DOC082.98.80062

SmartLogger II

USER MANUAL

October 2009, Edition 1

© HACH Company, 2009. All rights reserved. Printed in the U.S.A.

em

Table of Contents

Section 1 General Information 3
1.1 Terms of Use 3
1.2 Disclaimer 3
1.3 Product overview 3
1.4 Minimum platform and software requirements 4

Section 2 Installation 5
2.1 Install the software 5
2.1.1 Uninstall previous SmartLogger II software 5
2.1.2 Upgrade Internet Explorer 5
2.1.3 Install the software on Windows Vista 5
2.1.4 Install the software on Windows 98/ME/2000/XP 6
2.2 Install wireless communications (Bluetooth) 6
2.2.1 Configure the virtual serial COM port 7
2.3 Connect the meter to a Windows PC 7
2.3.1 Automatically set the COM port 7
2.3.2 Manually set the COM port 8

Section 3 User Interface and Navigation 9
3.1 User Interface and navigation 9
3.1.1 Window panes 10
3.1.2 Docking windows 10
3.1.2.1 Docking window properties 10
3.1.2.2 File properties 10
3.1.3 Status bar 11
3.2 Customizing toolbars 11

Section 4 Operation 13
4.1 Startup 13
4.2 View data 13
4.2.1 Edit the live data parameters 14
4.2.2 Customize the Live Data pane 15
4.2.3 Set the meter time and date 15
4.3 Manually send and receive remote messages 16
4.4 Data logging 17
4.4.1 Save logged data 17
4.5 View data in a table 17
4.6 Viewing data as a graph 18
4.6.1 Tracking data on the graph 18
4.6.2 Axis control 19
4.6.2.1 Zoom all axes 19
4.6.2.2 Zoom one axis 20
4.6.2.3 Scroll one axis 20
4.6.2.4 Scroll all axes 20
4.6.2.5 Data-cursor control 20
4.7 Calibration history 21
4.7.1 Export calibration history 23
4.8 Import data 23
4.8.1 Mixed mode log data 24
4.9 Export data 24

Section 5 Troubleshooting 25
5.1 Cannot communicate with the meter 25

Section 6 Contact information 27

Section 1 General Information

1.1 Terms of Use

The Software contains proprietary and confidential information that is protected by applicable intellectual property and other laws. You may not modify or sell works based on the Software.

The Software is for your personal use. We grant you a personal and non-exclusive license to use the object code version of the Software on a single Windows-based personal computer; provided that you do not (and do not allow any third party to) copy, modify, reverse engineer, create derivative works from, assign or otherwise transfer any right in the Software; and you will not modify the Software by any means.

1.2 Disclaimer

The “Product” is the complete SmartLogger II product including meter, software, user manual, and packaging.

Hach Company assumes no responsibility for any loss or claim by third parties which arise through the use of this Product. Hach Company assumes no responsibility for any damage or loss caused by deletion of data as a result of a Product malfunction. Be sure to backup copies of all important data on other media to protect against data loss.

The Software, and all accompanying files, data and materials, are provided "as is"

without warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The entire risk as to the quality and performance of the Software is with you. Should the Software prove defective, you assume the cost of all necessary servicing, repair or correction.

HACH COMPANY, OR ITS PRINCIPALS, SHAREHOLDERS, OFFICERS, EMPLOYEES, AFFILIATES, CONTRACTORS, SUBSIDIARIES, OR PARENT ORGANIZATIONS, SHALL NOT BE LIABLE FOR ANY INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR OTHER DAMAGES INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, LOSS OF REVENUE, LOSS OF DATA, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, DOWNTIME AND CONSUMER’S TIME OR FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY OR CONDITION, DAMAGE TO THE VEHICLE, BREACH OF CONTRACT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER LEGAL THEORY RELATED TO THIS PRODUCT.

1.3 Product overview

The SmartLogger II software allows the connection of the meter to a Windows PC with either Bluetooth or USB. Some of the software features include:

- Record live data from the meter
- User configurable continuous data-sampling rate from 1 second or longer
- Single sample mode to add 1 sample at a time
- Save and open previously recorded or imported data
- View and record pH, dissolved oxygen, temperature, ISE, total dissolved solids, conductivity, salinity and barometric pressure
- View data with a line graph or tabular format
- Annotate each reading with a note
- View the meter calibration history
- Remotely set meter settings such as date and time
- Export the data into a comma delimited format suitable for import into a spreadsheet

- Upload log and store data within the meter
- Bluetooth and USB support
- Supports Windows 98 and higher

1.4 Minimum platform and software requirements

Minimum hardware requirements

- Pentium 300 MHz or faster
- 128 MB or RAM of higher

Operating system requirements
One of the following operating systems with Microsoft Internet Explorer 5.01 or later must be installed the operating computer.

- Microsoft®[1] Windows® 98
- Microsoft® Windows® 98 Second Edition
- Microsoft® Windows® Millennium Edition (Windows Me)
- Microsoft® Windows NT® 4 (Workstation or Server) with Service Pack 6a
- Microsoft® Windows® 2000 (Professional, Server, or Advanced Server) with the latest Windows service pack and critical updates available from the Microsoft Security Web site (www.microsoft.com/security).
- Microsoft® Windows® XP (Home or Professional)
- Microsoft® Windows® XP Media Center Edition
- Microsoft® Windows® XP Tablet PC Edition
- Microsoft® Windows® Server 2003 family
- Microsoft® Windows® Vista

[1]Windows® is a registered trademark of Microsoft Corporation.

Section 2 Installation

2.1 Install the software

Check the manufacturer website for software updates at http://www.phmeters.com.

2.1.1 Uninstall previous SmartLogger II software

Uninstall all previous versions of the SmartLogger II software before software installation.

To uninstall previous versions:

1. From the Start menu, select **SETTINGS>CONTROL PANEL**.
2. Double-click on **ADD/REMOVE PROGRAMS**.
3. Click the **Install/Uninstall** tab, if the Windows version includes it.
4. From the list of programs to remove, select HachSmartLogger II.
5. Click **ADD/REMOVE**.
6. At the prompt, click Yes to confirm to remove the HachSmartLogger II program.
7. When the files are removed, the uninstall program indicates that the process is complete.

2.1.2 Upgrade Internet Explorer

The SmartLogger II software requires Microsoft Internet Explorer version 5.01 or later. The version is located on the **HELP>ABOUT INTERNET EXPLORER** menu option within Internet Explorer. If version 5.01 or later is not installed, download from Microsoft.

2.1.3 Install the software on Windows Vista

Before starting the installation, the current user account must have Administrator privileges.

To install the software on Windows Vista:

1. Close all other programs and windows.
2. Insert the CD labeled SmartLogger II into the CD-ROM drive.
3. The installation should start automatically. If not, from the Start menu select Run.
4. Type D:\setup (substitute the appropriate letter of your CD-ROM drive for D).
5. Follow the instructions on the screen.

If the software does not install on Windows Vista:

1. Close all other programs and windows.
2. Insert the CD labeled SmartLogger II into the CD-ROM drive.
3. With Windows Explorer, go to the setup.exe file on the CD ROM.
4. Right-click on setup.exe.
5. In the Properties dialog, click the **Compatibility** tab.
6. Click on the checkbox "Run this program as administrator".
7. Double click the setup.exe to start the installation.
8. Follow the instructions on the screen.

2.1.4 Install the software on Windows 98/ME/2000/XP

Administrator rights are required for software installation.

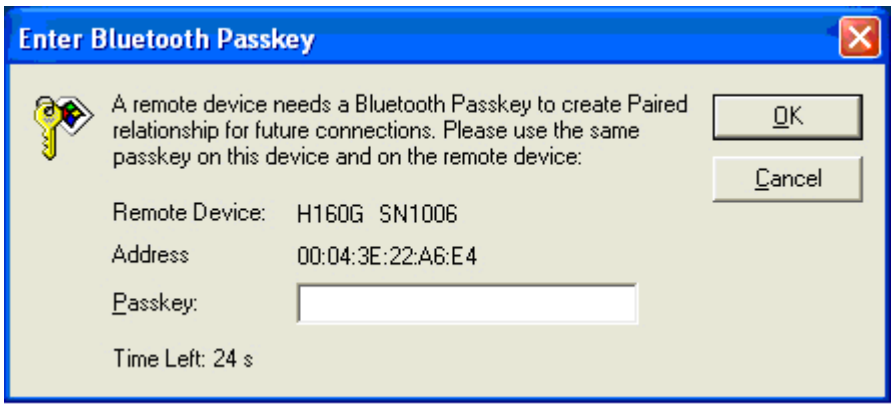
To install software on Windows 98/ME/200/XP

1. Close all programs and windows.
2. Insert the SmartLogger II CD into the CD-ROM drive.
3. The installation should start automatically. If not, from the Start menu select Run. Type D:\setup (substitute the appropriate letter of your CD-ROM drive for D).
4. Follow the instructions on the screen.

