# GX-2003
# Data Logging Software
# Operator's Manual

**Part Number: 71-0096RK**

**Revision: A**

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# 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.

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***CAUTION:***  *Read and understand this manual before using the GX-2003 Data Logging Software. Also read and understand the GX-2003 Operator's Manual included with the GX-2003 portable gas detection unit.*

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# Introduction

Using an advanced detection system consisting of up to five gas sensors, the GX-2003 Personal Gas Monitor detects the presence of combustible gases, oxygen ($O_2$), carbon monoxide (CO), and hydrogen sulfide ($H_2S$) simultaneously. The GX-2003's compact size and easy-to-use design makes it ideally suited for a wide range of applications as described in the GX-2003 Operator's Manual, which you should read first before using the GX-2003 Data Logging Software.

The GX-2003 Data Logging Software downloads stored data in the GX-2003 to a Windows-based PC. After the data has been downloaded, you can view, save, or print it using your computer and the GX-2003 Data Logging Software. The GX-2003 Data Logging Software can also calibrate the GX-2003 by setting the zero and the span.

The purpose of this manual is to explain how to use and set up the GX-2003 Data Logging Software. You will learn how to:

• install and launch the software

• install the downloading cable (if needed)

• download data from the GX-2003

• view, print, and save data

• change data logging parameters

• change the appearance of the software screens

• change the color of graphed readings for a particular gas

• calibrate the GX-2003

Before you get started, be sure to review system requirements in the next section.

**CAUTION:** *The GX-2003 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-2003, you must follow the instructions and warnings in the GX-2003 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.*

# System Requirements

To use the GX-2003 Data Logging Software , your personal computer must meet the following requirements:

- **Operating Systems:** Windows® 98, Windows® 2000, or Windows® XP

- **Processor:** IBM® compatible PC running Pentium® 2 or higher.

- **Memory:** 32 MB RAM minimum

- **Available Hard Disk Space:** 32 MB minimum

- **CD-ROM Drive**

- **Infrared port** or

  **Serial port and a serial/IrDA adapter cable** or

  **USB port and a USB/IrDA adapter cable**

# Installing the GX-2003 Data Logging Software

1. Launch Windows®.

2. Exit from all applications and open windows.

3. Insert the GX-2003 Data Logging Software Installation CD in your computer's CD-ROM drive.

4. The installation program will automatically launch. and the GX-2003 Data Logger Program Install window appears.
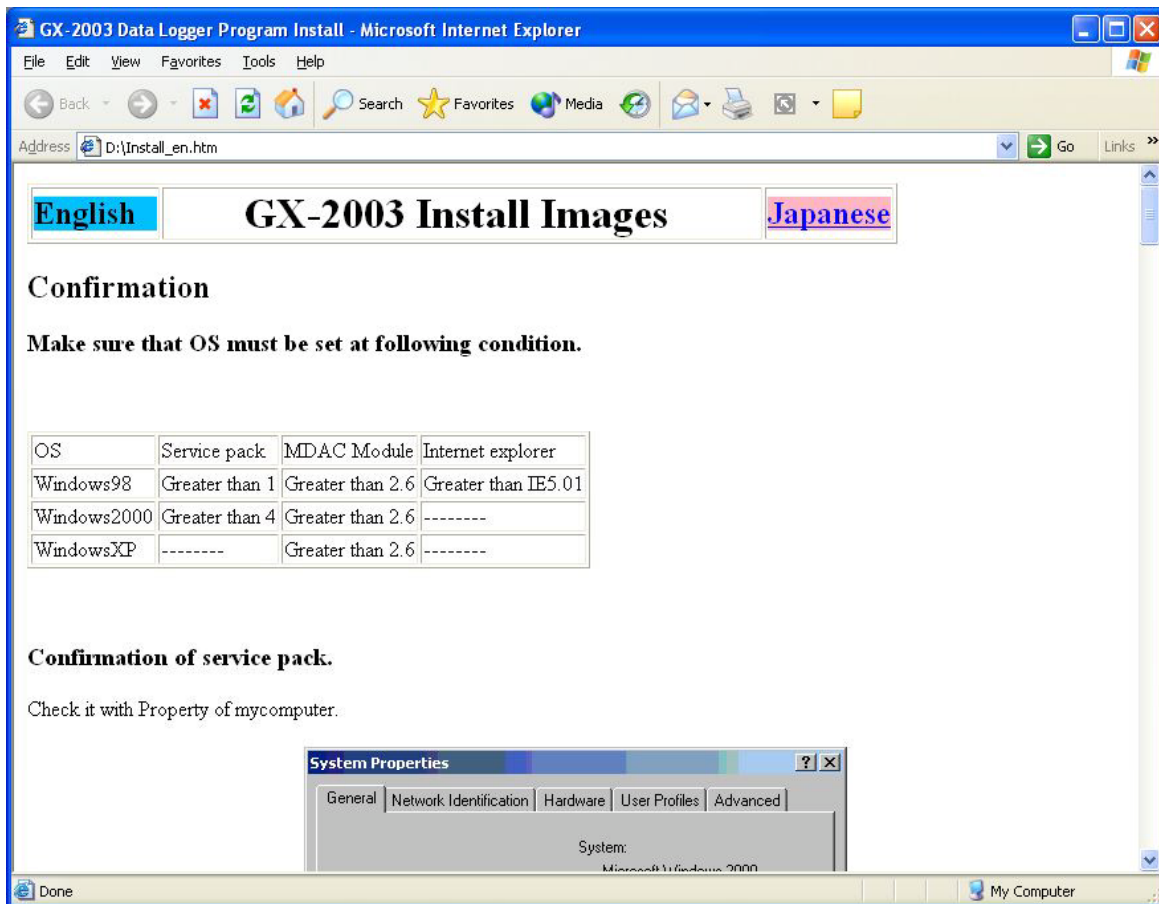


**Figure 1: GX-2003 Data Logger Installation Program**

5. Review the Confirmation section to make sure that your Windows$^{®}$ operating system has the minimum required service pack, minimum version of the MDAC module, and the minimum required version of Internet Explorer. Use the scroll bar on the right side of the program window to move up and down in the Installation Program.

6. Move to the Install Images section. Review the Install Images section of the installation program to see possible Windows$^{®}$ prompt screens or error messages that may occur during installation and how to address them.

7. Select the appropriate installation item, either the **GX-2003 datalogger Windows$^{®}$ 98 version** item or the **GX-2003 datalogger Windows$^{®}$ 2000/XP version** item, depending on your computer's Windows$^{®}$ operating system.
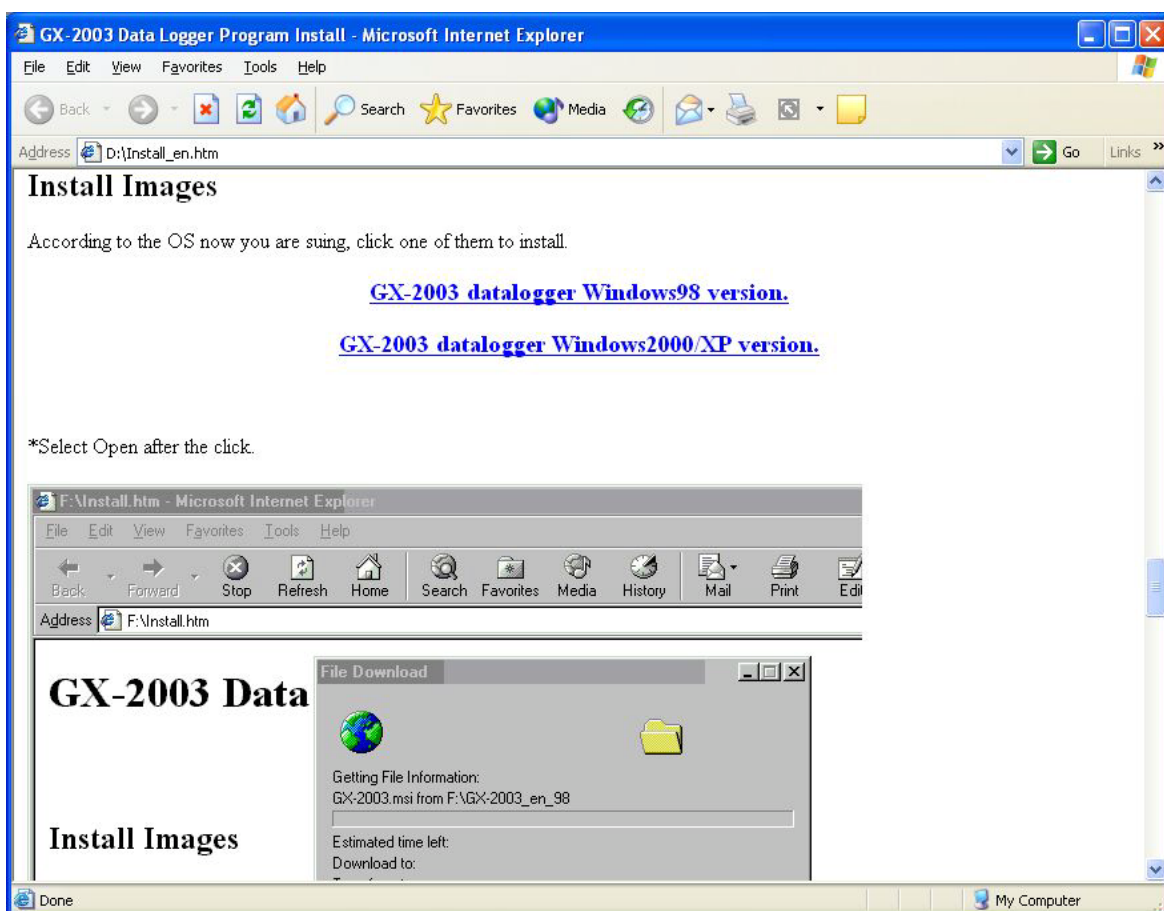


**Figure 2: Installation Images**

8. The installation process will begin. If a File Download window appears asking if you want to open or save a file, select **Open**.

9. The GX-2003 InstallShield Wizard screen appears. Follow the on-screen instructions in the Installation Wizard program to install the software.

10. If during software installation the installation program finds newer versions of Windows® files on your computer than those in the installation CD, it will ask you to keep these newer files. Click "Yes" to do so.

11. When installation is complete, close the GX-2003 Data Logger Program Install window and eject the installation CD form the CD-ROM drive.

# IrDA Downloading Cable

The GX-2003 communicates with a computer via an on-board infrared data port that complies with IrDA protocol standards.

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**NOTE:** If your computer has a built-in infrared port, you do not need an adapter cable to download data.

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If your computer does not have an infrared port, you will need to install an IrDA/serial adapter cable or an IrDA/USB adapter cable on your computer to download data to a PC from your GX-2003. Both types of cables are available from RKI Instruments, Inc. See the Spare Parts List at the end of this manual for the RKI part numbers. These cables can also be found in many electronic supply stores and computer stores.

Some versions of Windows® already have several infrared device drivers loaded in Windows® and will automatically recognize a cable during the installation process and guide you in installing the drivers. Other versions of Windows® will require you to load device drivers provided by the manufacturer of the cable during the installation process. RKI makes no warranty for the operation or compatibility of the drivers with any particular device.

## Installing an IrDA Adapter Cable

After installing the downloading software, connect an IrDA/serial or IrDA/USB cable to your computer and follow the manufacturer's instructions for installing the cable on your computer. Make sure the cable is compatible with your Windows® operating system.

If you do not have instructions from the cable manufacturer for installing your cable, see your Windows documentation. In general, you must go to the Control Panel and use the Add Hardware Wizard to install the cable drivers.

## Windows® Wireless Link Operation Note

When using an IrDA adapter cable and the GX-2003 Data

Logging Software on a Windows® computer, it is necessary to make a special setting in the Wireless Link Configuration window for proper communication between the GX-2003 and the software. This must be done before attempting to use the software. To make this setting, perform the following steps:

1.  Click **Start** on the Windows® Icon Tray.

2. If **Control Panel** is available to select in the **Start** menu, select it. The Control Panel will appear.

    If **Control Pane**l is not selectable in the Start menu but **Settings** is, select **Settings**, then select **Control Panel**. The Control Panel will appear.

3. Double click on **Wireless Link**. The Wireless Link Configuration window will appear.

4. Click on the Image Transfer tab.

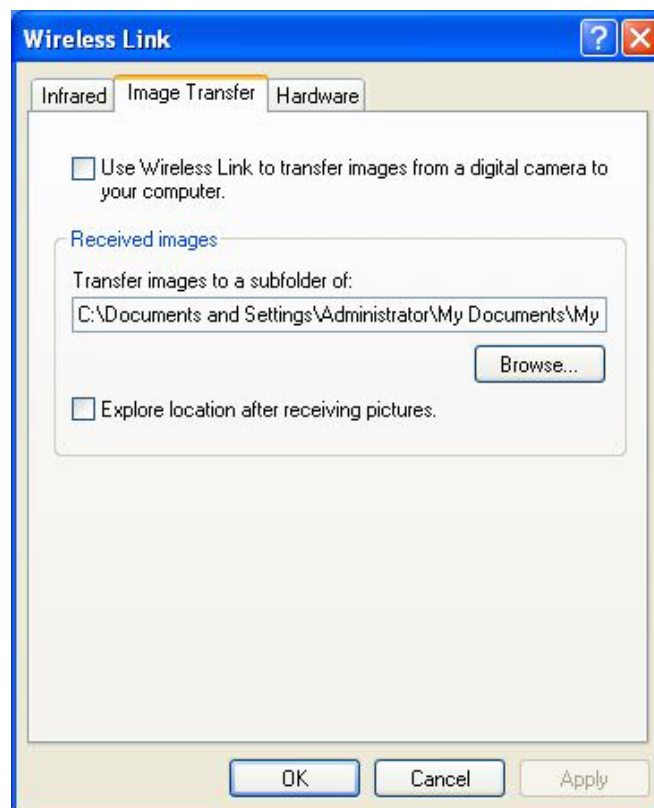5. Deselect the selection box for "Use Wireless Link to transfer images from a digital camera to your computer."



**Figure 3: Image Transfer Tab**

6. Click **OK**.

7. Close the Control Panel window.

## Using a USB or Serial Port With an IrDA Cable Installed

When an IrDA cable is installed on a USB or serial port, that port is always being used by the cable. If you need to use that port for another device, you must disable the IrDA/serial cable using Windows$^®$ and then shut down your computer before disconnecting it, starting your computer up again, and then using the port with another device or cable. For example, if you have an IrDA/Serial cable installed in a serial port and want to download a different device using a standard straight through serial cable, you will need to disable the IrDA cable and remove it to install the straight through serial cable. When you wish to download the GX-2003 again, reconnect the IrDA cable, enable the IrDA cable using Windows$^®$, and then restart your computer.

See your IrDA cable and Windows$^®$ documentation for instructions to enable and disable an IrDA device. In general, you can enable or disable a device by going to the Control Panel, double clicking **System**, selecting the Hardware tab, clicking **Device Manager**, double clicking the IrDa cable under Infrared Devices, and making the appropriate selection in the Device usage field. The process may differ slightly in your particular Windows$^®$ system.

