Model GX-2001
Data Logging Software
With Calibration Station

User's Guide

Part Number: 71-0064RK

Revision: E

Released: December 11, 2002

Warranty

RKI Instruments, Inc., warrants gas alarm equipment sold by us to be free from defects in materials and workmanship, and performance for a period of one year from date of shipment from RKI Instruments, Inc. Any parts found defective within that period will be repaired or replaced, at our option, free of charge. This warranty does not apply to those items which by their nature are subject to deterioration or consumption in normal service, and which must be cleaned, repaired, or replaced on a routine basis. Examples of such items are:

Absorbent cartridges	Batteries
Pump diaphragms and valves	Filter elements
Fuses	

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repairs procedures not in accordance with the instruction manual. This warranty indicates the full extent of our liability, and we are not responsible for removal or replacement costs, local repair costs, transportation costs, or contingent expenses incurred without our prior approval.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF RKI INSTRUMENTS, INC., INCLUDING BUT NOT LIMITED TO THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RKI INSTRUMENTS, INC., BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND CONNECTED WITH THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.

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.

Table of Contents

CAUTION: *Read and understand this manual before using the GX-2001 Data Logging Software. Also read and understand the Model GX-2001 Operator's Manual included with the Model GX-2001 portable gas detection unit.*

NOTE: The following conventions are used on this product and in this manual:

⚠   Caution or Refer to Accompanying Documentation

~   VAC (AC voltage)

Technical Notice on Updating Software

If you are updating your GX-2001 Downloading Software and your existing software is version 01523 or earlier, **DO NOT DELETE YOUR OLD GX-2001 SOFTWARE OR THE OLD SOFTWARE FOLDER. DATA SAVED USING VERSION 01523 OR EARLIER IS NOT READABLE USING VERSION 01610 OR LATER. BEFORE INSTALLING THE NEW SOFTWARE, CHANGE THE NAME OF THE OLD SOFTWARE FOLDER SO IT IS DIFFERENT THAN THE NAME OF THE NEW SOFTWARE FOLDER TO BE INSTALLED. THE DEFAULT NAME OF THE NEW SOFTWARE FOLDER IS *GX-2001*.**

Version 01610 of the GX-2001 Downloading Software has been updated to include the capability of printing calibration history information from the Calibration History part of the software. However, because database structure changes were required for this change, databases created with previous versions of the software will not operate with software version 01610 or subsequent versions. The database file is *GX-2001.mdb* in the GX-2001 software folder. If you attempt to view data using software version 01610 or later from a database generated with software version 01523 or earlier, an error indication will occur and the data will not be viewable.

Introduction

Using an advanced detection system consisting of four gas sensors, the Model GX-2001 Personal Four-Gas Monitor detects the presence of combustible gases, oxygen (O_2), carbon monoxide (CO), and hydrogen sulfide (H_2S) simultaneously. The Model GX-2001's compact size and easy-to-use design makes it ideally suited for a wide range of applications, as described in the Model GX-2001 Operator's Manual, which you should read first before using the GX-2001 Data Logging Software and GX-2001 Calibration Station.

The GX-2001 Data Logging Software and Calibration Station downloads stored data in the Model GX-2001 to a Windows-based PC. After the data has been downloaded, you can view, save, or print it using your computer and the GX-2001 Data Logging Software. The GX-2001 Data Logging Software and Calibration Station also calibrates the Model GX-2001 by setting the zero and the span. The GX-2001 can also be recharged using the calibration station.

The purpose of this manual is to explain how to use and set up the GX-2001 Data Logging Software and Calibration Station. You will learn how to:

- install and launch the software

- install the hardware

- down load data from the Model GX-2001

- view, print, and save data

- change data logging parameters

- change the appearance of data logging reports

- calibrate the Model GX-2001

- use the calibration station to recharge the Model GX-2001

- adjust the low flow alarm if necessary

Before you get started, be sure to review system requirements in the next section. Next read the overview about the GX-2001 Data Logging Software and Calibration Station.

CAUTION: *The Model GX-2001 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 Model GX-2001, you must follow the instructions and warnings in the Model GX-2001 Operator's Manual to assure proper and safe operation of the unit and to minimize the risk of personal injury.*

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.*

CAUTION: *Cleaning is not to be performed.*

System Requirements

To use the GX-2001 Data Logging Software and Calibration Station, your personal computer must meet the following requirements:

- **Operating Systems:** Windows® 95, Windows® 98 SE, Windows® ME, Windows® 2000, or Windows NT® 4.0

- **Processor:** IBM® compatible PC running Pentium® 2, Pentium® 3, or Pentium® 4 processor, or equivalent processor.

- **Memory:** 8 MB RAM minimum

- **Hard Disk Space:** 20 MB minimum

- **CD-ROM Drive**

Specifications

Table 1: GX-2001 Calibration Station Specifications

Safety/ Regulatory	C ⊕ US 186718
Input Power	115 V ~, 50/60 Hz, 0.1 A
Environmental Conditions	• For Indoor Use Only • 2,000 meters maximum altitude • -10° C to 40° C, below 80% Relative Humidity, Non-Condensing • Overvoltage Category II, Pollution Degree 2 • Mains Supply Voltage Fluctuations Not Exceeding ± 10% of the Nominal Voltage

Overview of the GX-2001
Data Logging Software

The Model GX-2001 is a gas monitoring device for combustible gases, O_2, CO, and H_2S. It measures combustible gases as a percentage of the lower explosive limit (% LEL), O_2 as a straight percentage (%), and H_2S and CO as parts per million (ppm). The Model GX-2001 also records STEL and TWA readings for H_2S and CO.

STEL is an acronym for short-term exposure limit, and it shows the average reading for H_2S and CO during the last 15 minutes. TWA is an acronym for time-weighted average, and it shows the average reading for H_2S and CO during the last eight (8) hours.

This, and other information (e.g., calibration history), is recorded by the Model GX-2001 and is stored in the unit's on-board memory. The GX-2001 Charger/Downloading Station and Software downloads this information to your computer for viewing, printing, and saving.

Types of Information Provided

The GX-2001 Data Logging Software provides information about gas concentrations, alarm trends, calibration history, and instrument data. This section of the manual has sample data screens along with a "road map" of the GX-2001 Data Logging Software to help you become better acquainted with how the software works.

Interval Trend Data

Gas concentrations are logged over five minute time intervals in the interval trend data files. Events are saved when they occur. The data may be viewed in table format, as seen in the following figure, or graph format.
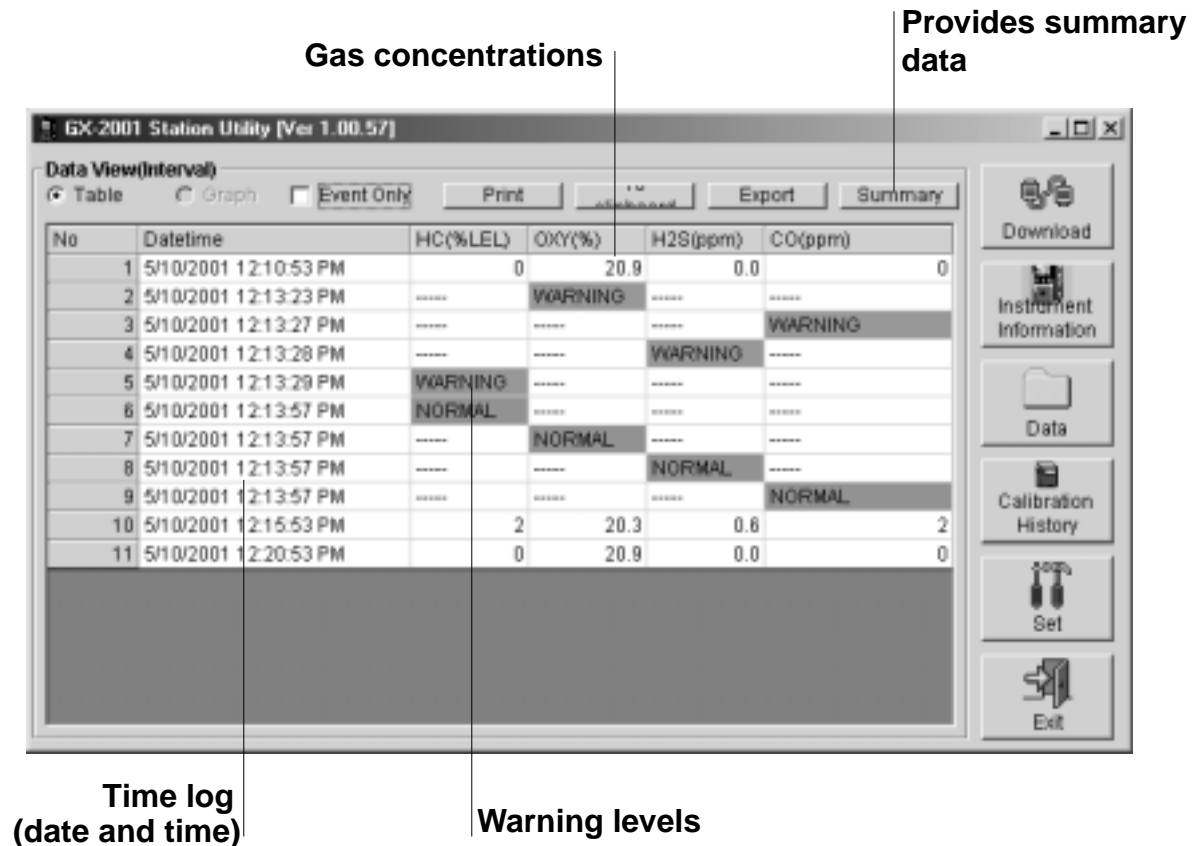
Figure 1. Data View (Interval) Window Showing Gas Concentrations

The above information was obtained after the Model GX-2001 recorded gas concentration levels in the monitoring area. The unit was then placed in the GX-2001 Calibration Station and the information stored in the unit's memory was down loaded to the computer. From the main window of the GX-2001 Data Logging Software, the Data Icon was "clicked" (using the computer mouse) to display the main Data window, from which this screen was displayed.

For a given data session (interval data), there must be at least five scheduled logs (every five minutes) for the data to be seen in graph form. If an interval data session has fewer than five scheduled logs, as in Figure 1 above, the graph button is not available for selection.

Note that the data count shown when you have selected an interval data file, as in Figure 1 above, can be more than five if you have events, such as the Model GX-2001 going into and out of alarm, but you may not have five scheduled log times.

The information on the previous page can also be displayed in summary form by clicking the Summary button.

