INSTRUMENTS

GX-2009 Data Logger Management Program Operator's Manual

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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-2009 Setup Program. Also read and understand the GX-2009 Operator's Manual included with the GX-2009 portable gas detection unit.*

Introduction

NOTE: The bump test function in Calibration Mode is included in instruments with firmware version 03955 or later installed. See the GX-2009 Operator's Manual for a description of the bump test function. GX-2009 instruments shipped after May 2011 include the bump test function. Instruments that have a serial number starting with 04516 or later shipped from the factory with the bump test function available. Instruments that have a serial number starting with 04515 did not include the bump test function when shipped from the factory. The factory setting for the bump test function is off.

Using an advanced detection system consisting of up to four gas sensors, the GX-2009 Personal Gas Monitor detects the presence of combustible gases, oxygen (O_2), carbon monoxide (CO), and hydrogen sulfide (H_2S) simultaneously. The GX-2009's compact size and easy-to-use design make it ideally suited for a wide range of applications as described in the GX-2009 Operator's Manual. Please read the GX-2009 Operator's Manual first before using the GX-2009 Data Logger Management Program.

The GX-2009 Data Logger Management Program downloads stored data in the GX-2009 to a Windows-based PC. After the data has been downloaded, you can view, save, or print it using your computer and the GX-2009 Data Logger Management Program.

The purpose of this manual is to explain how to use and set up the GX-2009 Data Logger Management Program. You will learn how to:

- install and launch the software
- install the downloading cable (if needed)
- access and store data in a common database
- download data from the GX-2009

- 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

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

CAUTION: *The GX-2009 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-2009, you must follow the instructions and warnings in the GX-2009 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-2009 Data Logger Management Program , your personal computer must meet the following requirements:

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

  USB port and a USB/IrDA adapter cable

Installing the GX-2009 Data Logger Management Program

1. Launch Windows®.
2. Exit from all applications and open windows.
3. There are two ways to install the GX-2009 Data Logger Management Program: by using the GX-2009 Product CD or by using the GX-2009 Data Logger Management Program Installation CD.
   - If you are using the GX-2009 Product CD, insert the Product CD in your computer's CD-ROM drive. The CD will automatically open revealing several folders. Open the Data Logger Program folder, double click on **setup.exe**, then continue with step 4.
   - If you are using the GX-2009 Data Logger Management Program Installation CD, it will automatically begin the installation process. Insert it in your computer's CD-ROM drive, then continue with step 4.

4. After a few seconds, a screen appears indicating that the InstallShield Wizard is preparing to install the Data Management Program, then the GX-2009 InstallShield Wizard window appears to guide you through installation.

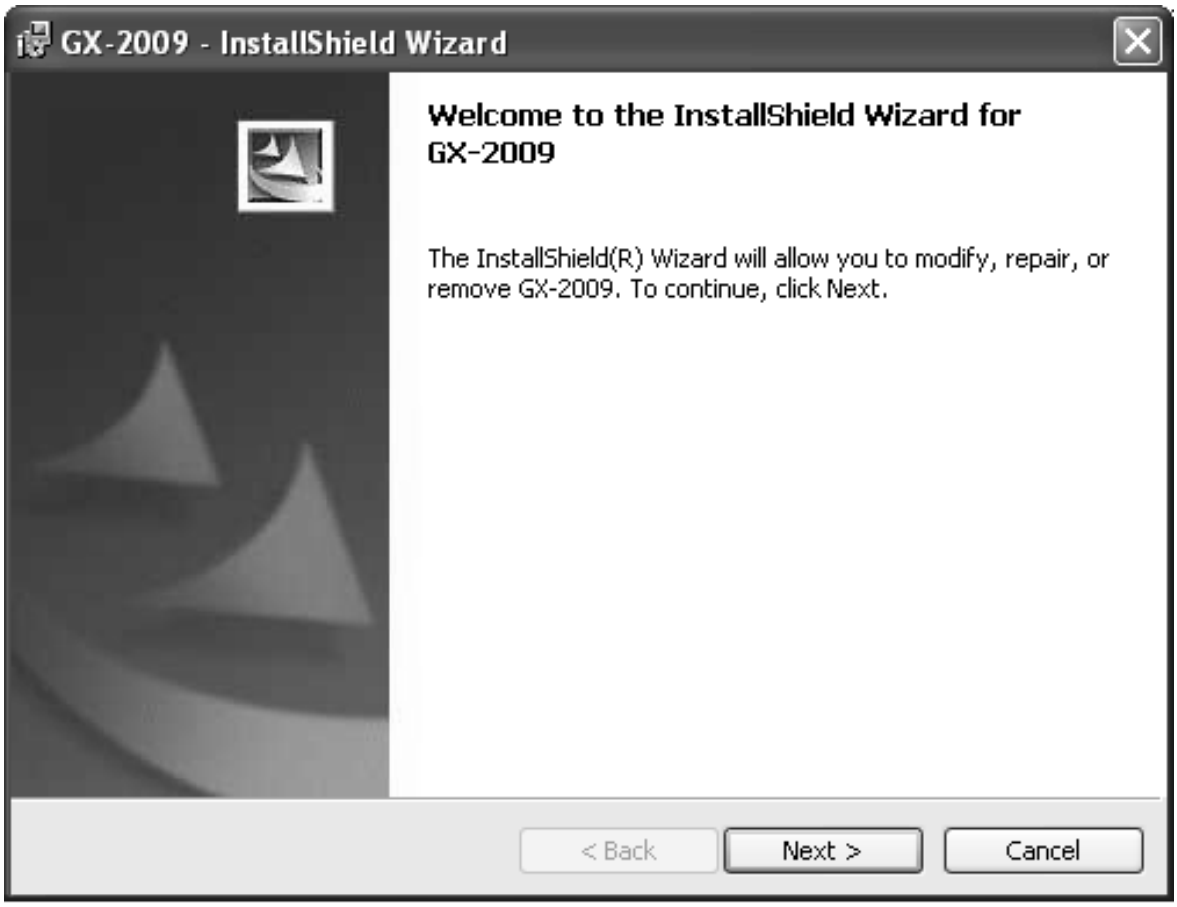


Figure 1: GX-2009 Data Management Installation Program

5. Follow the on-screen instructions in the InstallShield Wizard Window to install the program.
6. If the InstallShield Wizard finds versions of Windows® files on your computer newer than those in the product CD or installation CD, it will ask you if you want to keep these newer files. Click **Yes**.
7. When the InstallShield Wizard indicates that installation is complete, click the **Finish** button.
8. Eject the CD from the CD-ROM drive and store it in a safe place.

IrDA Downloading Cable

The GX-2009 communicates with a computer via an on-board infrared communication port that complies with IrDA protocol standards.

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

If your computer does not have an infrared port, you will need to install an IrDA/USB adapter cable on your computer to use the GX-2009 Data Logger Management Program with your GX-2009. The IrDA/USB cable is available from RKI Instruments, Inc. See the Spare Parts List at the end of this manual for the RKI part number. This cable 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 GX-2009 Data Logger Management Program, connect the 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-2009 Data Logger Management Program on a Windows® computer, it is necessary to make a special setting in the Wireless Link Configuration window for proper communication between the GX-2009 and the GX-2009 Data Logger Management Program. This must be done before attempting to use the program. Follow these steps to make this setting:

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.”

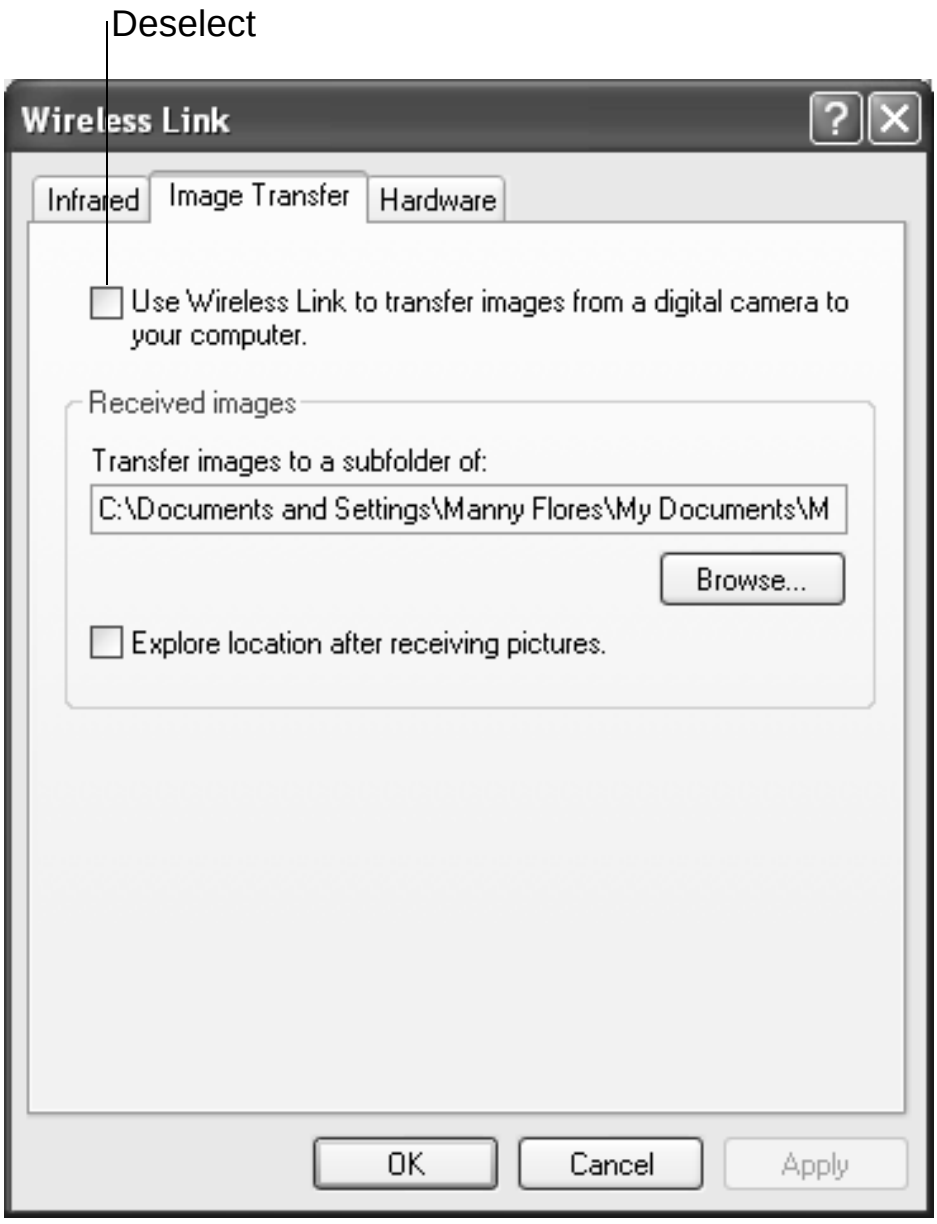


Figure 2: Image Transfer Tab

6. Click **OK**.
7. Close the Control Panel window.

Launching the Program

1. Click **Start** on the Windows® Icon Tray, then select **All Programs**, then select **GX-2009**. Your operating system may also have a shortcut installed in the **Start** menu.
2. The program will launch and the Download window will appear.

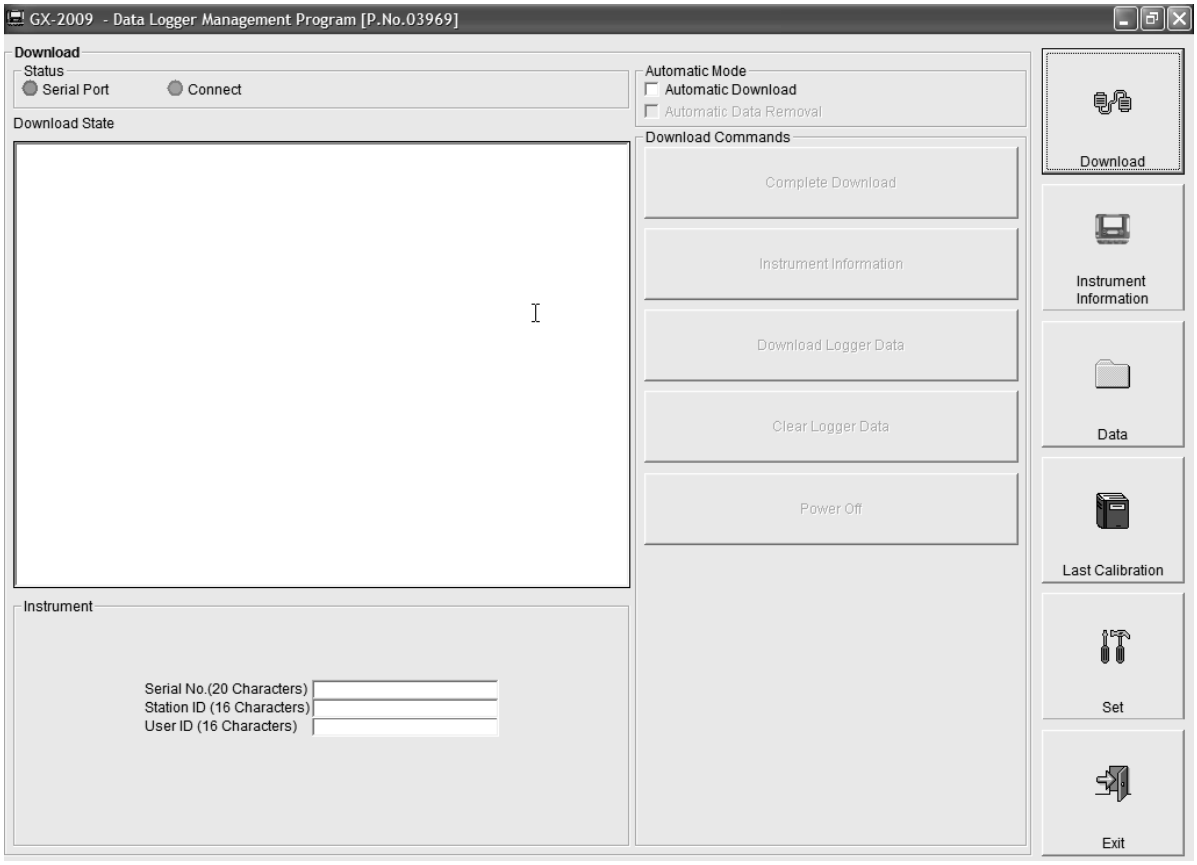


Figure 3: The Download Window

3. For convenience, make a shortcut of the GX-2009 Data Logger Management Program and place it on the Windows® desktop. See your Windows® documentation for information about making shortcuts.

Control Buttons

This section provides an overview of the control buttons. Instructions for using the various parts of the program accessed by the control buttons are given in other parts of this manual.

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

Figure 4: Windows Accessed by Control Buttons

Download Button

If you are in another program window, clicking the **Download** button opens the Download Window (see Figure 3). 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-2009” on page 23 for a complete description of downloading data from a GX-2009.

Instrument Information Button

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

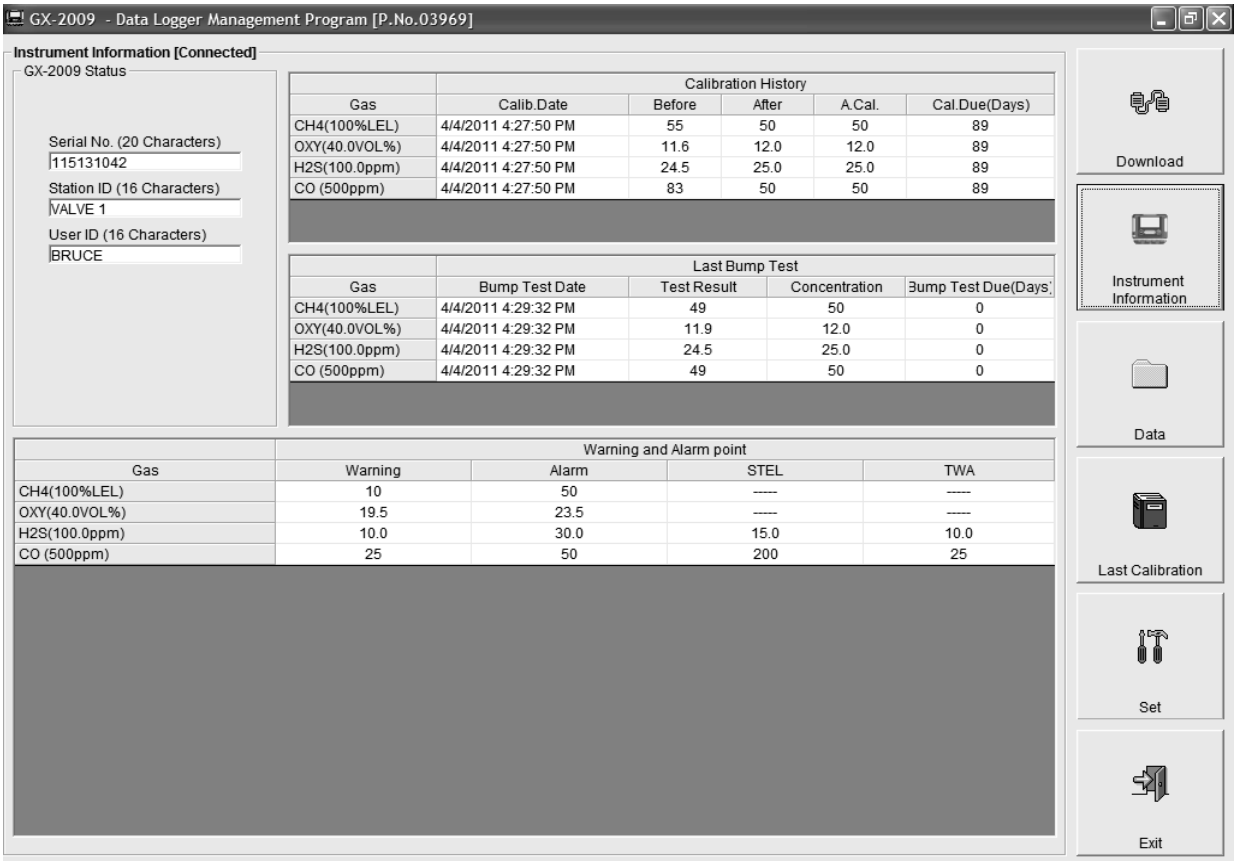


Figure 5: Instrument Information Window

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 program. If an instrument is turned off after being connected to the program, then the program will lose the connection with the instrument and the fields in the Instrument Information Window will become empty.

Data Button

Clicking the **Data** button opens the Data Window.

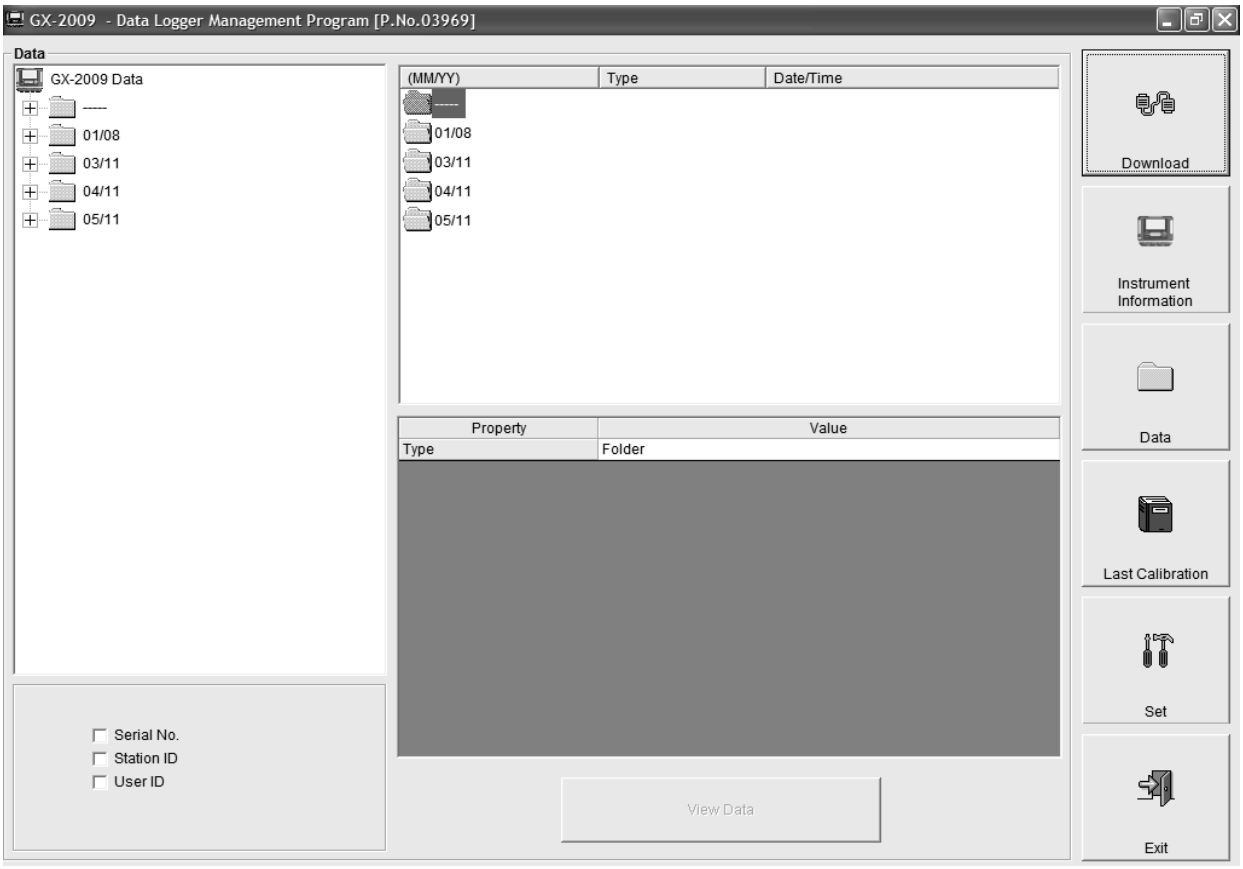


Figure 6: Data Window

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

NOTE: If the GX-2009 Data Logger Management 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 20 for more instruction.

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

- Bump Test Files

  A bump test file is saved for each instrument that has been downloaded. It records the bump test information for every bump test that was downloaded. The GX-2009 can save information for up to 100 bump tests and calibrations combined in its memory.

- 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-2009 can save information for up to 100 bump tests and calibrations in its memory.

- Interval Trend Data Files

  Interval trend data is logged at the interval time defined in the GX-2009. Each logged point is an average reading over the previous time interval.

NOTE: Although the interval time is stored in the GX-2009, it is not accessible using the GX-2009's operational modes. This parameter can only be accessed and updated using either the Data Logger Management Program or the User Setup Program.

- Alarm Trend Data Files

  Alarm trend data is logged around an alarm event. The GX-2009 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-2009 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-2009 can save up to 100 trouble events in its memory.

