# Model GX-2001
# Data Logging Software
## User's Guide

**Part Number: 71-0056RK**

**Edition: First**

**Released: 6/29/2001**

# 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.

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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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> ***WARNING:*** ***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.***

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# 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/Charger Station and Software.

The Data Logging/Charger Station and Software (RKI part number 49-2156RK) down loads 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 Data Logging Software. The Data Logging/Charger Station and Software also calibrates the Model GX-2001 by setting the zero and the span. To set the span, you will also need to use a calibration kit, as described in the Model GX-2001 Operator's Manual. And while the Model GX-2001 is placed in the Data Logging/Charger Station, its battery is recharged, provided the Model GX-2001 has been turn on.

The purpose of this manual is to explain how to use and set up the Data Logging/Charger Station and Software. 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

- calibrate the Model GX-2001

Before you get started, be sure to review system requirements in the next section and to read "Overview of the Data Logging Software," which tells you what information the software provides and how it works.

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**WARNING: 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.**

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# System Requirements

To use the Data Logging/Charger Station and Software, 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**

# Overview of the 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 Data Logging/Charger Station and Software down loads this information to your computer for viewing, printing, and saving.

## Types of Information Provided

The 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 Data Logging software to help you become better acquainted with how the Data Logging 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.
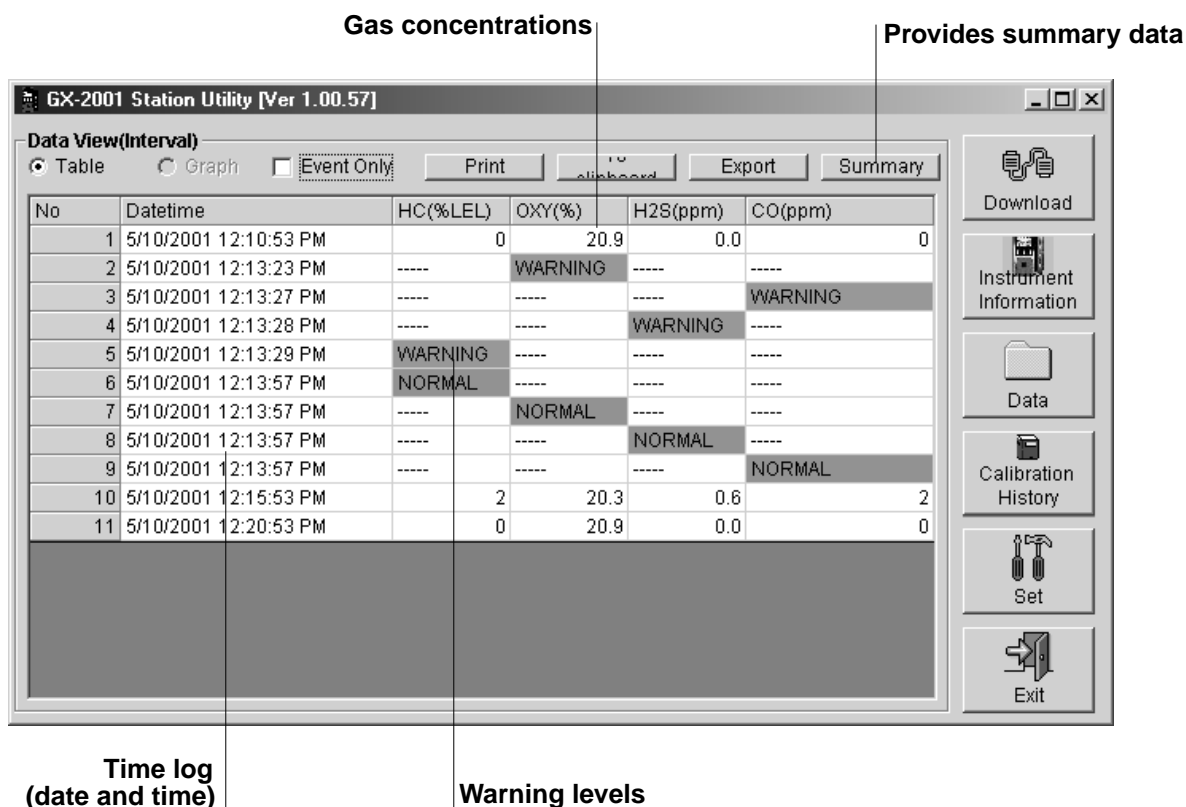