Gas concentrations   **Warning levels**

Time log
(date and time)
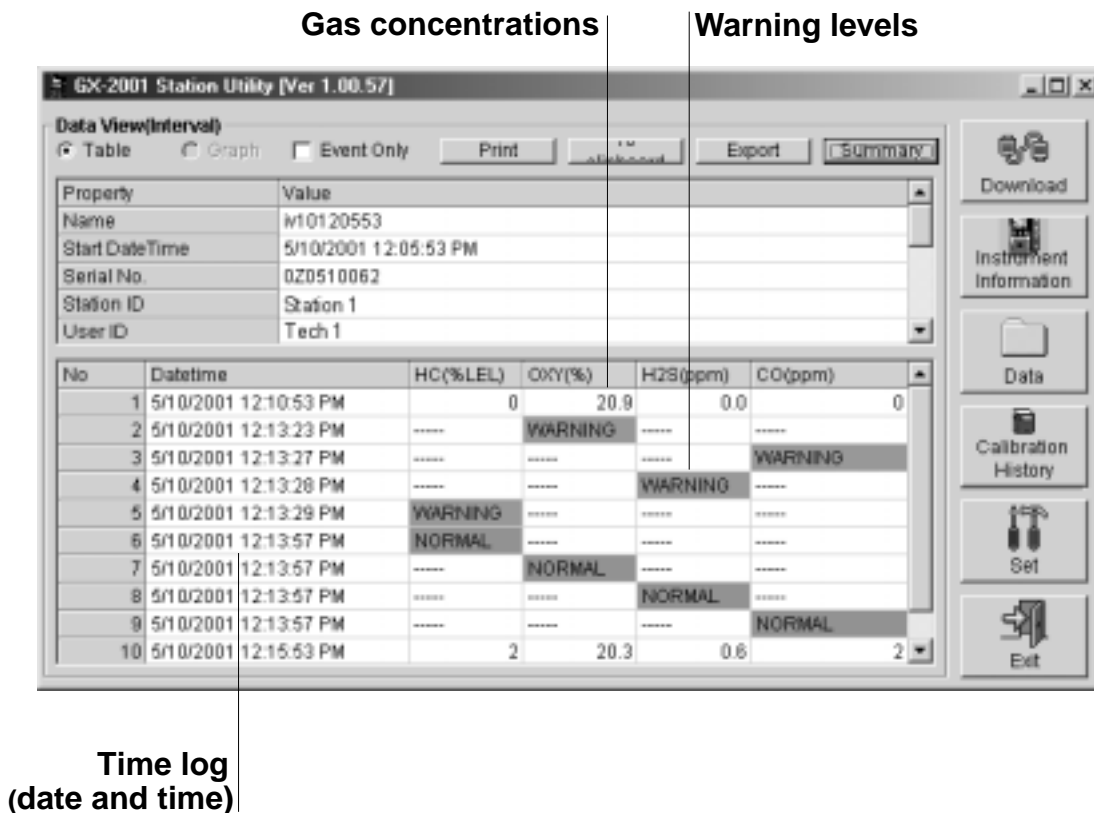
Figure 2. Data View (Interval) Summary Window

Alarm Trend Data

In addition to the interval trend data, the Model GX-2001 also saves a file that describes the most recent event during a particular session.If an event occurs, then an alarm trend file is saved separately from the data file, which shows the reading 15

minutes before and 15 minutes after the event, with the log time every five seconds.

When an event occurs and an alarm trend data file is saved in the Model GX-2001, this file remains in the unit's memory until another event occurs. When another event takes place, the alarm trend data file is overwritten with the information of the new event.

Alarm trend data can always be displayed in either table or graph format. The following figure shows a sample alarm trend graph of the four target gases. It includes the alarm event and the concentrations the four target gases during the alarm event.
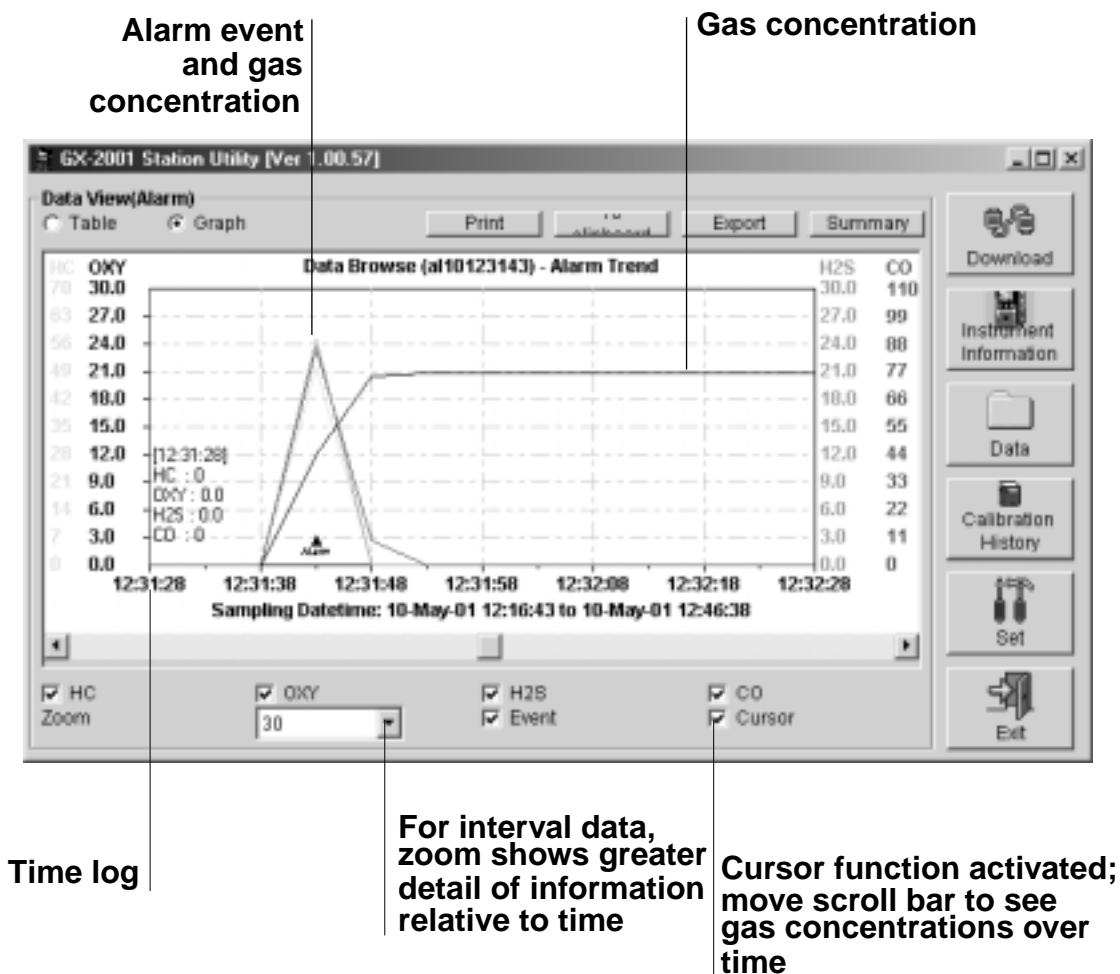
Figure 3. Data View (Alarm) Showing Gas Concentrations at the Alarm Event

Instrument Information and Calibration History

Calibration History on the most recent successful calibration for the Model GX-2001 is available on two screens: the Calibration History and the Instrument Information windows. The Instrument Information window also shows warning levels and alarm levels along with STEL and TWA readings. Both windows, with sample data, are shown below.

Calibration history data   **Before and after calibration settings**

Warning, alarm, STEL, and TWA settings

Figure 4. Instrument Information Window

Before and after calibration settings

Figure 5. Calibration History Window

A Road Map of the Software

The windows on the previous pages are accessed through the Download window of the GX-2001 Data Logging Software. The Download window is the starting point for all GX-2001 Data Logging Software functions, and it is the first screen displayed when you launch the software. The figure below shows the various screens that you can access when you click the icon buttons on the right of the Download window.
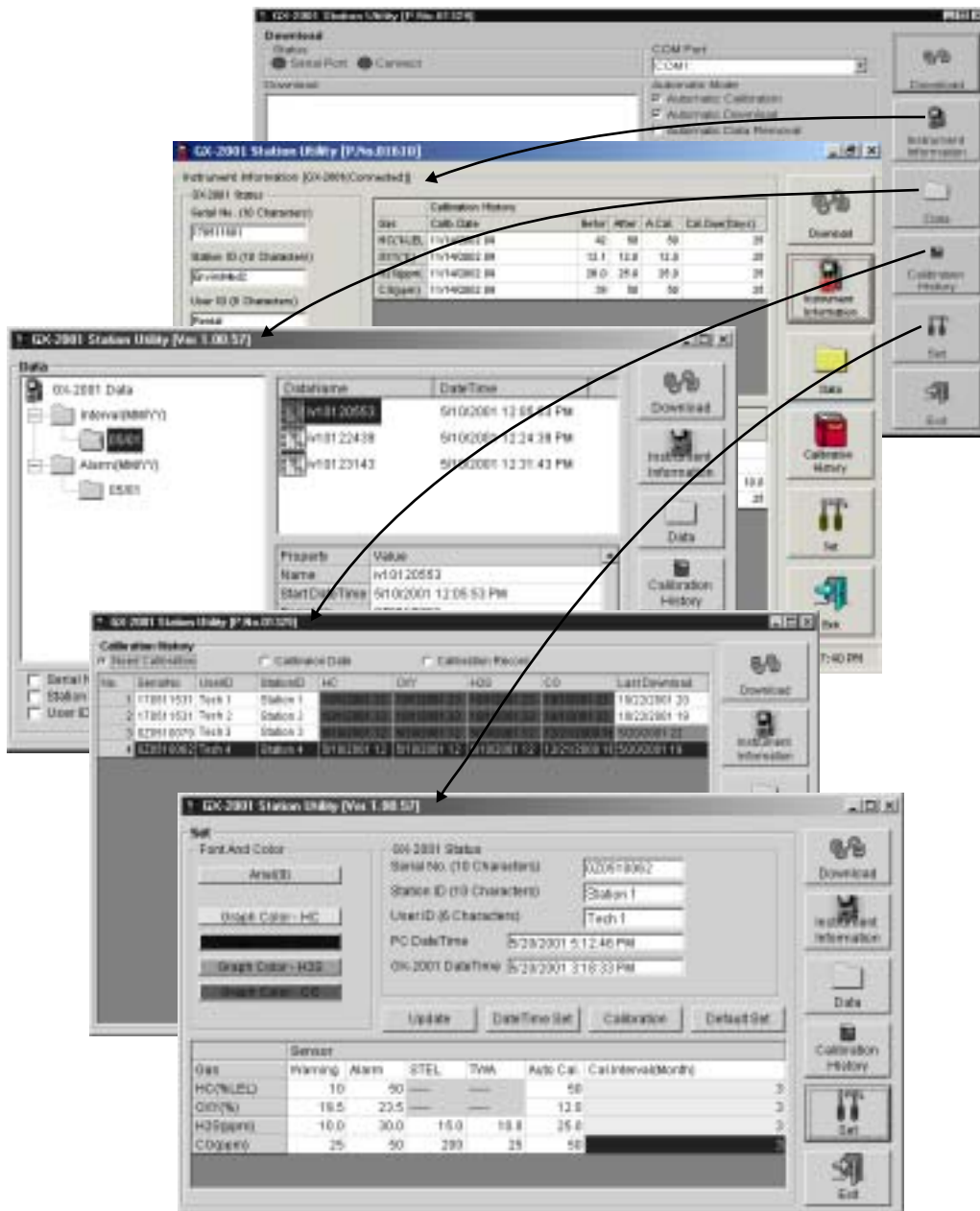
Figure 6. The Software Screens That Are Displayed from the Download Window

Overview of the GX-2001 Calibration Station

This section describes the components of the GX-2001 Calibration Station, which is used for down loading information in the Model GX-2001 and for the calibration of that unit.

