Catalog Number 6234218

Hydras 3 LT Quick Start

SOFTWARE MANUAL

December 2005, Edition 2

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jk/dk

Table of Contents

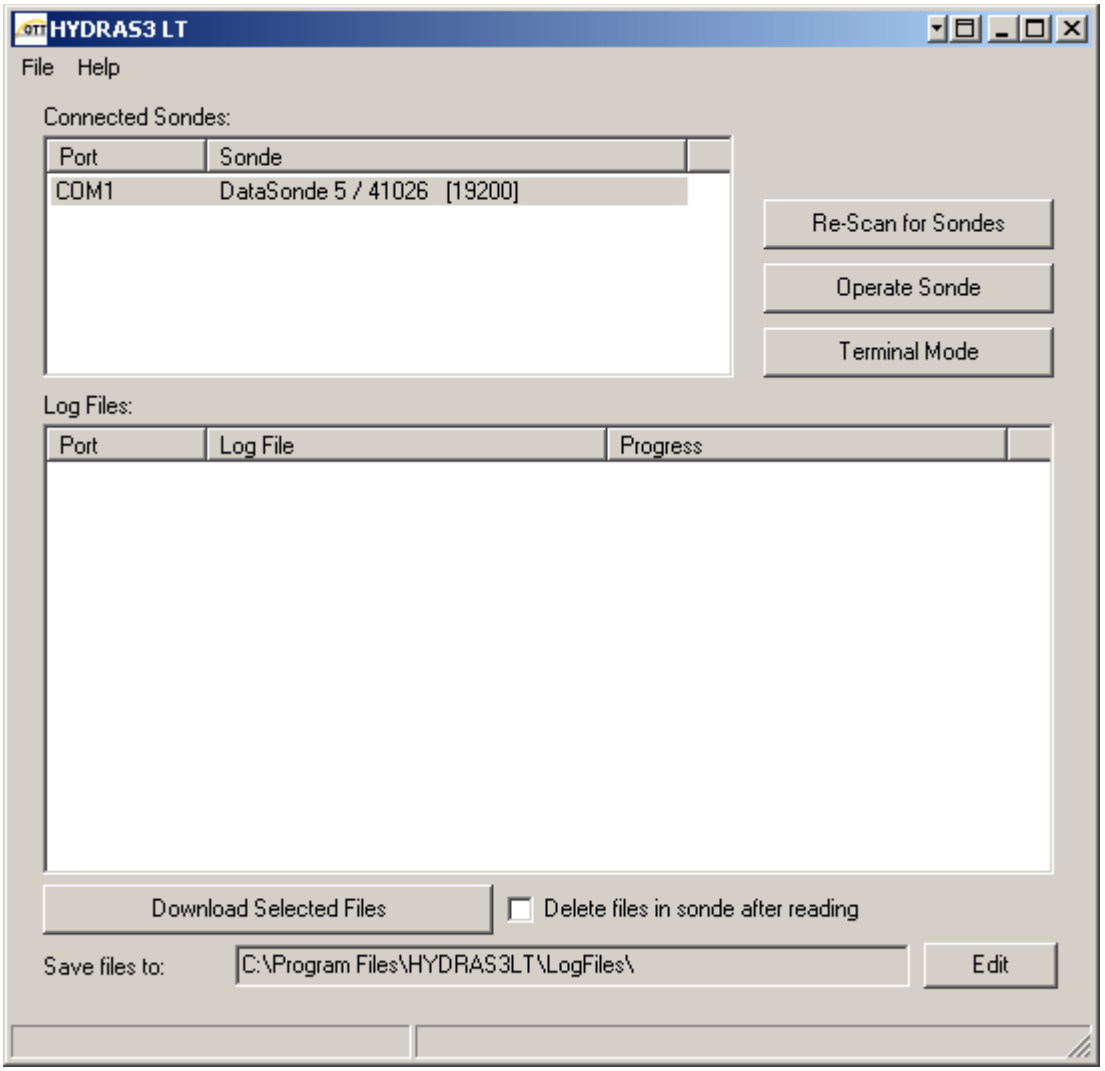
Section 1 General Information

Hydras 3LT is software used to connect Hydrolab sondes to a PC. It automatically scans for connected sondes and recognizes any log files held in memory. Up to 32 sondes can be connected at once, and all log files can be downloaded simultaneously.

When operating the sonde, Hydras 3LT provides seven function tabs to help view real-time data, or to set up a sonde for operation:

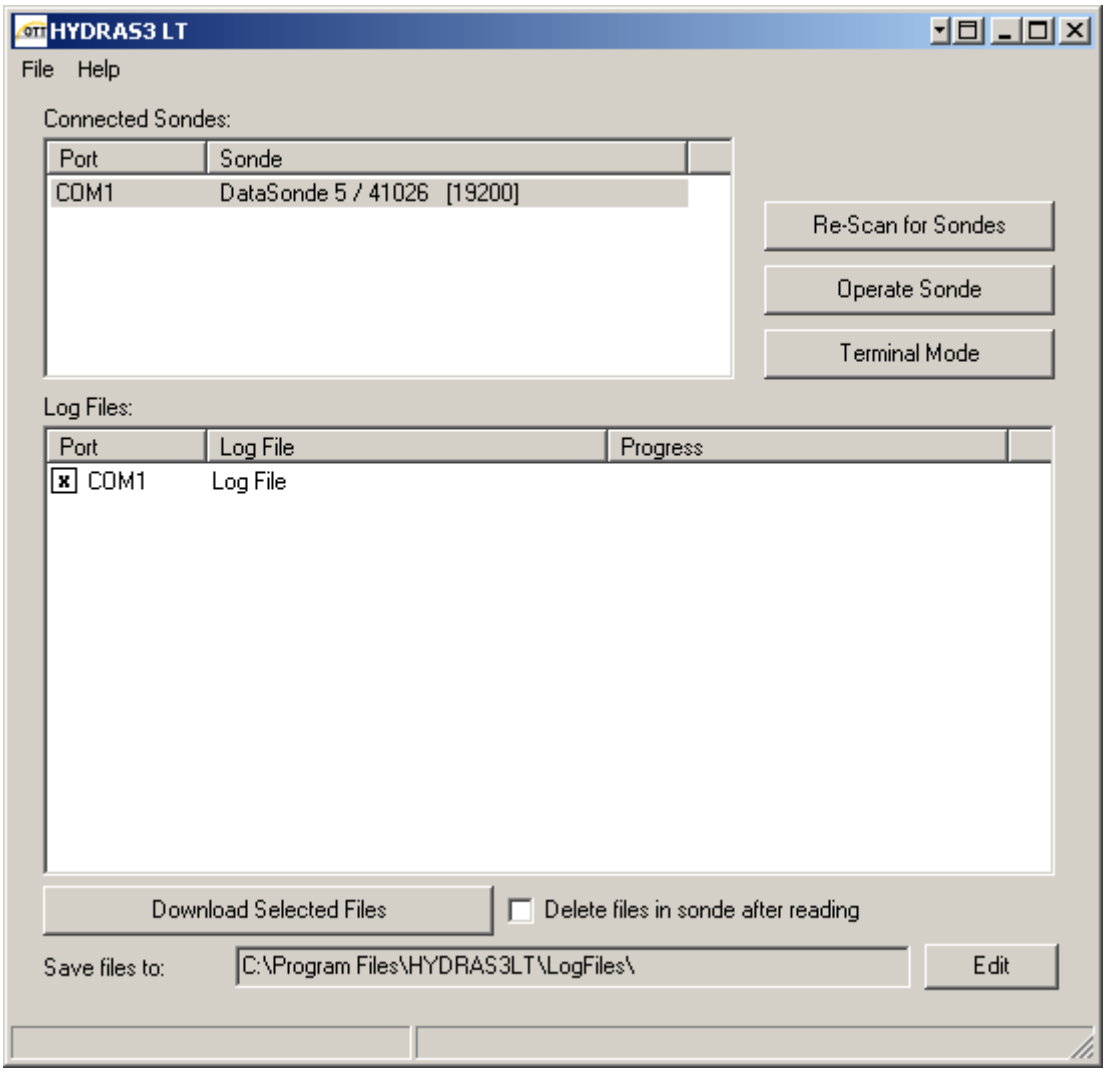
- The **System** tab allows the user to setup basic sonde identification information. Also, passwords can be established to allow up to four different access levels, which can help to protect the data.
- The **Online Monitoring** tab allows viewing real-time data as either a time series graph, or as a vertical profile graph. Up to six parameters can be viewed at a time on either graph. Data can also be downloaded into an Excel or text file.
- The **Log Files** tab allows quick and easy setup of logging runs with a GUI interface. Choose the start and stop time, the logging interval, as well as the circulator and sensor warm-up time. Add or remove parameters and arrange them in order. When the logging run is complete, download all the files at once.
- The **Parameter Setup** tab allows the user to configure available parameters.
- The **Calibration** tab sets the calibration parameters for an individual sensor. Choose the sensor to calibrate and enter the calibration standards. The current value and temperature readings are shown for temperature sensitive calibrations.
- The **Settings** tab sets the communication settings between the Hydras 3LT and the sonde.
- The **Software** tab uploads software to the sonde and updates and removes software drivers.