Figure 1. Data View (Interval) Window Showing Gas Concentrations

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 Data Logging/Charger Station and the information stored in the unit's memory was down loaded to the computer. From the main window of the 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 graphical 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)**
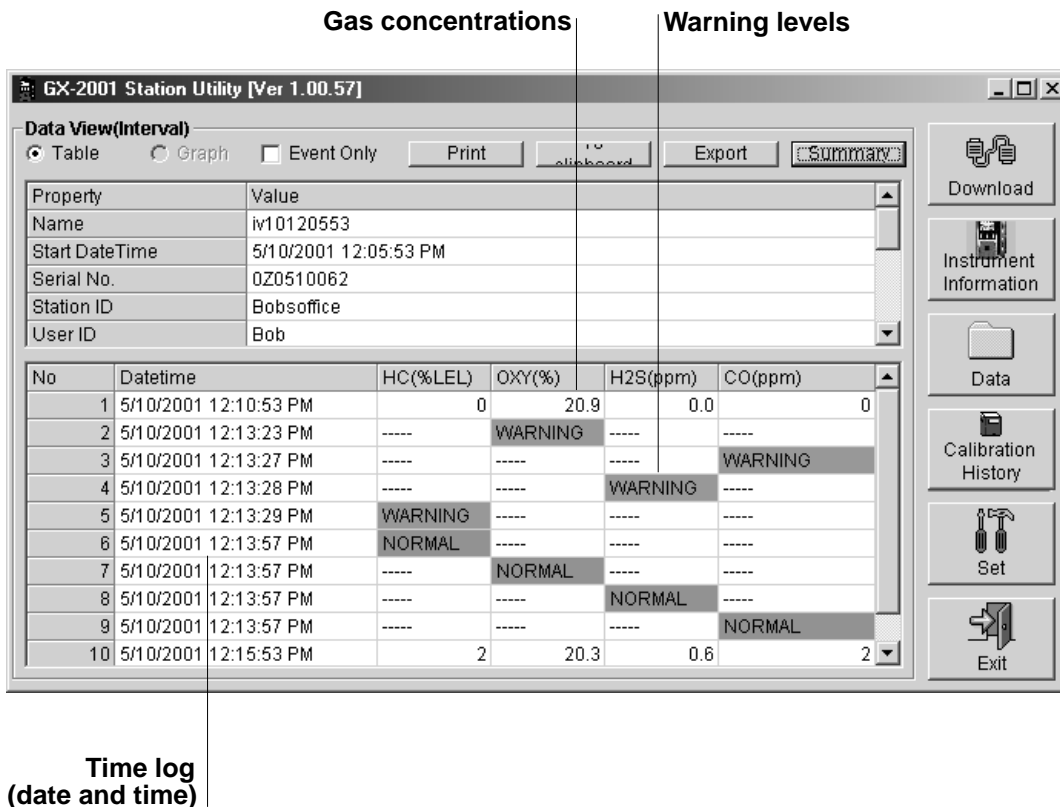
**Figure 2.  Data View (Interval) Summary Window**

### *Alarm Trend Data*

In addition to the interval trend data the GX-2001 also saves a file which 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 GX-2001, this file remains in the unit's memory until another event occurs. When another event occurs, the alarm trend data file is overwritten with the new event's information.

Alarm trend data can always be displayed in either table and graph format.

The following figure shows a sample graph of the four target gases, an alarm event, and the concentrations of two target gases during the alarm event.
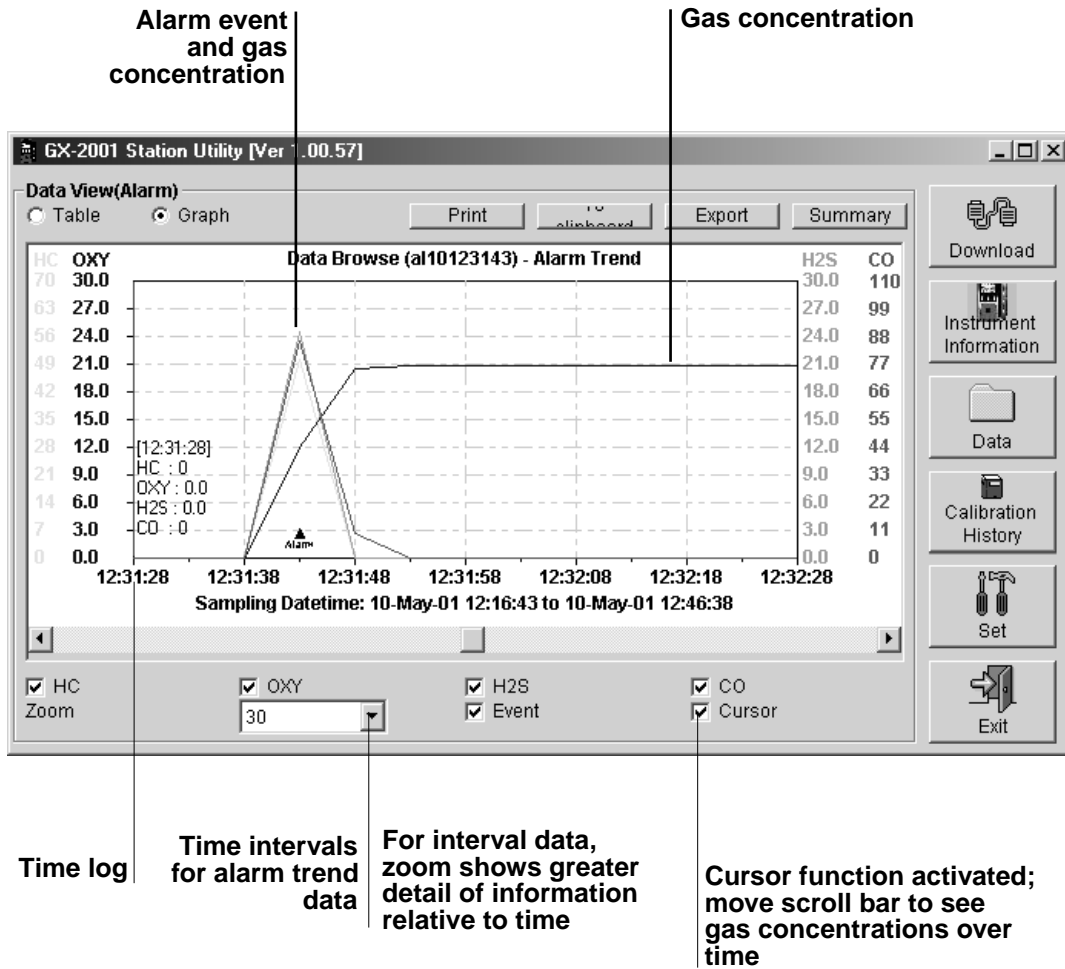
**Alarm event and gas concentration**

**Gas concentration**



**Time log**

**Time intervals for alarm trend data**

**For interval data, zoom shows greater detail of information relative to time**

**Cursor function activated; move scroll bar to see gas concentrations over time**

**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 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 on the next page.