Front Panel
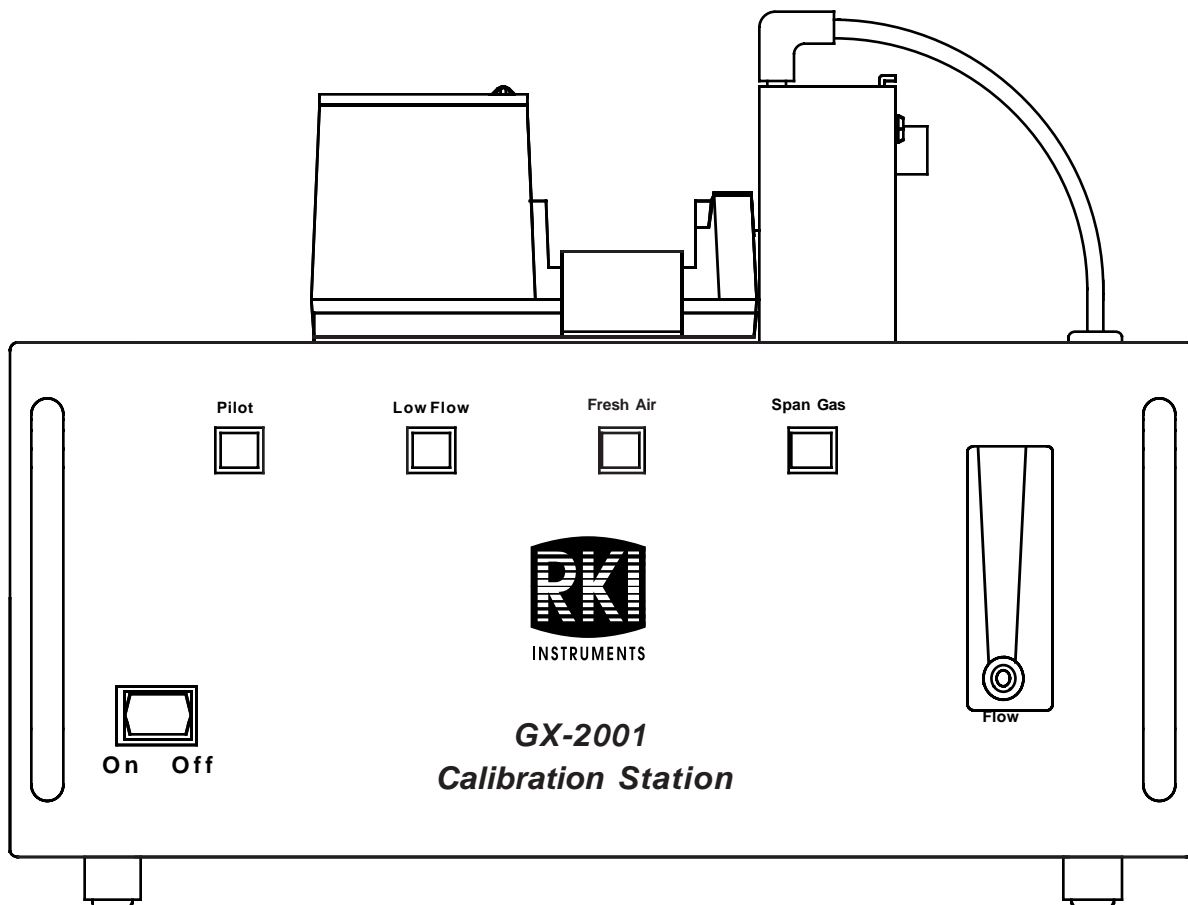
Figure 7. GX-2001 Calibration Station: Front View

The front panel of the GX-2001 Calibration Station has an on/off switch, four indicator lights, a flow meter, and handles.

On/Off Switch. Use this switch to turn on or to turn off the GX-2001 Calibration Station. When downloading information only, you do not have to turn on the GX-2001 Calibration Station. Just plug in the Downloading/Charger Station to a 115 VAC wall outlet.

Indictor Lights. The Pilot light indicates that power has been turned on (or off) to the GX-2001 Calibration Station. The Low Flow light turns on if the flow to the Calibration Adapter is too low. The Fresh Air light illuminates when fresh air is being drawn to the GX-2001 Calibration Station. The Span Gas light turns on when the calibration gas mixture is drawn to the GX-2001 Calibration Station from the gas cylinder during calibration.

Flow Meter. The Flow Meter measures the flow rate of gas or air flowing into the Calibration Adapter using the measurement of standard cubic foot per hour (SCFH). The recommended flow rate for fresh air flow 1.0 SCFH and 0.8 SCFH for span gas flow. You can adjust the fresh air and span gas flow rates on the back of the GX-2001 Calibration Station using a flathead screw driver.

Handles. To carry the Calibration conveniently, use the handles on the front of the unit.

Back Panel
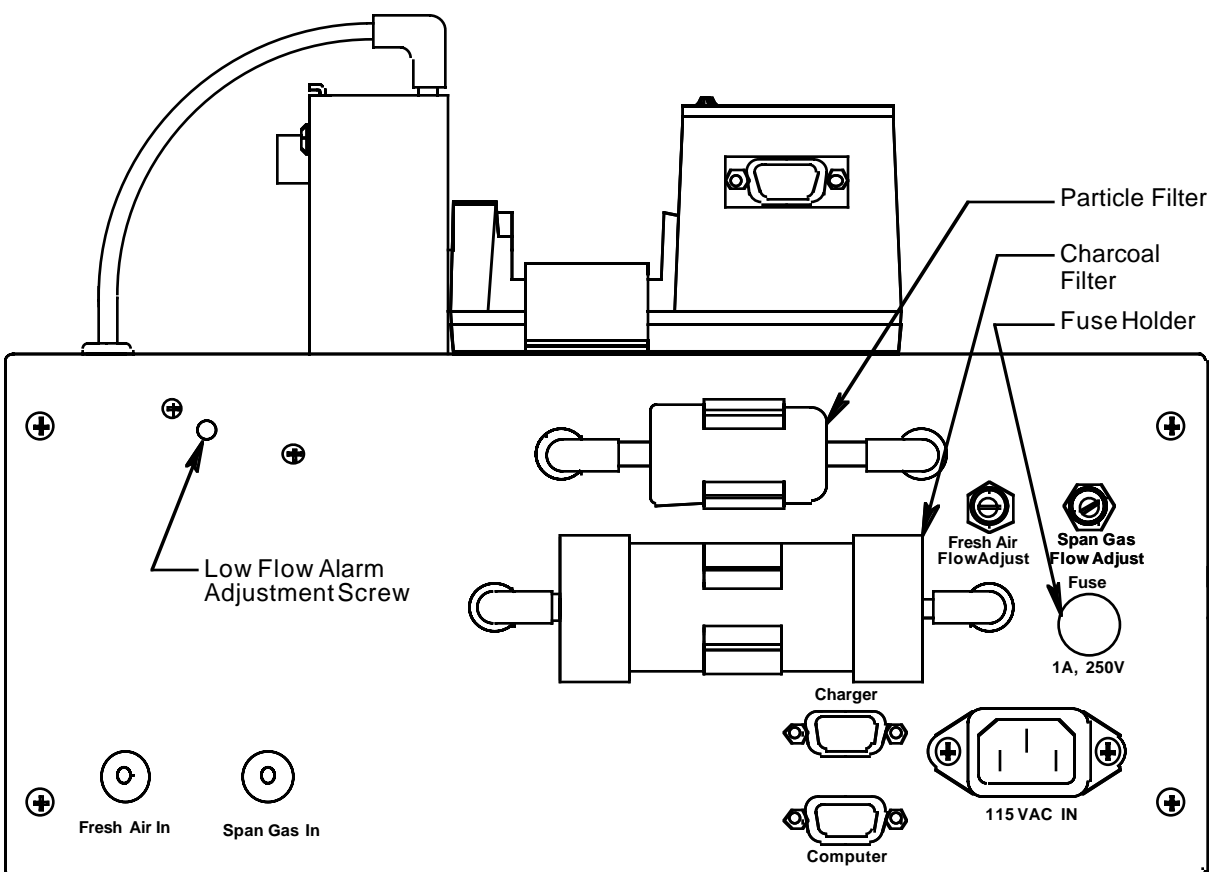
Figure 8. GX-2001 Calibration Station: Back View

The back panel is where you make a number of connections and adjust the flow rate of the span gas and fresh air.

Fresh Air In Fitting. Using a hose barb for 1/8-inch inside diameter tubing, the Fresh Air In fitting is the where you connect the fresh air polyurethane tubing.

Span Gas In Fitting. This connection uses a hose barb for 1/8-inch inside diameter tubing for connection to the cylinder containing the span gas.

Charger Connector. A DB-9 female/female extension cable from the Charger/Downloading Station located on top of the GX-2001 Calibration Station plugs into this connector. Data to and from the Model GX-2001 passes through this cable connection. This cable is factory installed.

Computer Connector. The computer receives its information from the GX-2001 Calibration Station when a DB-9 female/female extension cable is plugged into this connector and the other end of the cable is plugged into a serial port on the computer. A six foot cable is supplied with the Calibration Station.

115 VAC IN Connector. This connector is for the power cord that is provided with the Calibration Station.

Fresh Air Flow Adjustment Valve. Using a flathead screwdriver, you can adjust the fresh air flow rate. The recommended flow rate is 1 SCFH.

Span Gas Flow Adjustment Valve. Using a flathead screwdriver, you can adjust the span gas flow rate. The recommended flow rate is 1 SCFH.

Low Flow Adjustment Screw. Using a small flathead screwdriver, you can adjust the low flow alarm setting.

NOTE: The low flow alarm setting is factory set and does not normally need adjustment in the field. If it does need adjustment, see the Adjusting the Low Flow Alarm section for instructions.

Charcoal Filter. When fresh air is drawn into the GX-2001 Calibration Station, it first passes through the charcoal filter, which removes traces of gas that might be in your work environment. This filter is user-replaceable.

Particle Filter. After the fresh air flow passes through the charcoal filter, it goes through the particle filter, which removes any dust that might be present in your work area. This filter is user-replaceable.

Fuse. A 1/4-inch x 1 1/4-inch fast-acting fuse, rated at 1A, 250V, protects the circuitry of the GX-2001 Calibration Station from electrical overload. The fuse is user-replaceable.

Charger/Downloading Station with Calibration Adapter
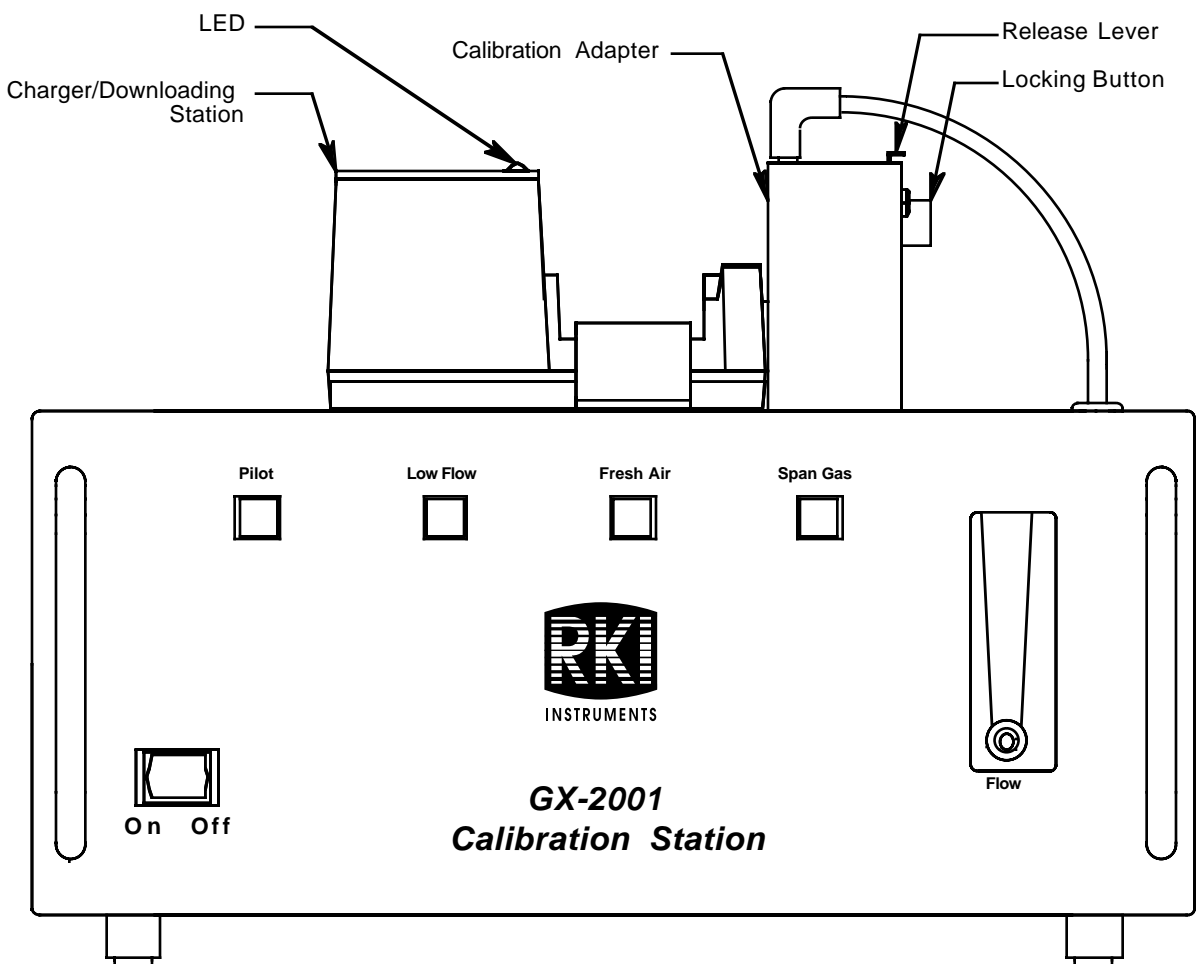
Figure 9. Charger/Downloading Station with Calibration Adapter

These units come pre-assembled from the factory and sit on top of the GX-2001 Calibration Station. The Model GX-2001 fits into the Charger/Downloading Station for the charging of batteries, for the downloading of data to the computer, and for the calibration of the Model GX-2001.