# Launching the Software

1. Click **Start** on the Windows® Icon Tray, then select **Programs**, then select the GX-2003 folder, then select **GX-2003**. Your operating system may also have a shortcut installed in the **Start** menu.

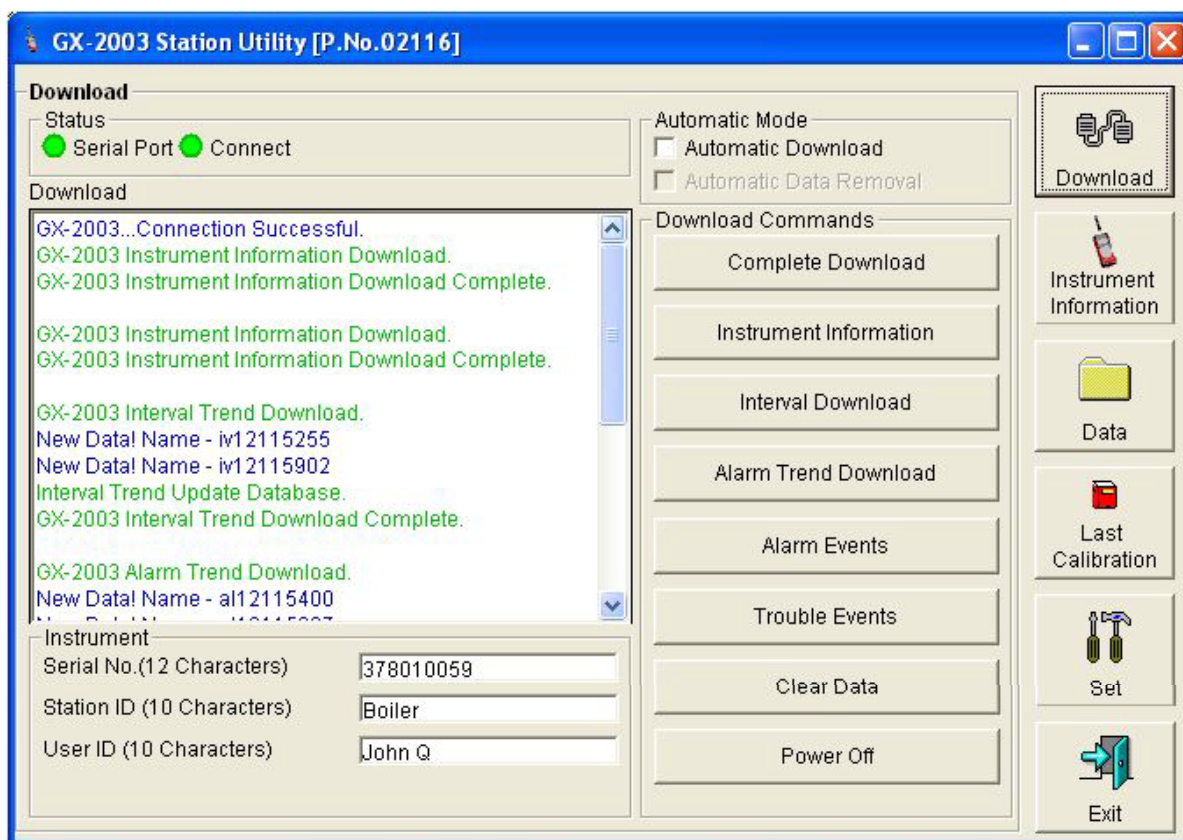2. The program will launch and the Download window will appear.



**Figure 4: The Download Window**

3. For convenience, make a shortcut of the GX-2003 Data Logging Software program and place it on the Windows® desktop. See your Windows® documentation for information about making shortcuts.

# Control Buttons

This section provides a description of the control buttons. Instructions for using the software are given in other parts of this manual.

When the software is launched, the software opens in the Download window. Along the right side of the Download window are six control buttons that access other windows in the software.The figure below shows the various windows that you can access when you click these control buttons
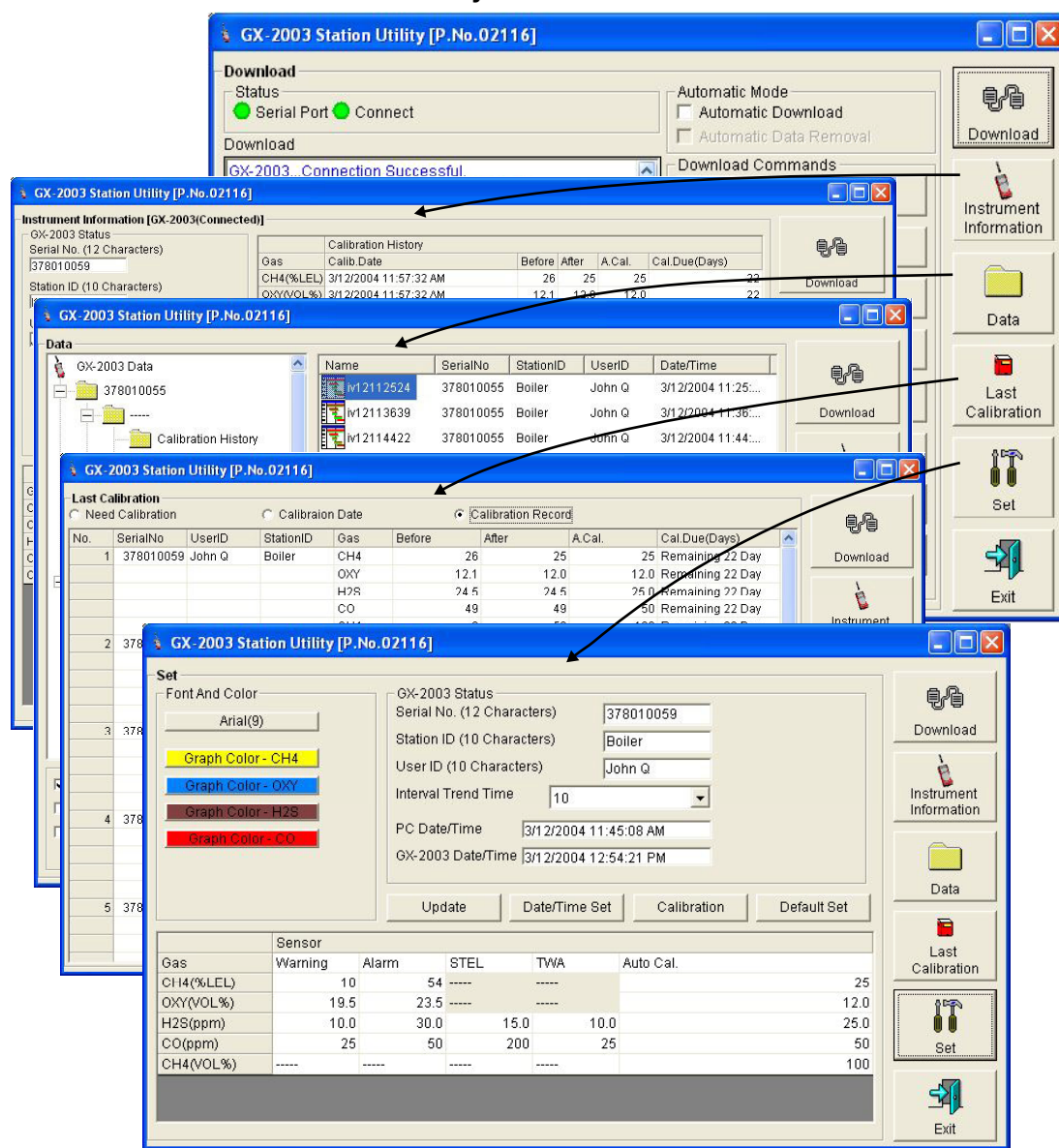


**Figure 5: Windows Accessed by Control Buttons**

# Download Button

If you are in another program window, clicking the **Download** button opens the Download window (see Figure 4). The Download window has several download commands that allow you to perform various data retrieval functions with an instrument that is connected to the software. Data can be retrieved from the instrument, data can be cleared from the instrument, and the instrument can be turned off. See "Downloading Data from the GX-2003" on page 27 for a complete description of downloading data from a GX-2003.

# Instrument Information Button

Clicking the **Instrument Information** button opens the Instrument Information Window.
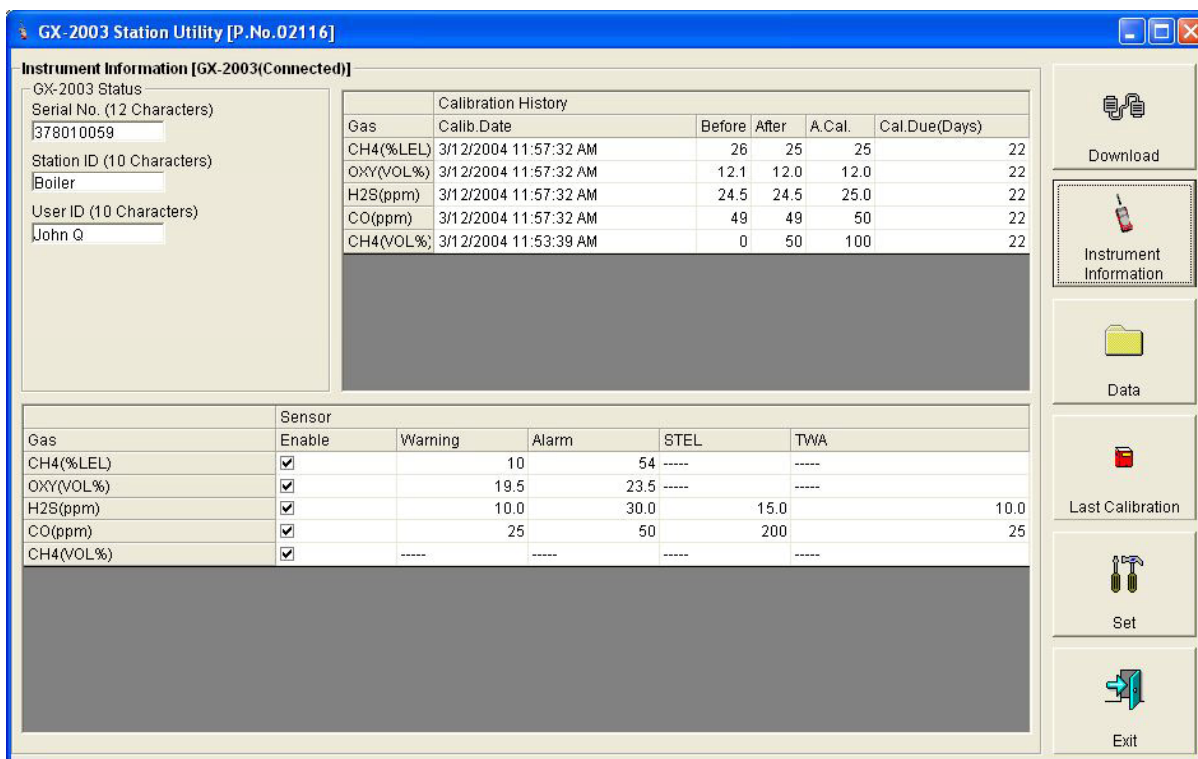


**Figure 6: Instrument Information Window**

The Instrument Information Window displays various instrument parameters for an instrument that has been downloaded using the **Complete Download** or **Instrument Information** download commands and is currently connected to the software. If an instrument is turned off after being connected to the software, then the software will lose the connection with the instrument

and the fields in the Instrument Information window will become blank.

## Data Button
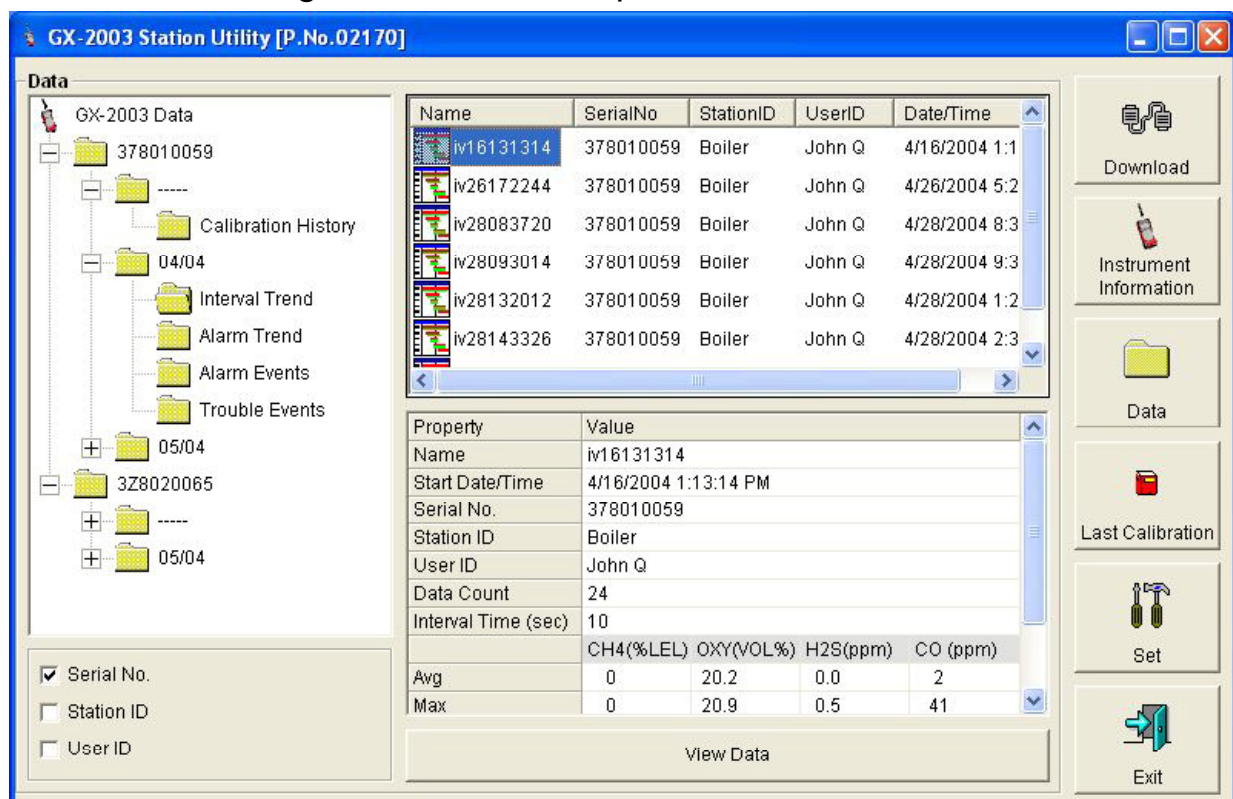
Clicking the **Data** button opens the Data window.



**Figure 7:  Data Window**

In the Data window, you can view, print, export, and delete data that has been downloaded from instruments.