2.2 Install wireless communications (Bluetooth)

A PC must be equipped with a Bluetooth wireless adapter (built-in or adapter) to communicate wirelessly to the meter. Each Bluetooth software package is different. Refer to the Bluetooth software documentation for exact instructions on how to wirelessly pair Bluetooth devices and enable the Bluetooth Serial Port Service on a PC.

The Bluetooth Serial Port Service is required to communicate with the meter. The first time the meter is used with a PC it will need to be “paired”. The meter Bluetooth pairing passkey (password) is **1234**.



To enable Bluetooth communications with a meter:

1. Turn on the meter.
2. Make sure the PC Bluetooth wireless adapter is enabled.
3. Select the Bluetooth Device Discovery within the PC Bluetooth software. The software should locate the meter with a device name similar to "H180G SN10000".
4. Select the Pair Device Bluetooth software feature and enter the passkey 1234.
5. Select connect to Serial Port Service using the Bluetooth software.
6. The Bluetooth icon on the meter display should now be illuminated and a virtual COM port assigned.
7. Start the SmartLogger II software. Select the **File** > **Find Meters** menu option.

The meter is now connected to the SmartLogger II software and ready for use. When correctly installed and enabled, the Bluetooth Serial Port service will create a virtual COM port (e.g. COM6). The SmartLogger II software will use this COM port to communicate with the meter.

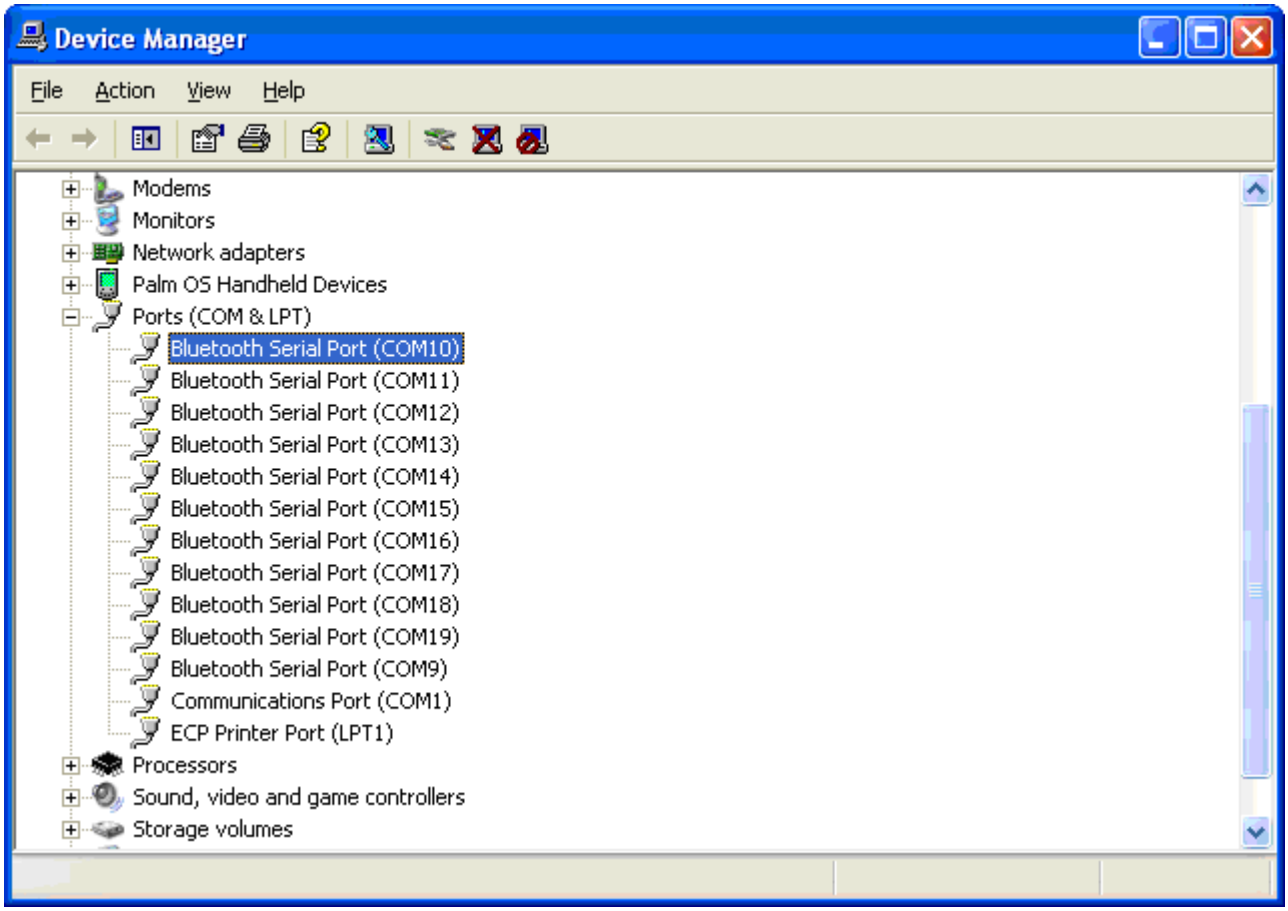
Post-requisite
Set the COM port automatically (section 2.3.1 on page 7) or set the COM port manually (section 2.3.2 on page 8) to complete the Bluetooth connection.

2.2.1 Configure the virtual serial COM port

When either the USB driver or the Bluetooth driver is installed a virtual COM port is created and assigned a number (e.g. COM9). The Windows Device Manager shows all assigned port numbers.

To open the Device Manager to configure the serial COM port:

1. Click **START** and then select Control Panel.
2. Switch to Classic View (if in Category View).
3. Double-click on System.
4. Select the **Hardware** tab.
5. Push the **DEVICE MANAGER** button.
6. Click on the "+" next to Ports.
7. The COM ports available on the PC are displayed. The USB virtual COM port will only display when the meter is plugged into the PC.



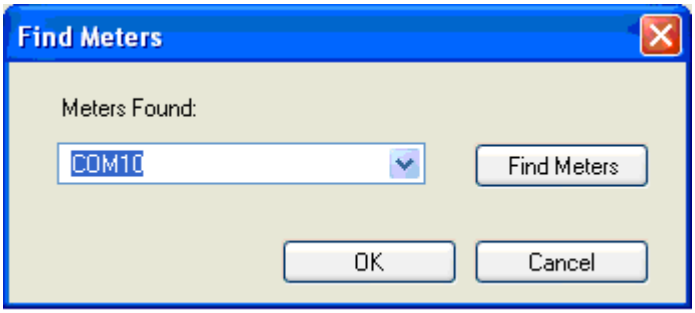
2.3 Connect the meter to a Windows PC

2.3.1 Automatically set the COM port

The SmartLogger II software can automatically detect the meter and COM port. To automatically detect the meter and COM port:

1. Connect the meter to the PC using a USB cable.
2. Start the SmartLogger II application.

3. Select the **FILE**>**FIND METER** menu option.
4. Push the **FIND METERS** button. Within a minute or two the software will find the meter and display the COM port options.
5. Select the COM port on the Meters Found drop-down menu then push **OK**. If multiple meters are found, the serial number of each meter is listed next to the COM port.

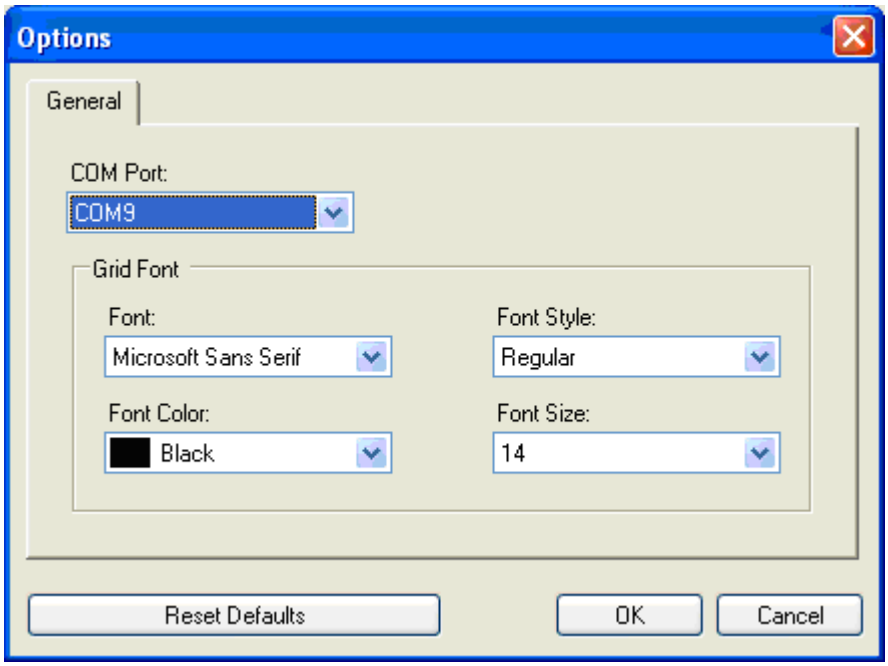


6. The COM port only needs to be set once. The SmartLogger II software remembers its last COM port setting every time the software is started.
7. The SmartLogger II software and meter are now ready for use.