1. Connect the Data Cable from the computer and to the sonde.
2. Start Hydras 3 LT. The software will automatically scan for sondes. All detected sondes are displayed in the 'Connected sondes' list in the Main window displayed below. If a sonde is not found, press **RE-SCAN FOR SONDES**. If a connection can not be established, refer to Appendix A Troubleshooting on page 29.



2.1 Downloading Data

After a log file is created in the Log Files tab, the files can be downloaded by checking the appropriate Log File box and clicking **DOWNLOAD SELECTED FILES**. Multiple files can be downloaded at once. The downloaded log files are stored in the location indicated at the bottom of the screen (typically “C:\Program Files\HYDRAS3LT\LogFiles”). The location can be changed by clicking **EDIT** and specifying a new directory.



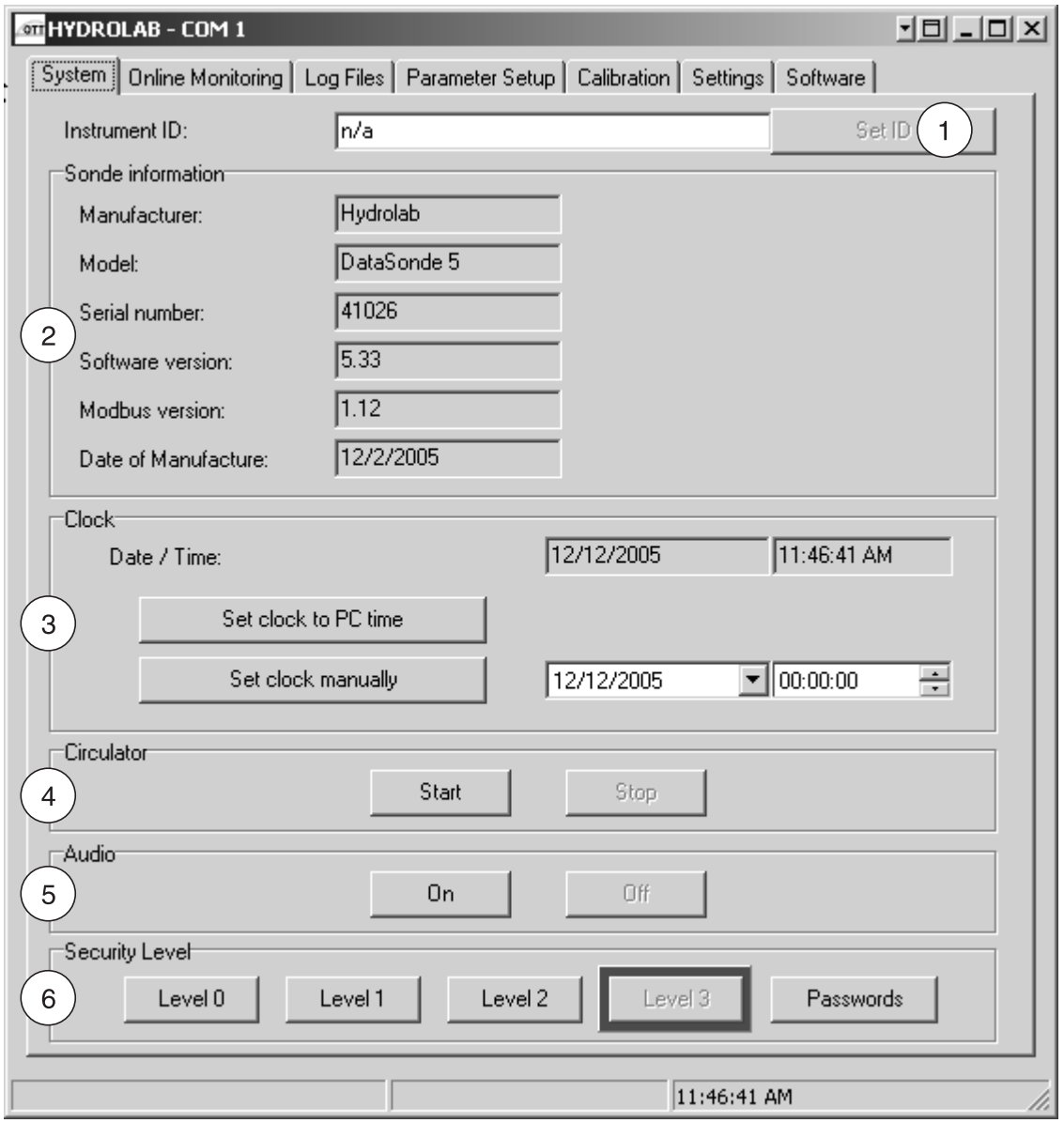
2.2 Operating a Sonde

Note: *To enter a higher level security mode, click on the Level button from the System Tab and enter the password.*

1. From the Main Hydras 3 LT menu, highlight the appropriate sonde and press **OPERATE SONDE**. The sonde window will appear. The window defaults to Security Level 2.
2. The sonde window contains 7 function tabs; System, Online Monitoring, Log Files, Parameter Setup, Calibration, Settings, and Software.