CAUTION: *There are no field-replaceable parts or adjustments to be made inside the GX-2001 Calibration Station. Under no circumstance should you open the chassis of the GX-2001 Calibration Station.*

There is an LED on the top left of the Charger/Downloading Station, which turns on after the Model GX-2001 has been placed in the Data Logging/Charger Station and the power cord for the Data Logging/Charger Station has been plugged into an electrical outlet. When the Model GX-2001 has been fully charged, this light goes off.

The Calibration Adapter is attached to the right side of the Charger/Downloading Station. It routes sample gas over the sensors of the Model GX-2001. On the right side of the Calibration Adapter are two hose barbs, Cal In and Cal Out. The Cal In hose barb is toward the back of the Calibration Adapter and has a tube connected to it which routs span gas and fresh air to the Calibration Adapter from inside the calibration station. The Cal Out hose barb is toward the front of the Calibration Adapter and is not connected to any tubing. It may be used to connect up to 10 feet of 3/16" I.D. tubing to route the exhaust to a hood or outdoors.

CAUTION: *Do not connect more than 10 feet of tubing to the Cal Out fitting. Connecting more than 10 feet of tubing to the Cal Out fitting will result in an inaccurate calibration of the GX-2001.*

To the right of Cal In and Cal Out hose barbs is a black button which, when pushed in, secures the Model GX-2001 to the Data Logging/Charger Station. Next to the black button is a metal release lever which, when pressed down, releases the Model GX-2001.

On the back of the Data Logging/Charger Station is a data connection (made at the factory) which is used to transfer data from the Model GX-2001 to the GX-2001 Calibration Station, where it is then transferred to the computer.

Installing the GX-2001 Data Logging Software

1. Launch Windows$^{\circledR}$.

2. Exit from all applications and open windows.

3. Insert the GX-2001 Data Logging Software CD into your computer's CD-ROM drive. A dialog box displays confirming that you have quit all running applications. Click "OK" to continue.

4. Read and accept the software license agreement, then Click "Next."

5. To install the GX-2001 Data Logging Software in the default directory (**C:/Programs/GX-2001**), click the Computer Icon. Otherwise, choose a new installation directory now.

6. If during software installation the Setup program finds newer versions of Windows files on your computer, it will ask you to keep these newer files. Click "Yes" to do so.

7. Follow the on-screen instructions to complete software installation.

Launching the Software

1. Click Start on the Windows Icon Tray, then select "Programs/ GX-2001."

2. Click "GX-2001." The Download window displays.
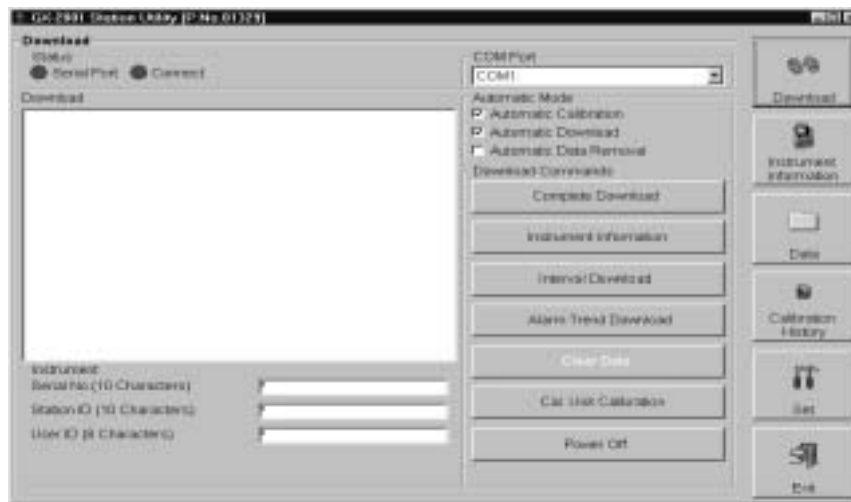
Figure 10. The Download Window

3. For convenience, make a shortcut of the GX-2001 Data Logging Software program and place it on the Windows desktop. See your Windows documentation for information about making shortcuts.

Setting Up the GX-2001 Calibration Station for Down Loading Data

1. Plug the power cable of the Charger/Downloading Station, which sits on top of the GX-2001 Calibration Station, into a 115 VAC electrical outlet.

2. Connect the data cable to the computer connector on the back of the GX-2001 Calibration Station and connect the other end of this cable to the computer's serial port. Refer to your computer's documentation for the location of the serial port.

3. Check the data cable connection between the Charger/ Downloading Station and the charger connector on the back of the GX-2001 Calibration Station. This connection was made at the factory.

4. Make sure that the On/Off switch is in the **off** position. For down loading data, you do *not* need to turn on the GX-2001 Calibration Station.

5. Insert the Model GX-2001 into the Charger/Downloading Station on top of the GX-2001 Calibration Station.

6. Do not lock the calibration adapter over the sensors of the Model GX-2001.

Down Loading Data from the Model GX-2001

You have the option of down loading data manually or automatically. If you want to download information using the automatic download feature, click the "Automatic Download" checkbox in the Download window before placing the Model GX-2001 in the Charger/Downloading Station that sits on top of the GX-2001 Calibration Station. Remember that the Instrument Information window will remain blank after Automatic Downloading is selected, and the Model GX-2001 will turn off automatically after the data has been downloaded.

Click here for automatic downloads
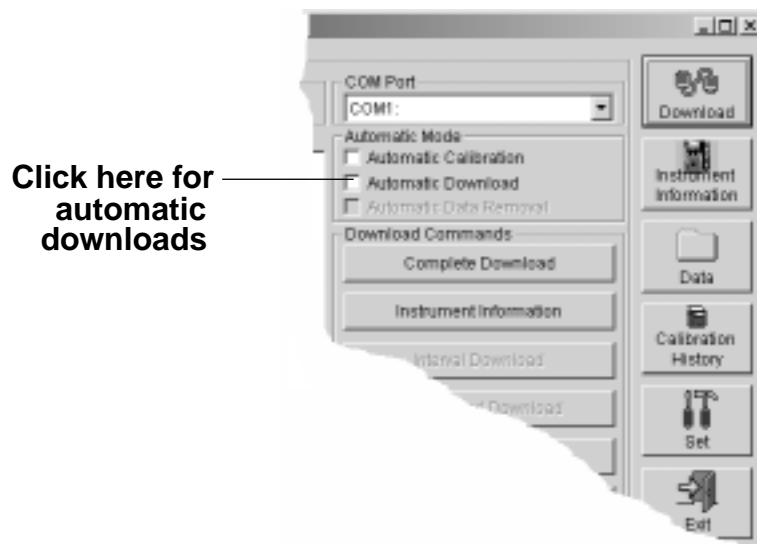
Figure 11. Automatic Download Checkbox

NOTE: Before you attempt to down load data, make sure you have installed the GX-2001 Data Logging Software and have set up the GX-2001 Calibration Station as described in "Setting Up the GX-2001 Calibration Station for Down Loading Data."

1. Launch the GX-2001 Data Logging Software. The Download Window displays.

2. Place the GX-2001 into the Charger/Downloading Station that sits on top of the GX-2001 Calibration Station.

3. Choose the COM port on the computer to which you have connected the Data Logging/Charger Station.

4. Press the Mode/Power button on the Model GX-2001. "Conn" displays on the Model GX-2001 LCD and "GX-2001...Connected Successful." displays in the Download area of the Download window.

Figure 12. Connection Message

5. If you have selected "Automatic Download," the downloading process begins automatically after you have placed the Model GX-2001 in the Data Logging/Charger Station and after you have turned on the unit by pressing the Mode/Power button.

6. If you are going to down load data manually, you can down load all information at once, or you can load only the information you want.

- To down load instrument information only, click "Instrument Information."

- To down load interval information, click "Interval Download."

- To down load alarm trend data only, click "Alarm Trend."

Figure 13. Download Options

7. After the data has been down loaded successfully, messages are displayed in the Download area of the Download window. (See the figure on the following page.) These messages tell you what type of information has been down loaded.

Download messages — **Use to down load all data** — **Instrument data** — **Use to down load subsets of the data** — **Clear data button**
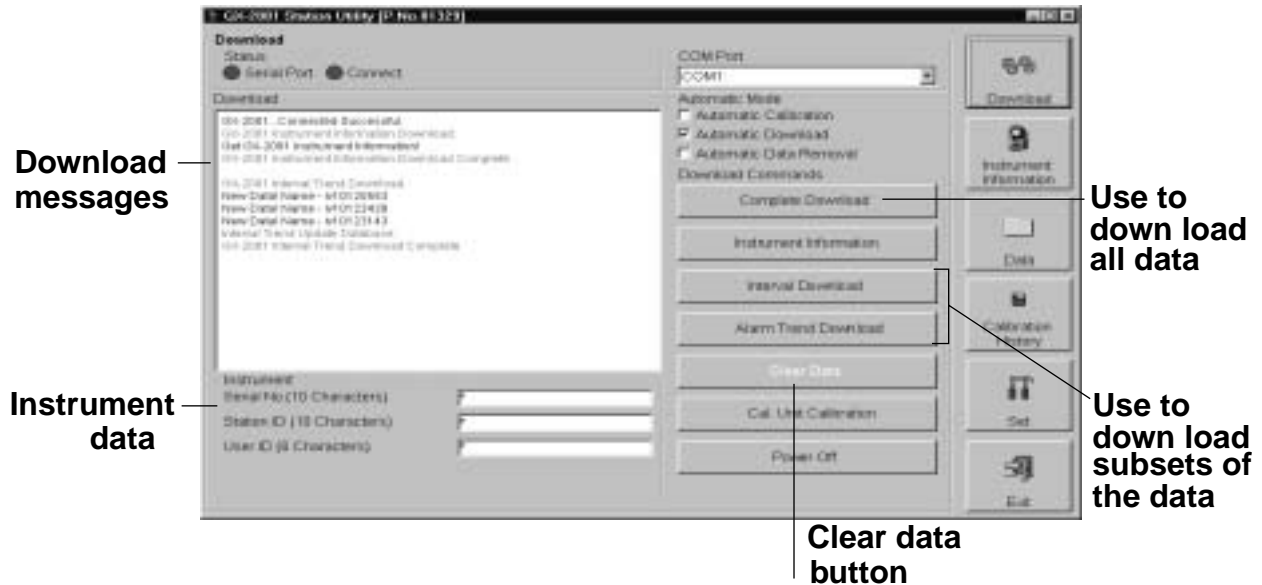
Figure 14. Download Messages in the Download Window

8. You can view, print, or save the downloaded information. Or you can delete all the data in the Model GX-2001 by clicking the "Clear Data" button.

WARNING: If you click the Clear Data button, all data is erased in the Model GX-2001, but not in your computer's memory. So it's advisable that you save the data to your hard drive first before deleting the data in the Model GX-2001.

Viewing, Printing, Exporting, and Deleting Data

You can view instrument information, interval data, alarm data, and calibration history. Interval and alarm data can be printed and saved to a file. Calibration history can be printed.

