Reference

Manual

BioTrakII
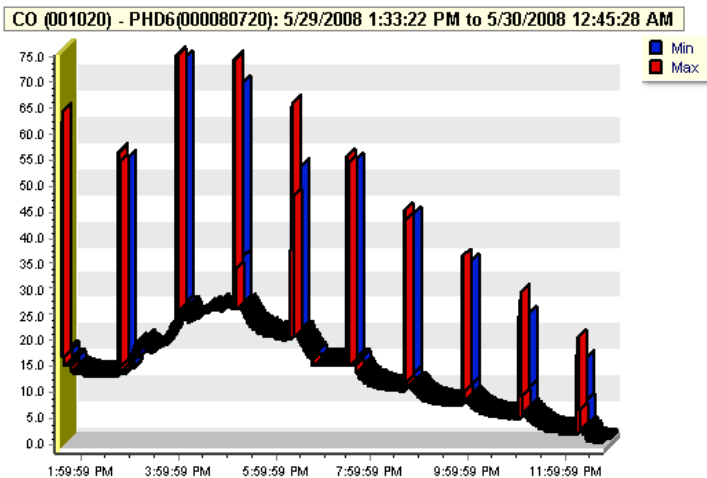
CO (001020) - PHD6(000080720): 5/29/2008 1:33:22 PM to 5/30/2008 12:45:28 AM

SPERIAN

BioTrakII has built-in security features.

Users must log in to use the software.
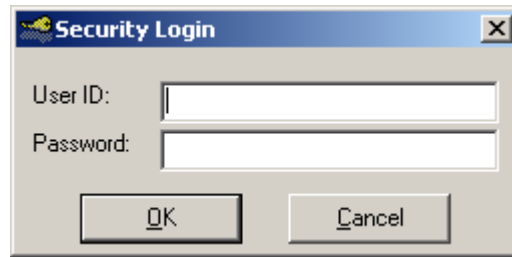
Note: The initial USER ID and PASSWORD are

User ID: setup

Password: iq

Note: The User ID and Password fields are case sensitive; "setup" and "iq" must be entered in lower case as shown.

⚠WARNING

THE BIOTRAKII PROGRAM IS DESIGNED TO INTERFACE WITH SPERIAN GAS DETECTORS. SPERIAN INSTRUMENTATION IS THE NEW NAME FOR BIOSYSTEMS. BIOTRAKII MAY ALSO BE USED WITH MANY DETECTORS WITH BIOSYSTEMS LABELING.

SPERIAN GAS DETECTORS HAVE BEEN DESIGNED FOR THE DETECTION OF DEFICIENCIES OF OXYGEN, ACCUMULATIONS OF FLAMMABLE GASES AND VAPORS AND ACCUMULATIONS OF TOXIC VAPORS.

IN ORDER TO ENSURE THAT THE USER IS PROPERLY WARNED OF POTENTIALLY DANGEROUS ATMOSPHERIC CONDITIONS, IT IS ESSENTIAL THAT THE INSTRUCTIONS IN THIS MANUAL AND THE OPERATIONS AND/OR REFERENCE MANUAL(S) FOR THE GAS DETECTOR(S) BE READ, FULLY UNDERSTOOD, AND FOLLOWED.

THIS MANUAL IS NOT INTENDED TO REPLACE THE OPERATIONS AND/OR REFERENCE MANUALS FOR THE GAS DETECTOR. THIS MANUAL IS ONLY DESIGNED TO AID IN THE INSTALLATION AND OPERATION OF THE IQ EXPRESS SYSTEM AND SHOULD BE USED IN CONJUNCTION WITH THE INSTRUMENT REFERENCE OR OPERATIONS MANUAL AT ALL TIMES.

Table of Contents

Warnings and Cautions

A.   Signal Words

The following signal words, as defined by ANSI Z535.4-1998, are used in the IQ Express Reference Manual.

⚠**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠**WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠**CAUTION** indicates a potentially hazardous situation, which if not avoided, may result in moderate or minor injury.

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

1. Overview

BioTrakII is a data management program designed for use with Sperian Instrumentation and Biosystems gas detectors and docking stations.

BioTrakII can be used to store and view data from session downloads, and can also be used to program specific user requirements into Sperian gas detectors and docking stations.

BioTrakII must be installed on a PC meeting the following minimal requirements:

- Pentium II Processor 400MHz or better or equivalent.
- 512MB RAM.
- Windows 2000**/XP
- 30MB hard drive disk space.
- Serial Port, USB Port and/or IrDA port depending on how the instruments will connect to the PC

Service Pack 3 for Windows 2000 is highly recommended.

The BioTrakII PC Software must be installed prior to attempting to connect to an instrument or docking station. The software installation procedure is given below in section 2.1.

Note: The initial release of BioTrakII is only useable with the PHD6.

1.1   PC – Instrument Connection

The connection between the PC and the detector or dock varies by instrument. Most newer Sperian gas detectors (PHD6, ToxiPro, MultiPro) connect to the PC via a built-in IrDA port on the detector. Most older instruments (PhD Ultra, PhD5, Toxi Ultra) connect via serial or USB port through a datadock that may also serve as the charging station.

IQ Docking stations can also be used to connect the PC to the detector. The IQ Dock can be connected to the PC via USB port or via Ethernet. See the IQ Dock's reference manual for further details.

1.2 Saving Data

Downloading data from the detector does not ensure that it is saved in a file on your PC.

See section 3.2 for instructions of retrieving, storing and clearing data.

2. Software Installation

1. Place the installation CD into the PC's CD tray. The installation screen should come up automatically. If downloading the software from the web or a network, select run.

A series of screens will be shown as the software prepares itself for installation.

