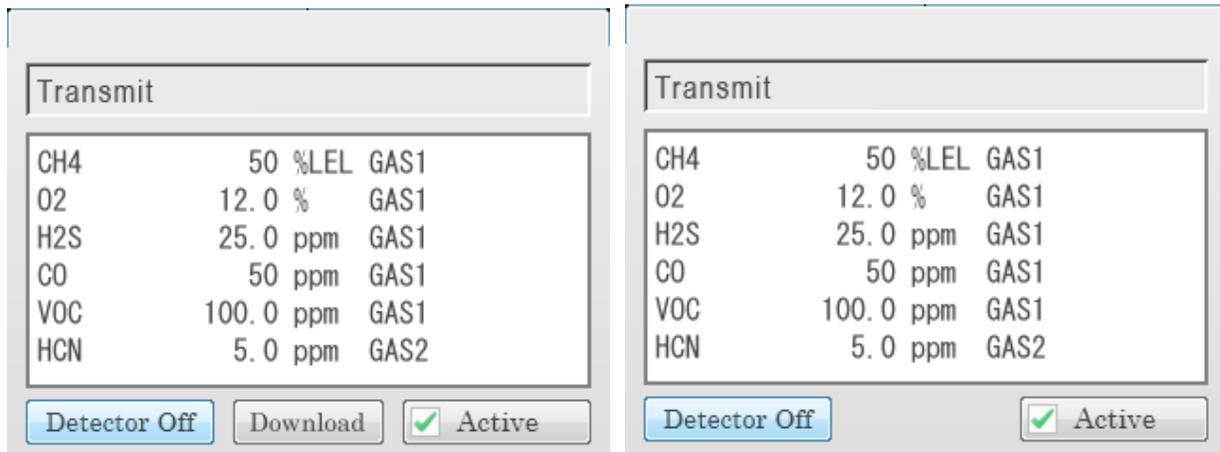
- 8 . If the GX-6000 is equipped with a Li-ion battery pack that needs to be charged, the Status LED will begin to flash orange. If the battery pack is fully charged, the Status LED will be solid orange. See “Charging a GX-6000 in an SDM-6000” on page 106 for a complete description of charging the GX-6000.
- 9 . Push the red gas in/gas out cover down until it touches the GX-6000 and then release it. It should lock into place against the top of the GX-6000. If it returns to its original position, attempt to lock it in place again.

- 10 . The GX-6000 will turn on once the gas in/gas out cover is in place. Any instrument charging that was taking place will stop.
- 11 . Repeat step 7 - step 10 for any additional SDM-6000s and GX-6000s.
- 12 . The GX-6000 will begin its power up sequence. If a successful connection between the GX-6000 and the SDM-6000 occurs, the screens of all connected SDM-6000(s) will indicate the instrument's active channels and the auto calibration value for each channel. If you have a single station system, the touchscreen will look as shown below..



Single Station System Touchscreen

If you have a multi-station system, the touchscreens will look as shown below.



First Station

Additional Stations

Multi-station System Touchscreens

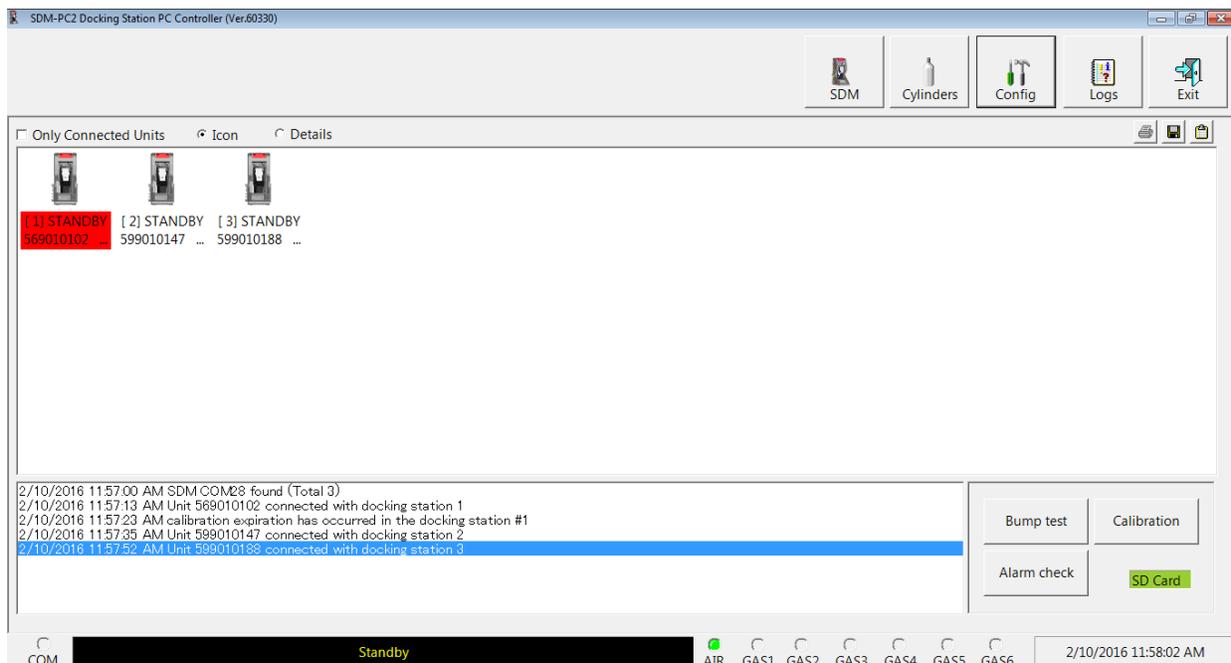
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**NOTE:** The screens shown above show a 4-gas + high range PID + HCN GX-6000. If you have a different instrument combination, your screens will appear differently.

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- For each GX-6000, the SDM-PC2 Docking Station PC Controller Program will indicate that a GX-6000 was found and it will download the instrument's basic parameters. When all GX-6000s have been turned on, connected, and downloaded, the main program window will appear as shown below. When the GX-6000 is connected to the PC Controller Program, the date and time of the instrument are automatically updated to the current date and time on the PC Controller Program's screen.

**NOTE:** Turn each GX-6000 on 10-15 seconds after the previous instrument to minimize the possibility of the GX-6000 not connecting to the PC Controller Program. If a GX-6000 does not connect, use the instrument's POWER/ENTER button to turn it off and turn it back on again.



**Figure 45: GX-6000s Connected and Downloaded**

If a GX-6000 is due for calibration, the docking station number and instrument serial number will be highlighted in red.

If a GX-6000 is due for calibration within the number of days defined in **Calibration Expiration Notice**, the docking station number and instrument serial number will be highlighted in orange.

If a GX-6000's basic parameters could not be downloaded properly, a red triangle will appear over the GX-6000 and SDM-6000 picture.

## Icon View vs. Details View

GX-6000s that are currently connected or have been previously connected can be viewed in either Icon View or Details View. Choose Icon or Details View by clicking the **Icon** or **Details** radio button below the control buttons. Icon View allows you to view connected GX-6000s and previously connected GX-6000s in an icon configuration. Connected GX-6000s are shown as a GX-6000 inserted in an SDM-6000 icon. Previously connected GX-6000s are shown as GX-6000 icons. Right clicking a GX-6000 causes the Instrument Function Menu to appear.

Details View allows you to view connected GX-6000s and previously connected GX-6000s in a table format. Scrolling to the right in Details View allows you to view existing GX-6000 parameters. For a description of these parameters and instructions to change them, see “Edit Function” on page 148.

| SDM No | Serial No | Connection | Model   | Status  | Station ID | User ID  | Date Time             | Next Test Date        | Next Cal Date         | Cal Interval (Day) | OXY Alar |
|--------|-----------|------------|---------|---------|------------|----------|-----------------------|-----------------------|-----------------------|--------------------|----------|
| 1      | 569010102 | COM28      | GX-6000 | STANDBY | VALVE 3    | BOB      | 2/10/2016 11:57:23 AM | 2/8/2016 12:04:15 PM  | 12/23/2015 3:54:59 PM | 90                 | -        |
| 2      | 599010147 |            | GX-6000 | STANDBY | RIG 4      | KIMBERLY | 2/10/2016 11:57:44 AM | 2/14/2016 12:28:52 PM | 4/14/2016 12:28:52 PM | 90                 | -        |
| 3      | 599010188 |            | GX-6000 | STANDBY | FLANGE 9   | KATIE    | 2/10/2016 11:58:00 AM | 1/27/2016 1:23:08 PM  | 3/27/2016 1:23:08 PM  | 90                 | -        |

2/10/2016 11:57:00 AM SDM COM28 found (Total 3)  
 2/10/2016 11:57:13 AM Unit 569010102 connected with docking station 1  
 2/10/2016 11:57:23 AM calibration expiration has occurred in the docking station #1  
 2/10/2016 11:57:35 AM Unit 599010147 connected with docking station 2  
 2/10/2016 11:57:52 AM Unit 599010188 connected with docking station 3

COM Standby AIR GAS1 GAS2 GAS3 GAS4 GAS5 GAS6 2/10/2016 11:59:26 AM

**Figure 46: Main Program Window, Details View**

Unless otherwise noted, all following figures that show the main program window in this manual are shown in Icon View.

## Printing and Exporting an Instrument List from the Main Program Window

You can print, save, or add to clipboard the instrument list in the main program window. You can only print the list if it is viewed in Details format. The list cannot be printed when viewed in Icon format.

To print the instrument list:

1. Ensure that the main program window is being viewed in Details format. The print icon will not be active if the main program window is viewed in Icon format.

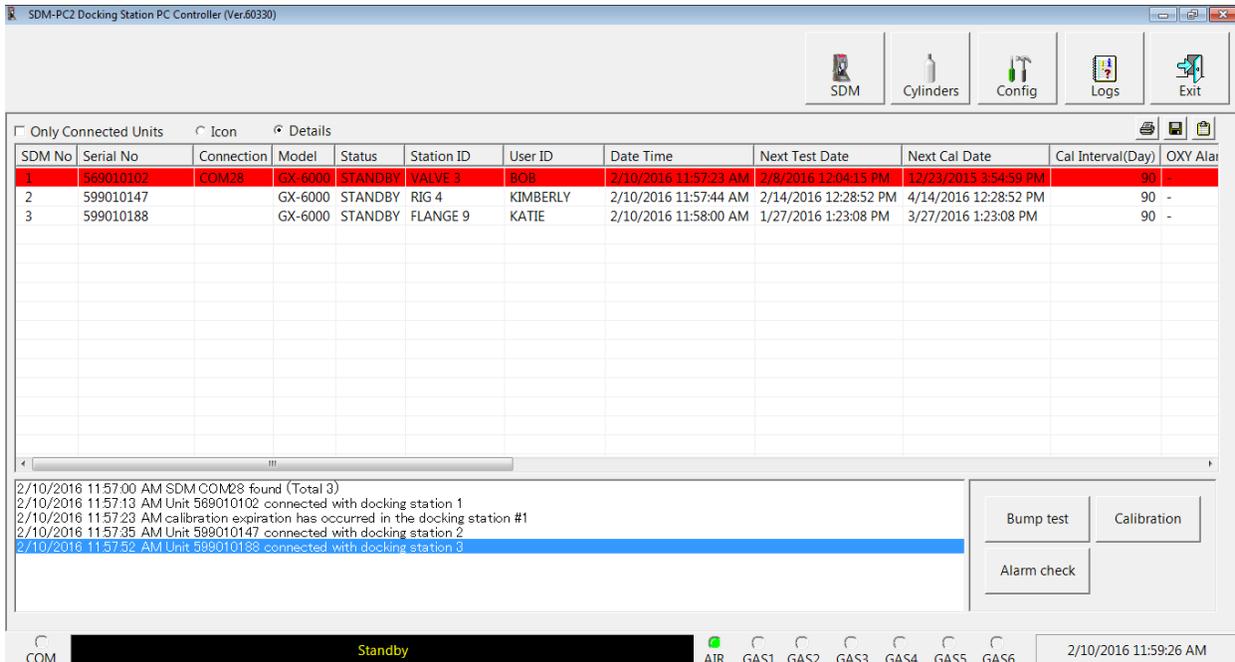
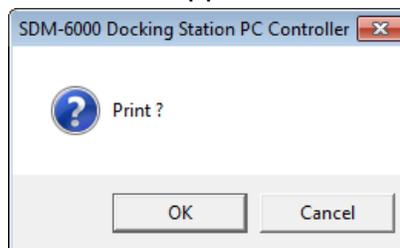


Figure 47: Details View

2. Click the **Print** icon located just below the **Exit** button.
3. A print confirmation screen will appear.



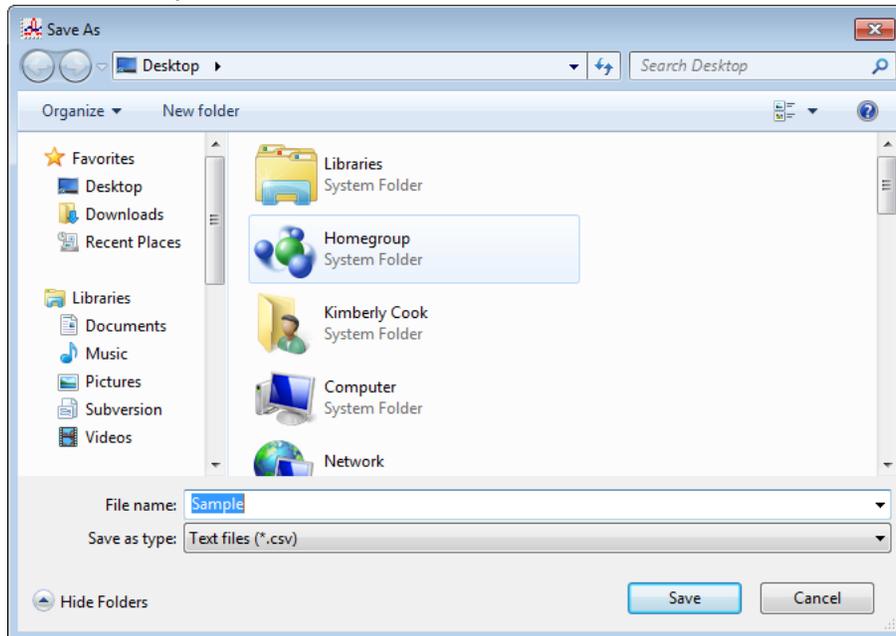
To print the instrument list, click **OK**.

To cancel the print job, click **Cancel**.

To save the instrument list as a .csv file:

1. Click the **Save** icon located just below the **Exit** button.

2. Choose a file path and enter a file name and click **Save**.



To save the instrument list to the clipboard:

1. Click the **Clipboard** button located just below the **Exit** button. The serial number, model, station ID, user ID, next bump test date, next calibration date, the calibration interval, and the data logging interval time for each GX-6000 in the main program window will be saved to the clipboard in a table format.
2. Open a spreadsheet program such as Excel or a word processing program such as Word and paste the clipboard data into it.

---

## Automatic Procedures

This section briefly describes the automatic procedures that may begin once the GX-6000 is turned on and connected to the PC Controller Program.

The PC Controller Program will automatically start a download of the instrument's logged data if the **Data Logger Auto Download** parameter in the Bump & Cal 2 Tab of the SDM Window is set up. The download will begin as soon as the instrument is connected to the PC Controller Program and the basic parameters have been downloaded. An automatic data download will occur first before any other setup automatic process such as an automatic bump test.

If **Auto Bump** is selected in the Bump & Cal 1 Tab of the SDM Window, the PC Controller Program will automatically perform a bump test on a connected GX-6000. See "Bump & Cal 1 Tab" on page 39 for a description of this parameter. This feature is only active if one SDM-6000 is connected to the PC Controller Program. If multiple SDM-6000s are connected, this feature is not active. The use of this feature allows the user to launch the PC Controller Program, turn on the GX-6000 and walk away. No oversight of the bump test is needed. For this reason, the calibration cylinders need to already be in place and the Cylinders Window needs to be set up appropriately. The bump test will begin as soon as the instrument is connected to the PC Controller Program and the basic parameters have been downloaded.

If **Auto Bump Test** or **Auto Calibration** is selected in the Parameter Tab of the Configuration Window, the PC Controller Program will automatically bump test or calibrate a connected GX-6000 as long as a bump test or calibration is due on that instrument. See “Parameter Tab” on page 62 for a description of these parameters. The use of this feature allows the user to launch the PC Controller Program, turn on the GX-6000 and walk away. No oversight of the bump test or calibration is needed. For this reason, the calibration cylinders need to already be in place and the Cylinders Window needs to be set up appropriately. The bump test or calibration will begin in the time defined by the **Waiting Time for Auto Process** parameter in the Parameter Tab of the Configuration Window after the instrument is connected to the PC Controller Program and the basic parameters have been downloaded.

If configured for automatic bump testing, calibration, or alarm checking at a specific date/time in the Automatic Tab of the SDM Window, the GX-6000(s) will be automatically turned on, tested, and then turned off. For bump testing and calibration, the calibration cylinders need to be connected to the appropriate fittings and the Cylinders Window needs to be set up appropriately.

---

## Performing a Bump Test

The PC Controller Program is capable of performing a bump test both manually and automatically when a GX-6000 is connected to it. When a bump test is performed, the PC Controller Program performs an air adjust operation on a GX-6000 and then applies calibration gas to the instrument. The program analyzes the response results based on predefined criteria and determines if the GX-6000 passed the bump test.

The criteria that the PC Controller Program uses to determine if the GX-6000 passes a bump test and whether or not the PC Controller Program automatically performs a bump test on a connected GX-6000 is defined in the SDM Window and in the Parameter tab of the Configuration Window. See “Setting Parameters in the SDM Window” on page 37 and “Parameter Tab” on page 62 for a description of the bump test configuration setup.

To manually bump test one or more GX-6000s:

1. Establish a connection between the SDM-6000, GX-6000 and the PC Controller Program as described in “Connecting GX-6000s to the PC Controller Program” on page 73.
2. Verify that all of the bump test parameters are set correctly. See “Setting Parameters in the SDM Window” on page 37 for instructions.
3. Verify that the appropriate calibration gas cylinders are connected to the gas fittings on the left side of the SDM-6000 or to the gas fittings on the SV-3. See “Connecting Calibration Gas, No SV-3 Attached” on page 28 or “Connecting Calibration Gas, SV-3 Attached” on page 31 for calibration gas cylinder options and calibration gas connection procedures.

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**NOTE:** If you are testing a GX-6000 with an IR CO<sub>2</sub> sensor in the 0-10,000 ppm or 0-10.00 %vol range, be sure to connect a CO<sub>2</sub> scrubber either to the AIR fitting (no SV-3 used) or to the air filter (SV-3 used) to ensure that the CO<sub>2</sub> present in fresh air is scrubbed out. The arrow on the CO<sub>2</sub> scrubber should be pointing toward the AIR inlet fitting.

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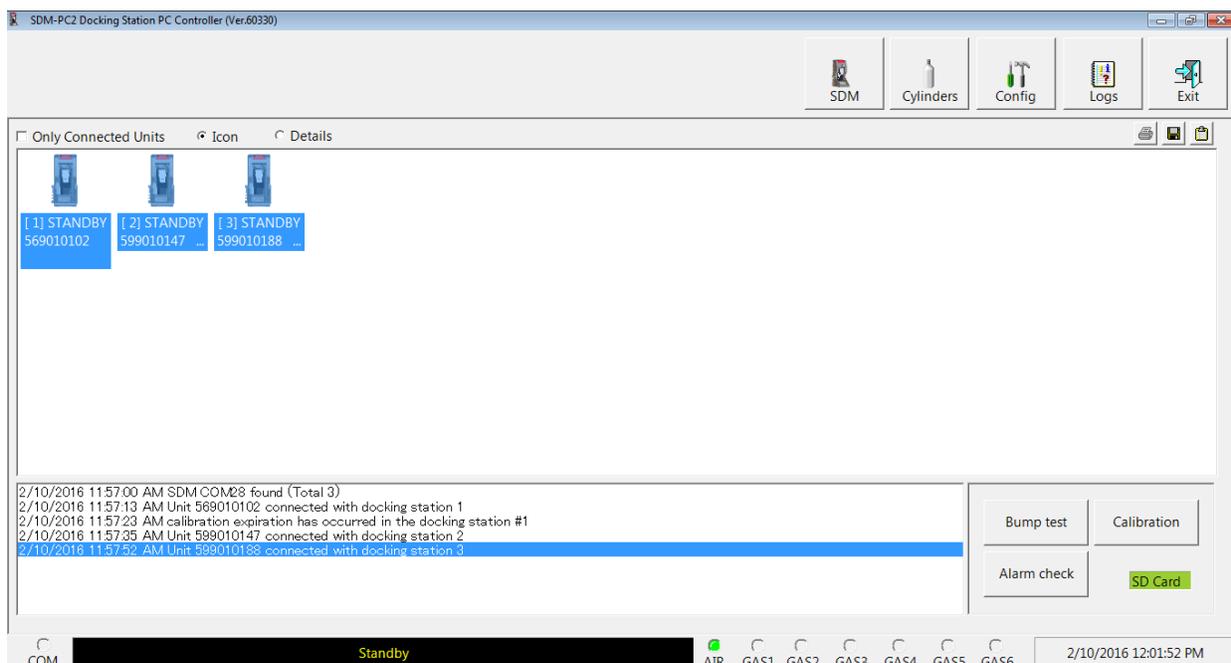
**NOTE:** If you are testing a GX-6000 with a PID sensor and if you suspect any low-level VOC background in the area, be sure to replace the air filter at the AIR inlet fitting with the VOC zero filter. The arrow on the VOC zero filter should be pointing toward the AIR inlet fitting.

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**NOTE:** RKI Instruments, Inc. recommends that you dedicate a regulator for use with chlorine (Cl<sub>2</sub>) gas and that you do not use that dedicated regulator for any other gases, particularly hydrogen sulfide (H<sub>2</sub>S).

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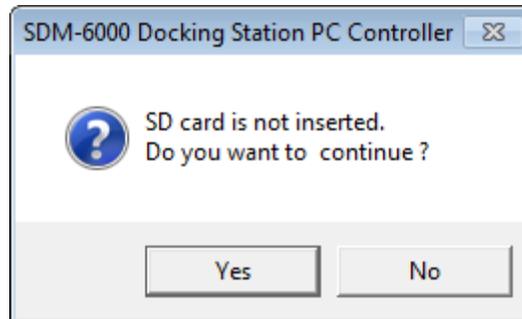
4. Select the GX-6000(s) you wish to bump test and click on them to highlight them as shown below. To select multiple GX-6000s for bump testing, hold down the Control button on the keyboard as you click them. You can also hold down the Shift button while you click the first and last instruments in the series of instruments you wish to bump test.



**Figure 48: Instrument Selection**

5. Click the **Bump test** button in the lower right corner of the main program window.

- If an SD card is not inserted in the SDM-6000, a warning will appear. Results for testing done without an SD card inserted will only be saved to the PC Controller Program and will not be saved anywhere else. Click **Yes** to proceed without the SD card inserted or **No** to return to the main window.



- You will be asked to confirm what instruments you'd like to test and what gases you'd like to include in the test. Select or deselect instruments and gases as appropriate for the test you'd like to perform. The example below shows 3 instruments: a 4-gas + high range PID + HCN, a 4-gas + NO<sub>2</sub>, and a 4-gas + SO<sub>2</sub>. All instruments and gases are selected. Deselecting the HCN (GAS 2), NO<sub>2</sub> (GAS 3), and SO<sub>2</sub> (GAS 4) gases would cause a bump test to be performed on the standard 4 sensors in all 3 instruments along with the high range PID sensor in the first instrument.

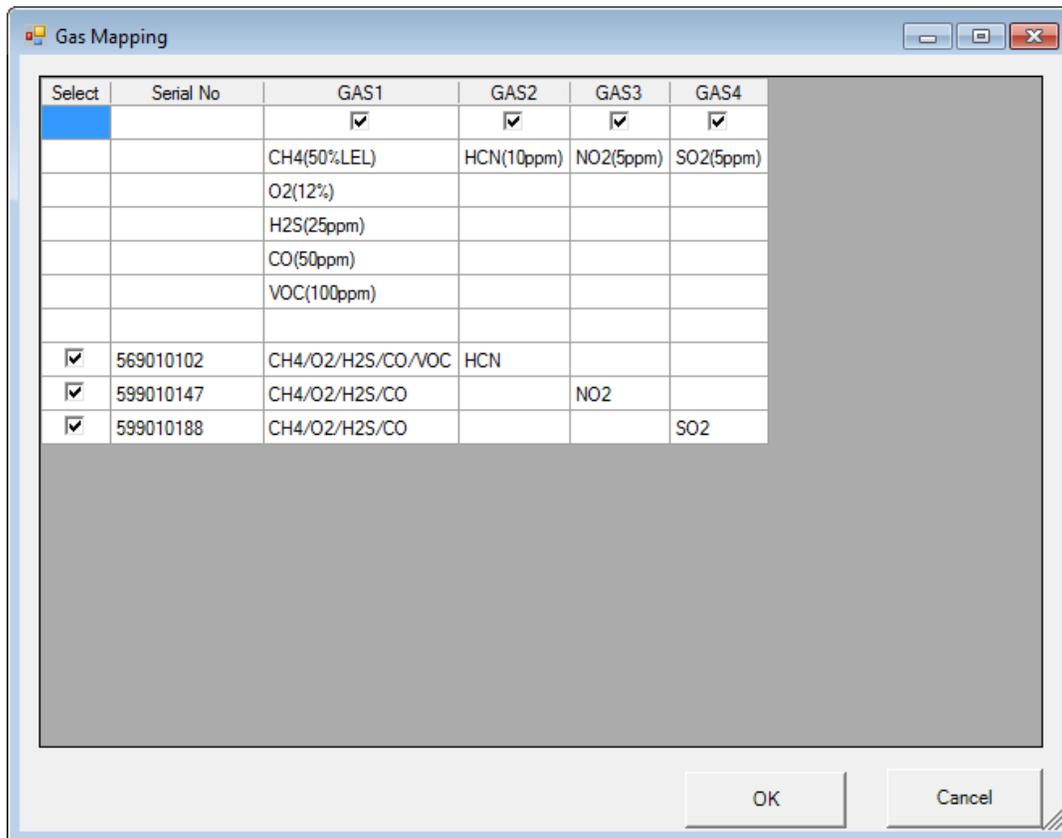


Figure 49: Instrument/Gas Confirmation Screen

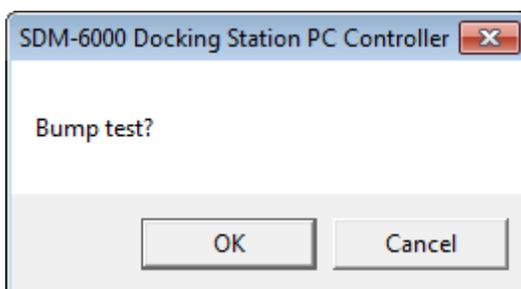
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**NOTE:** Selecting or deselecting a gas cylinder in this window also selects or deselects that cylinder's **Active** selection box in the Cylinders Window. The setting will remain in place until you change it.

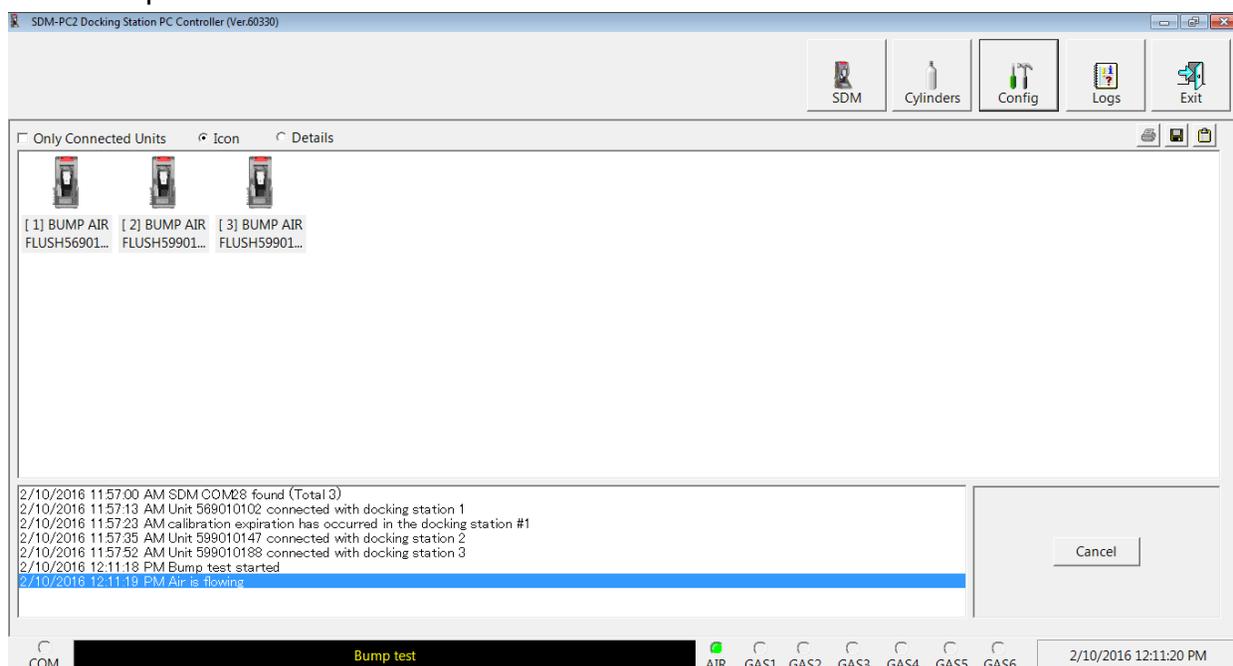
---

When all of the desired instruments and gases are selected, click **OK**. If you don't want to proceed, click **Cancel** to abort the bump test.

8. You will be asked if you want to bump test the instrument(s). Click **OK** to proceed. If you don't want to proceed with the bump test, click **Cancel** to return to the main program window.



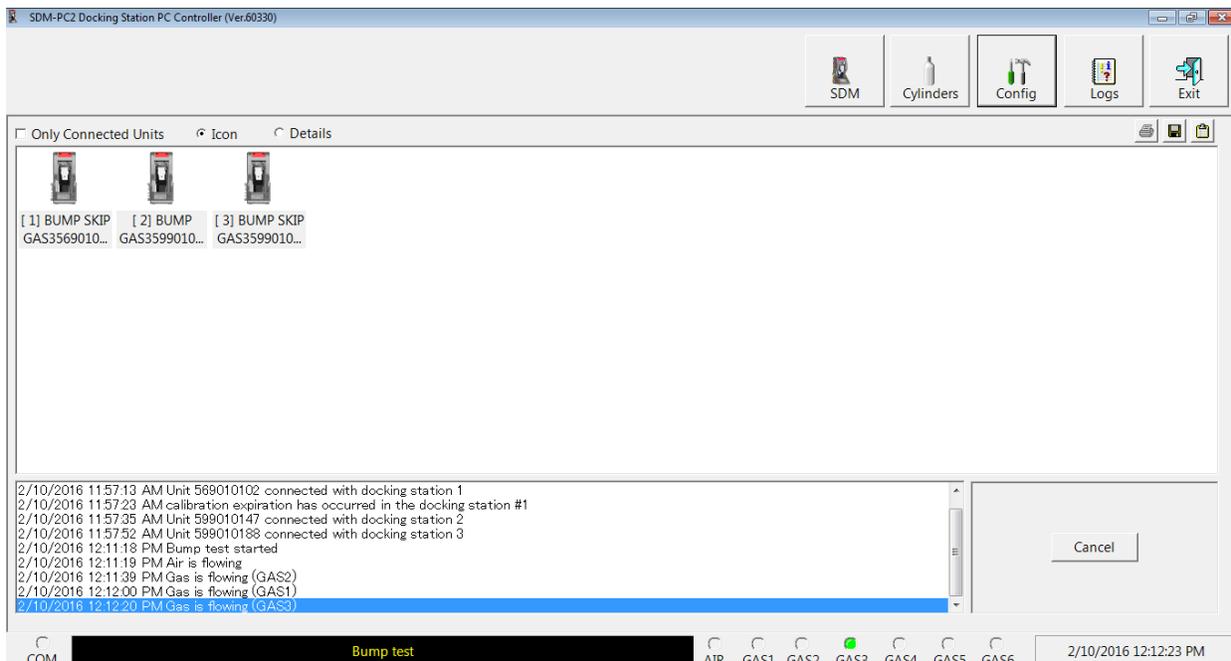
9. The instrument pumps will start and the program will indicate that air is flowing. The AIR indicator on the program screen will be solid green and air will be applied to the GX-6000(s) for the time defined by the **AIR Flush** bump test parameter in the SDM Window.



**Figure 50: Air Flowing**

The PC Controller Program will analyze the zero adjustment results. If any sensors failed the zero adjustment, the bump test for that instrument will be aborted.

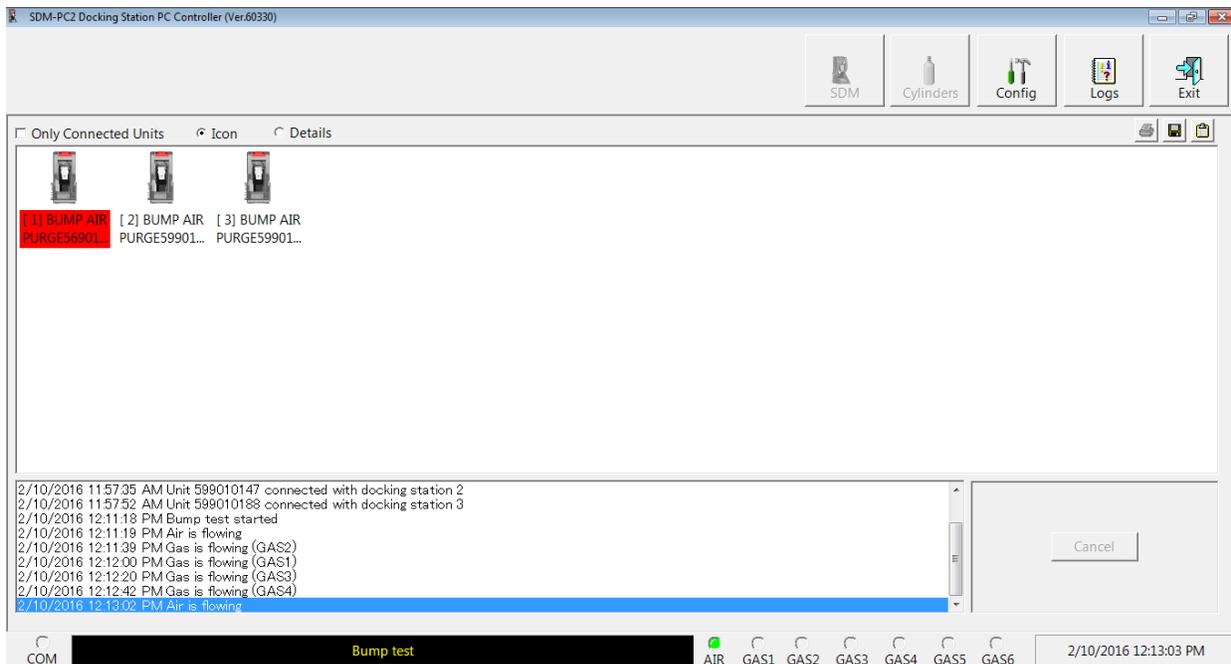
10. The SDM-6000 will then apply calibration gas in the order of the instrument's sensors for the length of time defined in the **GAS** bump test parameter. For example, if you are bump testing a 4-gas + low range PID instrument, gas will be applied to the 4-gas sensors and then gas will be applied to the low range PID sensor regardless of what SDM-6000 inlet fitting those gas cylinders are assigned to. The only exception is that HCN will always be applied before any other gas. The SDM-6000 will analyze the results after the end of each gas application. If the bump test fails and **Auto Calibration** is selected in the SDM Window, the gas will keep flowing and a calibration will automatically begin. Calibration gas will continue to be applied so that the total gas application time is the time defined by the **GAS** calibration parameter. This time includes the time that the GX-6000 was being bump tested. If the **GAS calibration parameter** is set to **90** seconds and the **GAS bump test parameter** is set to **30** seconds, the GX-6000 will sample gas for an additional 60 seconds to bring the total exposure time to 90 seconds.



**Figure 51: Calibration Gas Flowing**

Once the calibration is over, the SDM-6000 will continue with the next gas application or with the post-sample purge, whichever is appropriate.