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**NOTE:** If the GX-2003 Data Logger Program database is on the user's computer (default setting), data will only appear for instruments downloaded to that computer. If the database is on a network, data will appear for all instruments downloaded to that database. See "Accessing a Common Database" on page 24 for more information.

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The following types of data files are saved in the Data window:

- Calibration History Files

  A calibration history file is saved for each instrument that has been downloaded. It records the calibration information for every calibration that was downloaded. The GX-2003 can save information for up to 20 calibrations in its memory.

- Interval Trend Data Files

  Interval trend data is logged at the interval time defined in the GX-2003. Each logged point is an average reading over the previous time interval.

- Alarm Trend Data Files

  Alarm trend data is logged around an alarm event. The GX-2003 can save up to 8 alarm trend data files in its memory.

- Alarm Event Files

  Alarm event files record gas alarm events that have been downloaded from instruments. The GX-2003 can save up to 100 alarm events in its memory.

- Trouble Event Files

  Trouble event files record sensor failure and system failure events that have been downloaded from instruments. The GX-2003 can save up to 100 trouble events in its memory.

## Last Calibration Button

Clicking the **Last Calibration** button opens the Last Calibration window.



**Figure 8: Last Calibration Window**

The Last Calibration window stores the information for the most recent successful calibration on each channel for each GX-2003 that has been downloaded.

Select one of the following display options by clicking on the appropriate selection button: Need Calibration, Calibration Date, or Calibration Record.
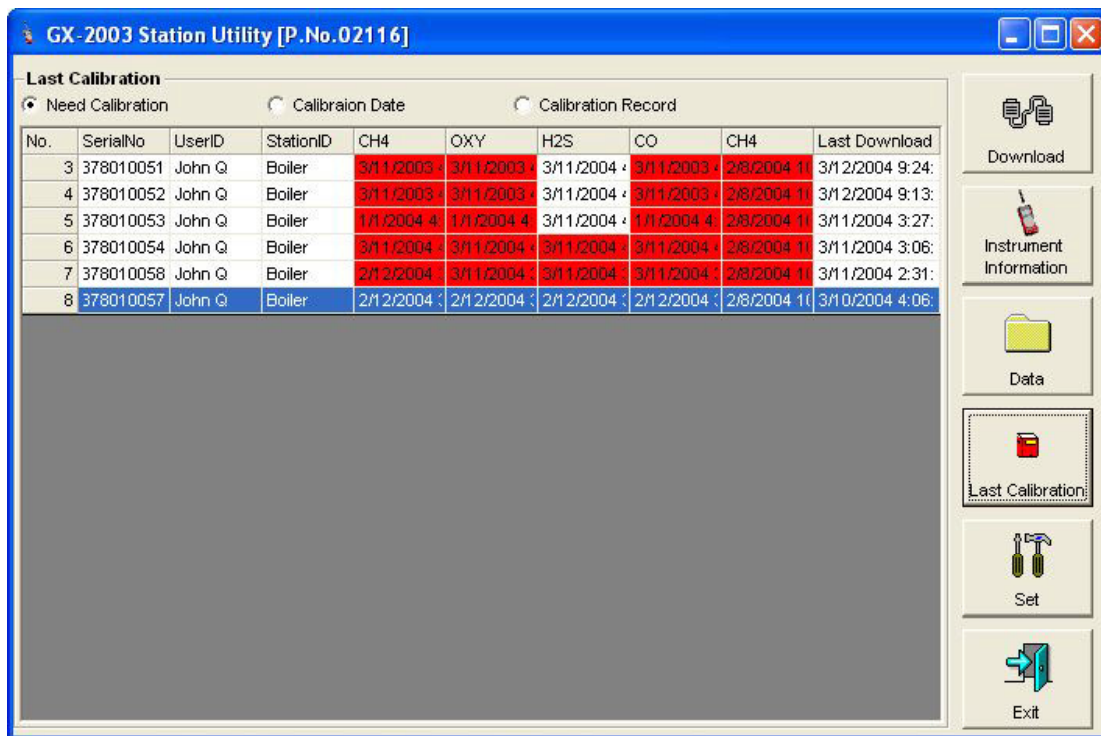
**Figure 9: Last Calibration Information: Need Calibration Option**

- **Need Calibration —** selecting this option shows calibration information only for the GX-2003 units due for calibration.

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**NOTE:** The calibration interval value, the number of days after a calibration that a new calibration is due, is saved in the GX-2003. If the calibration interval is changed in the GX-2003, the new calibration interval value will not be known by the software until the GX-2003 is downloaded using the **Complete Download** button or the **Instrument Information** button.

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- **Calibration Date —** selecting this option shows the calibration information for all the GX-2003 units that are in the software database. The fields for the Need Calibration and Calibration Date screens are the same. Figure 9 shows the Need Calibration Option selected.The fields on the Need Calibration and Calibration Date screens are described below:

- 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 — shows the user ID of the of the unit that was downloaded.

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

- Target Gases (CH4%LEL, O2, H2S, CO,CH4%volume) — 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. The CH4 on the far left is for the % LEL sensor and the CH4 on the far right if for the % volume sensor.

- 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.

- **Calibration Record —** selecting this option shows the instrument's serial number, user ID, station ID, before and after calibration readings, auto calibration settings, and calibration due information. The fields on this screen include SerialNo, UserID, and StationID just as in the Need Calibration and Calibration Date screens.

**Figure 10: Last Calibration Information: Calibration Record Option**

The fields also include the following:

- Gas — Lists the target gas for which the Before, After, and A.Cal readings are displayed. The top CH4 is %LEL CH4 and the CH4 below the CO line is %volume CH4.

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**NOTE:** The row for %volume CH4 shows information from the most recent single calibration of the CH4 %volume channel. The %volume CH4 channel cannot be autocalibrated.

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- Before — shows the settings prior to calibration.

- After — shows the settings after calibration.

- A. Cal. — lists the auto-calibration setting for each channel of the GX-2003 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-2003 (see the GX-2003 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 day" 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 Last Calibration Window and then right click on the calibration record you want to print. A pull-down menu will appear with two choices: print and delete. Select the Print option, then select the printer and click OK to print the calibration record. It is only possible to print the calibration record for one instrument at a time and only for the most recent calibration. To view and print all past calibrations for an instrument, see "Calibration History" on page 34.

To delete an instrument and it's calibration information from the Last Calibration window, see "Deleting Data" on page 53.

# Set Button

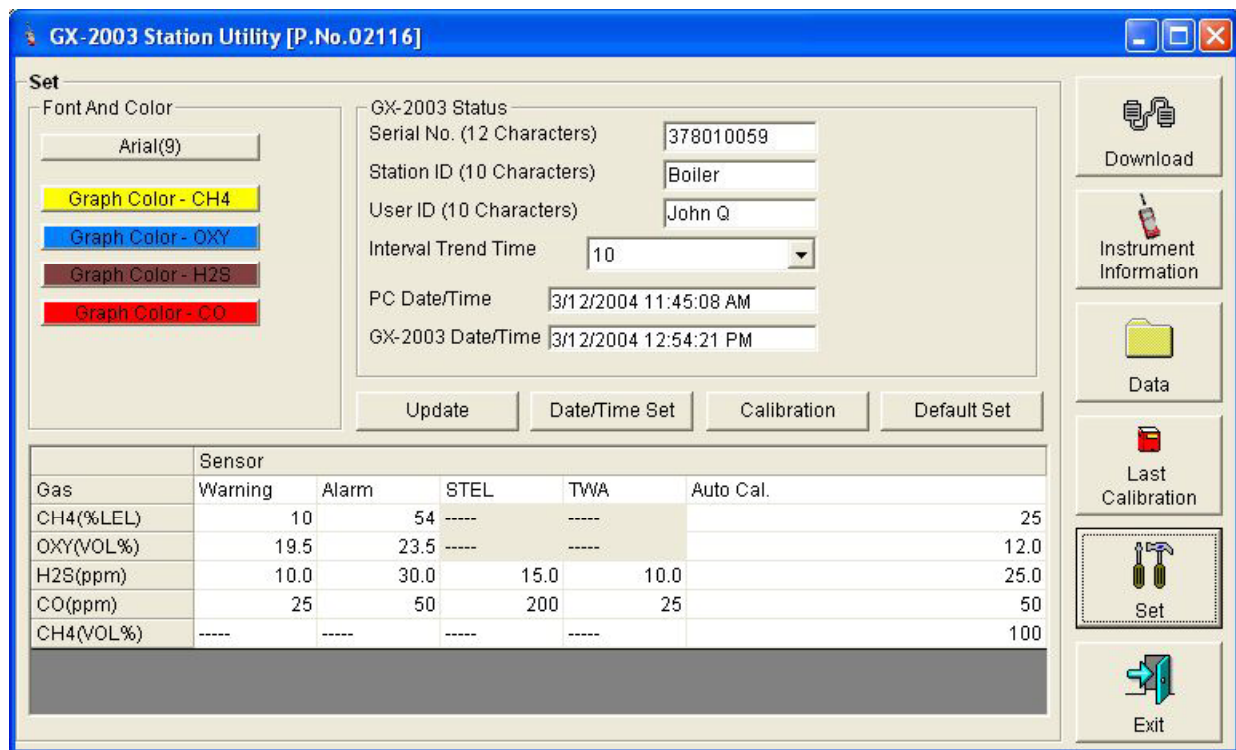Clicking the **Set** button opens the Set window.



**Figure 11: Set Window**

In the Set window, you can perform the following functions:

- Alter the appearance of the software windows with the Font and Color buttons

- Change parameters of a connected instrument by editing the fields in the GX-2003 Status frame and in the Gas/Sensor frame at the bottom of the window and clicking the **Update** button

- Update the date and time in a connected instrument by using the **Date/Time Set** button

- Calibrate a connected instrument by using the **Calibration** button

- Reset the defaults in a connected instrument by using the **Default Set** button.

# Accessing a Common Database

The GX-2003 Data Logging Software stores downloaded data in a database file. This database file is automatically stored on the computer's hard drive in the same folder as the GX-2003 Data Logging Software. In this configuration, a computer has access to its own database but no other computer's so only data downloaded to that computer may be viewed. If the database was set up on a network location, multiple computers could access the same database. All computers accessing that database could view all data that was downloaded from any computer.

The GX-2003 Data Logging Software has the ability to map its database along any other valid path to another file location. That file location can be on the same computer or it can be on a network location. Putting it on a network location allows multiple users to save and access data from the same location. This allows access to instrument data that was downloaded at other computers.

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**NOTE:** Only one computer at a time may access the database, so only one software installation mapped to a common database can be running at a time. If two installations attempt to access the same database, an error indication will occur when the second software is launched.

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To set up this new database path:

1. You must first determine where the database is going to be located and make a note of that file path.

2. If the GX-2003 Data Logging Software hasn't been launched on the computer yet, you must launch and close the program. This creates a GX2003.ini file that contains configuration settings. This file is located in the GX-2003 folder in your computer's Program Files.

3. Open the GX2003.ini file in Notepad and scroll down to the

very last line. This line is the Data Location path. An example of the path created by the software is shown in Figure 12. Replace the current path with the desired path (see Figure 13).
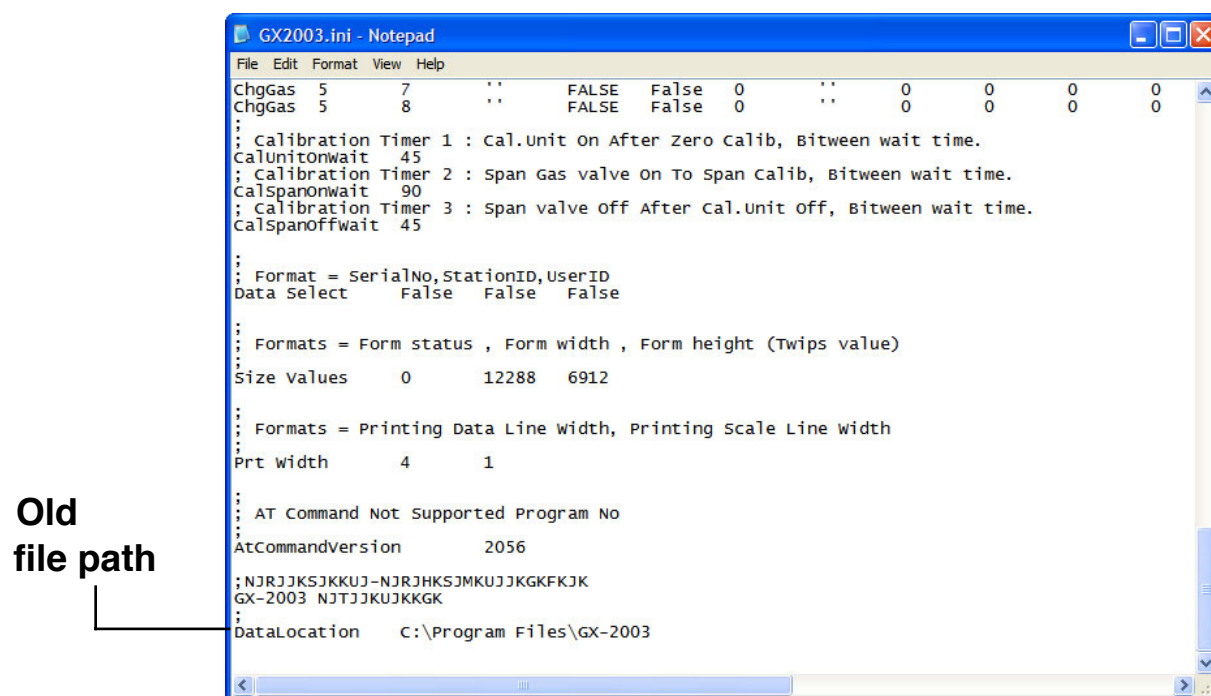
**Old file path**