↓
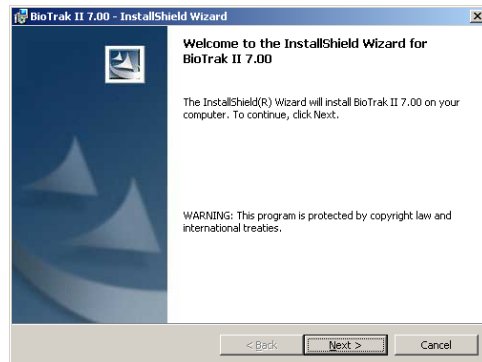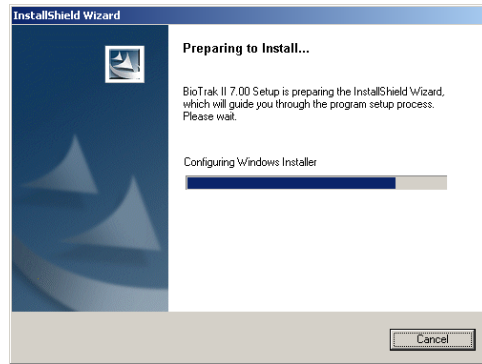
2. Click "Next" to continue with the installation. The Licensing Agreement screen will be shown.
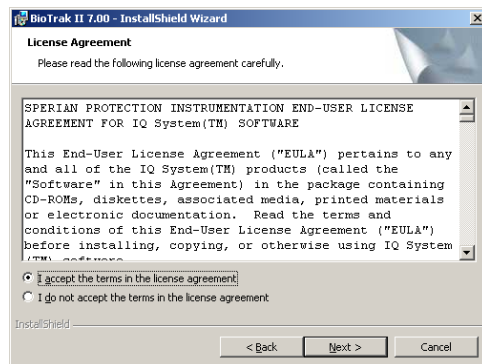
3. If you accept the terms of the License Agreement, click "I accept.....". Then click "Next" to continue. The PC requirements will be shown.

4. Click "Next" to continue. The Customer Information screen will be shown.

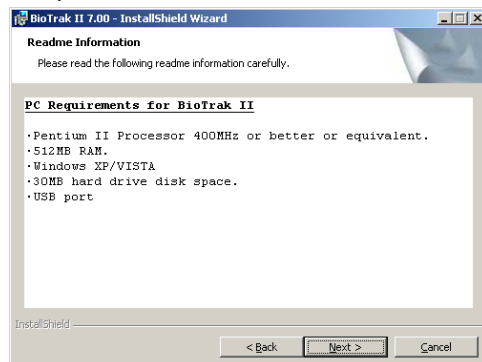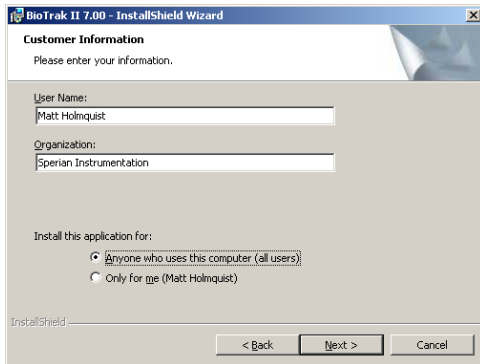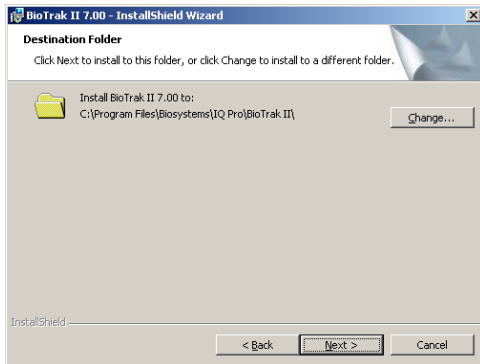5. Enter the name of the user and the name of the organization. Then select whether this application may be used by "Anyone who uses this computer" or "Only for me". Then click "Next. The destination folder screen will be shown.

6. To install BioTrakII in the default directory at "C:\ Program Files \ Biosystems \ IQ Pro \ BioTrakII" click "Next". To install the files to another directory, click "Browse" and use Windows Explorer to specify the new location. Click "Next" once this is accomplished. The following screen will then be shown.
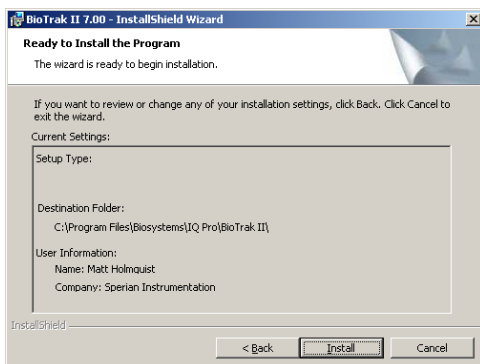
7. Click "Install" to proceed with the installation. The status of the installation will be shown.
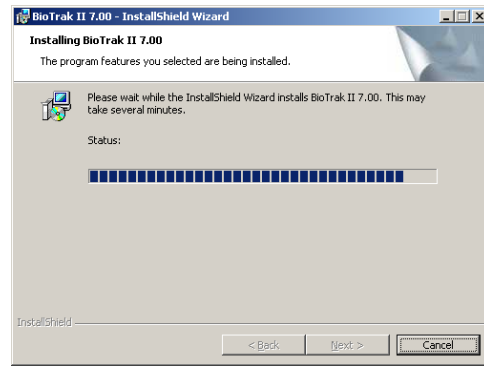
8. Once the installation is complete, the following screen will be shown:
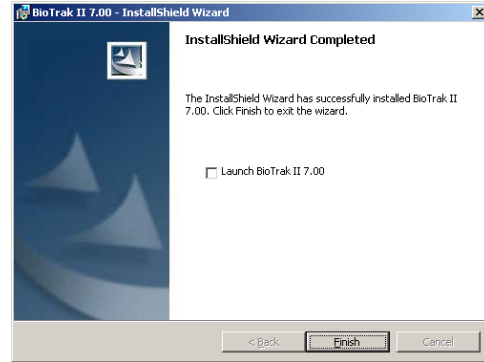
9. Click Finish to conclude the installation. The IQ Express logo will appear on your desktop.