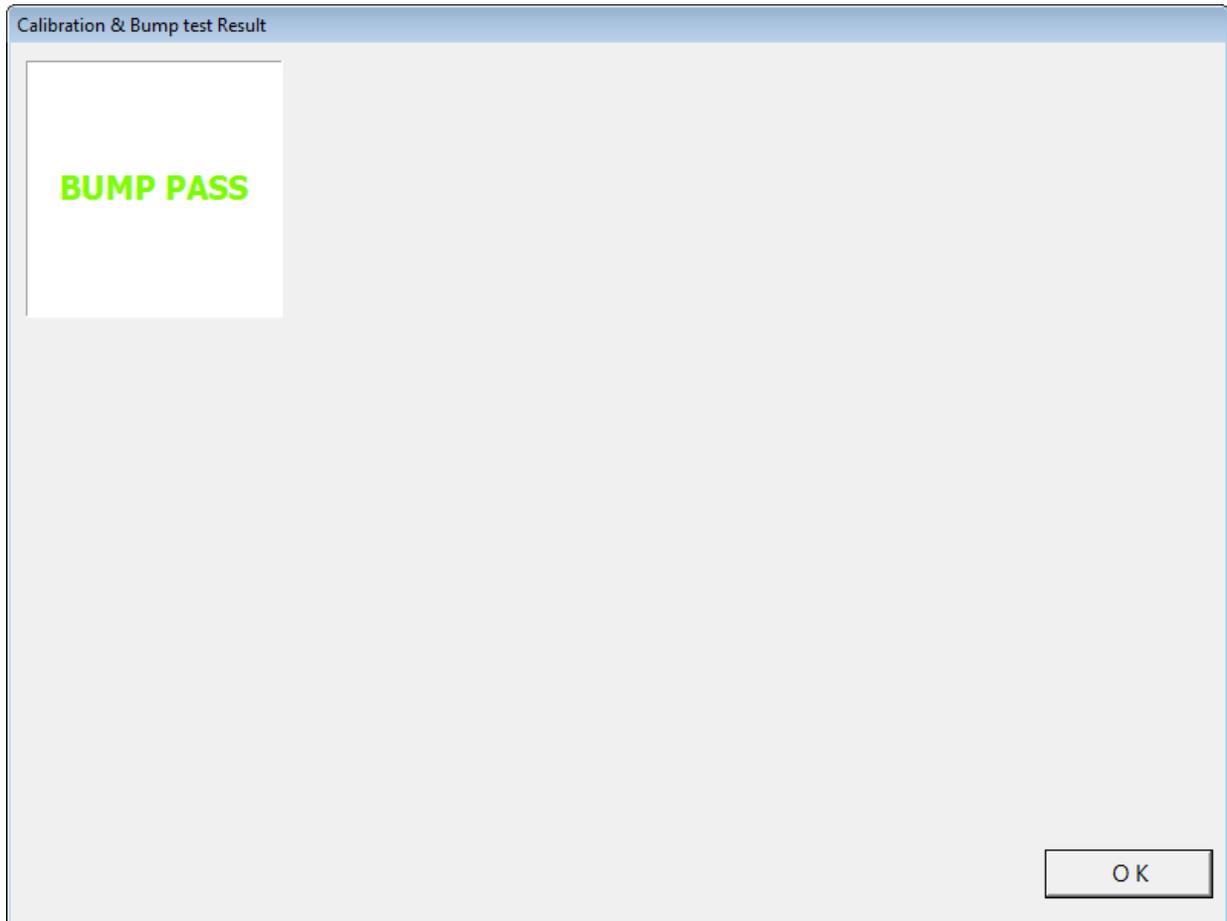
11. After calibration gas is applied, the docking station will purge with fresh air for the time period defined by the **AIR Purge** bump test parameter in the SDM Window.



**Figure 52: Fresh Air Purge**

12. After the fresh air purge is complete,

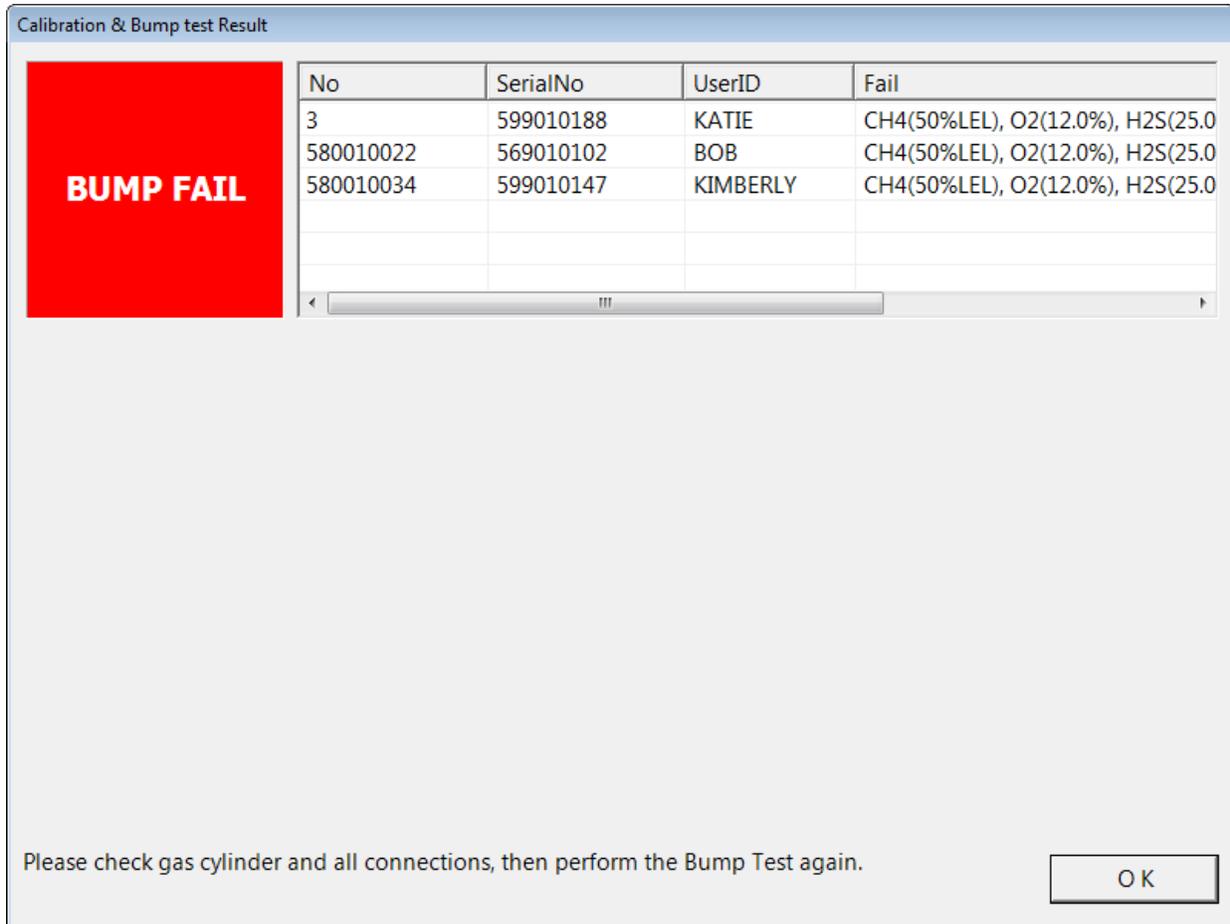
- If the bump test passes, the following window will open indicating that. Click **OK** to return to the main program window.



**Figure 53: Bump Test Passed**

After a successful bump test, the GX-6000 will automatically be shut off in the time period defined by the **Power Off After Pass** parameter in the SDM Window.

- If the bump test fails and the **Auto Calibration** box in the SDM Window was not selected, the following window will open indicating which channels failed the bump test. Click **OK** to return to the main program window or double click the instrument information line to view the bump test results in the Logs window.



**Figure 54: Bump Test Failed**

- If the bump test fails and the **Auto Calibration** box in the SDM Window was selected, the SDM-6000 automatically performs a calibration immediately after the failed bump test. The results screen will indicate the results of both the bump test and calibration. Click **OK** to return to the main program window or double click an instrument information line to view the bump test or calibration results in the Logs window.

Calibration & Bump test Result

| No        | SerialNo  | UserID   | Fail                             |
|-----------|-----------|----------|----------------------------------|
| 3         | 599010188 | KATIE    | CH4(50%LEL), O2(12.0%), H2S(25.0 |
| 580010022 | 569010102 | BOB      | CH4(50%LEL), O2(12.0%), H2S(25.0 |
| 580010034 | 599010147 | KIMBERLY | CH4(50%LEL), O2(12.0%), H2S(25.0 |
|           |           |          |                                  |
|           |           |          |                                  |

**BUMP FAIL**

| No        | SerialNo  | UserID   | Fail                             |
|-----------|-----------|----------|----------------------------------|
| 3         | 599010188 | KATIE    | CH4(50%LEL), O2(12.0%), H2S(25.0 |
| 580010022 | 569010102 | BOB      | CH4(50%LEL), O2(12.0%), H2S(25.0 |
| 580010034 | 599010147 | KIMBERLY | CH4(50%LEL), O2(12.0%), H2S(25.0 |
|           |           |          |                                  |
|           |           |          |                                  |

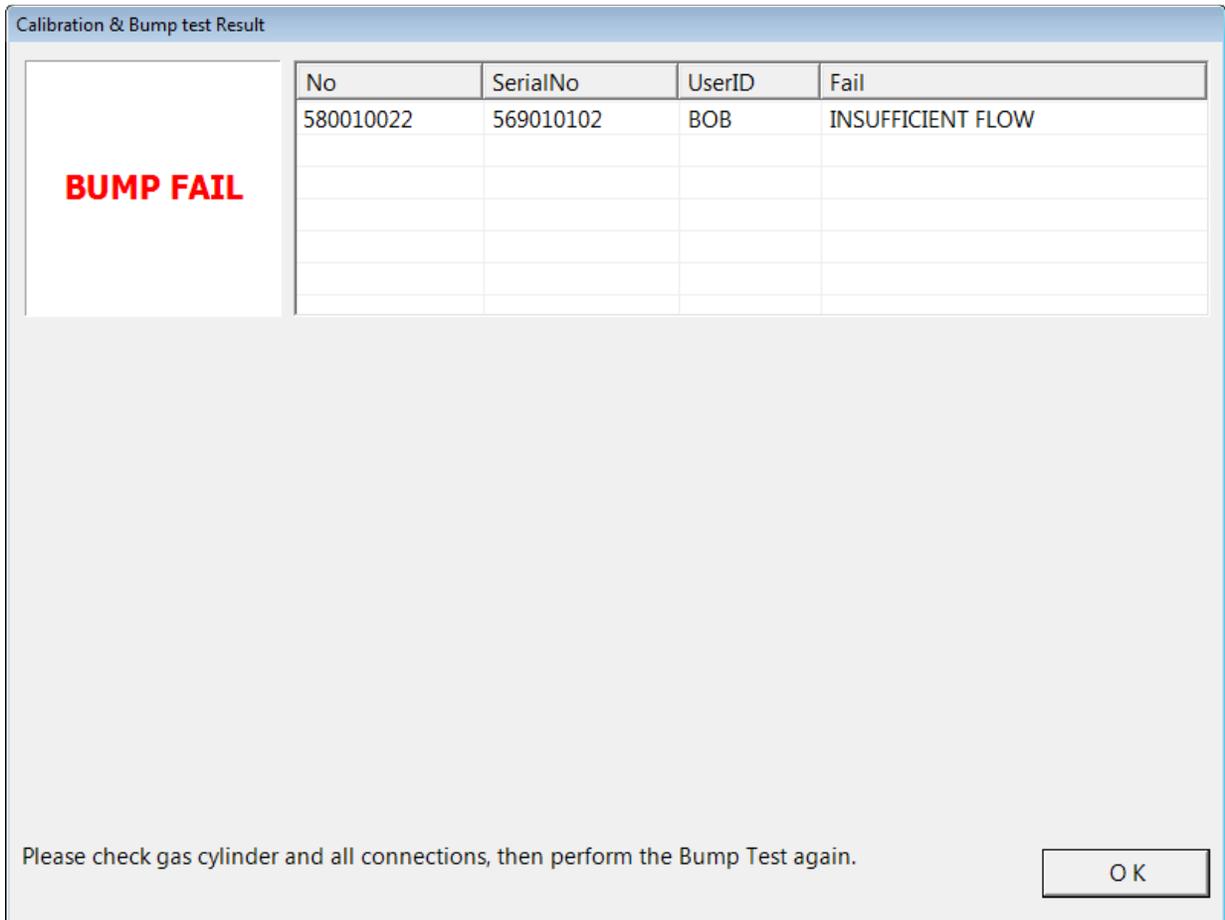
**CAL. FAIL**

Please check gas cylinder and all connections, then perform the Calibration again.

OK

**Figure 55: Bump Test Failed/Calibration Failed**

- If at any point during the bump test the flow rate to the GX-6000 becomes too low, the PC Controller Program will abort the bump test and display a failed bump test screen. Click **OK** to return to the main program window or double click the instrument information line to view the bump test results in the Logs window. Confirm all tubing connections are correct and that all lines are clear.



**Figure 56: Low Flow Bump Test Failure**

13. For all bump test result outcomes, the GX-6000s will be displayed in the main program window in Details View. To return the main program window to Icons View, click the **Icons** radio button.
14. All bump test results can be viewed in the Logs window. See "Bump Test Data" on page 131 for instructions for viewing bump test data.

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## Performing a Calibration

The PC Controller Program is capable of performing a calibration both manually and automatically on a GX-6000. When a calibration is performed, the PC Controller Program performs an air adjust operation on a GX-6000 and then applies calibration gas to the GX-6000. The PC Controller Program analyzes the calibration results and determines if the GX-6000 passed the calibration.

To manually calibrate one or more GX-6000s:

1. Establish a connection between the SDM-6000, GX-6000 and the PC Controller Program as described in “Connecting GX-6000s to the PC Controller Program” on page 73.
2. Verify that all of the calibration parameters are set correctly. See “Setting Parameters in the SDM Window” on page 37 for instructions.
3. Verify that the appropriate calibration gas cylinders are connected to the gas fittings on the left side of the SDM-6000 or to the gas fittings on the SV-3. See “Connecting Calibration Gas, No SV-3 Attached” on page 28 or “Connecting Calibration Gas, SV-3 Attached” on page 31 for calibration gas cylinder options and calibration gas connection procedures.

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**NOTE:** If you are testing a GX-6000 with an IR CO<sub>2</sub> sensor in the 0-10,000 ppm or 0-10.00 %vol range, be sure to connect a CO<sub>2</sub> scrubber either to the AIR fitting (no SV-3 used) or to the air filter (SV-3 used) to ensure that the CO<sub>2</sub> present in fresh air is scrubbed out. The arrow on the CO<sub>2</sub> scrubber should be pointing toward the AIR inlet fitting.

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**NOTE:** If you are testing a GX-6000 with a PID sensor and if you suspect any low-level VOC background in the area, be sure to replace the air filter at the AIR inlet fitting with the VOC zero filter. The arrow on the VOC zero filter should be pointing toward the AIR inlet fitting.

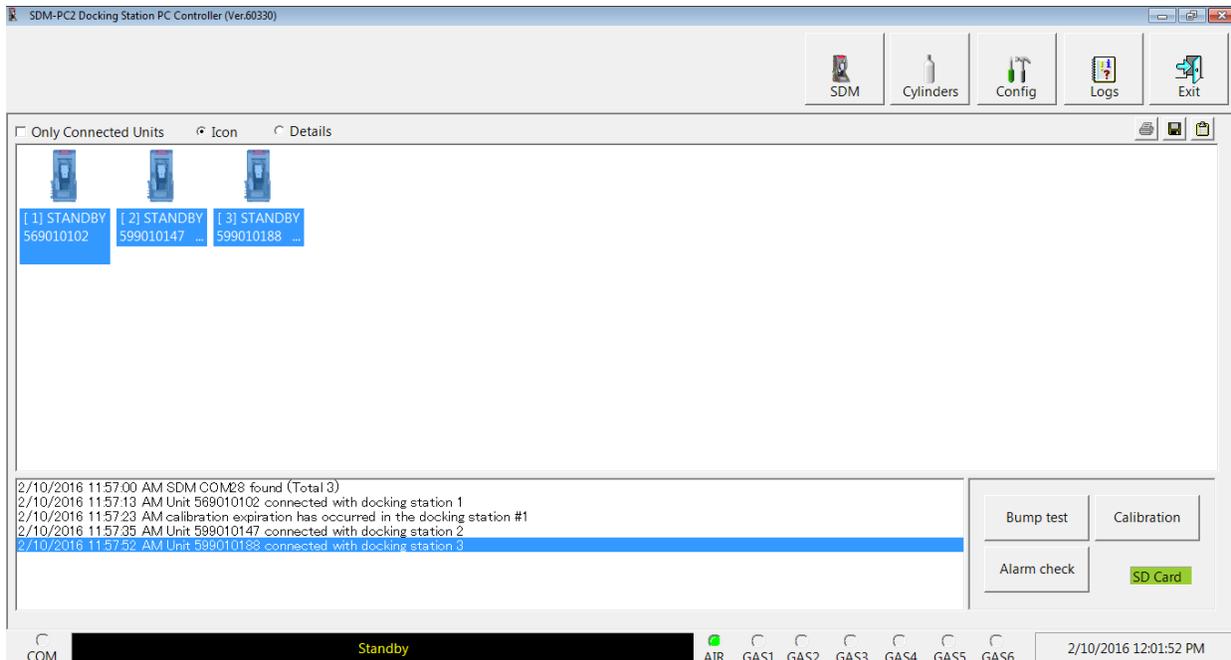
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**NOTE:** RKI Instruments, Inc. recommends that you dedicate a regulator for use with chlorine (Cl<sub>2</sub>) gas and that you do not use that dedicated regulator for any other gases, particularly hydrogen sulfide (H<sub>2</sub>S).

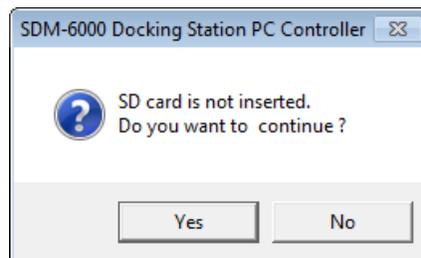
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- Select the GX-6000(s) you wish to calibrate and click on them to highlight them as shown below. To select more than one GX-6000 for calibration, hold down the Control button on the keyboard as you click them. You can also hold down the Shift button while you click the first and last instruments in the series of instruments you wish to calibrate.



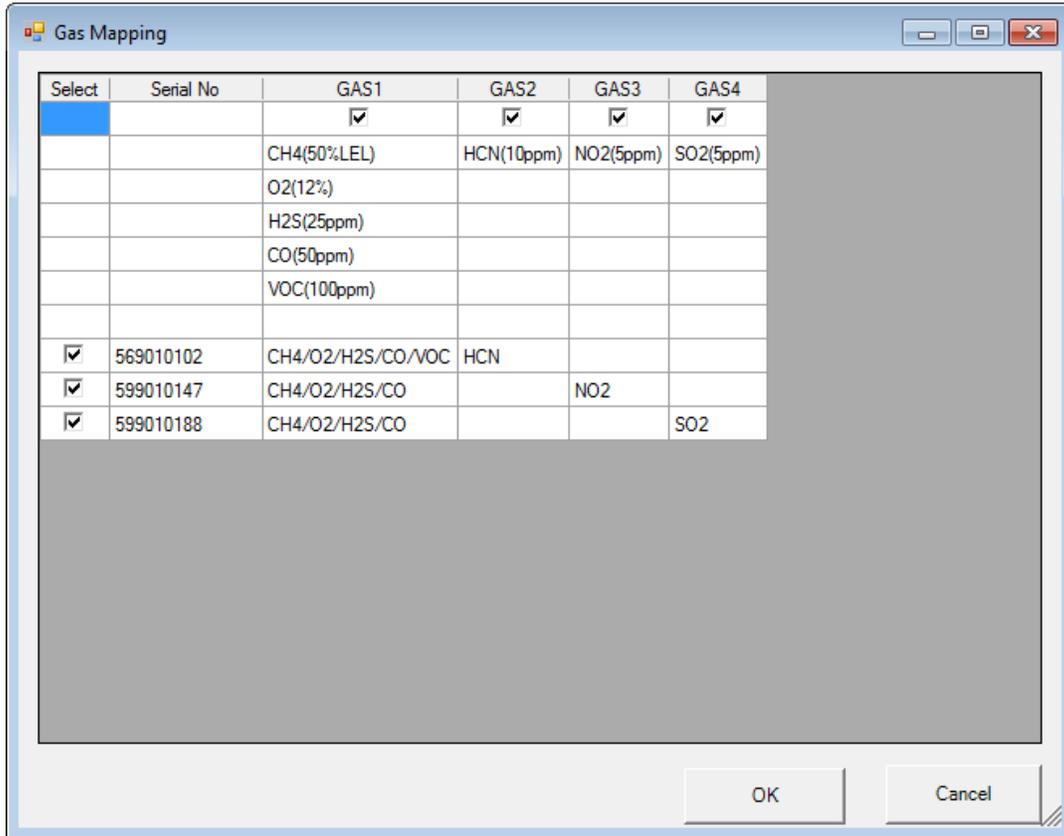
**Figure 57: Instrument Selection**

- Click the **Calibration** button in the lower right corner of the main program window.
- If an SD card is not inserted in the SDM-6000, a warning will appear. Results for testing done without an SD card inserted will only be saved to the PC Controller Program and will not be saved anywhere else. Click **Yes** to proceed without the SD card inserted or **No** to return to the main window.



- You will be asked to confirm what instruments you'd like to calibrate and what gases you'd like to include in the calibration. Select or deselect instruments and gases as appropriate for the calibration you'd like to perform. The example below shows 3 instruments: a 4-gas + high range PID + HCN, a 4-gas + NO<sub>2</sub>, and a 4-gas + SO<sub>2</sub>. All instruments and gases are selected. Deselecting the HCN (GAS 2), NO<sub>2</sub> (GAS 3), and SO<sub>2</sub> (GAS 4) gases would cause a

calibration to be performed on the standard 4 sensors in all 3 instruments along with the high range PID sensor in the first instrument.

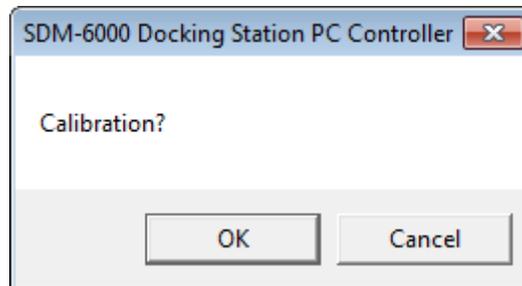


**Figure 58: Instrument/Gas Confirmation Screen**

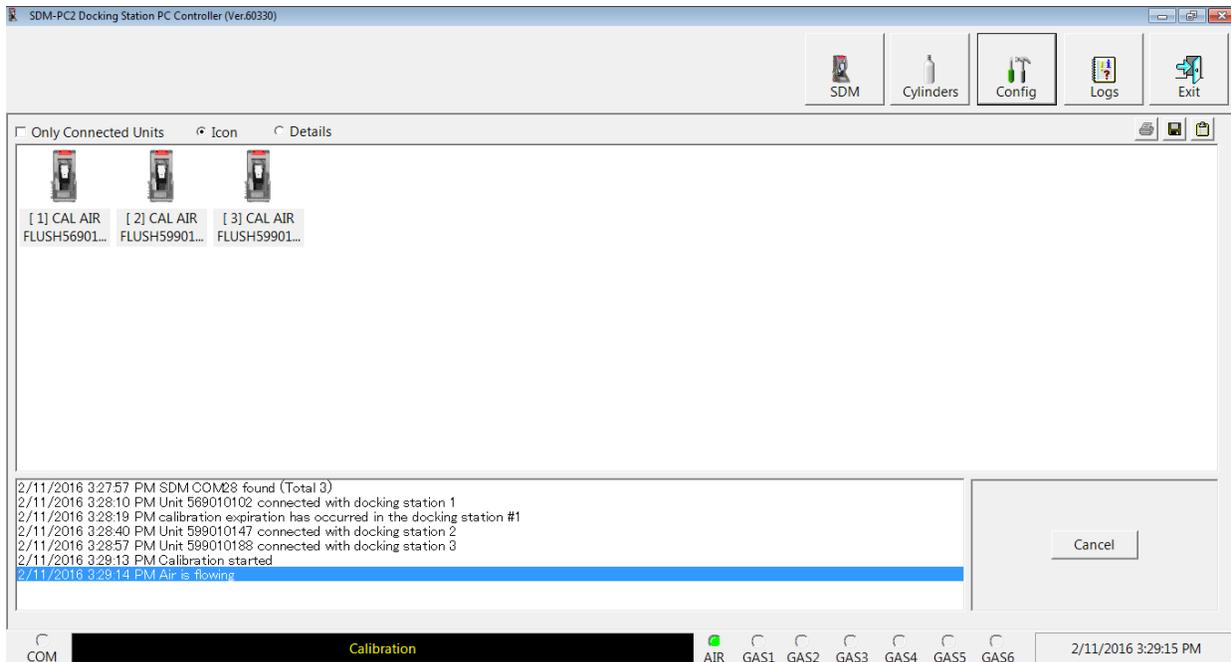
**NOTE:** Selecting or deselecting a gas cylinder in this window also selects or deselects that cylinder's **Active** selection box in the Cylinders Window. The setting will remain in place until you change it.

When all of the desired channels are selected, click **OK**. If you don't want to proceed, click **Cancel** to abort the calibration.

8. You will be asked if you want to calibrate the GX-6000(s). Click **OK** to proceed. If you don't want to proceed with the calibration, click **Cancel** to return to the main program window.



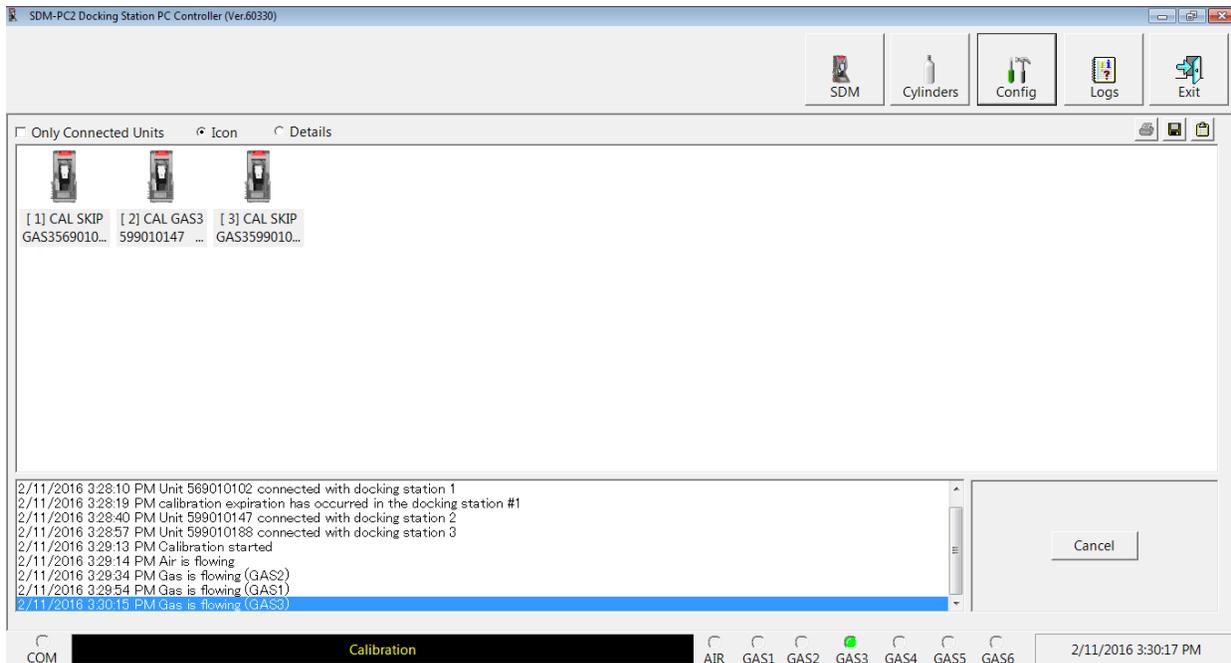
- The instrument pumps will start and the program will indicate that air is flowing. The AIR indicator on the program screen will be solid green and air will be applied to the GX-6000(s) for the time defined by the **AIR Flush** calibration parameter in the SDM Window.



**Figure 59: Air Flowing**

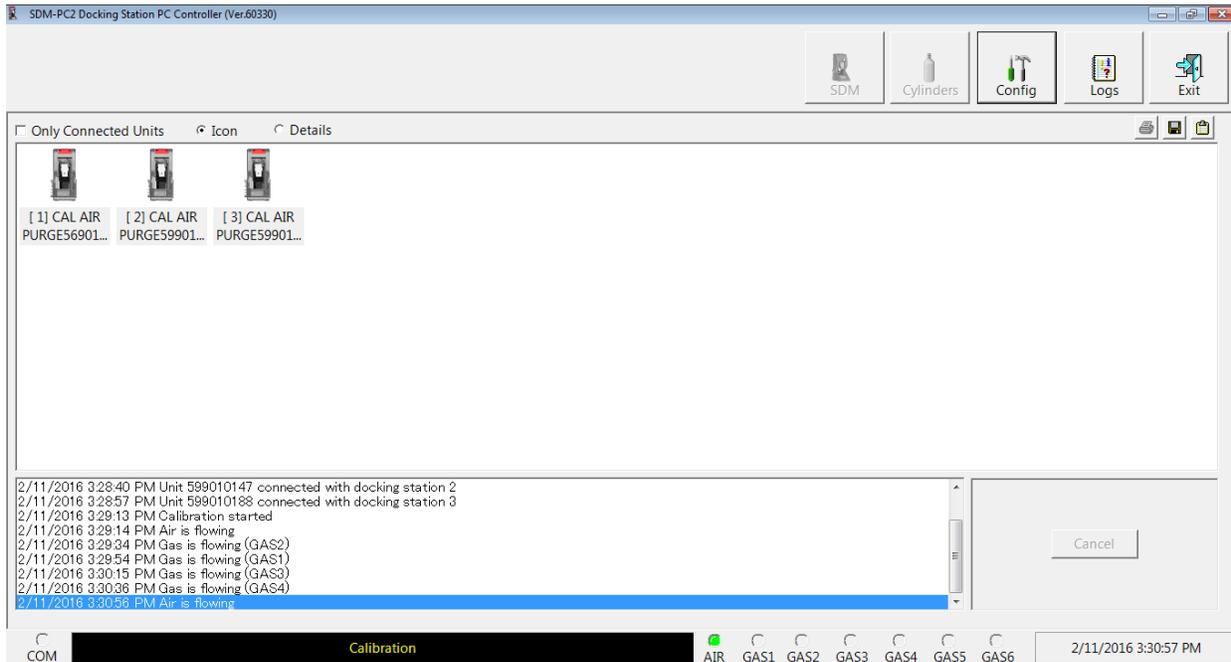
The PC Controller Program will analyze the zero adjustment results. If any sensors failed the zero adjustment, the calibration for that instrument will be aborted.

10. The SDM-6000 will then apply calibration gas in the order of the instrument's sensors for the length of time defined in the **GAS** calibration parameter. For example, if you are calibrating a 4-gas + low range PID instrument, gas will be applied to the 4-gas sensors and then gas will be applied to the low range PID sensor regardless of what SDM-6000 inlet fitting those gas cylinders are assigned to. The only exception is that HCN will always be applied before any other gas. The SDM-6000 will analyze the results after the end of each gas application.



**Figure 60: Calibration Gas Flowing**

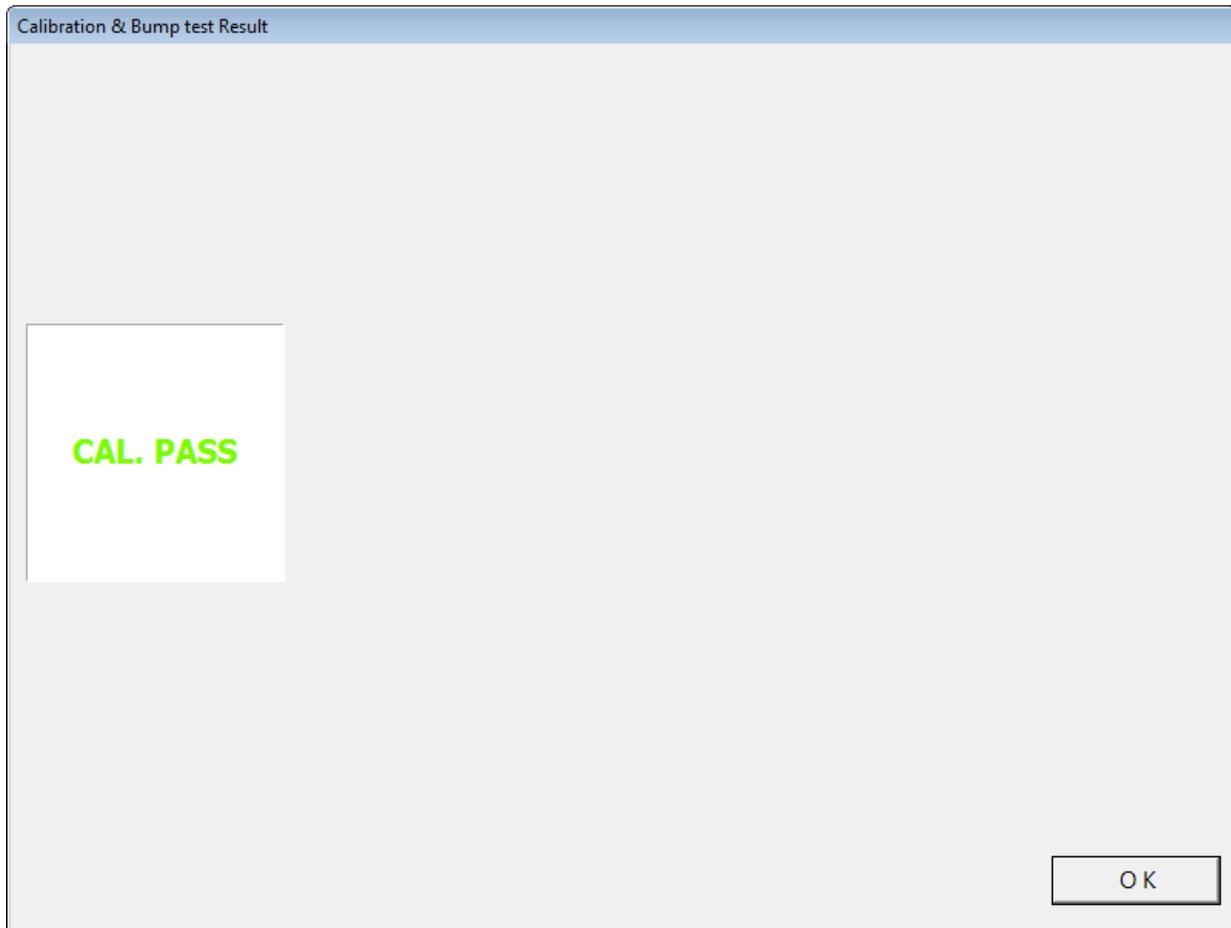
11. After calibration gas is applied, the docking station will purge with fresh air for the time defined by the **AIR Purge** calibration parameter in the SDM Window.