2.2.1 System Tab

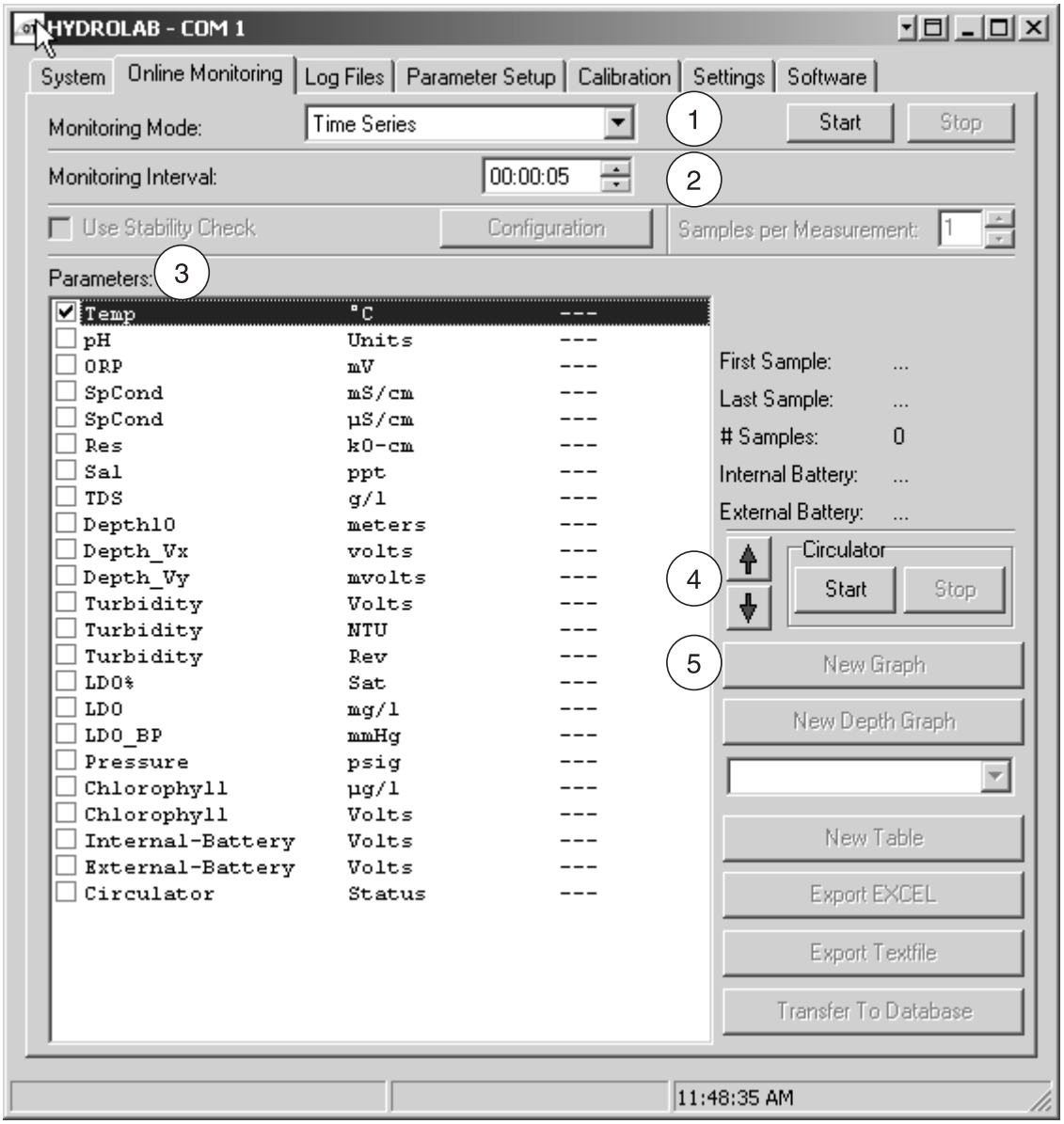
The System Tab sets up general information and configures the system components.



#	Function	Description
1	Instrument ID	Enter a description of the sonde. This will be used as an output on the data file.
2	Sonde Information	Displays static information about the sonde.
3	Clock	Sets the sonde date and time to match your PC clock or manually set the date and time (this is useful when monitoring in different time zones).
4	Circulator	Select whether to start or stop the circulator.
5	Audio	Turns on/off the beeping sound the sonde makes when taking measurements.
6	Security Level	Click on **LEVEL 0**, **LEVEL 1**, **LEVEL 2**, or **LEVEL 3** and enter the password to view that security mode. While in Level 3, click on **PASSWORDS** to set the passwords for Level 1, Level 2, and Level 3. The default Level 3 password from the factory is “Hydrolab”.

2.2.2 Online Monitoring Tab

The Online Monitoring Tab has three modes for capturing data; Manual, Time Series, and Vertical Profile (sections 2.2.2.1, 2.2.2.2, and 2.2.2.3). Criteria checks can be set before capturing the data (section 2.2.2.4) and then the results can be graphed (section 2.2.2.5).



#	Function	Description
1	Monitoring Mode	The monitoring mode must be set before starting Online Monitoring. Select Time Series for logging values at regular time intervals. Select Vertical Profile for logging values at user-defined depth levels. Or select Manually for User-defined logging.
2	Monitoring Interval	Select the time interval or depth level between samples as well as the stability check for Vertical Profile and Manual settings (see section 2.2.2.4).
3	Parameters	Check the parameters to be monitored.
4	Arrow buttons	Select a parameter and use the **UP** and **DOWN** arrow buttons to move the parameter in the list.

5	Data Buttons[1] (Monitoring must begin before the data button functions can be used)	**New Graph:** Opens a graphic window with the selected parameters (max. 6) plotted as a time series. See Real-time Graph Functions on page 15 for more information on changing graph properties.
		New Depth Graph: Opens a graphic window with the selected parameters (max. 6) displayed at the corresponding depth.
		New Table: Displays the selected monitored data in a tabular view (real-time).
		Export Excel: Microsoft Excel must be installed on the computer for this function to work. The monitored data is transferred to an Excel application running in the background. If Excel is not running, it is automatically started and a new worksheet is created. After the data is exported, the Excel file is not updated with new real-time data. Hydras 3LT continues to log such data for graphing and storage purposes.
		Export Textfile: Writes the monitored data to a text file. After the data is exported, the file is not updated with new real-time data.
		Transfer to Database: Not available with Hydras 3 LT.