3.   Software

To launch BioTrakII , click on the icon on your PC's desktop or access the program manually by selecting Program Files / Biosystems / IQ Pro / BioTrakII / BiotrakII (unless another location was specified during the installation).
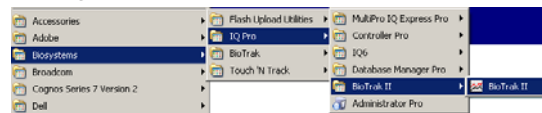
The log in screen will be shown once the software is launched.
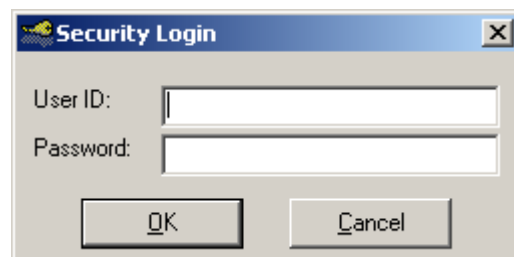
If this is the first launch, enter **Setup** as the User ID and **IQ** as the password. Otherwise, enter your user ID and password.

Once the software is successfully launched, the following screen will be shown.

3.1 Connect to PHD6

To connect to a PHD6, click on the Instruments Menu / PHD6. The connection window will be shown.

Click "Connect". An information window will be shown with instructions on how to prepare the PHD6 for the connection.

To connect to the PHD6 via an IQ6 Docking Station, select "Use Biosytems IQ6" prior to clicking "Connect".

Follow the instructions and press "OK". Connection Options will be shown.
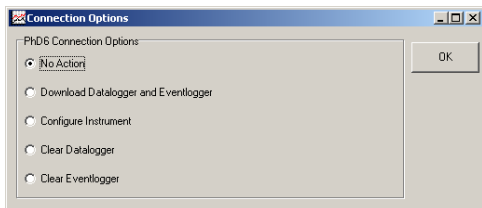
Select the appropriate option. The PHD 6 control window will be shown with the appropriate tab shown for the selection made during connection.
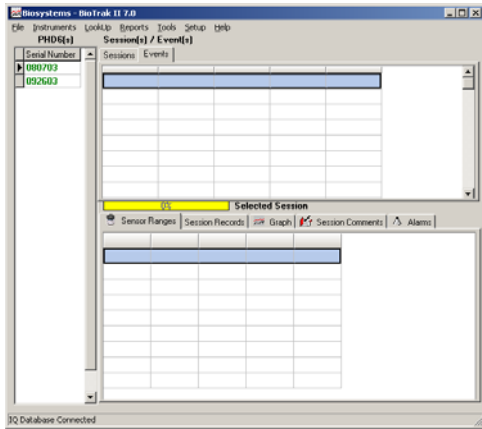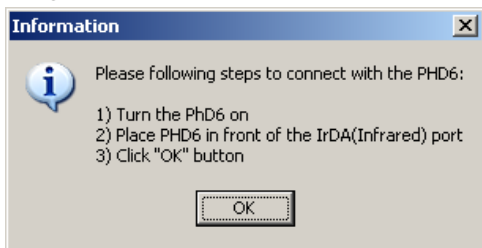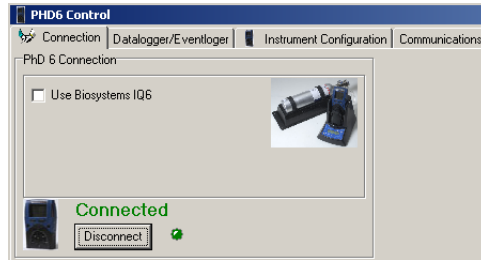

Sections 3.2 – 3.4 cover the three remaining menu items "Datalogger / Eventloger, Instrument Configuration and Communications.

3.2 Data Control

The section provides a basic overview of data control in BioTrakII.

3.2.1 Retrieving Data

To retrieve session data, complete the connection from the PHD6 to the PC. When the Connection Options screen is shown select Download Datalogger and Eventlogger and press OK.
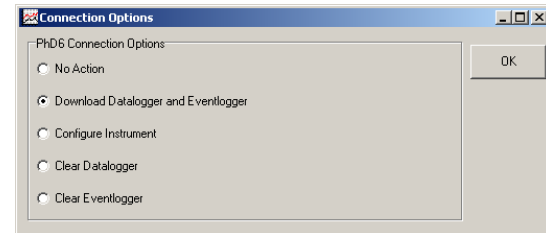
Data may also be obtained from the instrument by pressing the "Get Sessions / Event Data" from the Datalogger / Eventlogger tab after the connection is established.
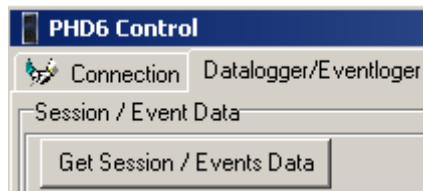
3.2.2 Saving Data

The best way to ensure that the data in your PHD6 is stored on your PC is to enter the Setup Menu followed by Options. Under the General Tab, select "Save Downloads to Database Automatically if it is not selected.

See section 4.6.2 for further details.

Data may also be saved manually by pressing the "Save to Database: button, which appears on the upper right side of the Datalogger / Eventlogger Tab following an instrument download.