**Calibration history data**

**Before and after calibration settings**



**Warning, alarm, STEL, and TWA settings**

**Before and after calibration settings**



**Figure 4. Instrument Information and Calibration History Windows**

## 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 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.
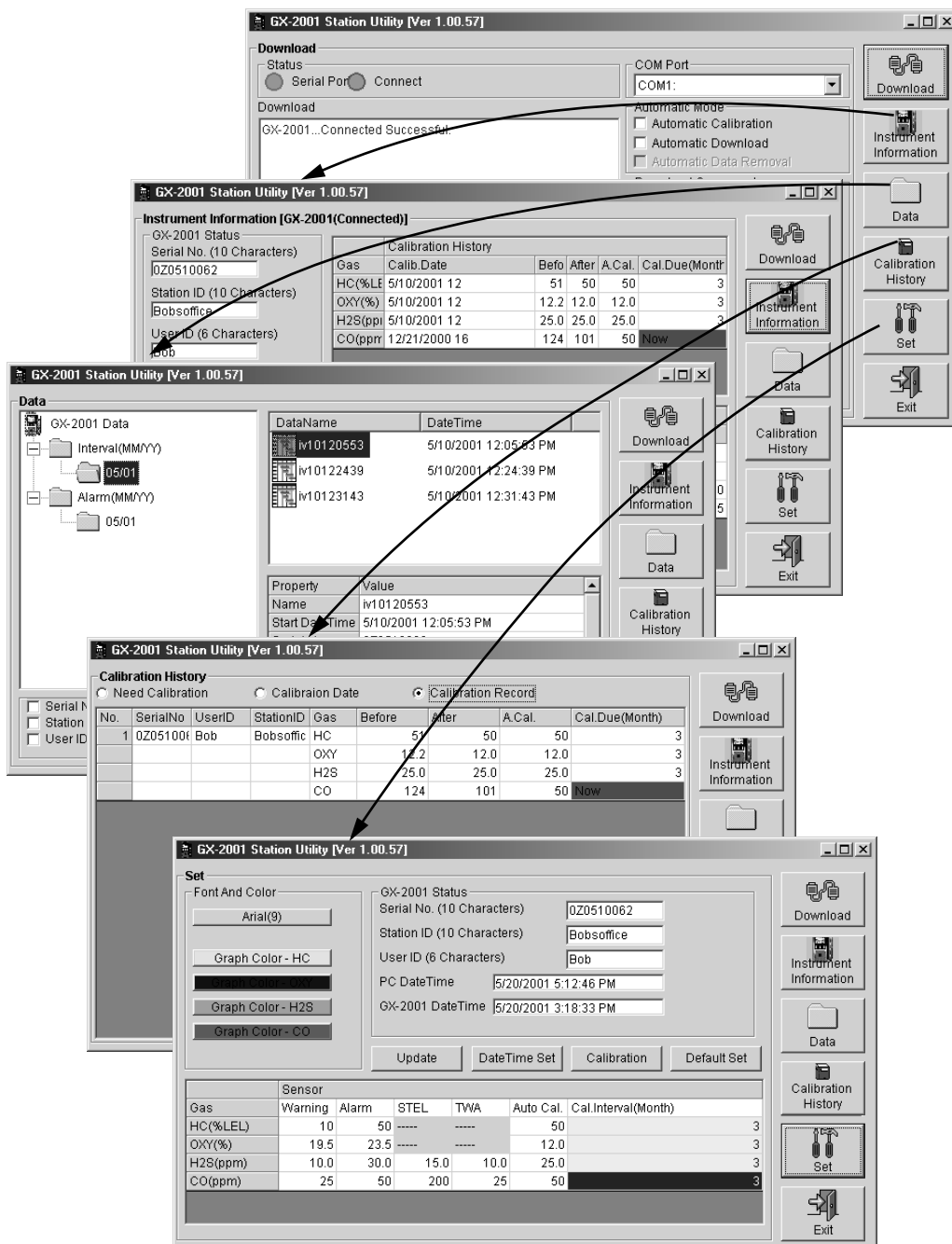