Viewing Instrument Information

To view instrument information for the last unit downloaded during a session, click the Instrument Information button on the Download window. The Instrument Information window displays. This screen cannot be printed from the downloading software. The Calibration History information is saved in the Calibration History window which is accessible by pressing the Calibration History button.
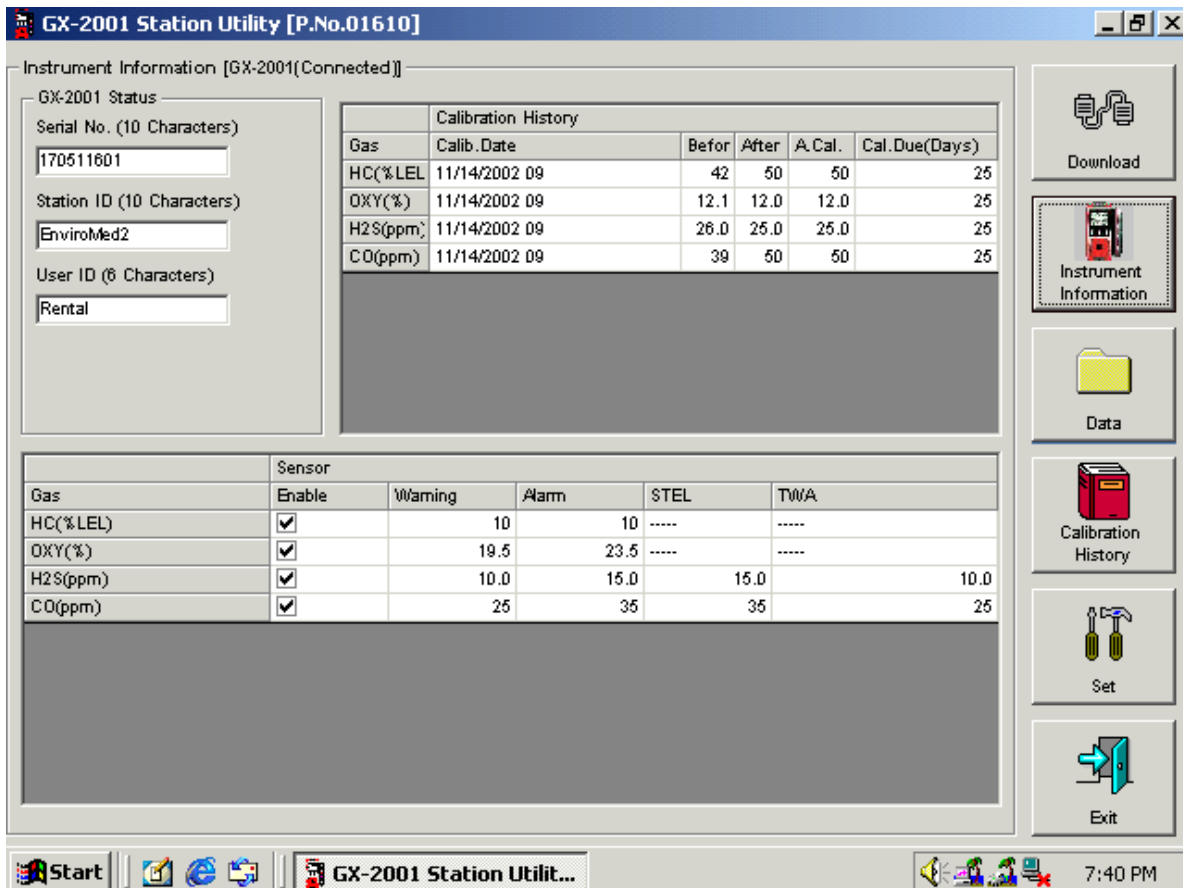
Figure 15. Instrument Information Window

Viewing Interval and Alarm Data
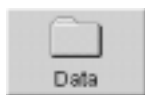
To view interval and alarm data, click the Data button on the Download window. The Data window displays.

Double-click to see the data files

Check to organize files
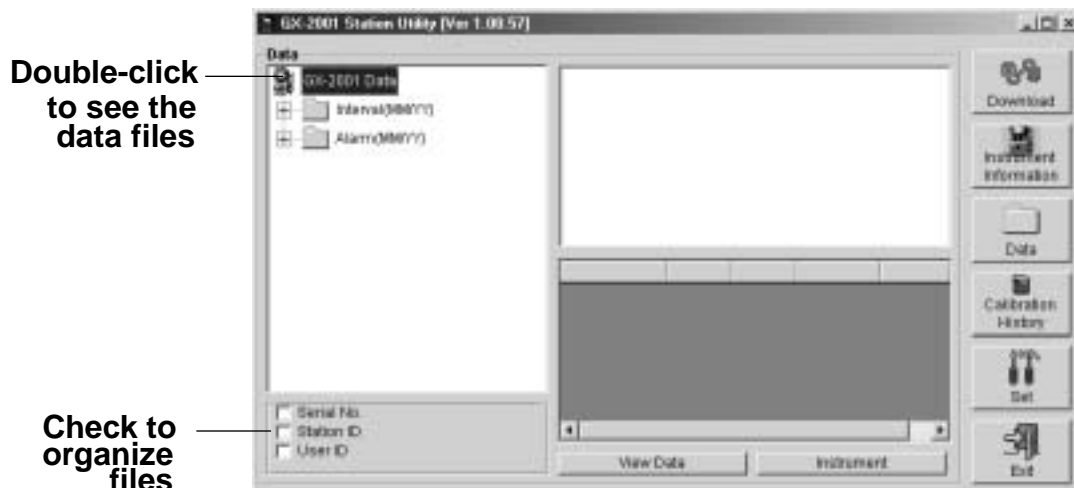
Figure 16. Data Window

To see the data, do the following:

1. Double-click the GX-2001 icon in the Data area of the Data window to see the files holding the interval and alarm data.

2. To view interval or alarm data files (not the actual data), click the interval folder or the alarm folder, respectively.

Click to expand folder

Click to display files

Click to display files

Double click to display data

Session Information
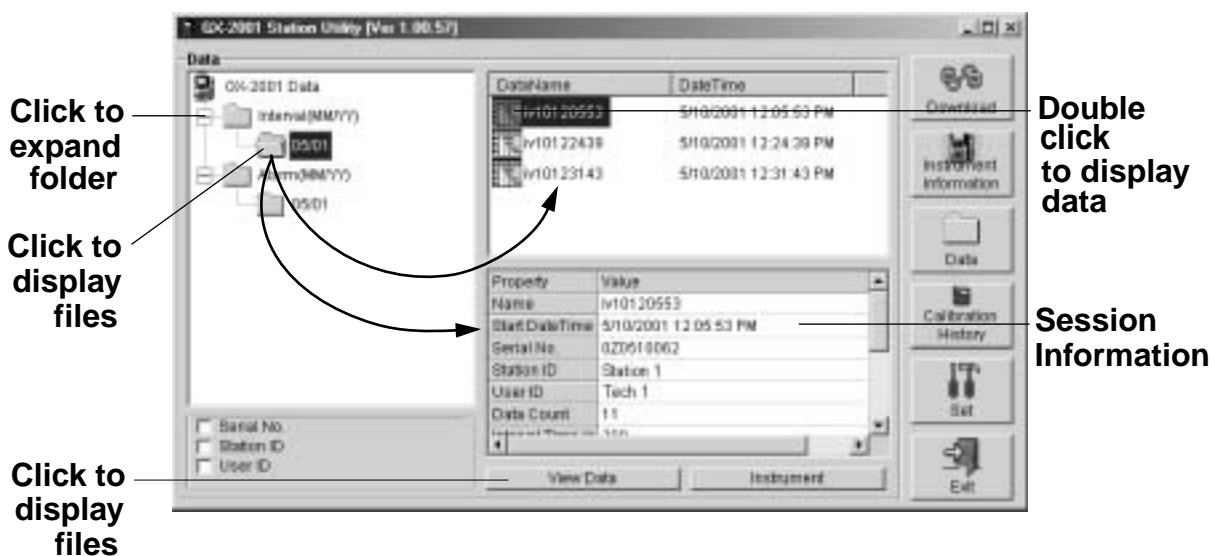
Figure 17. Viewing Expanded Files

3. Next double-click a file to view its contents, or click the View Data button.

4. When viewing interval data, you can see the information in a table format, graph the data if there are more than five scheduled data points, view the data in summary form, or view the events only. Data that has been graphed shows log time, gas concentration levels, and alarm events.

Interval Data

Interval Data with Summary

Figure 18. Interval Data Displayed

5. When viewing alarm data, you can see it either in table or graph form.

Click to print data

Click to transfer data to a file

Click for a summary of the data

Zoom level

Cursor feature
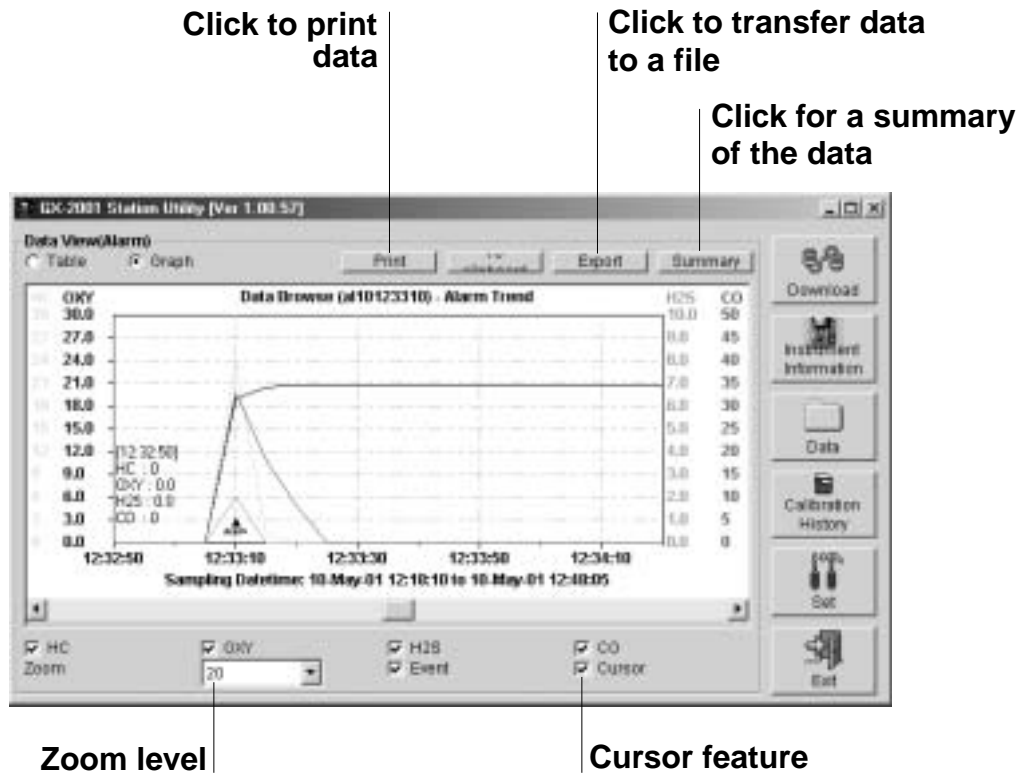
Figure 19. Alarm Data in Graph Form

6. In graph form, five or more events are required for interval trend data. When viewing interval trend or alarm trend information in graph form, you have several options:

• You can choose which gas you want to graph

• You can choose the zoom level, or time interval, on the graph. For alarm trend data, the zoom will always correspond to a particular time division because alarm data files have the same number of data points over the same period of time (every five seconds for 15 minutes before and 15 minutes after an event). For interval data, the zoom feature shows greater detail relative to time. Thus, an interval on the graph will depend on both the length of the datalogging session and on the zoom factor.

- Note that the Cursor feature (applies to both interval and alarm data files) allows you to display the log time. As you use the scroll arrow to move across the graph from left to right, readings at specific log times are displayed.

7. To go back and view other data, click the Data button on the Download window.

Viewing and Printing Calibration History

To view calibration data, click the Calibration History Button on the Download window. The Calibration History window displays.

Figure 20. Calibration History Information: Need Calibration Option

The Calibration History window has three options: Need Calibration, Calibration Date, and Calibration Record.

Need Calibration — shows information only for the Model GX-2001 units that are due for calibration or will be due in less than one day.

Calibration Date — shows the information for all the Model GX-2001 units that are in the software database. The screens used for both options are very similar. Figure 19 shows the Need Calibration Option selected.The fields on the Need Calibration and Calibration Date screens are described below:

NOTE: The Model GX-2001 units that are now due for calibration will have calibration dates highlighted in red for the channels that are now due. For the Model GX-2001 units that are due for calibration in less than one day the calibration dates are highlighted in orange for the channels that will be due. If the calibration interval is "0," then all units are always due for calibration and the calibration dates are highlighted in red.