Save to Database
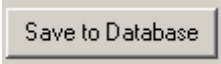
3.2.3 Clearing data from the PHD6

To clear the automatically clear the data in your PHD6 following download, enter the Setup Menu followed by Options. Under the General Tab and select "Clear Datalogger After Download" and/or "Clear Eventlogger After Download".

See section 4.6.2 for further details.

Note: Enabling either of the "Clear" functions without the enabling the "Save Download" function may result in lost data.

Data may also be cleared manually by pressing the "Clear Datalogger" or "Clear Events" buttons, which appear on the upper right side of the Datalogger / Eventlogger Tab following an instrument download.

Clear Datalogger   Clear Events

3.3 Datalogger/Eventlogger

The Datalogger/Eventlogger tab includes the control for retrieving session data at the top of the screen along with seven tab options for viewing the data.

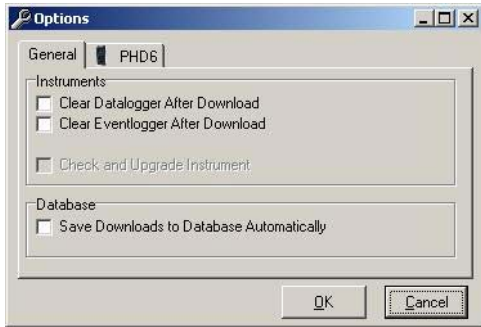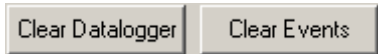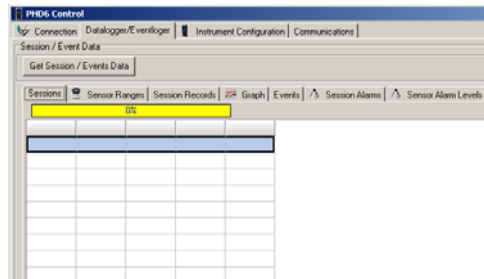The data on the tabs may be printed or exported by right-clicking in the data field and then selecting Print or Export as needed.

Type	Serial	Min	Max	Average	STEL
O2	001049	20.5 %	20.5 %	20.5 %	N/A
LEL	002002	-2 %	0 %	-1 %	N/A
CO-	001042	-20.7 ppm	0.0 ppm	-19.5 ppm	N/A
CO	001020	-9.4 ppm	0.0 ppm	-8.9 ppm	N/A
CO	077038	-1.3 ppm	0.0 ppm	-0.5 ppm	N/A
H2S	077038	0.0 ppm	0.0 ppm	0.0 ppm	N/A

Print
Export

Note: The datalogger in the PHD6 must be enabled to download the datalogger. If the PHD6 shows Black Box Datalogger on instrument startup it must be returned to Sperian Instrumentation to download the data in the datalogger. The eventlogger in the PHD6 may be downloaded and viewed regardless of the status of the datalogger.

Contact Sperian Instrumentation for more details.

3.3.1 Sessions

Sessions contains a comprehensive listing of all operating sessions for the selected instrument. The data shown will be limited to the data that is in that instrument's datalogger and eventlogger.

The Sessions tab displays downloaded data in a spreadsheet format. Rows represent individual operating sessions. Columns carry a wide array of specific information including the instrument serial numbers, session start and stop times and whether there was an alarm or not. Placing the mouse over the alarm indication cell causes the details of the alarm to be shown.

Alarms:
Dead Battery Shutdown
O2 (001049) Temperature Out of Range
CO- (001042) Temperature Out of Range
CO (001020) Temperature Out of Range
CO (077038) Temperature Out of Range
H2S (077038) Temperature Out of Range

Select a session to view the sensor ranges, session records, graph, events, alarms and sensor alarms levels.

3.3.2 Sensor Ranges

Type	Serial	Min	Max	Average	STEL	TWA	Last Fresh Air Cal	Last Gas Cal	Alarms
O2	001049	20.5%	20.6%	20.5%	N/A	N/A	5/29/2008 1:35:45 PM	5/22/2008 1:36:41 PM	
LEL	002002	0 %	0 %	0 %	N/A	N/A	5/29/2008 1:35:45 PM	5/29/2008 11:32:43 AM	
CO-	001042	0.0 ppm	0.0 ppm	0.0 ppm	N/A	N/A	5/29/2008 1:35:45 PM	5/29/2008 11:32:43 AM	
CO	001020	-9.2 ppm	0.0 ppm	-8.9 ppm	N/A	N/A	5/29/2008 1:35:45 PM	5/29/2008 11:32:43 AM	
CO	077038	0.0 ppm	0.0 ppm	0.0 ppm	N/A	N/A	5/29/2008 1:35:45 PM	5/29/2008 11:32:43 AM	
H2S	077038	0.0 ppm	0.0 ppm	0.0 ppm	N/A	N/A	5/29/2008 1:35:45 PM	5/29/2008 11:32:43 AM	

Sensor ranges for the selected session are grouped by sensor and include the sensor serial number, minimum sensor reading, maximum sensor readings, average sensor reading, STEL, TWA, last fresh air cal, last span cal and any alarms that occurred during the session.

3.3.3 Session Records

Session records is a more complete sensor history than the one given above in sensor ranges. The session records are broken down according to the datalogger interval with discrete information for each break in the data stream. With the default datalogging interval of one minute, the sessions records gives data for each sensor for each minute of operation in the session.