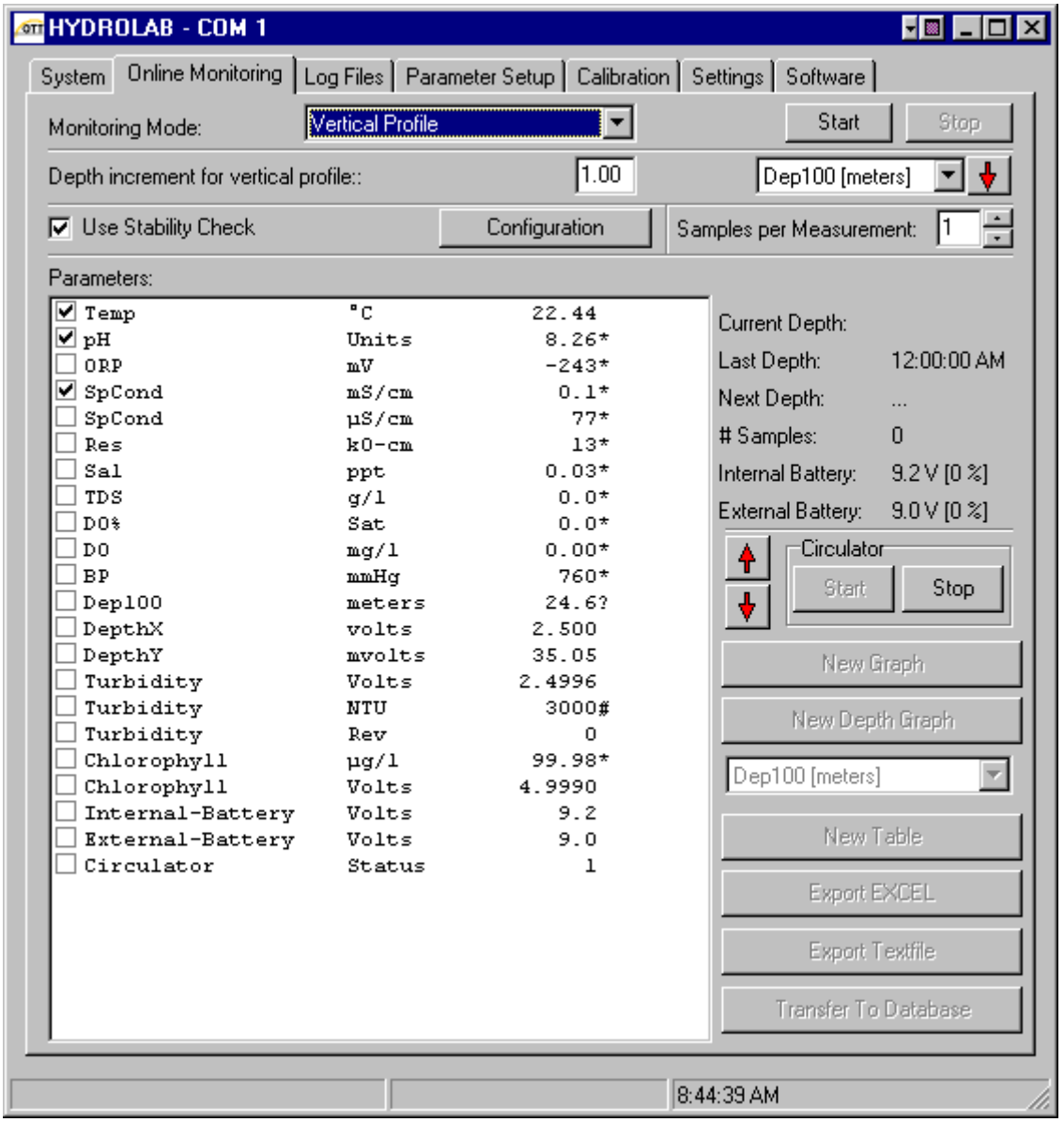
[1] The data buttons become available when at least one parameter in the list is selected.

2.2.2.1 Time Series

A time-based logging can be set by selecting Time Series as the Monitoring Mode. The user must select the time interval and parameters. Click **START** to begin monitoring data (see section 2.2.2 for a screen shot).