**Figure 5. The Software Screens That Are Displayed from the Download Window**

# Installing the Software

1. Launch Windows®.

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.
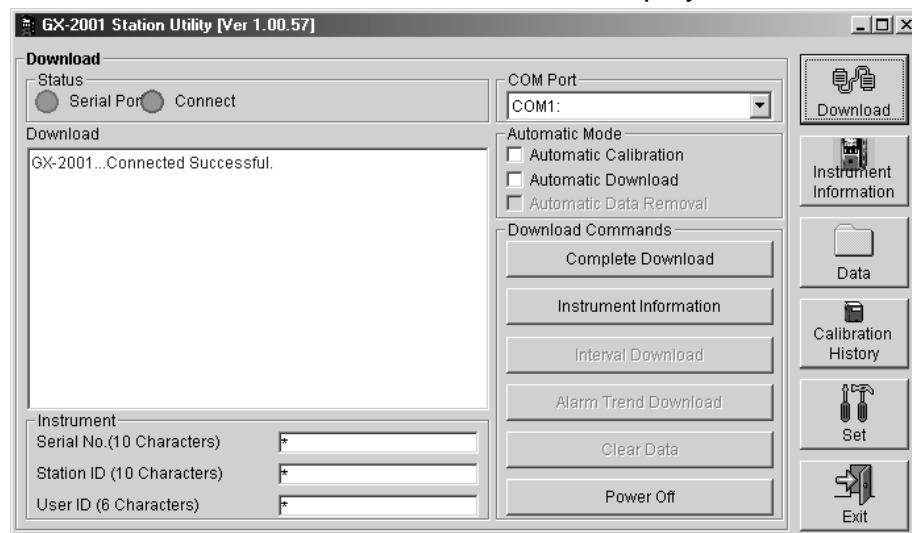


**Figure 6. The Download Window**

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.

# Installing the Hardware

1. Launch Windows.

2. Connect one end of the GX-2001 serial cable to the serial (COM1) port of your computer. You can use any active COM port, COM1 through COM 4.

3. Connect the other end of the serial cable to the GX-2001 Data Logging/ Charger Station.
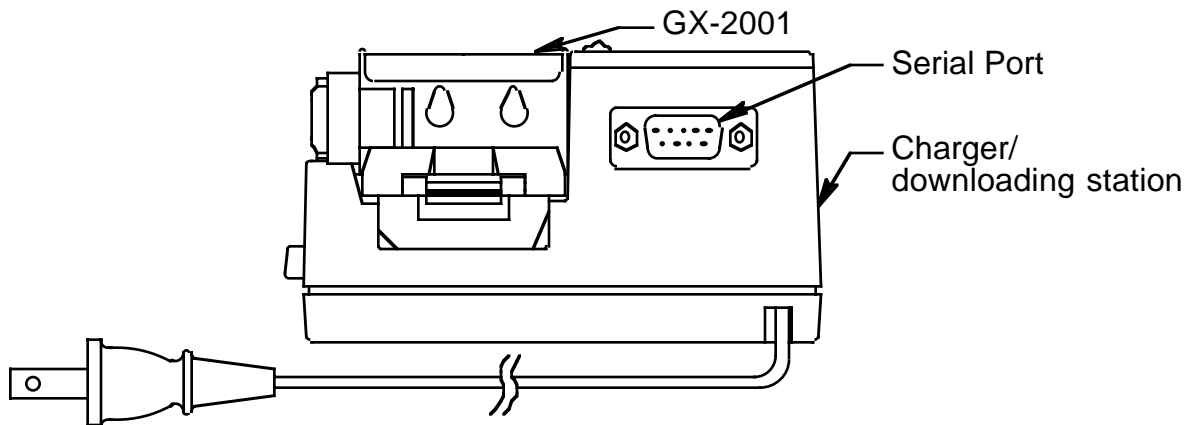


**Figure 7.  Connecting to the Serial Port on the Data Logging Station**

4. Plug the GX-2001 Data Logging/Charger Station. Power cord into an AC wall socket.

# Down Loading Data from the GX- 2001

You have the option of down loading data manually or automatically.

If you down load information using the automatic feature, click the checkbox, "Automatic Download," in the Download Window before placing the Model GX-2001 in the Data Logging Station. Remember that the Instrument Information screen will remain blank after Automatic Downloading is selected.

**Click here for automatic downloads** ──────
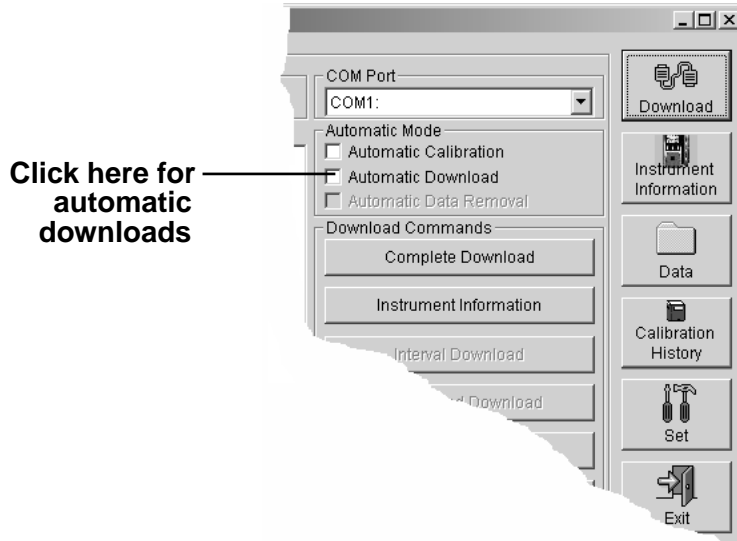
**Figure 8. Automatic Download Checkbox**

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**NOTE:** Before you attempt to down load data, make sure you have installed the GX-2001 Data Logging Software and have connected the serial data cable between the Data Logging Station and the computer.