3.3.4 Graph
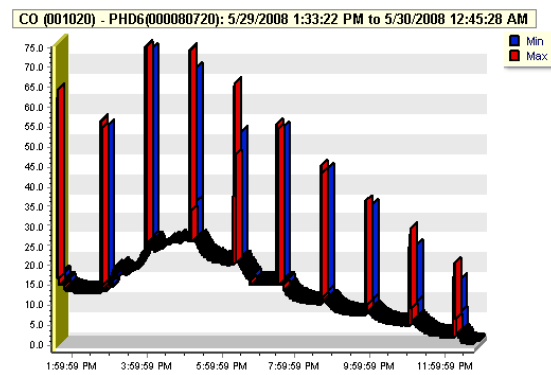
The graph can be configured to show min, max, average, STEL (if applicable) and TWA (if applicable) and temperature readings for each sensor that was in use during the session. To change the sensor type, select the sensor from the pull down box below sessions.
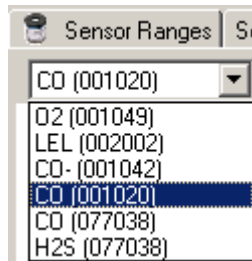
Once Graph is selected, three option buttons will appear above the graph: Restore, Edit Graph and Print Preview.

The Restore button is used when the zoom feature is used and restores the original graph.

Click on Edit Graph to change graphing options. Then click OK.
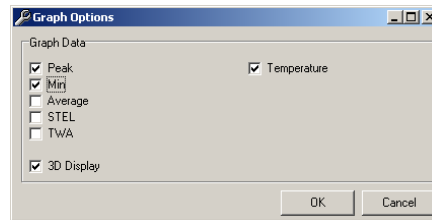
Print Preview option includes a number of controls that allow the user to customize the graph for printing.

3.3.5 Events

The Events Tab contains all information downloaded from the eventlogger. The eventlogger stores information about alarm events only.

3.3.6 Session Alarms

Session alarms shows all instrument and sensor alarms recorded during the selected operating session.

3.3.7 Sensor Alarm Levels

Type	Serial	Danger(O2 High)	Warning(O2 Low)	STEL	TWA
O2	001049	23.5 %	N/A	N/A	N/A
LEL	002002	N/A	N/A	N/A	N/A
CO-	001042	Disabled	Disabled	100.0 ppm	35.0 ppm
CO	001020	Disabled	Disabled	100.0 ppm	35.0 ppm
CO	077038	Disabled	Disabled	100.0 ppm	35.0 ppm
H2S	077038	Disabled	Disabled	15.0 ppm	10.0 ppm

Sensor alarm levels is a list of sensor alarms grouped by sensor.

3.4 Instrument Configuration

The Instrument Configuration window is divided into an upper and lower section.
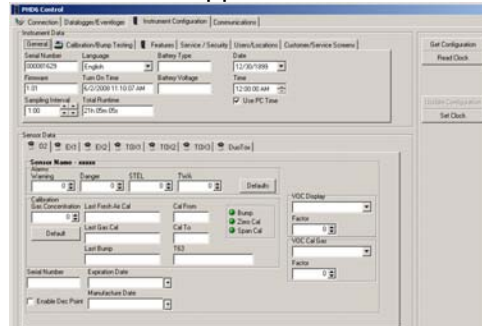
The upper section contains the following tabs:

- General
- Calibration / Bump Testing
- Features
- Service / Security
- Users / Locations
- Customer Service Screens

The lower sections contains a tab for each sensor that is installed in the instrument.

3.4.1 General

The General Tab contains information about the instrument including:

- Serial number
- Operating language (can be modified and uploaded)
- Battery Type
- Date (today's date in the datalogger) (can be modified and uploaded)
- Firmware version
- Turn on time (for current operating session
- Battery voltage
- Time (can be modified and uploaded)
- Use PC time option (automatically configures the instrument's clock to match the PC's clock. This feature is enabled at time of shipment).
- Sampling Interval (can be modified and uploaded)
- Total runtime (for the instrument)

3.4.2   Calibration / Bump Testing
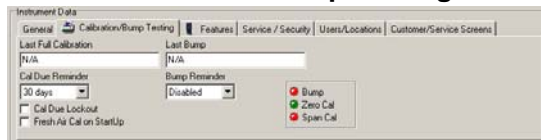
The Calibration / Bump testing tab contains the date of the last full instrument calibration and the date of the last bump test (only used with the IQ6 Docking Station). It also contains the following options that can be set to meet the needs of the user:

- Cal Due Reminder (can be set to disabled or to any number of days between every day and every 180 days).
- Bump Reminder (only used with the IQ6 Docking Station) (can be set to disabled or to any number of days between every day and every 180 days).
- Cal Due Lockout (causes instrument to shut down if instrument is not calibrated when it is due for

calibration as defined by the Cal Due Reminder.

- Fresh Air Cal on Startup (automatically initiates a fresh air calibration procedure as soon as the instrument is turned on).
- Instrument calibration / bump status (shown as three lights at the lower middle of the upper tab. Green means that the instrument is not due for that type of calibration. Red means that it is due for that type of calibration.)
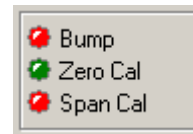
3.4.3 Features
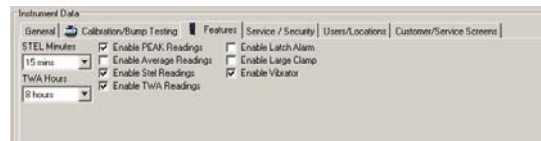
The features tab contains the adjustments for STEL and TWA periods.

STEL (Short Term Exposure Limit) represents the average reading for the past 5 to 60 minutes of instrument operation. In the past STEL values have been based on a 15-minute average.

TWA (Time Weighted Average) represents the maximum average concentration to which an unprotected worker may be exposed over certain period – typically over an eight hour working day. TWA values are calculated by taking the sum of exposure to a particular toxic gas in the current operating session in terms of parts-per-million-hours and dividing by the specified period. The TWA period setting can be adjusted to any whole number between 1 hour and 24 hours.