- **No. —** lists, in numerical order, the sequence of units whose data have been downloaded to the computer. The most recently downloaded unit will be No. 1.

- **SerialNo —** shows the serial number of the unit that was downloaded.

- **UserID —** lists the user ID of the of the unit that was downloaded.

- **StationID —** shows the station ID of the unit that was downloaded.

- **Target Gases (HC, O$_2$, H$_2$S, CO) —** shows when the unit was calibrated for each of the target gases in **MM/DD/YY** format. The last two digits in each field show the time using the 24-hour, military standard.

- **Last Downloaded —** shows when the last download took place for a unit using the **MM/DD/YY** format and the 24-hour, military time standard. This date is shaded purple if the unit has not been downloaded for 90 days or more.

Calibration Record — shows instrument information, before- and after- calibration readings, automatic calibration readings, and calibration due information. The fields on this screen, include SerialNo, UserID, and StationID as in the Need Calibration and Calibration Date screens.

The fields also include the following:

Figure 21. Calibration History Information: Calibration Record Option

- **Gas —** Lists the target gas for which the Before, After, and A.Cal readings are displayed.

- **Before —** shows the settings prior to calibration.

- **After —** shows the settings after calibration.

- **A. Cal. —** lists the auto-calibration setting for each channel of a Model GX-2001 unit. If a unit passes its calibration, the "After" column should match the "A. Cal." column. If the unit fails calibration on any of its channels, those channels will retain the previous calibration information.

NOTE: If a unit is calibrated using the Single Calibration menu in the GX-2001 (see the GX-2001 instruction manual) it is possible for the "After" reading to be different from the "A.Cal" setting if the unit was set to a level different than the "A.Cal" setting.

- **Cal. Due (Days)** — shows when calibration is due in days (e.g., "Remaining 25 days" means that calibration is due in 25 days, and "Now" means that calibration is due immediately).

To print calibration data for any instrument, select the Need Calibration or Calibration Date option when in the Calibration History Window and then right click on the calibration record you want to print. Select the Print option, then select the printer and click OK to print the calibration record. It is possible to print only the calibration record for one instrument at a time.

Printing and Exporting Data

To print your interval and alarm data, do the following:

1. From the Data window, double-click the data file you want to print. (You can also click (select) the file you want to print, then click the View Data button.) You can only print one file at a time. The Data View window displays.
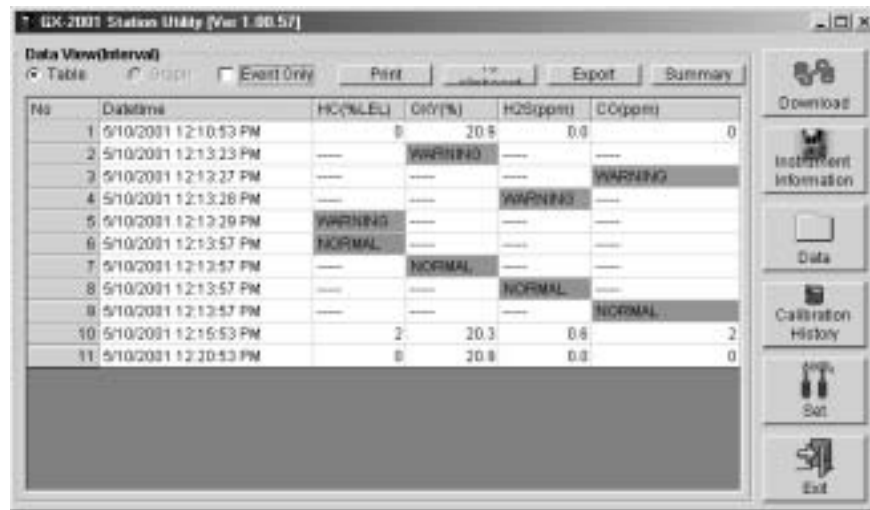
Figure 22. Printing and Saving Data Through the Data View Window

2. Click the Print button.

3. In the Printer dialog box, choose the printer to which you would like to print, then click the Print button.

To export interval and alarm data, do the following:

1. From the Display window, double-click the data file you want to export. (You can also click (select) the file you want to export, then click the View Data button.) You can only export one file at a time. The Data View window displays.

2. There are two ways to export.

    If you click the To Clipboard button, the table or graph displayed is copied to the clipboard. The clipboard file can then be pasted into a word processing or spreadsheet program.

    If you click the Export button, you can save the file to the hard drive or a floppy by following steps 3 and 4 below.

3. If you press the Export button, the Save As dialog box displays. In this window, you can choose the file type and its destination.

    Your choices for file type depend on whether you have selected either the table or graph feature. If you have the data in graph form, you can only export the data as a bitmap file. If you have the data in table format, you can save it as either a text file, or as two types of spreadsheet, importable files.

4. Click "Save" after you have finished specifying all the required information.

Figure 23. Save as Dialog Box

Deleting Data and Changing the Password

To delete data files, place the cursor on the file and click with the right mouse button. When the Delete box appears, right click it and click the yes button when the Delete Sample window appears.

To delete data files, select the Need Calibration or Calibration Date option, place the cursor on the file and click with the right mouse button. When the Print/Delete box appears, right click on Delete. When you delete Calibration History files, the Data Logging software asks you for a password. The password when the software is first installed is **rki**.

It is possible to change that password, as follows:

1. Right-click a file you want to delete. The "Please Input Password" screen displays.

2. Click Change Password.

3. Type the current password, then click the Current Password button.

4. Type the new password and click the New Password button.

5. Type the new password again, then click the confirm New Password button.

6. Click "OK" when the program asks if you want to change the password.

7. Close the password window.

Changing Data Logging Parameters

To make changes to settings stored in the Model GX-2001, use the Set window of the GX-2001 Data Logging Software. Follow the steps below to make these changes.

1. Launch the GX-2001 Data Logging Software.

2. Insert the Model GX-2001 into the GX-2001 Calibration Station.

3. Turn on the Model GX-2001 to make a connection between the Model GX-2001 and the computer.

4. In the Download window, click the Instrument Information button to down load the instrument information from the Model GX-2001 to the computer. You may also use one of the downloading options (e.g., Complete Download, Interval Download, or Alarm Trend Download).

5. Click the Set button in the Download window to display the Set window. Use the Set window to change the instrument information stored in the Model GX-2001.

Click to upload changes to the Model GX-2001
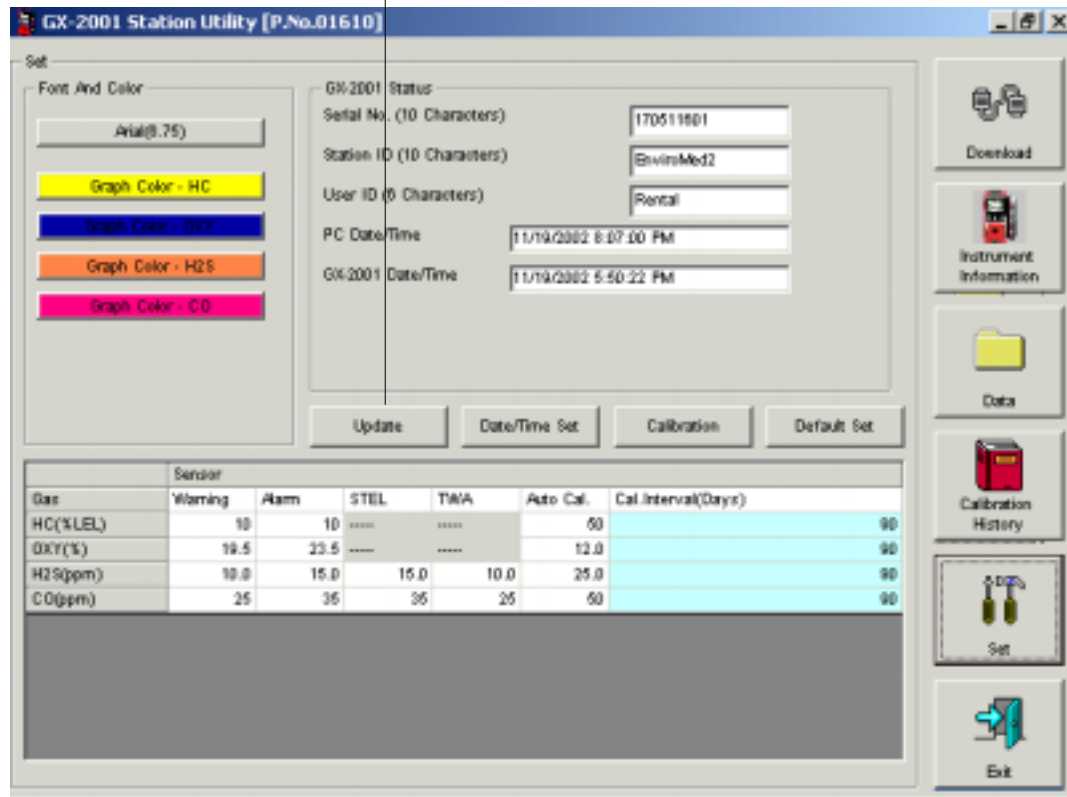
Figure 24. Set Window

6. To change the serial number, station ID, or user ID stored in the Model GX-2001, click the field you wish to change (e.g., user ID), use the backspace key to remove the current entry, then type the new information.

7. To change the channel parameters, click the field you wish to change (e.g., HC AutoCal.), use the Back Space key, then type the new information.

8. After you have finished entering new parameters, you must upload this information to the Model GX-2001 by clicking the Update button.

9. Exit the Set window by either clicking the Download button, if you have more units to calibrate or to enter instrument information for, or by clicking the Exit button, which will close the GX-2001 Data Logging Software.

10. Next, turn off the Model GX-2001 by pressing and holding the Mode button on the unit. Then remove the unit from the Calibration Station.

Changing the Appearance
of Data Logging Reports

To change how data is displayed in reports (e.g., text fonts and graph colors), use the Set window of the GX-2001 Data Logging Software. Follow the steps below to make these changes.

1. Launch the GX-2001 Data Logging Software.

2. Click the Set button in the Download window to display the Set window.

**Click to change
font type**
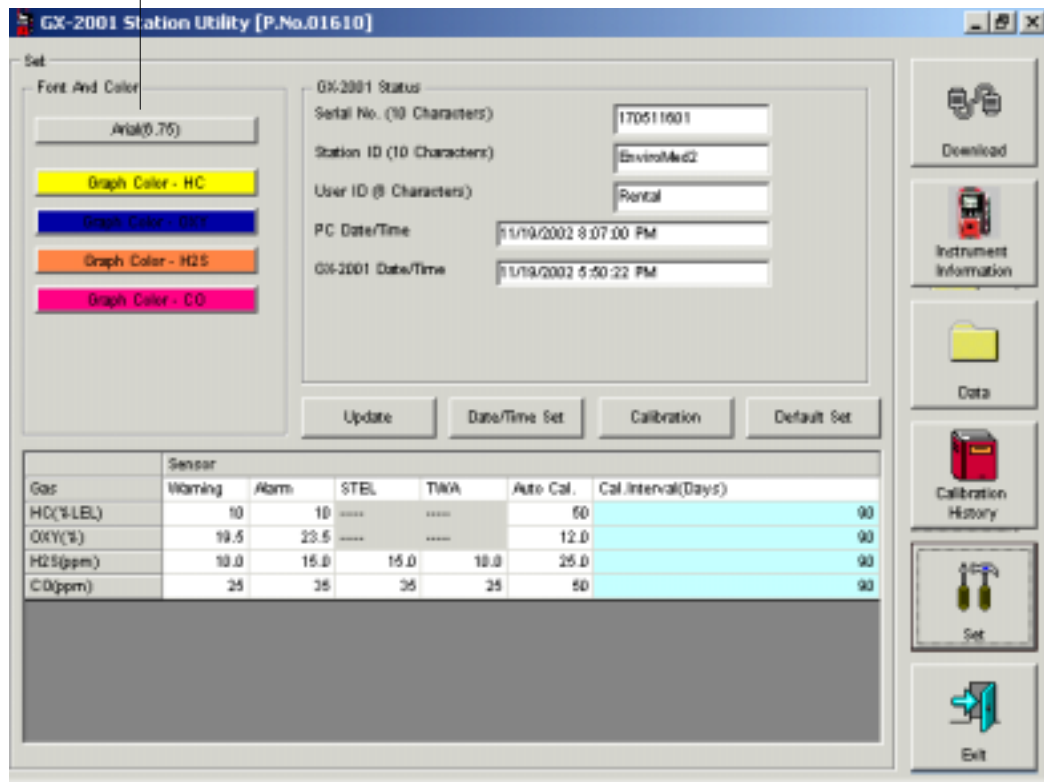
**Choose these options
to change the graph
colors for the target gases**