2.3.2 Manually set the COM port

To manually set the COM port:

1. Start the SmartLogger II application.
2. Select the **Tools**>**Options**.
3. On the COM Ports drop-down select the COM port.
4. Push **OK**.



5. The COM port only needs to be set once. The SmartLogger II software remembers the last COM port setting every time the software is started.
6. The SmartLogger II software and meter are now ready for use.

Section 3 User Interface and Navigation

3.1 User Interface and navigation

There are two main screens within the SmartLogger II software, Data View and Calibration history. Each main screen has a workspace that includes multiple Window panes and docking windows. Refer to Figure 1 on page 9.

The Data View screen displays and logs real-time meter data. Logged data can be viewed in a tabular format or graphical format. The Love Data pane always shows the most current meter reading when the software is or is not logging data.

The Calibration History screen displays the last 10 calibrations stored in the meter.

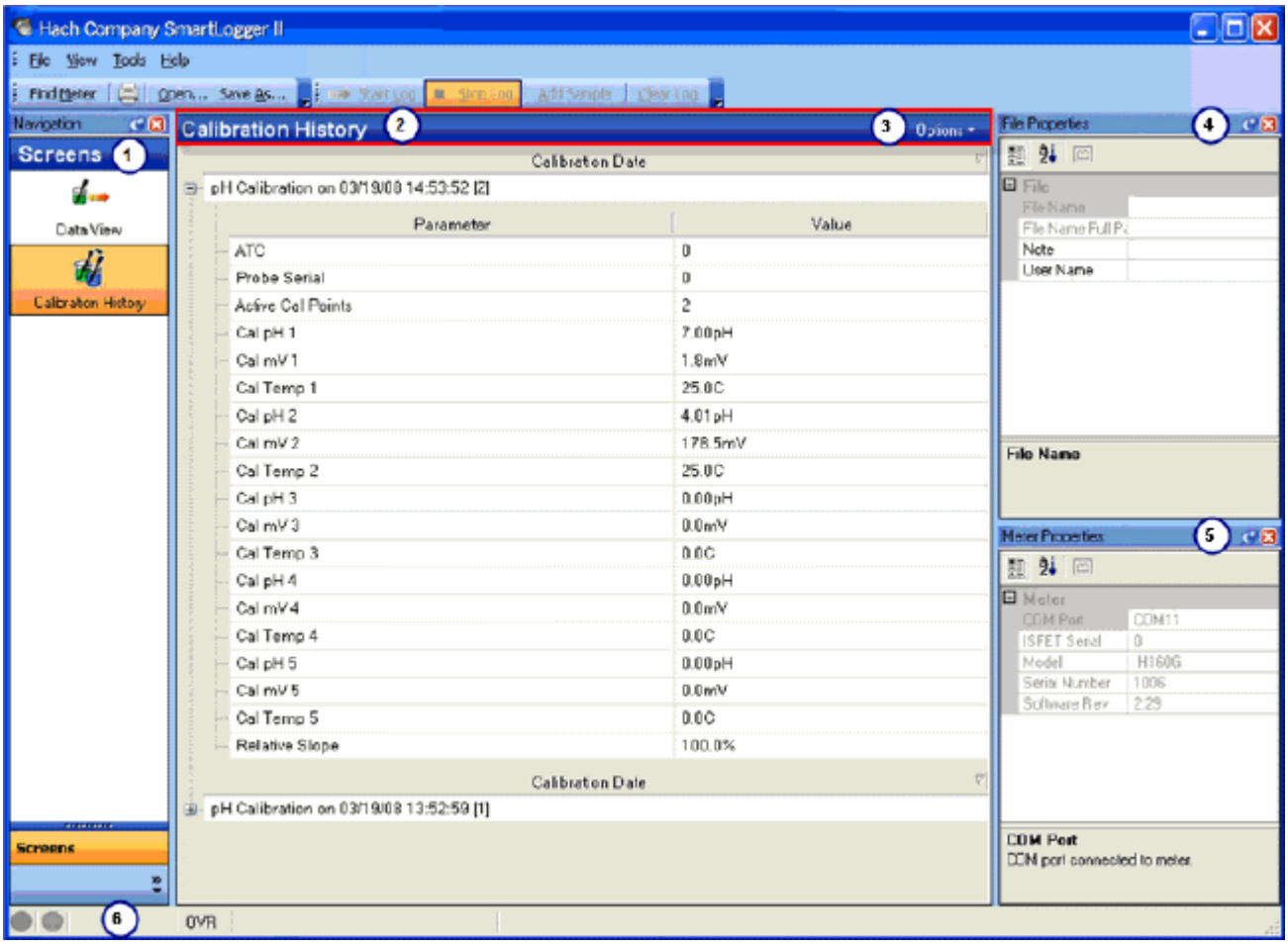


Figure 1 Main screen overview example

1	Navigation docking window—This window is used to between main screens. Click on an icon to switch the main screen.	**4**	File properties docking window—Displays the file properties when a file is saved or opened. If not file is currently open or saved, the File Properties docking window will remain blank.
2	Main screen (Calibration History is shown)	**5**	Meter properties docking window—Displays information about the meter that is connected. Information displayed includes serial number, software revision and COM port used.
3	Options drop-down	**6**	Status bar

3.1.1 Window panes

Each screen has multiple window panes for displaying different types of data. Right-click inside a pane to show a shortcut menu of options. Optionally, click Options at the top pane to display the shortcut menu.

- To close a pane, click the X in the upper right corner of the pane.
- To display a pane, right-click inside any pane and select Add <pane name> Pane from the shortcut menu.
- If multiple panes are used, resize the panes with the horizontal splitter bars separating each pane.

3.1.2 Docking windows

The SmartLogger II interface includes three docking windows that can be customized (Navigation, File Properties and Meter Properties). The docking windows can be hidden, they can slide in and out and they can be free-floating.

- To hide a docking window, click the red X button in the upper right corner.
- To hide a docking window with slide-in, push the **PUSHPIN** icon in the upper right corner. The window will slide in and be hidden.
- To show a hidden panel, select the View menu option.
- To show a docking window with slide-out, place the cursor over the docked window name or icon. The window will be visible.
- If a docking window is not visible, the View menu option will display any of the docking windows.
- To move a docking window from dock to float, either drag the window title bar to a new location or double-click the title bar.
- To move a docking window from float to dock, either drag the window title bar to one one of the four window edges (top, bottom, left, right) or double-click the title bar.

3.1.2.1 Docking window properties

Property values are shown in the docking windows. All property windows behave the same way:

- Properties displayed in bold font can be modified.
- Properties displayed in grey font cannot be modified.
- Any property changes are immediately saved to disk.
- Push the **+** or **–** icon next to a bold heading expands and collapses the data in a heading.

To change a property value, click the parameter and type in a new value.

3.1.2.2 File properties

The File heading within the File Properties window displays information regarding the file name, path, user name and an optional note.

The calibration heading shows the last calibration performed on the meter at the time the log file was saved. The calibration-heading name will show the type of calibration performed. For instance, in the File Properties screen below shows "pH Calibration" was the last calibration type performed.

The information grouped under the calibration heading shows the details of the last calibration performed at the time the file was saved. Information such as the number of calibration points and the data and time the calibration was performed is shown.

3.1.3 Status bar

The status bar is located at the bottom of the program screen. The status bar displays the following information:

- **Red transmit dot**—flashes red when the PC transmits data to the meter
- **Green receive dot**—flashes green when the PC receives data from the meter
- **NUM**—displays when the Num Lock on the keyboard is active.
- **CAPS**—displays when Caps Lock on the keyboard is active.
- **INS**—displays when text insert mode on the keyboard is active.
- **OVR**—displays when the text overwrite mode on the keyboard is active.
- **File name**—displays the currently opened file.