**Figure 12: GX2003.ini File with Original Path**

```
GX2003.ini - Notepad
File  Edit  Format  View  Help
ChgGas   5        7        ''        FALSE    False   0        ''        0        0        0        0
ChgGas   5        8        ''        FALSE    False   0        ''        0        0        0        0
;
; Calibration Timer 1 : Cal.Unit On After Zero Calib, Bitween wait time.
CalUnitOnWait    45
; Calibration Timer 2 : Span Gas valve On To Span Calib, Bitween wait time.
CalSpanOnWait    90
; Calibration Timer 3 : Span valve Off After Cal.Unit Off, Bitween wait time.
CalSpanOffwait   45


;
; Format = SerialNo,StationID,UserID
Data Select      False    False    False

;
; Formats = Form status , Form width , Form height (Twips value)
;
Size Values      0        12288    6912

;
; Formats = Printing Data Line Width, Printing Scale Line Width
;
Prt Width        4        1

;
;  AT Command Not Supported Program No
;
AtCommandVersion          2056

;NJRJJKSJKKUJ-NJRJHKSJMKUJJKGKFKJK
GX-2003 NJTJJKUJKKGK

DataLocation     Y:\mannyf\GX-2K3 Log Database
```
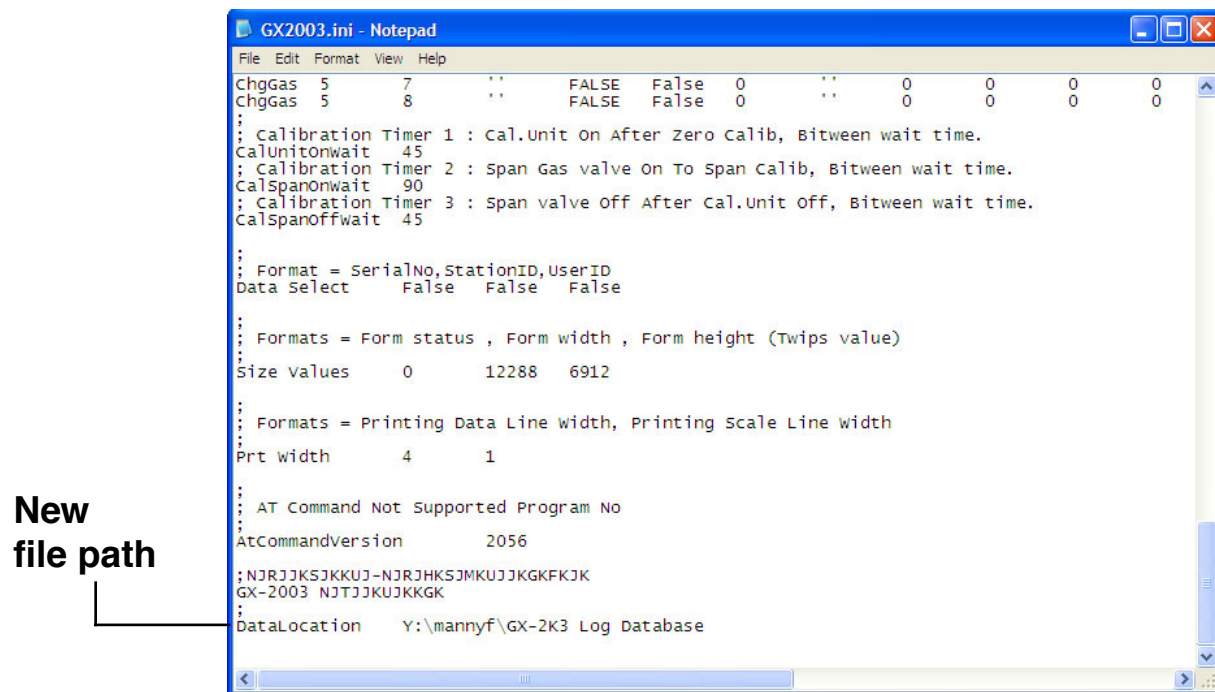
**New file path**

**Figure 13:  GX2003.ini File with New Path**

4. Save the file and reopen the GX-2003 Data Logging Software.

5. When you launch the program again, a database will be created in the specified location.

6. Repeat steps 2-5 for all installations that need access to the common database.

# Downloading Data from the GX-2003

You have the option of downloading data manually or automatically. If you want to download data using the automatic download feature, click the Automatic Download selection box in the Download window before attempting to download data from the GX-2003. Remember that if Automatic Download is selected, the Instrument Information window will remain blank and the GX-2003 will turn off automatically after the data has been downloaded. If you want the data in the GX-2003 to be cleared automatically after an automatic download, select the Automatic Data Removal box. The Automatic Data Removal box is only available for selection if the Automatic Download box is selected.
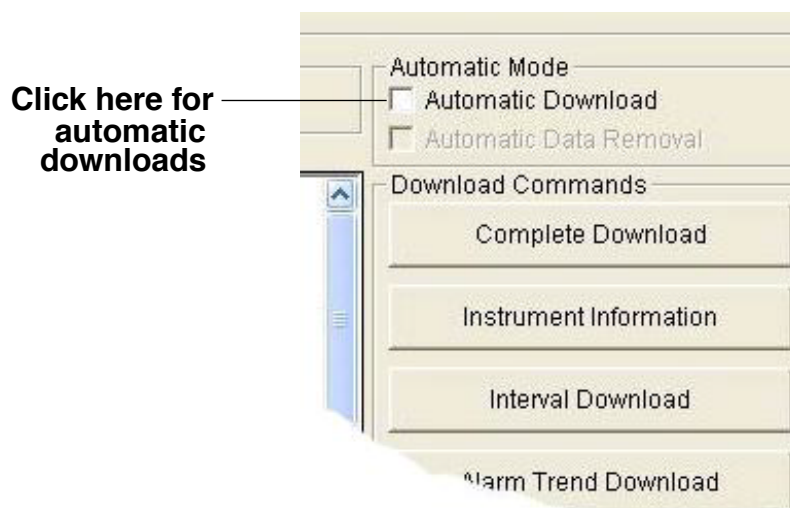


**Figure 14: Automatic Download Selection Box**

To download data from a GX-2003:

1. Launch the GX-2003 Data Logging Software. The Download Window displays.

2. Place the GX-2003 within an inch or two of the infrared port on your computer aligning the infrared port on the side of the GX-2003 with the infrared port on your computer.

   If your computer does not have a built in infrared port, place the GX-2003 within an inch or two of the infrared port on the IrDA adapter cable as shown in Figure 15 below, aligning the

infrared port on the side of the GX-2003 with the infrared port on the cable.
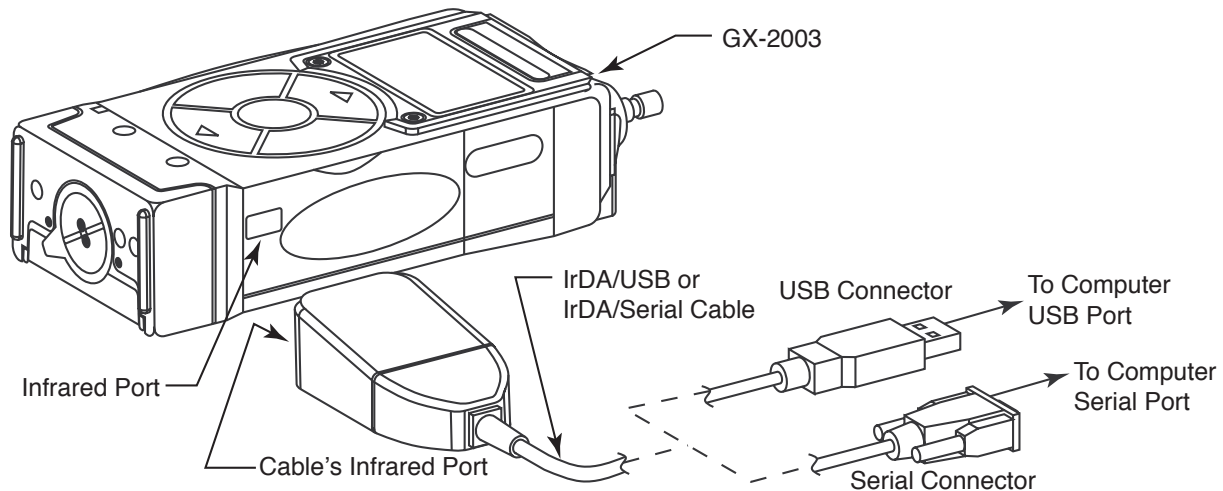


**Figure 15: Aligning the GX-2003 with the Cable Infrared Receiver**

3. Press and hold the POWER/ENTER button on the GX-2003 until you hear a beep, then release it. The GX-2003 will begin it's power up sequence with the pump turning on. If a successful connection between the GX-2003 and the computer occurs, the
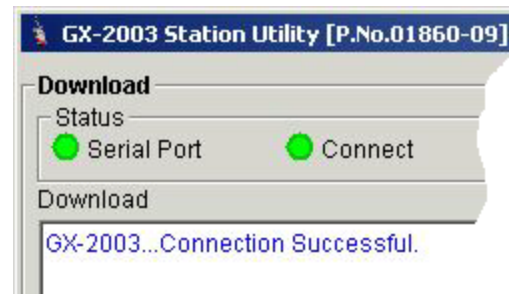


**Figure 16: Connection Message**

Connect light in the Download window turns green after a few seconds and "Connection Successful." displays in the Download area of the Download window. The GX-2003's pump will turn off. The Windows® icon tray will indicate that a wireless connection is in effect.

4. If you selected Automatic Download, the downloading process begins automatically after a successful connection is made.

5. If you are going to download data manually, you can download all information at once, or you can download only the information you want by using the Download Commands.

- To download all data and instrument information from the instrument, click **Complete Download**.

- To download instrument information only, click **Instrument Information.**

- To download interval trend data only, click **Interval Download.**

- To download alarm trend data only, click **Alarm Trend.**

- To download alarm events only, click **Alarm Events.**

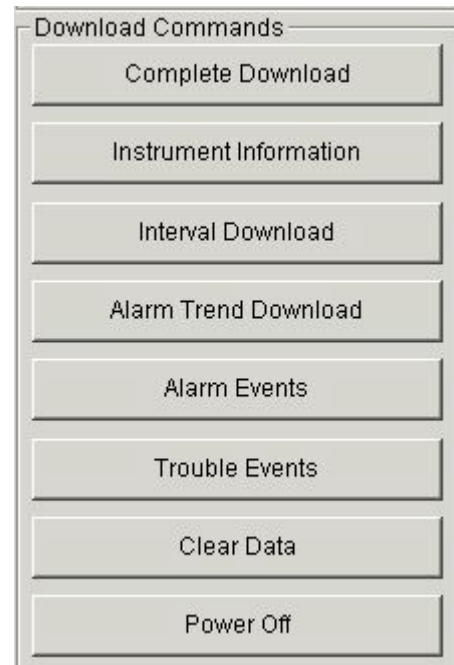- To download trouble events only, click **Trouble Events.**

**Figure 17: Download Commands**

6. While the data is being downloaded, messages in the download message area of the Download window indicate what actions the software is performing and if there are any communication or downloading problems. These messages also tell you what type of information has been downloaded.
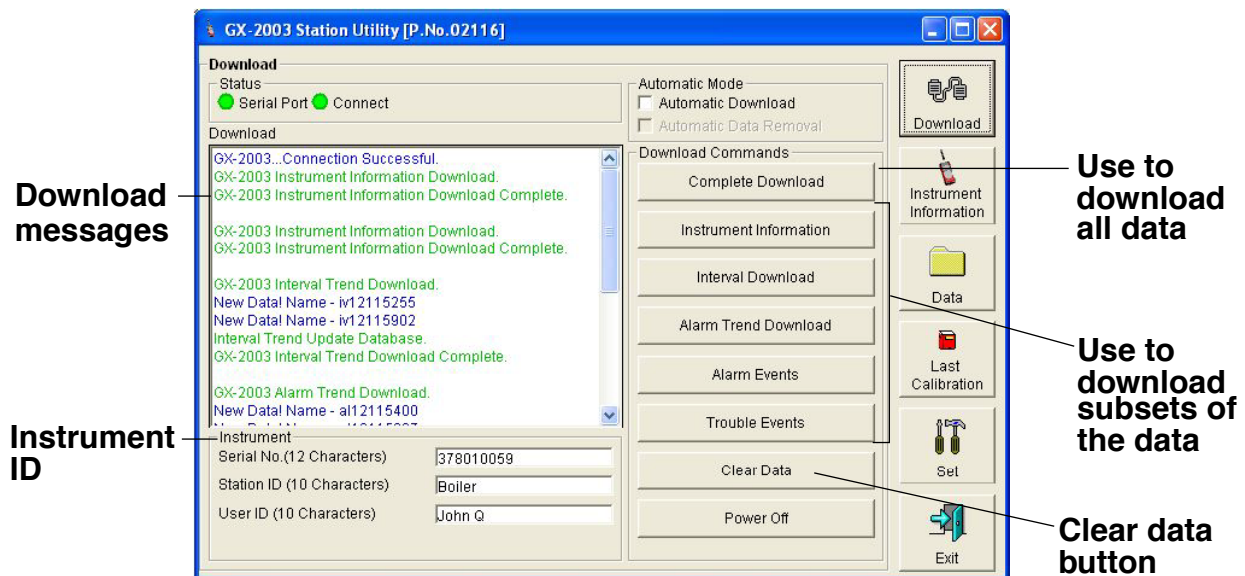
Download messages

Instrument ID

Use to download all data

Use to download subsets of the data

Clear data button

**Figure 18: Download Messages in the Download Window**

7. If the unit has been downloaded manually (Automatic Download not selected) using the **Complete Download** or **Instrument Information** commands, the unit's instrument information may be viewed after downloading by using the **Instrument Information** button if the unit is still turned on and connected to the computer. The instrument information includes instrument parameters such as serial number and alarm points, and also includes the results of the most recent successful calibration for each channel. To view instrument information for a unit, click the **Instrument Information** button along the right side of the Download window. The Instrument Information window displays. This screen cannot be printed from the downloading software. If the unit is turned off, the Instrument Information window will be blank.



**Figure 19: Instrument Information Window**

8. You can view, print, export, or delete downloaded data by entering the Data or Last Calibration windows. These windows are accessed by clicking the Data or Last Calibration buttons along the right side of the Download window. See "Viewing, Printing, Exporting, and Deleting Data" on page 32 or "Last Calibration Button" on page 18.

9. After downloading data from an instrument, you can delete all the data in the GX-2003 by clicking the "Clear Data" button if desired. This will not delete instrument parameters such as serial number, alarm settings, or autocalibration settings.

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***WARNING:*** ***If you click the Clear Data button, all data is erased in the GX-2003, but not in your computer's memory. So it's advisable that you download the data from the GX-2003 first before clearing the data.***

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To avoid overwriting data in the GX-2003 before it can be downloaded, note the amount of log time still available in the GX-2003 when beginning a data logging session and what the overwrite setting is in the GX-2003. See the GX-2003 Operator's Manual.

# Viewing, Printing, Exporting, and Deleting Data

The GX-2003 logs four types of data files: calibration history, interval trend data, alarm trend data, and event data.

You can view, print, and export (save to a file) each of these types of data files. All of these types of data files can also be deleted. The deleting of files is password protected and is described in "Deleting Data" on page 53.

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**NOTE:** If the GX-2003 Data Logger Program database is on the user's computer (default setting), data will only appear for instruments downloaded to that computer. If the database is on a network, data will appear for all instruments downloaded to that database. See "Accessing a Common Database" on page 24 for more information.