Figure 25. Set Window Used to Change the Appearance of Reports

3. Specify new fonts for data reports by clicking the button with the name of a font inscribed upon it. This action will display the Font window. Choose the font type, style, and size for your data reports.
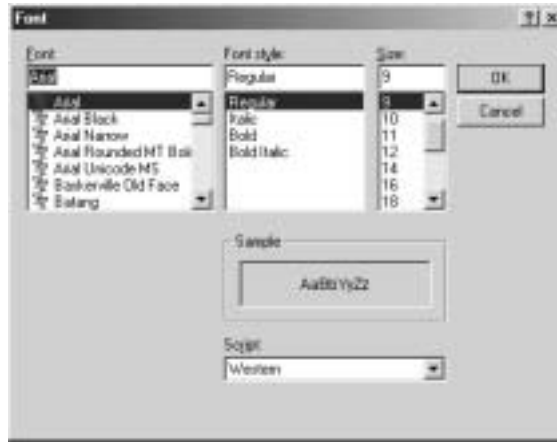
Figure 26. Font Window

4. Select the colors used to graph the various target gases in the alarm data report. To do this, click the buttons on the left side of the Set window in the "Font and Color" area of the screen.
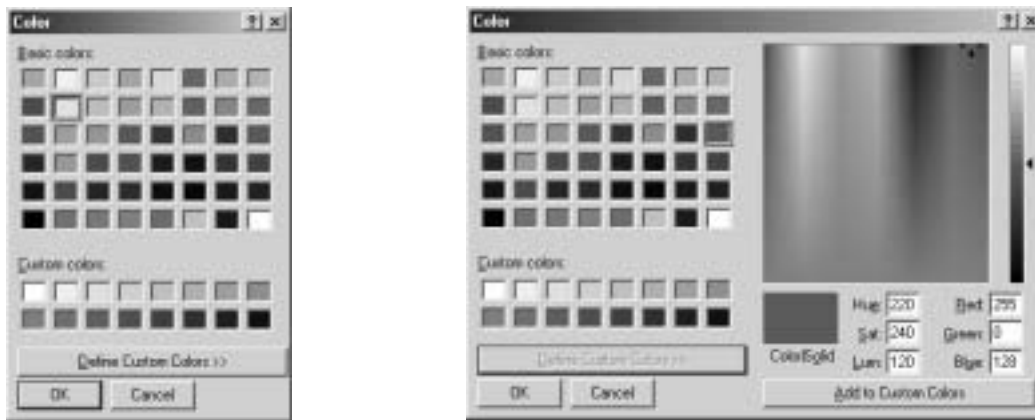
Figure 27. Color and Custom Color Windows

5. The changes you have made will take effect after you restart the Data Logging Software.

Calibrating the Model GX-2001
with the Calibration Station

The GX-2001 Data Logging Software allows you to calibrate the Model GX-2001 using the GX-2001 Calibration Station.

During the calibration process, you set the zero and span readings for the Model GX-2001. You can accomplish this task by using the Automatic Calibration feature in the Download window.

Precautions

During the calibration process, you may be using low levels of both toxic and combustible gases. Follow all the safety procedures established by your company. Read all the instructions in this section carefully before calibrating the Model GX-2001. If possible perform calibration procedures under an exhaust hood. And make sure that the exhaust tubing connected to the Cal Out hose barb (maximum of 10 feet long) on the GX-2001 Calibration Station leads to an environment outside and away from ventilation and air conditioning ducts. For more information about the safe handling of calibration gases, please read the material safety data sheets for your calibration cylinder which are available from RKI Instruments Inc. upon request.

Required Items for Calibration

GX-2001 Calibration Station. Efficient calibration is made possible by the GX-2001 Calibration Station. This unit has a charger and calibration adapter mounted on top of its cabinet for the convenient calibrating of Model GX-2001 units. The front panel of the GX-2001 Calibration Station has four square LEDs plus a flow meter that provide valuable information about the calibration process. For more information about the GX-2001 Calibration Station, see "Overview of the GX-2001 Calibration Station."

GX-2001 Data Logging Software. This software makes it possible to down load and store data contained in the Model GX-2001, and it controls the calibration process.

Demand Flow Regulator. This item comes with the GX-2001 Calibration Station. It screws into the top of the calibration gas cylinder and controls the flow of gas from the cylinder to the GX-2001 Calibration Station.

Gas Cylinder. A four-gas, 58 liter cylinder comes as standard equipment with the GX-2001 Calibration Station. It contains 50% LEL methane (CH_4), 12% oxygen (O_2), 50 ppm carbon monoxide (CO), and 25 ppm hydrogen sulfide (H_2S). The balance gas is nitrogen (N_2).

Polyurethane Tubing. Three feet of 1/4-inch OD x 1/8-inch ID polyurethane tubing comes as standard equipment to connect the regulator to the "Span Gas In" fitting on the back of the GX-2001 Calibration Station. The GX-2001 Calibration Station also includes a short piece of 3/16-inch ID x 5/16-inch OD polyurethane tubing connected to the regulator with an adaptor to connect it to 1/4-inch tubing. Additional tubing for use with the Fresh Air In and Exhaust fittings may be purchased separately.

Extension Cables. Two six-foot DB-9 female/female extension cables are included with the GX-2001 Calibration Station.

Power Cord. A power cord connects the GX-2001 Calibration Station to an electrical outlet.

Calibrating a Three-Gas Model GX-2001

If you have a three-gas Model GX-2001 unit that measures methane, oxygen, and hydrogen sulfide, you will still need to use the four-gas calibration cylinder described above.

If you have a three-gas Model GX-2001 unit that measures methane, oxygen, and carbon monoxide, then you can use a three-gas mix with methane, oxygen, and carbon monoxide to calibrate. This cylinder is a 103 liter cylinder and it has the following concentrations: 50% LEL CH4, 12.0% O2, and 50 ppm CO. See the Parts List at the end of this manual for the three-gas mix RKI part number.

Preparing for Calibration

1. Plug the power cable of the GX-2001 Calibration Station into a 115 VAC electrical outlet.

2. Plug the power cable of the Data Logging/Charger Station into a 115 VAC electrical outlet.

3. Connect one end of the data cable to the computer connector on the back of the GX-2001 Calibration Station. Connect the other end of this cable to the computer's serial port. Refer to your computer's documentation for the location of the serial port.

4. Check the data cable connection between the Charger/Downloading Station and the charger connector on the back of the GX-2001 Calibration Station. This connection was made at the factory.

5. Connect up to 10 feet of 3/16" I.D. flexible tubing to the Cal Out hose barb on the Calibration Adapter on the top of the Calibration Station. Make sure to run this tubing to an exhaust hood or outdoors away from fresh air vents and air conditioning ducts. Alternately, you may place the GX-2001 Calibration Station underneath an exhaust hood. (Remember to turn on the exhaust hood before calibration begins.)

CAUTION: *Do not connect more than 10 feet of tubing to the exhaust fitting. Connecting more than 10 feet of tubing to the exhaust fitting will result in an inaccurate calibration of the GX-2001.*

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6. If necessary, connect flexible tubing to the Fresh Air In fitting on the back of the GX-2001 Calibration Station. Use this fitting if you suspect that the area around the GX-2001 Calibration Station is not a fresh-air environment and you want to draw fresh air from a remote location.

7. Screw the regulator onto the calibration gas cylinder.

8. Connect the polyurethane tubing from the regulator to the Span Gas In fitting on the back of the GX-2001 Calibration Station.

9. Make sure the Calibration In and Calibration Out tubing is properly attached to the Calibration Adapter. This tubing was connected at the factory.

Auto-Calibrating the Model GX-2001

1. Make sure you have properly setup the GX-2001 Calibration Station following the instructions under "Preparing for Calibration."

2. Turn on the computer, then launch the GX-2001 Data Logging Software.

3. Check the Automatic Calibration box on the Download window.

Figure 28. Choosing the Automatic Calibration Option

4. Using the On/Off switch, turn on the GX-2001 Calibration Station.

5. Insert the Model GX-2001 into the Data Logging/Charger Station on top of the GX-2001 Calibration Station.

6. Lock the Calibration Adapter onto the Model GX-2001 by pressing the black button on the right side of the Calibration Adapter.

CAUTION: *Make sure to lock the calibration adapter onto the GX-2001 before continuing or an inaccurate calibration will result.*
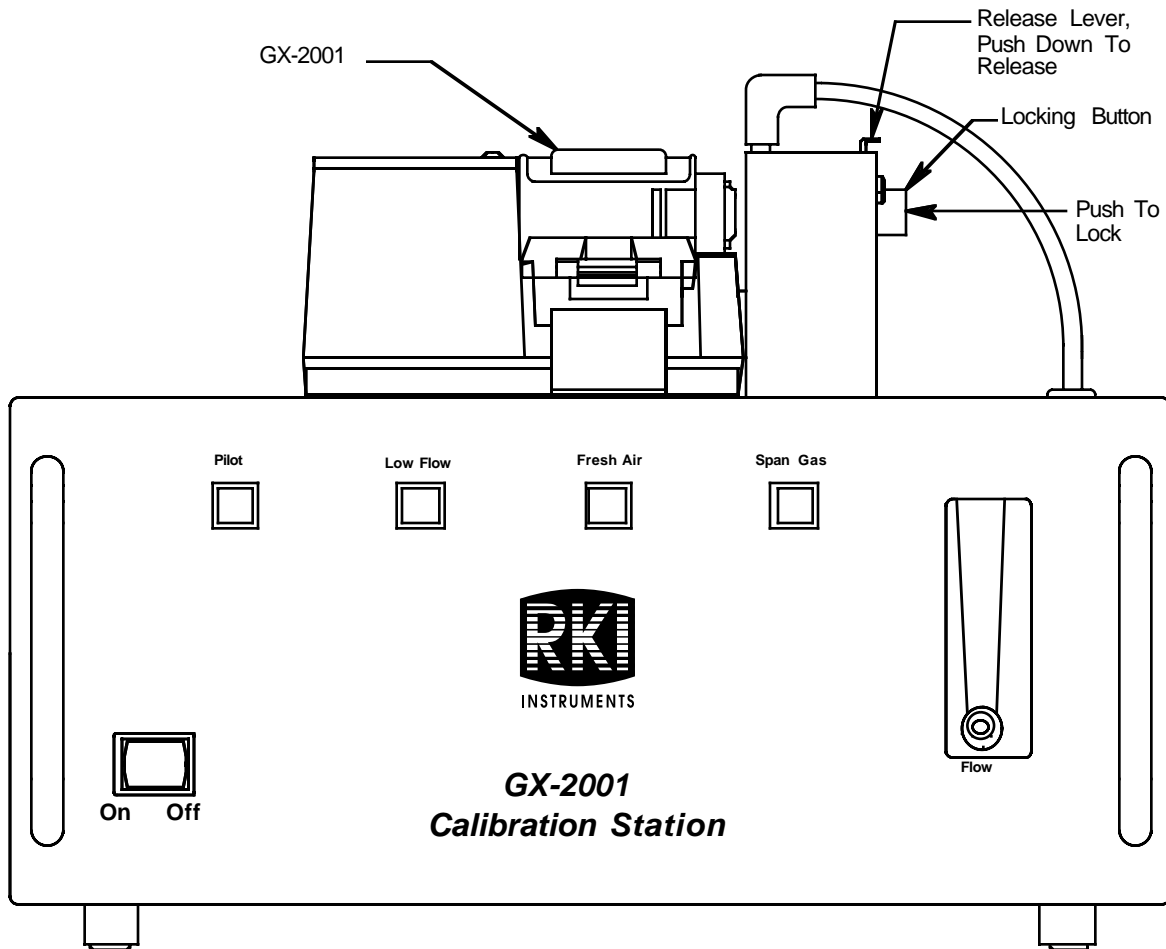
Figure 29. Inserting the Model GX-2001 Into the GX-2001 Calibration Station

7. Turn on the Model GX-2001 by pressing and holding the Mode button on the Model GX-2001 for about one second. The Downloading Software will retrieve instrument information. If the Model GX-2001 is due for calibration, it will be calibrated. If the Model GX-2001 is not due for calibration, the unit will not be calibrated. If you still want to calibrate the unit, see the next section, "Manual Calibration."