Last Calibration Button

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

NOTE: The setting of the Bump Test Function instrument parameter affects whether the Bump Test portion of the Last Calibration Window is shown. For further explanation of the Bump Test Function parameter as it pertains to the Last Calibration Window, see “Effects of Bump Test Function Parameter Setting on Appearance of Last Calibration Window” on page 67.

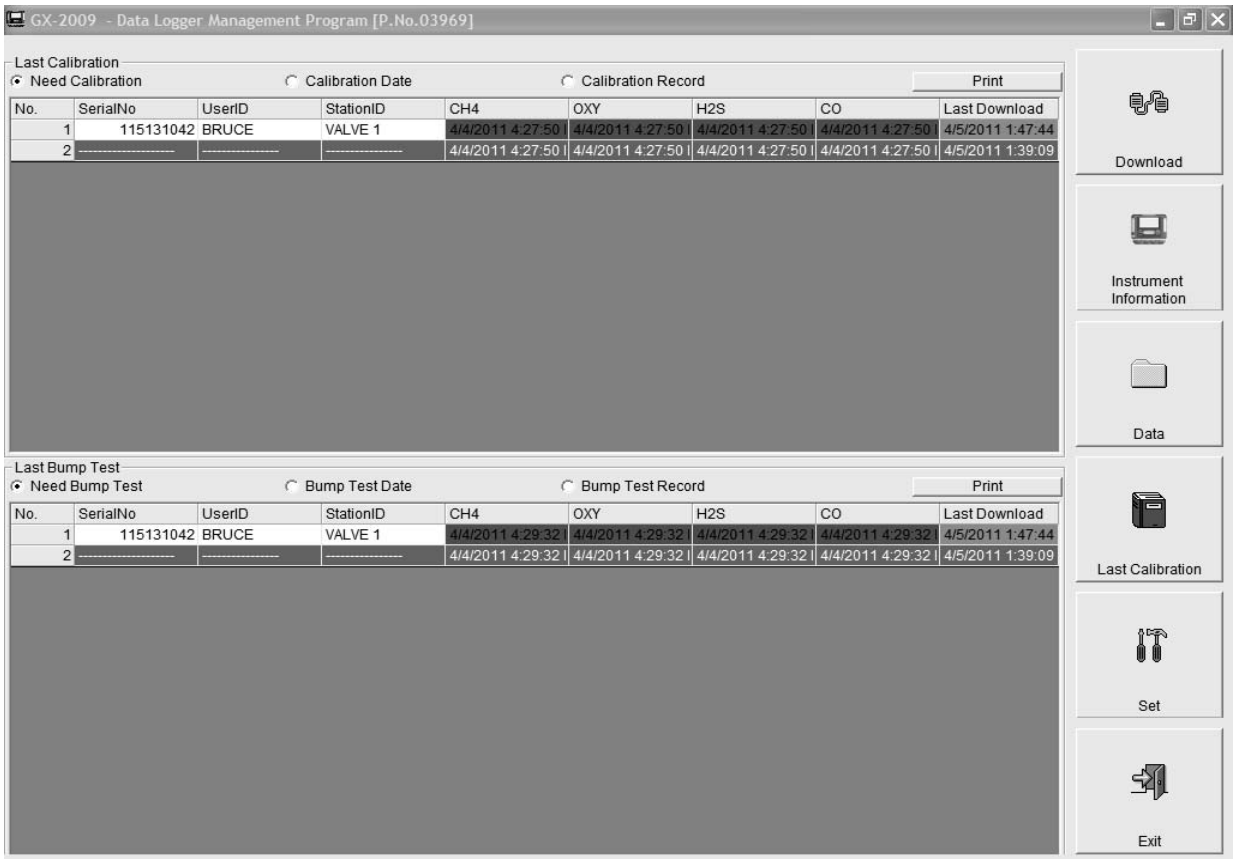


Figure 7: Last Calibration Window

The Last Calibration Window stores the information for the most recent successful calibration and for the most recent successful bump test for each GX-2009 that has been downloaded. Calibration data is displayed in the top part of the screen while bump test data is displayed in the bottom part. You can display the information three ways by using the Need Calibration/Need Bump Test, Calibration Date/Bump Test Date, or Calibration Record/Bump Test Record selection buttons. You can also print the information if you select the Need Calibration/Need Bump Test or Calibration Date/Bump Test Date display options.

Set Button

Clicking the **Set** button opens the Set Window.

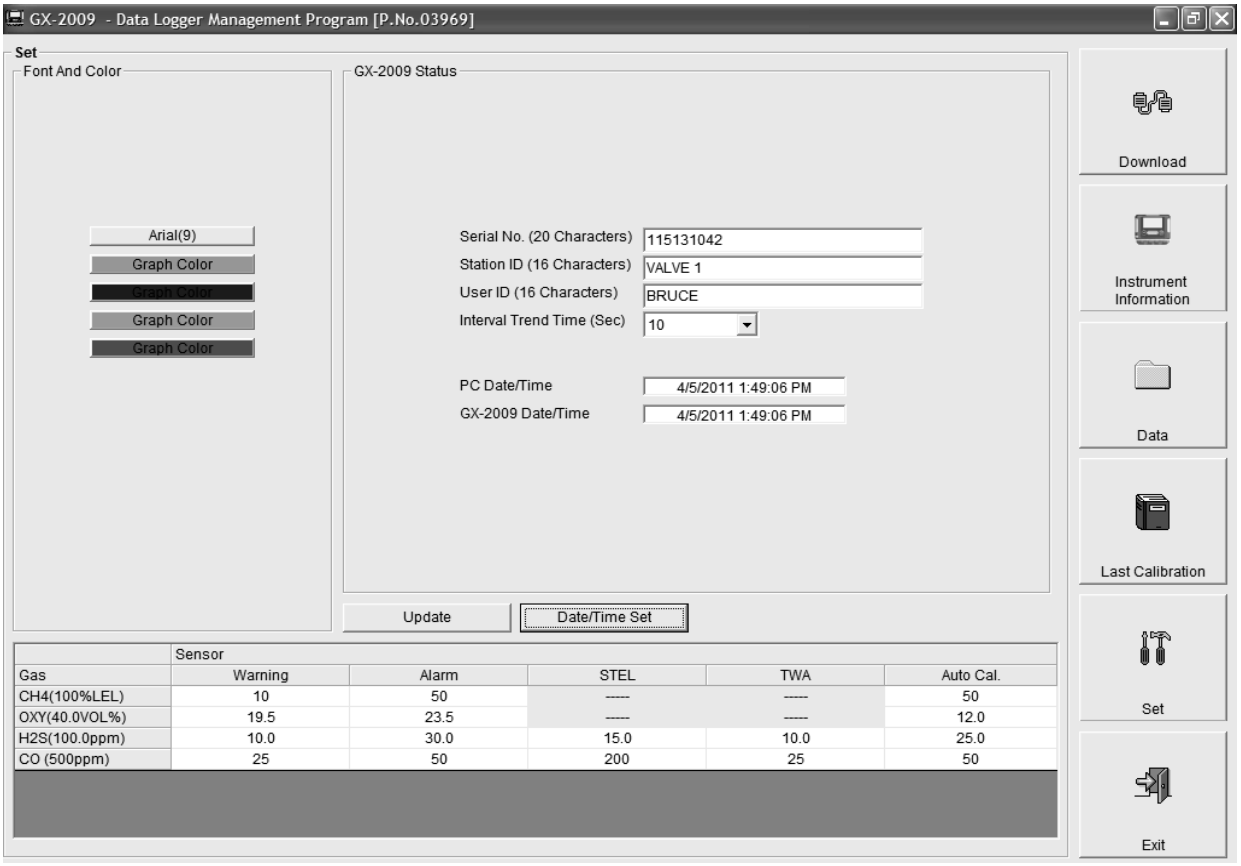


Figure 8: Set Window

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

- Alter the appearance of the program windows with the Font and Color buttons
- Change parameters of a connected instrument by editing the fields in the GX-2009 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

Accessing a Common Database

The GX-2009 Data Logger Management Program 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-2009 Data Logger Management Program. In this configuration, a computer has access to its own database but no other computer's. 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-2009 Data Logger Management Program 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 data to and access data from the same location. This allows access to instrument data that was downloaded at another computer.

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 program is launched.

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-2009 Data Logger Management Program hasn't been launched on the computer yet, you must launch and close the program. This creates a GX2009.ini file that contains configuration settings. The file is located in the GX-2009 folder in your computer's Program Files.
3. Open GX2009.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 program is shown in Figure 9. Replace the current path with the desired path (see Figure 10).

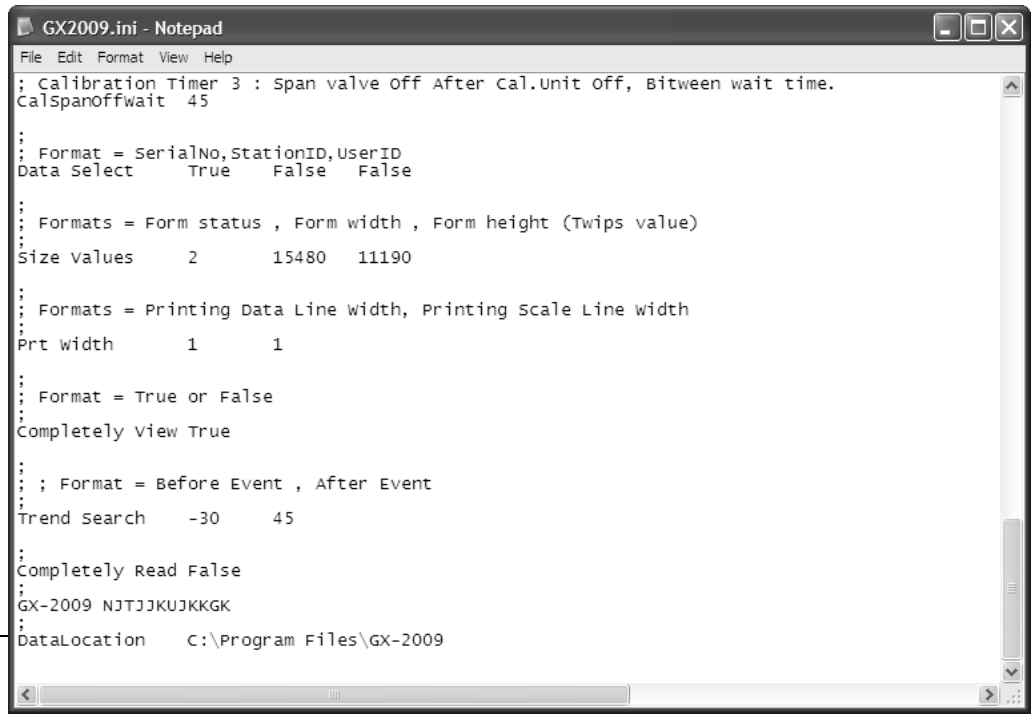


Figure 9: GX2009.ini File with Original Path

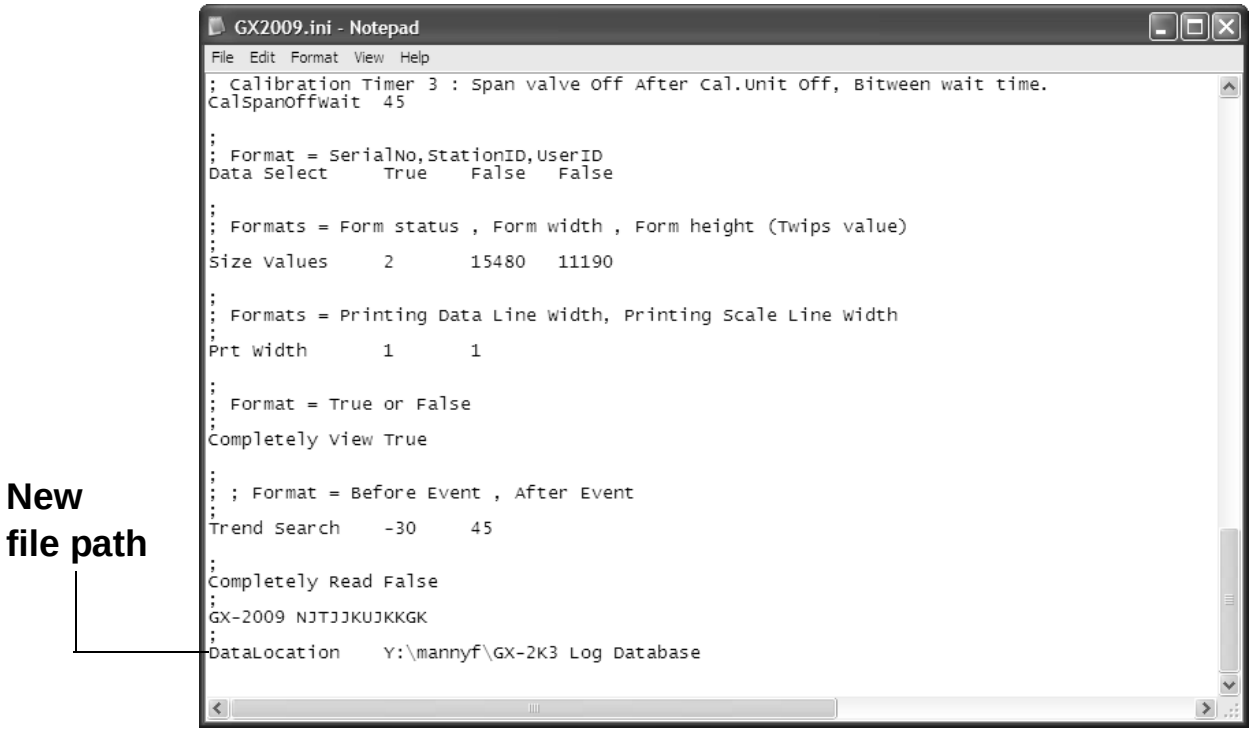


Figure 10: GX2009.ini File with New Path

4. Save the file and reopen the GX-2009 Data Logger Management Program.
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-2009

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-2009. Remember that if Automatic Download is selected, the Instrument Information Window will remain blank and the GX-2009 will turn off automatically after the data has been downloaded. If you want the data in the GX-2009 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.

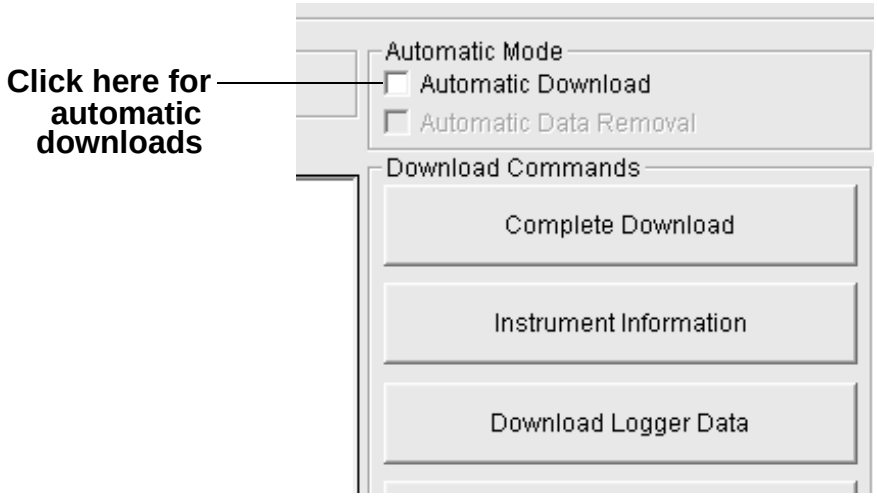


Figure 11: Automatic Download Selection Box

To download data from a GX-2009:

1. Launch the GX-2009 Data Logger Management Program. The Download Window displays. When the program comes up and no instrument is connected, the Download Commands are not selectable.
2. Place the GX-2009 within an inch or two of the infrared port on your computer aligning the infrared port on the top of the GX-2009 with the infrared port on your computer.

   If your computer does not have a built in infrared port, place the GX-2009 within an inch or two of the infrared port on the

IrDA adapter cable as shown in Figure 12 below, aligning the infrared port on the side of the GX-2009 with the infrared port on the cable.

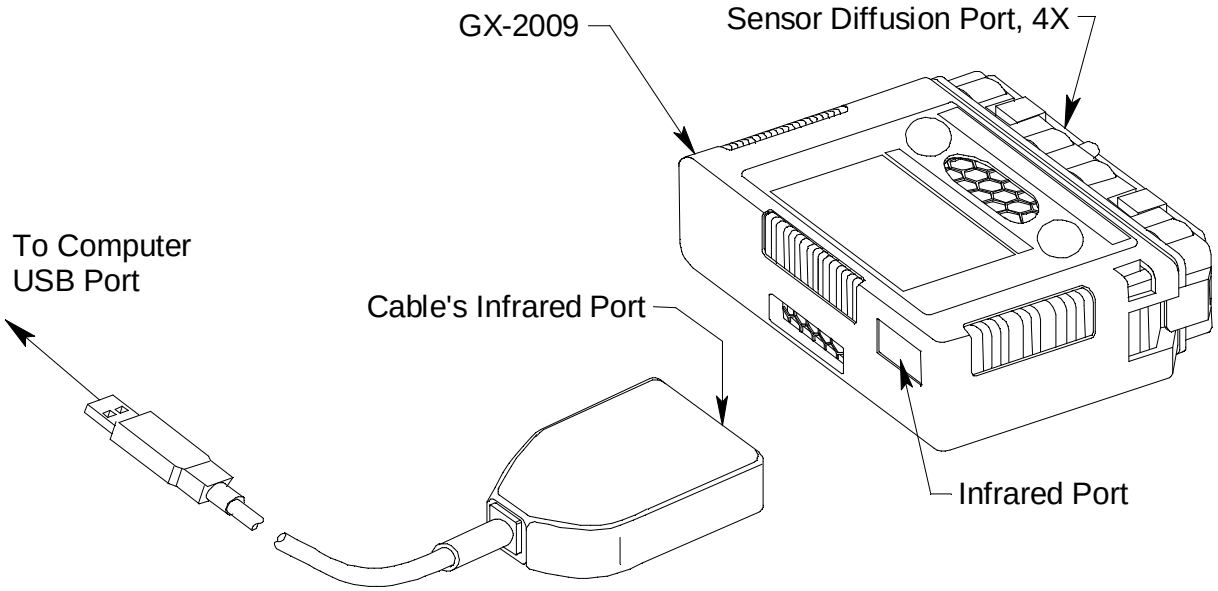


Figure 12: Aligning the GX-2009 with the Cable Infrared Receiver

3. Press and hold the POWER MODE button on the GX-2009 until you hear a beep, then release it. The GX-2009 will begin its power up sequence. If a successful connection between the GX-2009 and the computer occurs, the 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 Windows® icon tray will indicate that a wireless connection is in effect.

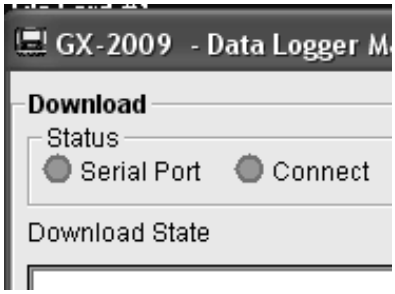


Figure 13: Connection Message

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

   If Automatic Download is not selected, the Complete Download, Instrument Information, and Power Off Download

Commands become selectable.

5. If you are going to download data manually, you can perform a complete download, download only the instrument information, or download only the data files by using the Download Commands.

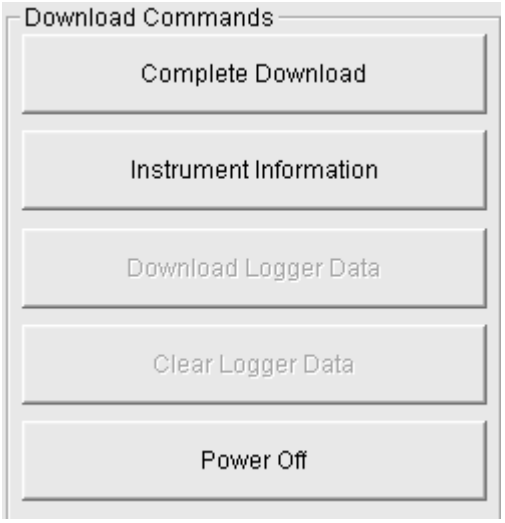


Figure 14: Download Commands

   - To download all data and instrument information from the instrument, click **Complete Download**.
   - To download instrument information only, click **Instrument Information.**
   - To download all data, click **Download Logger Data. Download Logger Data** becomes selectable only after a Complete Download or Instrument Information Download Command has been performed.

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

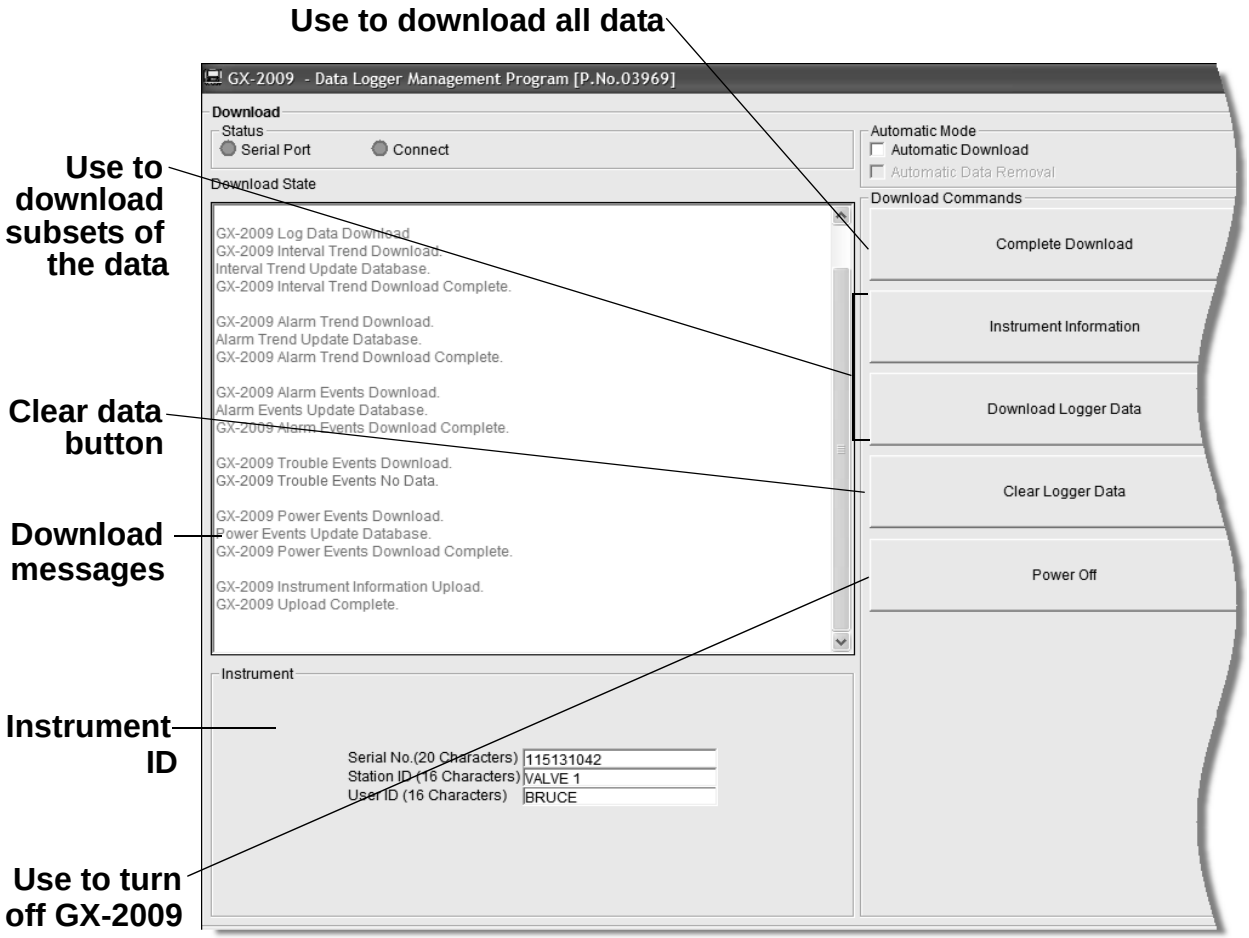


Figure 15: Download Messages & Download Commands

7. If the unit has been downloaded manually (Automatic Download not selected), the unit's instrument information may be viewed after downloading by using the **Instrument Information** control 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 **Instrument Information** 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.