Note: Lengthening the STEL and TWA values tends to diminish the chance for STEL and TWA alarms to be activated. The PHD6 automatically records the STEL and TWA period settings.

3.4.4 Service / Security
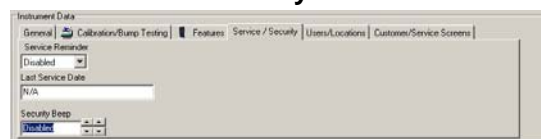
The Service / Security Tab contains the Service Reminder setting, Last Service Date and the Security Beep setting.

By enabling the service reminder, the instrument can let you know when the instrument requires service. The reminder

can be set to any interval in days between 1 day and 730 days (2 years), or set to Off.

The Security Beep is designed to notify the user that the instrument is powered up and running. Once enabled the PHD6 will emit a short audible beep and give a short flash on the LED at a user-defined interval. The interval can be set to any intercal between one second and one hour.

3.4.5 Users / Locations
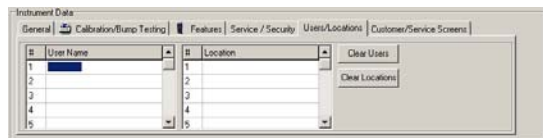
The PHD6 has memory allocated to storing user and location information for the current operating session. The user and location names must be entered in BioTrak and uploaded to the instrument prior to use. Once the names are in the instrument, they may be selected at startup and will be stored with the current operating session whenever the instrument is turned on.

3.4.6   Custom / Service Screens
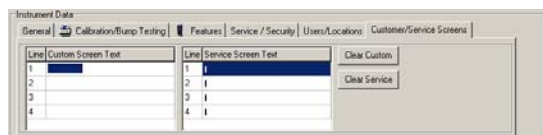
Enter custom information that will be displayed during instrument startup here. Text entered under Custom Screens will show up during instrument startup. Service screens show up in the PHD6's Information Menu under Service Info.

3.4.7 Sensor Tabs

The lower half of the Instrument Data window contains Sensor Data. This tab is shown regardless of which tab is selected in the upper half of the window.

Each sensor has its own configurable alarm settings, the option to return to the default settings, all recent calibration data for that particular sensor, and the sensor's serial number, expiration date and manufacturing date.

Note: If a VOC sensor is installed in the instrument, the sensor tab for the VOC sensor will include the VOC calibration gas type and the VOC target gas.

3.5 Communications

The communications tab contains a full listing of all communications between the PC and the instrument. This is used primarily for troubleshooting the PC-Instrument interface.
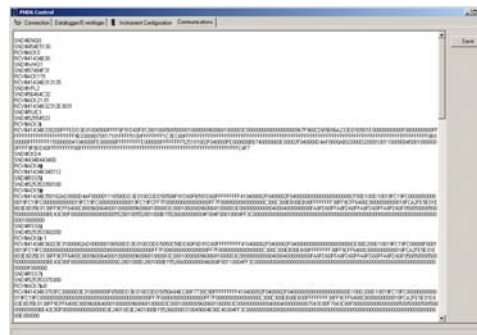
4.   Menu Options

BioTrakII's menu options allow the user to control all aspects of the program, from generating reports to user access.

4.1   File Menu

The file menu has three options: a link to IQ Database Administrator, the print setup control and Exit.

The IQ Database Administrator program is used to create and manage the database that is used with BioTrakII.

See the IQ Database Administrator manual for further details.

4.2   Instruments Menu

The Instruments Menu allows the user to specify the type of instrument that will be connected to the PC and to initiate communication.

This option is currently limited to the PHD6, but as BioTrakII is expanded, other Sperian Instrumentation gas detectors will be added.

4.3 Lookup Menu

The Lookup menu is designed to create and implement a search query to locate specific instruments.

This option is currently limited to the PHD6, but as BioTrakII is expanded, other Sperian Instrumentation gas detectors will be added.

4.4 Reports Menu

The reports menu allows the user to view and print reports created using the data stored during instrument download. Since the reports available are identical to those available at datalogger downloads, see section 3.3 for a more detailed description of the available reports.

Reports can be printed or exported through the Tools Menu (see section 4.5 below) or by right-clicking in the data fields and selecting Print or Export as needed.

4.5 Tools Menu

The Tools Menu contains the Data Export command. Data from events or sessions may be exported as a .csv file. The .csv file can be opened with Microsoft Excel.

4.6 Setup Menu

The Setup Menu allows access to the User List and also has logon and logoff controls.

4.6.1 Users
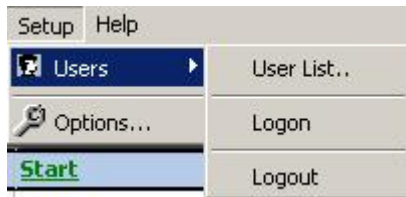
The Users option under setup allows users to logon or log out of BioTrakII and also contains the control for the User List.

Click on User List to access user settings. The Users window will then be shown.
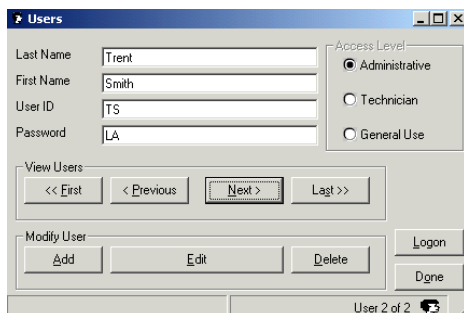
The information from one user will be shown. Programmed user information appears at the top of the screen and includes the user's first name, last name, ID, password and access level.