**Figure 61: Fresh Air Purge**

12. After the fresh air purge is complete,

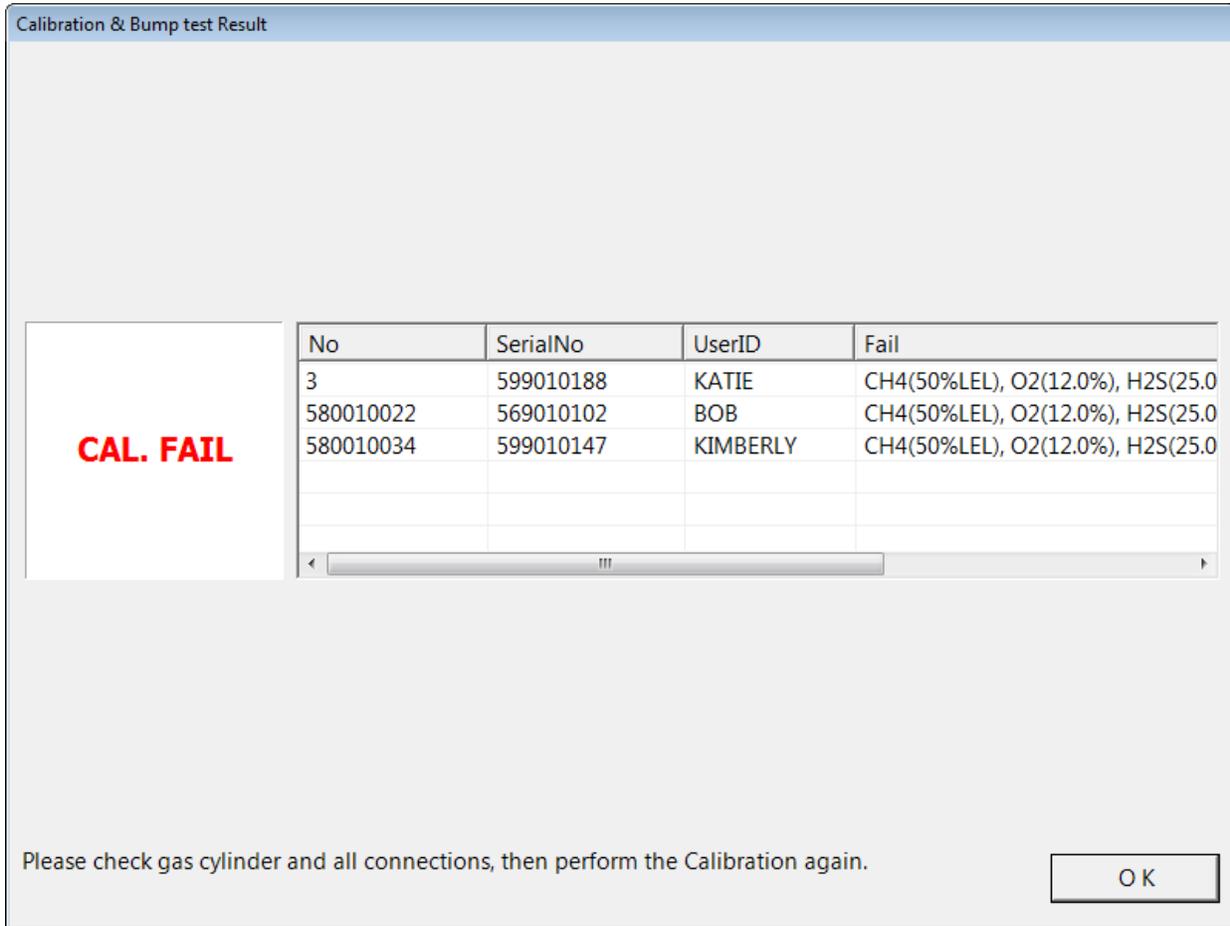
- If the calibration passes, the following window will open indicating that. Click **OK** to return to the main program window.



**Figure 62: Calibration Passed**

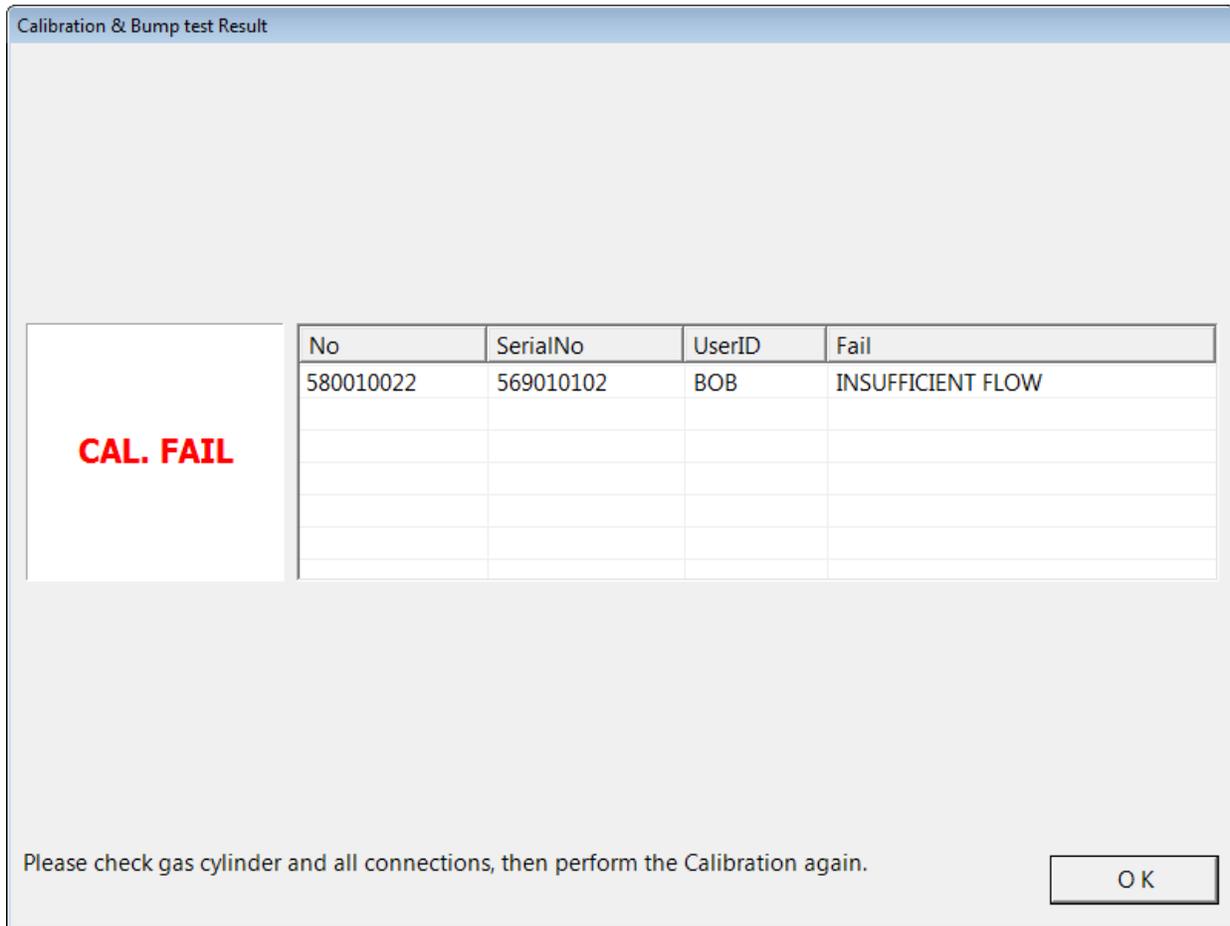
After a successful calibration, the GX-6000 will automatically be shut off in the time period defined by the **Power Off After Pass** parameter in the SDM Window.

- If the calibration fails, the following window will open indicating which channels failed to calibrate. Click **OK** to return to the main program window or double click the instrument information line to view the calibration results in the Logs window.



**Figure 63: Calibration Failed**

- If at any point during the calibration the flow rate to the GX-6000 becomes too low, the PC Controller Program will abort the calibration and display a failed calibration screen. Click **OK** to return to the main program window or double click the instrument information line to view the calibration results in the Logs window. Confirm all tubing connections are correct and that all lines are clear.



**Figure 64: Low Flow Calibration Failure**

13. For all calibration result outcomes, the GX-6000(s) will be displayed in the main program window in Details View. To return to Icons View, click the **Icons** radio button.
14. All calibration results can be viewed in the Logs window. See “Calibration Data” on page 117 for instructions for viewing calibration data.

## Performing an Alarm Check

The PC Controller Program is capable of performing an alarm check both manually and automatically on a GX-6000. When an alarm check is performed, the PC Controller Program checks the operation of the instrument's vibrator, LEDs, and buzzer. The PC Controller Program analyzes the alarm check results and determines if the GX-6000 passed the alarm check.

To manually alarm check one or more GX-6000s:

1. Establish a connection between the SDM-6000, GX-6000 and the PC Controller Program as described in "Connecting GX-6000s to the PC Controller Program" on page 73.
2. Select the GX-6000(s) you wish to alarm check and click on them to highlight them as shown below. To select more than one GX-6000 for alarm checking, hold down the Control button on the keyboard as you click them. You can also hold down the Shift button while you click the first and last instruments in the series of instruments you wish to alarm check.

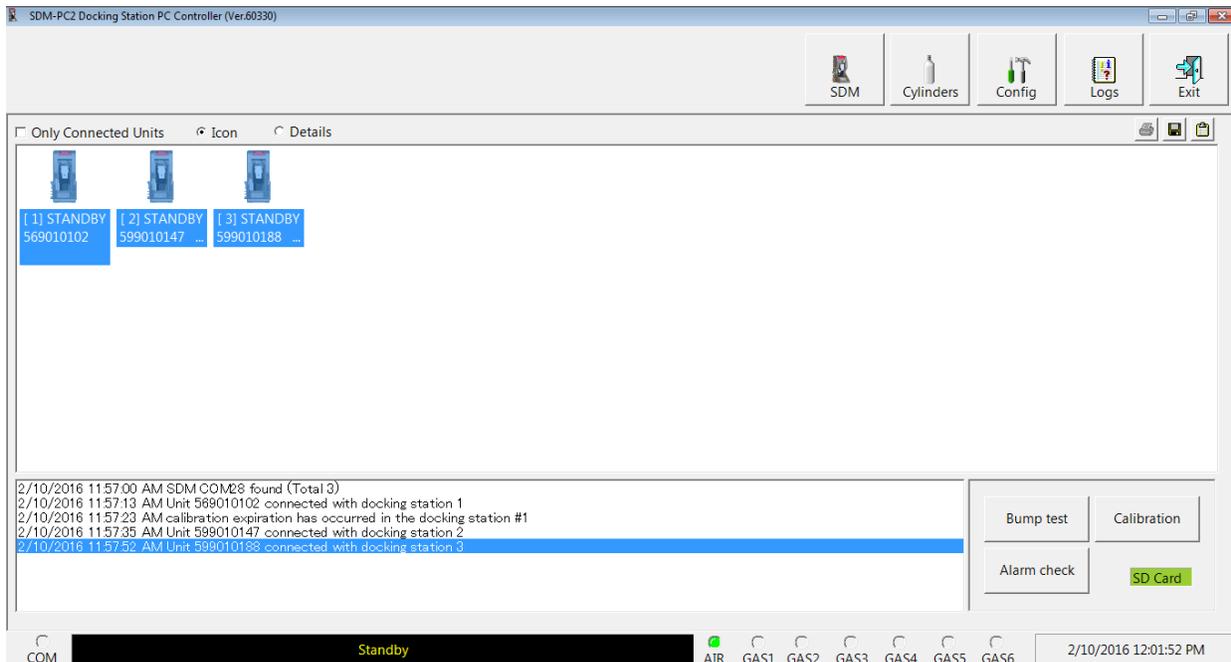
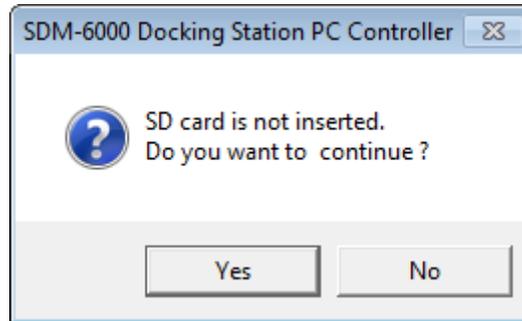


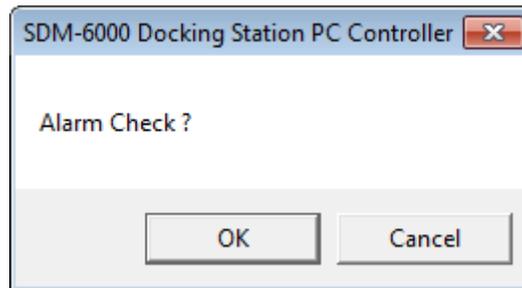
Figure 65: Instrument Selection

3. Click the **Alarm Check** button in the lower right corner of the main program window.

- If an SD card is not inserted in the SDM-6000, a warning will appear. Results for testing done without an SD card inserted will only be saved to the PC Controller Program and will not be saved anywhere else. Click **Yes** to proceed without the SD card inserted or **No** to return to the main window.



- You will be asked if you want to alarm check the GX-6000(s). Click **OK** to proceed. If you don't want to proceed with the alarm check, click **Cancel** to return to the main program window.



- The alarm check will begin and the program will determine the instrument's normal state as a baseline.

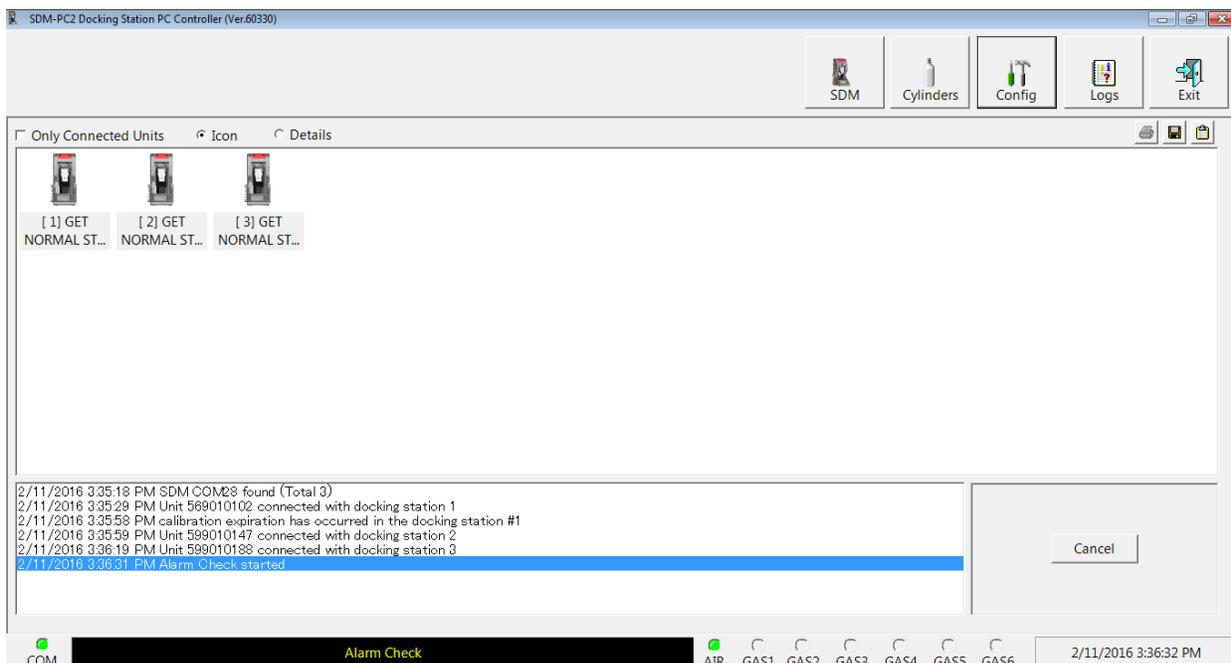


Figure 66: Normal State

7. The instrument's vibrator will be checked.

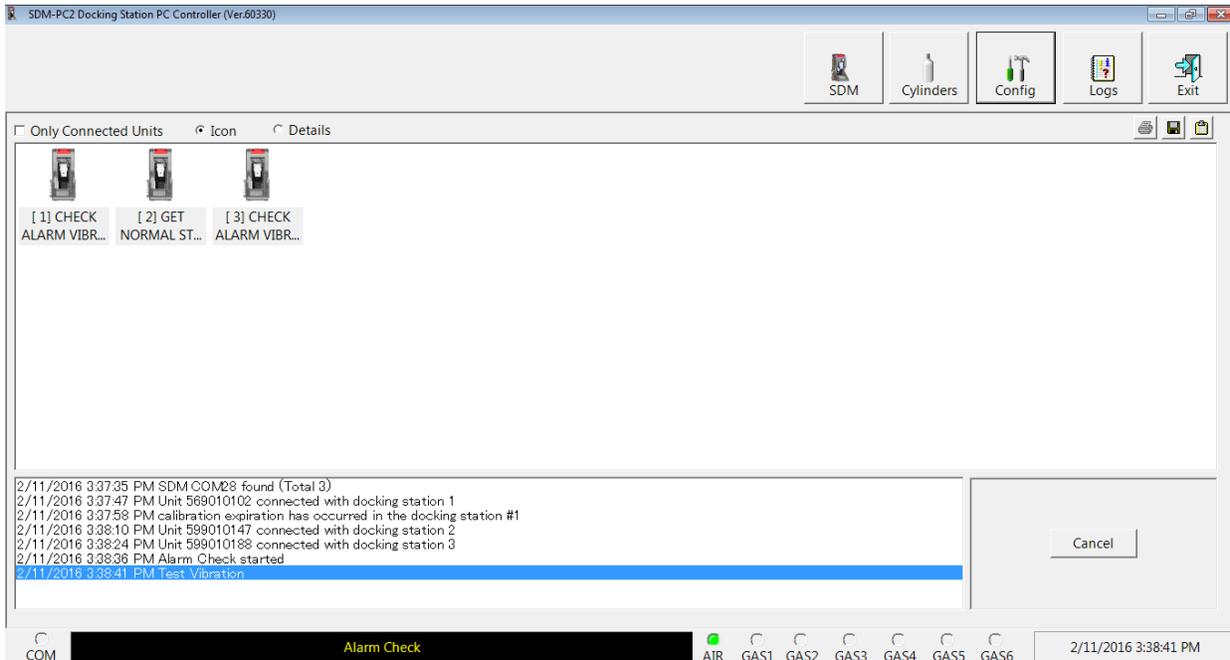


Figure 67: Vibrator Check

8. The instrument's LEDs and buzzer will be checked.

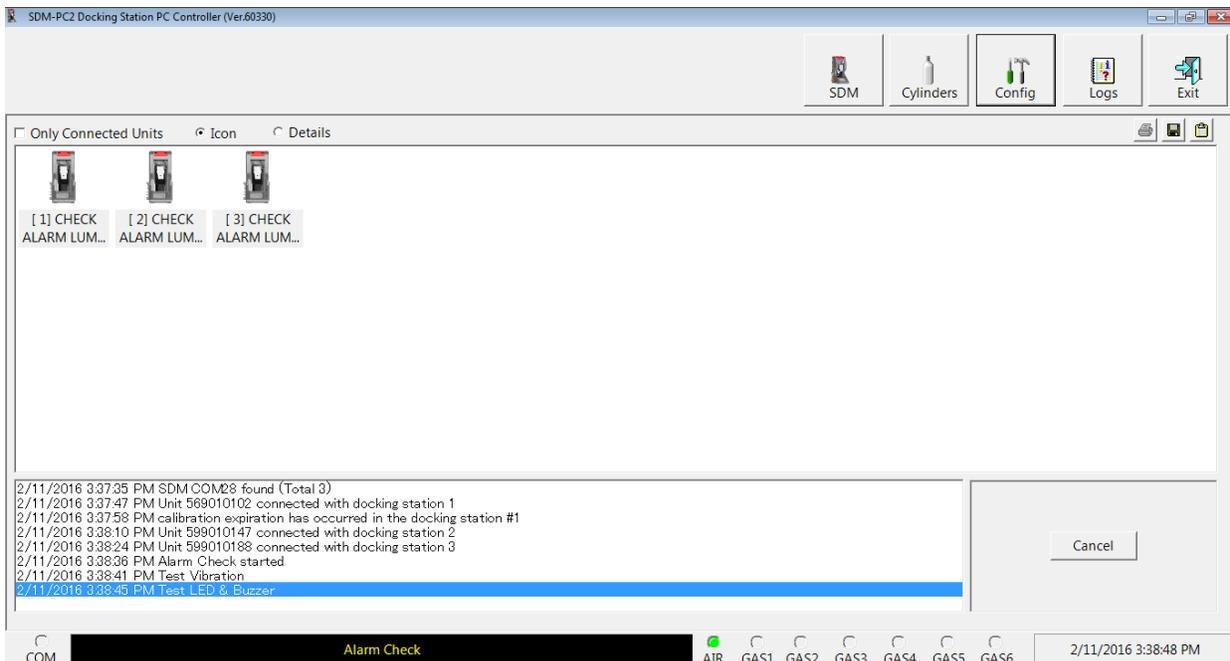
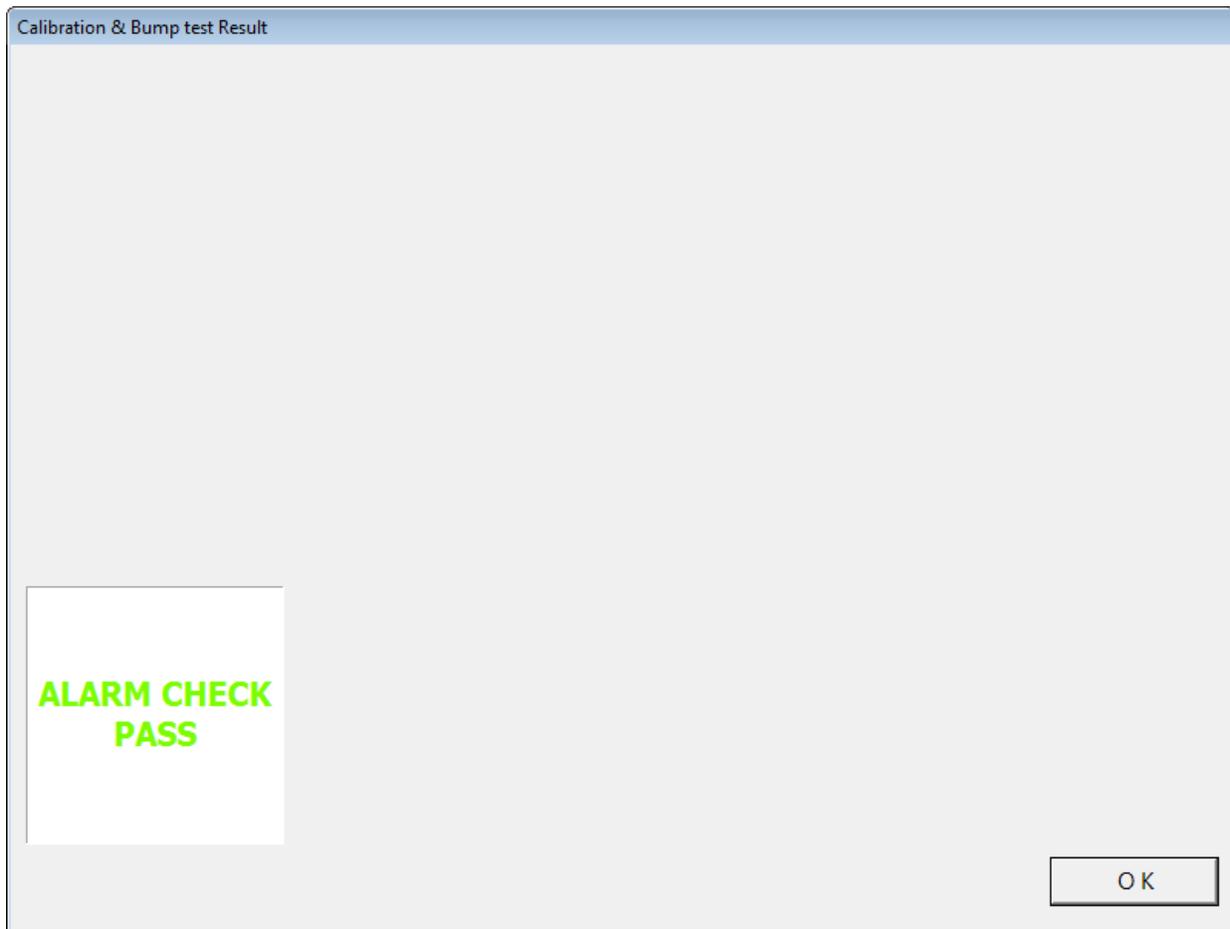


Figure 68: LED and Buzzer Check

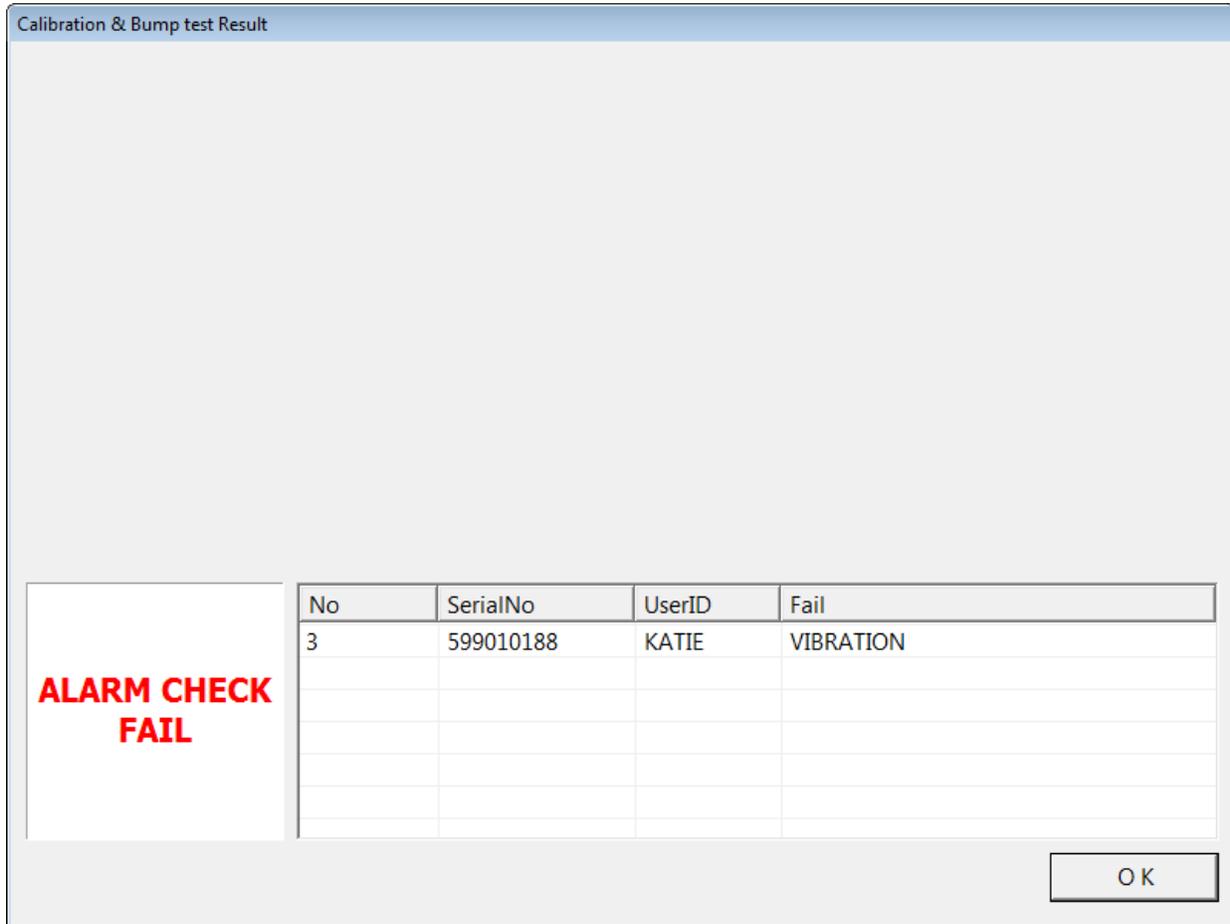
9. After the LED and buzzer have been tested,
  - If the alarm check passes, the following window will open indicating that. Click **OK** to return to the main program window.



**Figure 69: Alarm Check Passed**

After a successful alarm check, the GX-6000 will automatically be shut off in the time period defined by the **Power Off After Pass** parameter in the SDM Window.

- If the alarm check fails, the following window will open indicating which operation failed. Click **OK** to return to the main program window or double click the instrument information line to view the alarm check results in the Logs window.



**Figure 70: Alarm Check Failed**

10. For all alarm check result outcomes, the GX-6000(s) will be displayed in the main program window in Details View. To return to Icons View, click the **Icons** radio button.
11. All alarm check results can be viewed in the Logs window. See “Alarm Check Data” on page 142 for instructions for viewing alarm check data.

## Troubleshooting

**NOTE:** This troubleshooting guide describes SDM-6000 problems only. See the GX-6000 Operator's Manual for problems you may encounter with the GX-6000.

**Table 11: Troubleshooting the SDM-6000**

| Symptoms   | Probable Causes   | Recommended Action  |
|--|---|---|
| <ul style="list-style-type: none"> <li>• Fresh air adjustment fails</li> </ul> | <ul style="list-style-type: none"> <li>• The SDM-6000 is not in a fresh air environment or the cylinder connected to the AIR fitting is not a zero air cylinder.</li> <li>• If a zero air cylinder is used, the calibration cylinder is out of gas.</li> <li>• If a zero air cylinder is used, the red gas in/gas out cover is not pushed down and engaged with the GX-6000.</li> </ul>   | <ol style="list-style-type: none"> <li>1. Confirm that the SDM-6000 is in a fresh air environment or that a zero air cylinder is attached to the AIR fitting.</li> <li>2. If a zero air cylinder is used, verify that it contains an adequate supply of test sample.</li> <li>3. Check to make sure the red gas in/gas out cover is pushed down and engaged with the GX-6000.</li> <li>4. If a zero air cylinder is used, check all calibration tubing for leaks or for any bad connections.</li> <li>5. If the fail condition continues, replace the sensor(s) in the GX-6000.</li> <li>6. If the difficulties continue, contact RKI Instruments, Inc. for further instruction.</li> </ol>   |
| <ul style="list-style-type: none"> <li>• Calibration fails</li> </ul>          | <ul style="list-style-type: none"> <li>• The auto calibration values do not match the cylinder gas concentrations.</li> <li>• The calibration cylinder is out of gas or is outdated.</li> <li>• The calibration cylinder is not connected to the appropriate gas inlet fitting.</li> <li>• The red gas in/gas out cover is not pushed down and engaged with the GX-6000.</li> <li>• The tubing from the regulator to the gas inlet fitting is not connected.</li> </ul> | <ol style="list-style-type: none"> <li>1. Confirm that the auto calibration values match the concentrations listed on the gas cylinder.</li> <li>2. Verify that the calibration cylinder contains an adequate supply of fresh test sample.</li> <li>3. Verify that the calibration cylinder is connected to the appropriate gas inlet fitting.</li> <li>4. Check to make sure the red gas in/gas out cover is pushed down and engaged with the GX-6000.</li> <li>5. Check all calibration tubing for leaks or for any bad connections.</li> <li>6. If the fail condition continues, replace the sensor(s) in the GX-6000.</li> <li>7. If the difficulties continue, contact RKI Instruments, Inc. for further instruction.</li> </ol> |

|  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>No connection between GX-6000 and PC Controller Program</li> </ul>        | <ul style="list-style-type: none"> <li>SDM-6000 is not turned on.</li> <li>The GX-6000 is not correctly inserted into the instrument cradle.</li> <li>The IR window is dirty.</li> <li>The USB cable is not properly plugged into the SDM-6000 or the PC.</li> </ul> | <ol style="list-style-type: none"> <li>Turn on the SDM-6000. If it does not turn on, check that the AC adapter is plugged into an AC socket and to the jack on the left side of the SDM-6000.</li> <li>Check to make sure the GX-6000 is inserted properly.</li> <li>Clean the IR window on the SDM-6000 and GX-6000.</li> <li>Check to make sure the USB cable is plugged into the left side of the SDM-6000 and to a USB port on your PC.</li> <li>If the difficulties continue, contact RKI Instruments, Inc. for further instruction.</li> </ol> |
| <ul style="list-style-type: none"> <li>The Li-ion battery pack in the GX-6000 is not charging</li> </ul>         | <ul style="list-style-type: none"> <li>The GX-6000 has an alkaline battery pack installed.</li> <li>The Li-ion battery pack is faulty.</li> <li>The GX-6000 is not fully inserted in the instrument cradle.</li> <li>The charger is malfunctioning.</li> </ul>       | <ol style="list-style-type: none"> <li>Check to make sure your GX-6000 doesn't have an alkaline battery pack installed.</li> <li>Replace the Li-ion battery pack and attempt to charge it.</li> <li>Be sure that the GX-6000 is fully inserted in the instrument cradle.</li> <li>If the difficulties continue, contact RKI Instruments, Inc. for further instruction.</li> </ol>  |
| <ul style="list-style-type: none"> <li>The message window indicates that a GX-6000 has a cap error</li> </ul>    | <ul style="list-style-type: none"> <li>The red gas in/gas out cover is not pushed down and engaged with the GX-6000.</li> </ul>  | <ol style="list-style-type: none"> <li>Check to make sure the red gas in/gas out cover is pushed down and engaged with the GX-6000.</li> </ol>   |
| <ul style="list-style-type: none"> <li>The message window indicates that a GX-6000's inlet is not set</li> </ul> | <ul style="list-style-type: none"> <li>The gas inlets are not set appropriately for the installed GX-6000.</li> </ul>  | <ol style="list-style-type: none"> <li>Check to make sure that all gases in the GX-6000 have a corresponding inlet setting in the Cylinders Window.</li> <li>Be sure that all appropriate inlets are selected as Active in the Cylinders Window.</li> </ol>  |

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## Charging a GX-6000 in an SDM-6000

The SDM-6000 can be used to charge the rechargeable batteries in a GX-6000. To maximize the GX-6000's run time and the battery life, make sure the batteries' charge is as low as possible before recharging them.

### Recharging a Battery Pack After Performing a Test

To recharge the battery pack in a GX-6000 after performing a bump test or calibration:

1. Perform a bump test, calibration, or alarm check on a GX-6000 as described in "Performing a Bump Test" on page 80, "Performing a Calibration" on page 90, or "Performing an Alarm Check" on page 99.
2. After the bump test, calibration, or alarm check has been completed, turn off the GX-6000(s) by selecting the GX-6000(s), right clicking on them, and selecting Power Off. The Detector Off button on the SDM-6000's touch screen can also be used to turn off the GX-6000. If the bump test, calibration, or alarm check was successful, the docking station will automatically turn the GX-6000(s) off in the time period defined by the **Power Off After Pass** parameter in the SDM Window. The docking station will also turn the GX-6000(s) off if there is no activity for the time period defined by **Auto Power Off** in the SDM Window.
3. Before the GX-6000 is turned off, the Status LED will be blinking green. Once the GX-6000 is turned off, the Status LED will blink orange if the GX-6000 needs to be charged. The Status LED will be solid orange if the GX-6000 is already fully charged.

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**NOTE:** The SDM-6000 does not start charging the batteries until the GX-6000 is off.

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4. If the battery pack is drained enough for the docking station to charge it, the Status LED will continue to blink orange while charging is taking place. The SDM-6000 will take approximately 3 hours to charge a fully discharged GX-6000.

If you are attempting to charge an alkaline battery pack, the Status LED will be solid green and no charging will occur.

If the charging process encounters a fail condition, the Status LED will turn steadily red. A fail condition could indicate that there is something wrong with the Li-ion battery pack, or that there is something wrong with the charger.

5. When the charge is complete, the Status LED will turn solid orange.

## Recharging a Battery Pack Without Performing Any Operations

To recharge the batteries in a GX-6000 without performing any other operations:

- 1 . Confirm that the AC adapter is connected to an AC wall socket and that the power jack is plugged into the left side of the SDM-6000. If you have multiple SDM-6000s connected together, only the leftmost SDM-6000 should be connected to power.
- 2 . Flip the SDM-6000's power switch so that it's in the ON position. If you have multiple SDM-6000s connected together, only the power switch of the leftmost SDM-6000 needs to be flipped.
- 3 . The SDM-6000's Status LED will be solid green if it is operating properly or solid red if there is a system failure.
- 4 . Install a GX-6000 in the instrument cradle. Orient the GX-6000 so the belt clip is facing away from the SDM-6000. Set the bottom of the GX-6000 in the bottom of the instrument cradle and push the top of the GX-6000 toward the SDM-6000.

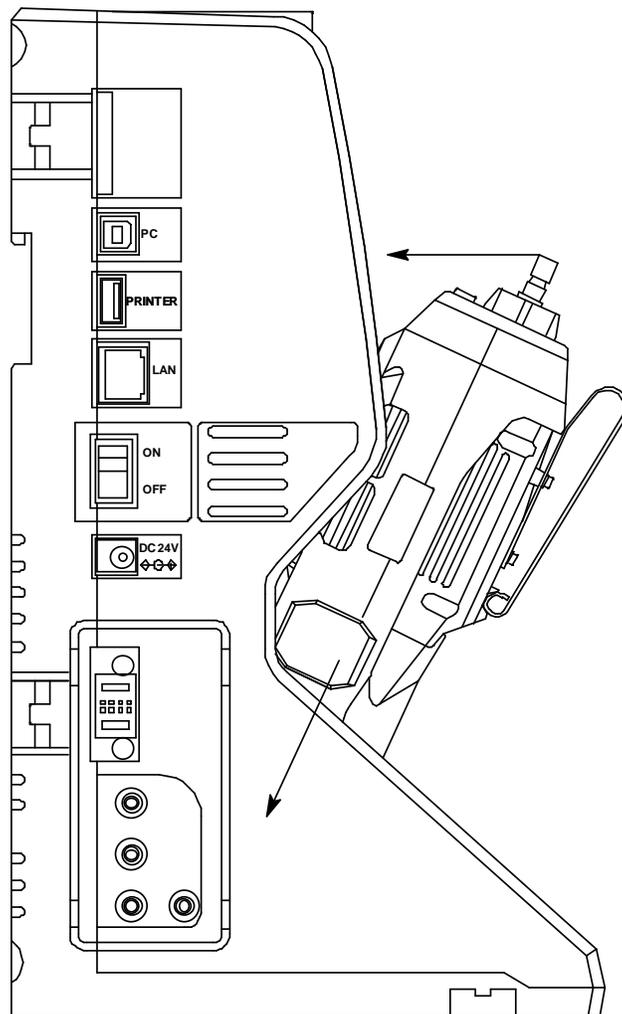


Figure 71: Inserting the GX-6000

- 5 . If the battery pack is fully charged, the Status LED will be solid orange.