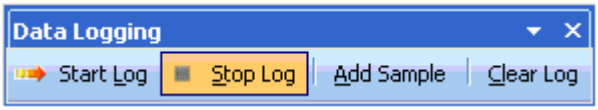
3.2 Customizing toolbars

Toolbar locations, docking position, buttons displayed and sizes are user customized.

- To move a docked toolbar, left-click and drag the vertical dashed line on the toolbar. Alternatively, double-click the dashed line to move the toolbar into a floating position.

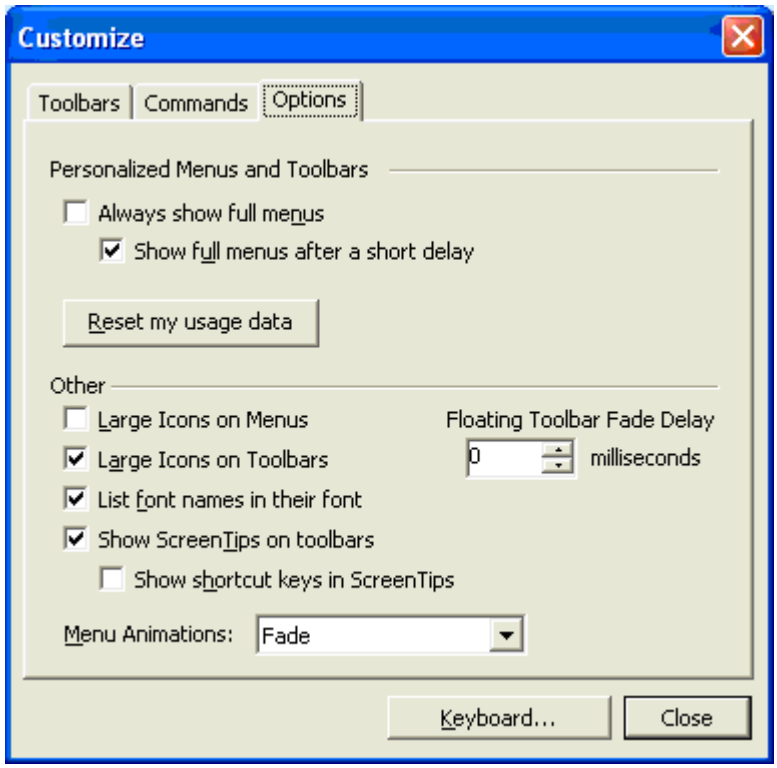


- To move a floating toolbar, left-click the title bar and drag it to a new location. Alternatively, double-click the title bar to put the toolbar back into its docked position.



- To move a toolbar to a new docked location, left-click and drag the toolbar to a new edge of the screen. The toolbar can be docked to any of the four application window edges (top, bottom, left, right).
- To customize the buttons on the toolbar, click the down arrow on a docked toolbar to show a toolbar menu. Alternatively, right-click on any blank location within the toolbar area to show the shortcut menu.

- To change the appearance or function of the toolbar, select the toolbar shortcut menu then select the Customize option.



Section 4 Operation

4.1 Startup

Double-click the SmartLogger II icon on the Desktop or go to the Windows Start button and select **SmartLogger II**>**SmartLogger II**.

4.2 View data

The data view screen shows live data that is transmitted from the meter, records live data and imports log or store points. The Live data screen has three major panes: Live data, Table and Graph. Use the Live Data pane to select monitored meters and to view the following data:

- **Parameter**—the name of the monitored parameter
- **Value**—the current value of the parameter as read from the meter
- **Units**—the parameter units of measure
- **Min**—the minimum value read by the software during this session
- **Max**—the maximum value read by the software during this session

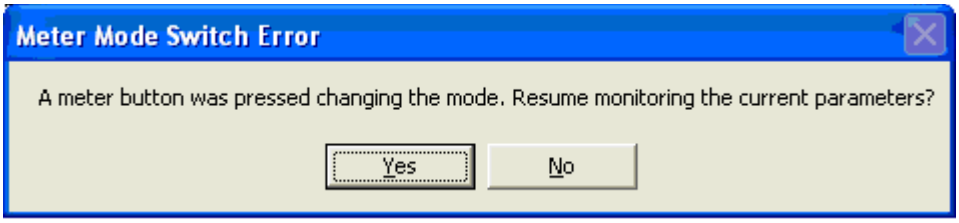
To reset the Min and Max values on the Live Data pane, right-click inside the Live Data pane and select Reset Min Max.



4.2.1 Edit the live data parameters

The monitored live data parameters can be changed:

Mode—Automatically commands the meter into the appropriate mode. If the mode button is accidently pushed on the meter while logging, the software will stop logging and notify of the mode change. A prompt will be provided to continue or stop logging.



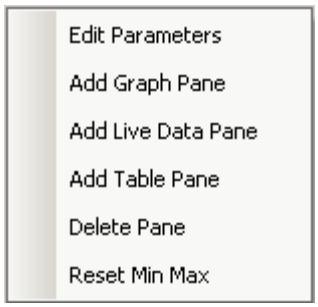
Parameter—Selects the name of the parameter that will be monitored and viewed in the live data pane.

Log speed—The log speed value controls how fast the software logs data on the Graph and Table panes. If you select a value of 5 seconds, a new Table and Graph data point will show every 5 seconds. The live data pane is always refreshed every second and does not depend on the log speed value.

Units of measure—The default Units for each parameter displayed on the Edit Parameters dialog is read from the meter. For instance, if the meter is configured to display temperature in Celsius, the software will display the 'C' as the default selection.

To change the monitored live data parameters:

1. Right-click inside the Live Data pane and select Edit Parameters from the shortcut menu. Alternatively, select Options in the top right corner of the live data pane.The Edit parameters window will display (Figure 2).



2. Select the Mode from the drop-down menu.
3. Enter the Log Speed in seconds.
4. Check the box next to the parameter to make a selection.

Important Note: *Each time the parameters are selected, the log history is erased. When necessary, save the log history before changing parameters.*

5. To change the units, place the cursor over a unit value and then click the drop-down arrow and select a new measurement unit.
6. Push **OK**. The software will display the live data within the Live Data pane.

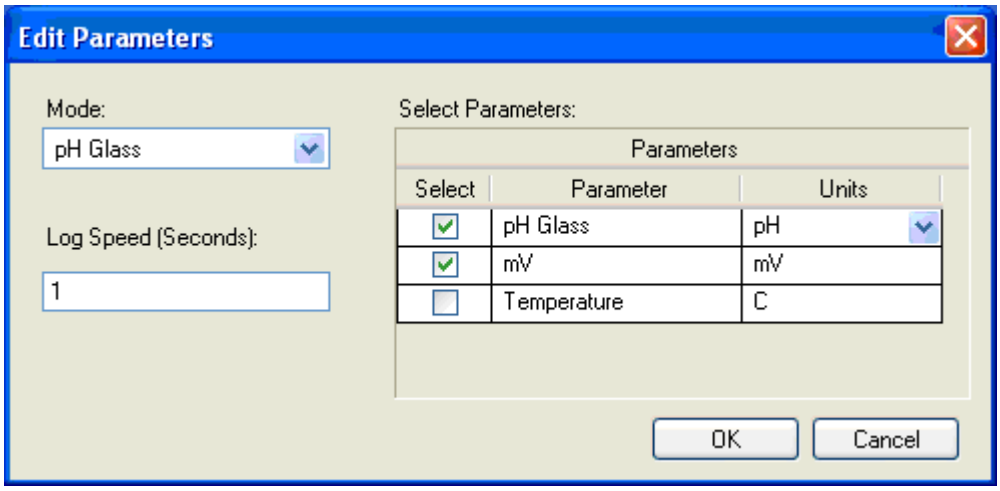
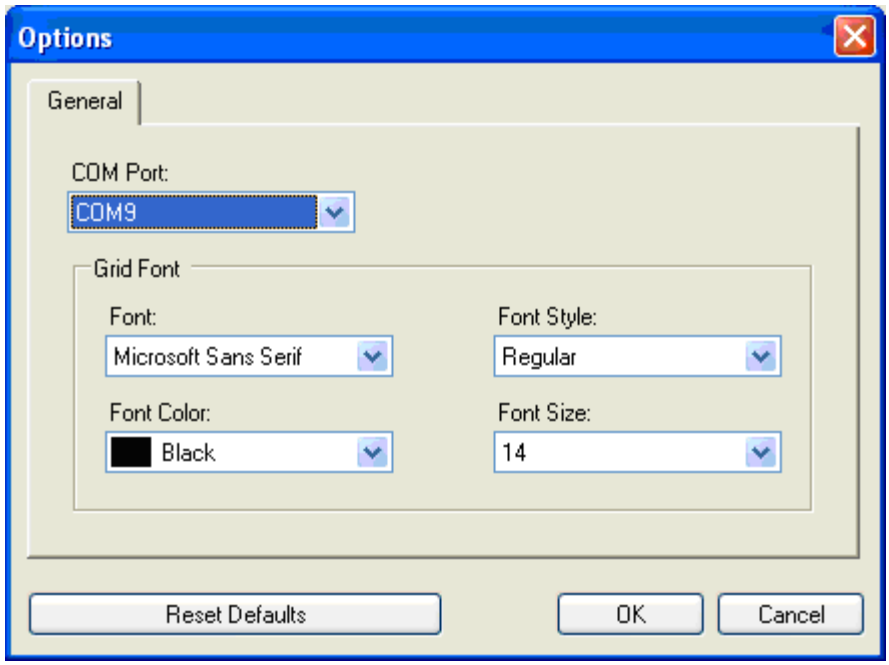