Access level is a three-tiered system.
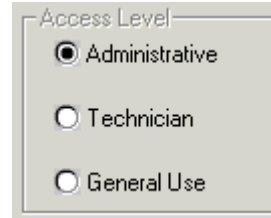
"**Administrative**" grants the individual access to the entire system. Both user and template information can be modified.

"**Technician**" grants access to template information, but denies access to user information.

"**General Use**" allows the individual to use the IQ system, but denies access to both user and template information.

The four buttons in the middle of the screen are used to scroll through the user list.

4.6.2 Options

Setup / Options is linked to a form with two tabs.
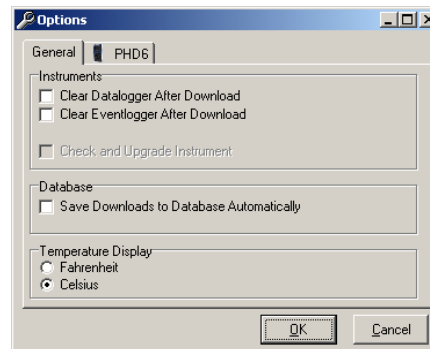
The General Tab contains the following options:

1. Clearing or not clearing the Datalogger or Eventlogger following a download.
2. The option to automatically save downloads to the IQ database.
3. The temperature display option (in either Fahrenheit or Celsius).

Note that is Clear Datalogger or Clear Eventlogger are selected, the corresponding part of the PHD6's memory will be deleted after download and may not be retrieved from the instrument again.

12
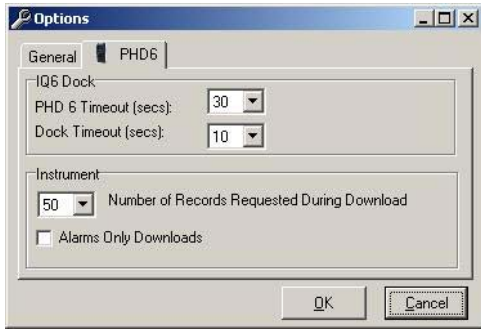
The PHD6 tab is divided into two sections.

The IQ6 Dock section contains the timeout session for the PHD6 when used with the IQ6 Dock, as well as the IQ6 Dock's own timeout setting. The timeout setting is the amount of time that the instrument can remain out of communication with the dock before the dock determines that there is a communication problem. If the communication persists the software will notify the user.

The Instrument section includes a control for the maximum number of records to download during a session, and an option to download only alarm information.

4.7 Help Menu

The Help Menu contains basic information about the BioTrakII program. The first three options in the Help Menu allow the user to access the built-in Help File and to search for specied topics.

Check for update uses the PC's internet connection to access Sperian's download website to see if a newer version of BioTrakII is available.

The About BioTrakII option contains information about the program, such as the software version and installation date.

5. Software Upgrades

Sperian Instrumentation will release new versions of BioTrakII software from time to time. Upgrades may be loaded onto the PC from a CD or may be downloaded from the Internet.

To install the new version from CD:

1. Uninstall the older version of BioTrakII by clicking on the Start Button followed by Control Panel / Add or Remove Programs and select BioTrakII for removal.

2. Place the disk in your PC's CD-tray. The upload will start automatically and will immediately prompt you to install the software.

To install from the Internet:

1. Uninstall the older version of BioTrakII by clicking on the Start Button followed by Control Panel / Add or Remove Programs and select BioTrakII for removal.

2. Upload the new Flash File from the Internet. Go to Sperian Instrumentation's Software Downloads website at:

   http://www.biodownloads.com

   Save the new BioTrakII file to the following folder: C:\ Program Files \ Biosystems \ IQ Pro \ BioTrakII. Then install the new program by running the .exe file from the same directory. The software may also be stored in other folders, but the location above is the default location that is used during software installation for this product.

Appendix A: Calibration Frequency

One of the most common questions that we are asked at Sperian Instrumentation is: *"How often should I calibrate my gas detector?"*

Sensor Reliability and Accuracy

Today's sensors are designed to provide years of reliable service. In fact, many sensors are designed so that with normal use they will only lose 5% of their sensitivity per year or 10% over a two-year period. Given this, it should be possible to use a sensor for up to two full years without significant loss of sensitivity.

Verification of Accuracy

With so many reasons why a sensor can lose sensitivity and given the fact that dependable sensors can be key to survival in a hazardous environment, frequent verification of sensor performance is paramount.

There is only one sure way to verify that a sensor can respond to the gas for which it is designed. That is to expose it to a known concentration of target gas and compare the reading with the concentration of the gas. This is referred to as a "bump" test. This test is very simple and takes only a few seconds to accomplish. **The safest course of action is to do a "bump" test prior to each day's use**. It is not necessary to make a calibration adjustment if the readings fall between 90%* and 120% of the expected value. As an example, if a CO sensor is checked using a gas concentration of 50 PPM it is not necessary to perform a calibration unless the readings are either below 45 PPM or above 60 PPM.

*The Canadian Standards Association (CSA) requires the instrument to undergo calibration when the displayed value during a bump test fails to fall between 100% and 120% of the expected value for the gas.

Lengthening the Intervals between Verification of Accuracy

We are often asked whether there are any circumstances in which the period between accuracy checks may be lengthened.

Sperian Instrumentation is not the only manufacturer to be asked this question! One of the professional organizations to which Sperian Instrumentation belongs is the Industrial Safety Equipment Association (ISEA). The "Instrument Products" group of this organization has been very active in developing a protocol to clarify the minimum conditions under which the interval between accuracy checks may be lengthened.

A number of leading gas detection equipment manufacturers have participated in the development of the ISEA guidelines concerning calibration frequency. Sperian Instrumentation's procedures closely follow these guidelines.