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## Data Window

All the data can be accessed in the Data window. The Data window is accessed by clicking the **Data** button along the right side of the program window.
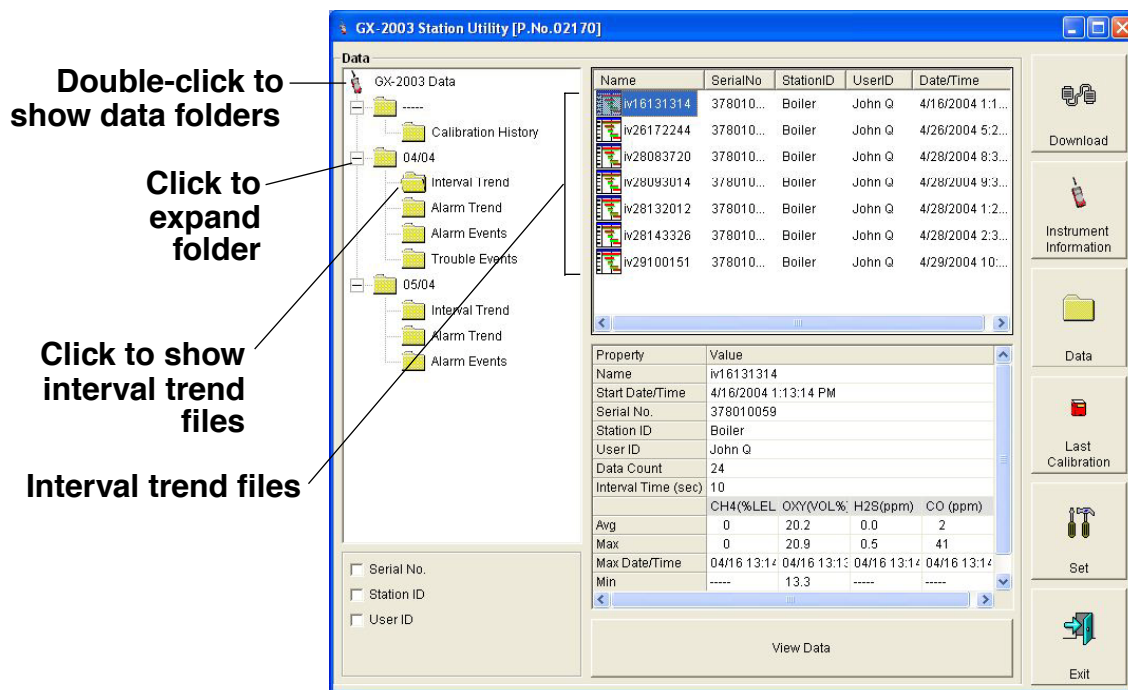
**Double-click to show data folders**

**Click to expand folder**

**Click to show interval trend files**

**Interval trend files**

**Figure 20: Data Window, Basic Data Organization**

The Data window is divided into four frames. The upper left frame is the Data frame and displays all the data folders. They are grouped under the GX-2003 icon in the upper left part of the frame. If the data folders are not visible, double click the icon to make them visible. If no data has been saved, then no folders will appear when the GX-2003 icon is double clicked.

The lower left frame contains three selection boxes for organizing data. If none of the boxes are selected, then the data is organized as shown in Figure 20. The data may be organized by one or more of the following parameters: serial number, station ID, or user ID. Click the selection box or boxes in the lower left frame to organize the data as desired.

**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 Data window will look slightly different.

The upper right frame shows the contents of a data folder that is

selected in the Data frame. The lower right frame shows the summary information for a data file that is selected in the upper right frame.

The **View Data** control button is located at the bottom of the lower right frame. The **View Data** button becomes active when a data file is selected in the upper right frame. Clicking the **View Data** button opens the data file and displays the data.

## Calibration History

Instrument calibration history is available in two separate locations in the program. The information regarding the most recent successful calibration for each channel of an instrument along with whether or not an instrument is due for calibration can be accessed using the **Last Calibration** button on the right side of the program window. See "Last Calibration Button" on page 18 for a complete description of the information that can be accessed by the **Last Calibration** button.

All downloaded calibration information for all downloaded instruments is available in the Calibration History folders in the Data window. This information is saved in a Calibration History folder that is located in an untitled folder for each instrument. The calibration history files are differentiated by instrument. The calibration information available here is more comprehensive than that in the Last Calibration window. The calibration information for all calibrations downloaded, whether successful or not, is saved instead of just the most recent successful calibration for each channel of an instrument.

To view the calibration history for any instrument in the database:
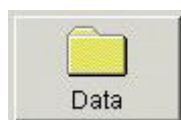
1. With the software already launched, click the **Data** control button along the right side of the program window. The Data window will appear.
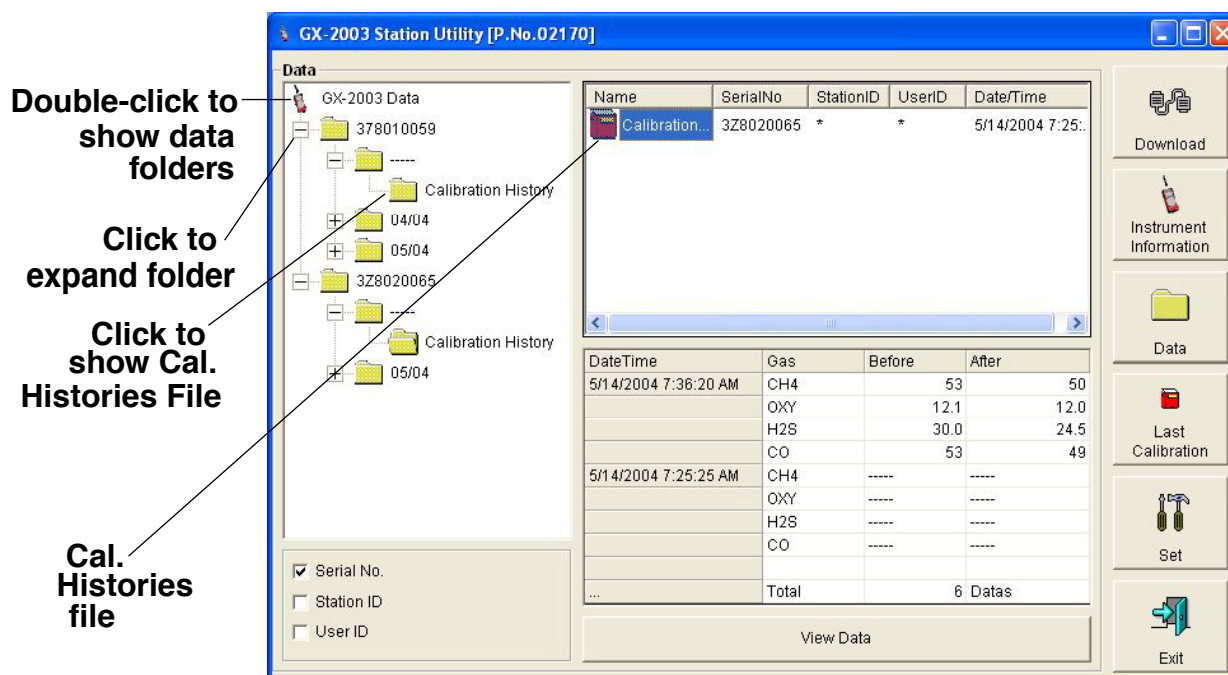
Labels on figure:
- Double-click to show data folders
- Click to expand folder
- Click to show Cal. Histories File
- Cal. Histories file

**Figure 21: Data Window - Selecting Calibration History Files**

2. If necessary, double-click the GX-2003 icon in the top of the Data window's upper left frame to see the folders of downloaded data.

3. Find your instrument by serial number, then click the expanded view symbol (+) or double-click the folder to view the contents.The top folder is untitled and contains the Calibration History folder. The rest of the folders contain folders for the interval trend files, alarm trend files, and event files and are named and organized by date (month/year).

4. Click the expanded view symbol (+) of or double-click the untitled folder. The Calibration History folder will appear below the untitled folder.

5. Click the Calibration History folder. The Calibration Histories file or files for that instrument will appear in the top right frame. If multiple Station ID's or User ID's are used for an instrument, then more than one Calibration Histories file will appear.

6. Click the file to select it. The first two calibrations saved will

be shown in the bottom right frame along with the total number of calibrations saved if it is more than two.

7. To view the Calibration Histories file in table format, double click the Calibration Histories file or click the View Data button. Calibration Histories files can only be viewed in table format.



**Figure 22: Data View - Calibration History**

8. If you want to print the data, click the **Print** button. A Print dialog box will appear for you to select a printer.

9. To export the data to another application, for example a spreadsheet or database, click the **Export** button. A "Save As" dialog box will appear for you to specify the filename, file location. The default file type is ".csv" (comma-separated values.
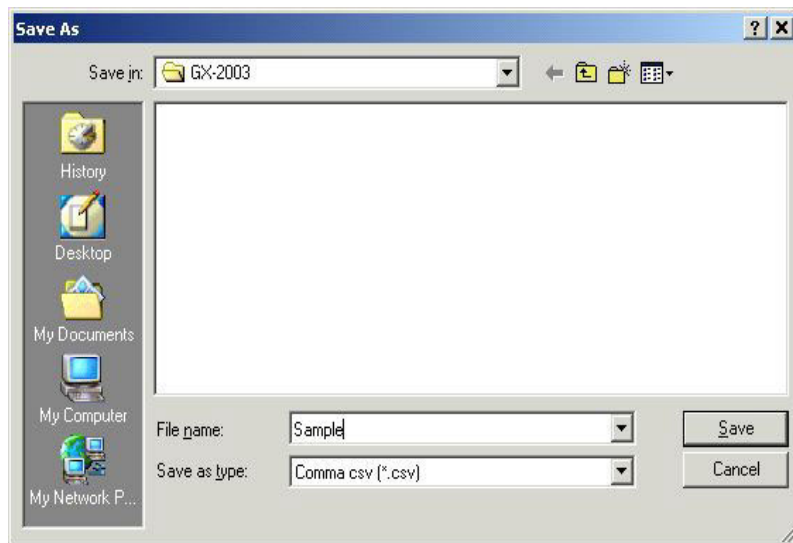
**Figure 23: Save as Dialog Box**

After specifying the, file name, file location, and file type click the **Save** button to save the file to the specified location.

10. To save the table to the clipboard, click the **To clipboard** button and the table 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 the **Data** button on the right side of the program window and select the data you want to view.
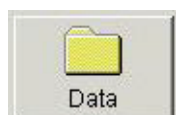
## Interval Trend Data

Average gas concentrations over the user defined interval time are logged in the interval trend data files. The interval time is set using the GX-2003 Setup Mode. See the GX-2003 Operator's Manual for instructions to set the data logging interval time. Events, such as gas alarms or low flow alarms, are saved in the data file when they occur.

An interval trend file is created and saved in the GX-2003 when the instrument is turned *off*. The serial number, user ID, and station ID that are entered in the instrument when it is turned *on* are saved for the interval trend file.

The data may be viewed either in table format or graph format if at least 5 scheduled data points have been logged at the programmed interval. If an interval data file has fewer than five scheduled data points, the data cannot be graphed.

To view and perform desired operations with the interval trend files:

1. With the software already launched, click the **Data** control button along the right side of the program window. The Data window will appear.
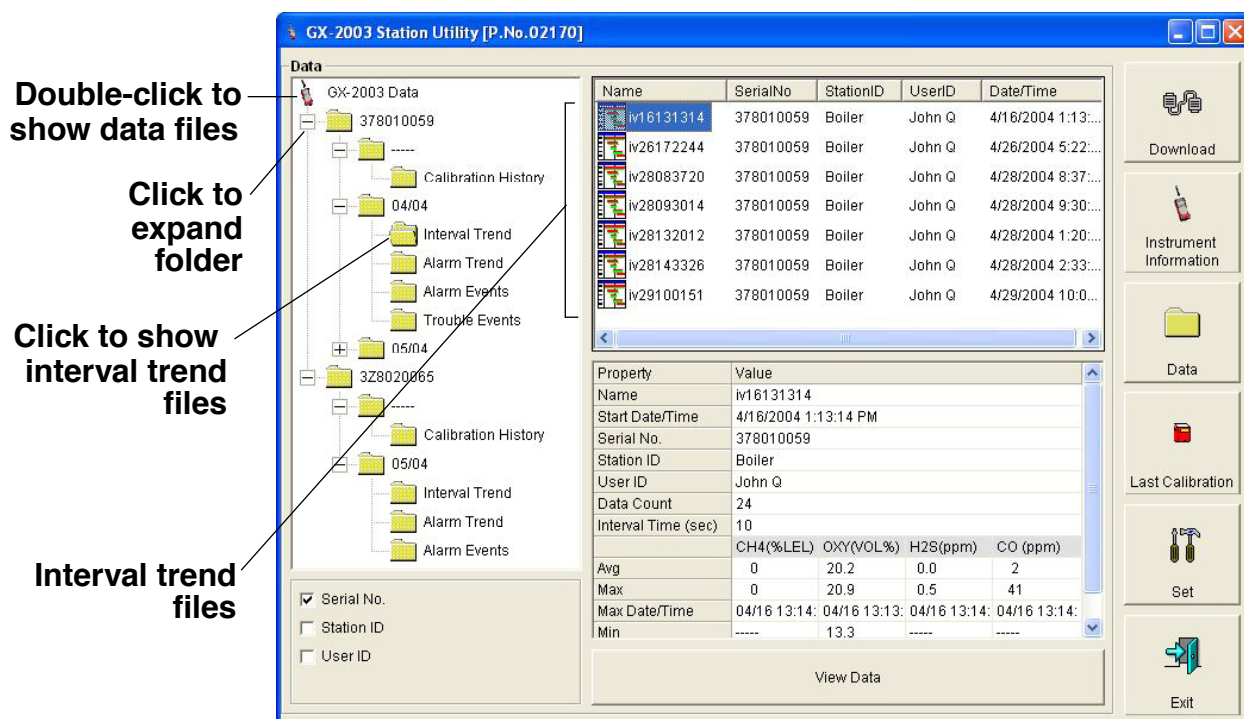


**Figure 24: Data Window - Selecting Interval Trend Data Files**

2. If necessary, double-click the GX-2003 icon in the top of the Data window's upper left frame to see the folders of downloaded data.

3. Find your instrument by serial number, then click the expanded view symbol (+) or double-click the folder to view the contents. The top folder is untitled and contains the Calibration History folder. The rest of the folders contain folders for the interval trend files, alarm trend files, and event files and are named and organized by date (month/year).

4. Click the expanded view symbol (+) of or double-click the dated folder whose contents you want to see.

5. Click on the Interval Trend folder. In the upper right frame of the Data window, a list of file names will appear in the Name column. A prefix of "iv" indicates an interval trend data file.

6. Click one of the interval trend data file names. A summary will appear in the bottom right frame with instrument and alarm setting information. If you want to view, graph, print, or export the interval trend data, double-click the filename or click the **View Data** button at the bottom of the window.

7. Interval trend data can be viewed in either table or graph format by selecting the Table or Graph selection buttons.



**Figure 25: Interval Trend Data in Table Format**

- In table format, the interval trend data is shown as the

average gas readings over the user defined interval. 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.

- 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 low flow condition or failed calibration, an indication that the unit is returning to "normal" condition after an alarm has been reset using the RESET SILENCE button on the GX-2003, and calibration.