If the battery pack is drained enough for the SDM-6000 to charge it, the Status LED will blink orange while charging is taking place. The SDM-6000 will take approximately 3 hours to charge a fully discharged GX-6000.

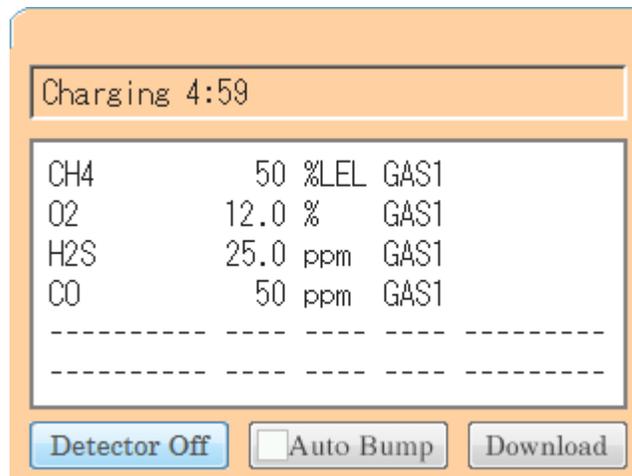
If you are attempting to charge an alkaline battery pack, the Status LED will be solid green and no charging will occur.

If the charging process encounters a fail condition, the Status LED will turn steadily red. A fail condition could indicate that there is something wrong with the Li-ion battery pack, or that there is something wrong with the charger.

- 6 . When the charge is complete, the Status LED will turn solid orange.

### Batteries Too Drained for PC Controlled Operation

If the batteries in the GX-6000 do not have enough power to keep the GX-6000 on during operations with the SDM-6000, the GX-600 will turn off and the SDM-6000 will go into a 5 minute charge cycle and indicate it is charging the instrument. The following screen occurs on a single station system. The screens on a multi-station system will be similar.



The GX-6000 will not connect to the SDM-6000. The GX-6000 cannot be bump tested, calibrated, or alarm checked in the charge cycle. Once the 5 minute charge cycle has ended, the GX-6000 will automatically turn back on and connect to the SDM-6000. The GX-6000 can now be bump tested, calibrated, or alarm checked.

## Chapter 6: Viewing Data in the Logs Window

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### Logs Button Overview

The Logs Window contains saved data from GX-6000s in addition to records of bump tests, calibrations, and alarm checks performed while the GX-6000 is connected to the PC Controller Program. If you perform a complete download by right clicking a selected GX-6000 and clicking **Download Logs** or if you import downloaded log data using the **SD Import** or **Net Import** buttons, the Logs Window will contain alarm trend data, calibration data, event data, interval trend data, memo data, bump test data, normal operation snap log data, and leak check snap log data. If you do not perform a complete download and do not import downloaded log data, the Logs Window will only have memo files and files for any bump tests, calibrations, or alarm checks completed while the GX-6000 was connected to the PC Controller Program or bump test, calibration, and alarm check files that are imported using the **SD Import** or **Net Import** buttons.

The use of the **SD Import** or **Net Import** buttons applies to using the SDM-6000 in Standalone Mode and is described in the SDM-6000 Standalone Mode Operator's Manual.

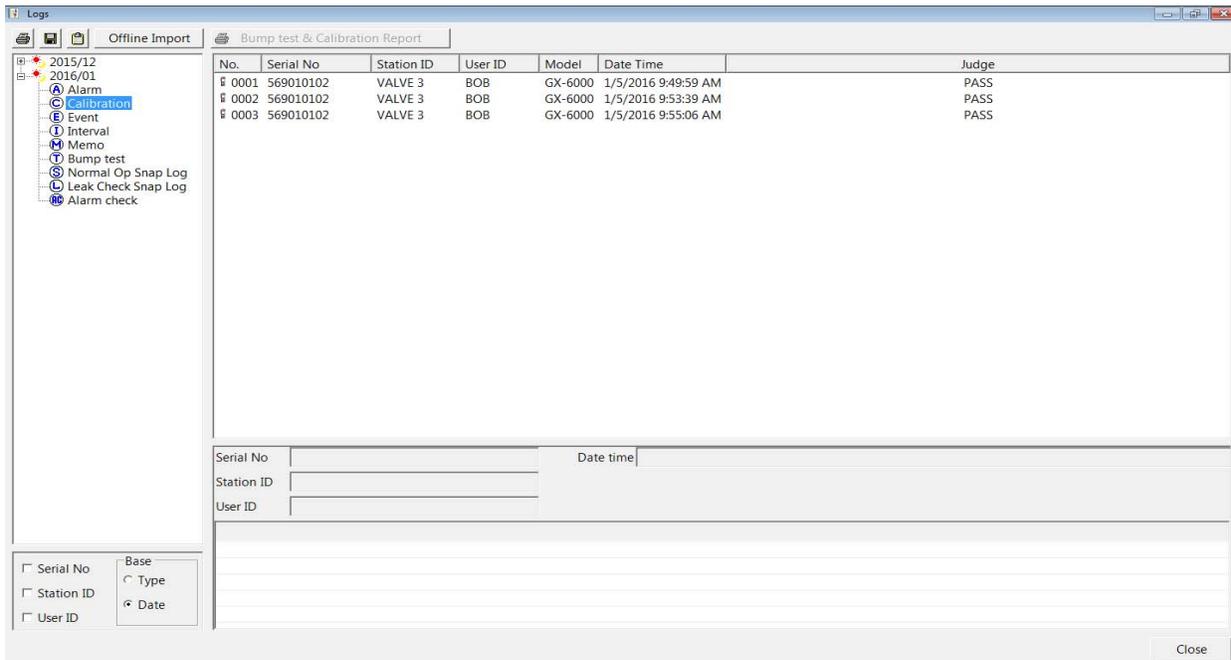
The Logs Window is divided into four frames. The upper left frame is the Data Frame and displays all the data folders. If no data has been saved, then no folders will appear in the Data Frame.

The upper right frame shows the contents of a data folder that is selected in the Data Frame. If applicable, the lower right frame shows the summary information for a data file that is selected in the upper right frame. Not all types of data files have summary information to display.

The lower left frame contains three selection boxes for organizing data. When viewing the data, it can be organized in two ways:

1. Base View Format

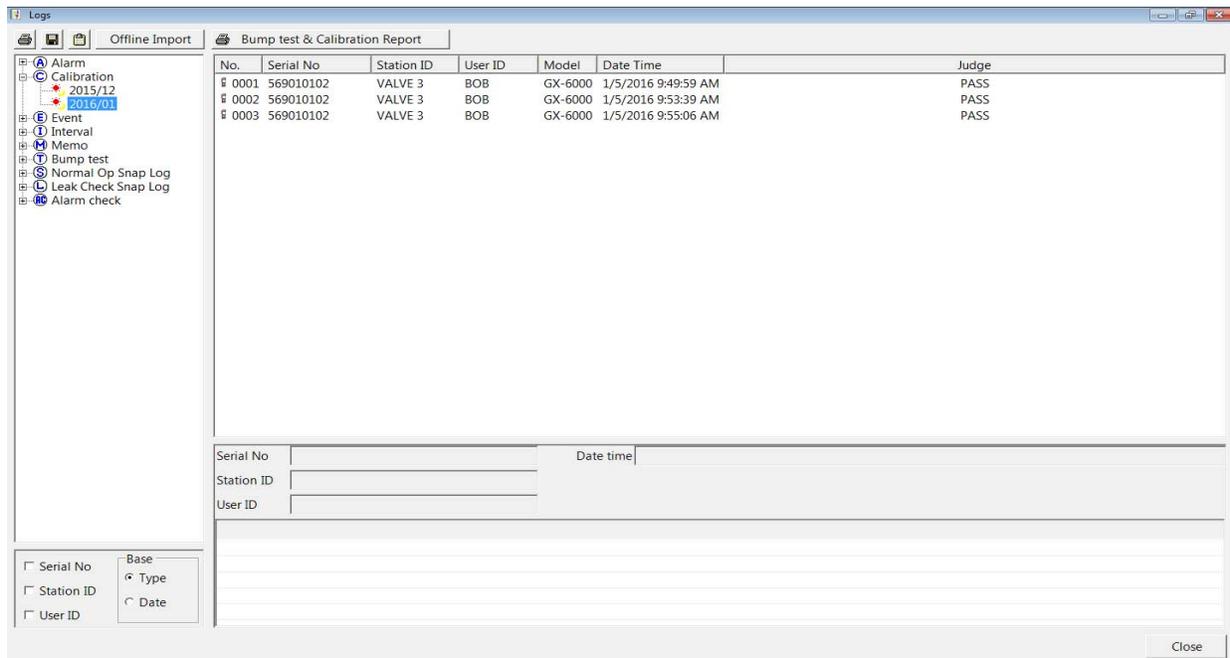
If you do not select **Serial No**, **Station ID**, or **User ID**, the Base view box appears next to the selection boxes. The data can be organized by either data type or by the year and month of the saved data.



**Figure 72: Logs Window in Base View Format, Date**

To view data in the Date Base View Format:

- a. Select **Date** in the Base view box.
- b. Click the expanded view symbol (+) next to a date folder in the Data frame of the Logs window or double click the folder to view the contents below it.
- c. Single click on the data type folder (Alarm, Calibration, etc.). All of the files in that data type folder will appear in the upper right frame of the Logs window.
- d. If an item is expanded and you want to close it, click the (-) symbol next to the item or double click it.



**Figure 73: Logs Window in Base View Format, Type**

To view data in the Type Base View Format:

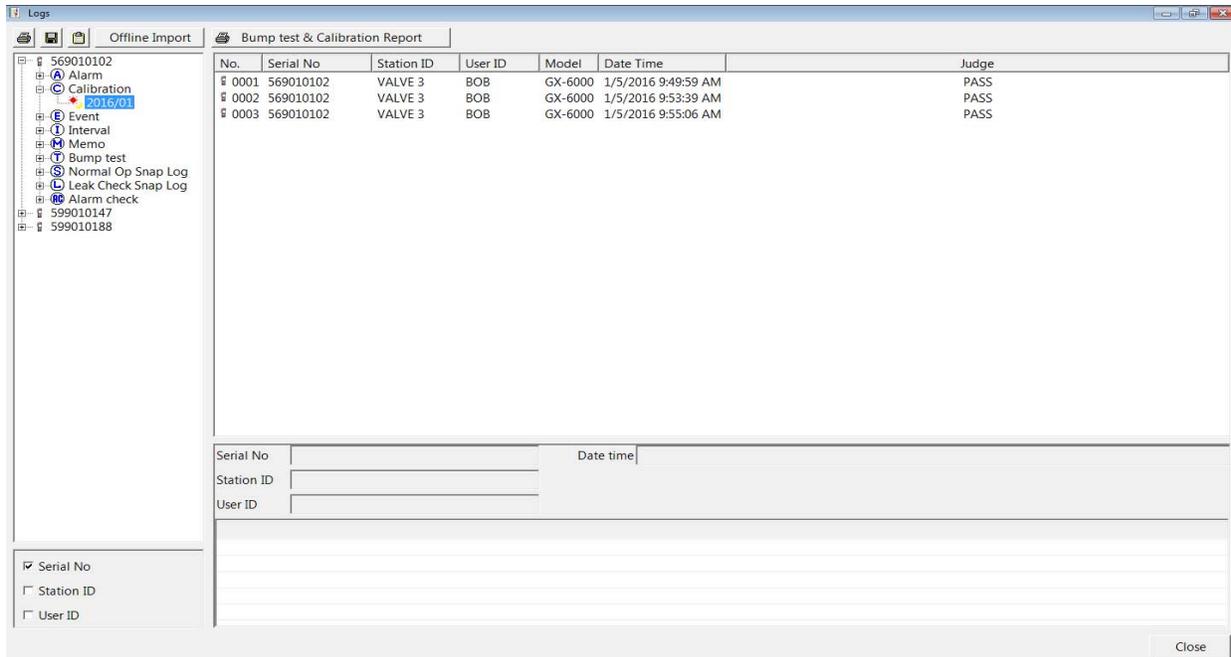
- a. Select **Type** in the Base view box.
- b. Click the expanded view symbol (+) next to a data type folder (Alarm, Calibration, etc.) in the Data frame of the Logs window or double click the folder to view the contents below it.
- c. Single click on a date folder. The dates are displayed in year/month format. All of the files in that date folder will appear in the upper right frame of the Logs window.
- d. If an item is expanded and you want to close it, click the (-) symbol next to the item or double click it.

## 2. ID View Format

The data may be organized by one or more of the following parameters:

- Serial Number
- Station ID
- User ID

If any of these boxes are selected, the Base view box disappears. Click the selection box or boxes in the lower left frame to organize the data as desired.



**Figure 74: Logs Window in ID View Format**

To view data in the ID View Format:

- Select one or more of the ID view choices: **Serial No.**, **Station ID**, or **User ID**.
- Click the expanded view symbol (+) next to an ID folder (Serial No., Station ID, or User ID) in the Data frame of the Logs window or double click the folder to view the contents below it. Depending on which ID parameters are selected, there may be up to 3 levels of ID folders.
- Click the expanded view symbol (+) next to the data type folder (Alarm, Calibration, etc.) you wish to view or double click the folder to view the contents below it.
- Single click on a date folder. The dates are displayed in year/month format. All of the files in that date folder will appear in the upper right frame of the Logs window.

- e. If an item is expanded and you want to close it, click the (-) symbol next to the item or double click it.

When viewing data by Serial No., no two GX-6000s should have the same serial number. However, if two GX-6000s do have the same serial number and have data for the same year/month, they will be distinguished by their different Station ID or User ID. When viewing data by Station ID or by User ID, if two GX-6000s have the same Station ID and/or User ID and have data for the same year/month, they will be distinguished by their different serial numbers.

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**NOTE:** In the examples that follow, the data will be shown organized by serial number. If you do not select any of the organization boxes or select the **Station ID** or **User ID** boxes instead of or in addition to the **Serial No.** box, your Logs Window will look slightly different.

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## Alarm Trend Data

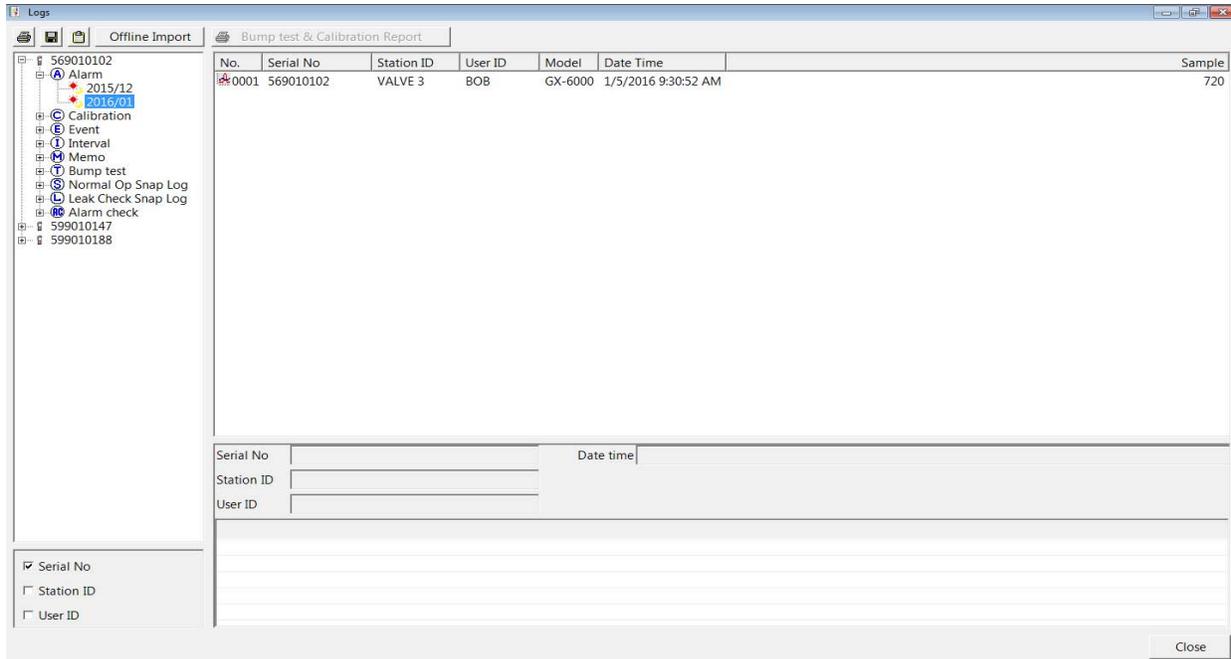
The GX-6000 saves files that describe the most recent gas alarm events. If a gas alarm event occurs, then an alarm trend file that is centered around the event is saved. It shows the readings up to 30 minutes before and 30 minutes after the event, with readings recorded every 5 seconds. The readings that are saved are the peak (minimum for oxygen) readings for the previous 5 seconds. If the GX-6000 was operating in Inert Mode at the time of the alarm, the maximum oxygen readings will be saved. If the GX-6000 had not been on for the 30 minutes before the alarm event occurred, the data during this time is left blank. If the GX-6000 is turned off less than 30 minutes after an alarm event occurs, the data file will only have logged data until the GX-6000 was turned off.

The GX-6000 saves up to 8 alarm trend files. When an alarm event triggers an alarm trend file to be saved, subsequent alarm events must occur 15 minutes after the previous triggering event in order to trigger the saving of another alarm trend file. If 8 alarm trend files are already saved in the GX-6000's memory, the oldest alarm trend file is overwritten when a new alarm trend file is saved.

Alarm trend data is downloaded from a GX-6000 when a complete download is performed. It can also be imported using the **SD Import** or **Net Import** buttons. To view and perform desired operations with the alarm trend files:

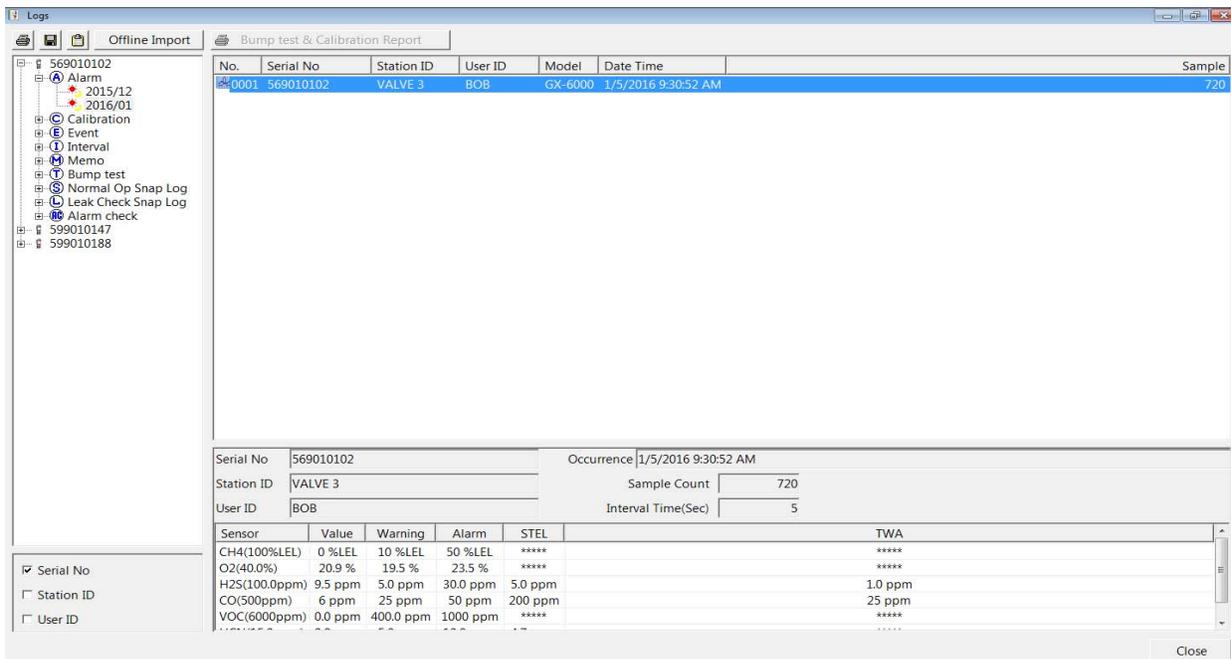
1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Alarm** folder to view the contents. Alarm trend data folders are arranged by year/month.

- Click the year/month folder you wish to view. All alarm trend data files for that GX-6000 in that particular year/month will appear in the upper right frame. The file number, serial number, station ID, user ID, model, date/time, and sample count of the alarm trend file appear in the same line.



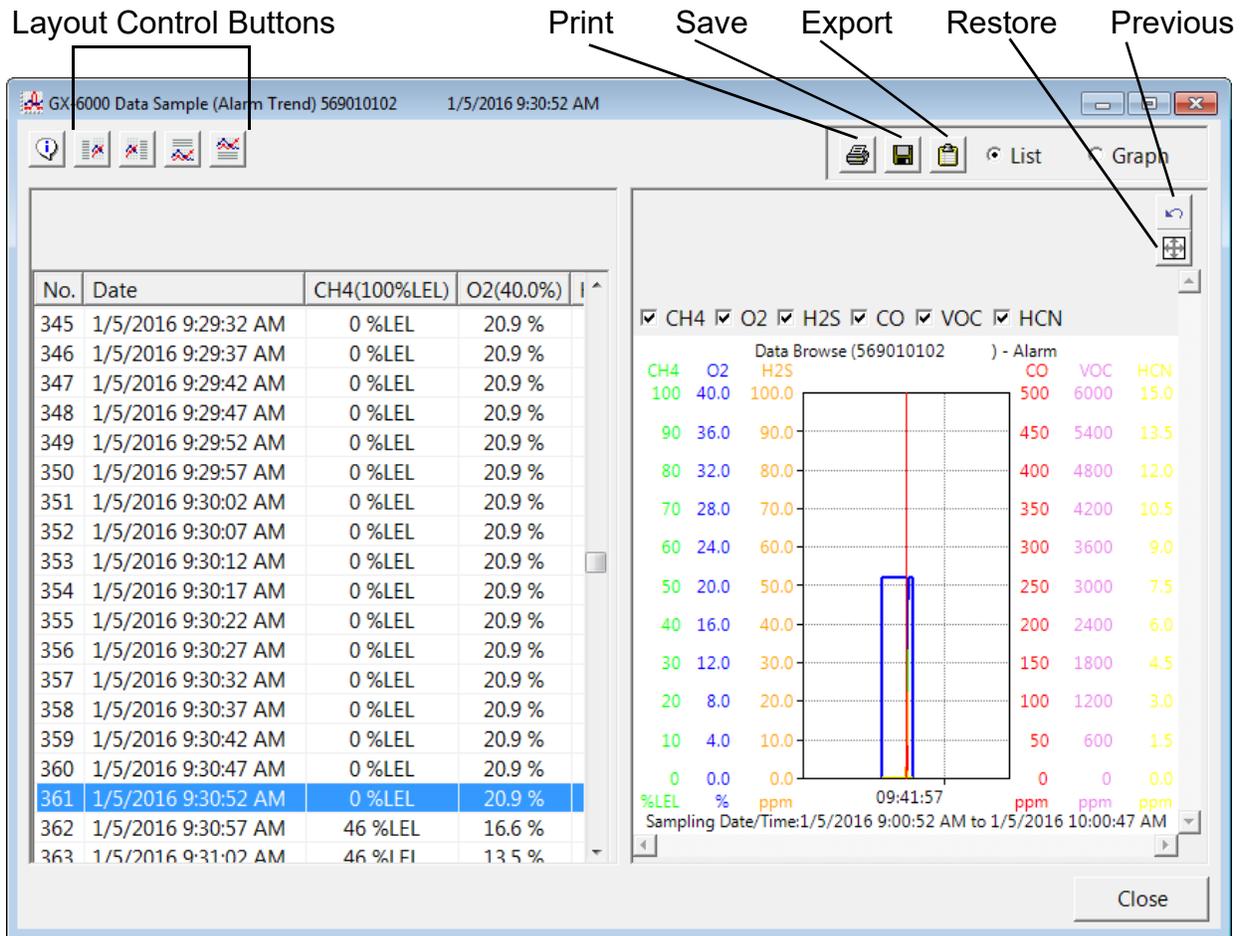
**Figure 75: Viewing Alarm Trend Files**

- Click a file to see the GX-6000 information, gas readings at the time of the event, and the alarm setpoints in the lower right frame.



**Figure 76: Alarm Trend Data**

5. To view the alarm trend data, double click the desired file.



**Figure 77: Alarm Trend Data**

Each data point will be displayed in the left half of the screen along with the peak readings (minimum for oxygen) over the previous 5 seconds. A graph of the data will appear on the right half of the screen.

To change the layout of the table and chart in relation to each other, click any of the four layout control buttons in the upper left corner of the screen.

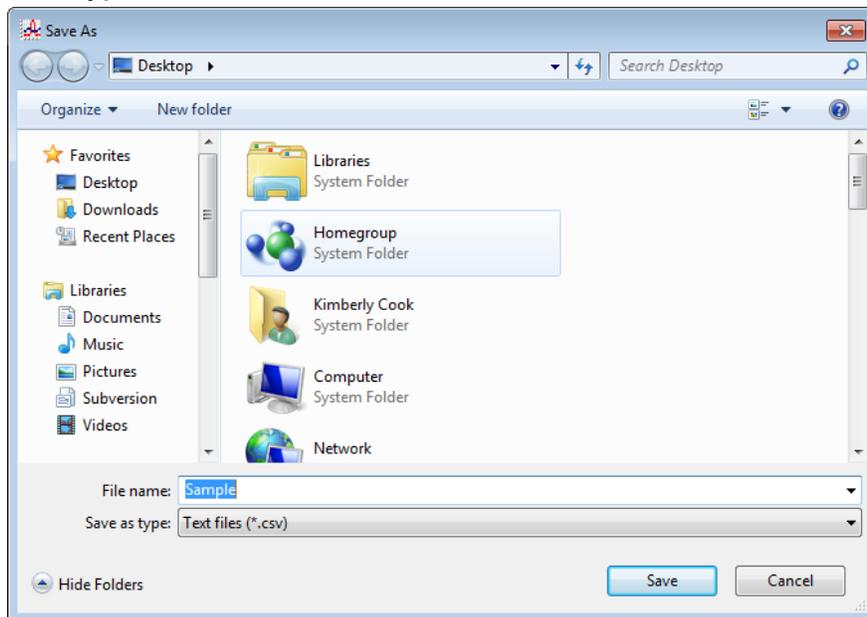
To change the proportions of the table to the graph, click the divider between the two and move it.

To display instrument information along with the data table and graph, click the “i” control button in the upper left corner.

6. In the table part of the screen,

- The gas readings at the time of the alarm event around which the logged data is centered are highlighted in red and are the instantaneous readings at that time.

7. In the graph part of the screen,
  - You can choose which gas(es) you want to graph by selecting or deselecting the boxes next to each gas name.
  - To zoom in on a particular part of the graph, drag a box around that area so that it is highlighted in gray. The graph will zoom in. To return to a previous zoom, click the Previous control button in the upper right corner of the graph section. To return to the original zoom, click the Restore control button in the upper right corner of the graph section.
  - A vertical red line appears on the graph at the point that created the alarm trend file. Clicking anywhere on the graph will move that red line and highlight that data point in the table. Clicking a data point in the table will move the red line in the graph to that data point.
8. To print the data, select either **List** or **Graph** in the upper right corner of the window and then click the **Print** control button in the upper right corner of the window. The **Print** control button has a printer icon on it. A dialog box will appear confirming if you want to print. Click **OK**. If **Graph** is selected, the data will print as a graph. If **List** is selected, the data will print as a table.
9. To save the data to a file which can be imported into another program, select either **List** or **Graph** in the upper right corner of the window and then click the **Save to File** control button. The **Save to File** control button has a floppy disk icon on it. A dialog box will appear for you to specify the file name, file location, and file type.



**Figure 78: Save As Dialog Box**

If **List** is selected, the file type is “.csv” (comma-separated values). If **Graph** is selected, the file type is “.bmp” (Windows bitmap). After specifying the file name and file location, click **Save** to save the file to the specified location.

10. To save the data to the clipboard, select either **List** or **Graph** in the upper right corner of the window and then click the **Copy to Clipboard** control button. The **Copy to Clipboard** control button has a clipboard icon on it. The table or graph will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.
11. To go back and view other data, click **Close** to return to the Logs window.

## Calibration Data

The GX-6000 is capable of saving information for up to the 100 most recent bump tests and calibrations combined. When a GX-6000 is connected to the PC Controller Program and a complete download is performed, the calibration files are retrieved and stored by the program. In addition, all calibrations performed by the PC Controller Program are stored by the program. Calibration data can also be imported using the **SD Import** or **Net Import** buttons. To view and perform desired operations with the calibration files:

1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Calibration** folder to view the contents. Calibration data folders are arranged by year/month.
3. Click the year/month folder you wish to view. All calibration data files for that GX-6000 in that particular year/month will appear in the upper right frame. The file number, serial number, station ID, user ID, model, date/time, and result of the calibration appear in the same line. If calibrations were performed prior to connecting the GX-6000 with the PC Controller Program, data for those calibrations will not appear until a complete download is performed.

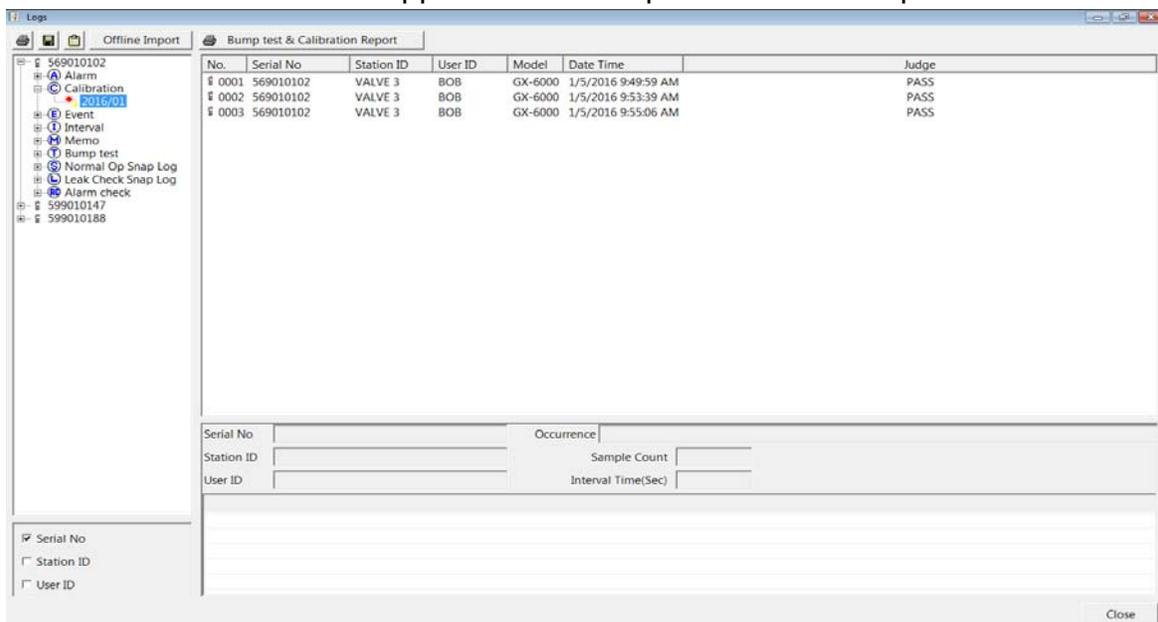
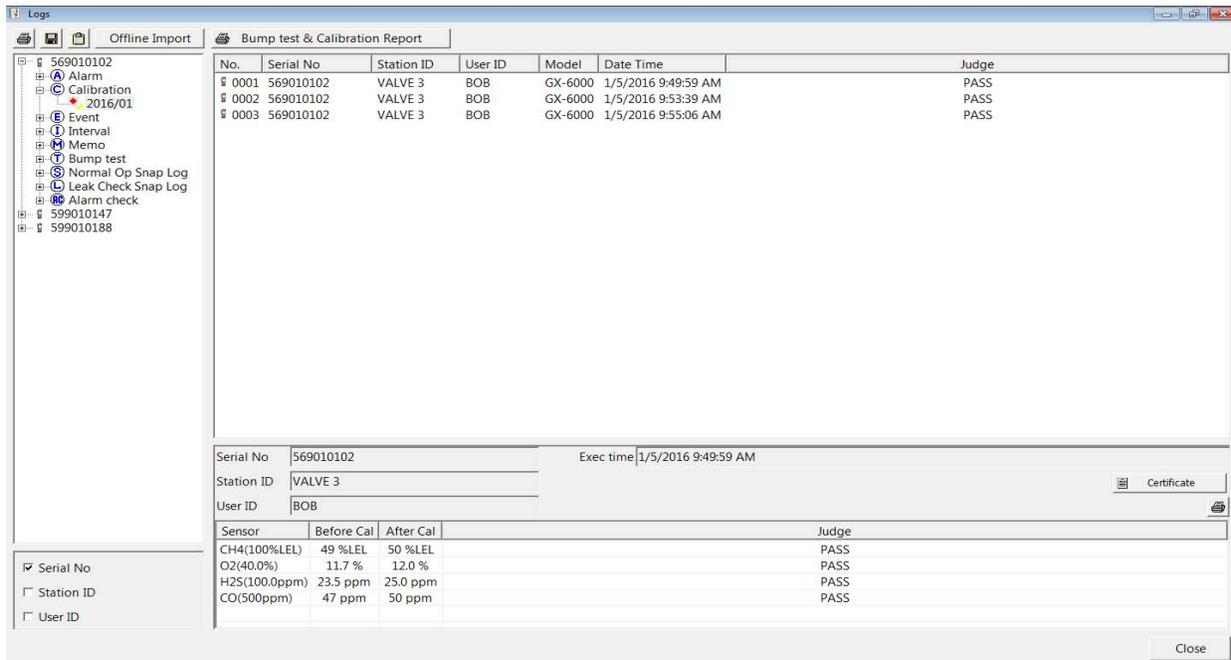


Figure 79: Viewing Calibration Log Files

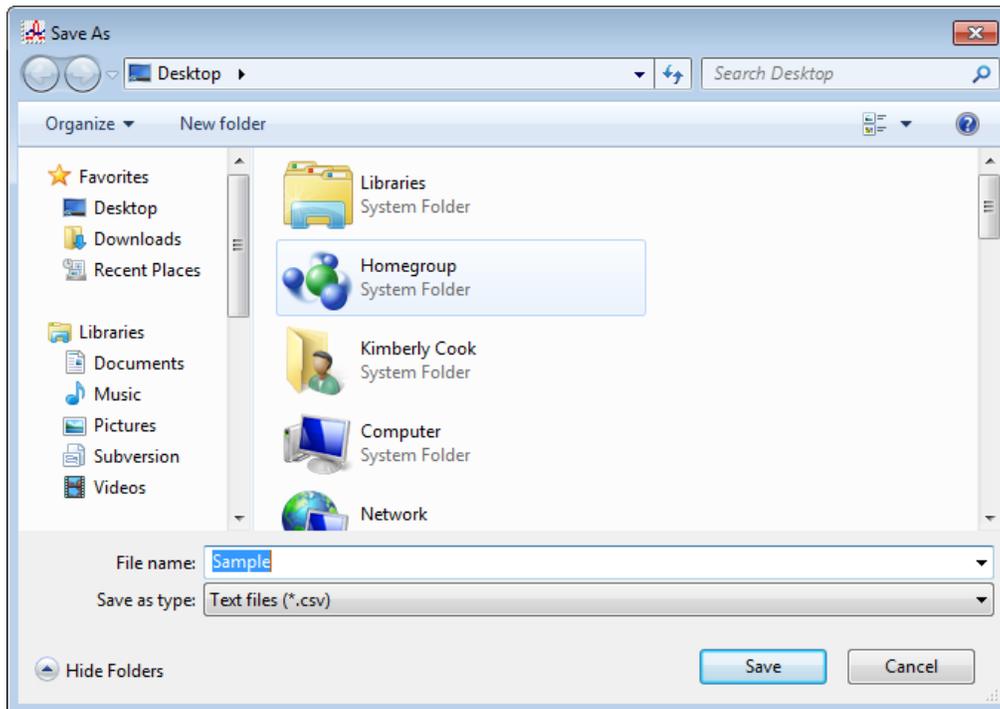
- Click one of the calibration data files. The fields in the bottom right frame will fill in. The instrument information will be displayed along with the calibration information. The tested sensors will be displayed along with the final gas concentration, the calibration gas values, and the result of the calibration. A **Certificate** button will also appear along the right side of the screen. This button is only active if the selected calibration passed.