If your operating procedures do not permit daily checking of the sensors, Sperian Instrumentation recommends the following procedure to establish a safe and prudent accuracy check schedule for your Sperian instruments:

1. During a period of initial use of at least 10 days in the intended atmosphere, check the sensor response daily to be sure there is nothing in the atmosphere that is poisoning the sensor(s). The period of initial use must be of sufficient duration to ensure that the sensors are exposed to all conditions that might have an adverse effect on the sensors.

2. If these tests demonstrate that it is not necessary to make adjustments, the time between checks may be lengthened. The interval between accuracy checking should not exceed 30 days.

3. When the interval has been extended the toxic and combustible gas sensors should be replaced immediately upon warranty expiration. This will minimize the risk of failure during the interval between sensor checks.

4. The history of the instrument response between verifications should be kept. Any conditions, incidents, experiences, or exposure to contaminants that might have an adverse effect on the calibration state of the sensors should trigger immediate re-verification of accuracy before further use.

5. Any changes in the environment in which the instrument is being used, or changes in the work that is being performed, should trigger a resumption of daily checking.

6. If there is any doubt at any time as to the accuracy of the sensors, verify the accuracy of the sensors by exposing them to known concentration test gas before further use.

Gas detectors used for the detection of oxygen deficiencies, flammable gases and vapors, or toxic contaminants must be maintained and operated properly to do the job they were designed to do. Always follow the guidelines provided by the manufacturer for any gas detection equipment you use!

If there is any doubt regarding your gas detector's accuracy, do an accuracy check! All it takes is a few moments to verify whether or not your instruments are safe to use.

One Button Auto Calibration

While it is only necessary to do a "bump" test to ensure that the sensors are working properly, all current Sperian gas detectors offer a one-button auto calibration feature. This feature allows you to calibrate a Sperian gas detector in about the same time as it takes to complete a "bump" test. The use of automatic bump test and calibration stations can further simplify the tasks, while automatically maintaining records.

> **Don't take a chance with your life.**
> **Verify accuracy frequently!**

Please read also Sperian Instrumentation's application note: *AN20010808 "Use of 'equivalent' calibration gas mixtures".* This application note provides procedures to ensure safe calibration of LEL sensors that are subject to silicone poisoning.

Biosystems website is located at

http://www.biosystems.com

Sperian Instrumentation Warranty Gas Detection Products

General

Sperian Protection Instrumentation, LLC (hereafter Sperian) warrants gas detectors, sensors and accessories manufactured and sold by Sperian, to be free from defects in materials and workmanship for the periods listed in the tables below.

Damages to any Sperian products that result from abuse, alteration, power fluctuations including surges and lightning strikes, incorrect voltage settings, incorrect batteries, or repair procedures not made in accordance with the Instrument's Reference Manual are not covered by the Sperian warranty.

The obligation of Sperian under this warranty is limited to the repair or replacement of components deemed by the Sperian Instrument Service Department to have been defective under the scope of this standard warranty.

To receive consideration for warranty repair or replacement procedures, products must be returned with transportation and shipping charges prepaid to Sperian at its manufacturing location in Middletown, Connecticut, or to a Sperian Authorized Warranty Service Center. It is necessary to obtain a return authorization number from Sperian prior to shipment.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. SPERIAN WILL NOT BE LIABLE FOR LOSS OR DAMAGE OF ANY KIND CONNECTED TO THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.

Instrument & Accessory Warranty Periods

Product(s)	Warranty Period
Biosystems PHD6, PhD[5], PhD Lite, PhD Plus, PhD Ultra, Cannonball3, MultiVision, Toxi, Toxi/Oxy Plus, Toxi/Oxy Ultra, ToxiVision, Ex Chek	As long as the instrument is in service
ToxiPro®, MultiPro	2 years from date of purchase
ToxiLtd®	2 years after activation or 2 years after the "Must Be Activated By" date, whichever comes first
Toxi3Ltd®	3 years after activation or 3 years after the "Must Be Activated By" date, whichever comes first
Mighty-Tox 2 Prorated credit is given towards repair or purchase of a new unit of the same type.	0 – 6 months of use 100% credit 6 – 12 months of use 75% credit 12 – 18 months of use 50% credit 18 – 24 months of use 25% credit
IQ Systems, Series 3000, Airpanel, Travelpanel, ZoneGuard, Gas✓Chek1 and Gas✓Chek4	One year from the date of purchase
Battery packs and chargers, sampling pumps and other components, which by their design are consumed or depleted during normal operation, or which may require periodic replacement	One year from the date of purchase

Sensor Warranty Periods

Instrument(s)	Sensor Type(s)	Warranty Period
PhD Plus, PhD Ultra, PhD[5], PhD Lite, Cannonball3, MultiVision, MultiPro, ToxiVision, ToxiPro®, Ex Chek	O_2, LEL**, CO, CO+, H_2S & Duo-Tox	2 Years
	All Other Sensors	1 Year
Toxi, Toxi/Oxy Plus, Toxi/Oxy Ultra	CO, CO+, H_2S	2 Years
	All Other Sensors	1 Year
All Others	All Sensors	1 Year

** Damage to combustible gas sensors by acute or chronic exposure to known sensor poisons such as volatile lead (aviation gasoline additive), hydride gases such as phosphine, and volatile silicone gases emitted from silicone caulks/sealants, silicone rubber molded products, laboratory glassware greases, spray lubricants, heat transfer fluids, waxes & polishing compounds (neat or spray aerosols), mold release agents for plastics injection molding operations, waterproofing formulations, vinyl & leather preservatives, and hand lotions which may contain ingredients listed as cyclomethicone, dimethicone and polymethicone (at the discretion of Sperian's Instrument Service department) void Sperian Instrumentation's Standard Warranty as it applies to the replacement of combustible gas sensors.