- If a calibration is performed on an instrument, the calibration will be displayed as an event at the time that the calibration was performed by pressing the POWER/ ENTER button. When the GX-2003 is in calibration mode, the average readings will continue to be logged at the interval time. However, any gas readings that occur while the GX-2003 is in calibration mode will not trigger alarm events to be saved and will not be recorded as a minimum or maximum reading for that data session. The data will not indicate when the instrument was put into calibration mode or when it returned to normal operation from calibration mode. To view complete calibration information for the instrument and print out calibration information, go to the Last Calibration window by clicking the **Last Calibration** button along the right side of the program window (this will allow you to see the most recent successful calibration for each channel of the unit) or open the Calibration Histories file for the unit (see "Calibration History" on page 34).

- If you click the **Summary** button, the data window will split into two frames, one above the other, with the data table in the lower frame and the summary information shown in the upper frame. The summary information is the same as the one shown in the lower right frame in Figure 24.

8. If data is being viewed from an instrument that included a TC %volume CH4 sensor, then it is possible that readings above 100% LEL were logged for the CH4 channel. To view the CH4 readings in %volume instead of % LEL, right click in the CH4 column. A selection box will appear that allows you to choose between %LEL and VOL% for the CH4 display units.
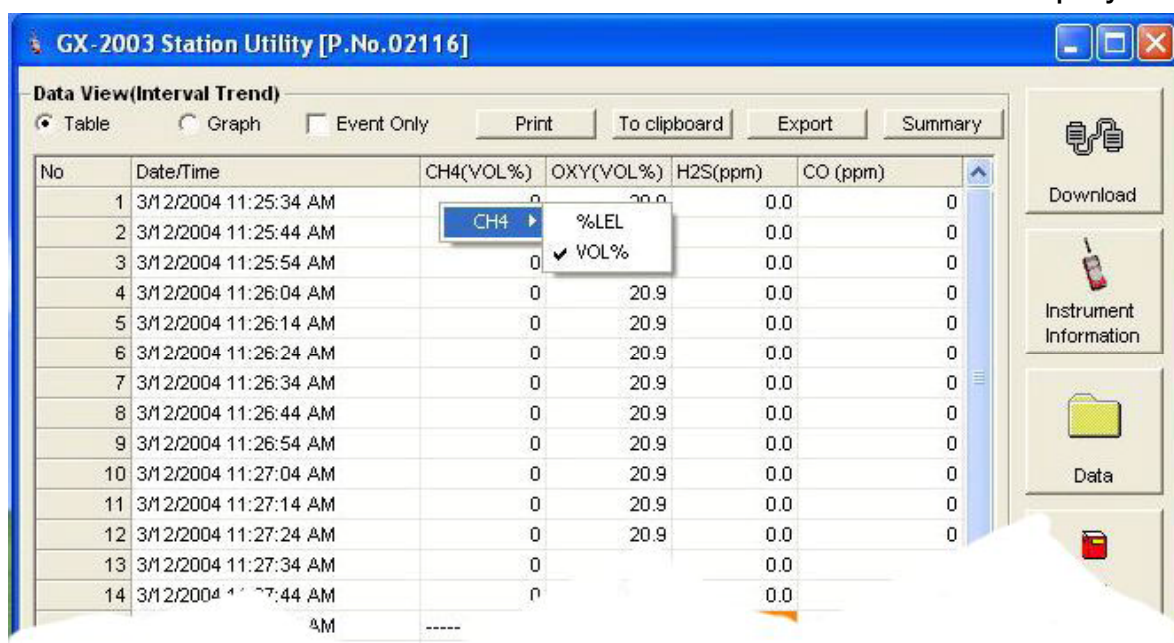


**Figure 26: CH4 %LEL/%Volume Selection**

9. To view the data in graph format, click the Graph selection button. Five or more scheduled data points are required in an interval trend file to be able to display it in graph format.

---

**NOTE:** The data count shown when you have selected an interval trend data file, as in Figure 24 above, can be more than five if you have events, such as the GX-2003 going into and out of alarm, but you may not have five scheduled data points.

---
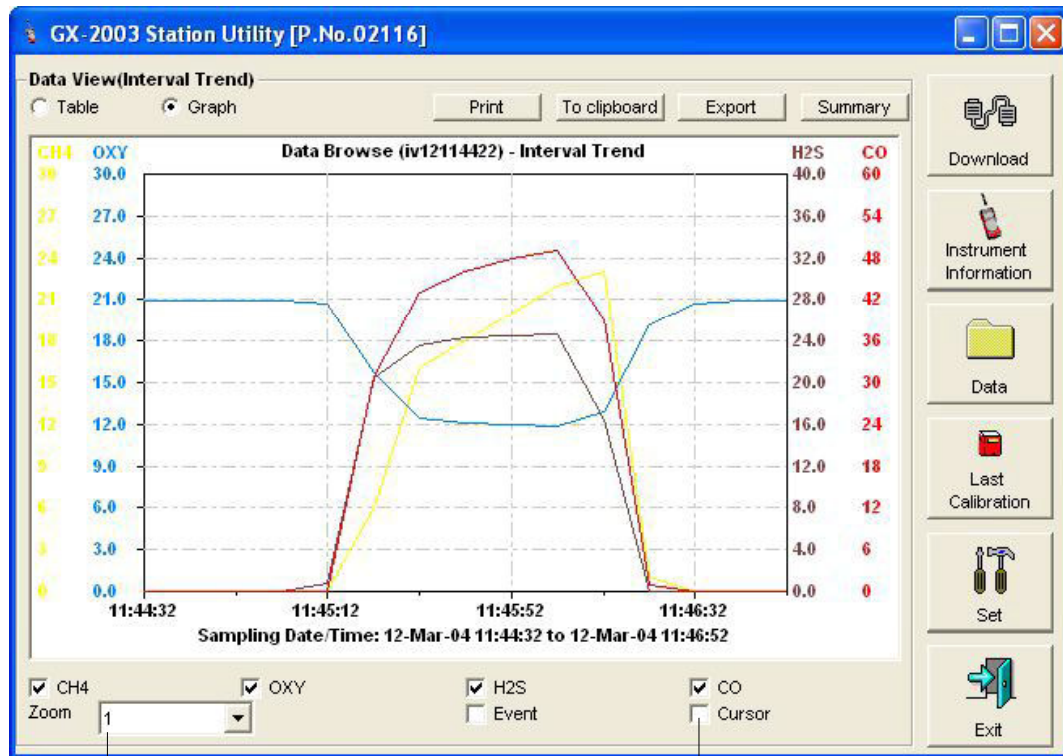
**Zoom level**            **Cursor feature**

**Figure 27: Interval Trend Data in Graph Format**

When viewing interval trend data in graph format, you have several options:

- You can choose which gas you want to graph

- You can choose the zoom level, or displayed time interval, on the graph. The zoom feature shows greater detail relative to time. Thus, the length of a time division on the graph will depend on both the length of the datalogging session and on the zoom factor.

- When selected, the Cursor feature allows you to display the gas reading and log time for each data point. As you use the left and right arrow buttons on your keyboard to move the cursor across the graph horizontally, readings at specific log times are displayed. Use the up and down arrows on the keyboard to move the readings up or down on the screen.

- If you click the Summary button, the data window will split into two frames one above the other with the graph in the lower frame and the summary information shown in the upper frame. The summary information is the same as the information shown in the lower right frame in Figure 24.

10. To print the data, whether it is viewed in table or graph format, click the **Print** button. A Print dialog box will appear for you to select a printer. Data displayed in Graph view will print as a graph and data displayed in Table view will print as a table.

11. To export the data to a file so it can be used by another application, for example a spreadsheet or database (for table data) or a word processing or presentation program (for graph data), click the **Export** button. A "Save As" dialog box will appear for you to specify the filename, file location, and file type.
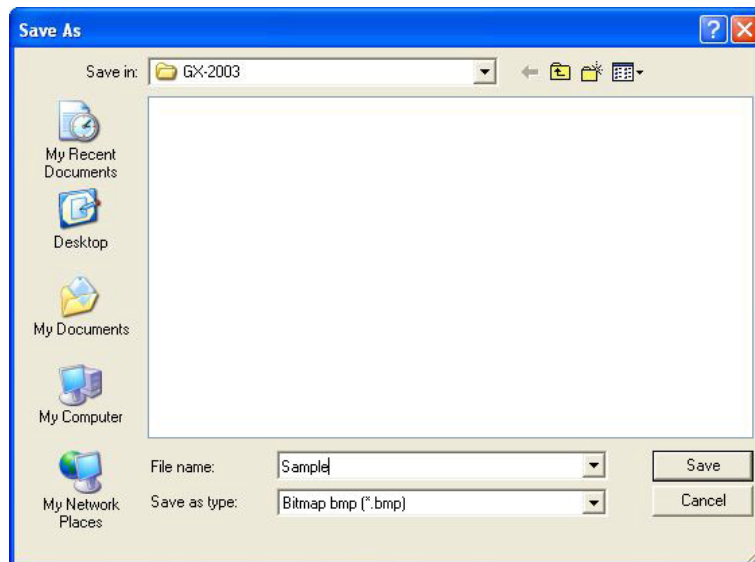


**Figure 28:  Save as Dialog Box**

For Graph view the export file type is Windows bitmap (.bmp). For Table view the default file type is ".csv" (comma-separated values.) After specifying the, file name, file location, and file type click the **Save** button to save the file to the specified location.

12. To save the table or graph to the Clipboard, click the **To clipboard** button and 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.

13. To go back and view other data, click the **Data** button on the right side of the program window and select the data you want to view.

---

**NOTE:** If data is being viewed and the data folders are left open before instrument downloading is done, close all folders after downloading and re-open them to be able to view newly downloaded files.

---

## Alarm Trend Data

In addition to the interval trend data, the GX-2003 also 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 separately from the interval data files. It shows the readings up to 30 minutes before and 30 minutes after the event, with the log interval time every five seconds. The gas readings logged at the alarm event time are highlighted in red and the gas readings logged every 5 seconds around the alarm event are the peak (minimum for oxygen) readings for the previous five seconds. If the GX-2003 has not been on for 30 minutes before the alarm event occurs, the data during this time is left blank. If the GX-2003 is turned off less than 30 minutes after an alarm event occurs, the data file will only have logged data until the unit was turned off.

The GX-2003 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-2003's memory, the oldest alarm trend file is overwritten when a new alarm trend file is saved. Alarm trend data can always be displayed in either table or graph format.

To view and perform desired operations with the alarm trend files:

1. With the software already launched, click the **Data** control button along the right side of the program window. The Data window will appear.

2. If necessary, double-click the GX-2003 icon in the top of the Data window's upper left frame to see the folders of downloaded data.
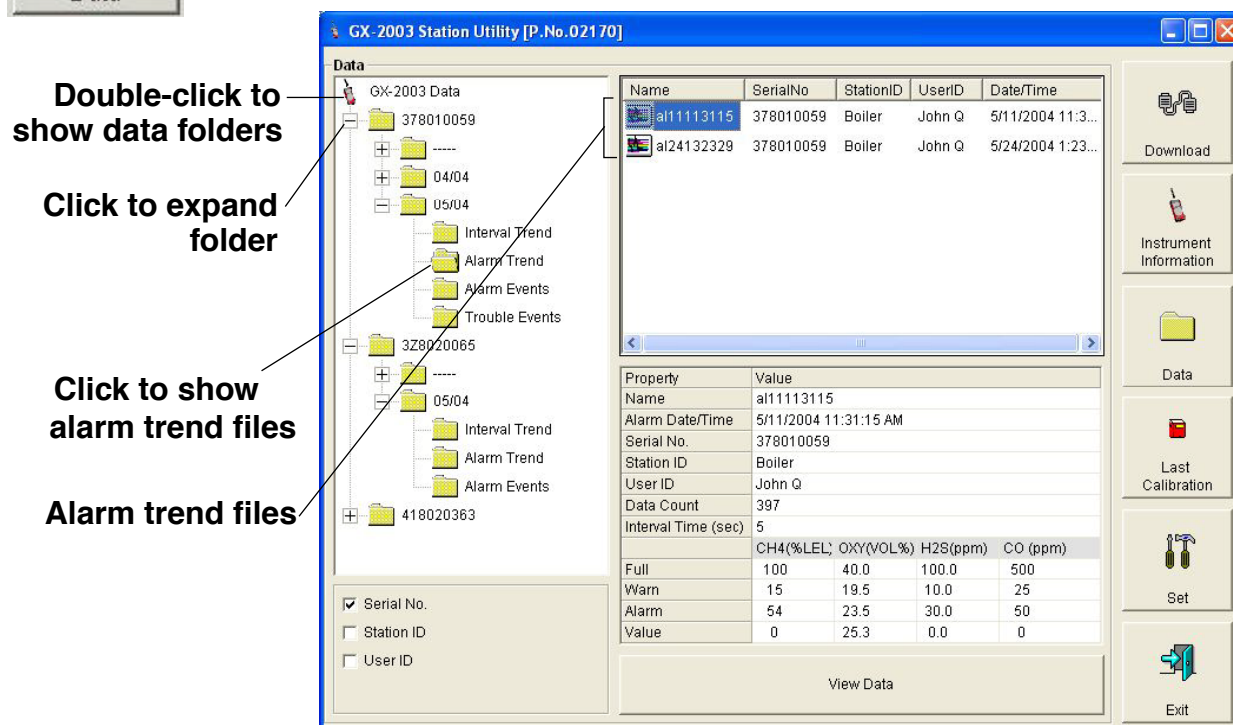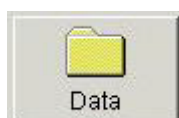


**Figure 29: Data Window - Selecting Alarm Trend Data Files**

3. Find your instrument by serial number, then click the expanded view symbol (+) of or double-click the folder to view the contents. The top folder is untitled and contains the Calibration History folder. The rest of the folders contain folders for the interval trend files, alarm trend files, and event files and are named and organized by date (month/year).

4. Click the expanded view symbol (+) of or double-click the dated folder whose contents you want to see.

5. Click on the Alarm Trend folder in the upper left frame. In the upper right frame of the Data window, a list of file names will

appear in the Name column. A prefix of "al" indicates an alarm trend data file.

6. Click one of the alarm trend data file names. A summary will appear in the bottom right frame with instrument and alarm setting information. If you want to view, graph, print, or export the alarm trend data, double-click the filename or click the **View Data** button at the bottom of the window.

7. Alarm trend data can be viewed in either table or graph format



**Figure 30: Alarm Trend Data in Table Format**

- In table format, the log times are shown along with the peak (minimum for oxygen) gas readings for the previous five seconds.

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

- If you click the **Summary** button, the data window will split into two frames one above the other with the data table in the lower frame and the summary information shown in the upper frame. The summary information is the same as the information shown in the lower right frame in Figure 29.