**Figure 80: Viewing Calibration Data**

- Files that record a failed calibration on all channels are highlighted in red. Files that record a calibration where not all channels passed are highlighted in orange.
- Calibrations that required more than one calibration cylinder will have separate calibration files for each cylinder. For example, a calibration performed on a GX-6000 that contained the standard 4 sensors plus an HCN ESS-03 sensor would result in one calibration file for the standard 4 sensors if a 4-gas mix was used and one calibration file for the HCN ESS-03 sensor.
- To print the calibration data (everything in the lower right frame of the screen), click the **Print** control button located just above the calibration judge column. A dialog box will appear confirming if you want to print. Click **OK**.
- To print the basic calibration results from a date folder (everything in the upper right frame), be sure that the desired date folder is selected and click the **Print** control button in the upper left corner of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.
- To print detailed calibration data for each calibration file in a date folder, be sure that the desired date folder is selected and click the **Bump Test & Calibration Report** control button along the top of the Logs window. A dialog

- box will appear confirming if you want to print. Click **OK**.
- To print detailed calibration and bump test data (if available) for each calibration and bump test file for a specific serial number, be sure that the desired serial number is selected in the upper left frame and click the **Bump Test & Calibration Report** control button along the top of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.
  - To save calibration data from a specific date folder, be sure the desired date folder is highlighted and click the **Save** control button in the upper left corner of the Logs window. A “Save As” dialog box will appear for you to specify the file name and file location.



**Figure 81: Save As Dialog Box**

- The file type will be “.csv” (comma separated values).  
Specify the file name and location and click **Save**.
- To copy calibration data in a date folder to the clipboard, be sure the desired date folder is selected and click the **Save to Clipboard** control button. The data will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.

13. To view or print a calibration certificate for a passed calibration, click the **Certificate** button along the right side of the window. The calibration certificate will appear.

| CALIBRATION CERTIFICATE   |  |  |           |   |          |
|---|--|--|-----------|---|----------|
| Language  |  | Align  |           |   |          |
| <input checked="" type="radio"/> English (United States) <input type="radio"/> Português (Brasil) |  | <input checked="" type="radio"/> Left <input type="radio"/> Center |           | <input type="button" value="Print"/> <input type="button" value="Close"/> |          |
| ISSUE DATE  | 1/5/2016                               |  |           |   |          |
| LABORATORY NAME   |  |  |           |   |          |
| LABORATORY ADDRESS  |  |  |           |   |          |
| CERTIFICATE NUMBER  | badb516a-14ef-4b69-bfe5-fe22f09079b2-1 |  |           |   |          |
| GAS DETECTOR DATA   | Serial                                 | 569010102  |           |   |          |
|   | Manufacturer                           | RIKEN KEIKI  |           |   |          |
|   | Model                                  | GX-6000  |           |   |          |
|   | Station ID                             | VALVE 3  |           |   |          |
|   | User ID                                | BOB  |           |   |          |
|   |  | GAS  | CH4(%LEL) | O2(%)   | H2S(ppm) |
| Alarm points  | 1st alarm                              | 10 %LEL  | 19.5 %    | 5.0 ppm   | 25 ppm   |
|   | 2nd alarm                              | 50 %LEL  | 23.5 %    | 30.0 ppm  | 50 ppm   |
| STANDARD OR REGULATION USED   |  |  |           |   |          |
| TRACEABILITY  |  |  |           |   |          |
| CALIBRATION RESULT  | GAS                                    | CH4(%LEL)  | O2(%)     | H2S(ppm)  | CO(ppm)  |
|   | Range                                  | 0-100%LEL  | 0-40.0%   | 0-100.0ppm  | 0-500ppm |
|   | Gas concentration                      | 50 %LEL  | 12.0 %    | 25.0 ppm  | 50 ppm   |
|   | Reading before calibration             | 49 %LEL  | 11.7 %    | 23.5 ppm  | 47 ppm   |
|   | Reading after calibration              | 50 %LEL  | 12.0 %    | 25.0 ppm  | 50 ppm   |
| ENVIRONMENTAL CONDITIONS  |  |  |           |   |          |

**Figure 82: Calibration Certificate**

The calibration date, instrument information, alarm points, and calibration gas concentration information will be displayed. Laboratory name, laboratory address, standard or regulation used, traceability, environmental conditions, observations, and executor fields are all available for user-entered information. If you would like to enter information into any of these fields, click in the field, and type in the desired information.

Use the **English** and **Portuguese** selection dots in the Language section at the top of the screen to choose the language you want the information displayed in.

Use the **Left** and **Center** selection dots in the Align section at the top of the

certificate to change the alignment of the information that's manually typed in.

To print a certificate, enter the desired information and click the **Print** button in the top right corner of the screen. Printing the certificate saves any information that was added to the open fields.

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## Event Data

The GX-6000 saves the 100 most recent alarm events and the 100 most recent trouble events. When a GX-6000 is connected to the PC Controller Program and a complete download is performed, the alarm and trouble event files are retrieved and saved in the program. They can also be imported using the **SD Import** or **Net Import** buttons.

Alarm event files save the time, instrument channel, gas, and alarm type of every gas alarm event that occurs on a particular GX-6000. Warning (low alarm), Alarm (high alarm), STEL, TWA, and overscale events are saved.

Trouble event files note the time, instrument channel, whether the event is an instrument system failure or sensor failure, and the specific type of failure. Calibration failures, dead battery alarms, and sensor failures are among the trouble events that are saved.

Even though two types of files are saved, the PC Controller Program does not distinguish between the two and shows them together and with the same lightning bolt symbol. To view and perform desired operations with the event files:

1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Event** folder to view the contents. Event data folders are arranged by year/month.

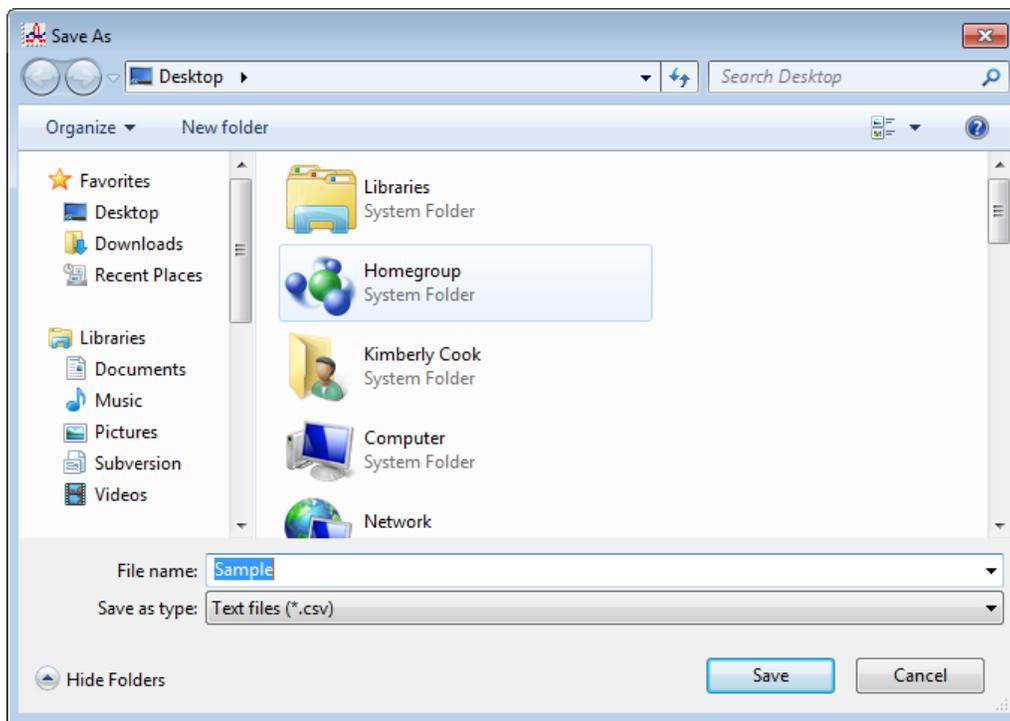
- Click the year/month folder you wish to view. All event data files for that GX-6000 in that particular year/month will appear in the upper right frame. The file number, serial number, station ID, user ID, model, date/time, channel number, sensor, and event type appear in the same line.

| No.  | Serial No | Station ID | User ID | Model   | Date Time           | Ch | Sensor        | Event      |
|------|-----------|------------|---------|---------|---------------------|----|---------------|------------|
| 0001 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 9:30:52 AM | 3  | H2S(100.0ppm) | WARNING    |
| 0002 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 9:30:53 AM | 4  | CO(500ppm)    | WARNING    |
| 0003 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 9:30:54 AM | 2  | O2(40.0%)     | WARNING    |
| 0004 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 9:30:56 AM | 1  | CH4(100%LEL)  | WARNING    |
| 0005 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:24:52 PM | 1  | CH4(100%LEL)  | Fail(BUMP) |
| 0006 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:24:53 PM | 4  | CO(500ppm)    | Fail(BUMP) |
| 0007 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:24:53 PM | 2  | O2(40.0%)     | Fail(BUMP) |
| 0008 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:24:53 PM | 3  | H2S(100.0ppm) | Fail(BUMP) |
| 0009 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:25:52 PM | 4  | CO(500ppm)    | Fail(Span) |
| 0010 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:25:52 PM | 3  | H2S(100.0ppm) | Fail(Span) |
| 0011 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:25:52 PM | 1  | CH4(100%LEL)  | Fail(Span) |
| 0012 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:25:52 PM | 2  | O2(40.0%)     | Fail(Span) |
| 0013 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:26:29 PM | 5  | VOC(6000ppm)  | Fail(BUMP) |
| 0014 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:27:29 PM | 5  | VOC(6000ppm)  | Fail(Span) |
| 0015 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:28:02 PM | 6  | HCN(15.0ppm)  | Fail(BUMP) |
| 0016 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 1:29:02 PM | 6  | HCN(15.0ppm)  | Fail(Span) |
| 0017 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:24:17 PM | 6  | HCN(15.0ppm)  | Fail(Sens) |
| 0018 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:24:20 PM | 6  | HCN(15.0ppm)  | Fail(Sens) |
| 0019 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:24:58 PM | 6  | HCN(15.0ppm)  | Fail(Sens) |
| 0020 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:25:00 PM | 6  | HCN(15.0ppm)  | Fail(Sens) |
| 0021 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:25:37 PM | 6  | HCN(15.0ppm)  | Fail(Sens) |
| 0022 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:26:20 PM | 4  | CO(500ppm)    | Fail(BUMP) |
| 0023 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:26:20 PM | 1  | CH4(100%LEL)  | Fail(BUMP) |
| 0024 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:26:20 PM | 2  | O2(40.0%)     | Fail(BUMP) |
| 0025 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:26:20 PM | 3  | H2S(100.0ppm) | Fail(BUMP) |
| 0026 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:27:20 PM | 3  | H2S(100.0ppm) | Fail(Span) |
| 0027 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:27:20 PM | 1  | CH4(100%LEL)  | Fail(Span) |
| 0028 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:27:20 PM | 2  | O2(40.0%)     | Fail(Span) |
| 0029 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:27:52 PM | 5  | VOC(6000ppm)  | Fail(BUMP) |
| 0030 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/5/2016 3:28:52 PM | 5  | VOC(6000ppm)  | Fail(Span) |
| 0031 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/6/2016 8:00:58 AM | 1  | CH4(100%LEL)  | Fail(BUMP) |
| 0032 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/6/2016 8:01:31 AM | 5  | VOC(6000ppm)  | Fail(BUMP) |
| 0033 | 569010102 | VALVE 3    | BOB     | GX-6000 | 1/6/2016 8:02:03 AM | 6  | SO2(6.00ppm)  | Fail(BUMP) |

Figure 83: Viewing Event Data

- To print event data from a date folder, be sure the desired date folder is selected and click the **Print** control button in the upper left corner of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.

5. To save event data from a date folder, be sure the desired date folder is selected and click the **Save** control button in the upper left corner of the Logs window. A “Save As” dialog box will appear for you to specify the file name and file location.



**Figure 84: Save As Dialog Box**

- The file type will be “.csv” (comma separated values).
- Specify the file name and location and click **Save**.
6. To copy event data from a date folder to the clipboard, be sure the desired date folder is selected and click the **Save to Clipboard** control button. The data will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.

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## Interval Trend Data

Average gas concentrations over the user defined interval trend time are logged in the interval trend data files. The interval trend time is set using either the **Interval Time** menu item in the Edit Function Screen or in the GX-6000 Setup Mode. See “Edit Function” on page 148 or the GX-6000 Operator’s Manual for instructions to set the interval trend time. Events such as gas alarms or sensor failures are saved in the interval trend data file when they occur.

An interval trend data file is created and saved in the GX-6000 when the instrument is turned *off* or when a user ID, or station ID is changed during operation. The serial number, user ID, and station ID that are entered in the instrument when it is turned *on* or that are updated during operation are saved for the corresponding interval trend file. If the instrument’s user ID or station ID are changed during operation, any interval

trend files that result from subsequent operating sessions will have the new user ID or station ID saved in them.

The data may be viewed in both table format and graph format if at least 5 scheduled data points have been logged at the programmed interval trend time. This does not include events. If an interval data file has fewer than five scheduled data points, the graph controls are not functional and the data is shown only in table format.

Interval trend data will not appear unless a complete download is performed or if an import is done using the **SD Import** or **Net Import** buttons. To view and perform desired operations with the interval trend files:

1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the Interval folder to view the contents. Interval data folders are arranged by year/month.
3. Click the year/month folder you wish to view. All interval trend data files for that GX-6000 in that particular year/month will appear in the upper right frame. The file number, serial number, station ID, user ID, model, date/time, and sample count of the interval trend appear in the same line.

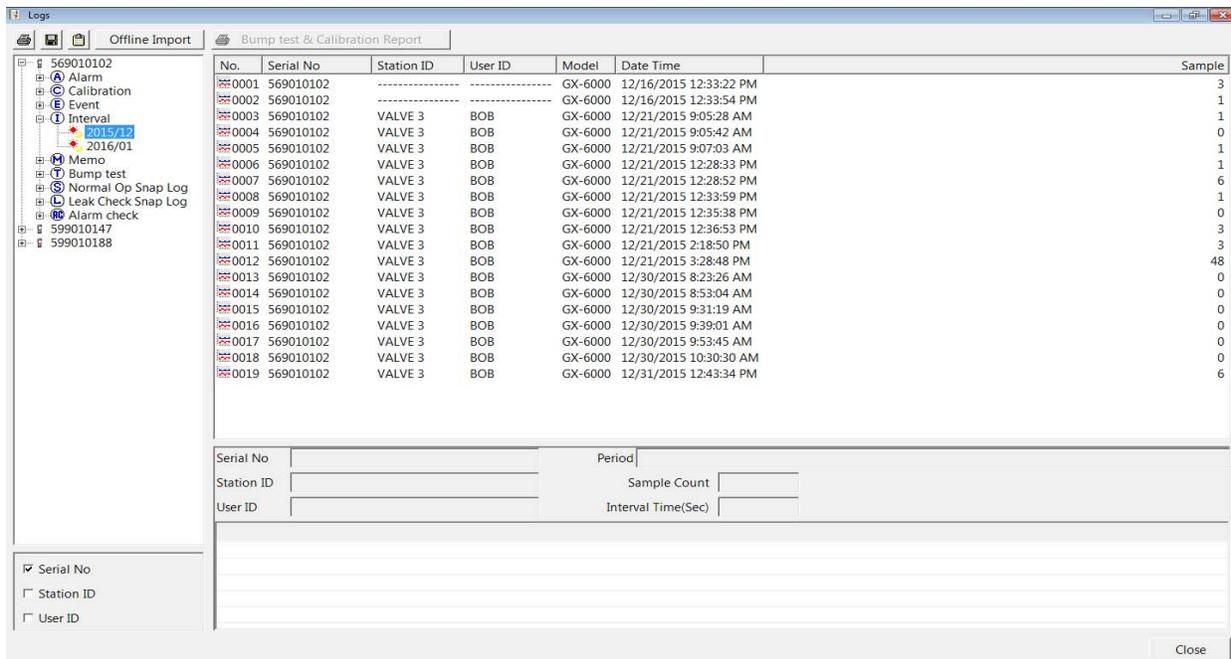


Figure 85: Viewing Interval Trend Files

- Click one of the interval trend data files. The fields in the bottom right frame will fill in. The instrument information will be displayed along with the average, minimum, and maximum gas readings for the operating session. Also displayed are the minimum date, the maximum date, and the warning, alarm, STEL, and TWA setpoints.

The screenshot shows the 'Logs' application window with the 'Bump test & Calibration Report' for serial number 569010102. The main data table lists various events, with the selected entry (No. 0012) highlighted in blue. The summary section at the bottom right provides details for the selected entry, including the period, sample count, and interval time. The bottom right frame displays a table of sensor readings and setpoints.

| No.  | Serial No | Station ID | User ID | Model   | Date Time              | Sample |
|------|-----------|------------|---------|---------|------------------------|--------|
| 0001 | 569010102 |            |         | GX-6000 | 12/16/2015 12:33:22 PM | 3      |
| 0002 | 569010102 |            |         | GX-6000 | 12/16/2015 12:33:54 PM | 1      |
| 0003 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 9:05:28 AM  | 1      |
| 0004 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 9:05:42 AM  | 0      |
| 0005 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 9:07:03 AM  | 1      |
| 0006 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 12:28:33 PM | 1      |
| 0007 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 12:28:52 PM | 6      |
| 0008 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 12:33:59 PM | 1      |
| 0009 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 12:35:38 PM | 0      |
| 0010 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 12:36:53 PM | 3      |
| 0011 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 2:18:50 PM  | 3      |
| 0012 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/21/2015 3:28:48 PM  | 48     |
| 0013 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/30/2015 8:23:26 AM  | 0      |
| 0014 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/30/2015 8:53:04 AM  | 0      |
| 0015 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/30/2015 9:31:19 AM  | 0      |
| 0016 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/30/2015 9:39:01 AM  | 0      |
| 0017 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/30/2015 9:53:45 AM  | 0      |
| 0018 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/30/2015 10:30:30 AM | 0      |
| 0019 | 569010102 | VALVE 3    | BOB     | GX-6000 | 12/31/2015 12:43:34 PM | 6      |

|            |           |                    |  |
|------------|-----------|--------------------|--|
| Serial No  | 569010102 | Period             | 12/21/2015 3:28:48 PM to 12/21/2015 3:36:49 PM |
| Station ID | VALVE 3   | Sample Count       | 48   |
| User ID    | BOB       | Interval Time(Sec) | 10   |

| Sensor        | Avg. Value | Min Value | Max Value | Min Date              | Max Date              | Warning   | Alarm    | STEL    | TWA     |
|---------------|------------|-----------|-----------|-----------------------|-----------------------|-----------|----------|---------|---------|
| CH4(100%LEL)  | 0 %LEL     | *****     | 0 %LEL    | *****                 | 12/21/2015 3:28:48 PM | 10 %LEL   | 50 %LEL  | *****   | *****   |
| O2(40.0%)     | 20.9 %     | 20.9 %    | 20.9 %    | 12/21/2015 3:28:48 PM | 12/21/2015 3:28:48 PM | 19.5 %    | 23.5 %   | *****   | *****   |
| H2S(100.0ppm) | 0.0 ppm    | *****     | 0.0 ppm   | *****                 | 12/21/2015 3:28:48 PM | 5.0 ppm   | 30.0 ppm | 5.0 ppm | 1.0 ppm |
| CO(500ppm)    | 0 ppm      | *****     | 2 ppm     | *****                 | 12/21/2015 3:28:55 PM | 25 ppm    | 50 ppm   | 200 ppm | 25 ppm  |
| VOC(6000ppm)  | 1.8 ppm    | *****     | 4.0 ppm   | *****                 | 12/21/2015 3:28:48 PM | 400.0 ppm | 1000 ppm | *****   | *****   |

Figure 86: Interval Trend Data

5. To view the interval trend data, double click the desired file.

Layout Control Buttons

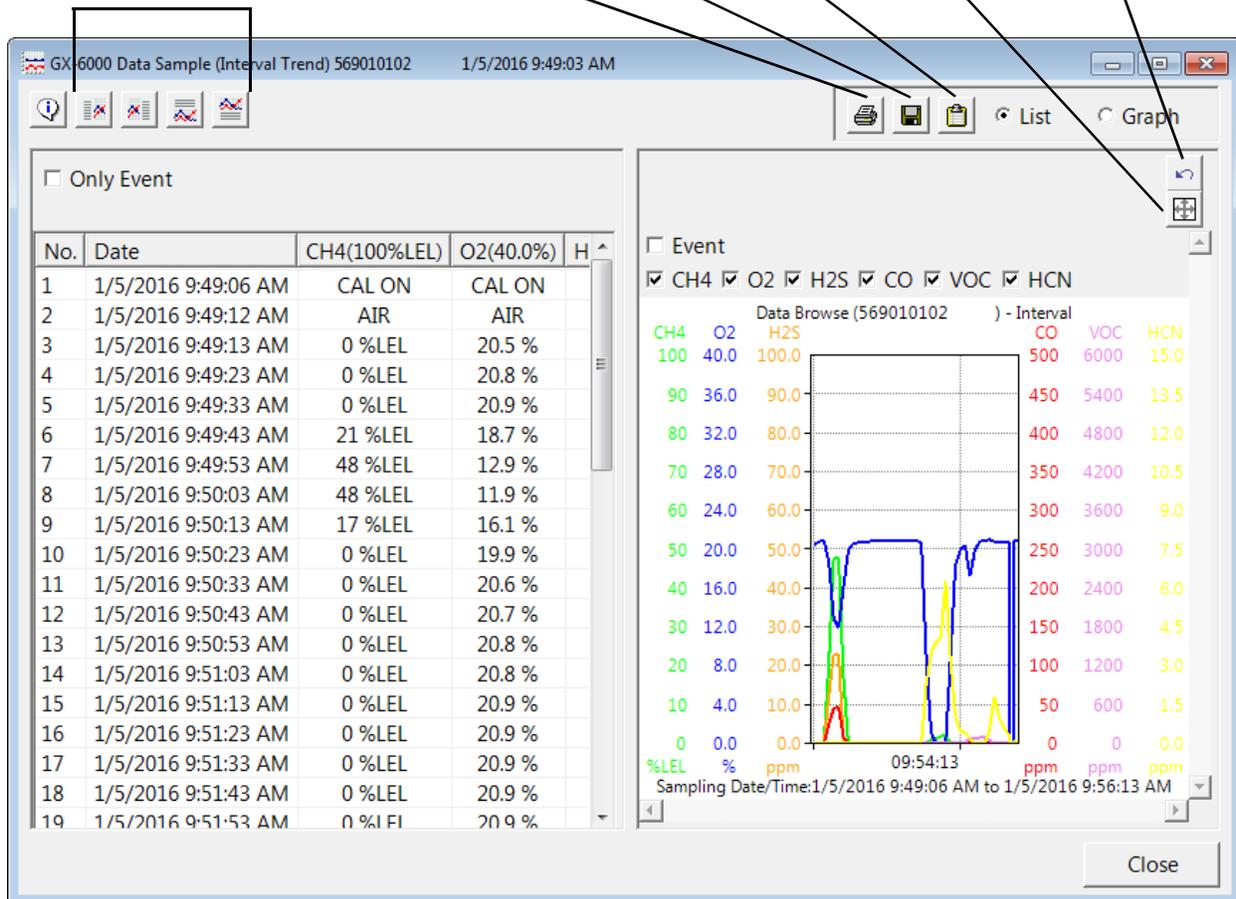
Print

Save

Export

Restore

Previous



**Figure 87: Interval Trend Data**

In table format on the left half of the screen, the interval trend data is shown as the average gas readings over the user defined interval trend time. So if the data logging session started at 4:13:38 PM and the interval time is set to 1 minute, then the readings logged at 4:14:38 PM are the average reading for each channel over that one minute period. If a channel went into Warning or Alarm, it will be indicated. A graph of the data will appear on the right half of the screen.

Events are displayed on the screen under the channel in which they occur and with the time of the event. Events are displayed whether they occurred at scheduled log times or in between them. Events include gas alarms such as a warning condition, trouble conditions such as a sensor failure, and an indication that the GX-6000 is returning to “normal” condition after an alarm has been reset using the RESET button.

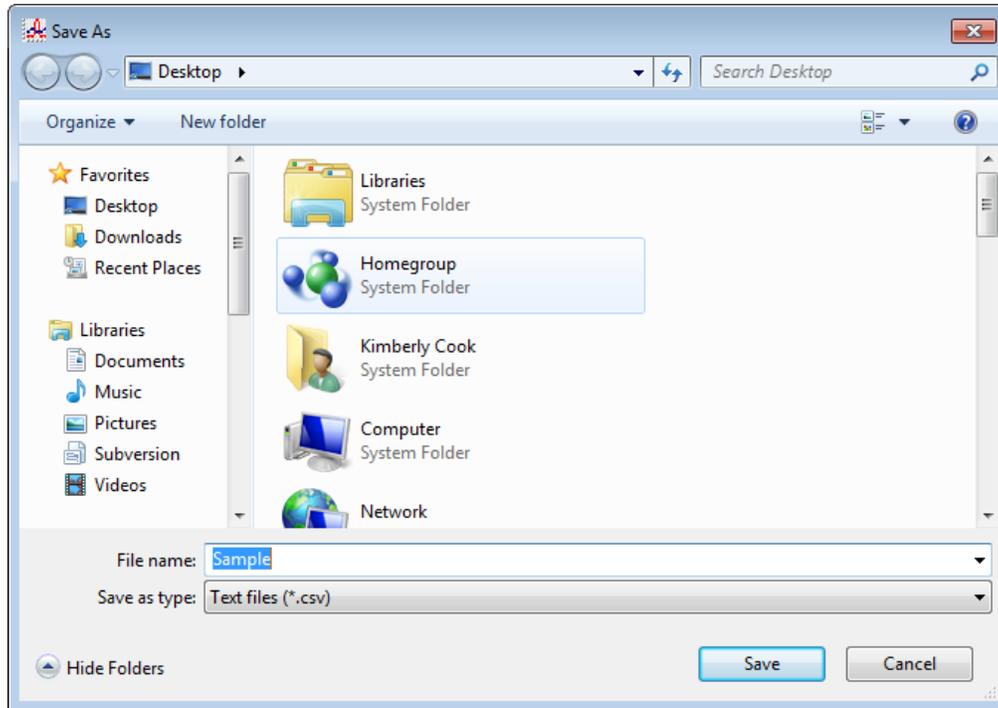
To change the layout of the table and chart, click any of the four layout control buttons in the upper left corner of the screen.

To change the proportions of the table to the graph, click the divider between the two and move it.

To display instrument information along with the data and graph, click the “i” control button in the upper left corner.

6. In the table part of the screen,
  - To view only events in the interval trend data file, click the **Only Event** selection box.
7. In the graph part of the screen,
  - You can choose which gas(es) you want to graph by selecting or deselecting the boxes next to each gas name.
  - To zoom in on a particular part of the graph, drag a box around that area so that it is highlighted in gray. The graph will zoom in. To return to a previous zoom, click the **Previous** control button in the upper right corner of the graph section. To return to the original zoom, click the **Restore** control button in the upper right corner of the graph section.
  - Clicking anywhere on the graph will cause a vertical red line to appear and the corresponding data point will be highlighted in the table. Clicking a data point in the table will move the red line in the graph to that data point.
8. To print the data, select either **List** or **Graph** in the upper right corner of the window and then click the **Print** control button in the upper right corner of the window. The **Print** control button has a printer icon on it. A dialog box will appear confirming if you want to print. Click **OK**. If **Graph** is selected, the data will print as a graph. If **List** is selected, the data will print as a table.

- To save the data to a file which can be imported into another program, select either **List** or **Graph** in the upper right corner of the window and then click the **Save to File** control button. The **Save to File** control button has a floppy disk icon on it. A dialog box will appear for you to specify the file name, file location, and file type.



**Figure 88: Save As Dialog Box**

- If **List** is selected, the file type is “.csv” (comma-separated values). If **Graph** is selected, the file type is “.bmp” (Windows bitmap). After specifying the file name and file location, click **Save** to save the file to the specified location.
- To save the data to the clipboard, select either **List** or **Graph** in the upper right corner of the window and then click the **Copy to Clipboard** control button. The **Copy to Clipboard** control button has a clipboard icon on it. The table or graph will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.
  - To go back and view other data, click **Close** to return to the Logs window.

## Memo Data

Any information entered into the Memo field in the Edit window is saved in a file in the Logs window. If there is text in the Memo field, a new file is created every time a GX-6000 is connected to the PC Controller Program. If a change is made to the Memo, the change is saved in the Memo file for that operating session. See “Parameter Tab” on page 148 for instructions to use the Memo field. To view and perform desired operations with the memo files:

1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Memo** folder to view the contents. Memo data folders are arranged by year/month.
3. Click the year/month folder you wish to view. All memo files for that GX-6000 in that particular year/month will appear in the upper right frame. The file number, serial number, station ID, user ID, model, date/time, and the first few words of the memo appear in the same line.

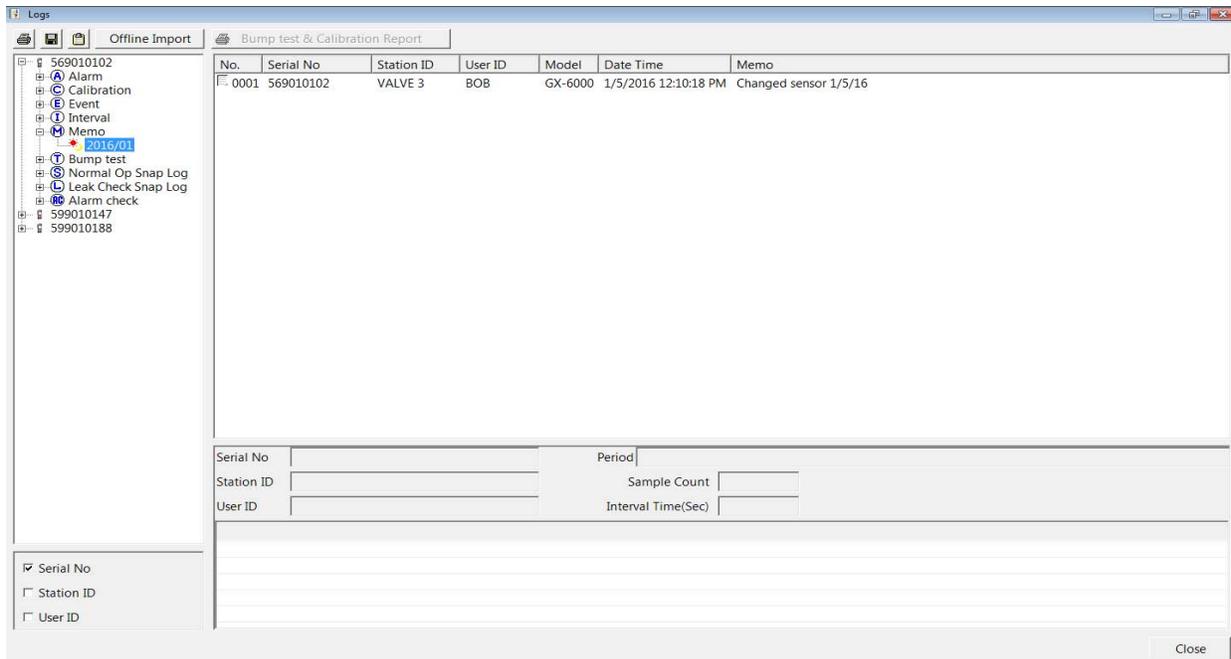
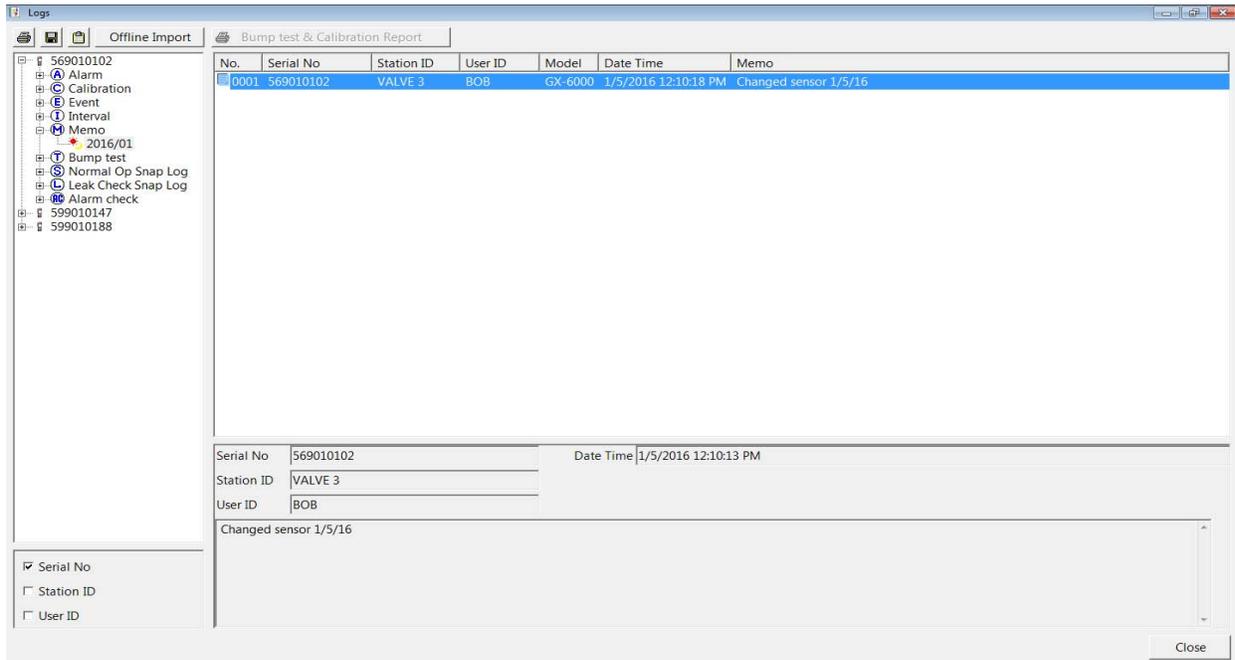


Figure 89: Viewing Memo Files

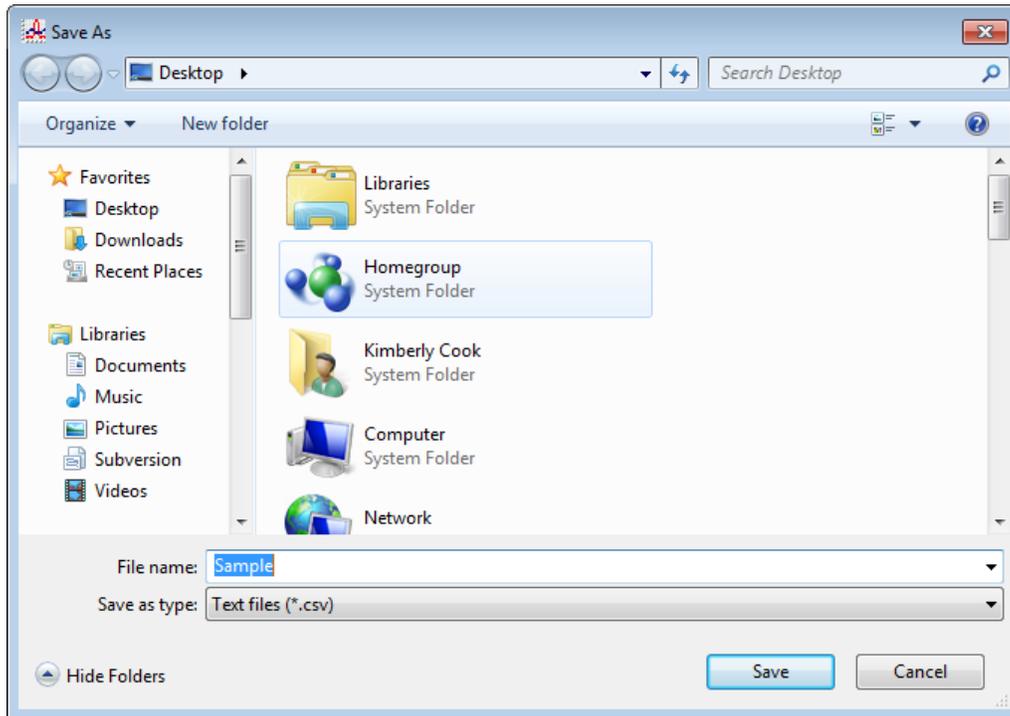
- Click on one of the memo files. The fields in the bottom right screen will fill in. The instrument information will be displayed along with the memo information.