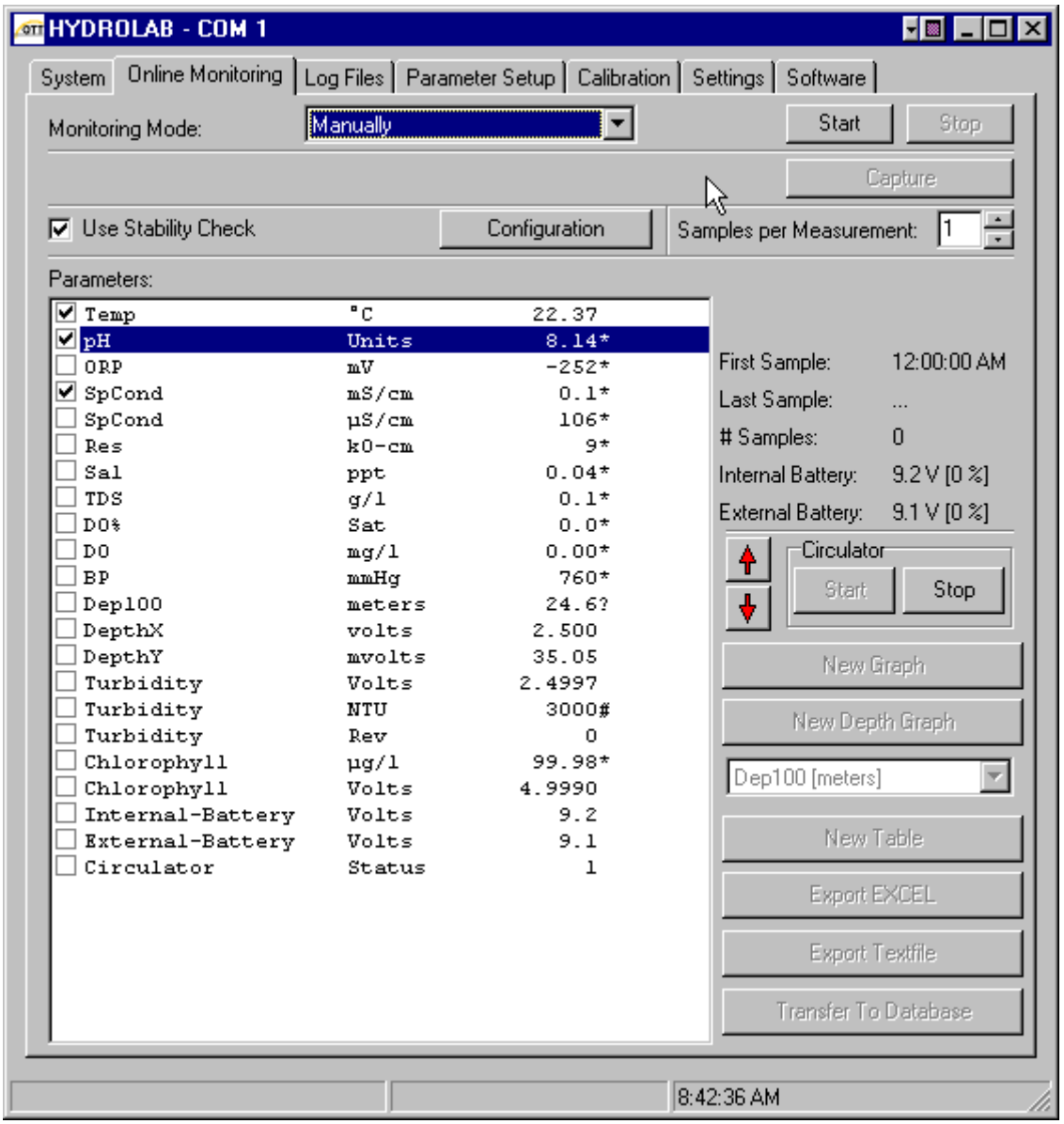
2.2.2.2 Vertical Profile

A vertical profile can be set by selecting Vertical Profile as the Monitoring Mode. The user must select the depth increment for the vertical profile, the units of measure for the profile, and whether the profile is ascending (up arrow) or descending (down arrow). The user should also indicate whether or not a stability check is to be used and how many samples per measurement point are preferred.



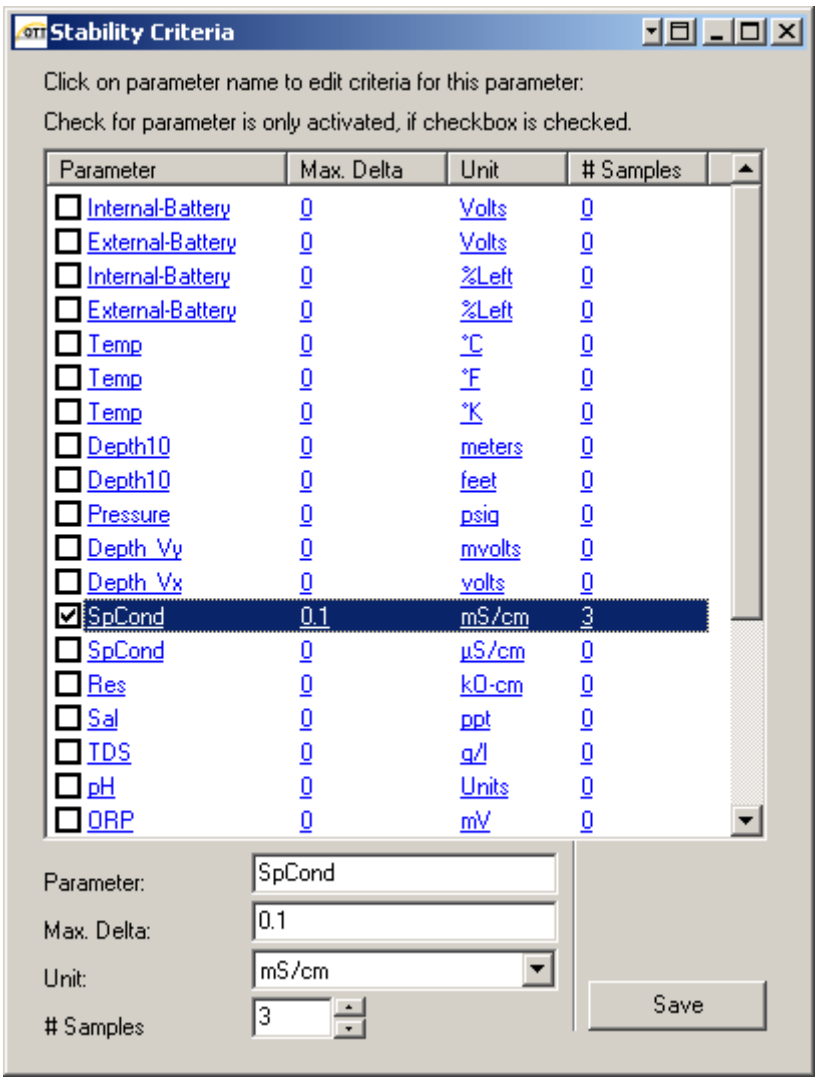
2.2.2.3 Manual Profile

A manual profile can be set by selecting Manually as the Monitoring Mode. The user should also indicate whether or not a stability check is to be used and how many samples per measurement point are preferred. The data is captured by either pressing the space bar or by clicking on the capture button



2.2.2.4 Stability Check

When monitoring in Depth Mode or Manually, the user can set up stability criteria which must be met prior to Hydras 3LT recording a measurement. The user needs to select a given parameter such as SpCond, the maximum delta (± this number from an average value), the units of measurement, and the number of samples that must meet this stability criteria. To select a parameter of interest, click on the parameter name in the Stability Criteria window. The check box in front of the parameter name is used to indicate whether that parameter will be used as part of the stability criteria check. When more than one stability criteria is checked, all conditions must be met for data to be collected. Click on **CONFIGURATION** in the Online Monitoring screen to enter the stability criteria screen.