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

2. Place the GX-2001 into the Data Logging Station.

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

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**NOTE:** The software includes a **Cal.Unit Calibration** button between the **Clear Data** button and the **Power Off** button which is not shown in this manual. This button is for use with the RKI Automatic Calibration Station which is under development. If this button is accidentally clicked, click the **Cancel** button which appears in Automatic Calibration Mode screen.
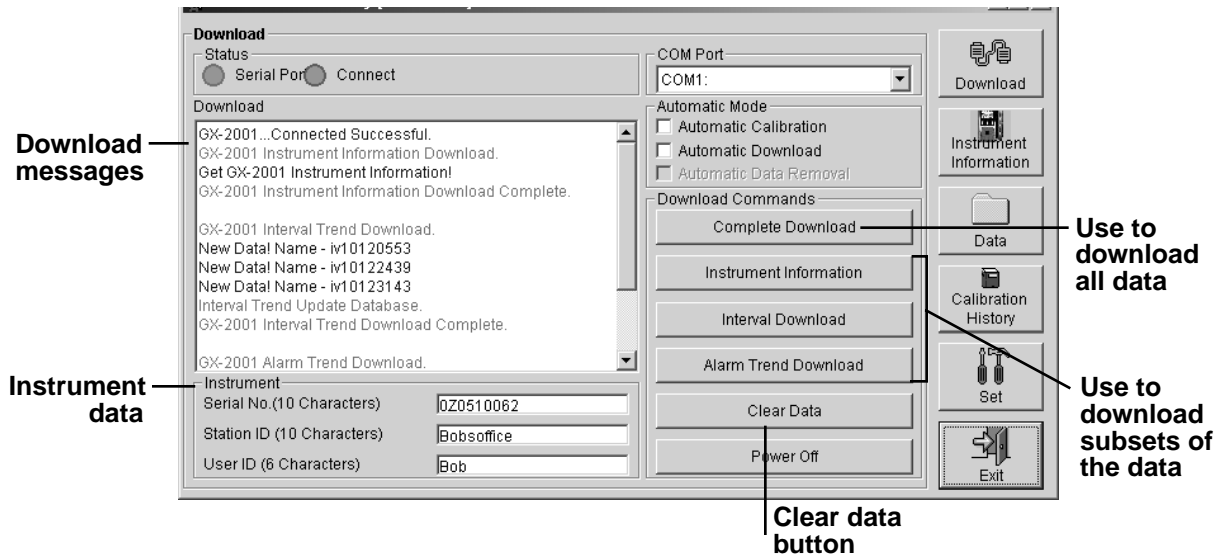
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4. Press the Mode/Power button on the Model GX-2001. "Conn" displays on the Model GX-2001 LCD and "GX-2001...Connected Successful." displays in the Download area of the Download window.

5. If you have selected "Automatic Download," the downloading process begins automatically after you have placed the Model GX-2001 in the Data Logging 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 download instrument information only, click "Instrument Information."

   • To download interval information, click "Interval Download."

   • To download alarm trend data only, click "Alarm Trend."

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.



**Figure 9.  Connection Message**



**Figure 10.  Download Options**

**Download messages** — GX-2001...Connected Successful. / GX-2001 Instrument Information Download. / Get GX-2001 Instrument Information! / GX-2001 Instrument Information Download Complete.

GX-2001 Interval Trend Download. / New Data! Name - iv10120553 / New Data! Name - iv10122439 / New Data! Name - iv10123143 / Interval Trend Update Database. / GX-2001 Interval Trend Download Complete.

GX-2001 Alarm Trend Download.

**Instrument data**

**Use to download all data** — Complete Download

**Use to download subsets of the data** — Instrument Information / Interval Download / Alarm Trend Download

**Clear data button** — Clear Data

**Figure 11. 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.

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*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.***

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# Viewing, Printing, and Saving Data

You can view instrument information, interval data, alarm data, and calibration history. Note that you can only print and save interval and alarm data.

## Viewing Instrument Information



To view instrument information, click the Instrument Information button on the Download window. The Instrument Information window displays. Remember that you cannot save or print this information.



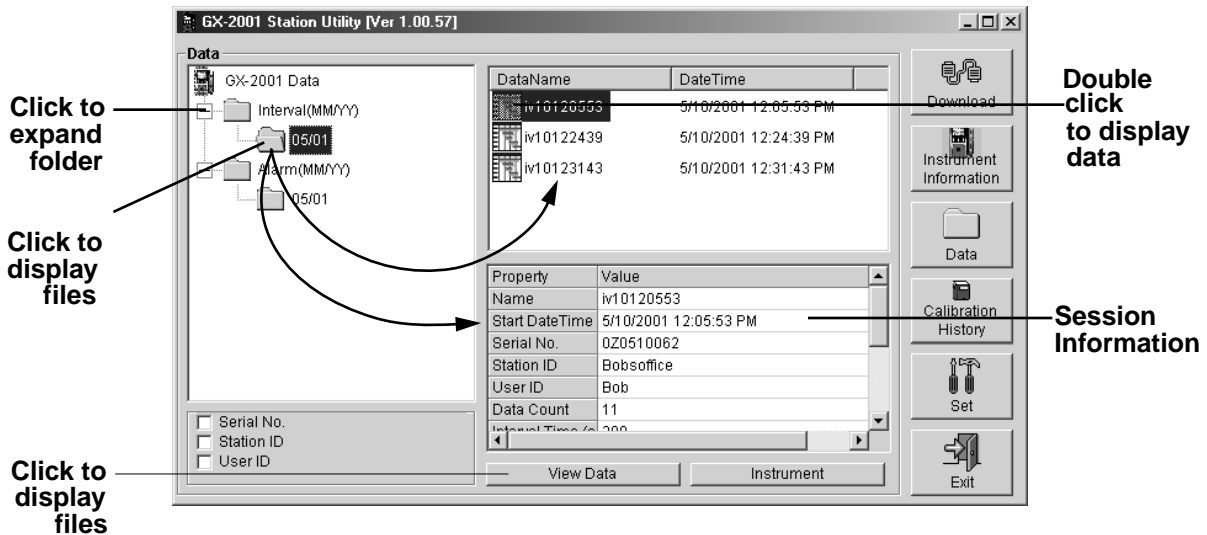**Figure 12. Instrument Information Window**