Figure 2 Edit parameters window

4.2.2 Customize the Live Data pane

The Grid Font properties can be changed. To change the Grid Font properties:

1. Select **Tools>Options** to display the Options menu.
2. Change the font, color, style and size of the text.

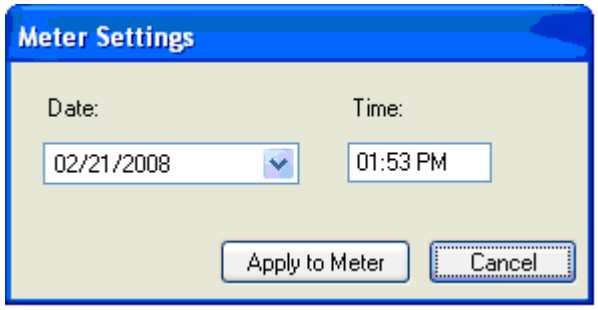


4.2.3 Set the meter time and date

The Meter Settings dialog sets the meter internal data and time. The initial values for the date and time come from the Window PC clock.

To change the date and time:

1. Select **Tools>Meter Settings** to display the meter settings dialog.



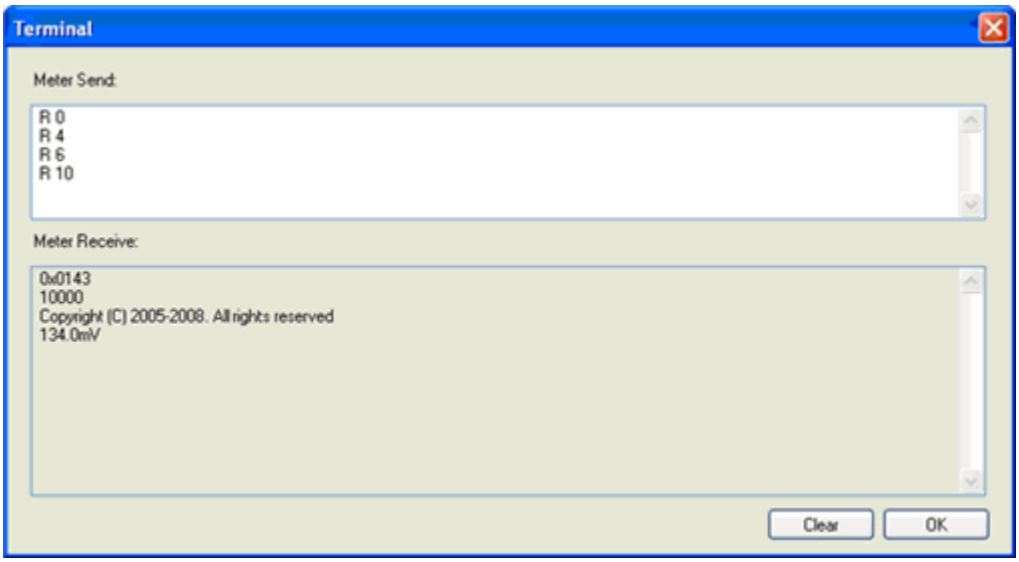
2. Change the data using the drop-down calendar. Enter the time in the text box.
3. Push **APPLY TO METER** to set the date and time. Push **CANCEL** with complete.

4.3 Manually send and receive remote messages

The user can manually send remote interface protocol messages from the meter. For more information about the meter remote interface protocol, contact the manufacturer.

To send a manual message:

1. Select **Tools>Terminal** to display the Terminal dialog.



2. Type the message in the Meter Send text box and push **OK**.
3. The Meter Receive text box displays the meter response.
4. Push **CLEAR** to remove the send and receive text boxes.

4.4 Data logging

The log history stores the live data obtained from the meter. The table and graph panes show the data within the log history. The rate at which the data is placed into the log is controlled by Log Speed parameter.

The Data Logging toolbar controls the data added to the log history.

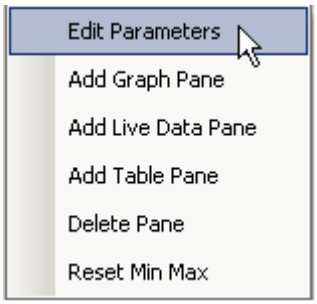


- Push the **START LOG** button to add live data to the log history.
- Push the **STOP LOG** button to stop data from being logged.
- Push the **ADD SAMPLE** button to add one sample to the log.
- Push the **CLEAR LOG** button to clear the data in the log history.

Data Logging Example



1. Select the **DATA VIEW** icon from the Navigation docking window.
2. Make sure that a Live Data, Table and/or Graph pane is displayed.
3. Right-click in the Live Data pane and select Edit Parameters.



4. Select the parameters to monitor. See section 4.2.1 on page 14. Select a Log Speed of 1 second.
5. Push the **START LOG** button.
6. Data will start to display in the Live Data, Table and Graph panes.
7. Push the **STOP LOG** button to end the logging of data.
8. Push the **ADD SAMPLE** button to add another data sample.
9. Select **File>Save As** and enter the file name for the log file to save the data.
10. Select **File>Open** to retrieve the file.

4.4.1 Save logged data

Data stored in the log history must be manually saved to disk. Otherwise, the data is stored in a temporary buffer. To save the logged data, select **File>Save As**.

4.5 View data in a table

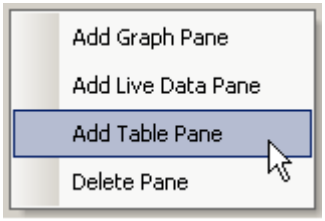
The Table pane displays the log history in a tabular format. The number columns will change depending on the parameters selected. Three columns are always present:

- **Count**—the data sample log number
- **Time**—the time the reading was taken

- **Note**—an optional user entered note. This field is used to enter optional text for a particular data sample. To add a note, left-click into any note cell and add text.

Multiple table panes can be viewed simultaneously. Both Table panes will show the same log data. This can be helpful with large log files to view different log locations at the same time. For example, the first table pane shows data samples 10 to 20 and the second table pane shows data 100 to 110.

To add a table pane, right-click inside a table and select Add Table Pane.



4.6 Viewing data as a graph

The Graph pane displays real-time sensor readings from the meter in a line graph format. Multiple parameters can be shown simultaneously on the graph.

Several options are available for viewing data such as a stacked or side-by-side view, hiding traces, zoom in and out and markers showing each data point.

The graph control is dynamic. Most screen elements can be moved around by holding the left mouse button and dragging the mouse to cause axes to move of the graph to scroll.

Shortcut menus options are available. Right-click a graphical element for more options.

Multiple Graph panes can be viewed simultaneously. Both Graph panes will show the same log data. To add another Graph pane, click on Options and select Add Graph Pane.

4.6.1 Tracking data on the graph

Tracking on the graph is when the graph automatically scrolls left to keep the most current data point in view. The most current data point is located on the far right of the graph.

To update the default tracking zoom factor, right-click an axis and select Update Resume Values. Alternatively, select from the axis shortcut menu Zoom to Fit > All. Now. When Tracking Resume or Tracking Enable is selected the zoom level will return to the set factor.

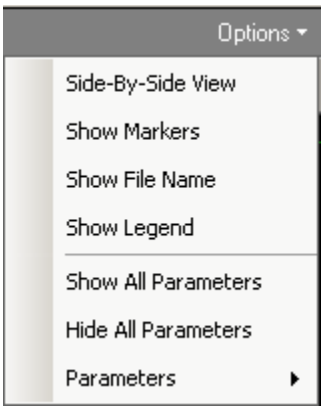
Table 1 Tracking data/Analyze tool bar

Button	Description	Button	Description
	Tracking Resume—Resumes graph tracking so that the most current data point is in view. Zooms all axes to the default tracking zoom scale.		Zoom Box—Allows the user to draw a box around an area to zoom in on.
	Tracking Pause—Pauses tracking for all axes and allows viewing the data without scrolling.		Data Cursor—Show or hide all data cursors. Values for each channel are displayed in a hint row next to the cursor(s)
	Axes Mode—Change the axis mode when using a mouse. Puts axes in scroll mode or zoom mode. Push **CTRL** to toggle between the two modes.		Copy—Copies the current component image or data file. Once copied, the data can be pasted into another application such as a word processor.