NOTE: If the Cal. Interval is set to 0 days, then calibration will always be due and the software will always proceed with the calibration process. See the Calibration Interval section below for precautions when setting the Cal. Interval to 0.

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8. The calibration sequence begins automatically.

CAUTION: *The recommended fresh air flow rate is 1.0 SCFH and the recommended span gas flow rate is 0.8 SCFH. Verify that the span gas flow rate is set to 0.8 SCFH.*

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9. After the Model GX-2001 has been calibrated, remove it from the Charger/Downloading Charger Station by pressing down on the metal release lever located on the right side of the Calibration Adapter.

10. Place another Model GX-2001 in the Charger/Downloading Station if you have other unit(s) to calibrate. Repeat steps 5 – 9 above.

11. When you are done calibrating, remove the regulator from the gas cylinder.

12. Disconnect the regulator from the Span Gas In tubing. Store the regulator and gas cylinder in a safe place.

13. Turn off the Calibration Station.

Manual Calibration

If the Model GX-2001 is not due for calibration, you can still calibrate the unit with the Calibration Station using the Cal. Unit Calibration button on the Download window.

NOTE: If manually calibrating a unit more than once in an hour, see the Calibration Interval section below for precautions.

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1. Make sure you have properly setup the GX-2001 Calibration Station following the instructions under "Preparing for Calibration."

2. Turn on the computer, then launch the GX-2001 Data Logging Software.

3. Make sure that the Automatic Calibration box on the Download window is unchecked, or left blank.

4. Using the On/Off switch, turn on the GX-2001 Calibration Station.

5. Insert the Model GX-2001 into the Charger/Downloading Station on top of the GX-2001 Calibration Station.

6. Lock the Calibration Adapter onto the Model GX-2001 into place by pressing the black button on the right side of the Calibration Adapter. (Refer to Figure 26.)

7. Turn on the Model GX-2001 by pressing and holding the Mode button on the Model GX-2001 for about one second.

8. Download information from the Model GX-2001 by clicking either the Instrument Information button or the Complete Download button. This action activates the Cal. Unit Calibration button.

9. To begin calibration, click the "Cal. Unit Calibration" button on the Download window.

Figure 30. Choosing the Cal. Unit Calibration Option

10. After the Model GX-2001 has been calibrated, remove it from the Charger/Downloading Station by pressing down on the metal release lever located on the right side of the Calibration Adapter.

11. Place another Model GX-2001 in the Data Logging/Charger Station if you have other unit(s) to calibrate. Repeat steps 5 – 10 above.

12. When you are done calibrating, remove the regulator from the gas cylinder.

13. Disconnect the regulator from the Span Gas In tubing. Store the regulator and gas cylinder in a safe place.

14. Turn off the Calibration Station.

Flow Rate

The recommend flow rate for fresh air flow is 1.0 SCFH. and 0.8 SCFH for span gas flow. The low flow alarm is set at 0.4 ± 0.1 SCFH, and will sound if the flow rate reaches this level. If the flow rate drops below the recommended flow rate during calibration, you can adjust the flow rate by making adjustments using a flat head screw driver to either the Fresh Air Flow Adjust Valve or the Span Gas Flow Adjust Valves on the back of the GX-2001 Calibration Station.

The low flow alarm setting is factory set and should not require field adjustment. If adjustment is required, see the Maintenance section below for instructions.

Calibration Failure

Under most circumstances, calibration should proceed smoothly. Should a calibration failure occur, it would be due to one of four reasons:

* The calibration adapter was not locked onto the GX-2001 during calibration.

* If you attempt to calibrate the Model GX-2001 without applying the span gas.

* If you do not set the auto calibration values in the Set window to match the concentration of the span gas in the cylinder, this may result in a calibration failure. Make sure these values are the same for an accurate calibration.

* One of the sensors in the Model GX-2001 could have malfunctioned and needs replacing. If the span gas has been applied and the auto calibration values are the same as the span gas concentrations in the cylinder, then it is likely there is a problem with one of the Model GX-2001 sensors. Refer to the Model GX-2001 Operator's Manual for more information about the sensors in the Model GX-2001 and how you can change them.

Calibration Interval

In the Set Menu of the GX-2001 Data Logging Software, there is a data field called Cal. Interval. The value entered into this data field is stored in the computer, not the GX-2001. It indicates the calibration interval, in days, for the Model GX-2001. If you set the Cal. Interval to 0, for example, the calibration will always be due whenever you place the Model GX-2001 in the GX-2001 Calibration Station. If you set the value to 30, the calibration will be due 30 days from the last calibration date saved in the Model GX-2001.

Multiple Calibrations Within an Hour

Because of the way the Data Logging Software stores a particular unit's calibration date and time to determine if it is due for calibration when using the calibration station, it will not indicate a calibration error in one particular situation when the calibration station is used to calibrate a particular unit more than once in a one hour period. **This occurs only if a calibration is attempted within one hour of a successful calibration and calibration gas is not applied.** In this case the software will display the calibration data from the previous successful calibration and will not indicate a failure. **The data from the previous successful calibration will remain stored in the unit so the unit will remain calibrated accurately.** If calibration gas is applied when attempting a calibration within one hour of a successful calibration, then the calibration process will proceed normally.

Charging the Model GX-2001 with the Calibration Station

The Calibration Station can be used to charge a GX-2001 by using the Charger/Downloading Station located on top of the Calibration Station.

1. Plug the Charger/Downloading Station power cord into a 115 VAC outlet. It is not necessary to connect the Calibration Station power cord to power or to connect the Calibration Station to a computer.

2. Place the GX-2001 into the Charger/Downloading Station.

3. While the unit is being charged, the red LED on the top face of the Charger/Downloading Station is on.

4. When the red LED turns off, the GX-2001's battery pack is fully charged. It takes approximately 90 minutes to recharge a fully discharged battery pack.

5. To verify whether the battery pack is fully recharged, remove the unit from the battery charger, then press the MODE/POWER button to start up the unit. If the battery icon on the LCD is fully colored in, then the unit has been completely recharged.

NOTE: A battery pack will have a typical service life of 500 charging cycles minimum.

When using the GX-2001, be sure to drain the battery as much as possible before recharging. If the battery is regularly only partially drained before charging, the battery will experience a "memory effect" and the run time of the instrument will be decreased.

Maintaining the GX-2001 Calibration Station

This section tells you how to change the filters and fuse of the GX-2001 Calibration Station and adjust the low flow alarm if necessary.

Changing the Filters

There are two filters (a charcoal filter and a particulate filter) on the back of the GX-2001 Calibration Station that will need periodic replacement. Both filters filter the fresh air that is drawn into the GX-2001 Calibration Station. Change the particulate filter (the smaller filter located above the charcoal filter) when it looks dirty. The charcoal filter scrubs out any H_2S or hydrocarbons that may be present in the fresh air sample. You

should consider replacing the charcoal filter once a year, and in the case of H_2S or hydrocarbon contamination, more frequently, like every three-to-six months, depending on the level of the contamination.

To change one of the filters, remove the rubber fittings on both ends of the filter, then carefully remove the filter from the metal brackets that hold it to the back of the GX-2001 Calibration Station.

Changing the Fuse

A 1/4-inch x 1 1/4-inch fast-acting fuse rated at 1A, 250V protects the circuitry of the GX-2001 Calibration Station from electrical overload.

To replace the fuse, do the following:

1. Turn the fuse holder counter clockwise to remove it from the back of the GX-2001 Calibration Station.

2. To insert a new fuse, put the replacement fuse in the fuse holder.

3. Insert the fuse and the holder into the back of the GX-2001 Calibration Station.

4. Push the holder in and twist it clockwise until the fuse and holder are fully seated in the chassis of the GX-2001 Calibration Station.

CAUTION: *Under no circumstance should you attempt to open the chassis of the GX-2001 Calibration Station. There are no user-serviceable parts inside the GX-2001 Calibration Station. If, for example, you experience a problem with the flow rate that you cannot fix by adjusting the Fresh Air Flow Adjust or the Span Gas Flow Adjust or by replacing the filters, contact your local distributor or RKI Instruments, Inc.*

Adjusting the Low Flow Alarm

The factory set low flow alarm setting is 0.4 SCFH (±0.1). The low flow alarm can be adjusted using the low flow adjustment screw, which is located in the upper left corner of the back panel. It is accessible through a hole in the panel. Use a small flathead screwdriver to make the adjustment. To adjust the low flow setting, do the following:

1. Follow the instructions in the Manual Calibration section above, but do not connect a calibration gas cylinder to the calibration station.

2. After you press the Cal. Unit Calibration button, as soon as the Calibration Station begins to drawing fresh air, continue with step 3.

3. Use the fresh air flow adjustment valve on the back panel of the Calibration Station to set the flow to 0.4 SCFH.

   If the Calibration Station goes into low flow alarm before you can adjust the flow down to 0.4 SCFH, adjust the low flow adjustment screw 1/4 turn clockwise, then attempt to set the flow again. Repeat this step until you are able to adjust the flow to 0.4 SCFH.

4. Slowly turn the low flow adjustment screw counterclockwise in very small increments and wait 5 seconds after each increment to see if the Calibration Station goes into low flow alarm. Continue this process until the Calibration Station goes into low flow alarm.

5. Increase the flow using fresh air flow adjustment valve until the unit is out of low flow alarm.

6. Decrease the flow very slowly and verify that the low flow alarm is 0.4 SCFH (±0.1).

7. If the low flow alarm is set too high, turn the low flow adjustment screw slightly clockwise. Repeat steps 5 and 6.

   If the low flow alarm is set too low, turn the low flow adjustment screw slightly counterclockwise. Repeat steps 5 and 6.

8. Use the fresh air adjustment valve to set the flow to 1.0 SCFH.

NOTE: If the calibration station switches over to drawing span gas before you are able to complete the adjustment, use the span gas adjustment valve to make flow adjustments.

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9. Click the Cancel button on the screen to abort the calibration sequence.

10. Turn off the calibration station and exit the downloading software.

Spare Parts List

Table 2: Spare Parts List

Part Number	Description
06-1252RK	Polyurethane tubing, 1/4-inch OD x 1/8-inch ID
06-1248RK	Polyurethane tubing, 5/16-inch OD x 3/16-inch ID
17-0601RK	Rubber elbow (used on filters and calibration adapter)
33-0163RK	Particle filter
33-6095RK	Charcoal filter
43-4140RK	Fuse, 1/4-inch x 1 1/4-inch, 1A, 250V
47-1013RK	Power cord
47-5006RK	Downloading cable, DB-9 female to DB-9 female, straight through, 6 foot
49-2156RK	Downloading charger w/ cable and software
81-0090RK-03	Three-gas calibration cylinder, 50% LEL CH_4/12% O_2/ 50 ppm CO, 103 liter steel
81-0154RK-02	Four-gas calibration cylinder, 50% LEL CH_4/12% O_2/50 ppm CO/25 ppm H_2S, 58 liter aluminum
81-1054RK	Demand flow regulator
81-1130RK	Calibration Adapter for Model GX-2001 Charger
83-0006RK	Downloading software, GX-2001