## 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**
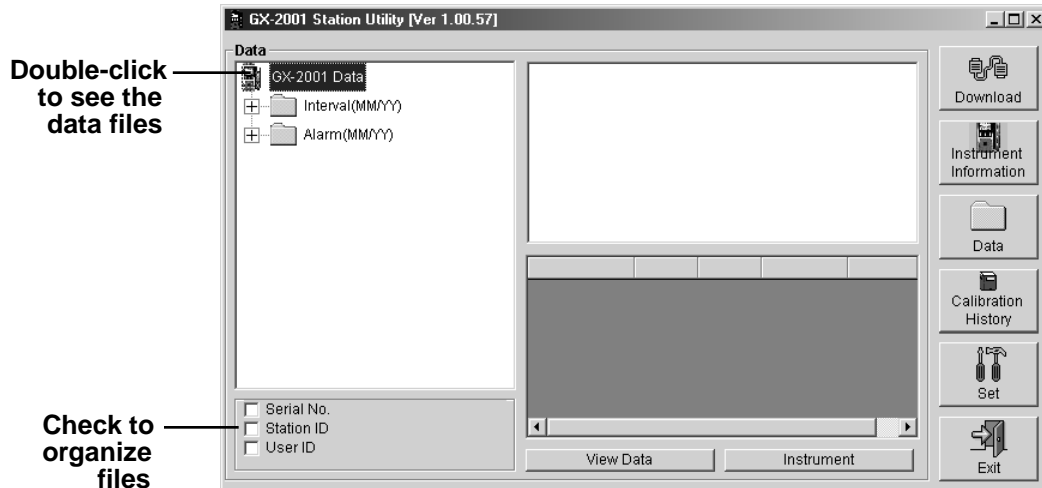
**Figure 13. Data Window**

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 14. 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.
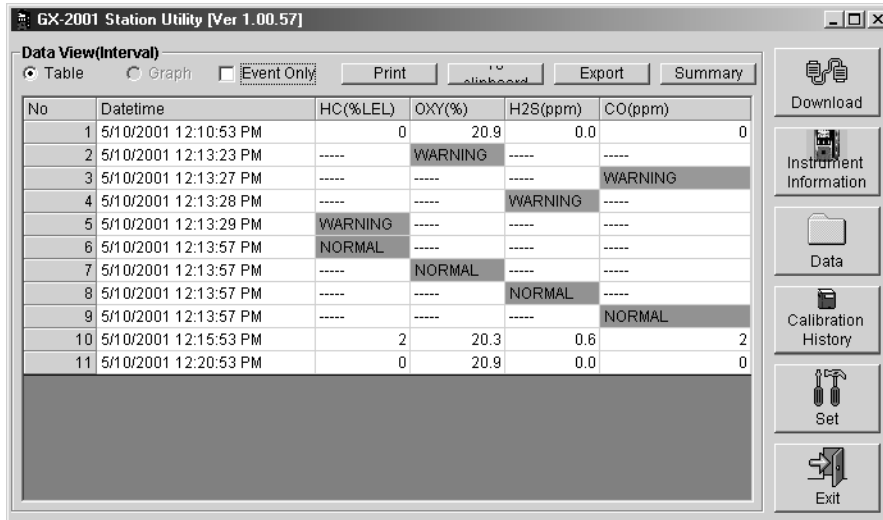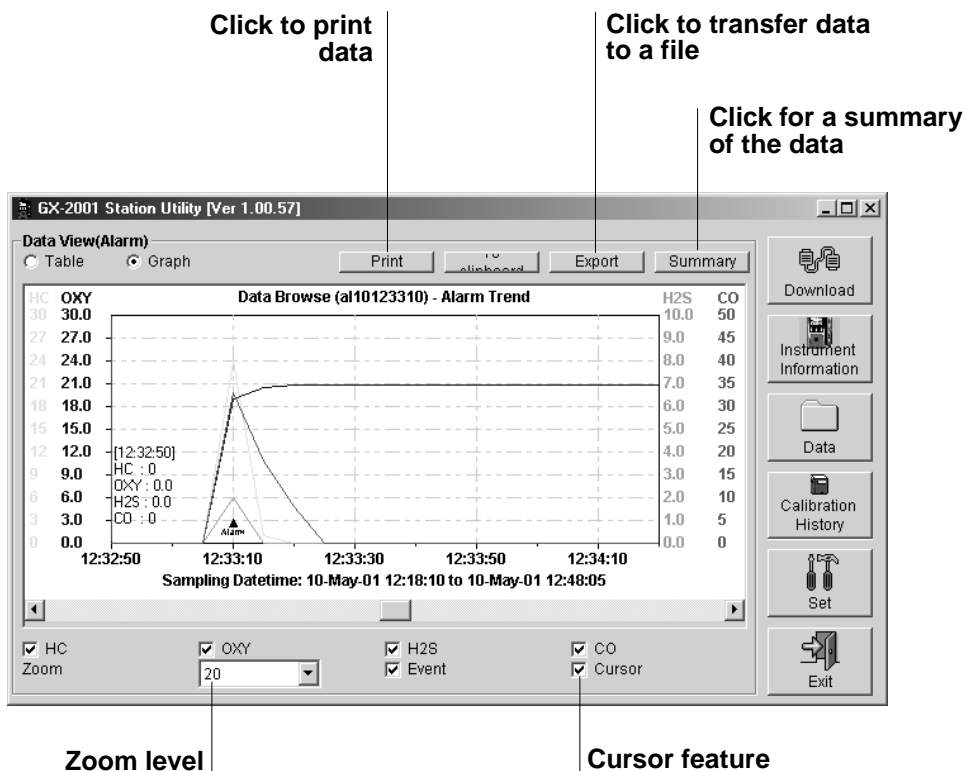