**Figure 90: Viewing Memo File Data**

- To print memo data, click the **Print** control button in the upper left corner of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.

6. To save memo data, click the **Save** control button in the upper left corner of the Logs window. A “Save As” dialog box will appear for you to specify the file name and file location.



**Figure 91: Save As Dialog Box**

Specify the file name and location and click **Save**.

7. To copy memo data to the clipboard, click the **Save to Clipboard** control button. The data will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.

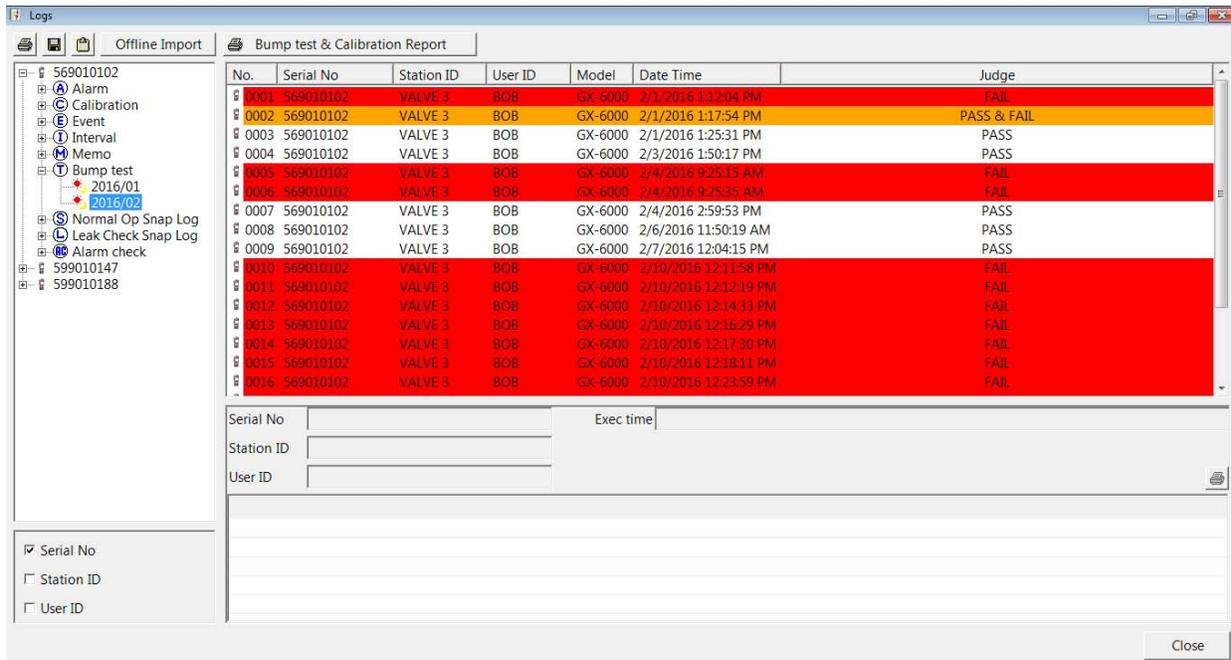
---

## Bump Test Data

The GX-6000 is capable of saving information for up to the 100 most recent bump tests and calibrations combined. When a GX-6000 is connected to the PC Controller Program and a complete download is performed, the bump test files are retrieved and stored by the program. In addition, all bump tests performed by the PC Controller Program are stored by the program. Bump test data can also be imported using the **SD Import** or **Net Import** buttons. To view and perform desired operations with the bump test files:

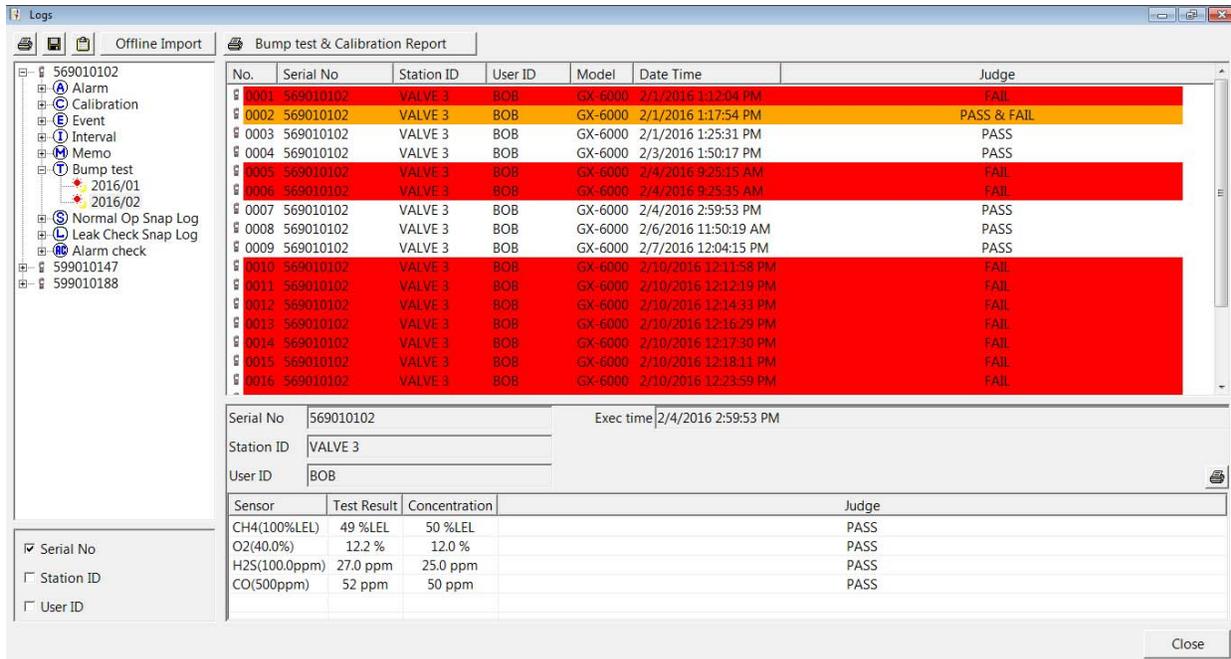
1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Bump Test** folder to view the contents. Bump test data folders are arranged by year/month.

- Click the year/month folder you wish to view. All bump test data files for that GX-6000 in that particular year/month will appear in the upper right frame. The file number, serial number, station ID, user ID, model, date/time of the bump test, and the results appear in the same line. If bump tests were performed prior to connecting the GX-6000 with the PC Controller Program, data for those bump tests will not appear until a complete download is performed.



**Figure 92: Viewing Bump Test Log Files**

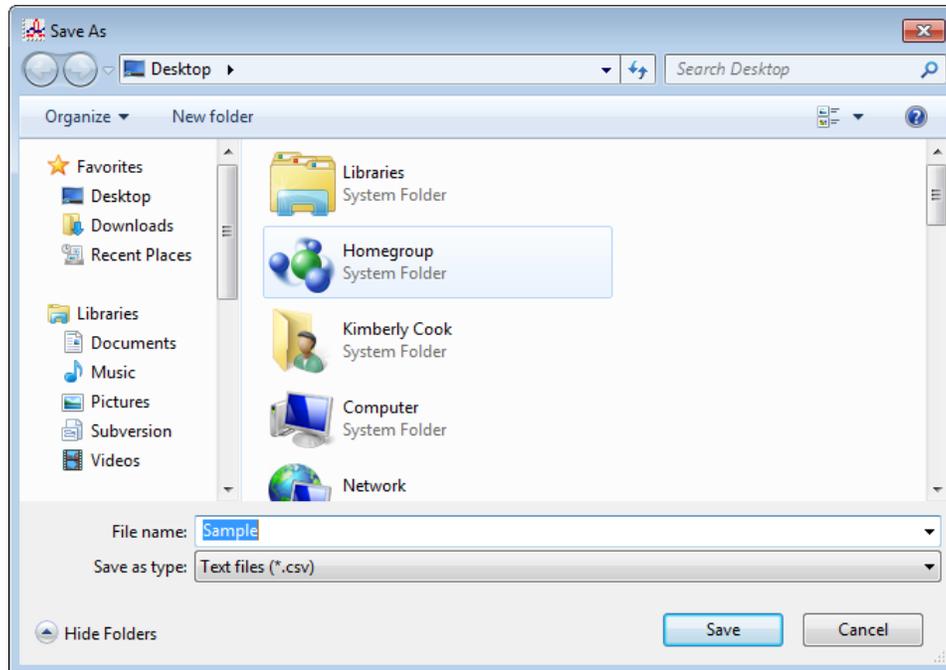
- Click on one of the bump test data files. The fields in the bottom right screen will fill in. The instrument information will be displayed along with the bump test information. The tested sensors will be displayed along with the bump test gas reading, the bump test gas values, and the result of the bump test.



**Figure 93: Viewing Bump Test Data**

- Files that record a failed bump test on all channels are highlighted in red. Files that record a bump test where not all channels passed are highlighted in orange.
- Bump tests that required more than one calibration cylinder will have separate bump test files for each cylinder. For example, a bump test performed on a GX-6000 that contained the standard 4 sensors plus an HCN ESS-03 sensor would result in one bump test file for the standard 4 sensors if a 4-gas mix was used and one bump test file for the HCN ESS-03 sensor.
- To print the bump test data (everything in the lower right frame of the screen), click the **Print** control button located just above the bump test judge column. A dialog box will appear confirming if you want to print. Click **OK**.
- To print the basic bump test results from a date folder (everything in the upper right frame), be sure that the desired date folder is selected and click the **Print** control button in the upper left corner of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.
- To print detailed bump test data for each bump test file in a date folder, be sure that the desired date folder is selected and click the **Bump Test & Calibration Report** control button along the top of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.

10. To print detailed calibration (if available) and bump test data for each calibration and bump test file for a specific serial number, be sure that the desired serial number is selected in the upper left frame and click the **Bump Test & Calibration Report** control button along the top of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.
11. To save bump test data from a specific date folder, be sure the desired date folder is highlighted and click the **Save** control button in the upper left corner of the Logs window. A “Save As” dialog box will appear for you to specify the file name and file location.



**Figure 94: Save As Dialog Box**

Specify the file name and location and click **Save**.

12. To copy bump test data in a date folder to the clipboard, be sure the desired date folder is selected and click the **Save to Clipboard** control button. The data will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.

## Normal Operation Snap Log Data

The GX-6000's Snap Log Mode in normal operation allows the user to record normal operation data at a specific time and have it saved to the data logger. When a GX-6000 is connected to the PC Controller Program and a complete download is performed, the normal operation snap log files are retrieved and stored by the program. Normal operation snap log data can also be imported using the **SD Import** or **Net Import** buttons. To view and perform desired operations with the normal operation snap log files:

1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Normal Op Snap Log** folder to view the contents. Normal operation snap log data folders are arranged by year/month.
3. Click the year/month folder you wish to view. All normal operation snap log data files for that GX-6000 in that particular year/month will appear in the upper right frame. One snap log file is generated for all normal operation snap logs taken during an operating session. If you turn the instrument off and turn it back on, a new snap log file will be created. The file number, serial number, model, start date/time, and end date/time appear in the same line. The start date/time corresponds to the date and time that the instrument was turned on. The end date/time corresponds to the date and time that the instrument was turned off.

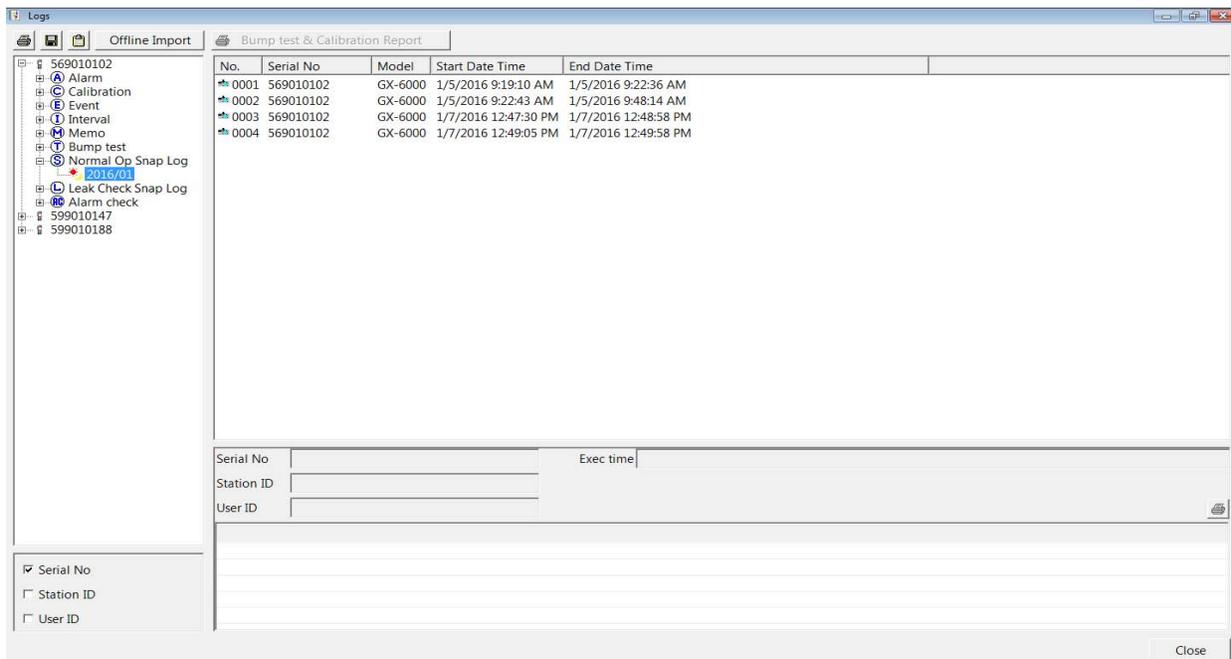


Figure 95: Viewing Normal Op Snap Log Files

- Click one of the snap log data file names. A summary will appear in the bottom right frame with instrument information. It will also show the gas reading that was saved for the first snap log in that snap log file. If a gas concentration increases above a warning or alarm point during the first snap log, it will be displayed.

The screenshot shows the 'Logs' application window with a tree view on the left and a main data area. The tree view includes categories like Alarm, Calibration, Event, Interval, Memo, Bump test, Normal Op Snap Log, Leak Check Snap Log, and Alarm check. The main area displays a table of snap log entries. The entry for serial number 569010102, dated 1/5/2016 9:22:43 AM, is selected. Below this, a summary section shows details for Serial No 569010102, Station ID VALVE 3, and User ID BOB. At the bottom, a table lists sensor concentrations and associated events.

| No.  | Serial No | Model   | Start Date Time      | End Date Time        |
|------|-----------|---------|----------------------|----------------------|
| 0001 | 569010102 | GX-6000 | 1/5/2016 9:19:10 AM  | 1/5/2016 9:22:36 AM  |
| 0002 | 569010102 | GX-6000 | 1/5/2016 9:22:43 AM  | 1/5/2016 9:48:14 AM  |
| 0003 | 569010102 | GX-6000 | 1/7/2016 12:47:30 PM | 1/7/2016 12:48:58 PM |
| 0004 | 569010102 | GX-6000 | 1/7/2016 12:49:05 PM | 1/7/2016 12:49:58 PM |

|            |           |           |                     |
|------------|-----------|-----------|---------------------|
| Serial No  | 569010102 | Exec time | 1/5/2016 9:31:03 AM |
| Station ID | VALVE 3   |           |                     |
| User ID    | BOB       |           |                     |

| Sensor        | Concentration | Events  |
|---------------|---------------|---------|
| CH4(100%LEL)  | 23 %LEL       | WARNING |
| O2(40.0%)     | 14.8 %        | WARNING |
| H2S(100.0ppm) | 1.0 ppm       | WARNING |
| CO(500ppm)    | 6 ppm         | WARNING |
| VOC(6000ppm)  | 1.3 ppm       | -----   |

**Figure 96: Viewing Normal Op Snap Log Data**

- To view all of the data in the snap log file, double-click the filename. All of the snap logs taken during the operating session will be displayed. The gas reading and alarm condition (if applicable) can be viewed along with the user ID, station ID, and date/time that the snap log was taken.

Print    Save    Export

Period: 1/5/2016 9:22:43 AM - 1/5/2016 9:48:14 AM  
 Serial No.: 569010102

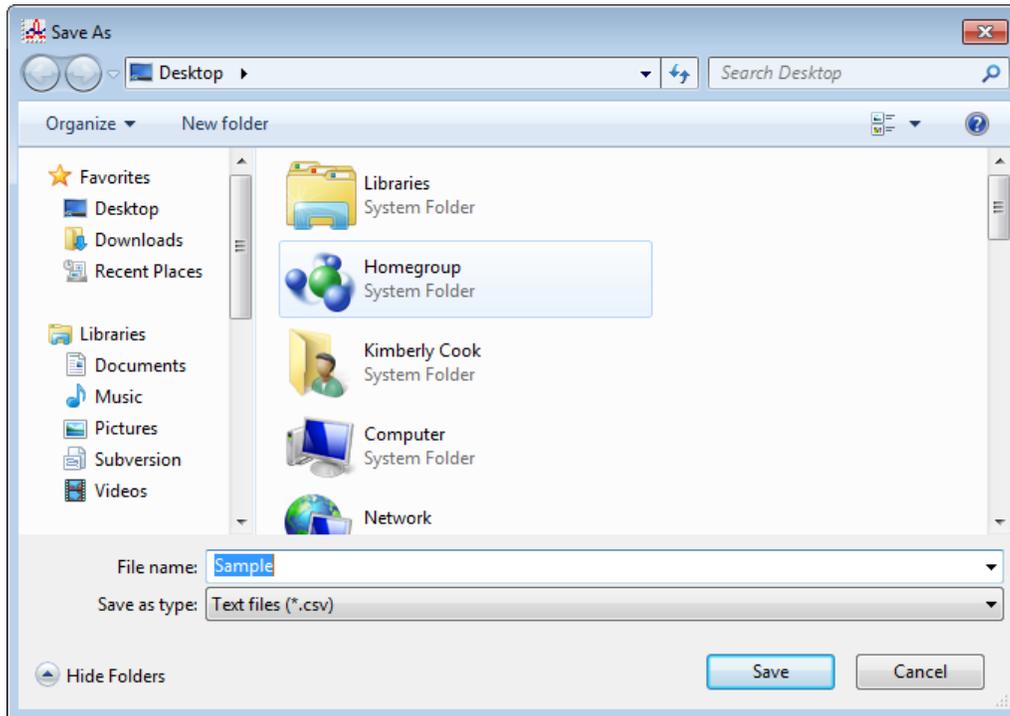
| No. | User ID | Station ID | Date Time           | CH4(100%LEL)       | O2(40.0%)         | H2S(100.0ppm)      | CO(500ppm)       | VOC(6000ppm)     | HCN(15.0ppm)     |
|-----|---------|------------|---------------------|--------------------|-------------------|--------------------|------------------|------------------|------------------|
| 1   | BOB     | VALVE 3    | 1/5/2016 9:31:03 AM | 23 %LEL<br>WARNING | 14.8 %<br>WARNING | 1.0 ppm<br>WARNING | 6 ppm<br>WARNING | 1.3 ppm<br>----- | 0.0 ppm<br>----- |
| 2   | BOB     | VALVE 3    | 1/5/2016 9:31:13 AM | 0 %LEL<br>WARNING  | 19.8 %<br>WARNING | 0.0 ppm<br>WARNING | 0 ppm<br>WARNING | 1.2 ppm<br>----- | 0.0 ppm<br>----- |

Close

**Figure 97: Data View - Normal Op Snap Log**

- To print the detailed normal operation snap log data, click the **Print** control button in the upper right corner of the screen. A dialog box will appear confirming if you want to print. Click **OK**.

7. To save the detailed normal operation snap log data, click the **Save** control button in the upper right corner. A “Save As” dialog box will appear for you to specify the file name and file location.



**Figure 98: Save As Dialog Box**

Specify the file name and location and click **Save**.

8. To copy detailed normal operation snap log data to the clipboard, be sure the desired date folder is selected and click the **Save to Clipboard** control button. The data will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.

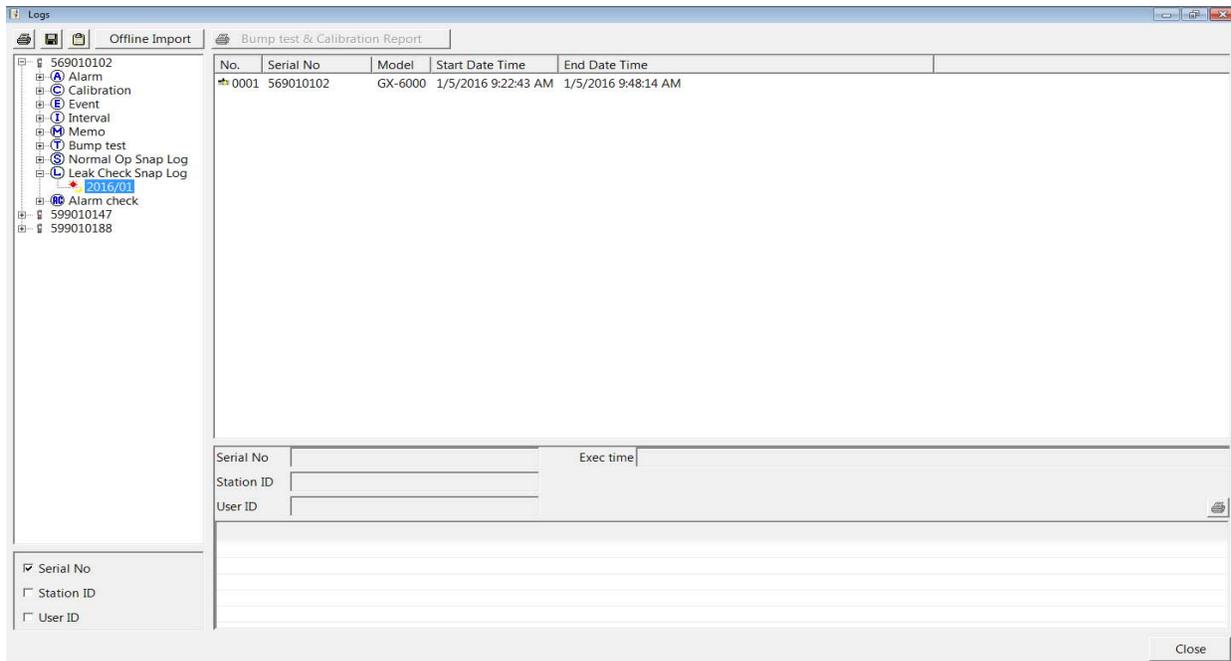
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## Leak Check Snap Log Data

The GX-6000’s Snap Log Mode in Leak Check Mode allows the user to record leak check data at a specific time and have it saved to the data logger. When a GX-6000 is connected to the PC Controller Program and a complete download is performed, the leak check snap log files are retrieved and stored by the program. Leak check snap log data can also be imported using the **SD Import** or **Net Import** buttons. To view and perform desired operations with the leak check snap log files:

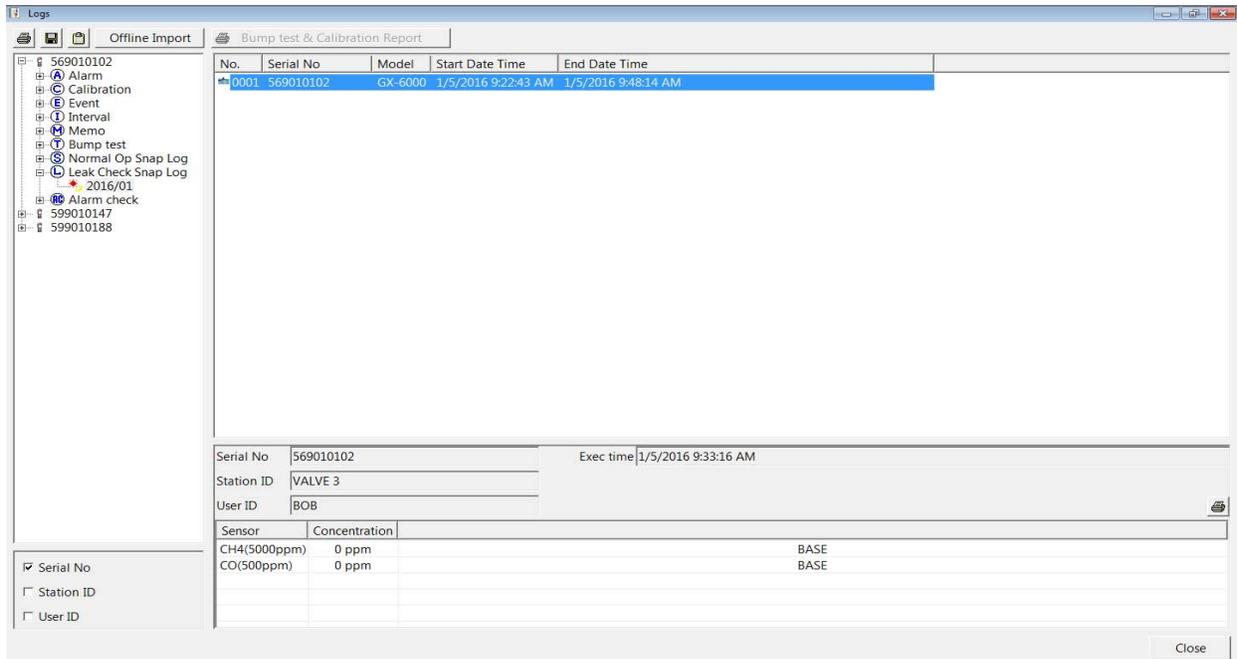
1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Leak Check Snap Log** folder to view the contents. Leak check snap log data folders are arranged by year/month.

- Click the year/month folder you wish to view. All leak check snap log data files for that GX-6000 in that particular year/month will appear in the upper right frame. One snap log file is generated for all leak check snap logs taken during an operating session. If you turn the instrument off and turn it back on, a new snap log file will be created. The file number, serial number, model, start date/time, and end date/time appear in the same line. The start date/time corresponds to the date and time that the instrument was turned on. The end date/time corresponds to the date and time that the instrument was turned off.



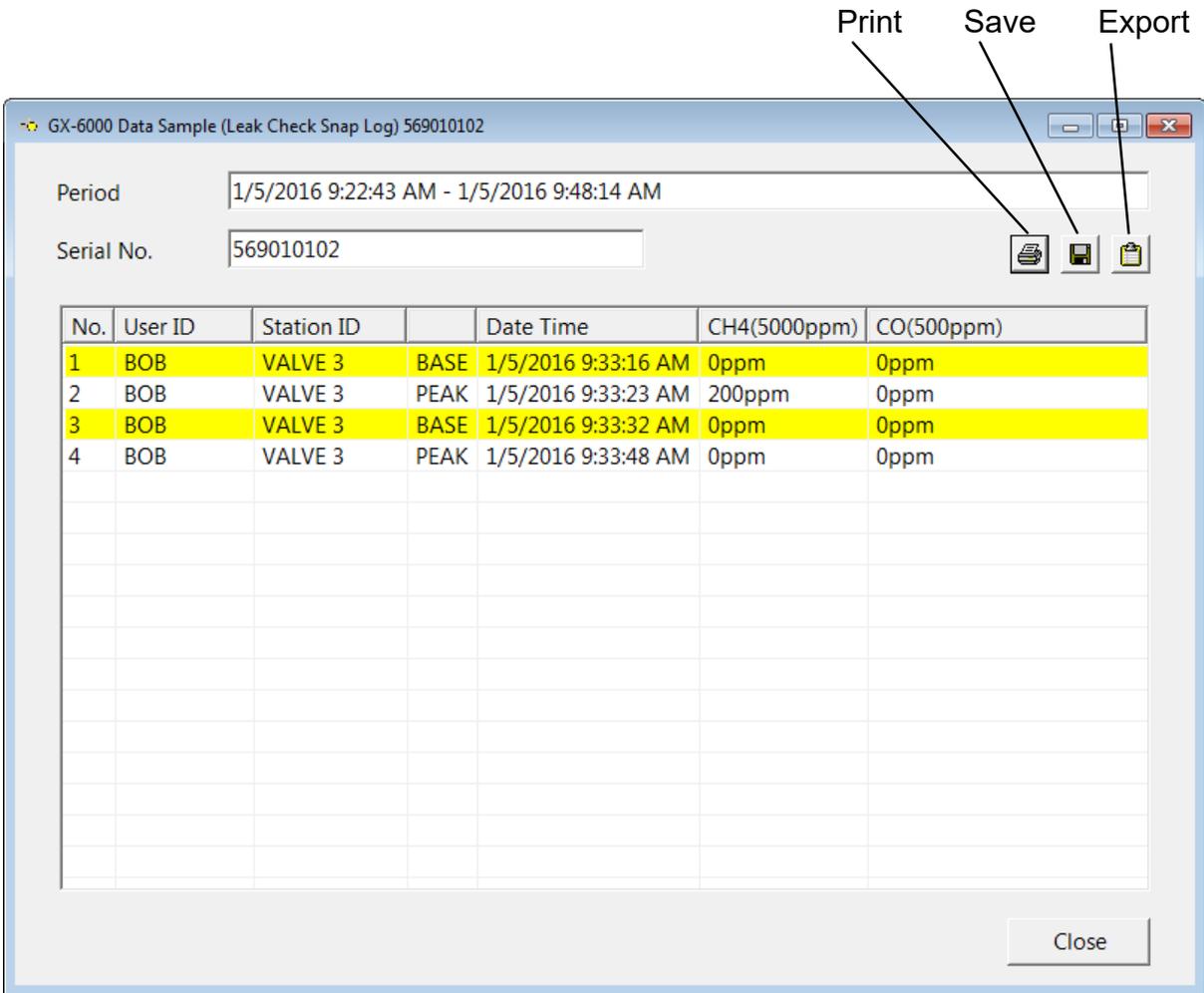
**Figure 99: Viewing Leak Check Snap Log Files**

- Click one of the snap log data file names. A summary will appear in the bottom right frame with instrument information. It will also show the base gas reading for the snap logs taken during the operating session.



**Figure 100: Viewing Leak Check Snap Log Data**

- To view all of the data in the snap log file, double-click the filename. All of the snap logs taken during the operating session will be displayed. The base and peak readings can be viewed along with the user ID, station ID, and date/time that the snap log was taken.

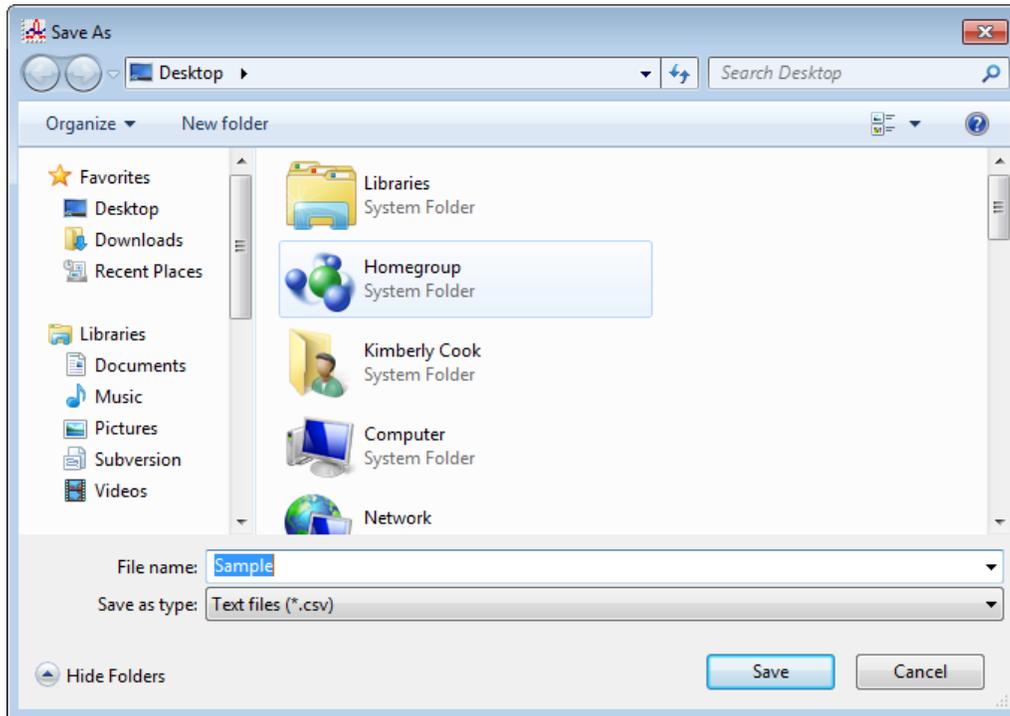


**Figure 101: Data View - Leak Check Snap Log**

If **CO DISPLAY** was set to **ON** when the leak check snap log data was saved, then CO readings can be viewed in this screen.

- To print the detailed leak check snap log data, click the **Print** control button in the upper right corner of the screen. A dialog box will appear confirming if you want to print. Click **OK**.

7. To save the detailed leak check snap log data, click the **Save** control button in the upper right corner. A “Save As” dialog box will appear for you to specify the file name and file location.



**Figure 102: Save As Dialog Box**

Specify the file name and location and click **Save**.

8. To copy detailed leak check snap log data to the clipboard, be sure the desired date folder is selected and click the **Save to Clipboard** control button. The data will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.

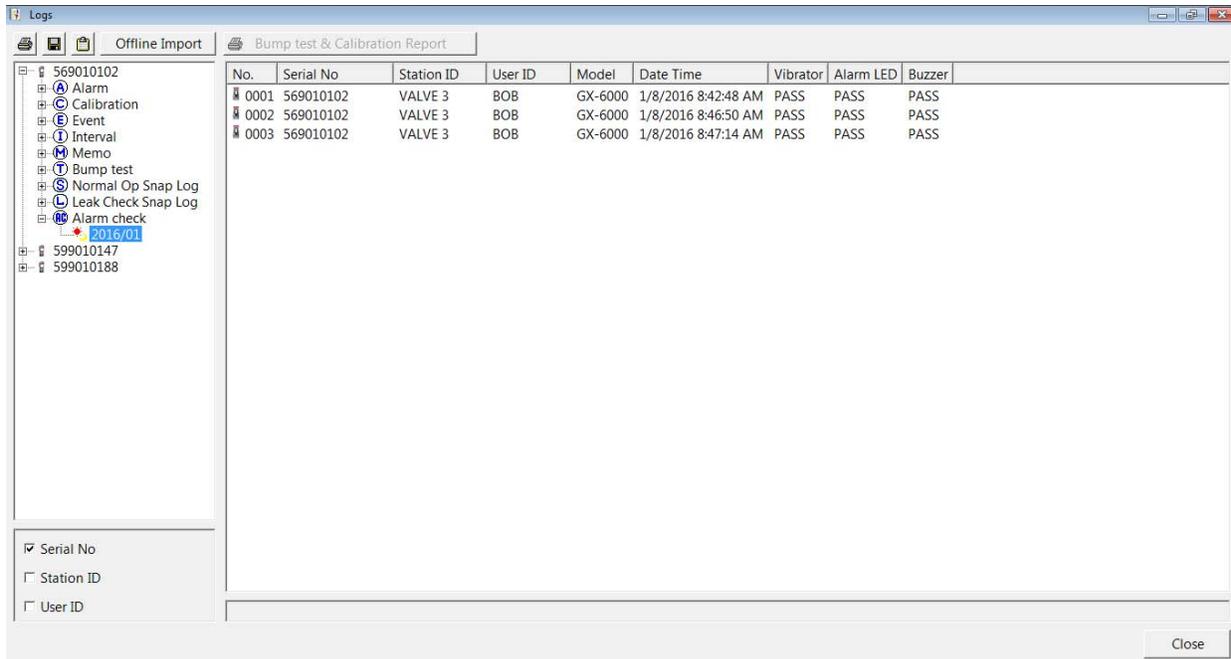
---

## Alarm Check Data

All alarm checks performed by the PC Controller Program are stored by the program. Alarm check data can also be imported using the **SD Import** or **Net Import** buttons. To view and perform desired operations with the alarm check files:

1. While in the Logs window, find your GX-6000 by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.
2. Click the expanded view symbol (+) of or double-click the **Alarm Check** folder to view the contents. Alarm check data folders are arranged by year/month.