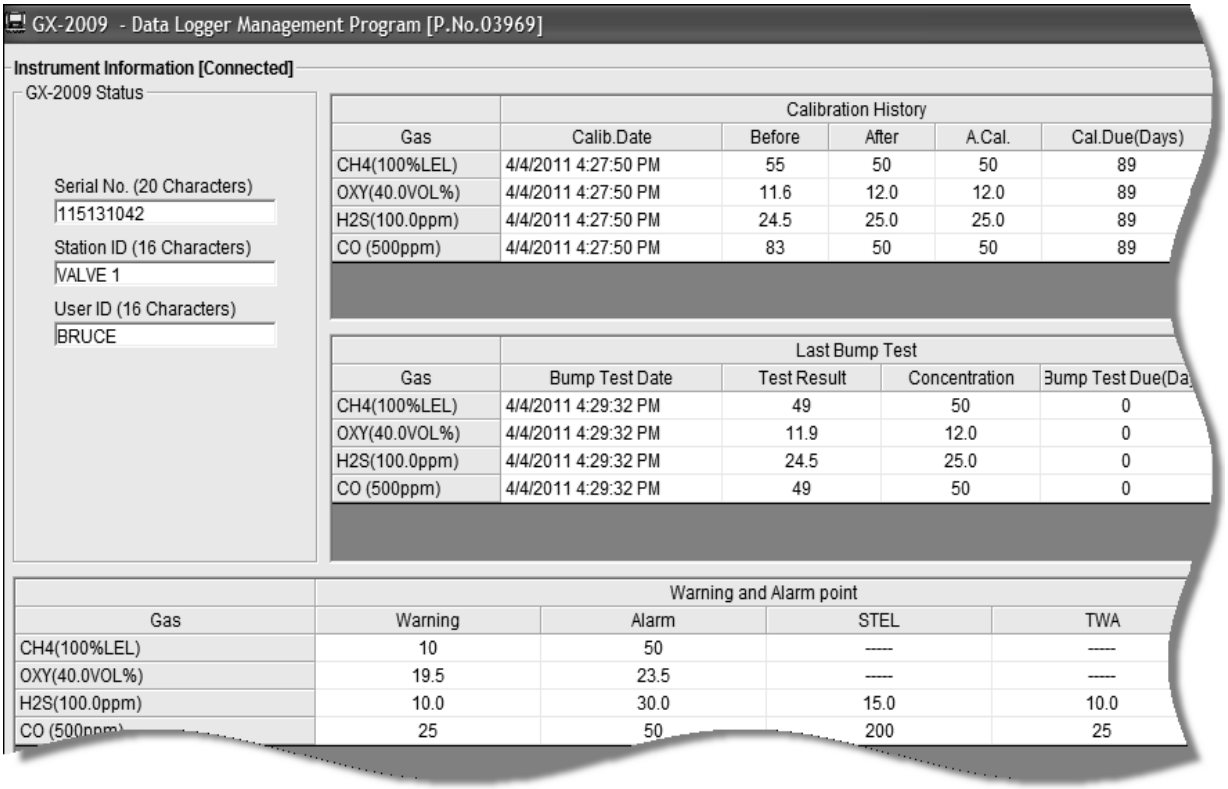


Figure 16: Instrument Information Window

8. You can view, print, export, or delete downloaded data by entering the Data or Last Calibration Windows. These windows are accessed by clicking **Data** or **Last Calibration** along the right side of the Download Window. See “Viewing, Printing, Exporting, and Deleting Data in the Data Window” on page 29 or “Last Calibration Button” on page 17.
9. After downloading data from an instrument, you can delete all the data in the GX-2009 by clicking **Clear Logger Data** if desired. This will not delete instrument parameters such as serial number, alarm settings, or autocalibration settings.

WARNING: If you click Clear Logger Data, all data is erased in the GX-2009, but not in your computer’s memory. So it’s advisable that you download the data from the GX-2009 first before clearing the data.

GX-2009 Data Logging Capacity

Table 1: GX-2009 Data Logging Capacity

Interval Trend Time	Data Logging Hours
10 seconds	10 hours
30 seconds	30 hours
60 seconds	60 hours
180 seconds (3 minutes)	180 hours
300 seconds (5 minutes)	300 hours
600 seconds (10 minutes)	600 hours

Table 1 above lists the GX-2009's data logging capacity for each interval trend time setting assuming no alarms or other events. The interval trend time setting can be set using the Set Window (see "Changing GX-2009 Instrument Parameters" on page 76).

Overwriting Data in the GX-2009

The GX-2009's Logger Over Write function is factory set to *On* so that when the GX-2009's data logging memory becomes full, it begins to overwrite the oldest interval trend data with new interval trend data. Download data regularly to avoid over-writing data in the GX-2009 before it can be downloaded. The Logger Over Write function is accessible using the GX-2009 User Setup Program. To set the Logger Over Write function to *Off*, see the GX-2009 User Setup Program Operator's Manual. When the Logger Overwrite function is set to off, the GX-2009 will stop saving data when its data logging memory is full.

The Logger Over Write function applies only to interval trend data. All other data, such as alarm trend data, event data, or calibration data, will continue to be saved when the memory is full. If the maximum number of each of these types of data has been reached, the oldest data will be overwritten.

Viewing, Printing, Exporting, and Deleting Data in the Data Window

The GX-2009 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 in the Data Window” on page 60.

NOTE: If the GX-2009 Data Logger Management 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 20 for more instruction.

Data Window

All the data, other than the most recent calibration and bump test information that is accessible in the Last Calibration Window, can be accessed in the Data Window. The Data Window is accessed by clicking **Data** along the right side of the program window.

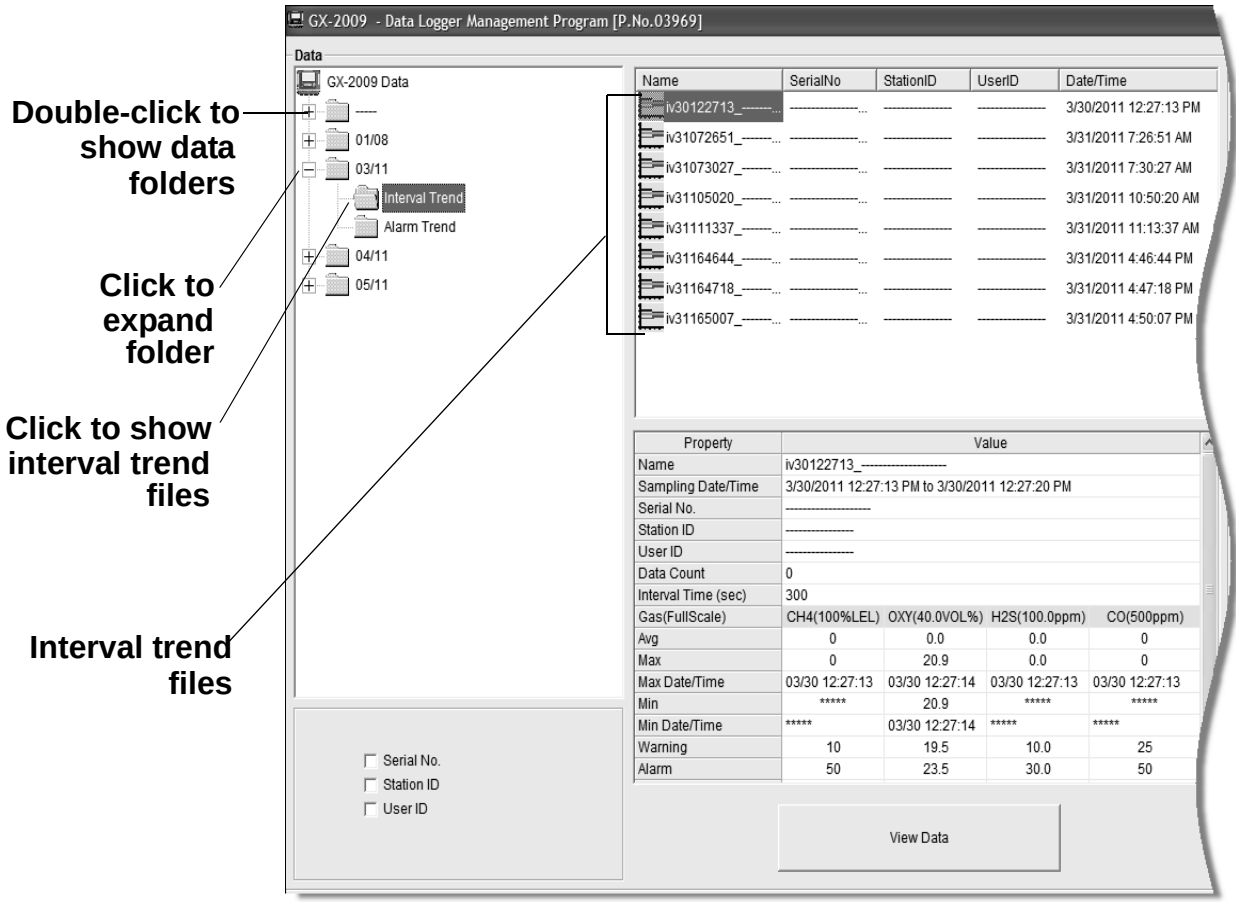


Figure 17: Data Window, Basic Data Organization

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-2009 icon in the upper left part of the frame. If the data folders are not visible, double click the GX-2009 icon to make them visible. If no data has been saved, then no folders will appear when the GX-2009 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 17. 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 following examples also show the combustible channel as “CH4”. The combustible channel may also be “HC”. See the GX-2009 Operator’s Manual for details.

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 **View Data** opens the data file and displays the data.

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.

Bump Test

The GX-2009 is capable of saving information for up to 100 of the most recent bump tests and calibrations combined. This bump test history is retrieved by the Data Logger Management Program when data is downloaded from the GX-2009 using either the **Complete Download** download command or the **Download Logger Data** download command.

Instrument bump test information is also available in the Last Calibration Window. The information regarding the most recent successful calibration and bump test for each downloaded instrument along with whether or not an instrument is due for calibration or bump testing can be accessed using the **Last Calibration** button on the right side of the program window. See “Viewing, Printing, and Deleting Data in the Last Calibration Window” on page 66 for a complete description of the

information that can be accessed by the **Last Calibration** button.

All downloaded bump test information for all downloaded instruments is available in the Bump Test folders in the Data Window. This information is saved in a Bump Test Folder that is located in an untitled folder for each instrument. The bump test files are differentiated by instrument. The bump test information available here is more comprehensive than that in the Last Calibration Window. The bump test information for all bump tests downloaded, whether successful or not, is saved instead of just the most recent successful bump test for each instrument.

To view, print, or export the bump test information 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.

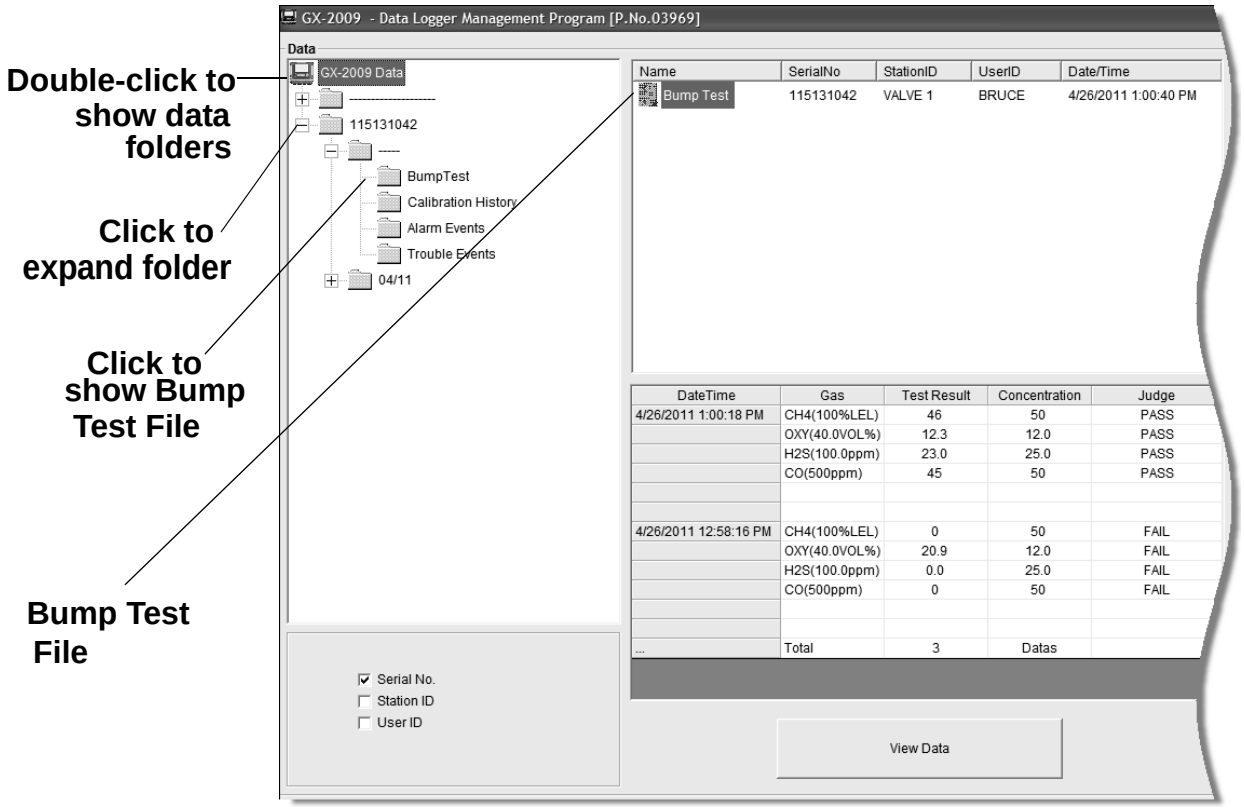


Figure 18: Data Window - Selecting Bump Test Files

2. If necessary, double-click the GX-2009 icon in the top of the

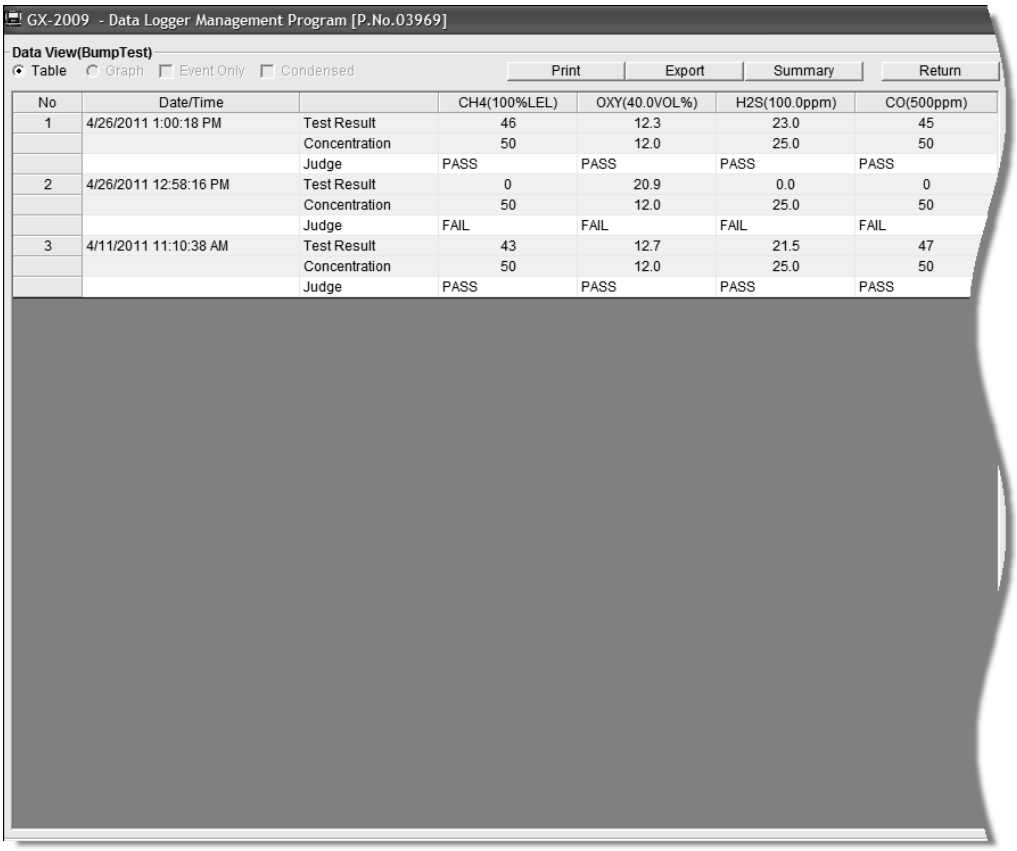
Data Window's upper left frame to see the folders of downloaded data.

3. Find your instrument by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.The top folder is untitled and contains the Bump Test Folder along with folders for calibration history, alarm events, and trouble events. The rest of the folders contain folders for the interval trend files and alarm trend files and are named and organized by date (month/year).
4. Click the expanded view symbol (+) of or double-click the untitled folder. The Bump Test folder will appear below the untitled folder along with the Calibration History, Alarm Events, and Trouble Events folders.
5. Click the Bump Test folder. The Bump Test 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 Bump Test file will appear.

   The serial number, station ID, user ID, and date/time appear on the line for each file. The date/time correspond to the date and time of the instrument download and not a date or time of a bump test.
6. Click the file to select it. The first two bump tests saved will be shown in the bottom right frame along with the total number of bump tests saved if it is more than two.

   Each saved bump test shows the date/time of calibration, the gas, the test result, the concentration of gas used, and the result of the bump test.

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



No	Date/Time		CH4(100%LEL)	OXY(40.0VOL%)	H2S(100.0ppm)	CO(500ppm)
1	4/26/2011 1:00:18 PM	Test Result	46	12.3	23.0	45
		Concentration	50	12.0	25.0	50
		Judge	PASS	PASS	PASS	PASS
2	4/26/2011 12:58:16 PM	Test Result	0	20.9	0.0	0
		Concentration	50	12.0	25.0	50
		Judge	FAIL	FAIL	FAIL	FAIL
3	4/11/2011 11:10:38 AM	Test Result	43	12.7	21.5	47
		Concentration	50	12.0	25.0	50
		Judge	PASS	PASS	PASS	PASS

Figure 19: Data View, Bump Test

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

Figure 20: Printer List Dialog Box, Calibration History

9. Select a printer and click **OK** to print the data.
10. 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

type, and file location. The default file type is ".csv" (comma-separated values).

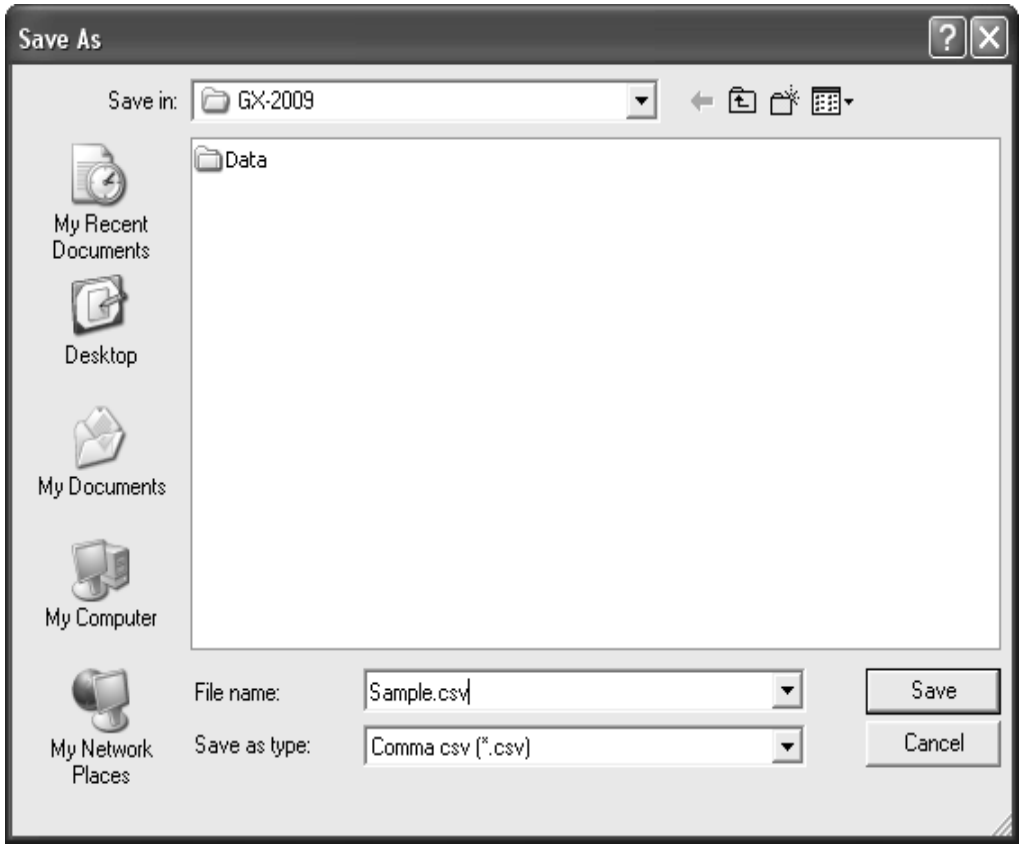


Figure 21: Save as Dialog Box

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

11. To go back and view other data, click the **Return** button in the upper right corner of the Data Window or the **Data** button on the right side of the program window and select the data you want to view.