Table 1 Tracking data/Analyze tool bar (continued)

Button	Description	Button	Description
	Zoom In/Out—Zooms all axes in or out. Zooming in any axis will automatically pause tracking.		Save—Saves chart data to an image or data file (.dat). The text data file saves a series of X and Y values for each parameter and can be opened with any text editor or spreadsheet tool.
	Select—select items in the data view area.		Print—Prints an image of the chart to the printer.

Table 2 Graph options menu

Menu	Option	Description
	Side-By-Side View	Switches between Side-By-Side view and the Stacked view.
	Show Markers	Shows a round dot on each data point.
	Show File Name	Shows the file name at the top of the graph.
	Show Legend	Shows a trace legend on the right side of the graph.
	Show All Parameters	Shows every parameter on the screen.
	Hide All Parameters	Hides all parameters on the screen.
	Parameters	Shows/hides individual parameters on the graph.

4.6.2 Axis control

The chart has two axes, one horizontal x-axis and one or more vertical y-axis. Each axis shows the name of the parameter, units of measure, and the axis scale.

The chart has two main modes, Axis Scroll mode and Axis Zoom mode. The modes are switched with the **AXIS SCROLL** or **AXIS ZOOM** buttons on the toolbar.

Many options require dragging, which means and holding the left mouse button while moving the mouse.

When dragging an axis while in Axis Scroll mode, the axis will scroll back and forth. When dragging an axis while in Axis Zoom mode, the axis will zoom in and out.

The entire graph can be dynamically zoomed or scrolled by dragging the center of the graph in any direction. Axis Scroll and Axis Zoom modes control whether the chart is dynamically zoomed or scrolled when dragged.

Push and hold the keyboard **CTRL** key to toggling between Axis Zoom and Axis Scroll modes.

4.6.2.1 Zoom all axes

Toolbar Zoom: All axes can be zoomed together with the toolbar.

1. Left-click inside the line graphing area (a dotted box will surround the entire axes and line graphing area).
2. Push the **ZOOM IN** or **ZOOM OUT** button.

Zoom-Box Zoom: All axes can be zoomed with the **ZOOM-BOX** button.

1. Select the **ZOOM-BOX** button.
2. Click inside the line graph and drag a box around the area to zoom in.

Mouse Zoom: The entire graph area can be dynamically zoomed using the mouse.

1. Push the **AXES ZOOM** button.
2. Push the **SELECT TOOLBAR** button.
3. Drag the line graphing area to dynamically zoom both the x and y-axes. Drag left and right zooms the x-axis, and up and down zooms the y-axis.

4.6.2.2 Zoom one axis

Toolbar Zoom: Each axis can be zoomed independent of the other using the toolbar zoom buttons.

1. Push the **AXIS ZOOM** button.
2. Select an axis to zoom with the left mouse button (a dotted box will surround the axis).
3. Push the **ZOOM IN** or **ZOOM OUT** button.

Mouse Zoom: Each axis can be dynamically zoomed using the mouse.

1. Select the **AXIS ZOOM** button.
2. Drag an axis to zoom in and out.

Shortcut Menu Zoom: The software can also zoom a parameter to fit the entire graphing area.

1. Right-click an axis and select from the shortcut menu **Zoom To Fit>All or Zoom To Fit>In-View**. The All option zooms the line based upon the data points in the entire recorded file. The In-View option only zooms the data points that are visible within the graphing area.

4.6.2.3 Scroll one axis

Mouse Scroll: Once an axis is zoomed, it can be scrolled up and down.

1. Push the **AXIS SCROLL** button.
2. Drag an axis to scroll.

4.6.2.4 Scroll all axes

Mouse Scroll: The entire graph area can be scrolled in any axis direction by mouse dragging. The chart must be zoomed on at least one axis before you can drag the chart.

1. Push the **AXIS SCROLL**.
2. Drag the graph in any direction causes dynamic zooming in and out.

4.6.2.5 Data-cursor control

The Data-Cursor is a red crosshair within the graphing area. Dragging the crosshair vertical line moves the cursor. As the cursor is moved, the tool tip shows the current x/y value. If the **Options>Show Markers** is on, round markers will mark each individual data point. Tool tip values between actual marker data points are interpolated.

The data cursor can be moved to a data point marker.

1. Drag the cursor close to the marker to measure.

2. Release the left mouse button. The cursor will snap to the closest marker to provide an exact value of the data point.

Move the data-cursor between parameters:

1. Right-click on the cursor crosshair lines.
2. Select Channel from the shortcut menu, then the parameter to monitor.

The data-cursor has many different measurement modes selected from the Style shortcut menu:

- Value-XY
- Value-X
- Value-Y
- Period
- Peak-Peak
- Frequency

4.7 Calibration history

The Calibration History screen reads the calibration history from the meter (Figure 3). The meter can store up to 10 calibrations. There a five different types of calibration:

- pH Calibration
- Conductivity Calibration
- TDS Calibration
- DO Calibration
- ISE Calibration

Select the **CALIBRATION HISTORY** icon on the Navigation docking window to switch to the Calibration History screen. The software automatically starts uploading and displays the calibration history.

The calibrations returned are sorted by data and time with the most recent calibrations at the top. Push the **+** icon next to the calibration type to display the data values associated with the calibration.

When viewing the calibration history, the software continues to log data uninterrupted.