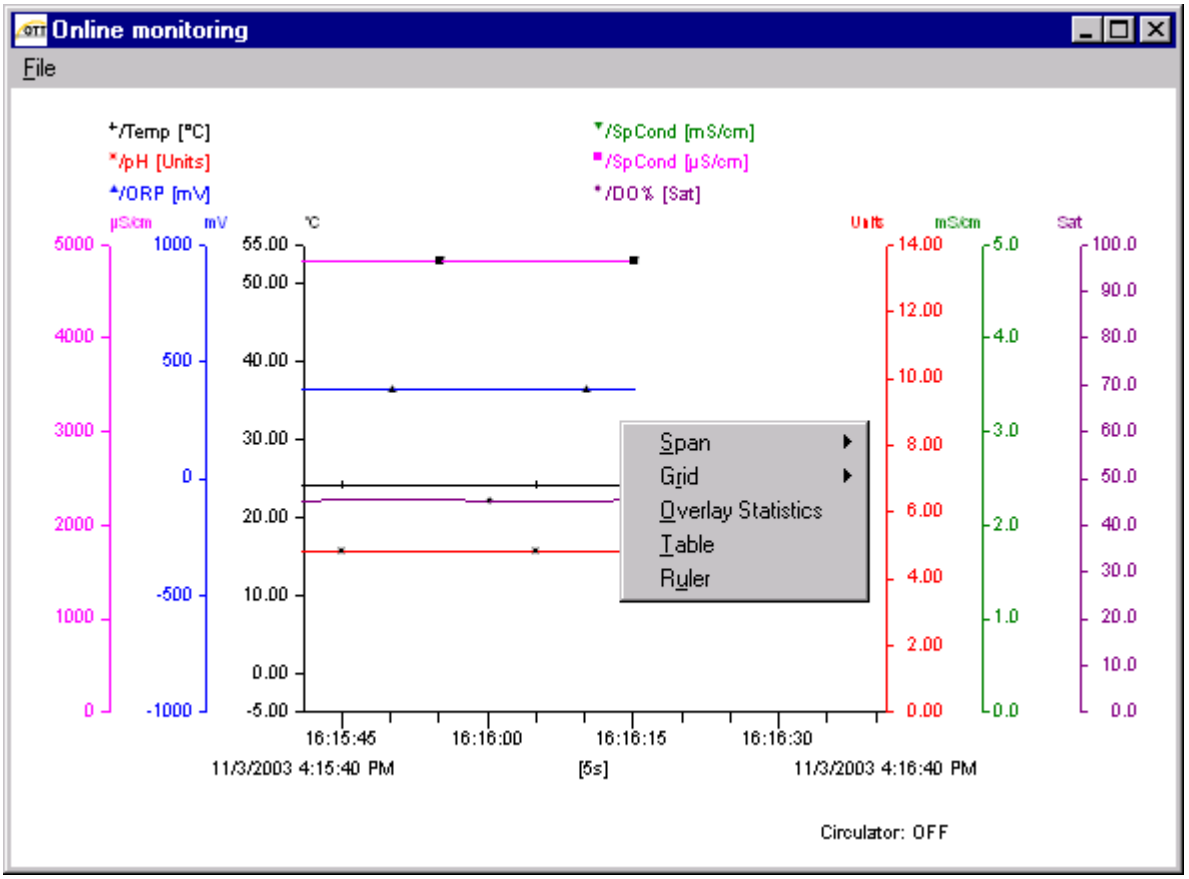


2.2.2.5 Real-time Graph Functions

Up to six selected parameters can be displayed with different colors and an individual axis range for every sensor. In the graphic options (**F2**), the user can select if every parameter has its own vertical axis displayed or that only 2 vertical axis are used (one left, one right).

To change the scale on the y-axis, click on the minimum and maximum values on the graph. A dialog box will appear, enter the minimum and maximum y-axis values. Press **Ctrl-A** to autoscale the y-axis at any time while the data is plotted on the graph.

Right-click on the graph to display a context menu. See the table below for context menu options.



Function	Description
Span	Select the time span that is displayed until the current value (1 min, 5 min, 10 min, 30 min, 1 h, 3 h, 6 h, 12 h, or 24 h).
Grid	Turn the horizontal and vertical grid on or off.
Overlay Statistics	Select overlay statistics to show simple statistics on the graph such as max, min, and average.
Table	Select table to view the graph in a tabular form.
Ruler	Turn the two rulers on or off.

2.2.3 Log Files Tab

Users frequently like to use the same Log File settings for multiple sondes or for redeploying a sonde after retrieving a stored log file. The Log Files tab allows the user to share and retrieve template Log File settings using a right-click while the cursor is in the Log Files screen.

2.2.3.1 Creating a Log File

Note: *A log file must be created and then enabled before data can be collected.*

1. Click the **CREATE** button.
2. Enter the name for the new log file. The empty log file is now created.

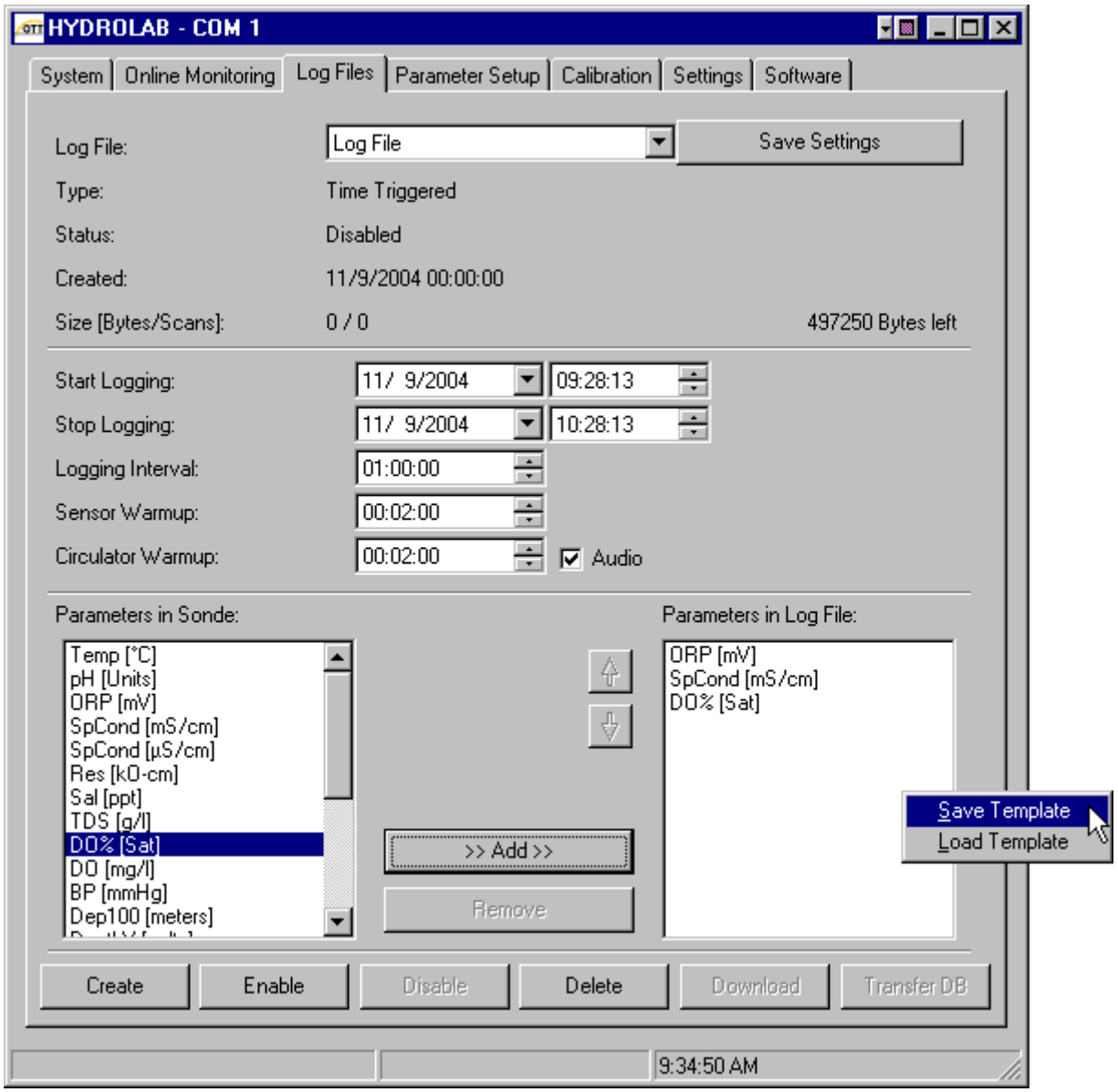
Note: *To delete a log file, select the log file in the Log File drop-down menu and click the* ***DELETE*** *button.*

3. Enter the start and end time of the log, the logging interval, the sensor warm-up time before logging, and how long before logging the circulator will be turned on, and if audio signals will be used while logging.
4. Select the parameters in the 'Parameter in sonde' list and click the **ADD** button to place them into the 'Parameters in log file' list. Change the order of the parameters using the **UP** and **DOWN** arrow buttons.
5. Click **SAVE SETTINGS** to send the configuration to the sonde.
6. Click **ENABLE** to start collecting data. Click **DISABLE** to stop collecting data during logging. A fully completed logging run will automatically disable at the end of the run.
7. Click **DOWNLOAD** to download and display the log file. Select Printable or Spreadsheet format.