8. If data is being viewed from an instrument that included a TC %volume CH4 sensor, then it is possible that readings above 100% LEL were logged for the CH4 channel. To view the CH4 readings in %volume instead of % LEL, right click in the CH4 column. A selection box will appear that allows you to choose between %LEL and VOL% for the CH4 display units.
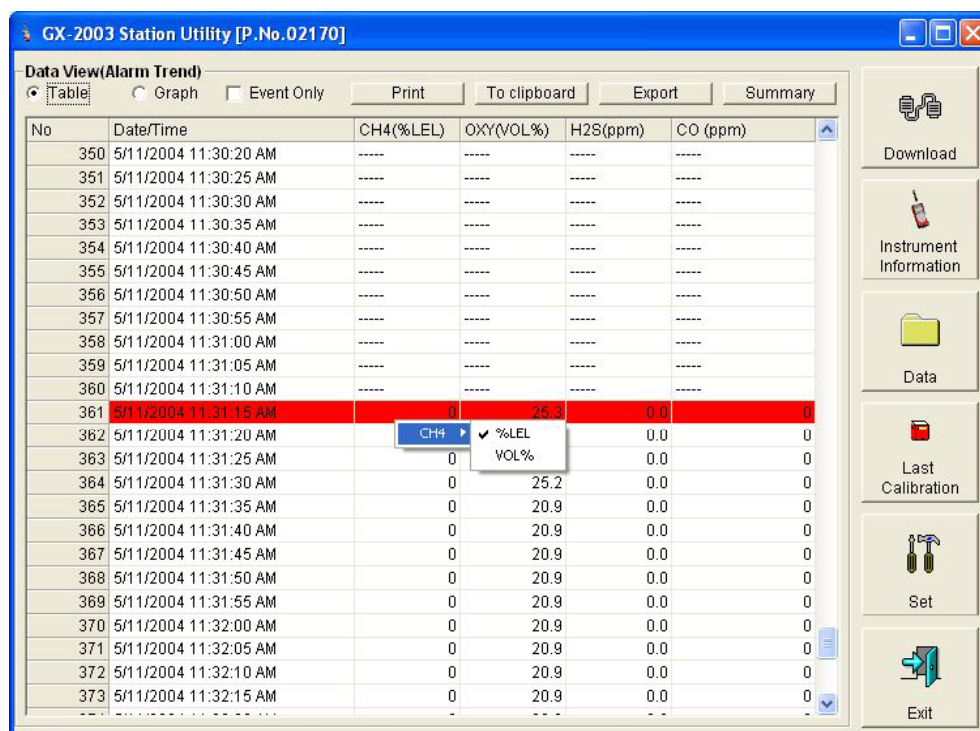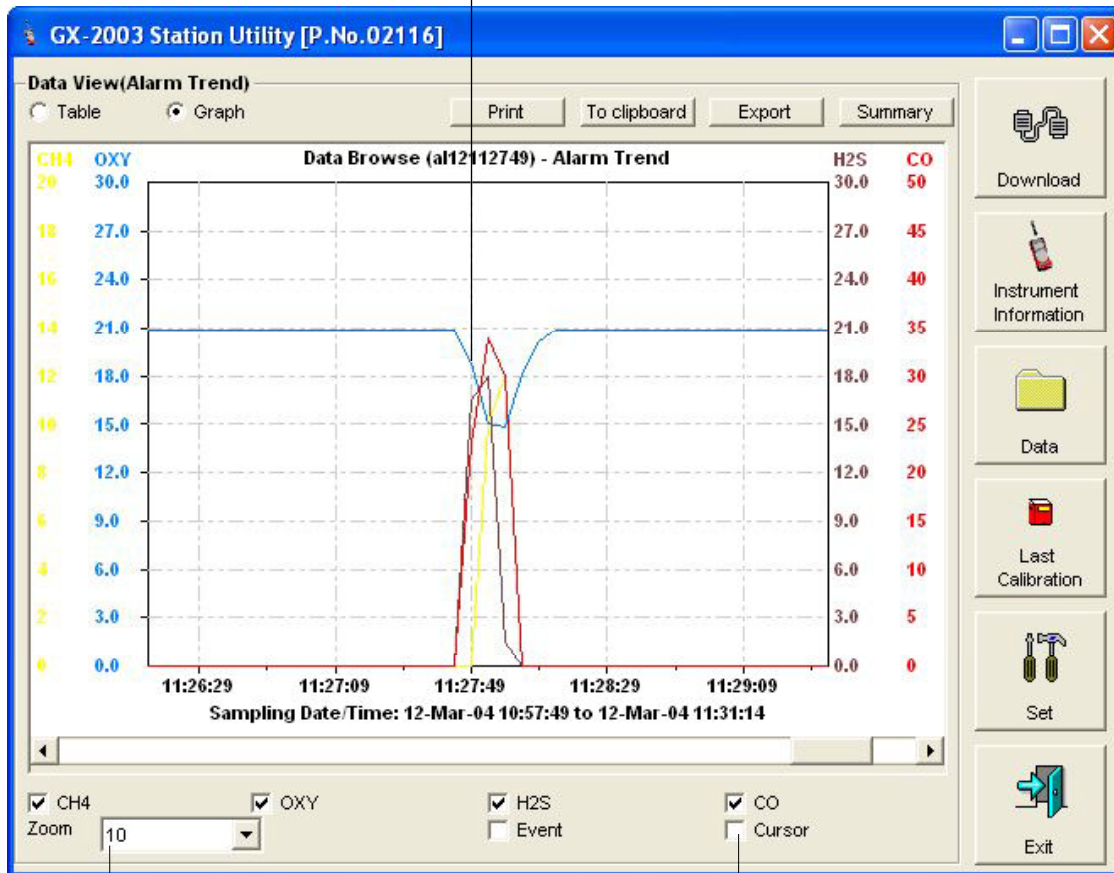


**Figure 31: CH4 %LEL/%Volume Selection**

9. To view the data in graph format, click the **Graph** button. An alarm trend file can always be graphed regardless of the number of logged points.

**Alarm event and gas concentration**



**Zoom factor**

**Cursor feature**

**Figure 32: Alarm Trend Data in Graph Format**

When viewing alarm trend data in graph format, you have all the same options as when viewing interval trend data. See instruction 9 on page 41 in "Interval Trend Data".

10. To print the data, whether it is viewed in table or graph format, click the **Print** button. A Print dialog box will appear for you to select a printer. Data displayed in Graph view will print as a graph and data displayed in Table view will print as a table.

11. To export the data to another application, for example a spreadsheet or database (for table data) or a word processing or presentation program (for graph data), click the **Export** button. A "Save As" dialog box will appear for you

to specify the filename, file location, and file type.



**Figure 33:  Save as Dialog Box**

For Graph view the export file type is Windows bitmap (.bmp). For Table view the default file type is ".csv" (comma-separated values.) After specifying the, file name, file location, and file type click the **Save** button to save the file to the specified location.

12. To save the table or graph to the clipboard, click the **To clipboard** button and 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.

13. To go back and view other data, click the **Data** button on the right side of the program window and select the data you want to view.

---

**NOTE:**  If data is being viewed and the data folders are left open before instrument downloading is done, close all folders after downloading and re-open them to be able to view newly downloaded files.

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## Event Data

The GX-2003 not only saves trend files which include logged data at scheduled times, but also saves the 100 most recent alarm events and the 100 most recent trouble events. When an instrument is downloaded, the GX-2003 Data Logging Software will retrieve these events from an instrument and save them in alarm event files and trouble event files for each instrument that is downloaded.

Alarm event files save the time, instrument channel, and alarm type of every gas alarm event that occurs on a particular instrument. Warn (alarm 1), alarm (alarm 2), STEL, TWA, and overscale events are saved.

Trouble event files note the time, whether the event is an instrument system failure or sensor failure and the specific type of failure. Flow failures, calibration failures, and sensor failures are among the trouble events that are saved.

1. With the software already launched, click the **Data** control button along the right side of the program window. The Data window will appear.
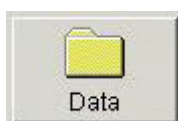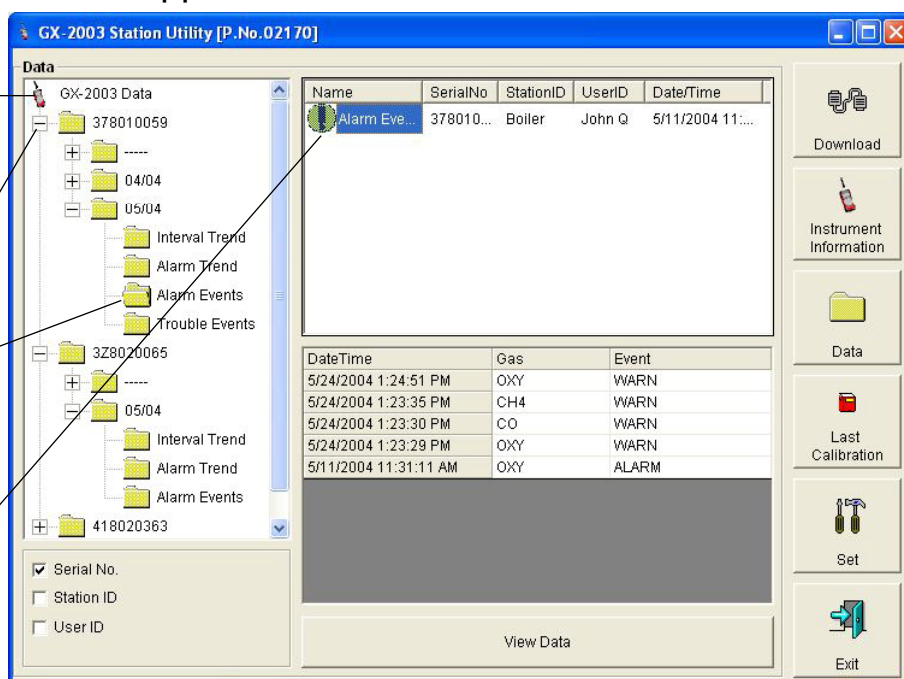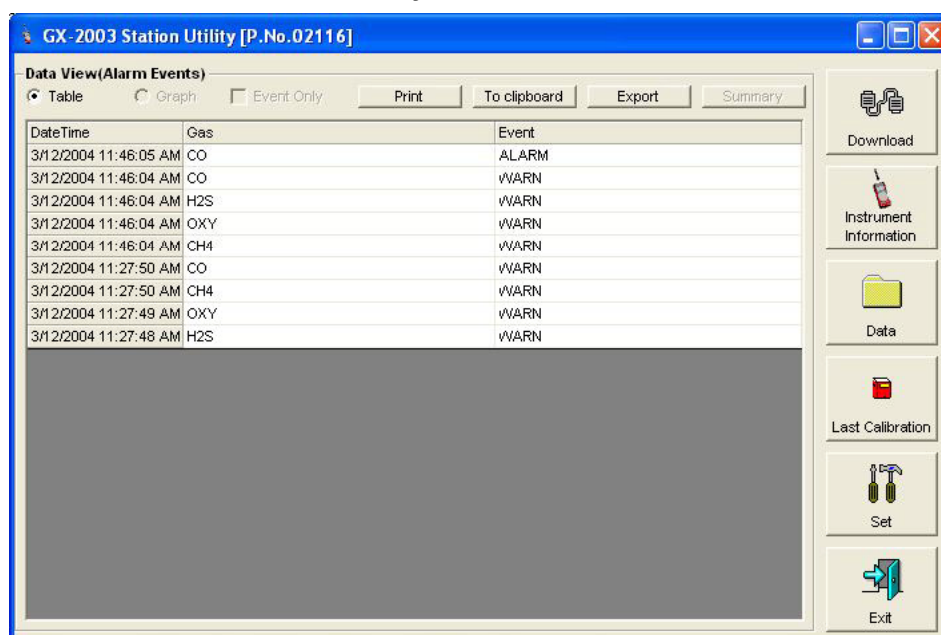


**Figure 34:  Data Window - Selecting Event Data Files**

2. If necessary, double-click the GX-2003 icon in the top of the Data window's upper left frame to see the folders of downloaded data.

3. Find your instrument by serial number, then click the expanded view symbol (+) or double-click the folder to view the contents.The top folder is untitled and contains the Calibration History folder. The rest of the folders contain folders for the interval trend files, alarm trend files, and event files and are named and organized by date (month/year).

4. Click the expanded view symbol (+) of or double-click the dated folder whose contents you want to see.

5. Click the Alarm Events or Trouble Events folder. An alarm or trouble event file will appear in the top right frame and a summary will appear in the bottom right frame with the date, time, event type, and specific event for the first 8 events saved in the file along with the total number of events in the file. If multiple Station ID's or User ID's are used for an instrument, then more than one event file will appear.

6. If you want to print or export an event file, double-click the event file name to open the file and view it in table format. Event files can only be viewed in table format.



**Figure 35: Data View - Alarm Events**
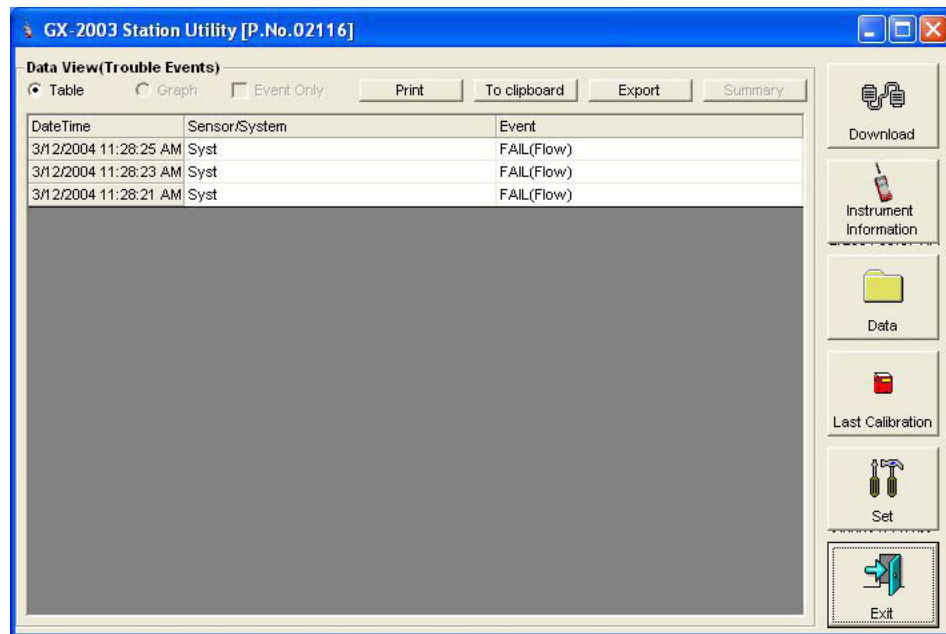
**Figure 36:  Data View - Trouble Events**

7. If you want to print the data, click the **Print** button. A Print dialog box will appear for you to select a printer.

8.  To export the data to another application, for example a spreadsheet or database, click the **Export** button. A "Save As" dialog box will appear for you to specify the filename, file location. The default file type is ".csv" (comma-separated values.)



**Figure 37:  Save as Dialog Box**

After specifying the, file name, file location, and file type click the **Save** button to save the file to the specified location.