Calibration History

The GX-2009 is capable of saving information for up to 100 of the most recent bump tests and calibrations combined. This calibration history is retrieved by the Data Logger Management Program when data is downloaded from the GX-2009 using either the **Complete Download** download command or the **Download Logger Data** download command.

Instrument calibration information is also available in the Last Calibration Window. The information regarding the most recent successful calibration and bump test for each downloaded instrument along with whether or not an instrument is due for calibration or bump testing can be accessed using the **Last Calibration** button on the right side of the program window. See “Viewing, Printing, and Deleting Data in the Last Calibration Window” on page 66 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 instrument.

To view, print, or export 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.

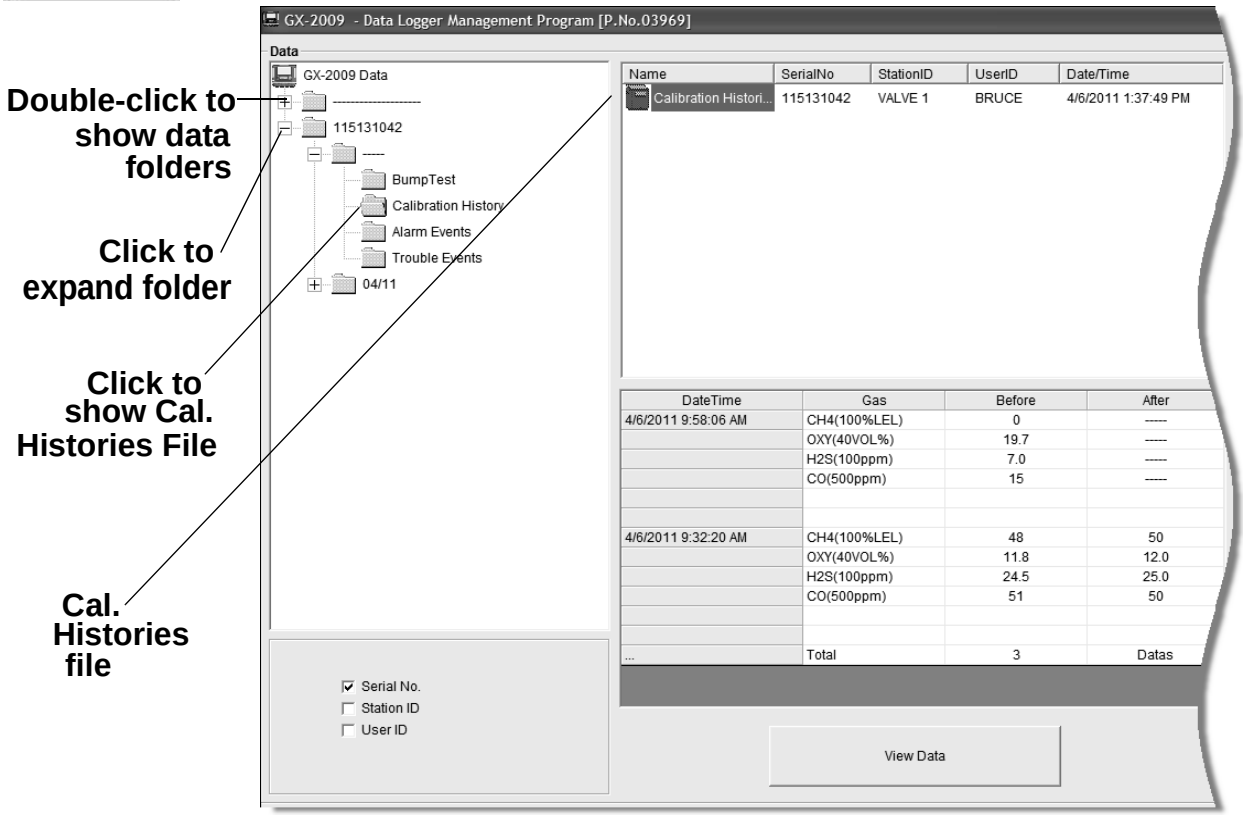


Figure 22: Data Window - Selecting Calibration History Files

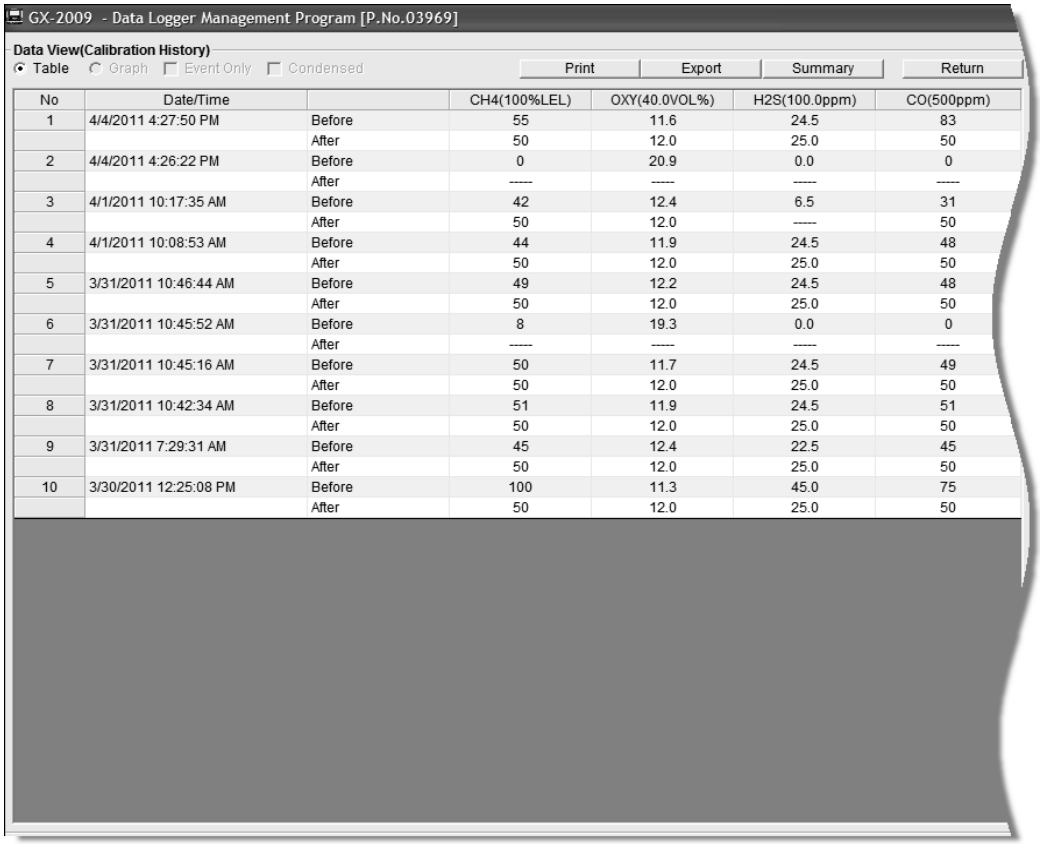
2. If necessary, double-click the GX-2009 icon in the top of the Data Window's upper left frame to see the folders of downloaded data.
3. Find your instrument by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.The top folder is untitled and contains the Calibration History Folder along with folders for bump tests, alarm events, and trouble events. The rest of the folders contain folders for the interval trend files and alarm trend 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 along with the Bump Test, Alarm Events, and Trouble Events folders.
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.

   The serial number, station ID, user ID, and date/time appear on the line for each file. The date/time correspond to the date and time of the instrument download and not a date or time of calibration.
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.

   Each saved calibration shows the date/time of calibration, the gas, the concentration before calibration, and the concentration after calibration. If a calibration failed, dashes will appear in the After column rather than gas concentrations.

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.



No	Date/Time		CH4(100%LEL)	OXY(40.0VOL%)	H2S(100.0ppm)	CO(500ppm)
1	4/4/2011 4:27:50 PM	Before	55	11.6	24.5	83
		After	50	12.0	25.0	50
2	4/4/2011 4:26:22 PM	Before	0	20.9	0.0	0
		After	-----	-----	-----	-----
3	4/1/2011 10:17:35 AM	Before	42	12.4	6.5	31
		After	50	12.0	-----	50
4	4/1/2011 10:08:53 AM	Before	44	11.9	24.5	48
		After	50	12.0	25.0	50
5	3/31/2011 10:46:44 AM	Before	49	12.2	24.5	48
		After	50	12.0	25.0	50
6	3/31/2011 10:45:52 AM	Before	8	19.3	0.0	0
		After	-----	-----	-----	-----
7	3/31/2011 10:45:16 AM	Before	50	11.7	24.5	49
		After	50	12.0	25.0	50
8	3/31/2011 10:42:34 AM	Before	51	11.9	24.5	51
		After	50	12.0	25.0	50
9	3/31/2011 7:29:31 AM	Before	45	12.4	22.5	45
		After	50	12.0	25.0	50
10	3/30/2011 12:25:08 PM	Before	100	11.3	45.0	75
		After	50	12.0	25.0	50

Figure 23: Data View, Calibration History

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

Figure 24: Printer List Dialog Box, Calibration History

9. Select a printer and click **OK** to print the data.
10. 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 type, and file location. The default file type is ".csv" (comma-separated values).

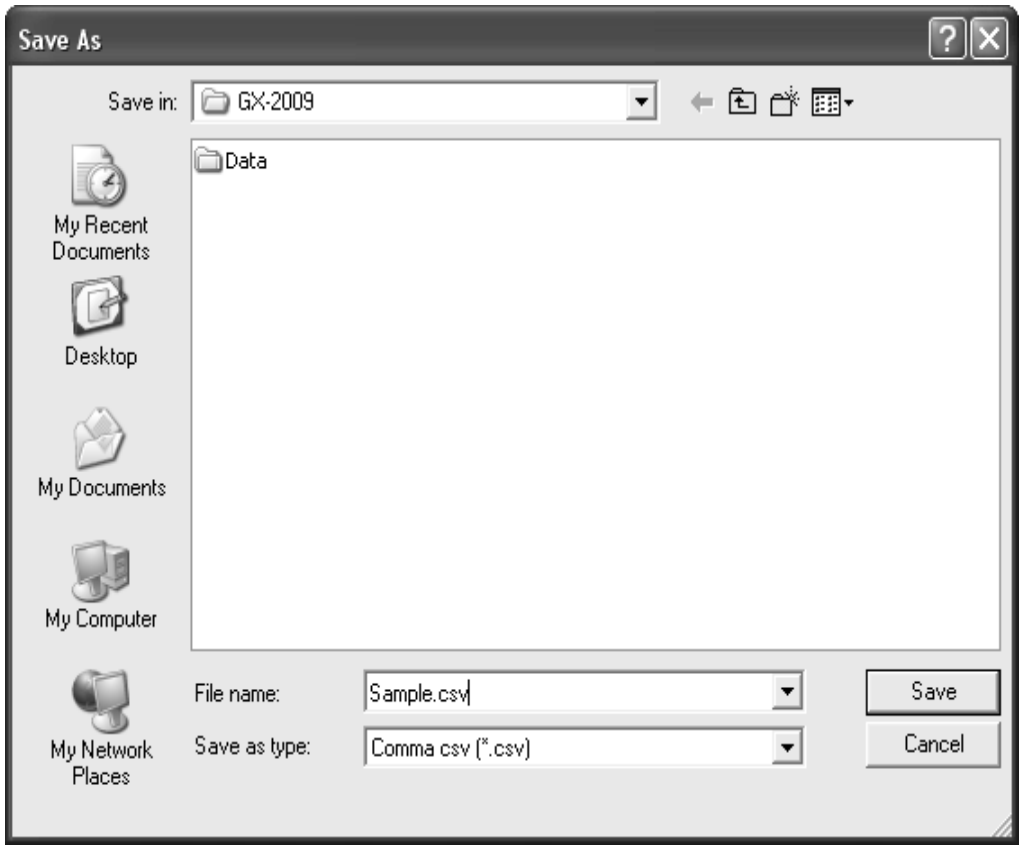


Figure 25: Save as Dialog Box

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

11. To go back and view other data, click the **Return** button in the upper right corner of the Data Window or the **Data** button on the right side of the program window and select the data you want to view.

Event Data

The GX-2009 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-2009 Data Logger Management Program will retrieve these events from that

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. Warning (low alarm), Alarm (high alarm), 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. Dead battery alarms and sensor failures are among the trouble events that are saved.

To view, print, or export the event data for any instrument in the database:

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

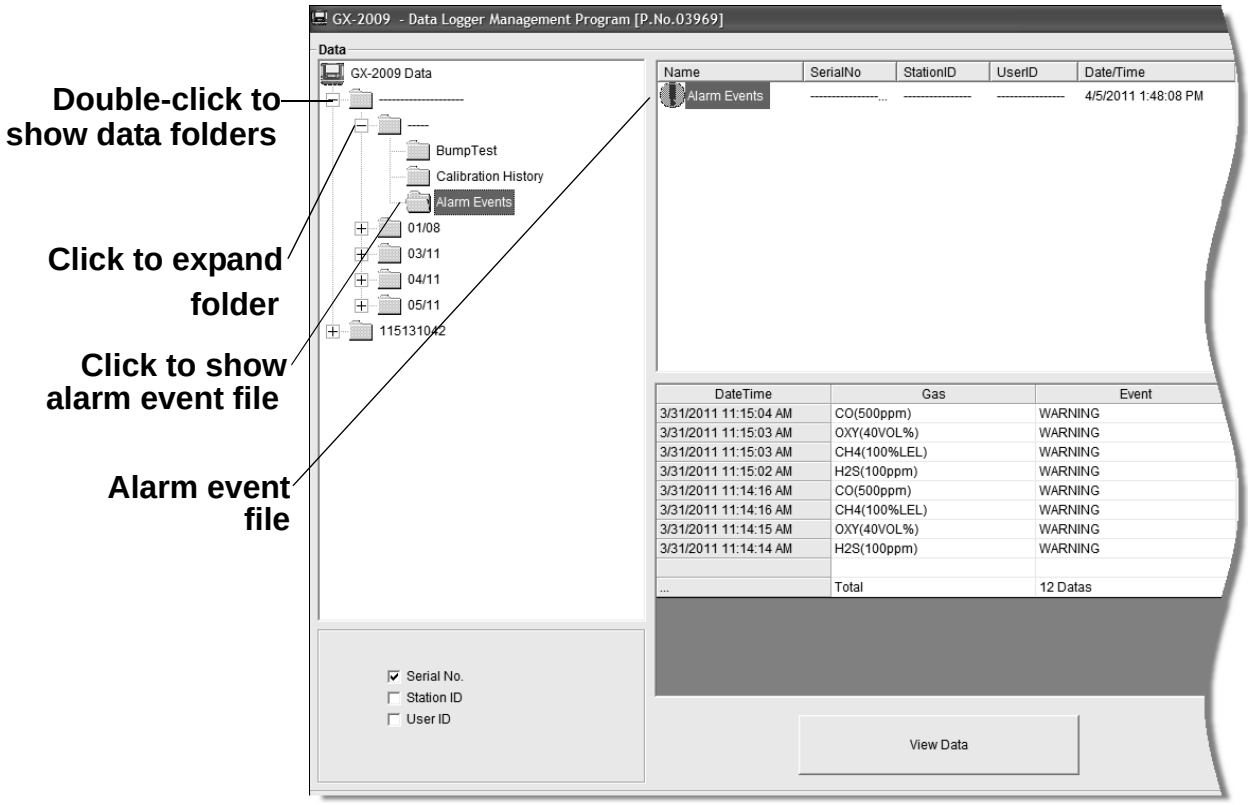


Figure 26: Data Window - Selecting Event Data Files

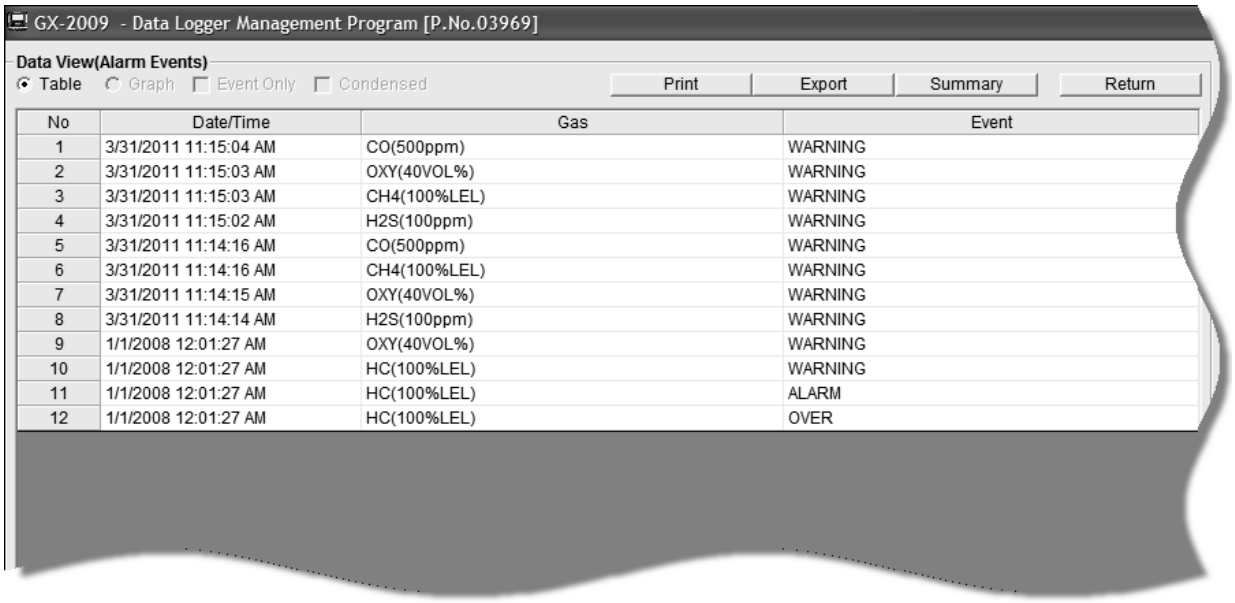
2. If necessary, double-click the GX-2009 icon in the top of the Data Window's upper left frame to see the folders of

downloaded data.

3. Find your instrument by serial number, then click the expanded view symbol (+) of or double-click the serial number folder to view the contents.The top folder is untitled and contains the Alarm Events Folder and Trouble Events Folder along with the Calibration History Folder. The rest of the folders contain folders for the interval trend files and alarm trend files and are named and organized by date (month/year).
4. Click the expanded view symbol (+) of or double-click the untitled folder. The Alarm Events Folder and Trouble Events Folder will appear below the untitled folder along with the Calibration History Folder.
5. Click the Alarm Events or Trouble Events folder. One or more alarm or trouble event files will appear in the top right frame. An Alarm Events Folder has been opened in the example in Figure 26. If multiple user IDs or Station IDs are used for an instrument, then more than one event file will appear.

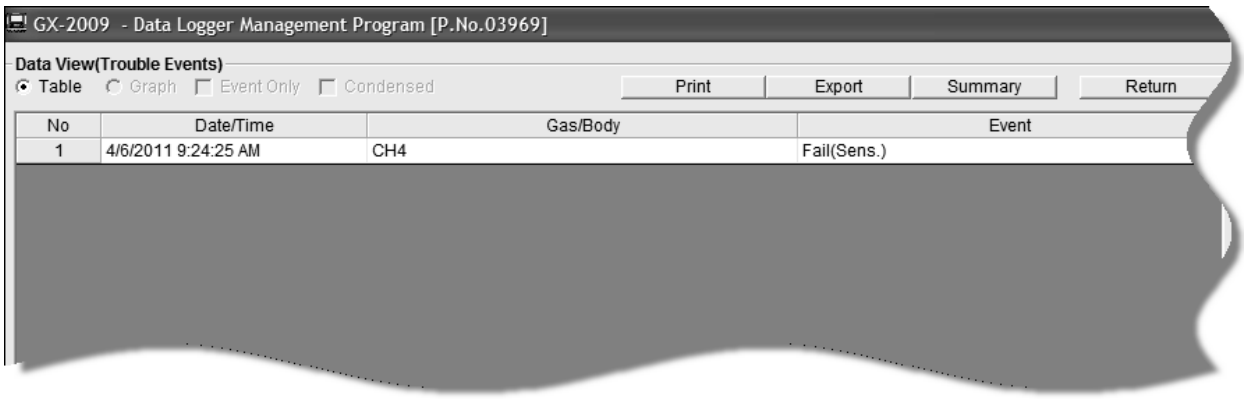
   The serial number, station ID, user ID, and date/time appear on the line for each alarm event or trouble event file. The date/time correspond to the date and time that the instrument was downloaded and not the date and time of an alarm or trouble event.
6. Click the desired event file to select it. An event list will appear in the bottom right frame with the date, time, channel, and event type for the first eight events saved in the selected file. If more than eight events are saved, the first eight events are shown and the total number of events in the file is shown at the bottom of the list.

7. Click the **View Data** button at the bottom of the Data Window or 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.



No	Date/Time	Gas	Event
1	3/31/2011 11:15:04 AM	CO(500ppm)	WARNING
2	3/31/2011 11:15:03 AM	OXY(40VOL%)	WARNING
3	3/31/2011 11:15:03 AM	CH4(100%LEL)	WARNING
4	3/31/2011 11:15:02 AM	H2S(100ppm)	WARNING
5	3/31/2011 11:14:16 AM	CO(500ppm)	WARNING
6	3/31/2011 11:14:16 AM	CH4(100%LEL)	WARNING
7	3/31/2011 11:14:15 AM	OXY(40VOL%)	WARNING
8	3/31/2011 11:14:14 AM	H2S(100ppm)	WARNING
9	1/1/2008 12:01:27 AM	OXY(40VOL%)	WARNING
10	1/1/2008 12:01:27 AM	HC(100%LEL)	WARNING
11	1/1/2008 12:01:27 AM	HC(100%LEL)	ALARM
12	1/1/2008 12:01:27 AM	HC(100%LEL)	OVER

Figure 27: Data View - Alarm Events



No	Date/Time	Gas/Body	Event
1	4/6/2011 9:24:25 AM	CH4	Fail(Sens.)

Figure 28: Data View - Trouble Events

8. If you click the **Summary** button, the Data Window will split into two frames one above the other with the event list 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 upper right frame in Figure 26. To return to the one-frame format, click **Summary** again.

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

Figure 29: Printer List Dialog Box, Event Data

10. Select a printer and click **OK** to print the data.

11. 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 and file location. The default file type is ".csv" (comma-separated values).