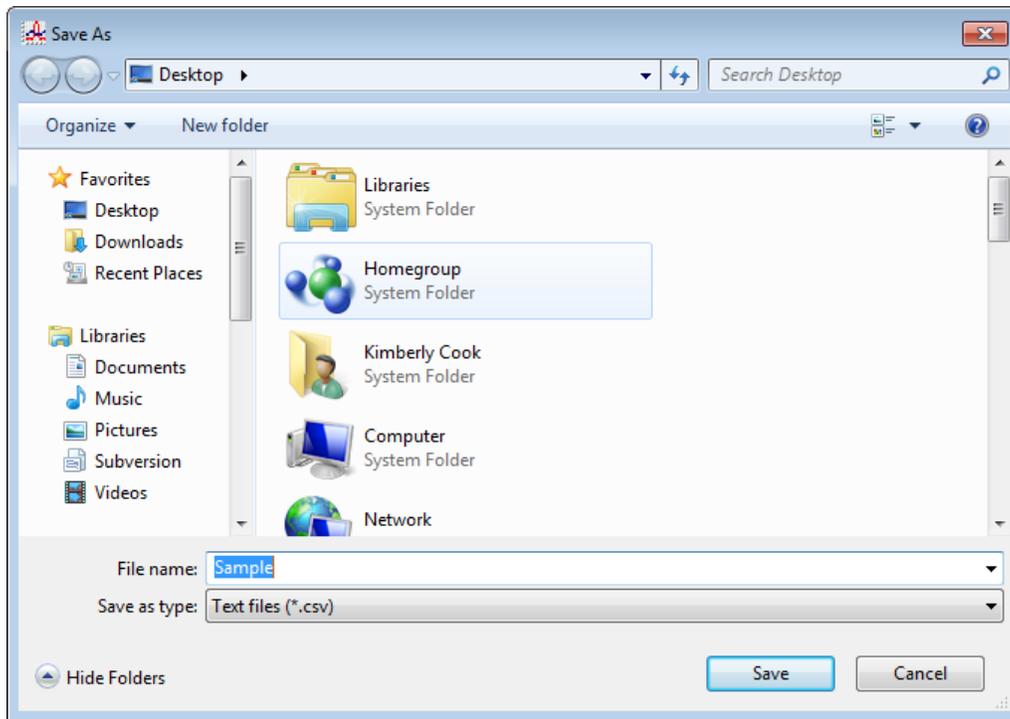
- Click the year/month folder you wish to view. All alarm check data files for that GX-6000 in that particular year/month will appear in the upper right frame. The file number, serial number, station ID, user ID, model, date/time of the alarm check, and the results appear in the same line.



**Figure 103: Viewing Alarm Check Log Files**

- Files that record a failed alarm check on all tests are highlighted in red. Files that record an alarm check where not all tests passed are highlighted in orange.
- To print alarm check data from a date folder, be sure the desired date folder is selected and click the **Print** control button in the upper left corner of the Logs window. A dialog box will appear confirming if you want to print. Click **OK**.

6. To save alarm check data from a specific date folder, be sure the desired date folder is highlighted and click the **Save** control button in the upper left corner of the Logs window. A “Save As” dialog box will appear for you to specify the file name and file location.

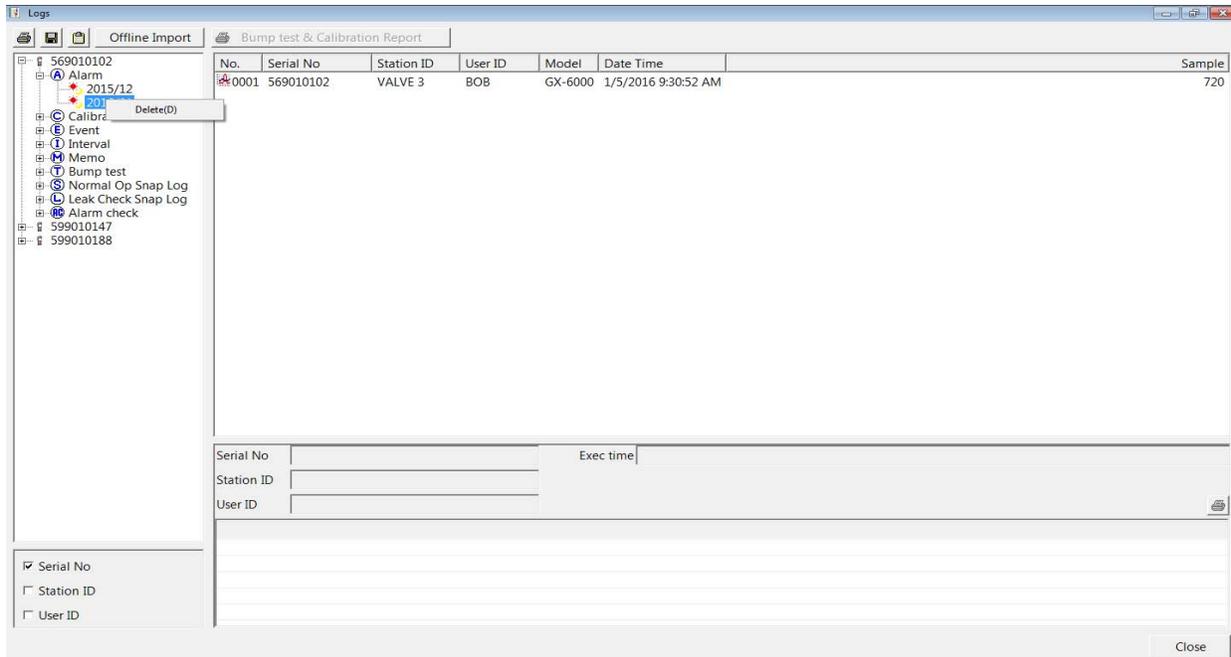


**Figure 104: Save As Dialog Box**

- The file type will be “.csv” (comma separated values).  
Specify the file name and location and click **Save**.
7. To copy alarm check data in a date folder to the clipboard, be sure the desired date folder is selected and click the **Save to Clipboard** control button. The data will be saved to the clipboard. It can then be pasted into a document by using the Paste command in an application.

## Deleting Data in the Logs Window

Data can be deleted from the Logs window by right clicking on the folder or file you wish to delete. Any file or folder except for **Memo** data may be deleted.



**Figure 105: Deleting Data in the Logs Window**

1. Right click on the folder or file you wish to delete and click **Delete**.
2. You will be prompted for a password. The factory set password is ABCDE. It is case sensitive. After you have entered the password, click **OK**.
3. To delete the folder or file, click **OK** in the confirmation window that comes up. If you do not want to delete the data, click **Cancel**.

# Chapter 7: Instrument Function Menu

## Instrument Function Menu

When you are in the main program window, if you right click on a GX-6000 or a docking station, the Instrument Function Menu appears.

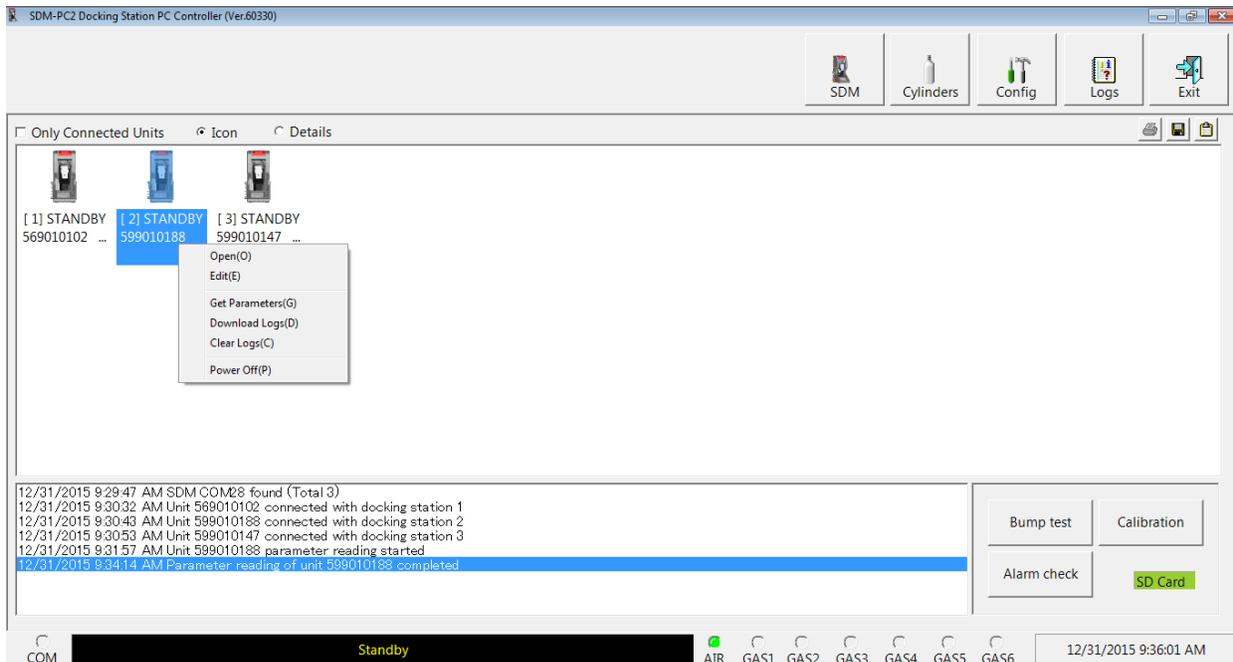


Figure 106: Instrument Function Menu

The functions in the Instrument Function Menu are **Open**, **Edit**, **Get Parameters**, **Download Logs**, **Clear Logs**, and **Power Off**. **Open** and **Edit** are only selectable if a **Get Parameters** operation has been performed. **Open** and **Edit** will not become selectable if only a **Download Logs** operation has been performed. If you right click on a GX-6000 that is currently connected to a docking station and has had a **Get Parameters** operation performed on it, all items in the Instrument Function Menu are selectable as shown above in Figure 106. If you right click on a GX-6000 that is not currently connected to the SDM PC Controller Program but that has previously been connected and had a **Get Parameters** operation performed on it, only the **Open** function is selectable. The other functions will be grayed out. If you right click on an SDM-6000 that is connected to the SDM PC Controller Program but does not have a GX-6000 in it, no functions will be selectable.

## Open Function

This function can be activated by either right clicking a GX-6000 and selecting **Open(O)** when the pull down menu appears or by selecting a GX-6000 and then using the alt/O key combination. The Open function brings up the Instrument Information window for viewing only. No changes can be made with the Open function. The Instrument Information Window consists of the Parameter Tab, the Sensor Tab, and the Station & User Tab. For further explanation of each tab, see the next section.

569010102

Serial No. 569010102 Station ID VALVE 3 Date Time 1/4/2016 9:34:42 AM  
Model GX-6000 User ID BOB Load Date 1/4/2016 9:36:35 AM

Parameter | Sensor | Station & User

Serial No. 569010102  
Station ID VALVE 3  
User ID BOB

Cal Interval(Day) 90  
Interval Time(Sec) 30

Memo

Option 1 | Option 2 | Option 3 | Option 4

OXY Alarm Pattern  Falling and Rising  Both Alarms Falling  Both Alarms Rising  
Cal past due Act  Confirm to Cal  Must Calibrate  Notification Only  
Cal Check Gas 4GAS

Alarm Latching  Cal Reminder  Data Log Overwrite  Data Log Remain  
 Alarm Silence  Lunch Break  Data Log Memory  
 User/StationID  Auto Fresh Air Adj  Zero Adjustment on demand  Pump OFF Display

(Left space 0) OK Cancel

**Figure 107: Instrument Information Window, Parameter Tab**

To exit the Instrument Information Window and return to the main program window, click Cancel.

---

## Edit Function

In order for the Edit function to be active, you must first perform a Get Parameters operation for the GX-6000(s) whose parameters you wish to edit.

This function can be activated by either right clicking a GX-6000 and selecting **Edit(E)** when the pull down menu appears or by selecting a GX-6000 and then using the alt/E key combination.

All of the parameters that can be changed in the Edit function tabs are GX-6000 parameters only. Any changes made do not affect the SDM-6000 or the PC Controller Program.

---

**NOTE:** If a sensor has been removed from the GX-6000 but that sensor's channel has not been turned OFF in the GX-6000's Maintenance Mode 2 before connecting the instrument to the PC Controller Program, the Edit function cannot be utilized without an error occurring. Be sure to disable any channels whose sensors have been removed before connecting a GX-6000 to the PC Controller Program.

---

### Parameter Tab

The Parameter Tab is selected when the Edit function is opened. This tab allows you to view and change various instrument parameters and settings and has information in four sub tabs: the Option 1 Tab, the Option 2 Tab, the Option 3 Tab, and the Option 4 Tab.

The table below lists the instrument parameters shown in the Parameter Tab along with the parameter's available choices and the factory setting.

**Table 12: Parameters**

| Parameter Tab Name, pg. # of description | Sub Tab Location | Available Choices   | Factory Setting |
|--|------------------|---|-----------------|
| Serial No., pg. 152                      | N/A              |   |                 |
| Station ID, pg. 152                      | N/A              |   |                 |
| User ID, pg. 152                         | N/A              |   |                 |
| Cal Interval (Day), pg. 152              | N/A              | 1 - 365 days  | 90 days         |
| Interval Time (Sec), pg. 152             | N/A              | <ul style="list-style-type: none"><li>• 10 sec</li><li>• 20 sec</li><li>• 30 sec</li><li>• 60 sec</li><li>• 180 sec</li><li>• 300 sec</li><li>• 600 sec</li></ul> | 30 sec          |

**Table 12: Parameters**

| <b>Parameter Tab Name,<br/>pg. # of description</b> | <b>Sub Tab<br/>Location</b> | <b>Available Choices</b>  | <b>Factory<br/>Setting</b> |
|---|-----------------------------|---|----------------------------|
| Oxy Alarm Pattern,<br>pg. 154                       | Option 1                    | <ul style="list-style-type: none"> <li>• Falling and Rising</li> <li>• Both Alarms Falling</li> <li>• Both Alarms Rising</li> </ul> | Falling and Rising         |
| Cal Past Due Act,<br>pg. 154                        | Option 1                    | <ul style="list-style-type: none"> <li>• Confirm to Cal</li> <li>• Must Calibrate</li> <li>• Notification Only</li> </ul>           | Confirm to Cal             |
| Cal Check Gas, pg. 154                              | Option 1                    | <ul style="list-style-type: none"> <li>• 4GAS</li> <li>• ALL</li> </ul>   | 4GAS                       |
| Alarm Latching, pg. 155                             | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Alarm Silence, pg. 155                              | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| User/Station ID, pg. 155                            | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | not selected               |
| Cal Reminder, pg. 155                               | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Lunch Break, pg. 155                                | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | not selected               |
| Auto Fresh Air Adj,<br>pg. 155                      | Option 1                    | <ul style="list-style-type: none"> <li>• selected not selected</li> </ul>   | not selected               |
| Data Log Overwrite,<br>pg. 155                      | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Data Log Memory,<br>pg. 155                         | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Zero Adjustment on<br>Demand, pg. 156               | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Data Log Remain,<br>pg. 156                         | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Pump OFF Display,<br>pg. 156                        | Option 1                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | not selected               |

**Table 12: Parameters**

| <b>Parameter Tab Name,<br/>pg. # of description</b> | <b>Sub Tab<br/>Location</b> | <b>Available Choices</b>   | <b>Factory<br/>Setting</b> |
|---|-----------------------------|--|----------------------------|
| Language, pg. 156                                   | Option 2                    | <ul style="list-style-type: none"> <li>• English</li> <li>• Japanese</li> <li>• Spanish</li> <li>• German</li> <li>• French</li> <li>• Portuguese</li> <li>• Russian</li> <li>• Korean</li> <li>• Italian</li> </ul> | English                    |
| Backlight Delay, pg. 157                            | Option 2                    | 0 - 255 seconds  | 30 seconds                 |
| LCD Contrast, pg. 157                               | Option 2                    | 1 - 50   | 25                         |
| LCD Auto Invert, pg. 157                            | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>   | selected                   |
| Peak Bar Display, pg. 157                           | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>   | not selected               |
| LB Mode, pg. 157                                    | Option 2                    | <ul style="list-style-type: none"> <li>• OFF</li> <li>• LEAK CHECK ONLY</li> <li>• BAR HOLE ONLY</li> <li>• BH &amp; LC</li> </ul>   | OFF                        |
| BH Measuring Time, pg. 157                          | Option 2                    | <ul style="list-style-type: none"> <li>• 30 sec</li> <li>• 45 sec</li> <li>• 60 sec</li> </ul>   | 30 sec                     |
| User Mode Protection, pg. 157                       | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>   | not selected               |
| Password Protection, pg. 157                        | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>   | not selected               |
| Maintenance Protection, pg. 158                     | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>   | selected                   |
| Leak Check Buzzer, pg. 158                          | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>   | selected                   |
| Leak Check with CO, pg. 158                         | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>   | not selected               |

**Table 12: Parameters**

| <b>Parameter Tab Name,<br/>pg. # of description</b>          | <b>Sub Tab<br/>Location</b> | <b>Available Choices</b>  | <b>Factory<br/>Setting</b> |
|--|-----------------------------|---|----------------------------|
| Confirmation, pg. 158  | Option 2                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | not selected               |
| Bump Test Function,<br>pg. 159                               | Option 3                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | not selected               |
| Bump Test Time<br>Remaining, pg. 159                         | Option 3                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | not selected               |
| Bump Test Interval<br>(Day), pg. 159                         | Option 3                    | 0 - 30 days   | 30 days                    |
| Bump Test Past Due<br>Act, pg. 159                           | Option 3                    | <ul style="list-style-type: none"> <li>• Confirm to Bump Test</li> <li>• Must Bump Test</li> <li>• Notification Only</li> </ul> | Confirm to<br>Bump Test    |
| Bump Check Gas,<br>pg. 159                                   | Option 3                    | <ul style="list-style-type: none"> <li>• 4GAS</li> <li>• ALL</li> </ul>   | 4GAS                       |
| Bump Test Time (Sec),<br>pg. 159                             | Option 3                    | <ul style="list-style-type: none"> <li>• 30 sec</li> <li>• 45 sec</li> <li>• 60 sec</li> <li>• 90 sec</li> </ul>                | 30 sec                     |
| Calibration After Bump<br>Test Failed, pg. 159               | Option 3                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Bump Test Threshold<br>(%), pg. 159                          | Option 3                    | 10 - 50%  | 30%                        |
| Calibration Time (sec)<br>After Bump Test Failed,<br>pg. 160 | Option 3                    | <ul style="list-style-type: none"> <li>• 90 sec</li> <li>• 120 sec</li> </ul>   | 90 sec                     |
| Panic, pg. 160   | Option 4                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | selected                   |
| Man Down, pg. 161  | Option 4                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>  | not selected               |
| Man Down 1, pg. 161  | Option 4                    | 10 - 120 sec  | 60 sec                     |
| Man Down 2, pg. 161  | Option 4                    | 10 - 120 sec  | 75 sec                     |
| Man Down Alarm,<br>pg. 161                                   | Option 4                    | 10 - 120 sec  | 90 sec                     |

**Table 12: Parameters**

| <b>Parameter Tab Name,<br/>pg. # of description</b> | <b>Sub Tab<br/>Location</b> | <b>Available Choices</b>   | <b>Factory<br/>Setting</b> |
|---|-----------------------------|--|----------------------------|
| Inert Function, pg. 161                             | Option 4                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>                       | not selected               |
| Warning, pg. 161                                    | Option 4                    |  | 5.0%                       |
| Alarm, pg. 161                                      | Option 4                    |  | 10.0%                      |
| Date Format, pg. 161                                | Option 4                    | <ul style="list-style-type: none"> <li>• DD/MM/YYYY</li> <li>• MM/DD/YYYY</li> <li>• YYYY/MM/DD</li> </ul> | MM/DD/YYYY                 |
| Key Tone, pg. 161                                   | Option 4                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>                       | selected                   |
| IR Auto Range, pg. 162                              | Option 4                    | <ul style="list-style-type: none"> <li>• selected</li> <li>• not selected</li> </ul>                       | selected                   |
| Destination, pg. 162                                | Option 4                    | <ul style="list-style-type: none"> <li>• Japan</li> <li>• Other</li> </ul>                                 | Other                      |

Several parameters are always selectable and do not depend on which sub tab is selected.

- **Serial No.:** To change the current GX-6000 serial number, place the cursor in the Serial No. field and enter the desired serial number. If you change the serial number, once you upload the changes to the GX-6000 and return to the main program window, the PC Controller Program will indicate that the GX-6000 with the old serial number was disconnected. A GX-6000 with the new serial number will then connect to the PC Controller Program.
- **Station ID:** To change the station ID, select the drop-down menu and select the desired station ID. To change the station ID list, see “Station & User Tab” on page 164.
- **User ID:** To change the user ID, select the drop-down menu and select the desired station ID. To change the user ID list, see “Station & User Tab” on page 164.
- **Cal Interval (Day):** The calibration interval is the length of time between scheduled calibrations. To change the calibration interval, use the arrows to the right of the current value to increase or decrease the interval. You may also highlight the current setting and type in the new desired setting. It can be set anywhere between **1** and **365** days. The factory setting is **90** days.
- **Interval Time (Sec):** The interval time is how often the GX-6000 will log interval trend readings. It can be set to **10, 20, 30** (factory setting), **60, 180, 300, or 600** seconds. To change the interval time, use the arrows to the right of the current

value to increase or decrease it. You may also highlight the current setting and type in the new desired setting. The value that you type in must match the allowable interval settings. If it does not, when you save your changes, your entered value will be shifted to the closest match. For example, if you enter 90 seconds, when you save the changes, the interval will adjust itself to **60** seconds.

### ***Memo Section***

The Memo section of the Parameter Tab allows the user to enter remarks for a GX-6000 that is connected to the program. The Memo may be used to document anything of interest, such as maintenance records (noting when a sensor or a battery pack was changed). The Memo section is empty until the user enters information. The first time information is entered, a Memo file is created in the Logs window. If the Memo is changed in the same operating session, that Memo file is updated. When the GX-6000 is disconnected from the PC Controller Program and connected again, a new Memo file is created with the current memo. If you edit the memo field in that operating session, the new Memo file is updated. If you clear the Memo field for a GX-6000, the Memo file that was created when the GX-6000 was connected to the PC Controller Program will be deleted since it is now empty. All memos from previous operating sessions will always be available in the Logs window. They cannot be deleted.

To enter information into the Memo section,

1. Place the cursor in the Memo field. If a memo has been previously entered, it will still appear in the Memo field.
2. If necessary, delete the old memo. Enter the information you wish to document.
3. Click the **OK** button in the lower right corner of the window. A confirmation screen will appear asking if you would like to save the changes you have made. To save the changes and return to the main program window, click **Yes**. To return to the main program window without saving your changes, click **No**. To return to the Parameter tab and update your changes, click **Cancel**.

To return to the main program window without saving any changes, click **Cancel** in the lower right corner of the window.

## Option 1 Sub Tab

569010102

Serial No. 569010102 Station ID VALVE 3 Date Time 12/24/2015 8:29:37 AM  
Model GX-6000 User ID BOB Load Date 12/24/2015 8:29:32 AM

Parameter | Sensor | Station & User

Serial No. 569010102  
Station ID VALVE 3  
User ID BOB

Cal Interval(Day) 90  
Interval Time(Sec) 30

Memo

Option 1 | Option 2 | Option 3 | Option 4

OXY Alarm Pattern  Falling and Rising  Both Alarms Falling  Both Alarms Rising  
Cal past due Act  Confirm to Cal  Must Calibrate  Notification Only  
Cal Check Gas 4GAS

Alarm Latching  Cal Reminder  Data Log Overwrite  Data Log Remain  
 Alarm Silence  Lunch Break  Data Log Memory  
 User/StationID  Auto Fresh Air Adj  Zero Adjustment on demand  Pump OFF Display

(Left space 0) OK Cancel

**Figure 108: Parameter Tab, Option 1**

The adjustable parameters in the Option 1 Tab are:

- **OXY Alarm Pattern:** The oxygen alarms can be set to **Falling and Rising**, **Both Alarms Falling**, or **Both Alarms Rising**. If set to **Falling and Rising** (factory setting), the first oxygen alarm will be a decreasing alarm and the second oxygen alarm will be an increasing alarm. If set to **Both Alarms Falling**, both oxygen alarms will be decreasing alarms. If set to **Both Alarms Rising**, both oxygen alarms will be increasing alarms.
- **Cal Past Due Act:** The Cal Past Due Act determines how the GX-6000 will react to a needed calibration during the start up sequence. If Cal Past Due Act is set to **Confirm to Cal** (factory setting), the GX-6000 will sound an alarm and the user will have to press and release the RESET button to continue. If set to **Must Calibrate**, the GX-6000 cannot be used until a calibration has been performed. If set to **Notification Only**, the GX-6000 will display that a calibration is due but will continue with the warm up sequence. See the GX-6000 Operator's Manual for a description of the start up sequence.
- **Cal Check Gas:** This item defines which sensors are used to update the calibration reminder screen. With Cal Check Gas set to **4 GAS** (factory setting), the calibration dates for only the standard 4 sensors (LEL, O2, H2S, and CO)

are used to determine if a calibration is due. With Cal Check Gas set to **ALL**, the calibration dates for the standard 4 sensors along with the PID sensor and any other installed smart sensors are used to determine if a calibration is due.

- **Alarm Latching:** With alarm latching selected (factory setting), the GX-6000 remains in alarm condition until the alarm condition passes *and* the RESET button is pressed. With alarm latching not selected, the GX-6000 automatically resets an alarm when the alarm condition passes.
- **Alarm Silence:** With alarm silence selected (factory setting), pressing and releasing the RESET button silences the buzzer when the GX-6000 is in a gas alarm. The LEDs continue to flash and the display continues to show the alarm. When the gas concentration falls below the alarm level, pressing and releasing RESET clears all alarm indications for that alarm. With alarm silence not selected, you cannot silence the buzzer. You must wait until the alarm condition clears before you can press RESET to clear the alarm indications.
- **User/Station ID:** With User/Station ID selected, the User ID and Station ID screens display during startup and in Display Mode. With User/Station ID not selected (factory setting), the User ID and Station ID screens do not display during startup or in Display Mode.
- **Cal Reminder:** With Cal Reminder selected (factory setting), the GX-6000 will give an indication at start up if it is due for calibration. The type of indication will depend on the Cal Past Due Act setting. With Cal Reminder not selected, there will be no indication at start up if the instrument is due for calibration.
- **Lunch Break:** With Lunch Break not selected (factory setting), the GX-6000 automatically starts new TWA and PEAK reading collection and resets the time in operation at startup. With Lunch Break selected, the Lunch Break Screen displays during startup. From this screen, you can choose to continue accumulating TWA and PEAK readings and the time in operation from the last time the GX-6000 was used or start collecting new readings and reset the time in operation.
- **Auto Fresh Air Adj:** With Auto Fresh Air Adj selected, the GX-6000 will perform a fresh air adjustment after the start up sequence. If Auto Fresh Air Adj is not selected (factory setting), the GX-6000 will not perform a fresh air adjustment after the start up sequence.
- **Data Log Overwrite:** With Data Log Overwrite selected (factory setting), the GX-6000 writes over the oldest data with new data when the data logger memory is full. With Data Log Overwrite not selected, the GX-6000 stops saving data to the data logger when the data logger memory is full.
- **Data Log Memory:** With Data Log Memory selected (factory setting), the LOG CLEAR Screen appears in Display Mode and asks whether you want to clear the logged data. With Data Log Memory not selected, the LOG CLEAR Screen does not appear in Display Mode.

- **Zero Adjust on Demand:** With Zero Adjust on Demand selected (factory setting), you can manually perform a fresh air adjust in Measuring Mode by pressing the ▲ AIR button. With Zero Adjust on Demand not selected, you cannot manually perform a fresh air adjust in Measuring Mode.
- **Data Log Remain:** With Data Log Remain selected (factory setting), the Log Time Remaining Screen appears in Display Mode and shows the time remaining until the datalogging memory is full. With Data Log Remain not selected, the Log Time Remaining Screen does not appear in Display Mode.
- **Pump OFF Display:** With Pump OFF Display selected, the Pump Off Screen appears in Display Mode and the user can turn off the pump in order to conserve battery power. With Pump OFF Display not selected (factory setting), the Pump Off Screen does not appear in Display Mode and the user cannot turn the pump off.

### Option 2 Sub Tab

**Figure 109: Parameter Tab, Option 2**

The adjustable parameters in the Option 2 Tab are:

- **Language:** You may change the language of your GX-6000 to **English** (factory setting), **Japanese**, **Spanish**, **German**, **French**, **Portuguese**, **Russian**, **Korean**, or **Italian**. Select the drop down menu and make your selection.

- **Backlight Delay:** The Backlight Delay setting is how long the backlight stays on after the last button push. It can be set anywhere from **0** to **255** seconds. The factory setting is **30** seconds. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.
- **LCD Contrast:** The LCD Contrast parameter allows you to adjust the display contrast on the GX-6000. Select the setting so the characters on the display are easy to see. It can be set from **1** to **50**. The factory setting is **25**. The higher the setting, the darker the characters and LCD background. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.
- **LCD Auto Invert:** If LCD Auto Invert is selected (factory setting), the GX-6000's LCD will automatically flip if the instrument is turned upside down.

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**NOTE:** Even if LCD Auto Invert is selected, the screens in Calibration Mode, User Mode, and Maintenance Mode will not flip if the instrument is turned upside down.

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If LCD Auto Invert is not selected, the GX-6000's LCD will not flip and can only be read when the instrument is right side up. A LOCK symbol will appear at the top of the screen to indicate that the LCD's position is fixed.

- **Peak Bar Display:** If Peak Bar Display is selected, the peak bar appears along the right side of each gas reading in Measuring Mode and on the Peak Screen in Display Mode. It shows the peak readings for each channel in bar graph format. If Peak Bar Display is not selected (factory setting), the peak bars do not appear.
- **LB Mode:** The LB Mode selection allows you to turn on Leak Check Mode (**LEAK CHECK ONLY**), Bar Hole Mode (**BAR HOLE ONLY**), or both (**BH & LC**). If any of these modes are turned on, you will be prompted to select an operational mode when you turn the GX-6000 on. The factory setting is **OFF**. To update this parameter, select the drop down menu and make your selection. See the GX-6000 Operator's Manual for a description of the operational modes.
- **BH Measuring Time:** The BH Measuring Time parameter only applies to GX-6000s being used in Bar Hole Mode. The BH Measuring Time is the amount of time the GX-6000 samples the bar hole. It can be set to **30** (factory setting), **45**, or **60** seconds. Use the up and down arrow buttons to make your selection.
- **User Mode Protection:** When User Mode Protection is selected, the GX-6000 prompts you for a password when you enter User Mode and Calibration Mode. When User Mode Protection is not selected (factory setting), no password is required to enter User Mode or Calibration Mode. The box to the right of this selection allows the user to change the password required if User Mode Protection is selected (factory set password is 0405).
- **Password Protection:** This parameter is factory set as deselected and should not be changed.

- **Maintenance Mode Protection:** When Maintenance Mode Protection is selected (factory setting), the GX-6000 prompts you for a password when you enter Maintenance Mode. When Maintenance Mode Protection is not selected, no password is required to enter Maintenance Mode. The box to the right of this selection allows the user to change the password required if Maintenance Mode Protection is selected (factory set password is 0006).
- **Leak Buzzer:** If selected (factory setting), the buzzer will operate in Leak Check Mode.
- **Leak Check with CO:** When **Leak Check with CO** is not selected (factory setting), the CO channel is not displayed in Leak Check Mode. When **Leak Check with CO** is selected, the CO channel will be displayed in Leak Check Mode but there will be no CO alarms.
- **Confirmation:** When Confirmation is selected, the GX-6000 periodically double beeps and double flashes the LED arrays to verify that it is operating. The interval between the confirmation alert is user defined and can be set between **1** and **60** minutes. The factory setting is **5** minutes. When Confirmation is not selected (factory setting), the GX-6000 does not provide a confirmation alert.

### Option 3 Sub Tab

Figure 110: Parameter Tab, Option 3

The adjustable parameters in the Option 3 Tab are:

- **Bump Test Function:** When Bump Test Function is selected, the **BUMP TEST** menu item will appear in Calibration Mode. When Bump Test Function is not selected (factory setting), the **BUMP TEST** menu item will not appear in Calibration Mode.
- **Bump Test Time Remaining:** When Bump Test Time Remaining is selected, the GX-6000 will give an indication at start up if it is due for bump testing. The type of indication will depend on the Bump Test Past Due Act setting. When Bump Test Time Remaining is not selected (factory setting), the GX-6000 will not give an indication at start up if it is due for bump testing.
- **Bump Test Interval (Day):** The Bump Test Interval defines the amount of time between bump tests. The time can be set between **0** and **30** days in 1 day increments. The factory setting is **30** days. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.
- **Bump Test Past Due Act:** The Bump Test Past Due Act parameter determines how the GX-6000 will react to a needed bump test during the start up sequence. If Bump Test Past Due Act is set to **Confirm to Bump Test** (factory setting), the GX-6000 will sound an alarm and the user will have to press and release the RESET button to continue. If set to **Must Bump Test**, the GX-6000 cannot be used until a bump test has been performed. If set to **Notification Only**, the GX-6000 will display that a bump test is due but will continue with the warm up sequence. See the GX-6000 Operator's Manual for a description of the start up sequence.
- **Bump Check Gas:** This item defines which sensors are used to update the bump test reminder screen. With Bump Check Gas set to **4 GAS** (factory setting), the bump test dates for only the standard 4 sensors (LEL, O2, H2S, and CO) are used to determine if a bump test is due. With Bump Check Gas set to **ALL**, the bump test dates for the standard 4 sensors along with the PID sensor and any other installed smart sensors are used to determine if a bump test is due.
- **Bump Test Time (Sec):** The Bump Test Time parameter is the amount of time that the GX-6000 is exposed to gas during a bump test. The available choices are **30** (factory setting), **45**, **60**, and **90** seconds. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.
- **Calibration After Bump Test Failed:** When Calibration After Bump Test Failed is selected (factory setting), if a bump test fails, the GX-6000 will automatically begin a calibration. When Calibration After Bump Test Failed is not selected and a bump test fails, nothing will happen.
- **Bump Test Threshold (%):** The Bump Test Threshold parameter is the bump test tolerance value and is represented as a percentage. It is the percentage that the bump test reading can differ from the actual gas concentration. If the

bump test reading differs more, the bump test will fail. The available values are **10%**, **20%**, **30%** (factory setting), **40%**, and **50%**. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.

- **Calibration Time (sec) After Bump Test Failed:** The Calibration Time After Bump Test Failed parameter is the total time the GX-6000 is exposed to calibration gas when a bump test fails if Calibration After Bump Test Failed is selected. The bump test time is deducted from the calibration time. For example, if the Calibration Time After Bump Test Failed is set to 90 seconds and the Bump Test Time is set to 30 seconds, if the bump test fails, the GX-6000 will only be exposed to gas for an additional 60 seconds. The available values are **90** seconds (factory setting), and **120** seconds. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.

### Option 4 Sub Tab

**Figure 111: Parameter Tab, Option 4**

The adjustable parameters in the Option 4 Tab are:

- **Panic:** When Panic is selected (factory setting), a Panic Alarm can be manually initiated by holding down the SHIFT ▼ (PANIC) button. When Panic is not

selected, a Panic Alarm cannot be manually initiated.