**Interval Data**
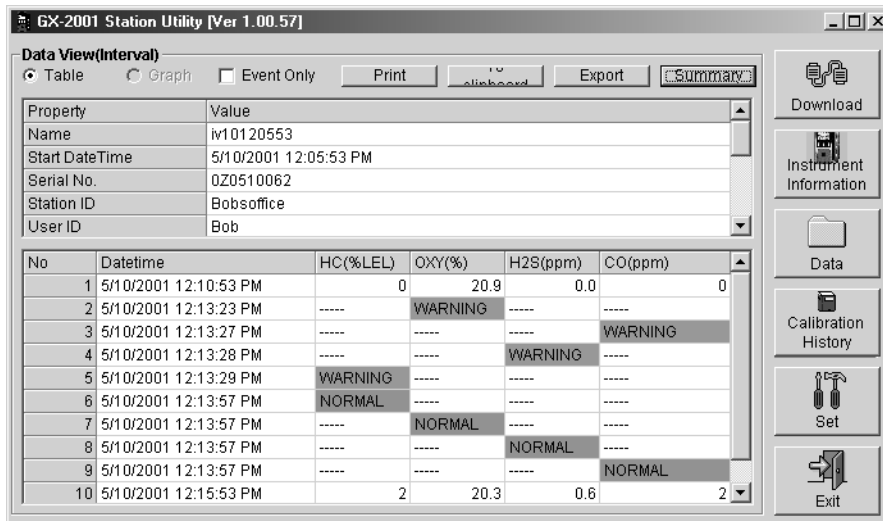


**Interval Data with Summary**

**Figure 15. 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 16.  Alarm Data in Graph Form**

6. In graph form, five or more events are required. 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.
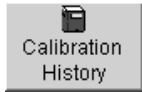
## Viewing Calibration History

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



**Figure 17.  Calibration History Information**

## Printing and Exporting Data

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

1. From the Display 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 18. 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.
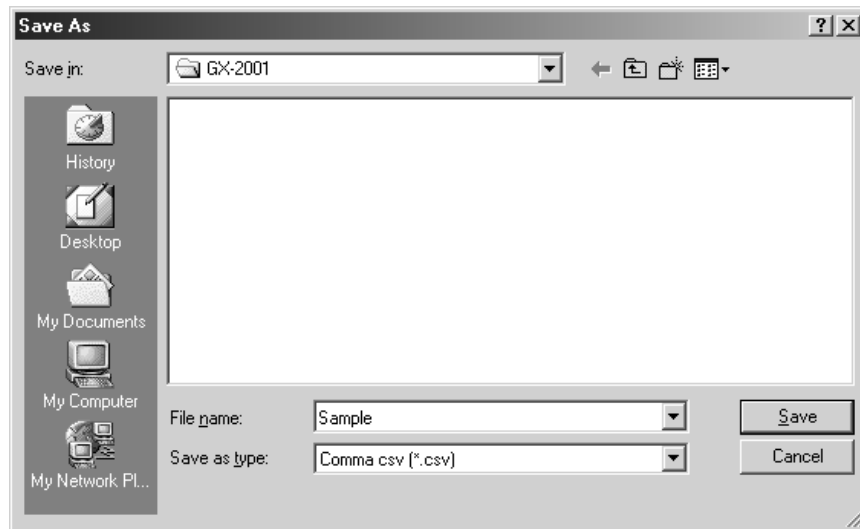


**Figure 19.  Save as Dialog Box**

## Deleting Data/Changing Delete Password

To delete data files and Calibration History files, place the cursor on the file and click with the right mouse button.

When you delete Calibration History files, the Data Logging software asks you for a password. The password is 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
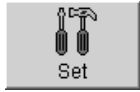
To change how data is displayed in reports and to make settings changes to the Model GX-2001, click the Set Button on the Download window to display the Set window. After you have entered your changes, click the Update button to upload the new information to the Model GX-2001. To upload new time and date information, click the Date Time Set button.