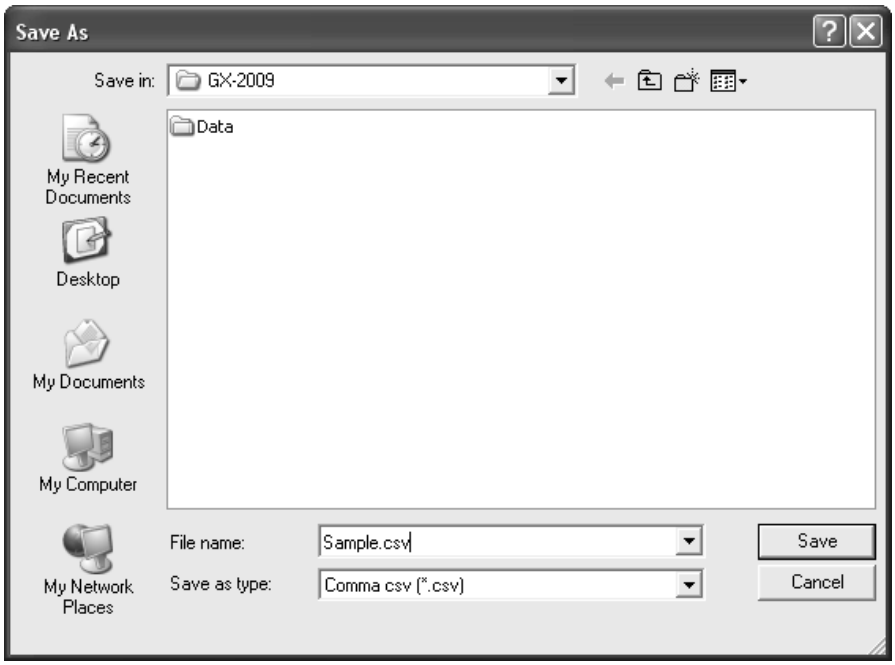


Figure 30: Save as Dialog Box

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

13. To go back and view other data, click the **Return** button in the upper right corner of the Data Window or the **Data** button on the right side of the program window and select the data

you want to view.

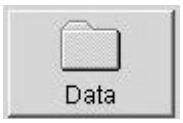
Interval Trend Data

Average gas concentrations over the user defined interval trend time are logged in the interval trend data files. The interval trend time is set using the GX-2009 User Setup Program. See the GX-2009 User Setup Program Operator's Manual for instructions to set the interval trend time. Events such as gas alarms or sensor failures are saved in the interval trend data file when they occur.

An interval trend data file is created and saved in the GX-2009 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 corresponding interval trend file. If the instrument's serial number, user ID, or station ID are changed using the GX-2009 User Setup Program, any interval trend files that result from subsequent operating sessions will have the new serial number, user ID, or station ID saved in them.

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 trend time. This does not include events. If an interval data file has fewer than five scheduled data points, the graph controls are not functional and the data cannot be graphed.

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



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

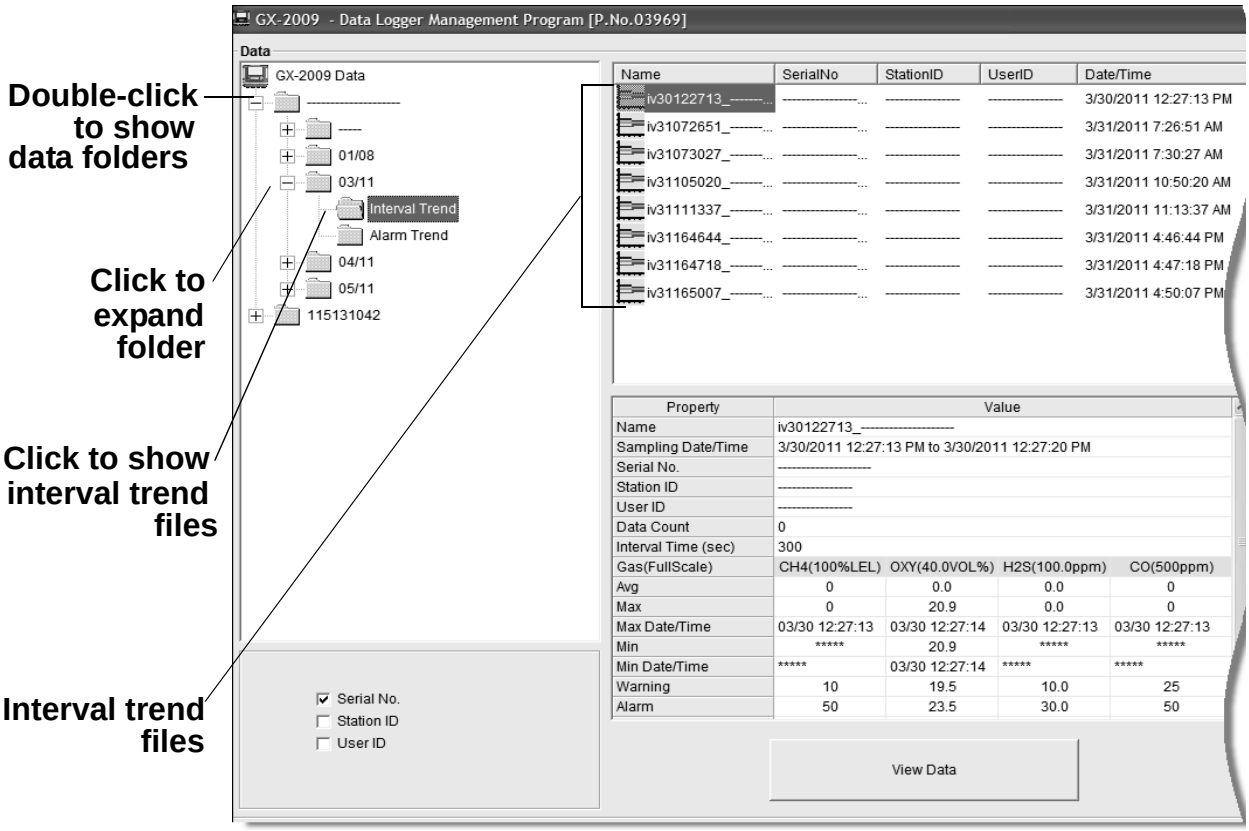


Figure 31: Data Window - Selecting Interval Trend Data Files

2. If necessary, double-click the GX-2009 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 (+) of or double-click the serial number folder to view the contents.The top folder is untitled and contains the Calibration History, Alarm Event, and Trouble Event folders. The rest of the folders contain folders for the interval trend files and alarm trend files and are named and organized by date (month/year).
4. Click the expanded view symbol (+) of or double-click the

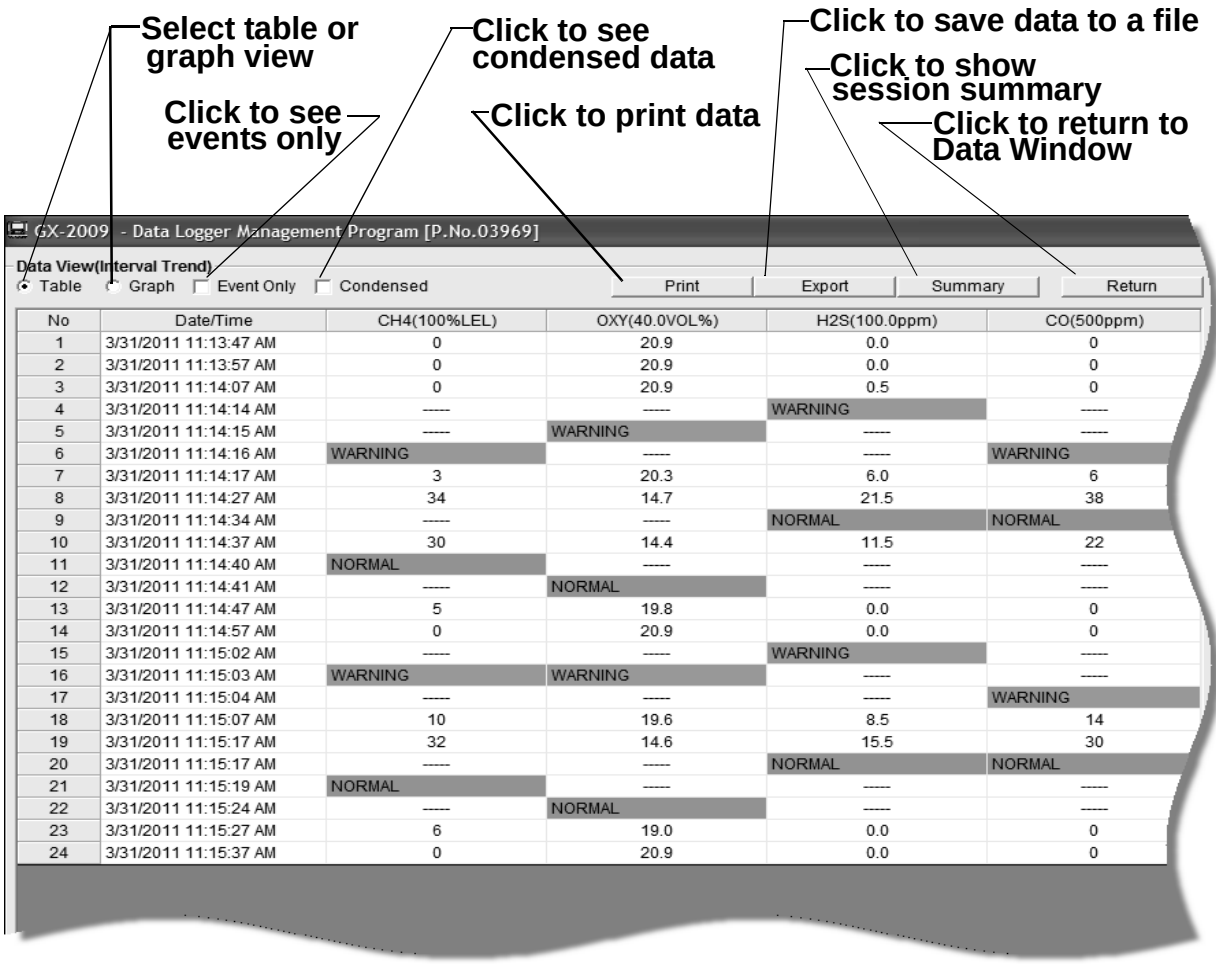
dated folder whose contents you want to see.

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.

   The serial number, station ID, user ID, and date/time appear on the line for each interval trend file. The date/time is the date and time that the data file was created and data began being recorded in that 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. The example below in Figure 32 is shown in table format.



No	Date/Time	CH4(100%LEL)	OXY(40.0VOL%)	H2S(100.0ppm)	CO(500ppm)
1	3/31/2011 11:13:47 AM	0	20.9	0.0	0
2	3/31/2011 11:13:57 AM	0	20.9	0.0	0
3	3/31/2011 11:14:07 AM	0	20.9	0.5	0
4	3/31/2011 11:14:14 AM	-----	-----	WARNING	-----
5	3/31/2011 11:14:15 AM	-----	WARNING	-----	-----
6	3/31/2011 11:14:16 AM	WARNING	-----	-----	WARNING
7	3/31/2011 11:14:17 AM	3	20.3	6.0	6
8	3/31/2011 11:14:27 AM	34	14.7	21.5	38
9	3/31/2011 11:14:34 AM	-----	-----	NORMAL	NORMAL
10	3/31/2011 11:14:37 AM	30	14.4	11.5	22
11	3/31/2011 11:14:40 AM	NORMAL	-----	-----	-----
12	3/31/2011 11:14:41 AM	-----	NORMAL	-----	-----
13	3/31/2011 11:14:47 AM	5	19.8	0.0	0
14	3/31/2011 11:14:57 AM	0	20.9	0.0	0
15	3/31/2011 11:15:02 AM	-----	-----	WARNING	-----
16	3/31/2011 11:15:03 AM	WARNING	WARNING	-----	-----
17	3/31/2011 11:15:04 AM	-----	-----	-----	WARNING
18	3/31/2011 11:15:07 AM	10	19.6	8.5	14
19	3/31/2011 11:15:17 AM	32	14.6	15.5	30
20	3/31/2011 11:15:17 AM	-----	-----	NORMAL	NORMAL
21	3/31/2011 11:15:19 AM	NORMAL	-----	-----	-----
22	3/31/2011 11:15:24 AM	-----	NORMAL	-----	-----
23	3/31/2011 11:15:27 AM	6	19.0	0.0	0
24	3/31/2011 11:15:37 AM	0	20.9	0.0	0

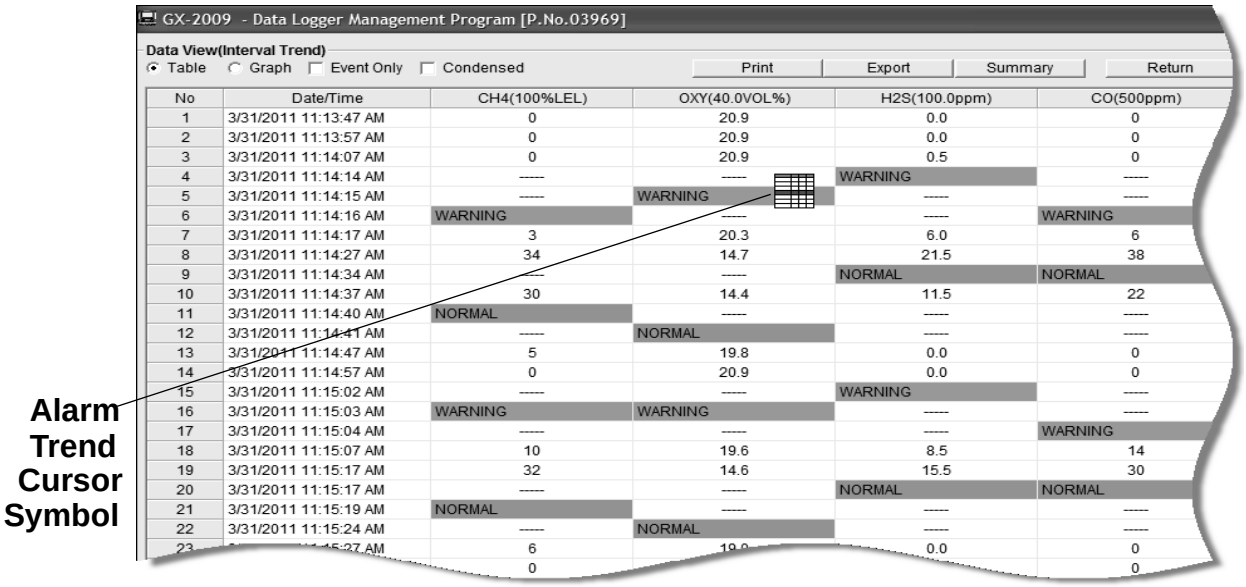
Figure 32: Interval Trend Data in Table Format

- In table format, the interval trend data is shown as the average gas readings over the user defined interval trend time. So if the data logging session started at 4:13:38 PM and the interval time is set to 1 minute, then the readings logged at 4:14:38 PM are the average reading for each channel over that one minute period.
- 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 sensor failure, and an indication that the unit is returning to “normal” condition after an alarm has been reset using the

POWER MODE button on the GX-2009.

- 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 31. To return to the one frame format, click **Summary** again.

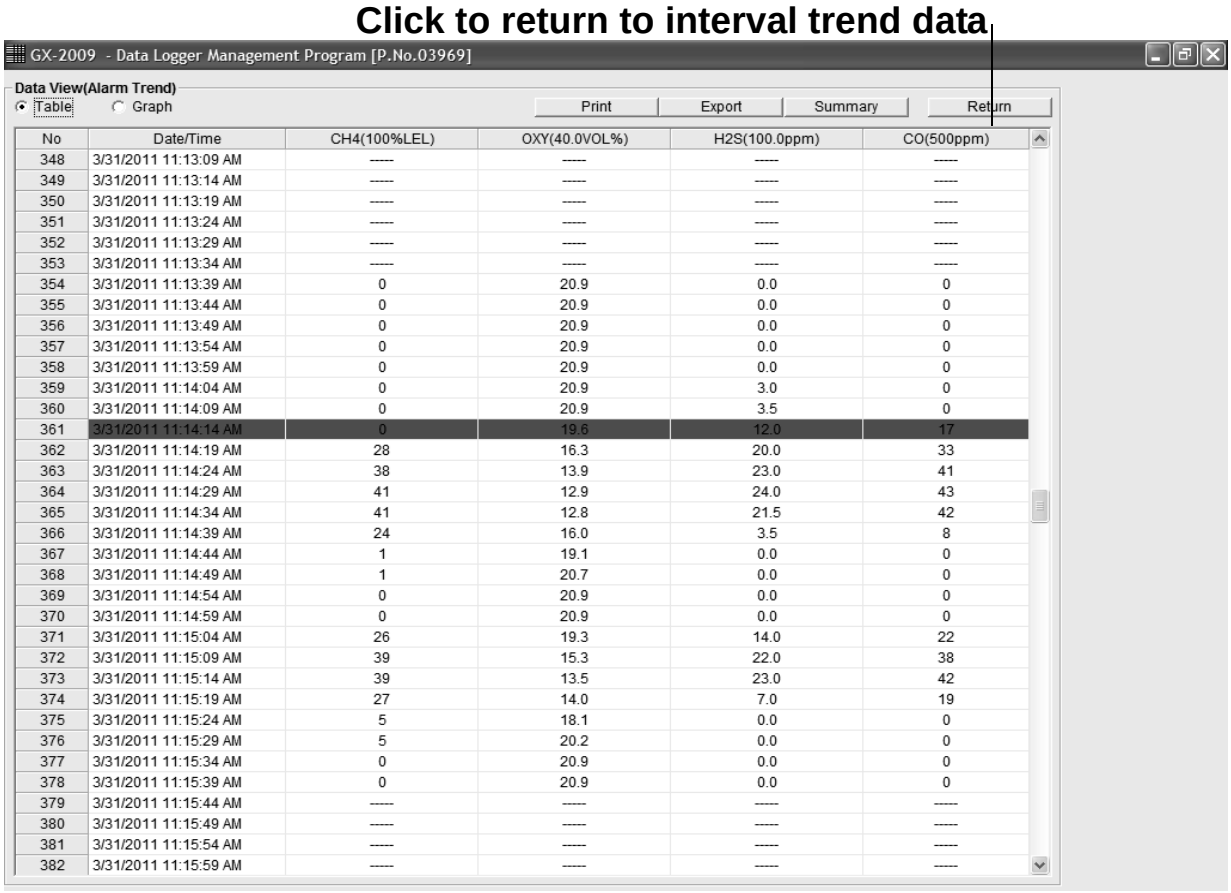
8. When the data is viewed in table format, if you move the cursor over an alarm event, it will change into a small symbol that looks like an alarm trend data file while it is kept over the alarm event.



No	Date/Time	CH4(100%LEL)	OXY(40.0VOL%)	H2S(100.0ppm)	CO(500ppm)
1	3/31/2011 11:13:47 AM	0	20.9	0.0	0
2	3/31/2011 11:13:57 AM	0	20.9	0.0	0
3	3/31/2011 11:14:07 AM	0	20.9	0.5	0
4	3/31/2011 11:14:14 AM	-----	-----	WARNING	-----
5	3/31/2011 11:14:15 AM	-----	WARNING	-----	-----
6	3/31/2011 11:14:16 AM	WARNING	-----	-----	WARNING
7	3/31/2011 11:14:17 AM	3	20.3	6.0	6
8	3/31/2011 11:14:27 AM	34	14.7	21.5	38
9	3/31/2011 11:14:34 AM	-----	-----	NORMAL	NORMAL
10	3/31/2011 11:14:37 AM	30	14.4	11.5	22
11	3/31/2011 11:14:40 AM	NORMAL	-----	-----	-----
12	3/31/2011 11:14:41 AM	-----	NORMAL	-----	-----
13	3/31/2011 11:14:47 AM	5	19.8	0.0	0
14	3/31/2011 11:14:57 AM	0	20.9	0.0	0
15	3/31/2011 11:15:02 AM	-----	-----	WARNING	-----
16	3/31/2011 11:15:03 AM	WARNING	WARNING	-----	-----
17	3/31/2011 11:15:04 AM	-----	-----	-----	WARNING
18	3/31/2011 11:15:07 AM	10	19.6	8.5	14
19	3/31/2011 11:15:17 AM	32	14.6	15.5	30
20	3/31/2011 11:15:17 AM	-----	-----	NORMAL	NORMAL
21	3/31/2011 11:15:19 AM	NORMAL	-----	-----	-----
22	3/31/2011 11:15:24 AM	-----	NORMAL	-----	-----
23	3/31/2011 11:15:27 AM	6	19.9	0.0	0
		0			0

Figure 33: Alarm Trend Cursor Symbol

If you click on the event, the corresponding alarm trend data file will be opened in a new window that pops up over the Data Window. No control buttons will be visible along the right side of the new window when an alarm trend data file is displayed in this way. To return to the interval trend data file, click the **Return** button or click the “X” in the upper right corner of the new window to close the window.



No	Date/Time	CH4(100%LEL)	OXY(40.0VOL%)	H2S(100.0ppm)	CO(500ppm)
348	3/31/2011 11:13:09 AM	-----	-----	-----	-----
349	3/31/2011 11:13:14 AM	-----	-----	-----	-----
350	3/31/2011 11:13:19 AM	-----	-----	-----	-----
351	3/31/2011 11:13:24 AM	-----	-----	-----	-----
352	3/31/2011 11:13:29 AM	-----	-----	-----	-----
353	3/31/2011 11:13:34 AM	-----	-----	-----	-----
354	3/31/2011 11:13:39 AM	0	20.9	0.0	0
355	3/31/2011 11:13:44 AM	0	20.9	0.0	0
356	3/31/2011 11:13:49 AM	0	20.9	0.0	0
357	3/31/2011 11:13:54 AM	0	20.9	0.0	0
358	3/31/2011 11:13:59 AM	0	20.9	0.0	0
359	3/31/2011 11:14:04 AM	0	20.9	3.0	0
360	3/31/2011 11:14:09 AM	0	20.9	3.5	0
361	3/31/2011 11:14:14 AM	0	19.6	12.0	17
362	3/31/2011 11:14:19 AM	28	16.3	20.0	33
363	3/31/2011 11:14:24 AM	38	13.9	23.0	41
364	3/31/2011 11:14:29 AM	41	12.9	24.0	43
365	3/31/2011 11:14:34 AM	41	12.8	21.5	42
366	3/31/2011 11:14:39 AM	24	16.0	3.5	8
367	3/31/2011 11:14:44 AM	1	19.1	0.0	0
368	3/31/2011 11:14:49 AM	1	20.7	0.0	0
369	3/31/2011 11:14:54 AM	0	20.9	0.0	0
370	3/31/2011 11:14:59 AM	0	20.9	0.0	0
371	3/31/2011 11:15:04 AM	26	19.3	14.0	22
372	3/31/2011 11:15:09 AM	39	15.3	22.0	38
373	3/31/2011 11:15:14 AM	39	13.5	23.0	42
374	3/31/2011 11:15:19 AM	27	14.0	7.0	19
375	3/31/2011 11:15:24 AM	5	18.1	0.0	0
376	3/31/2011 11:15:29 AM	5	20.2	0.0	0
377	3/31/2011 11:15:34 AM	0	20.9	0.0	0
378	3/31/2011 11:15:39 AM	0	20.9	0.0	0
379	3/31/2011 11:15:44 AM	-----	-----	-----	-----
380	3/31/2011 11:15:49 AM	-----	-----	-----	-----
381	3/31/2011 11:15:54 AM	-----	-----	-----	-----
382	3/31/2011 11:15:59 AM	-----	-----	-----	-----

Figure 34: Data Displayed by Alarm Trend Cursor Symbol

9. To view only events in the interval trend data file, click the **Events Only** selection box to select it.
10. To view the interval trend data in condensed form, click the **Condensed** selection box to select it. When the data is condensed, the software shows only important and eventful data as follows:
    - The first and last scheduled data points in the session are shown.
    - If there are more than two consecutive data points with the same readings for all channels, only the first and last of these consecutive data points are shown.
    - All events, such as gas alarms or sensor failures, are shown.