9. To save the table to the Clipboard, click the **To clipboard** button and the table will be saved to the Clipboard. It can then be pasted into a document by using the Paste command in an application.

10. To go back and view other data, click the **Data** button on the right side of the program window and select the data you want to view.

## Deleting Data

The following items can be deleted:

· data folders

· interval trend and alarm trend data files in the Data window

· event files in the Data window

· Calibration History files in the Data window

· calibration data in the Last Calibration Window

To delete data folders, data files, event, or Calibration History files in the Data window:

1. Place the cursor on the file or folder and click with the right mouse button. The Delete box will appear.

2. Click Delete with the left mouse button. The Password window appears.

3. Enter the password and click the Continue button. The Delete Sample window will appear. The password when the software is first installed in "rki". The password is case sensitive. See "Changing the Password" on page 54 for instructions to change the password if desired.

4. If you want to delete the file, click the Yes button. The file will be deleted by the software.

If you do not want to delete the file, click the No button and the operation will be cancelled.

To delete calibration data in the Last Calibration window:

1. With the software launched, click the **Last Calibration** button on the right side of the program window. The Last Calibration window will appear.

2. Select the Need Calibration or Calibration Date option.

3. Click the row for the instrument whose calibration information you want to delete to select it. It will be highlighted to show that it is selected.

4. Click the row with the right mouse button. The Print/Delete window appears.

5. Click Delete with the left mouse button. The Password window appears.

6. Enter the password and click the Continue button. The Delete Sample window will appear. The password when the software is first installed is "rki". The password is case sensitive. See "Changing the Password" on page 54 for instructions to change the password if desired.

7. If you want to delete the file, click the Yes button. The file will be deleted by the software.

   If you do not want to delete the file, click the No button and the operation will be cancelled.

## Changing the Password

It is possible to change that password as follows:

1. Right-click a data folder, data file, or event file. The Delete box will appear.

2. Click Delete with the left mouse button. The Password window appears.

3. Click Change Password.

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

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

6. Type the new password again, then click the Confirm New Password button.

7. Click **OK** when the program confirms that you have changed the password.

8. Close the Password window.

# Calibrating A GX-2003 With the Data Logging Software

A GX-2003 can be calibrated using the GX-2003 Data Logging Software. The calibration function is available in the Set window. To perform a calibration you will need a calibration kit. This section describes calibration using a calibration kit that includes a demand flow regulator. If a calibration kit is used that includes a sample bag and a dispensing valve instead of a demand flow regulator, connect a sample bag filled with calibration gas to the GX-2003's inlet fitting when applying gas instead of connecting the demand flow regulator to the GX-2003's inlet fitting.

To calibrate the GX-2003 you will need the following items:

- Known calibrating samples of the gases being detected. The combustible and toxic gas samples should have concentrations in approximately the middle of the range of detection. A 3-gas or 4-gas mix, depending on your instrument version, is recommended so that all channels (other than % volume CH4 if it is installed) may be calibrated at once.

- If a TC % volume sensor is installed, this sensor will need to be calibrated individually. A 50% volume methane in nitrogen cylinder is recommended for calibration of the TC % volume sensor.

- A demand-flow regulator to provide adequate sample gas flow

- Non-absorbent tubing to connect the regulator to the GX-2003's inlet fitting

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**CAUTION:**  *Calibration using the GX-2003 Data Logging software should be done in a fresh air area, an area free of combustible and toxic gases and of normal oxygen content (20.9%). If you suspect the area is not a fresh air area, apply zero air to the instrument when performing a zero operation.*

---

To calibrate a GX-2003, perform the following steps:

1. Launch the GX-2003 Data Logging Software.

2. .Connect a GX-2003 to the software. See "Downloading Data from the GX-2003" on page 27, instruction 1 through instruction 3, for instructions to connect an instrument to the software.

3. Once the connection is made, the **Complete Download, Instrument Information, and Power Off** download commands will be selectable. Click the **Instrument Information** download command to retrieve the instrument information from the GX-2003. If you wish to download data before calibrating, click **Complete Download** instead of **Instrument Information**.

4. Click the **Set** button to display the Set window.

**Click to begin calibration of a GX-2003**



**Figure 38: Set Window**

5. Click the **Calibration** button in the GX-2003 Status frame. The Calibration frame will replace the GX-2003 Status frame and the instrument's pump will begin to operate.
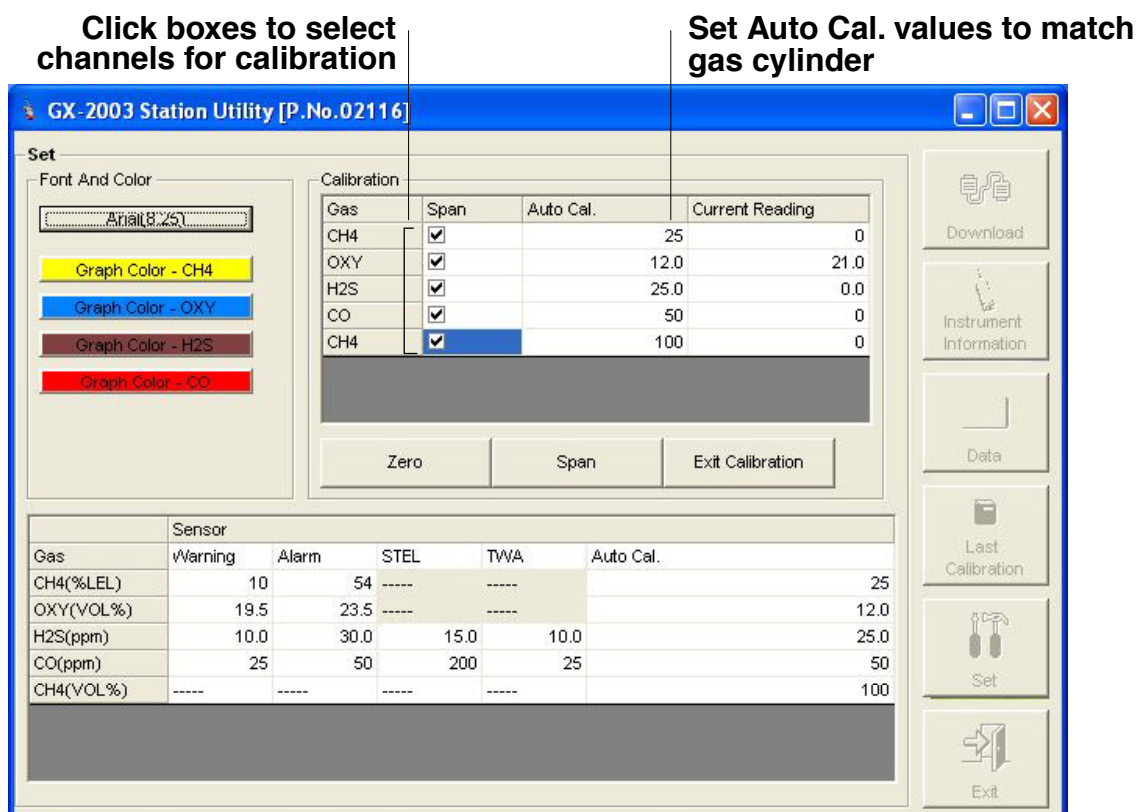
**Click boxes to select channels for calibration**

**Set Auto Cal. values to match gas cylinder**



**Figure 39: Set Window with Calibration Frame**

6. Use the selection boxes under the Span column to select the channels you want to calibrate.

---

**NOTE:** If installed, the TC % volume sensor cannot be calibrated at the same time as the other sensors because a multi-gas cylinder that includes % volume methane is not available.

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7. Click the **Zero** button. The software will perform a zero adjustment setting the oxygen channel to 20.9% and all other channels to 0.

8. Verify that the value(s) in the Auto Cal. column match the gas concentration(s) in the calibration cylinder that will be used. If not, place the cursor in the field that needs to be changed and update the value. If you have a GX-2003 with the TC % volume sensor, the CH4 at the top of the list is the %LEL sensor and the CH4 at the bottom of the list is the TC sensor.

9. Screw the demand flow regulator onto the calibration cylinder.

10. Connect the regulator to the GX-2003's inlet fitting using the sample tubing provided with the calibration kit.

11. Allow the gas to flow for one minute. The current gas readings will be shown in the Current Reading column.

12. Click the **Span** button. The software will make the span adjustments.

13. Disconnect the tubing from the GX-2003's inlet fitting.

14. Remove the regulator from the cylinder.

15. Click the **Exit Calibration** button to return to the GX-2003 Status frame. The GX-2003's pump will stop.

16. If you wish to use other functions in the software, click one of the control buttons.

17. If you wish to exit the software, click the **Download** button to return to the Download window. Turn off the GX-2003 by using the POWER/ENTER button on the GX-2003 or by clicking the **Power Off** button and confirming that you want to turn off the GX-2003 when the Power Off window appears. Then click the **Exit** button to exit the software.

# Changing Data Logging Parameters

To make changes to parameters stored in the GX-2003, use the Set window of the GX-2003 Data Logging Software. Follow the steps below to make these changes.

1. Launch the GX-2003 Data Logging Software.

2. .Connect a GX-2003 to the software. See "Downloading Data from the GX-2003" on page 27, instruction 1 through instruction 3, to connect an instrument to the software.

3. Once the connection is made, the **Complete Download, Instrument Information, and Power Off** download commands will be selectable. Click the **Instrument Information** download command to retrieve the instrument information from the GX-2003. If you wish to download data before making changes, click **Complete Download** instead of **Instrument Information**.

4. Click the **Set** button to display the Set window. Use the GX-2003 Status frame and the Gas/Sensor frame to change parameters stored in the GX-2003.

**Click to upload changes to GX-2003**



**Figure 40:  Set Window**

5. To change the serial number, station ID, or user ID stored in the GX-2003, 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.

6. To change the datalogging interval time, click on the down arrow in the Interval Trend Time field and select the desired interval time in seconds.

7. To change the channel parameters, click the field you wish to change (e.g. H2S AutoCal.), use the Back Space key to remove the current entry, then type the new information.

8. After you have finished entering new parameters, you must upload this information to the GX-2003 by clicking the **Update** button, then confirming that you want to update the information by clicking the **Yes** button when the Update window appears.

9. To update the GX-2003's date and time to match the computer's, click the **Date/Time Set** button and then click the **Yes** button when the Update window appears.

10. If you wish to use other functions in the software, click the appropriate control button along the right side of the program window.

11. If you wish to exit the software, click the **Download** button to return to the Download window. Turn off the GX-2003 by using the POWER/ENTER button on the GX-2003 or by clicking the **Power Off** button and confirming that you want to turn off the GX-2003 when the Power Off window appears. Then click the **Exit** button to exit the software.

# Changing the Appearance
# of the Software Screens

To change how information is displayed in the software (e.g., text fonts and graph colors), use the Set window of the GX-2003 Data Logging Software. Follow the steps below to make these changes.

1. Launch the GX-2003 Data Logging Software.

2. Click the **Set** button to display the Set window. Use the Font And Color frame in the left side of the window to change fonts and graph colors.

**Click to change font type**



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

**Figure 41: Set Window, Changing Fonts and Graph Colors**

3. Specify new fonts by clicking the button with the name of a font inscribed on it. This action will display the Font window. Choose the font type, style, and size, then click **OK**.
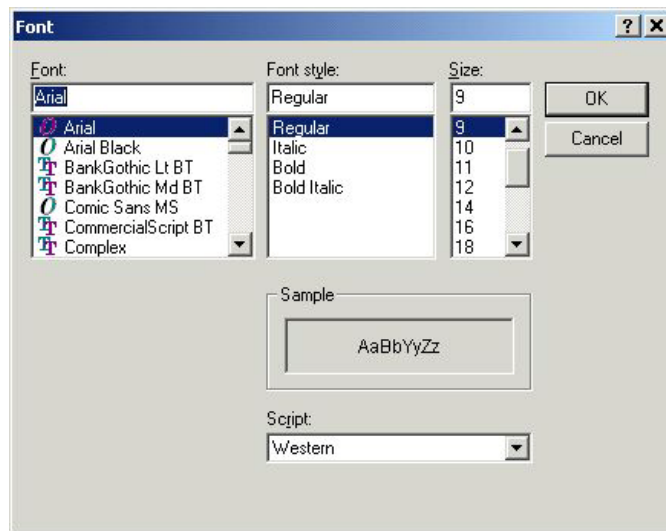
**Figure 42: Font Window**

4. Select the colors used to graph the various target gases in the interval and alarm trend files. To do this, click the appropriate **Graph Color** button on the left side of the Set window in the Font and Color frame.
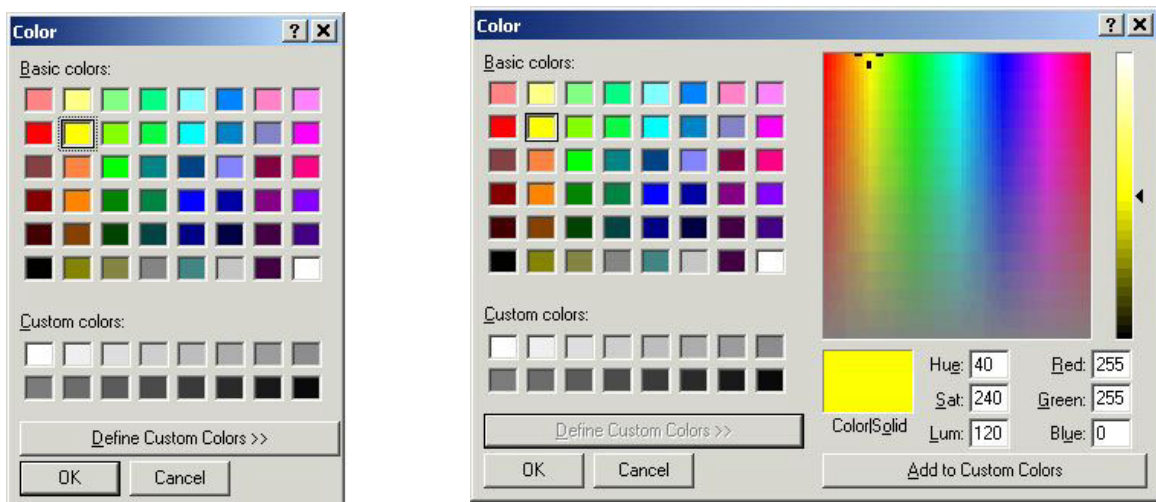


**Figure 43: Color and Custom Color Windows**

5. After making the desired changes, click **OK**.

6. The changes you have made will take effect after you exit and restart the Data Logging Software.

# Spare Parts List

**Table 1: Spare Parts List**

| Part Number | Description |
| --- | --- |
| 47-5026RK | Cable, serial/IrDA adapter |
| 49-5027RK | Cable, USB/IrDA adapter |
| 71-0096RK | GX-2003 Data Logging Software Operator's Manual (this document) |
| 83-0007RK | Downloading software, GX-2003 |