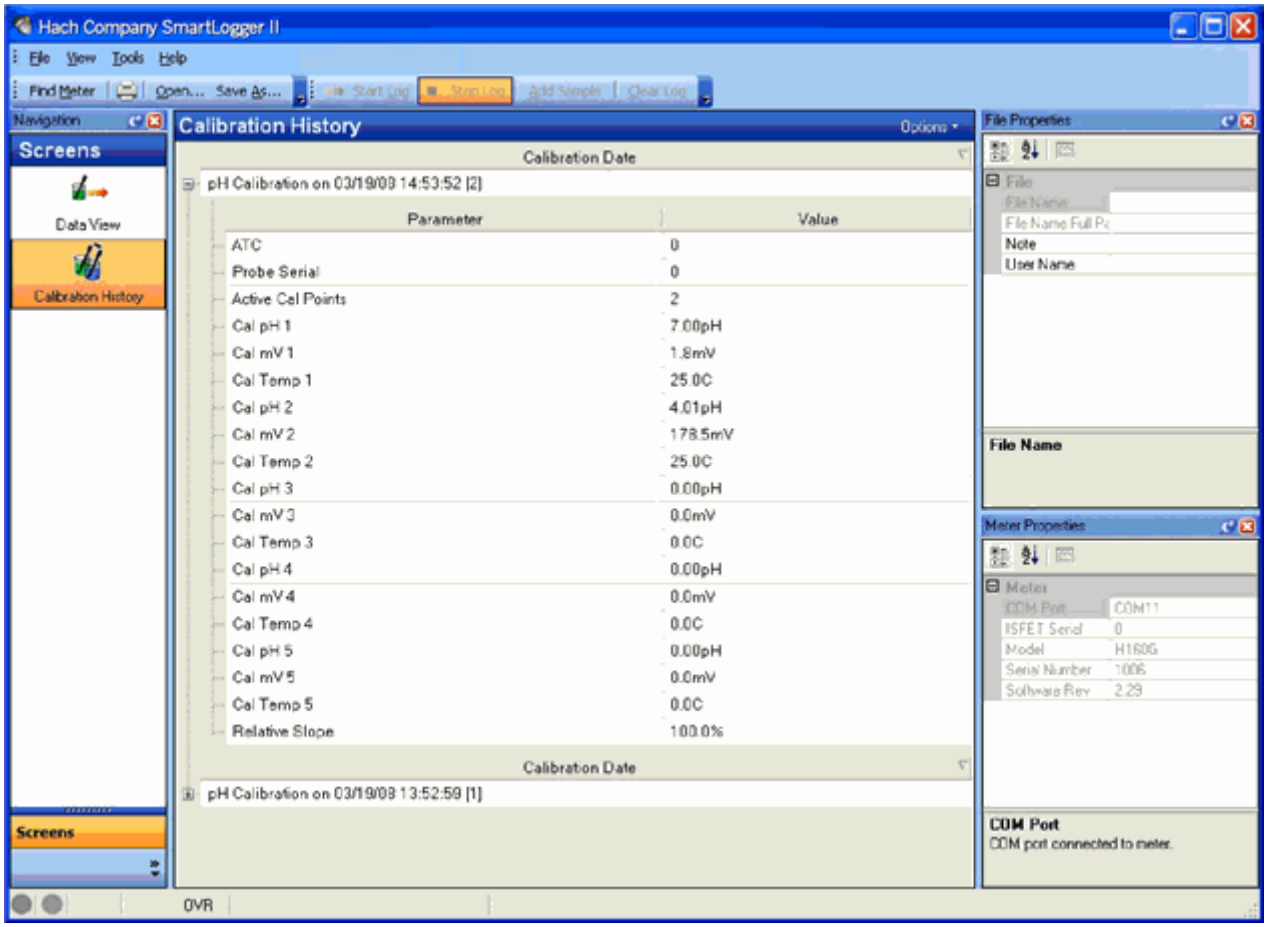
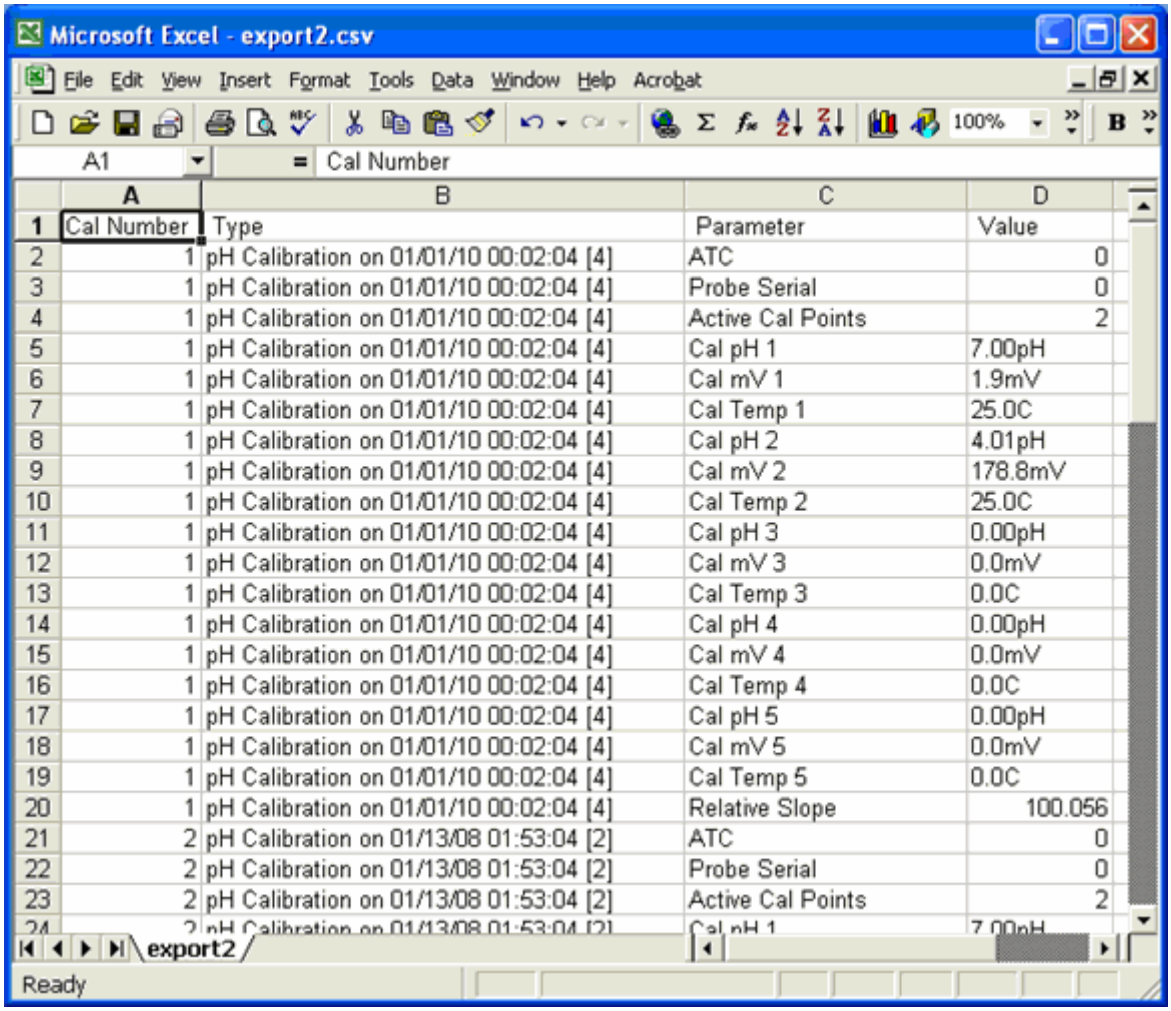


Figure 3 Calibration History screen

4.7.1 Export calibration history

The calibration history can be exported to a comma separated value (CSV) file. Once calibration history is exported, it can be viewed in a spreadsheet program such as Excel. Select Export from the Options menu on the Calibration History pane.



	A	B	C	D
1	Cal Number	Type	Parameter	Value
2	1	pH Calibration on 01/01/10 00:02:04 [4]	ATC	0
3	1	pH Calibration on 01/01/10 00:02:04 [4]	Probe Serial	0
4	1	pH Calibration on 01/01/10 00:02:04 [4]	Active Cal Points	2
5	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal pH 1	7.00pH
6	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal mV 1	1.9mV
7	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal Temp 1	25.0C
8	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal pH 2	4.01pH
9	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal mV 2	178.8mV
10	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal Temp 2	25.0C
11	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal pH 3	0.00pH
12	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal mV 3	0.0mV
13	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal Temp 3	0.0C
14	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal pH 4	0.00pH
15	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal mV 4	0.0mV
16	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal Temp 4	0.0C
17	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal pH 5	0.00pH
18	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal mV 5	0.0mV
19	1	pH Calibration on 01/01/10 00:02:04 [4]	Cal Temp 5	0.0C
20	1	pH Calibration on 01/01/10 00:02:04 [4]	Relative Slope	100.056
21	2	pH Calibration on 01/13/08 01:53:04 [2]	ATC	0
22	2	pH Calibration on 01/13/08 01:53:04 [2]	Probe Serial	0
23	2	pH Calibration on 01/13/08 01:53:04 [2]	Active Cal Points	2
24	2	pH Calibration on 01/13/08 01:53:04 [2]	Cal pH 1	7.00pH

4.8 Import data

The meter has two different types of internal data logging storage: log points and store points, which a total storage of up to 999 data points.

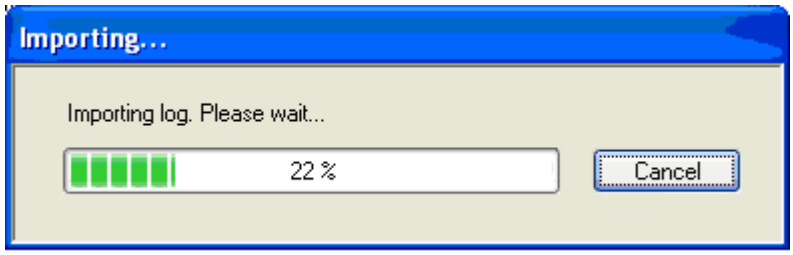
Log points are automatically saved at a data-logging interval set on the meter. Store points are stored manually one at a time.

The meter internal log points are imported using the **File>Import**. Once imported, view and save the data.

To upload log points and save to data to disk:

1. Make sure the meter log has some data points stored.
2. Select the **File>Import>Log Points**.

3. Wait for the import to complete.



4. When complete, the log data imported is displayed on the Table and Graph panes within the software.
5. Select the **File>Save As** to save the data to disk.

4.8.1 Mixed mode log data

The meter data log may contain different types of data. For instance, pH, ISE and DO may all be saved into the data log. Furthermore, the data samples may be taken at widely different dates and times.

If the imported data contains data points from different meter modes and/or dates, the software will still show all data.

- The Graph pane will show groups of samples clustered around a data/time separated by a long time gap between the next groups of samples. Use the Graph pane Show Markers options to see round dots drawn on the graph where the actual data points occur. Zoom in with the **ZOOM-BOX** button to zoom into the group of samples.
- The Table pane will have some blank column values if the meter log is mixed with different types of data.

4.9 Export data

Log history data viewed within the Table and Graph data may be exported to a comma separated value file (CSV) suitable for import into a spreadsheet.