- For any event, the data point before and after the event is always shown.

11. To view the data in graph format, click the **Graph** selection button. Five or more scheduled data points are required in an interval trend data 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 31 above, can be more than five if you have events, such as the GX-2009 going into and out of alarm, but you may not have five scheduled data points.

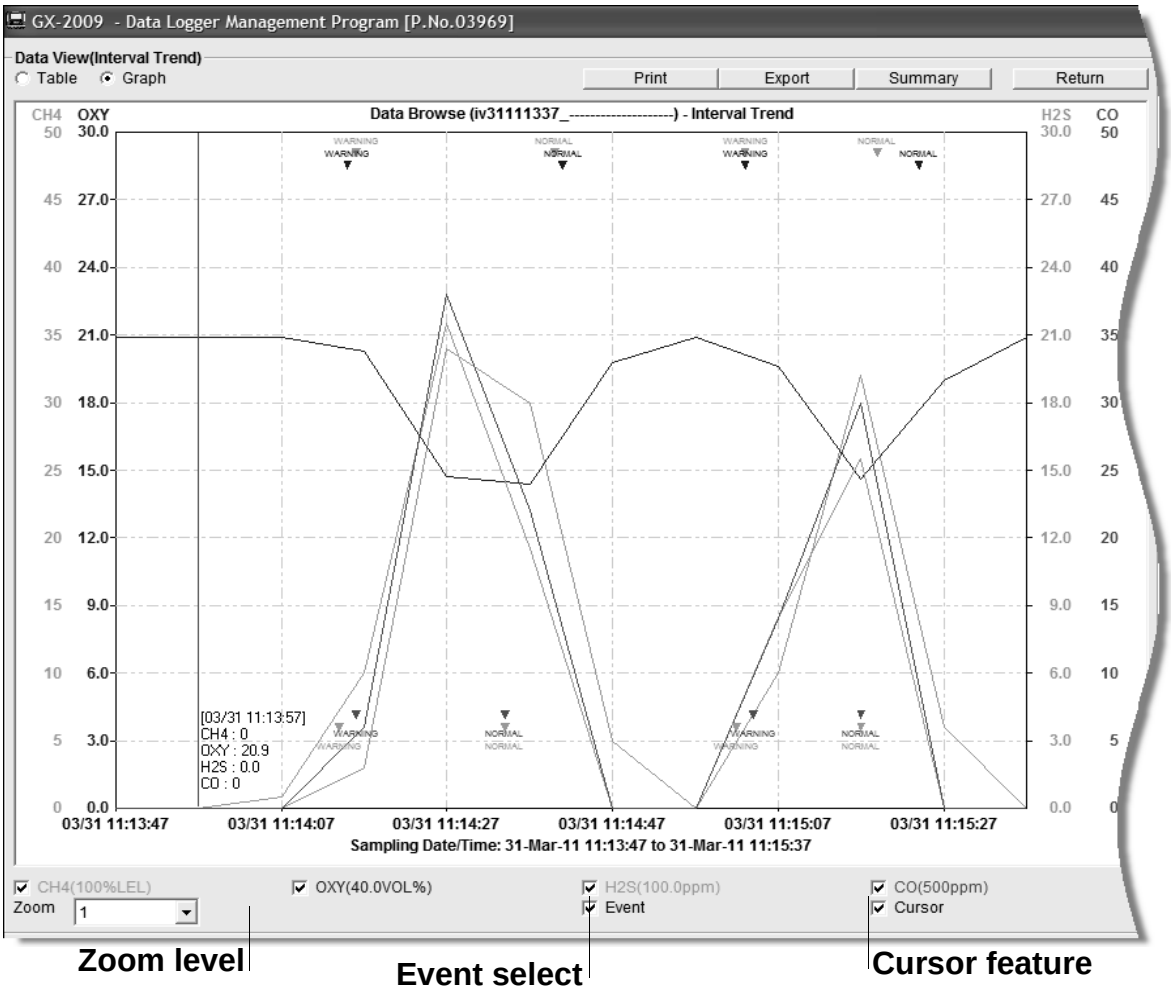


Figure 35: Interval Trend Data in Graph Format

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. Depending on the length of the data session, data sessions that show changing readings will normally have more choices for zoom levels than sessions that show stable data to allow for viewing of gas reading changes in greater detail.
- When selected, the Cursor feature allows you to display the gas reading and log time for each data point saved on the graph. The number of data points on the graph is minimized depending on the length of a data session by several means including omitting consecutive data points that have the same gas readings. 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 31. To return to the one frame format, click **Summary** again.

12. To print the data, whether it is viewed in table or graph format, click the **Print** button. A Printer List dialog box will appear for you to select a printer.

Figure 36: Printer List Dialog Box, Interval Data

13. Select a printer and click **OK** to print the data. Data displayed in Graph view will print as a graph and data displayed in Table view will print as a table.

14. 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.

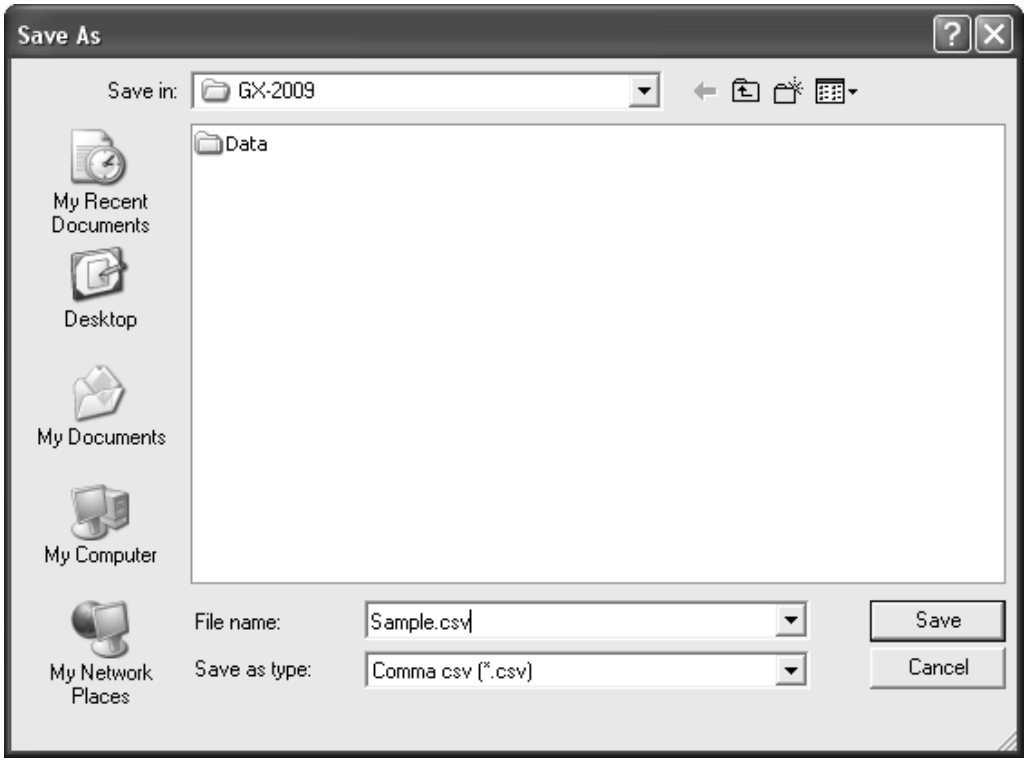


Figure 37: Save as Dialog Box

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.

15. To go back and view other data, click the **Return** button in the upper right corner of the Data Window or the **Data** button on the right side of the program window and select the data you want to view.

Alarm Trend Data

In addition to the interval trend data, the GX-2009 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 trend 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-2009 has not been on for 30 minutes before the alarm event occurs, the data during this time is left blank. If the GX-2009 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-2009 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-2009'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.

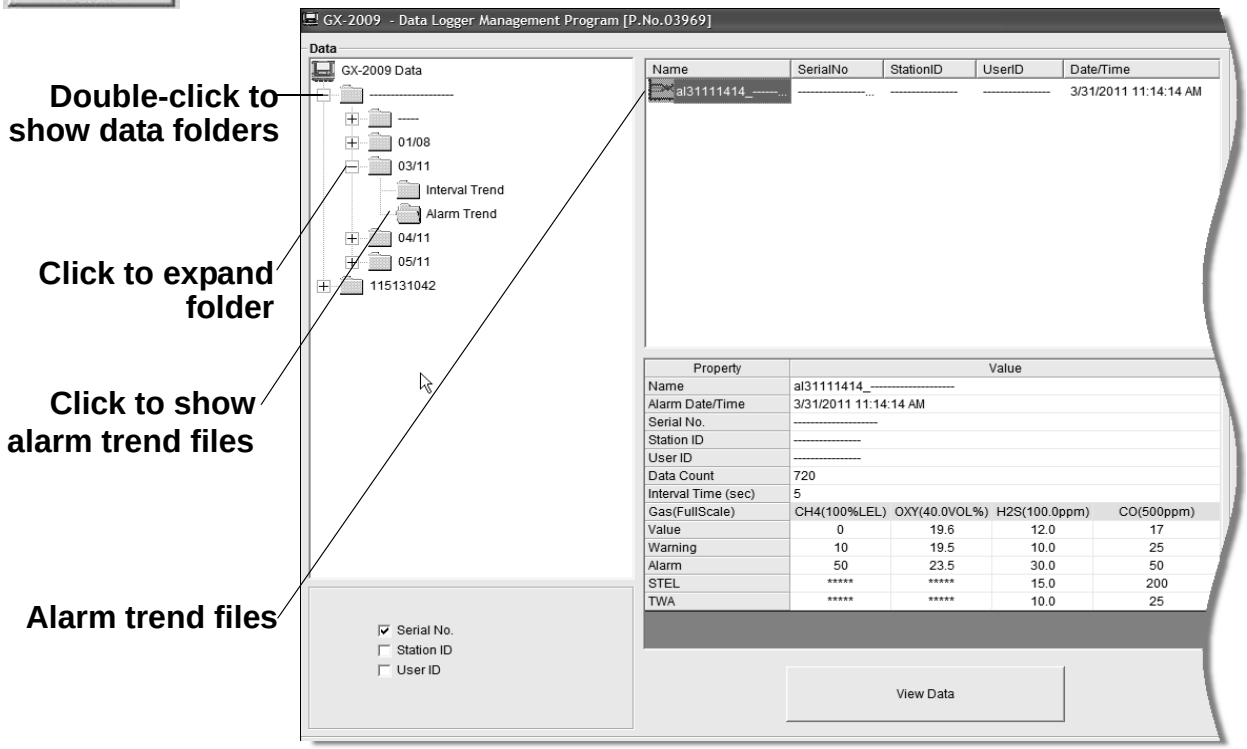


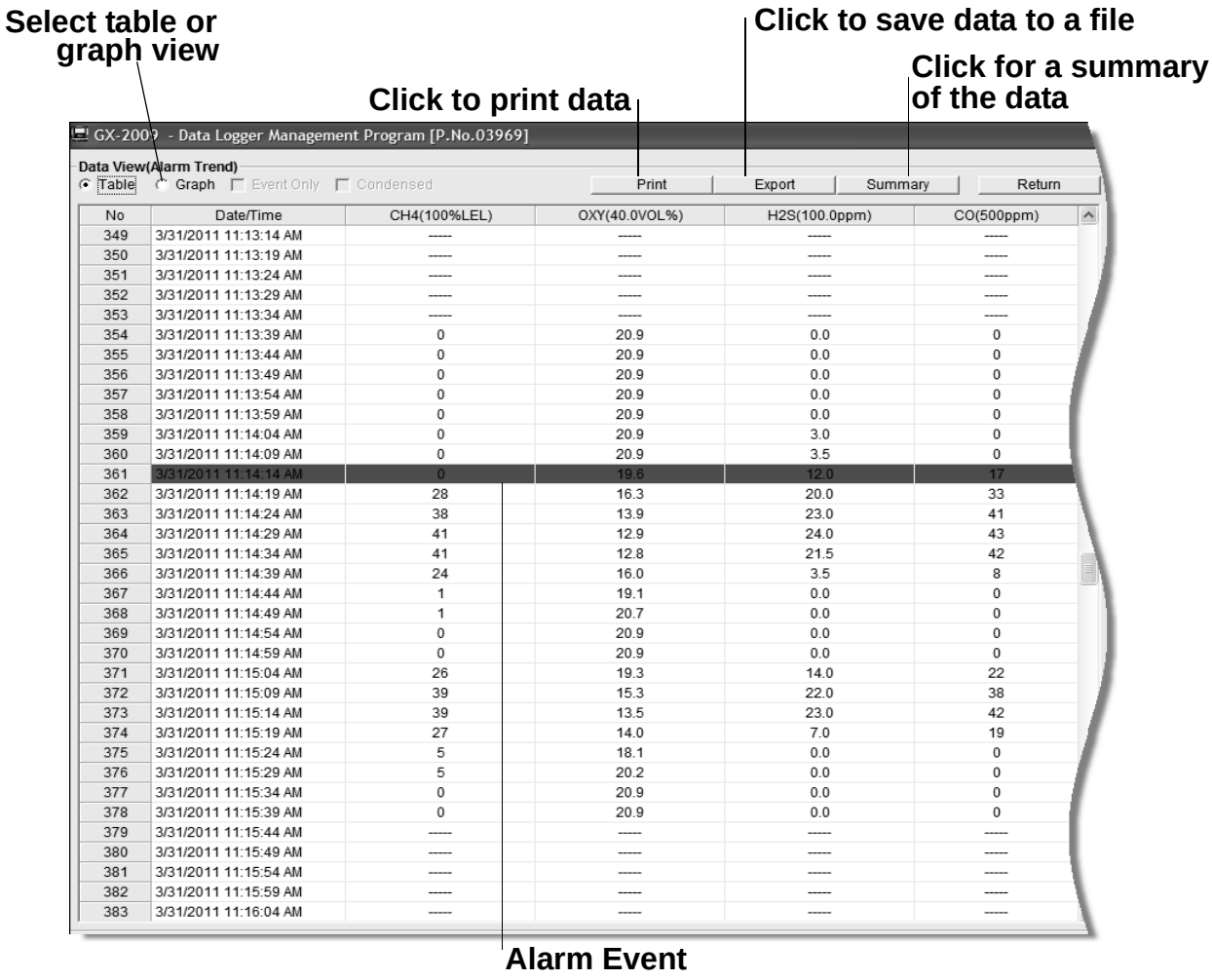
Figure 38: Data Window - Selecting Alarm Trend Data Files

2. If necessary, double-click the GX-2009 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 (+) of or double-click the serial number folder to view the contents.The top folder is untitled and contains the Calibration History folder along with folders for alarm events and trouble events. The rest of the folders contain folders for the interval trend files and alarm trend 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.

The serial number, station ID, user ID, and date/time appear on the line for each alarm trend file. The date/time is the date and time that the data file was created and data began being recorded in that 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 by selecting the Table or Graph selection buttons. The example below in Figure 39 is in table format.



No	Date/Time	CH4(100%LEL)	OXY(40.0VOL%)	H2S(100.0ppm)	CO(500ppm)
349	3/31/2011 11:13:14 AM	-----	-----	-----	-----
350	3/31/2011 11:13:19 AM	-----	-----	-----	-----
351	3/31/2011 11:13:24 AM	-----	-----	-----	-----
352	3/31/2011 11:13:29 AM	-----	-----	-----	-----
353	3/31/2011 11:13:34 AM	-----	-----	-----	-----
354	3/31/2011 11:13:39 AM	0	20.9	0.0	0
355	3/31/2011 11:13:44 AM	0	20.9	0.0	0
356	3/31/2011 11:13:49 AM	0	20.9	0.0	0
357	3/31/2011 11:13:54 AM	0	20.9	0.0	0
358	3/31/2011 11:13:59 AM	0	20.9	0.0	0
359	3/31/2011 11:14:04 AM	0	20.9	3.0	0
360	3/31/2011 11:14:09 AM	0	20.9	3.5	0
361	3/31/2011 11:14:14 AM	0	19.6	12.0	17
362	3/31/2011 11:14:19 AM	28	16.3	20.0	33
363	3/31/2011 11:14:24 AM	38	13.9	23.0	41
364	3/31/2011 11:14:29 AM	41	12.9	24.0	43
365	3/31/2011 11:14:34 AM	41	12.8	21.5	42
366	3/31/2011 11:14:39 AM	24	16.0	3.5	8
367	3/31/2011 11:14:44 AM	1	19.1	0.0	0
368	3/31/2011 11:14:49 AM	1	20.7	0.0	0
369	3/31/2011 11:14:54 AM	0	20.9	0.0	0
370	3/31/2011 11:14:59 AM	0	20.9	0.0	0
371	3/31/2011 11:15:04 AM	26	19.3	14.0	22
372	3/31/2011 11:15:09 AM	39	15.3	22.0	38
373	3/31/2011 11:15:14 AM	39	13.5	23.0	42
374	3/31/2011 11:15:19 AM	27	14.0	7.0	19
375	3/31/2011 11:15:24 AM	5	18.1	0.0	0
376	3/31/2011 11:15:29 AM	5	20.2	0.0	0
377	3/31/2011 11:15:34 AM	0	20.9	0.0	0
378	3/31/2011 11:15:39 AM	0	20.9	0.0	0
379	3/31/2011 11:15:44 AM	-----	-----	-----	-----
380	3/31/2011 11:15:49 AM	-----	-----	-----	-----
381	3/31/2011 11:15:54 AM	-----	-----	-----	-----
382	3/31/2011 11:15:59 AM	-----	-----	-----	-----
383	3/31/2011 11:16:04 AM	-----	-----	-----	-----

Figure 39: 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 38.

8. 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.

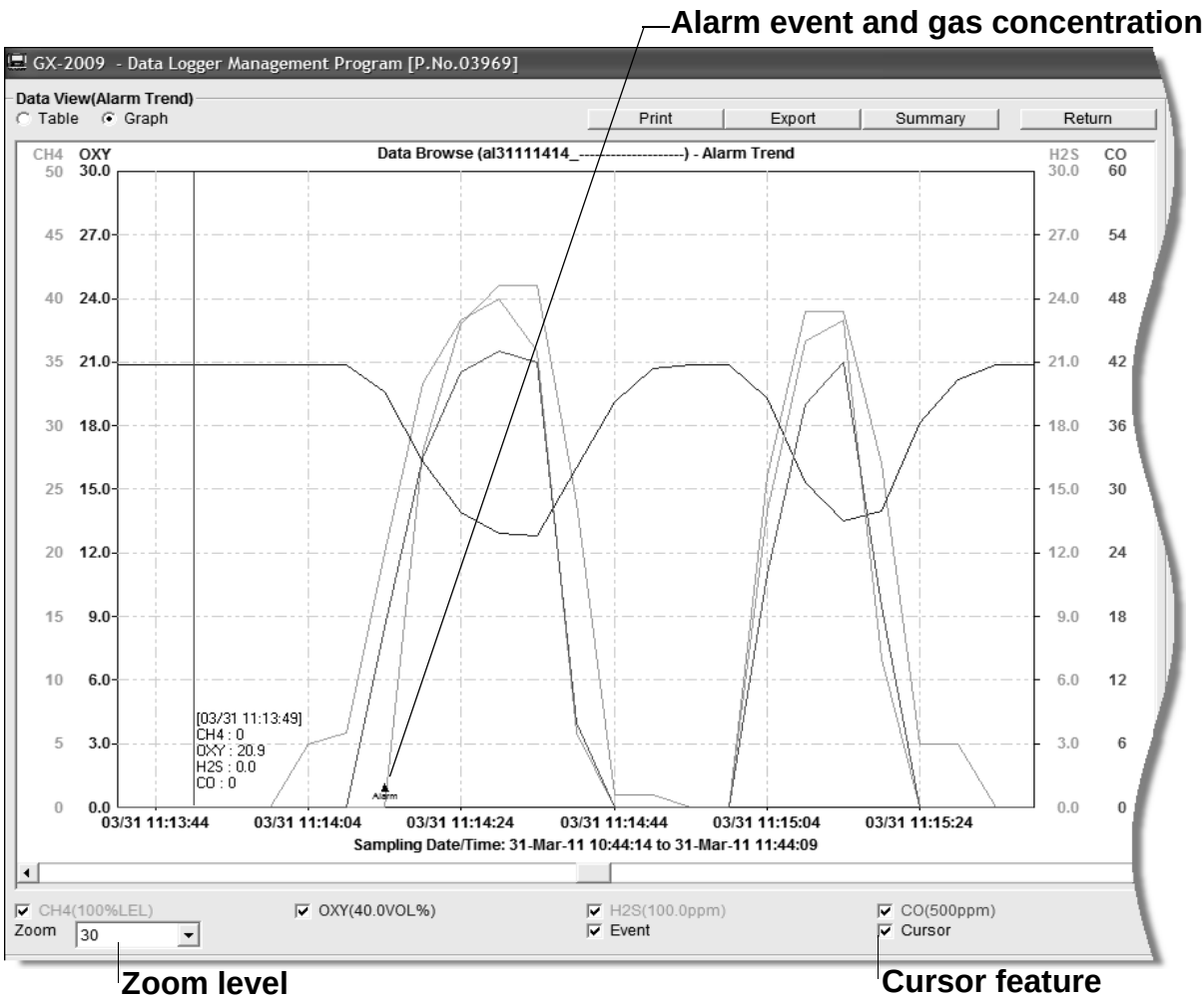


Figure 40: Alarm Trend Data in Graph Format

When viewing alarm 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 in the alarm trend file. 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 38. To return to the one frame format, click **Summary** again.

9. To print the data, whether it is viewed in table or graph format, click the **Print** button. A Printer List dialog box will appear for you to select a printer.