2.2.3.2 Storing a Template File

Note: *In order to create a stored template file, a sonde must be connected to Hydras 3LT.*

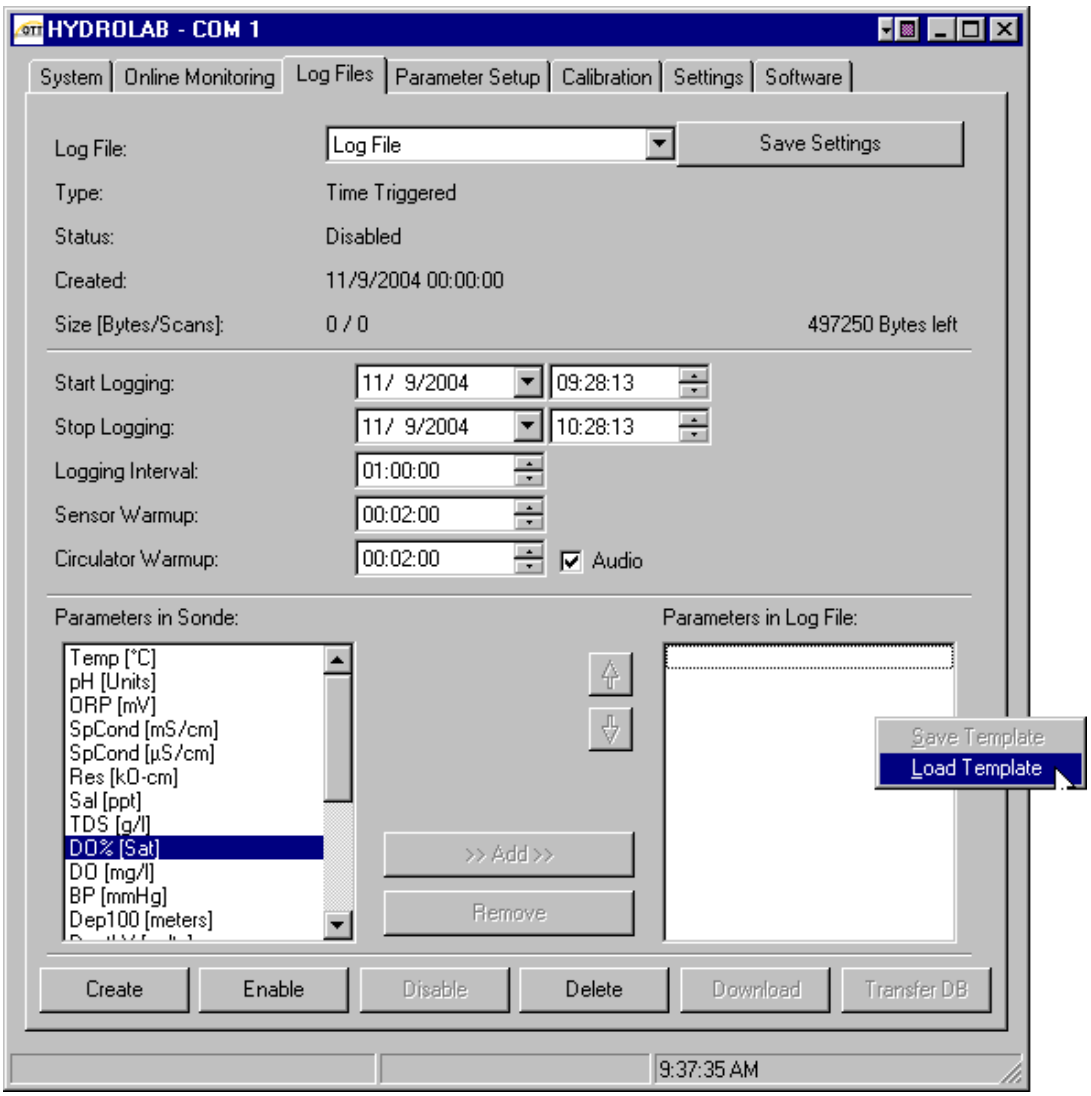
1. Open an existing log file by using the Log File pull-down menu or create a new log file by following steps 1–4 in section 2.2.3.1.
2. While the cursor is in the Log Files screen, right-click to open the template selection screen.
3. Select **STORE TEMPLATE**.
4. Choose a name for the template. It will be stored automatically in the template folder. Reusing a template name will overwrite the old template.
5. Select **SAVE**.
6. The log file template is now saved and can be used to speed up the creation of future log files.