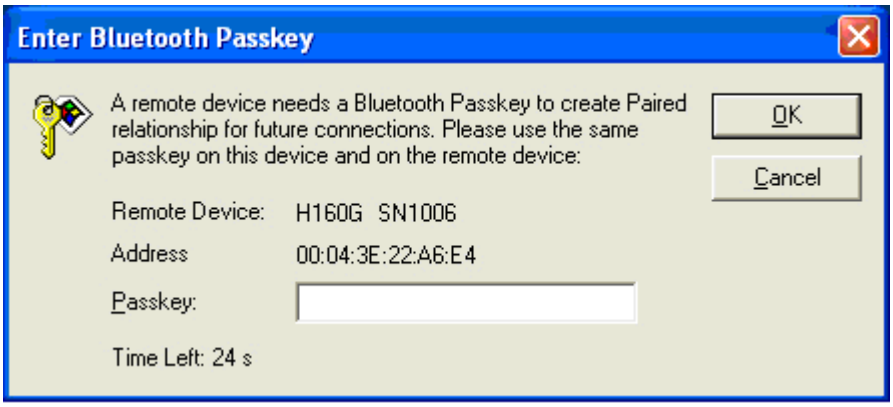
To export data view values to a CSV file:

1. Push the **DATA VIEW** icon in the Navigation docking window.
2. Make sure the Table and/or Graph pane is displayed on the Live Data screen. If not, right-click and select Add Graph Pane or Add Table Pane from the shortcut menu.
3. Right-click in the Live Data pane and select Edit Parameters from the shortcut menu.
4. On the Edit Parameters dialog select one or more parameters to monitor with a one second log speed.
5. Push the **START LOG** button if not already depressed.
6. Wait for some data to display within the Table and/or Graph pane.
7. Push the **STOP LOG** button.
8. Select the **File>Export>Log File**.
9. On the Export Log File dialog enter a file name to store the data and push **OK**.
10. The data is now saved to disk and ready to open with a spreadsheet program.

Section 5 Troubleshooting

5.1 Cannot communicate with the meter

Make sure the USB/Bluetooth driver is installed and a virtual COM port assigned. Refer to section 2.2 on page 6 for more information on how to establish communication with the meter.



Section 6 Contact information

HACH Company
World Headquarters
P.O. Box 389
Loveland, Colorado
80539-0389 U.S.A.
Tel (800) 227-HACH
(800) -227-4224
(U.S.A. only)
Fax (970) 669-2932
orders@hach.com
www.hach.com

Repair Service in the United States:
HACH Company
Ames Service
100 Dayton Avenue
Ames, Iowa 50010
Tel (800) 227-4224
(U.S.A. only)
Fax (515) 232-3835

Repair Service in Canada:
Hach Sales & Service
Canada Ltd.
1313 Border Street, Unit 34
Winnipeg, Manitoba
R3H 0X4
Tel (800) 665-7635
(Canada only)
Tel (204) 632-5598
Fax (204) 694-5134
canada@hach.com

Repair Service in Latin America, the Caribbean, the Far East, Indian Subcontinent, Africa, Europe, or the Middle East:
Hach Company World
Headquarters,
P.O. Box 389
Loveland, Colorado,
80539-0389 U.S.A.
Tel +001 (970) 669-3050
Fax +001 (970) 669-2932
intl@hach.com

HACH LANGE GMBH
Willstätterstraße 11
D-40549 Düsseldorf
Tel. +49 (0)2 11 52 88-320
Fax +49 (0)2 11 52 88-210
info@hach-lange.de
www.hach-lange.de

HACH LANGE LTD
Pacific Way
Salford
GB-Manchester, M50 1DL
Tel. +44 (0)161 872 14 87
Fax +44 (0)161 848 73 24
info@hach-lange.co.uk
www.hach-lange.co.uk

HACH LANGE LTD
Unit 1, Chestnut Road
Western Industrial Estate
IRL-Dublin 12
Tel. +353(0)1 46 02 5 22
Fax +353(0)1 4 50 93 37
info@hach-lange.ie
www.hach-lange.ie

HACH LANGE GMBH
Hütteldorferstr. 299/Top 6
A-1140 Wien
Tel. +43 (0)1 9 12 16 92
Fax +43 (0)1 9 12 16 92-99
info@hach-lange.at
www.hach-lange.at

DR. BRUNO LANGE AG
Juchstrasse 1
CH-8604 Hegnau
Tel. +41(0)44 9 45 66 10
Fax +41(0)44 9 45 66 76
info@hach-lange.ch
www.hach-lange.ch

HACH LANGE FRANCE S.A.S.
33, Rue du Ballon
F-93165 Noisy Le Grand
Tél. +33 (0)1 48 15 68 70
Fax +33 (0)1 48 15 80 00
info@hach-lange.fr
www.hach-lange.fr

HACH LANGE SA
Motstraat 54
B-2800 Mechelen
Tél. +32 (0)15 42 35 00
Fax +32 (0)15 41 61 20
info@hach-lange.be
www.hach-lange.be

DR. LANGE NEDERLAND B.V.
Laan van Westroijen 2a
NL-4003 AZ Tiel
Tel. +31(0)344 63 11 30
Fax +31(0)344 63 11 50
info@hach-lange.nl
www.hach-lange.nl

HACH LANGE APS
Åkandevej 21
DK-2700 Brønshøj
Tel. +45 36 77 29 11
Fax +45 36 77 49 11
info@hach-lange.dk
www.hach-lange.dk

HACH LANGE AB
Vinthundsvägen 159A
SE-128 62 Sköndal
Tel. +46 (0)8 7 98 05 00
Fax +46 (0)8 7 98 05 30
info@hach-lange.se
www.hach-lange.se

HACH LANGE S.R.L.
Via Riccione, 14
I-20156 Milano
Tel. +39 02 39 23 14-1
Fax +39 02 39 23 14-39
info@hach-lange.it
www.hach-lange.it

HACH LANGE S.L.U.
Edif. Arteaga Centrum
C/Larrauri, 1C- 2ª Pl.
E-48160 Derio/Vizcaya
Tel. +34 94 657 33 88
Fax +34 94 657 33 97
info@hach-lange.es
www.hach-lange.es

HACH LANGE LDA
Av. do Forte nº8
Fracção M
P-2790-072 Carnaxide
Tel. +351 214 253 420
Fax +351 214 253 429
info@hach-lange.pt
www.hach-lange.pt

HACH LANGE SP.ZO.O.
ul. Opolska 143 a
PL-52-013 Wrocław
Tel. +48 (0)71 342 10-83
Fax +48 (0)71 342 10-79
info@hach-lange.pl
www.hach-lange.pl

HACH LANGE S.R.O.
Lešanská 2a/1176
CZ-141 00 Praha 4
Tel. +420 272 12 45 45
Fax +420 272 12 45 46
info@hach-lange.cz
www.hach-lange.cz

HACH LANGE S.R.O.
Roľnícka 21
SK-831 07 Bratislava –
Vajnory
Tel. +421 (0)2 4820 9091
Fax +421 (0)2 4820 9093
info@hach-lange.sk
www.hach-lange.sk

HACH LANGE KFT.
Hegyalja út 7-13.
H-1016 Budapest
Tel. +36 (06)1 225 7783
Fax +36 (06)1 225 7784
info@hach-lange.hu
www.hach-lange.hu

HACH LANGE S.R.L.
Str. Căminului nr. 3
Sector 2
RO-021741 Bucureşti
Tel. +40 (0) 21 205 30 03
Fax +40 (0) 21 205 30 03
info@hach-lange.ro
www.hach-lange.ro

HACH LANGE
8, Kr. Sarafov str.
BG-1164 Sofia
Tel. +359 (0)2 963 44 54
Fax +359 (0)2 866 04 47
info@hach-lange.bg
www.hach-lange.bg

HACH LANGE SU ANALİZ SİSTEMLERİ LTD.ŞTİ.
Hilal Mah. 75. Sokak
Arman Plaza No: 9/A
TR-06550 Çankaya/ANKARA
Tel. +90 (0)312 440 98 98
Fax +90 (0)312 442 11 01
bilgi@hach-lange.com.tr
www.hach-lange.com.tr

HACH LANGE D.O.O.
Fajfarjeva 15
SI-1230 Domžale
Tel. +386 (0)59 051 000
Fax +386 (0)59 051 010
info@hach-lange.si
www.hach-lange.si

HACH LANGE E.Π.E.
Αυλίδος 27
GR-115 27 Αθήνα
Τηλ. +30 210 7777038
Fax +30 210 7777976
info@hach-lange.gr
www.hach-lange.gr

HACH LANGE E.P.E.
27, Avlidos str
GR-115 27 Athens
Tel. +30 210 7777038
Fax +30 210 7777976
info@hach-lange.gr
www.hach-lange.gr