Figure 41: Printer List Dialog Box, Interval Data

10. Select a printer and click **OK** to print the data. 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.

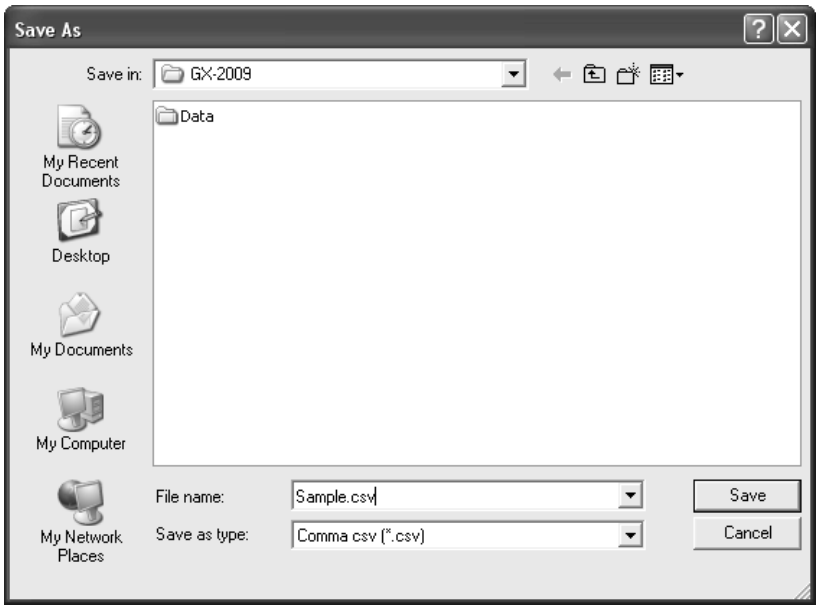


Figure 42: Save as Dialog Box

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 go back and view other data, click the **Return** button in the upper right corner of the Data Window or the **Data** button on the right side of the program window and select the data you want to view.

Deleting Data in the Data Window

The following items can be deleted in the Data Window:

- Data folders
- Calibration History files
- Alarm and Trouble Event files

- Interval Trend and Alarm Trend data files

To delete any of the above items in the Data Window:

1. With the program launched, click the Data control button on the right side of the program window.
2. Find the folder or file you want to delete.
3. Place the cursor on the folder or file you want to delete and click it with the right mouse button. The Delete box will appear.

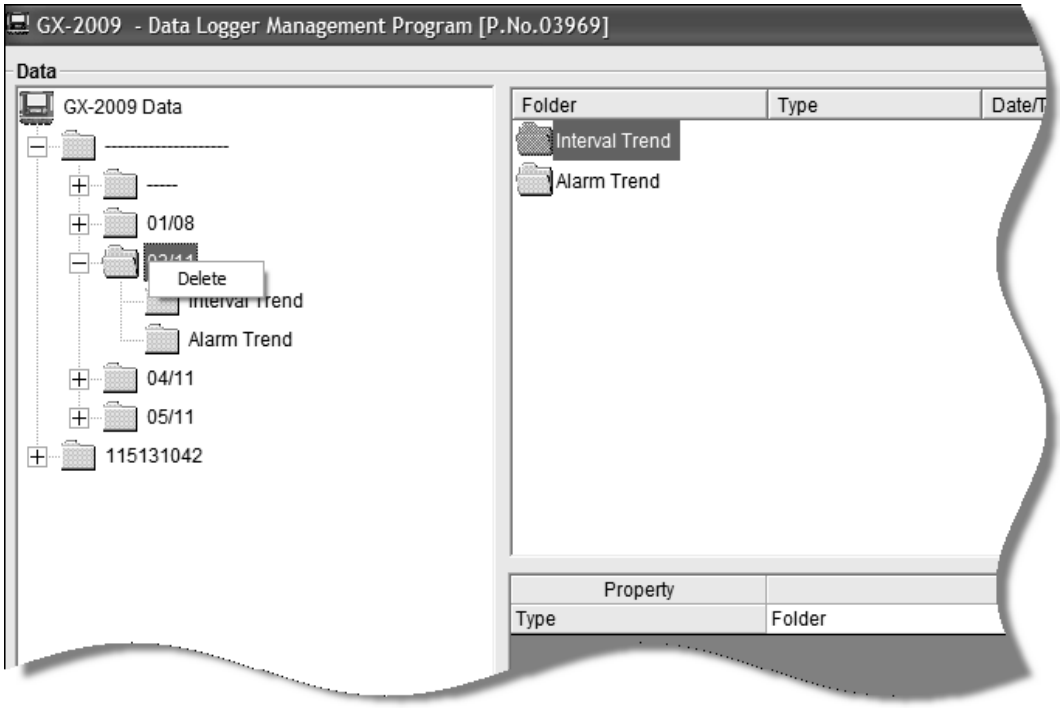


Figure 43: Delete Box

4. Click Delete with the left mouse button. The Password Window appears.

Figure 44: Password Window

5. Enter the password and click **Continue**. The password when the program is first installed is “rki”. The password is case sensitive. See “Changing the Password” on page 63 for instructions to change the password if desired.
6. When the password has been entered and **Continue** clicked, the Delete Data Window (if a folder is selected for deletion) or Delete Sample Window (if a file is selected for deletion) will appear asking you to confirm that you want to delete the selected folder or file. In the example below, the Delete Data Window appears because the data folder shown in Figure 43 has been selected for deletion.

Figure 45: Delete Data Window

7. If you want to delete the selected item, click **Yes**. The item will be deleted by the program.

   If you do not want to delete the selected item, click **No** and the operation will be cancelled.

Changing the Password

CAUTION: *Changing the password requires use of the Delete box. Take care to avoid accidentally deleting data if you decide to change 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.

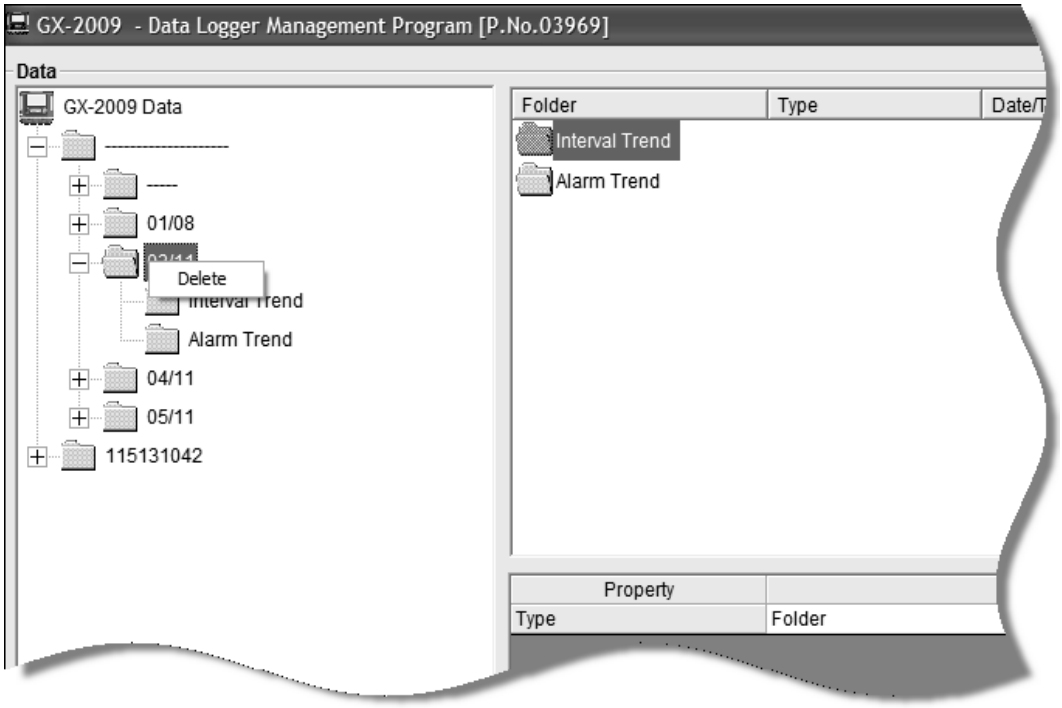


Figure 46: Delete Box

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

Figure 47: Password Window

3. Click **Change Password**. The Password Window asks you to input the current password.

Figure 48: Inputting Current Password

4. Type the current password, then click **Current password**. The Password Window asks you to input the new password.

Figure 49: Inputting New Password

5. Type the new password and click **New Password**. The Password Window asks you to input the new password again to confirm it.

Figure 50: Confirming New Password

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

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

Figure 51: Confirming New Password

8. Close the Password Window by clicking the red “X” in the upper right corner of the window.

Viewing, Printing, and Deleting Data in the Last Calibration Window

You can access data on the most recent successful calibration and bump test for each instrument that has been downloaded in the Last Calibration Window. You can view, print (calibration date/bump test date only), and delete this data in the Last Calibration Window.

NOTE: If the GX-2009 Data Logger Management 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 20 for more instruction.

Effects of Bump Test Function Parameter Setting on Appearance of Last Calibration Window

The setting of the Bump Test Function instrument parameter has an effect on the appearance of the Last Calibration Window. This instrument parameter can be set using the GX-2009 User Setup Program. The factory setting is *Off*.

If the Bump Test Function parameter is set to *Off* for every instrument that has been downloaded to the GX-2009 Data Logger Management Program using the Complete Download or Instrument Information download buttons, the Last Calibration Window will appear as shown in the screen below. The screen is shown with the Need Calibration option selected. The Bump Test portion of this window is not shown

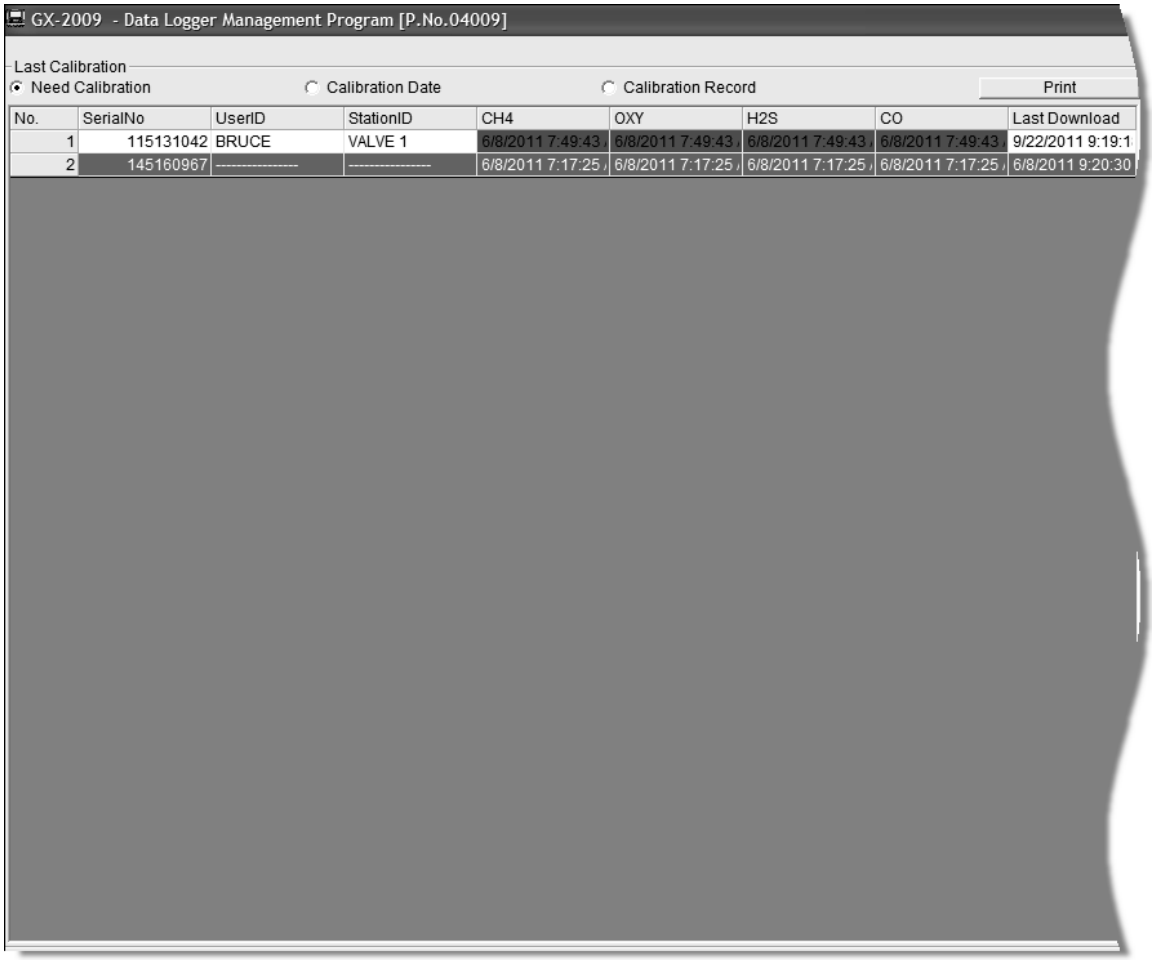


Figure 52: Last Calibration Window: Bump Test Function *Off*

If any instrument has been downloaded to the GX-2009 Data Logger Management Program using the Complete Download or Instrument Information download buttons that has the Bump Test Function parameter set to *On*, the Last Calibration Window will appear as below. The screen below is shown with the Need Calibration and Need Bump Test options selected. Only instruments that had the Bump Test Function instrument parameter turned *On* when downloaded will appear in the Bump Test portion of the window. It should be noted that once an instrument that has the Bump Test Function parameter set to *On* has been downloaded using the Complete Download or Instrument Information download buttons, the Bump Test portion of this screen will always appear.

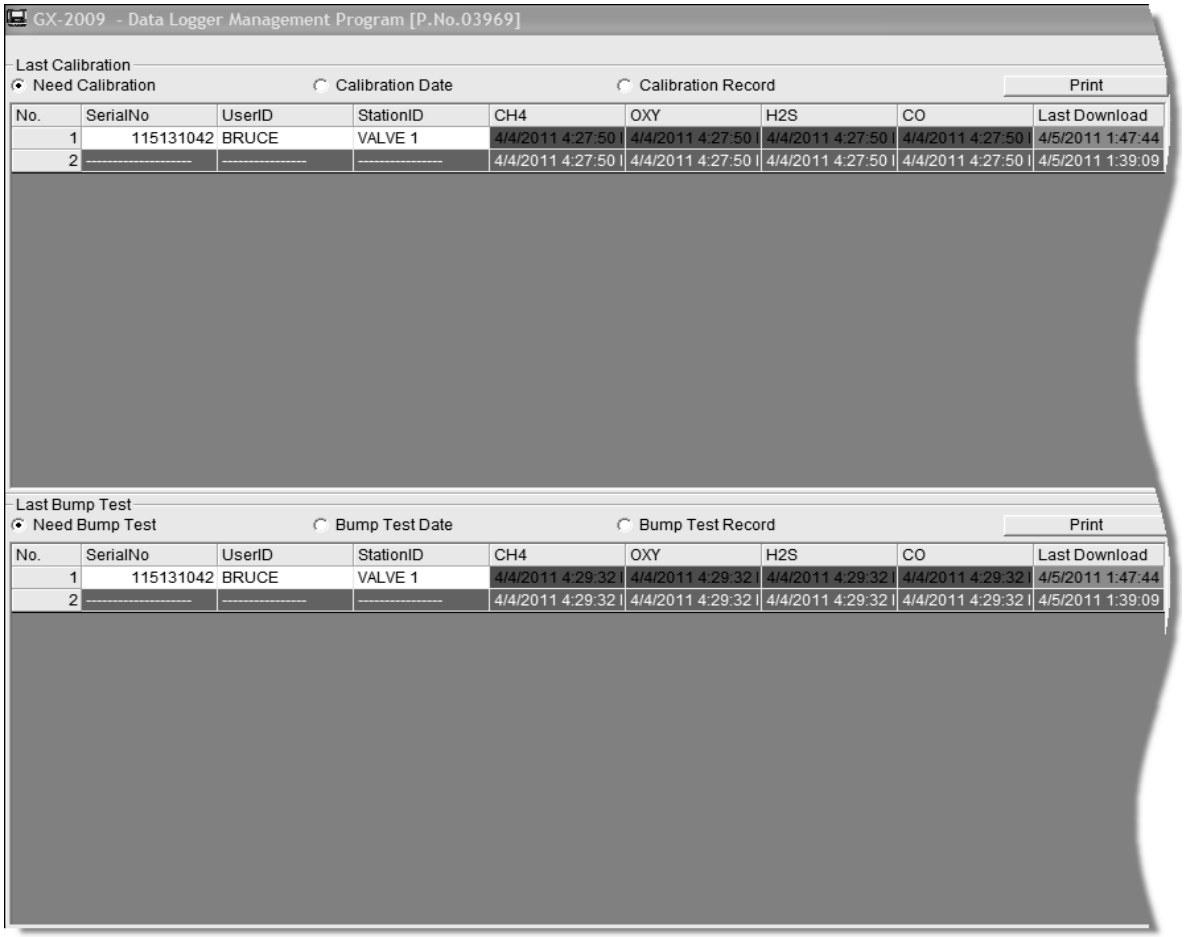


Figure 53: Last Calibration Window: Bump Test Function *On*

The following screens are shown with the Bump Test portion of the window active. If the Bump Test Function on all of the instruments you have downloaded is set to *Off*, you will not see the Bump Test portion of these screens. For more information on setting the Bump Test Function, see the User Setup Program

Operator's Manual.

Viewing and Printing Last Calibration Data

Open the Last Calibration Window by clicking **Last Calibration** along the right side of the program window. When you open the Last Calibration Window the first time after launching the program, it will open with the Need Calibration/Need Bump Test view options selected. There are three view options in the Last Calibration window: Need Calibration/Need Bump Test, Calibration Date/Bump Test Date, and Calibration Record/Bump Test Record.

Need Calibration/Need Bump Test Option

Selecting this option shows the last calibration date, last bump test date, and the last download date for the GX-2009s that are due for calibration or bump testing. The calibration data appears at the top half of the screen while the bump test data appears in the bottom half of the screen.

NOTE: The calibration time limit value, the number of days after a calibration that a new calibration is due, is saved in the GX-2009 but it is only accessible with the GX-2009 User Setup Program. If the calibration time limit is changed in the GX-2009 using the User Setup Program, the new calibration time limit value will not be known by the program until the GX-2009 is downloaded.

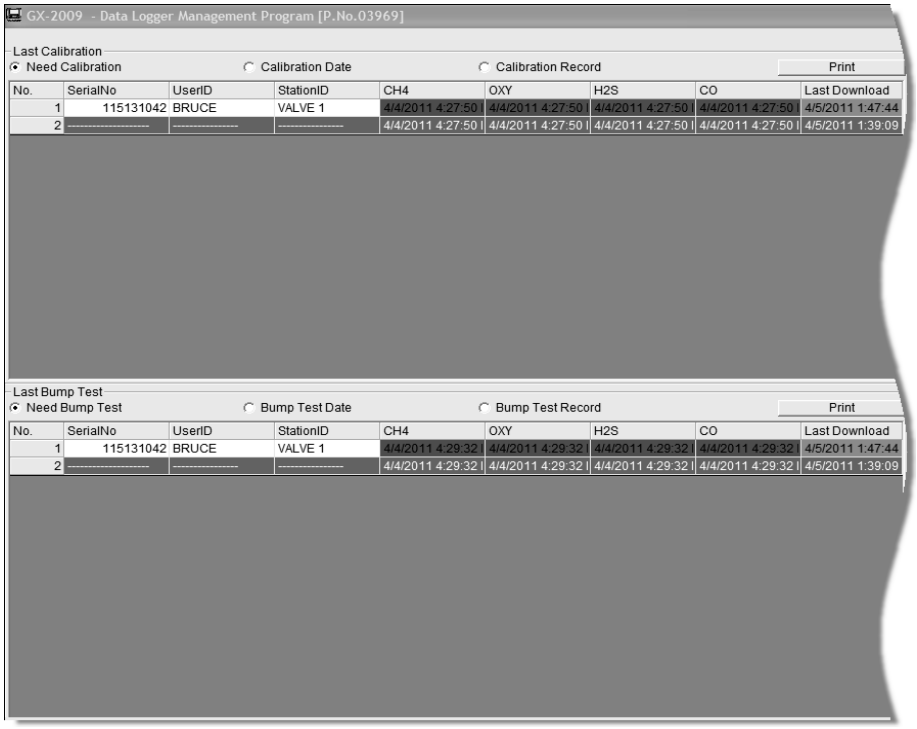


Figure 54: Last Calibration Window: Need Calibration View Option

The Need Calibration/Need Bump Test view option shows the following fields for both calibration and bump test data:

- No. — lists, in numerical order, the sequence of GX-2009s whose data have been downloaded to the computer. The most recently downloaded GX-2009 will be No. 1.
- SerialNo — shows the serial number of the GX-2009 that was downloaded.
- UserID — shows the user ID of the of the GX-2009 that was downloaded.
- StationID — shows the station ID of the unit that was downloaded.
- Target Gases (CH4 or HC, O2, H2S, CO) **—** shows when the unit was calibrated or bump tested for each of the target gases using the **MM/DD/YY** format and 24-hour military standard time.

NOTE: Your GX-2009 may have less than 4 sensors installed.

- Last Downloaded — shows when the last download took place for a unit using the **MM/DD/YY** format and 24-hour military time standard.

The GX-2009s that are due for calibration or bump testing (in the case of the Need Calibration/Need Bump Test view option, that will be all of them), will have their last calibration date or last bump test date highlighted in red. The GX-2009s that have not been downloaded for more than 90 days will have their last download date highlighted in purple.

To print a list of the instruments shown in the Need Calibration/ Need Bump Test view option along with their user ID and last calibration date or last bump test date, click the **Print** button. A Printer List dialog box will appear.

Figure 55: Printer List Dialog Box, Need Calibration View Option

Select a printer and click the **OK** button to print the instrument list.

Calibration Date/Bump Test Date View Option

Selecting this option shows the last calibration date, last bump test date, and the last download date for all the GX-2009s that are in the program's database. The fields for the Calibration Date/Bump Test Date view option are the same as for the Need Calibration/Need Bump Test view option.