- **Man Down:** When Man Down is selected, the Man Down alarm can be triggered if the GX-6000 detects no motion for the period of time defined in Man Down 1, Man Down 2, and Man Down Alarm below. When Man Down is not selected (factory setting), the Man Down alarm cannot be triggered.
- **Man Down 1:** The Man Down 1 time is the amount of time that has to pass between a Man Down detection and the first preliminary alarm. It can be set in 1 second increments from **10 - 120** seconds. The factory setting is **60** seconds. When setting the Man Down 1 time, keep in mind that Man Down Alarm  $\geq$  Man Down 2  $\geq$  Man Down 1. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.
- **Man Down 2:** The Man Down 2 time is the amount of time that has to pass between a Man Down detection and the second preliminary alarm. It can be set in 1 second increments from **10 - 120** seconds. The factory setting is **75** seconds. When setting the Man Down 1 time, keep in mind that Man Down Alarm  $\geq$  Man Down 2  $\geq$  Man Down 1. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.
- **Man Down Alarm:** The Man Down Alarm time is the amount of time that has to pass between a Man Down detection and the main alarm. It can be set in 1 second increments from **10 - 120** seconds. The factory setting is **90** seconds. When setting the Man Down 1 time, keep in mind that Man Down Alarm  $\geq$  Man Down 2  $\geq$  Man Down 1. Use the arrows to the right of the value to make your selection or highlight the existing value and enter the desired value.
- **Inert Function:** When Inert Function is selected, Inert Mode becomes an option in the Mode Select Screen when the GX-6000 turns on. Normal Mode is still an option. See the GX-6000 Operator's Manual for a description of Inert Mode. When Inert Function is not selected (factory setting), selecting Inert Mode at startup is not an option.
- **Warning:** The Warning parameter is the Warning setpoint for the oxygen channel when the GX-6000 is used in Inert Mode. The factory setting is **5.0** and it is factory set as a rising alarm. Highlight the existing value and enter the desired value.
- **Alarm:** The Alarm parameter is the Alarm setpoint for the oxygen channel when the GX-6000 is used in Inert Mode. The factory setting is **10.0** and it is factory set as a rising alarm. Highlight the existing value and enter the desired value.
- **Date Format:** The Date can be displayed as **MM/DD/YYYY** (factory setting), **DD/MM/YYYY**, or **YYYY/MM/DD**. Select the drop down menu and make your selection.
- **Key Tone:** When Key Tone is selected (factory setting), the GX-6000 will beep every time a button is pressed. When Key Tone is not selected, the GX-6000 will

not beep when a button is pressed.

- **IR Auto Range:** When IR Auto Range is selected (factory setting), the IR channel's gas reading will be displayed in %LEL until the gas level reaches 100 %LEL, or 5.0 %vol for methane. Once the gas reading is above 100 %LEL, it is displayed in %vol. Alarm points exist for the %LEL range but do not exist for the %vol range. When IR Auto Range is not selected, the IR channel's gas reading will only be displayed in %LEL up to 100 %LEL.
- **Destination:** This parameter should always be set to **Other**.

To exit the Parameter tab, click the **OK** button in the lower right corner of the window. A confirmation screen will appear asking if you would like to save the changes you have made. To save the changes and return to the main program window, click **Yes**. To return to the main program window without saving your changes, click **No**. To return to the Parameter tab and update your changes, click **Cancel**.

To return to the main program window without saving any changes, click **Cancel** in the lower right corner of the window.

## Sensor Tab

The Sensor Tab displays the alarm settings and auto calibration values for all installed sensors. It also shows the date and time of the most recent calibration and bump test for each channel.

If a PID sensor is installed in the GX-6000, the PID information will be displayed at the bottom of the Sensor Tab. This information is displayed for reference and is not editable. The PID gas must be edited in the GX-6000's Display Mode.

- **PID No:** The PID No is the library number of the selected PID gas.
- **Chemical Formula:** This shows the chemical formula of the selected gas.
- **Modulus:** The modulus is the selected gas's response factor relative to isobutylene.
- **GAS Full Name:** This field shows the full name of the selected PID gas.

569010102

Serial No. 569010102 Station ID VALVE 3 Date Time 12/31/2015 12:49:21 PM  
 Model GX-6000 User ID BOB Load Date 12/31/2015 12:53:26 PM

Parameter Sensor Station & User

| Sensor        | Warning | Alarm | STEL  | TWA   | Auto Cal. | Last Calibration      | Channel | Last Bump test        |
|---------------|---------|-------|-------|-------|-----------|-----------------------|---------|-----------------------|
| CH4(100%LEL)  | 10      | 50    | ***** | ***** | 50        | 11/15/2015 5:51:36 AM | 1       | 11/15/2015 5:51:36 AM |
| O2(40.0%)     | 19.5    | 23.5  | ***** | ***** | 12.0      | 11/15/2015 5:51:36 AM | 2       | 11/15/2015 5:51:36 AM |
| H2S(100.0ppm) | 5.0     | 30.0  | 5.0   | 1.0   | 25.0      | 11/15/2015 5:51:36 AM | 3       | 11/15/2015 5:51:36 AM |
| CO(500ppm)    | 25      | 50    | 200   | 25    | 50        | 11/15/2015 5:51:36 AM | 4       | 11/15/2015 5:51:36 AM |
| VOC(6000ppm)  | 400.0   | 1000  | ***** | ***** | 100.0     | 12/7/2015 12:02:49 PM | 5       | 12/7/2015 12:02:49 PM |
| HCN(15.0ppm)  | 5.0     | 10.0  | 4.7   | ***** | 10.0      | 7/1/2015 1:53:37 PM   | 6       | 7/1/2015 1:53:37 PM   |
|               |         |       |       |       |           |                       |         |                       |
|               |         |       |       |       |           |                       |         |                       |

VOC Information

PID No 382 Chemical Formula C4H8 Modulus 1  
 GAS Full Name Isobutylene

(Left space 0) OK Cancel

**Figure 112: Sensor Tab**

Any value in a white box can be changed. Values in shaded boxes cannot be changed. To change a value:

1. Click the box whose value you want to change. The entire box will turn blue.
2. Click the box again and only the value will be highlighted in blue.
3. Type in the new desired value.
4. Repeat steps 1 through 3 for any other values you wish to change and then click **OK**.
5. You will be asked if you want to save the changes that you made.
  - Select **Yes** if you wish to save the changes. The PC Controller Program will update the GX-6000 and then return you to the main program window.
  - Select **No** if you do not want to save the changes. The PC Controller Program will return you to the main program window.
  - Select **Cancel** to return to the Sensor Tab and make any additional changes.

## Station & User Tab

The Station & User Tab allows you to update the Station ID and User ID lists in a connected GX-6000.

To edit the Station ID or User ID list, you will need to import a csv (comma separated values) file into the program. A Station csv file and a User csv file are provided with the SDM-6000 product CD. In addition, you can generate csv files for editing from the program.

### Creating ID Files

1. To create a csv file for editing, click the **Export csv file** button for either the Station or User ID list.

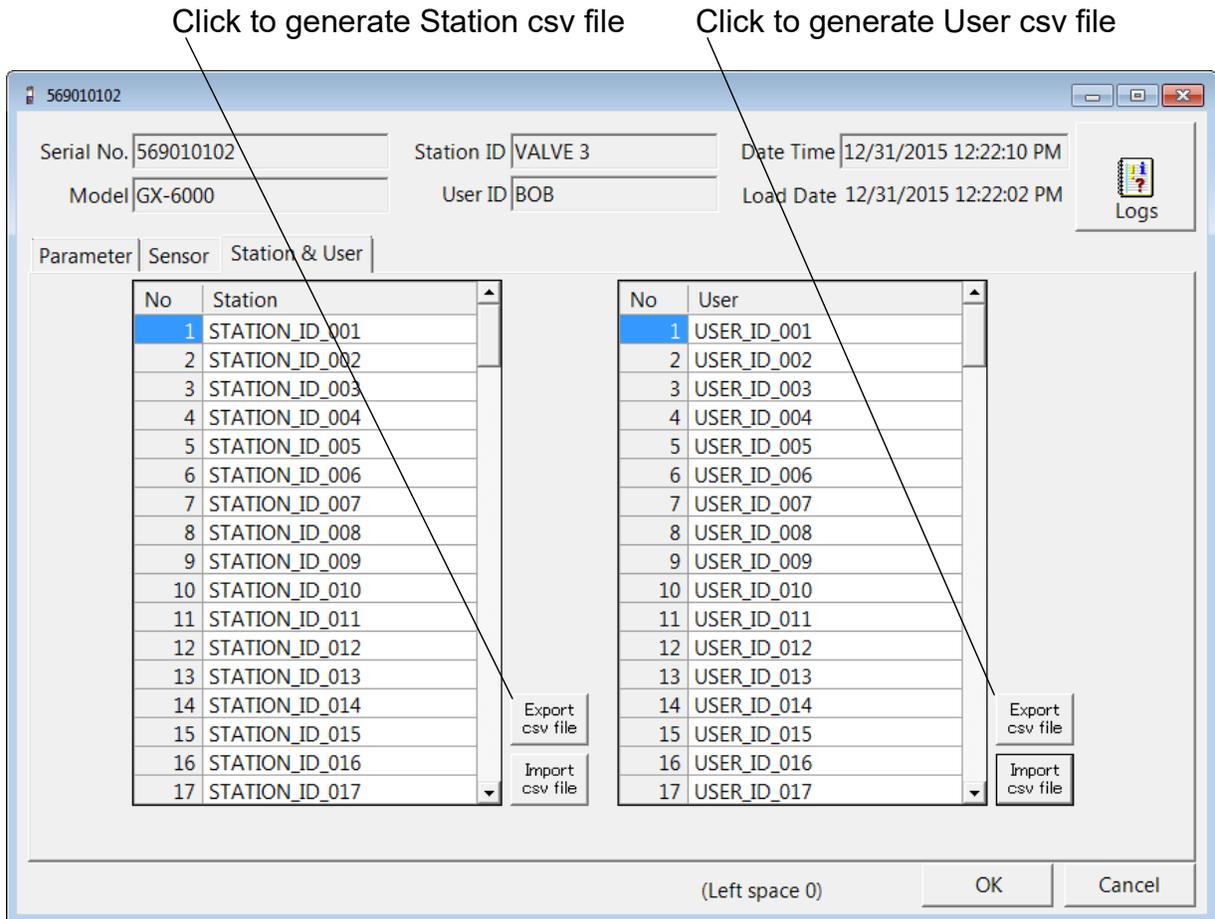
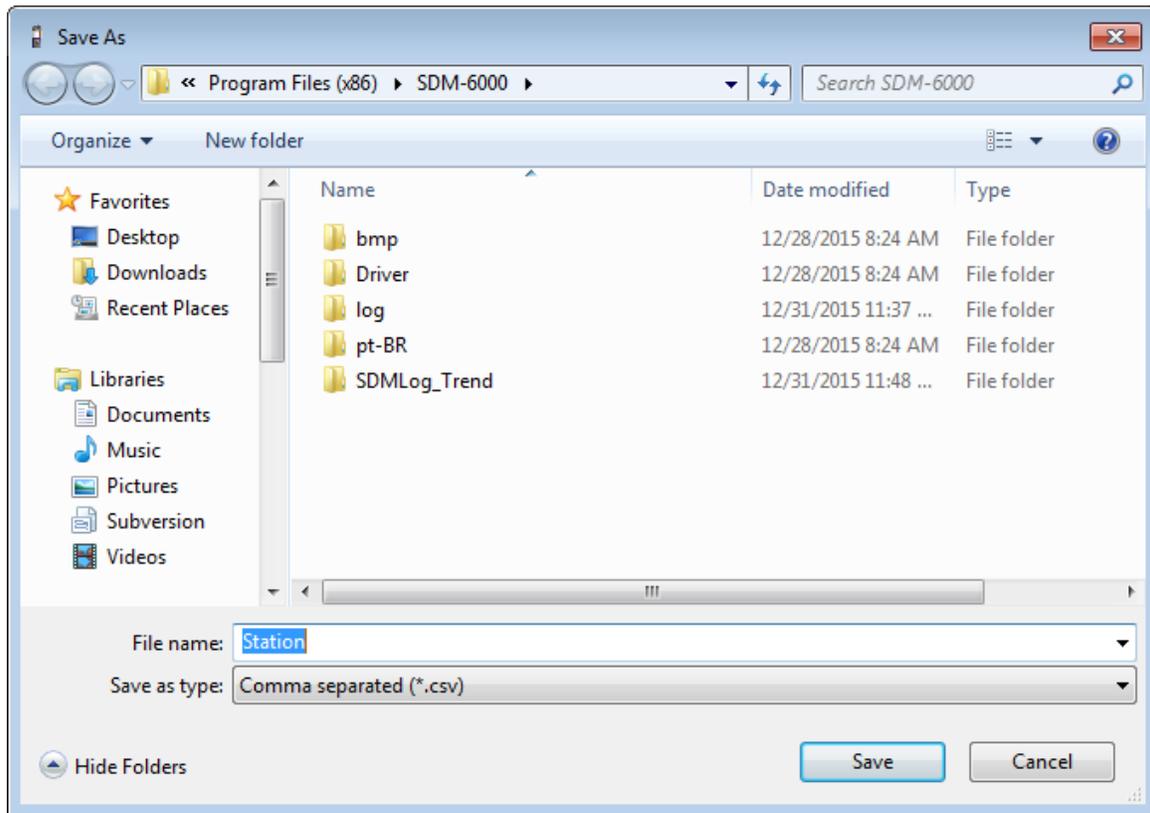


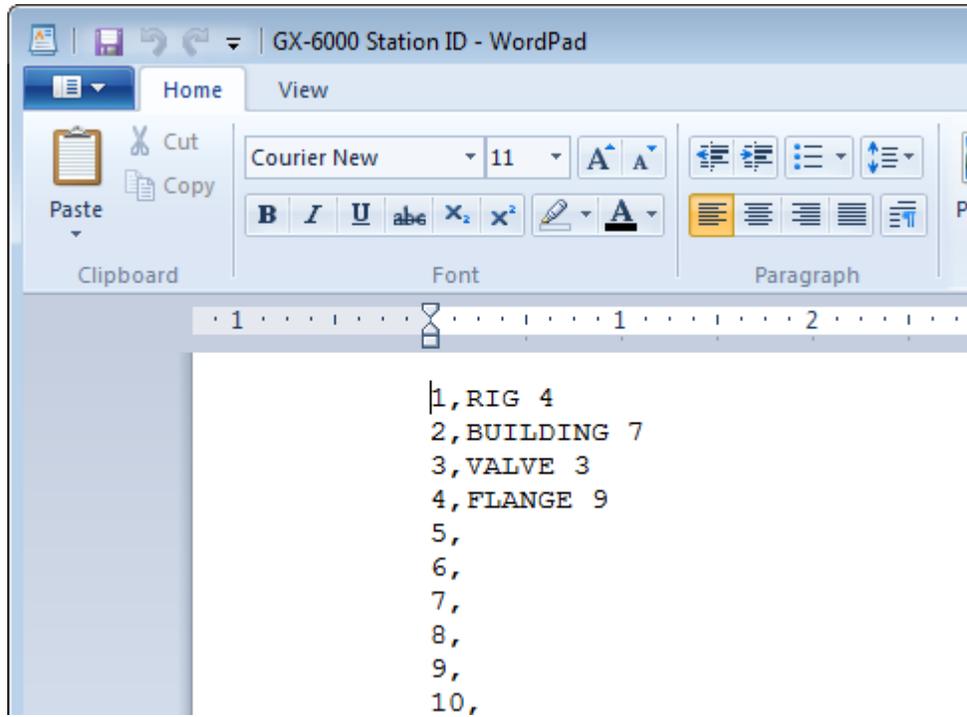
Figure 113: Station and User Tab

2. Navigate to the location you want to save the file, type in a file name, and click **Save**. You can save multiple station and user ID files if desired.



**Figure 114: Save As**

3. The csv files can be opened, edited, and saved using a word processing program such as Word, WordPad, or Notepad. The Station and User csv files consist of the Station or User ID number and its associated name. Below is an example of the Station csv file opened in WordPad.



**Figure 115: Station ID CSV File Opened in WordPad**

Any existing Station or User IDs will be displayed as STATION\_ID\_XXX or USER\_ID\_XXX with the "XXX" being the ID number. To edit a Station or User ID, delete the existing name and replace it with the desired name. The name may consist of any letter, number, or character.

4. Save the changes you made to the csv file.

## Loading ID Files

1. In the Station & User Tab, click **Import csv file** for either the Station ID list or User ID list.

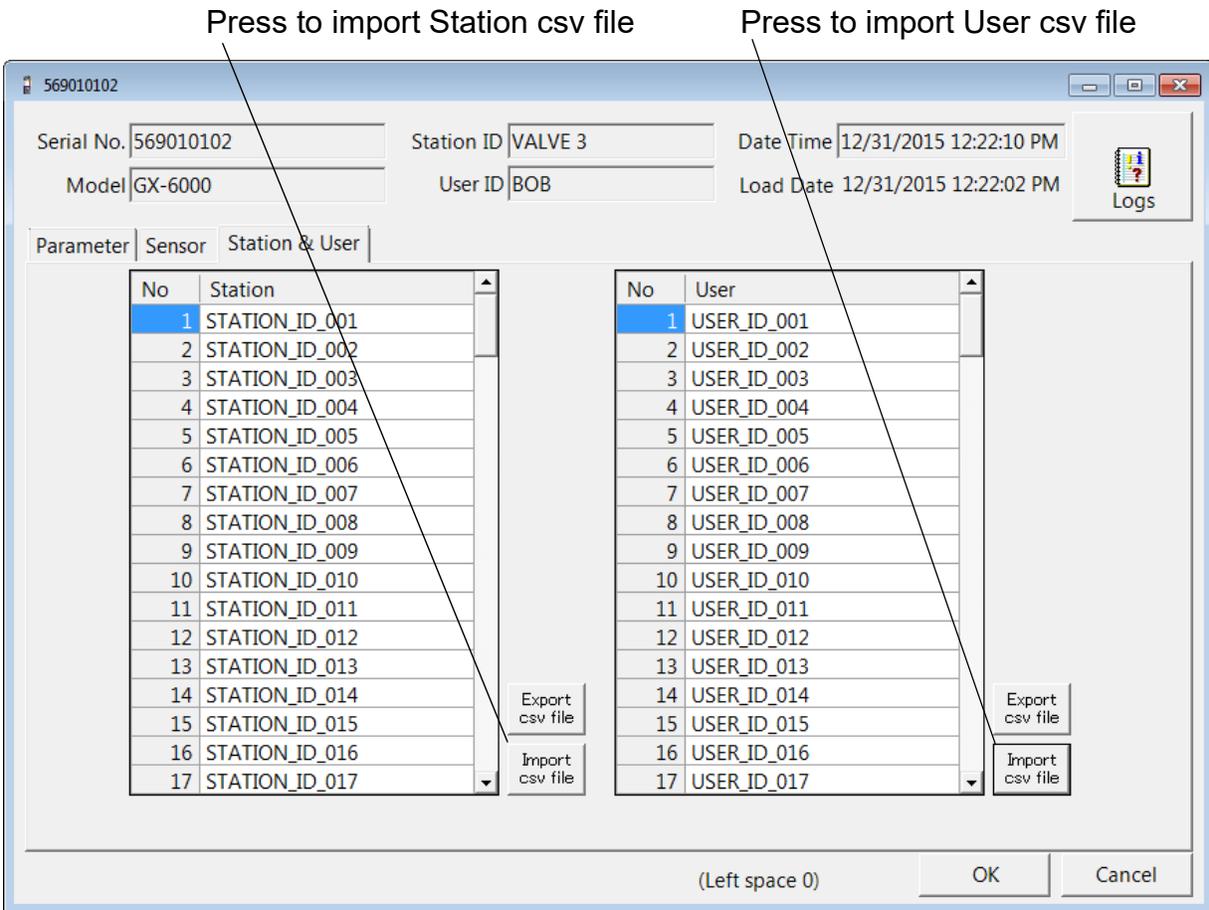


Figure 116: Station and User Tab

2. Navigate to the file you wish to import and click **Open**.

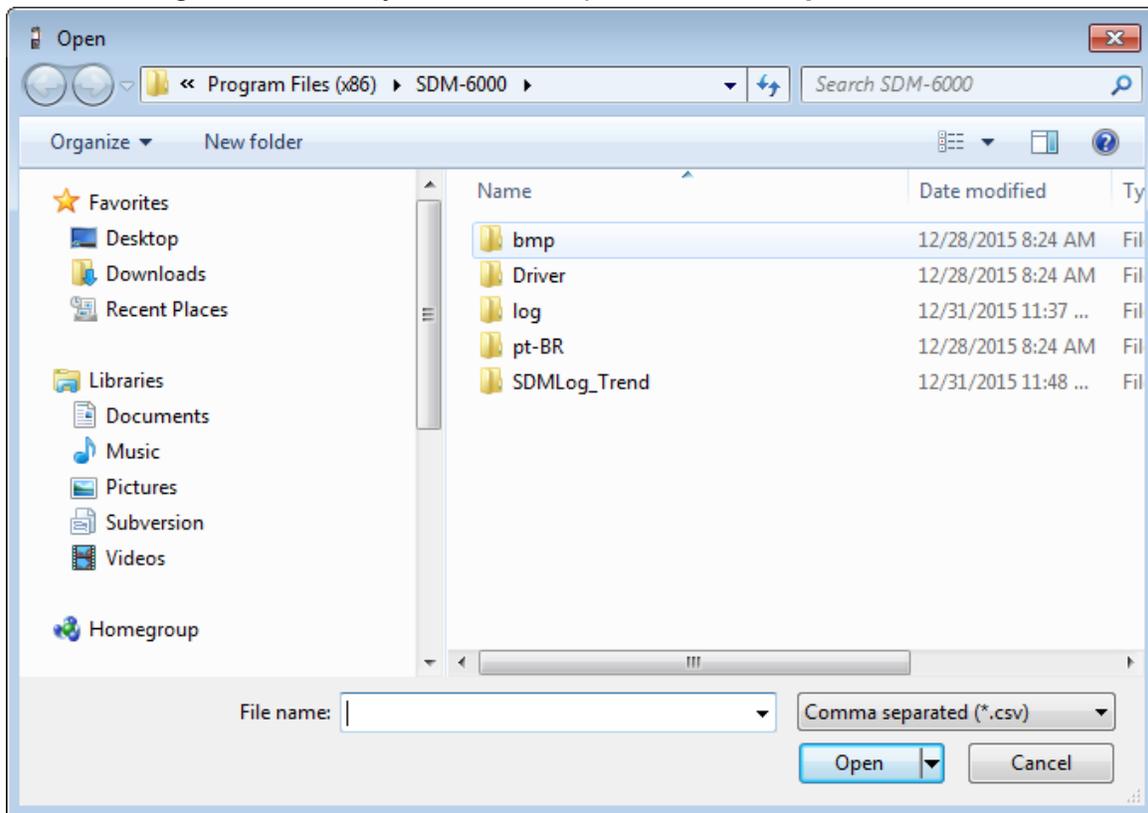
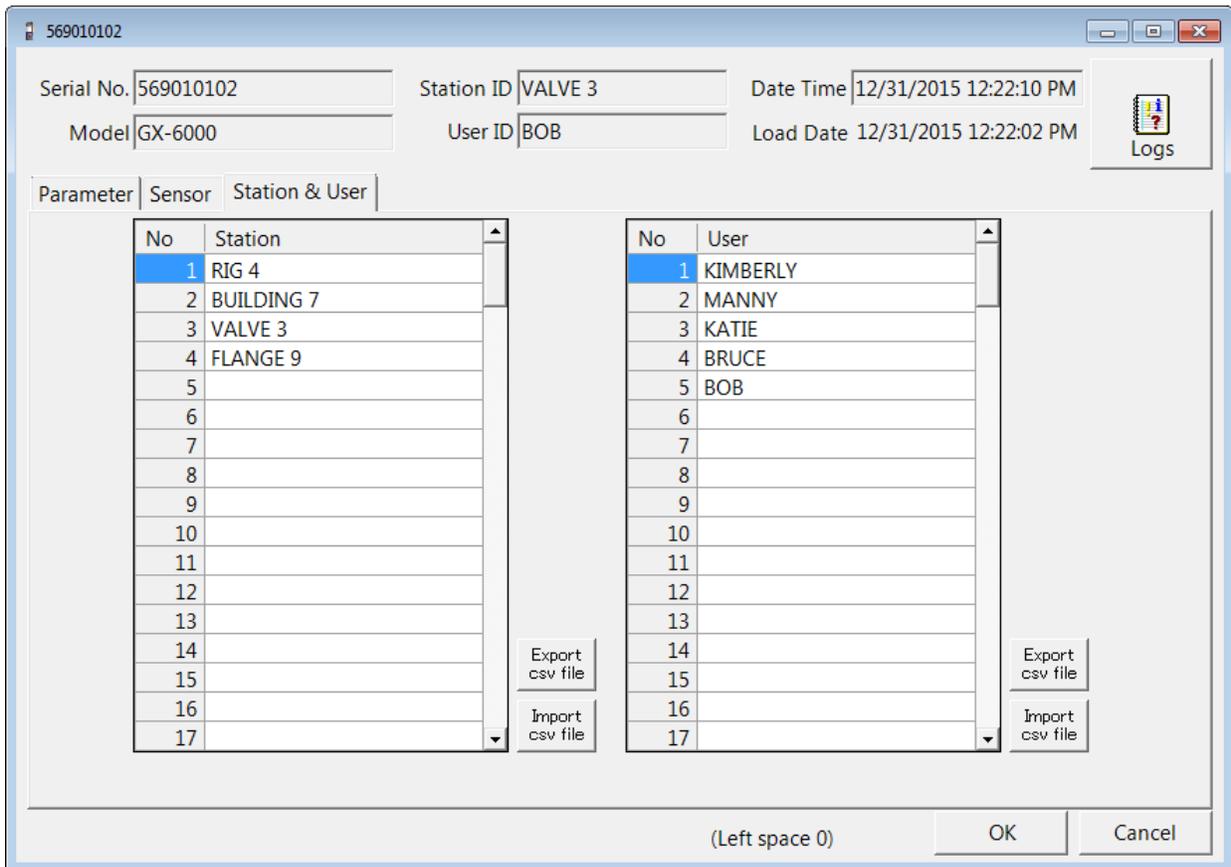


Figure 117: Open Station ID CSV File

- Once you have imported the Station ID and/or User ID csv files, the new list will be reflected in the Station & User Tab.



**Figure 118: New Station and User IDs**

- Click **OK** to save the changes and click **Yes** in the confirmation window that comes up. The program will tell you to wait while it updates the GX-6000.  
To exit this screen without saving changes, click **Cancel**.
- To select a Station ID or User ID for the GX-6000, go back to the Parameter tab. See “Parameter Tab” on page 148 for instructions to select a station ID or user ID.

## Get Parameters Function

This function can be activated by either right clicking a GX-6000 and selecting **Get Parameters (G)** when the pull down menu appears or by selecting a GX-6000 and then using the alt/G key combination. The Get Parameters function downloads the selected GX-6000’s instrument parameters. A Get Parameters function must be completed before you can edit any instrument parameters using the Edit function. If you select **Get Parameters (G)**, a confirmation box appears. Click the **OK** button to proceed with the parameters download. A parameter download will take approximately 5 minutes to complete.

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## Download Logs Function

This function can be activated by either right clicking a GX-6000 and selecting **Download Logs(D)** when the pull down menu appears or by selecting a GX-6000 and then using the alt/D key combination. The Download Logs function downloads all logged data from the GX-6000 to the PC Controller Program. Performing a Download Logs operation will not make the **Open** or **Edit** functions selectable. If you select **Download Logs(D)**, a confirmation box appears. Click the **OK** button to proceed with the data download. A data download will take 20 - 25 minutes to complete.

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**NOTE:** Even if an SD card is installed in the SDM-6000, a **Download Logs(D)** operation will not save downloaded data to that SD card. It will only save data to the PC Controller Program's database.

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## Clear Logs Function

This function can be activated by either right clicking a GX-6000 and selecting **Clear Logs(C)** when the pull down menu appears or by selecting a GX-6000 and then using the alt/C key combination. The Clear Logs function clears all logged data from a GX-6000. If you select **Clear Logs(C)**, a confirmation box appears. Click the **OK** button to proceed with clearing all the data from the GX-6000. The message window will indicate that the data is being cleared. When the data has been cleared, the message window will indicate this.

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## Power Off Function

This function can be activated by either right clicking a GX-6000 and selecting **Power Off(P)** when the pull down menu appears or by selecting a GX-6000 and then using the alt/P key combination. The Power Off function turns off the selected GX-6000. If you select **Power Off(P)**, a confirmation box appears. Click **OK** to turn off the selected GX-6000.

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**NOTE:** The GX-6000 can also be turned off by pressing the Detector Off button on the SDM-6000's touch screen.

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## Spare Parts List

**Table 13: Spare Parts List**

| <b>Part Number</b> | <b>Description</b>  |
|--------------------|---|
| 06-1248RK          | Polyurethane tubing, 5/16-inch OD x 3/16-inch ID, for connecting to inlet fittings                  |
| 06-1248RK-03       | 3 foot length of 5/16-inch OD x 3/16-inch ID, for connecting calibration cylinder to inlet fittings |
| 06-1254RK          | Polyurethane tubing, 7/16-inch OD x 5/16-inch ID, for exhaust tube, 15 feet maximum                 |
| 06-1254RK-10       | 10 foot length of 7/16-inch OD x 5/16-inch ID, for exhaust tube                                     |
| 10-1233-06         | Screw, M4 x 8 mm, for connection brackets and/or panel on right side of SDM-6000                    |
| 14-0401            | Wall mounting brackets, set of 3, with screws   |
| 14-0402            | Connection brackets, set of 2, with screws, for connecting SV-3 to SDM-6000                         |
| 14-0403            | Connection brackets, set of 3, with screws, for connecting SDM-6000s together                       |
| 17-4710            | Sample fitting plugs  |
| 21-1935            | Panel cover for right side of SDM-6000  |
| 33-0167RK          | Particle air filter replacement, CF-8369  |
| 33-6015RK          | CO <sub>2</sub> scrubber  |
| 33-6098-01         | VOC zero filter, charcoal, with tubing stub   |
| 47-1013RK          | Multi-station AC adapter line cord only   |
| 47-1017            | Printer power cord  |
| 47-5073RK          | USB cable, Type A to Type B, for connecting to a computer   |
| 47-5085RK          | Cable, USB A to USB mini, for connecting printer to SDM-6000  |
| 47-5088            | Ethernet cable, black, 5 ft.  |
| 49-0126            | Single-station AC adapter   |
| 49-0128            | Multi-station AC adapter with line cord   |
| 49-0128-01         | Multi-station AC adapter, without line cord   |

**Table 13: Spare Parts List**

| <b>Part Number</b> | <b>Description</b>  |
|--------------------|---|
| 49-0129            | Printer AC adapter  |
| 49-1621            | Printer battery pack  |
| 71-0385            | Operator's Manual, SDM-6000 Docking Station Standalone Configuration                                    |
| 71-0386            | Operator's Manual, SDM-6000 Docking Station PC Controlled Configuration (this document)                 |
| 71-8011            | Product CD, SDM-6000, includes PC Controller Program  |
| 81-0012RK-01       | Calibration cylinder, 50 %LEL CH <sub>4</sub> in air, 34 liter steel                                    |
| 81-0012RK-03       | Calibration cylinder, 50 %LEL CH <sub>4</sub> in air, 103 liter steel                                   |
| 81-0013RK-01       | Calibration cylinder, 50% vol CH <sub>4</sub> in N <sub>2</sub> , 34 liter steel                        |
| 81-0013RK-05       | Calibration cylinder, 50% vol CH <sub>4</sub> in N <sub>2</sub> , 58 liter steel                        |
| 81-0018RK-01       | Calibration cylinder, 50 %LEL isobutane in air, 34 liter steel  |
| 81-0018RK-03       | Calibration cylinder, 50 %LEL isobutane in air, 103 liter steel   |
| 81-0076RK          | Zero air cylinder, 17 liter steel   |
| 81-0076RK-01       | Zero air cylinder, 34 liter steel   |
| 81-0076RK-03       | Zero air cylinder, 103 liter steel  |
| 81-0090RK-01       | Three-gas calibration cylinder, 50% LEL CH <sub>4</sub> /12% O <sub>2</sub> /50 ppm CO, 34 liter steel  |
| 81-0090RK-03       | Three-gas calibration cylinder, 50% LEL CH <sub>4</sub> /12% O <sub>2</sub> /50 ppm CO, 103 liter steel |
| 81-0103RK-01       | Calibration cylinder, isobutylene, 100 ppm in air, 34 liter steel                                       |
| 81-0103RK-03       | Calibration cylinder, isobutylene, 100 ppm in air, 103 liter steel                                      |
| 81-0103RK-04       | Calibration cylinder, isobutylene, 100 ppm in air, 34 liter aluminum                                    |
| 81-0104RK-01       | Calibration cylinder, isobutylene, 10 ppm in air, 34 liter steel  |
| 81-0104RK-03       | Calibration cylinder, isobutylene, 10 ppm in air, 103 liter steel                                       |
| 81-0104RK-04       | Calibration cylinder, isobutylene, 10 ppm in air, 34 liter aluminum                                     |

**Table 13: Spare Parts List**

| <b>Part Number</b> | <b>Description</b>   |
|--------------------|--|
| 81-0142RK-02       | Five-gas calibration cylinder, 50% LEL CH <sub>4</sub> /12% O <sub>2</sub> /25 ppm H <sub>2</sub> S/50 ppm CO/5 ppm SO <sub>2</sub> in nitrogen, 58 liter aluminum |
| 81-0142RK-04       | Five-gas calibration cylinder, 50% LEL CH <sub>4</sub> /12% O <sub>2</sub> /25 ppm H <sub>2</sub> S/50 ppm CO/5 ppm SO <sub>2</sub> in nitrogen, 34 liter aluminum |
| 81-0143RK-02       | Five-gas calibration cylinder, CH <sub>4</sub> /O <sub>2</sub> /H <sub>2</sub> S/CO/IBL, 58 liter aluminum   |
| 81-0143RK-04       | Five-gas calibration cylinder, CH <sub>4</sub> /O <sub>2</sub> /H <sub>2</sub> S/CO/IBL, 34 liter aluminum   |
| 81-0154RK-02       | Four-gas calibration cylinder, 50% LEL CH <sub>4</sub> /12% O <sub>2</sub> /50 ppm CO/25 ppm H <sub>2</sub> S, 58 liter aluminum                                   |
| 81-0154RK-04       | Four-gas calibration cylinder, 50% LEL CH <sub>4</sub> /12% O <sub>2</sub> /50 ppm CO/25 ppm H <sub>2</sub> S, 34 liter aluminum                                   |
| 81-0158RK-02       | Four-gas calibration cylinder, 50% LEL Isobutane/12% O <sub>2</sub> /50 ppm CO/25 ppm H <sub>2</sub> S, 58 liter aluminum  |
| 81-0158RK-04       | Four-gas calibration cylinder, 50% LEL Isobutane/12% O <sub>2</sub> /50 ppm CO/25 ppm H <sub>2</sub> S, 34 liter aluminum  |
| 81-0170RK-02       | Calibration cylinder, 5 ppm SO <sub>2</sub> in nitrogen, 58 liter  |
| 81-0170RK-04       | Calibration cylinder, 5 ppm SO <sub>2</sub> in nitrogen, 34 liter  |
| 81-0176RK-02       | Calibration cylinder, 25 ppm NH <sub>3</sub> in nitrogen, 58 liter   |
| 81-0176RK-04       | Calibration cylinder, 25 ppm NH <sub>3</sub> in nitrogen, 34 liter   |
| 81-0182RK-02       | Calibration cylinder, 5 ppm NO <sub>2</sub> in air, 58 liter   |
| 81-0182RK-04       | Calibration cylinder, 5 ppm NO <sub>2</sub> in air, 34 liter   |
| 81-0185RK-02       | Calibration cylinder, 0.5 ppm PH <sub>3</sub> in nitrogen, 58 liter  |
| 81-0190RK-02       | Calibration cylinder, 5 ppm Cl <sub>2</sub> in nitrogen, 58 liter  |
| 81-0190RK-04       | Calibration cylinder, 5 ppm Cl <sub>2</sub> in nitrogen, 34 liter  |
| 81-0196RK-02       | Calibration cylinder, 10 ppm HCN in nitrogen, 58 liter   |
| 81-0196RK-04       | Calibration cylinder, 10 ppm HCN in nitrogen, 34 liter   |

**Table 13: Spare Parts List**

| <b>Part Number</b> | <b>Description</b>  |
|--------------------|---|
| 81-1054-01         | Demand flow regulator with 3 feet of calibration tubing, for 58/103 liter cylinders   |
| 81-1055RK          | Demand flow regulator, for 17/34 liter steel cylinders  |
| 81-SDM6000         | Docking station for GX-6000, includes docking station, air filter, exhaust tubing, and connection brackets  |
| 81-SDM6000-01      | Docking station for GX-6000, includes docking station, air filter, exhaust tubing, connection brackets, single-station AC adapter, USB cable, Ethernet cable, and SD card with SD to USB reader |
| 81-SDM6000-02      | Docking station for GX-6000, includes docking station, air filter, exhaust tubing, connection brackets, multi-station AC adapter, USB cable, Ethernet cable, and SD card with SD to USB reader  |
| 81-SV3             | SV-3 solenoid valve unit, with connection brackets  |
| 814-101-P25        | Calibration kit, 5-gas with IBL, 58 liter aluminum cylinder   |
| 814-101-P25-DLV    | Calibration kit, 5-gas with IBL, 34 liter aluminum cylinder   |
| 82-6107            | SDHC card and SD to USB reader  |
| 82-6400            | Printer with AC adapter, power cord, battery pack, paper roll, and USB cable  |
| 82-6400-01         | Thermal printer paper roll, 58 mm width   |