**Click to upload changes to the Model GX-2001**

**Click to change font type**

**Click to calibrate the Model GX-2001**



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

**Click to set date and time**

**Figure 20.  Set Window**

Using the Set window, you can specify the following parameters for the GX-2001:

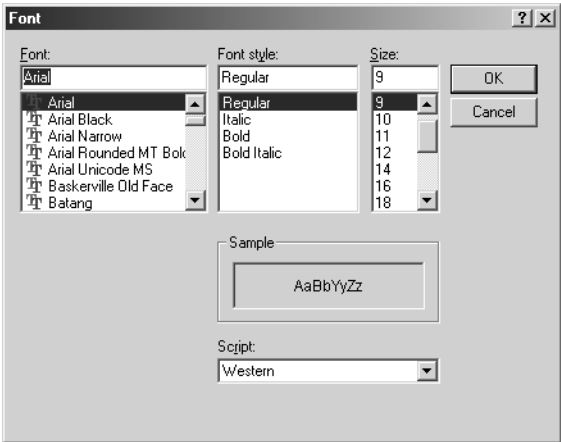• Choose the font type, style, and size for data reports in the Font window



**Figure 21.  Font Window**

• Select the colors used to graph the various target gases in the alarm data report
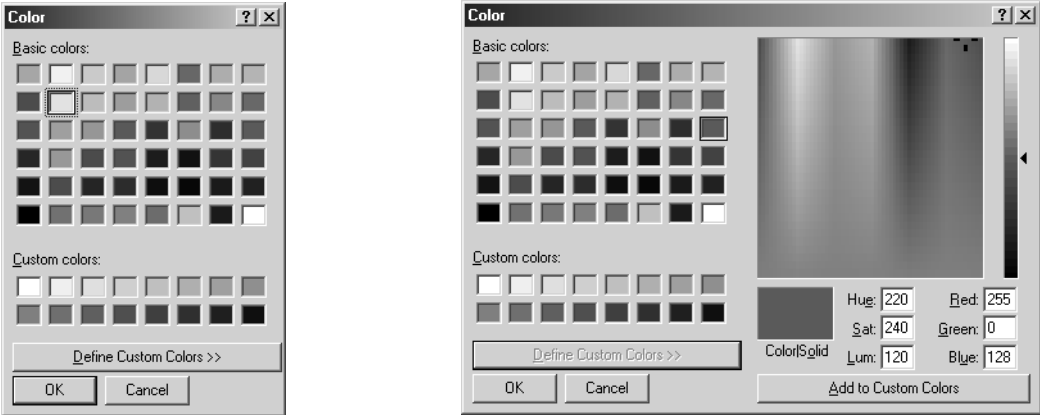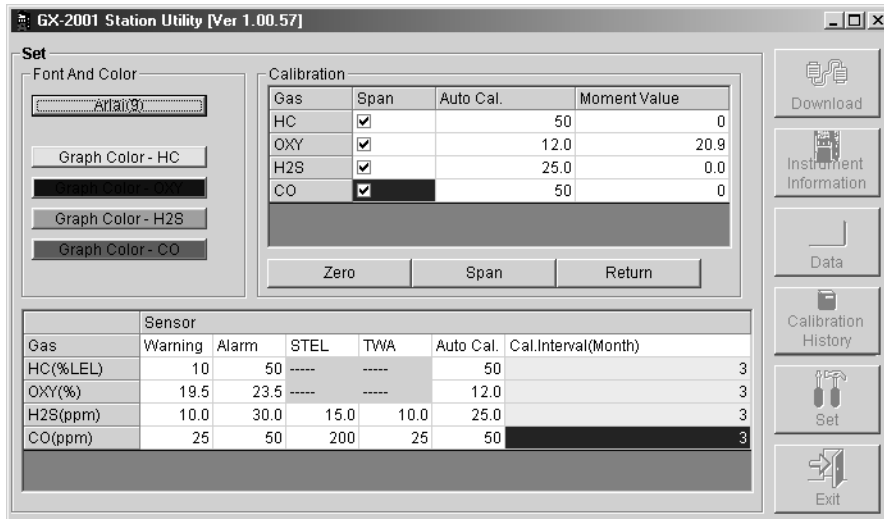


**Figure 22.  Color and Custom Color Windows**

- Make settings for the GX-2001 that affect at which gas concentrations a warning or an alarm is activated

- Select STEL and TWA levels for the GX-2001

- Specify calibration intervals, in months, and change auto-calibration levels



**Figure 23. Calibration Window**

- Specify serial number, station ID, and user ID information for the Model GX-2001

# Calibrating the GX-2001

The Data Logging Software allows you to set the zero and the span readings for the Model GX-2001 as part of the Set screen.These features require that a calibration adapter be installed on the downloading station. This adapter is under development. See the GX-2001 manual for calibration instructions.

In the Download Screen, see Figure 6, there is a selection box called Automatic Calibration. Do not select this box. It is for use with the RKI Automatic Calibration Station which is under development.

# Spare Parts List

**Table 1: Spare Parts List**

| Part Number | Description |
| --- | --- |
| 47-5006RK | Downloading cable, DB-9 female to DB-9 female, straight through, 6 foot |
| 49-2156RK | Downloading charger w/ cable and software |
| 83-0006RK | Downloading software, GX-2001 |