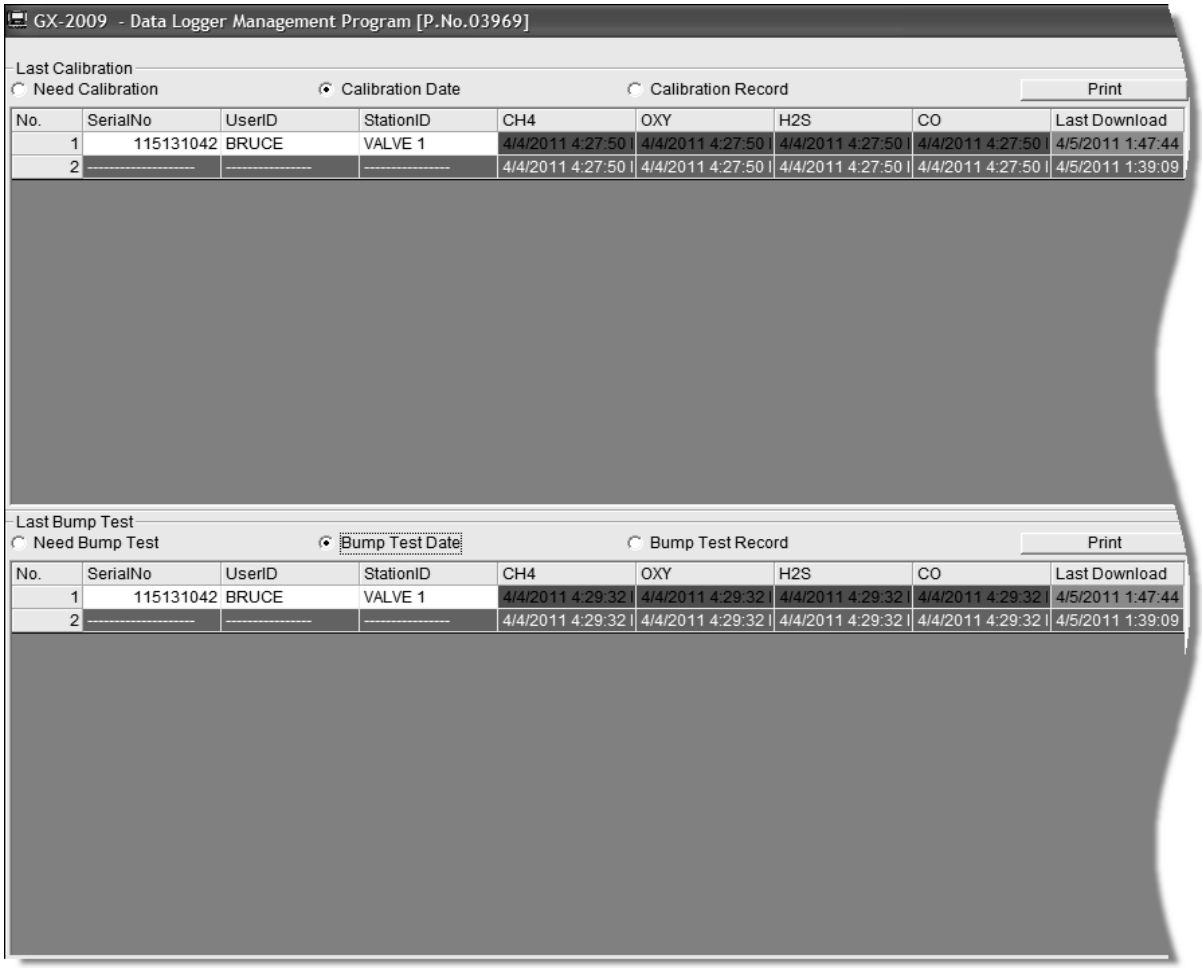


Figure 56: Last Calibration Window: Calibration Date View Option

To print a list of the instruments shown in the Calibration Date/ Bump Test Date view option along with their user ID and last calibration date or last bump test date, click the **Print** button. A Printer List dialog box will appear.

Figure 57: Printer List Dialog Box, Calibration Date View Option

Select a printer and click the **OK** button to print the instrument list.

Calibration Record/Bump Test Record View Option

Selecting the Calibration Record/Bump Test Record view option shows detailed calibration or bump test information for each GX-2009's most recent successful calibration or bump test.

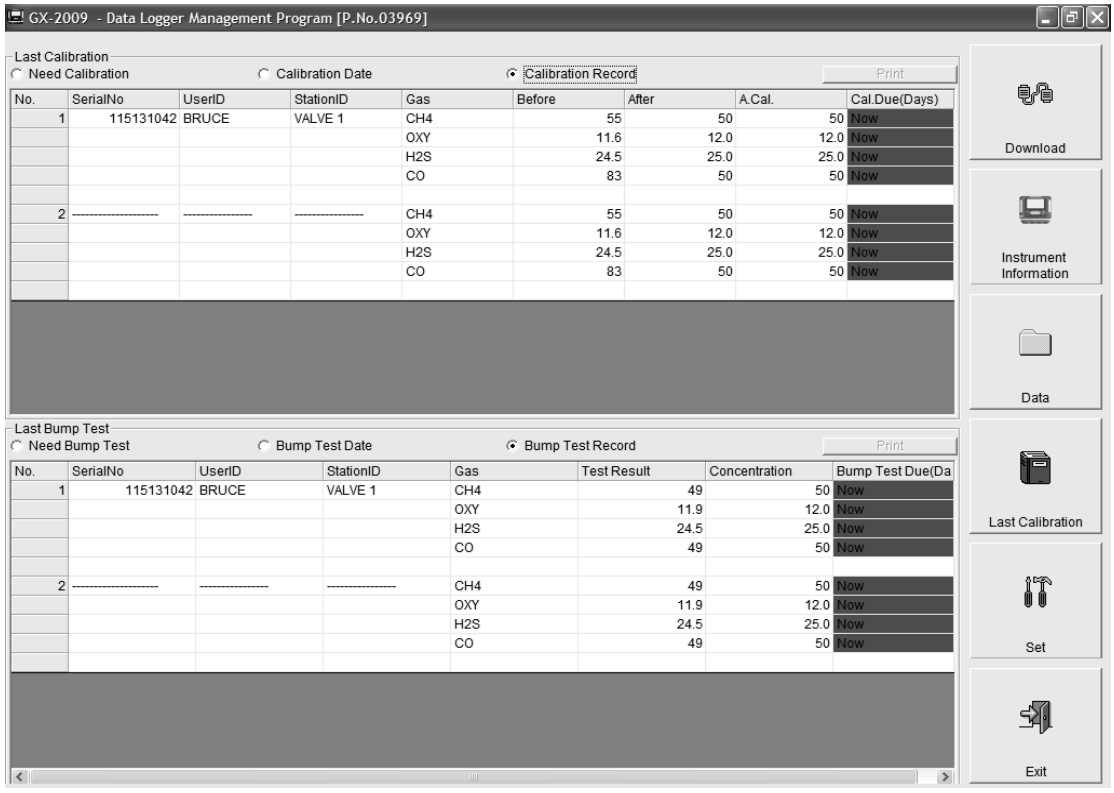


Figure 58: Last Calibration Window: Calibration Record View Option

The fields on this screen include SerialNo, UserID, and StationID just as in the Need Calibration/Need Bump Test and Calibration Date/Bump Test Date screens. The Calibration Record fields also include the following:

- Gas — Lists the target gas for which the Before, After, and A.Cal readings are displayed.
- Before — shows the settings prior to calibration.
- After — shows the settings after calibration.
- A. Cal. — lists the auto-calibration setting for each channel of the GX-2009. If a GX-2009 passes its calibration, the "After" column should match the "A. Cal." column. If the GX-2009 fails calibration on any of its channels, those channels will retain the previous calibration information.

NOTE: If a unit is calibrated using One Cal in the GX-2009's Calibration Mode (see the GX-2009 Operator's 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).

The Bump Test Record fields also include the following:

- Gas — Lists the target gas for which the Test Result and Concentration readings are displayed.
- Test Result — Shows the gas reading resulting from the bump test.
- Concentration — Shows the concentration values of the applied gas.
- Bump Test Due — Indicates what day a bump test is due for the instrument. If the instrument is due now, the box will be highlighted in red.

It is not possible to print any information when the Calibration Record/Bump Test Record view option is selected.

To view and print all past calibrations for an instrument, see “Calibration History” on page 35.

Deleting Last Calibration Data

To delete an instrument and its calibration or bump test data from the Last Calibration Window:

1. With the program launched, click **Last Calibration** on the right side of the program window. The Last Calibration Window will appear.
2. Select the Need Calibration/Need Bump Test or Calibration Date/Bump Test Date option.
3. Click the row for the instrument whose calibration or bump test 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 Delete box appears.

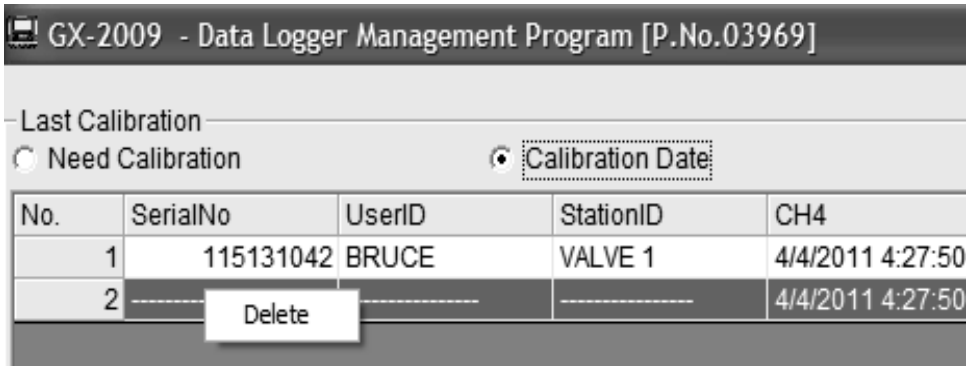


Figure 59: Delete Box

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

Figure 60: Password Window, Deleting Last Calibration Data

6. Enter the password and click the **Continue** button. The password when the software is first installed is “rki”. The password is case sensitive. See “Changing the Password” on page 63 for instructions to change the password if desired.
7. When the password has been entered and the **Continue** button clicked, the Delete History window will appear asking you to confirm that you want to delete the most recent calibration or bump test information for the selected instrument.

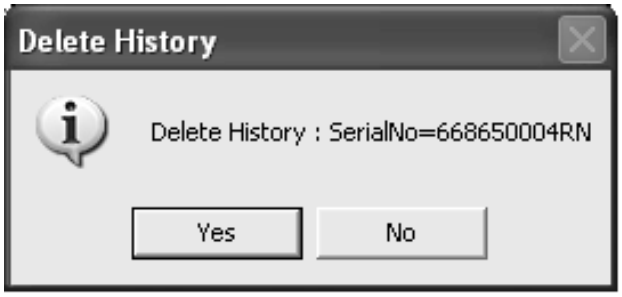


Figure 61: Delete History Window

8. If you want to delete the calibration or bump test information, click **Yes**. The information will be deleted by the program.

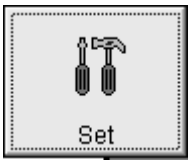
   If you do not want to delete the calibration or bump test information, click **No** and the operation will be cancelled.

Changing GX-2009 Instrument Parameters

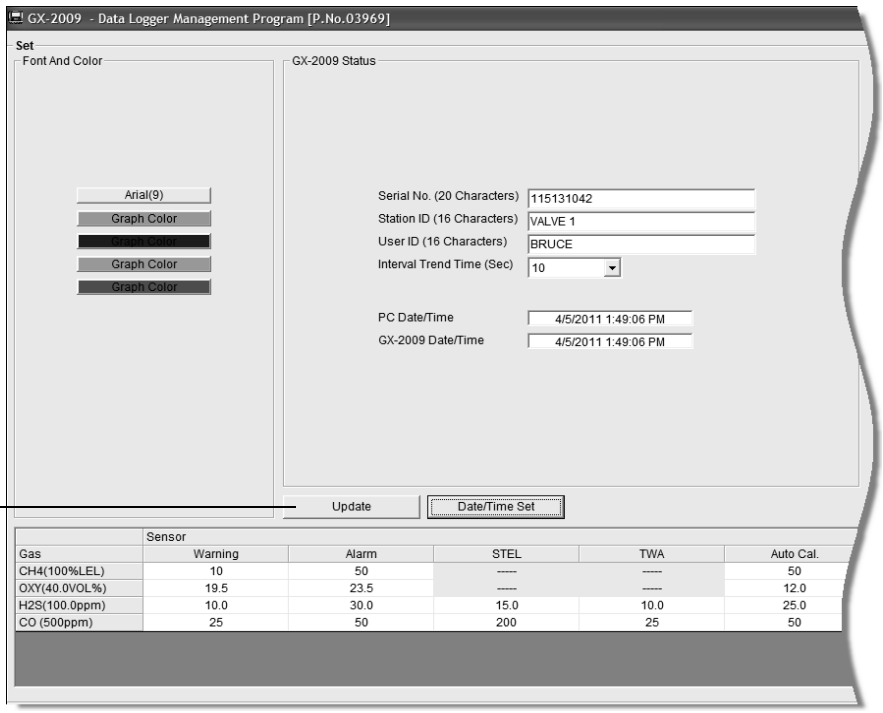
To make changes to parameters stored in the GX-2009, use the GX-2009’s Data Logger Management Program’s Set Window. Follow the steps below to make these changes.

1. Launch the GX-2009 Data Logger Management Program.
2. If the Automatic Download selection box is selected, deselect it.
3. Connect a GX-2009 to the program. See “Downloading Data from the GX-2009” on page 23, instruction 1 through instruction 3, to connect an instrument to the program.
4. 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-2009. If you wish to download data before making changes, click **Complete Download** instead of **Instrument Information**.



5. Click the **Set** button to display the Set Window. Use the GX-2009 Status Frame and the Gas/Sensor Frame to change parameters stored in the GX-2009.



Click to upload changes to GX-2009

Figure 62: Set Window

6. To change the serial number, station ID, or user ID stored in the GX-2009, click the field you wish to change (e.g., user ID), use the backspace key to remove the current entry, then type the new information.
7. To change the datalogging trend interval time, click on the down arrow in the Interval Trend Time Field and select the desired interval time in seconds. The available choices are 10, 20, 30, 60, 180, 300, and 600 seconds.
8. To change the channel parameters, click the field you wish to

change (e.g. H2S AutoCal.) to select it, then type the new information.

9. After you have finished entering new parameters, you must upload this information to the GX-2009 by clicking the **Update** button, then confirming that you want to update the information by clicking the **Yes** button when the Update window appears.

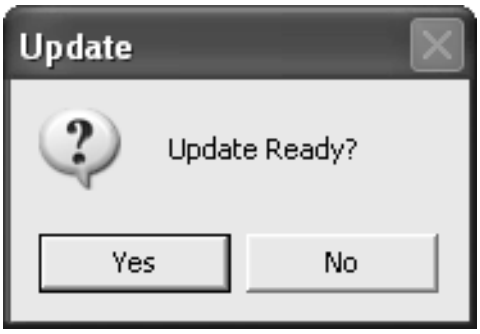


Figure 63: Update Window

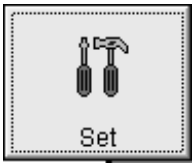
10. To update the GX-2009's date and time to match the computer's, click the **Date/Time Set** button and then click the **Yes** button when the Update window appears.

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

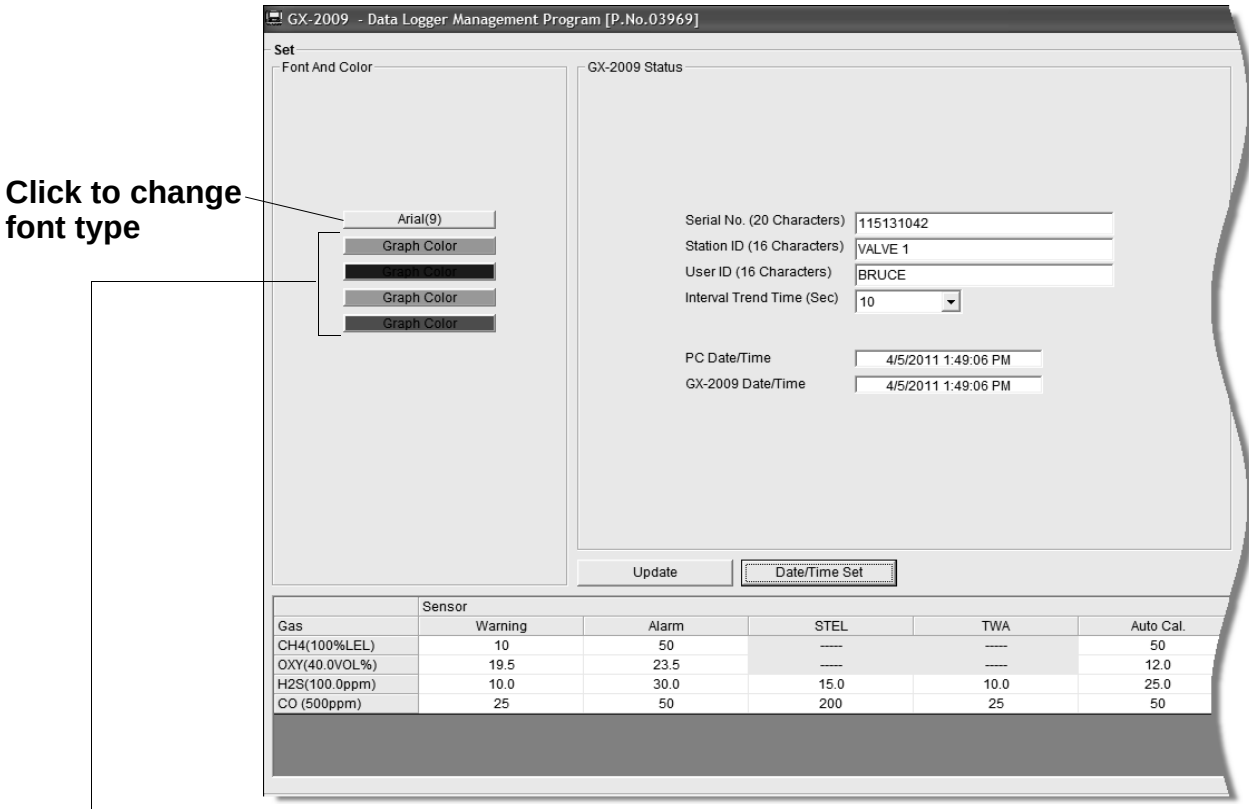
12. If you wish to exit the software, click the **Download** control button to return to the Download Window. Turn off the GX-2009 by using the POWER MODE button on the GX-2009 or by clicking the **Power Off** button and confirming that you want to turn off the GX-2009 when the Power Off Window appears. Then click the **Exit** button to exit the software.

Changing the Appearance of the Program Screens

To change how information is displayed in the program (e.g., text font or graph colors), use the program's Set Window. Follow the steps below to make changes.



1. Launch the GX-2009 Data Logger Management Program.
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 64: 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, size, and script, then click **OK**.

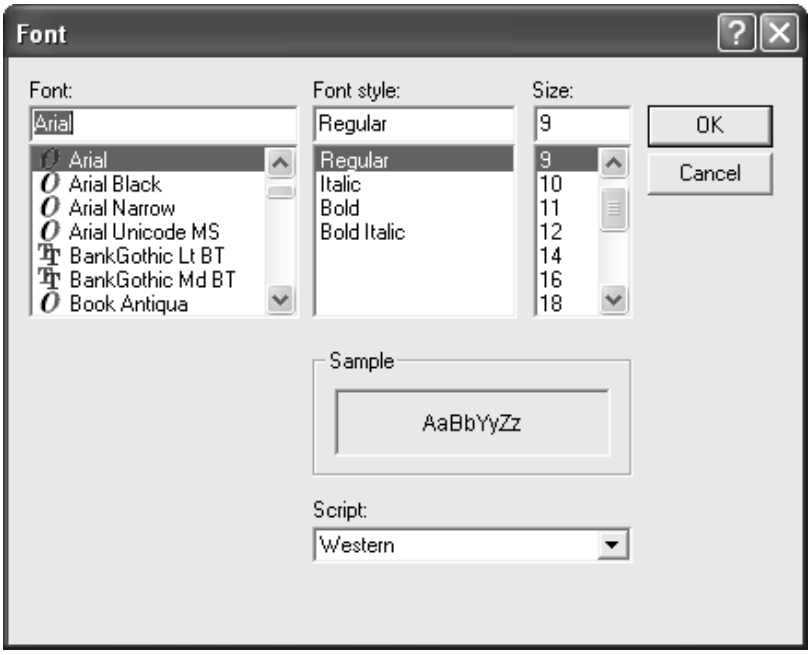


Figure 65: Font Window

4. Select the colors used to graph the various target gases in the interval trend and alarm trend data files by clicking the appropriate **Graph Color** button on the left side of the Set Window in the Font and Color frame.

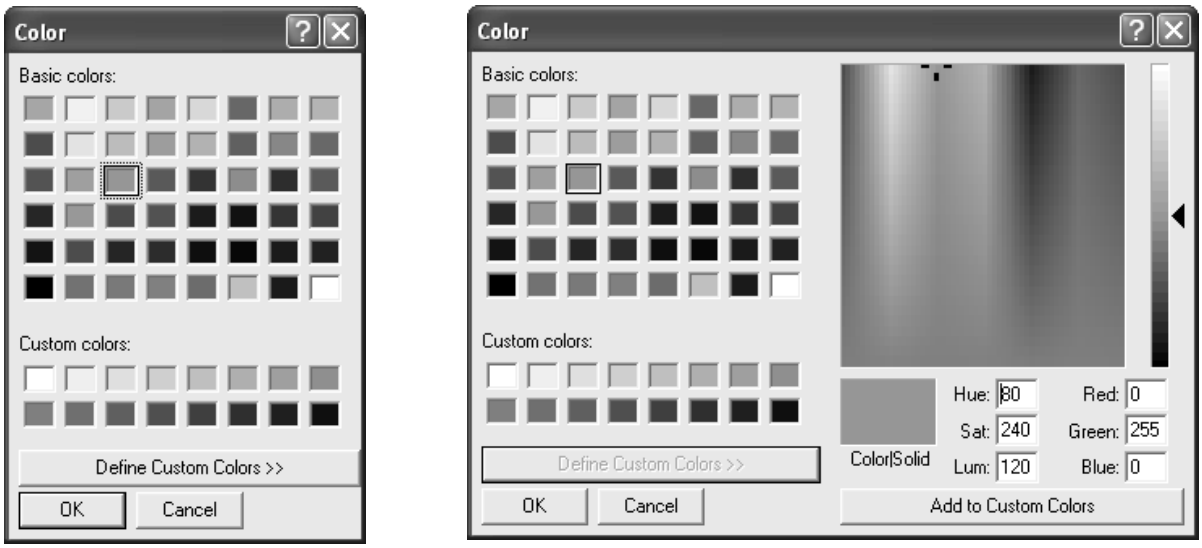


Figure 66: Color and Custom Color Windows

- The Color Window shown on the left above appears when the **Graph Color** button is clicked.

- If you want to define a custom color, click the **Define Custom Colors** button and the Custom Color Window shown on the right above replaces the Color Window.

5. After making the desired changes, click **OK**.
6. The changes you have made will take effect after you exit and restart the program.

Spare Parts List

Table 2: Spare Parts List

Part Number	Description
47-5027RK	Cable, USB/IrDA adapter
71-0163RK	GX-2009 Data Logger Management Program Operator's Manual (this document)
71-8002RK	GX-2009 Product CD, Includes the GX-2009 Data Logger Management Program, the GX-2009 User Setup Program, and Operator's Manuals for Each