2.2.3.3 Recalling Template Files

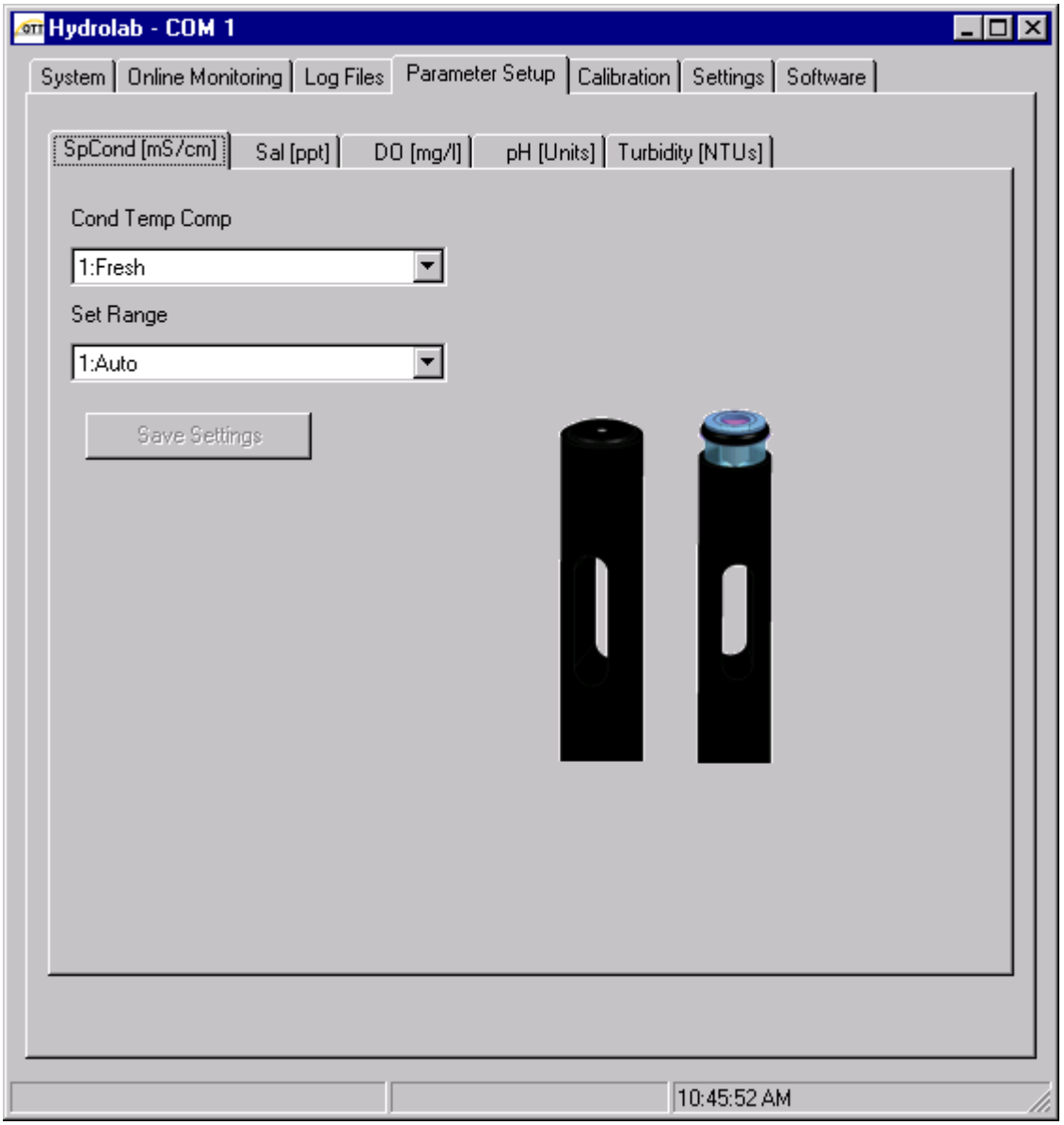
Note: *In order to use a template file, the sonde used to create the template and the sonde used when retrieving the template should be configured in a compatible manner. That is, all parameters used in the template file should be available in the sonde to which the template file is being applied.*

1. Click the **CREATE** button to create a new log file or open an existing log file by using the Log File pull-down menu.
2. Enter a name for the new log file, if necessary. An empty log file is created.
3. While the cursor is in the Log Files screen, right-click to open the template selection screen.
4. Select Load Template.
5. The template will load onto the Log Files screen. It will be identical to the stored template except the Start Logging start time will be the current PC time.
6. Verify that all items are prepared as needed, including the Start Logging and Stop Logging times.
7. Click **SAVE SETTINGS** to send the configuration to the sonde.
8. Click **ENABLE** to start collecting data.



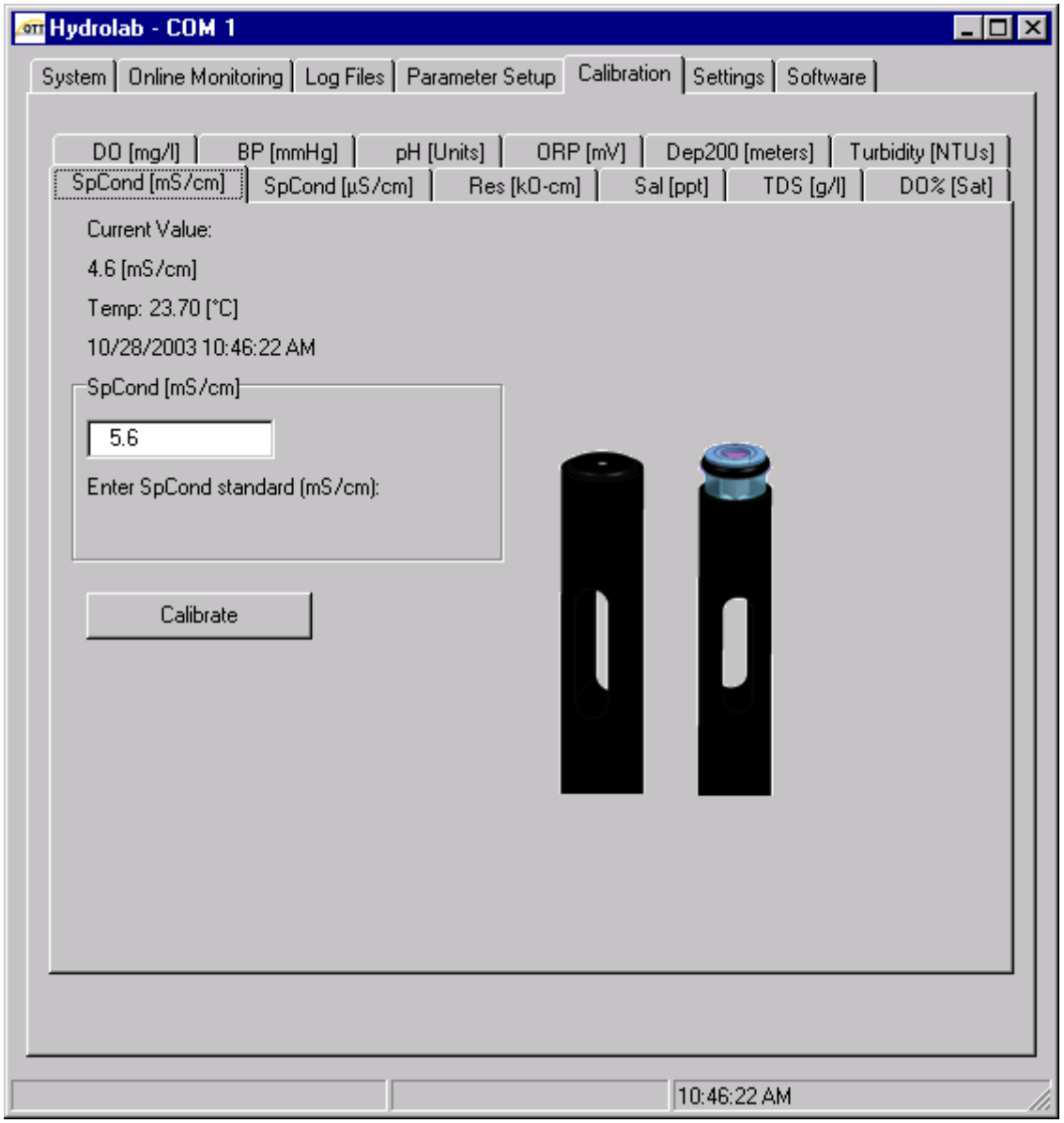
2.2.4 Parameter Setup Tab

Click on the appropriate parameter and enter the setup information for each parameter. Press **SAVE SETTINGS** when all parameter setup information is complete. Refer to the instrument manual for more information for each parameter.

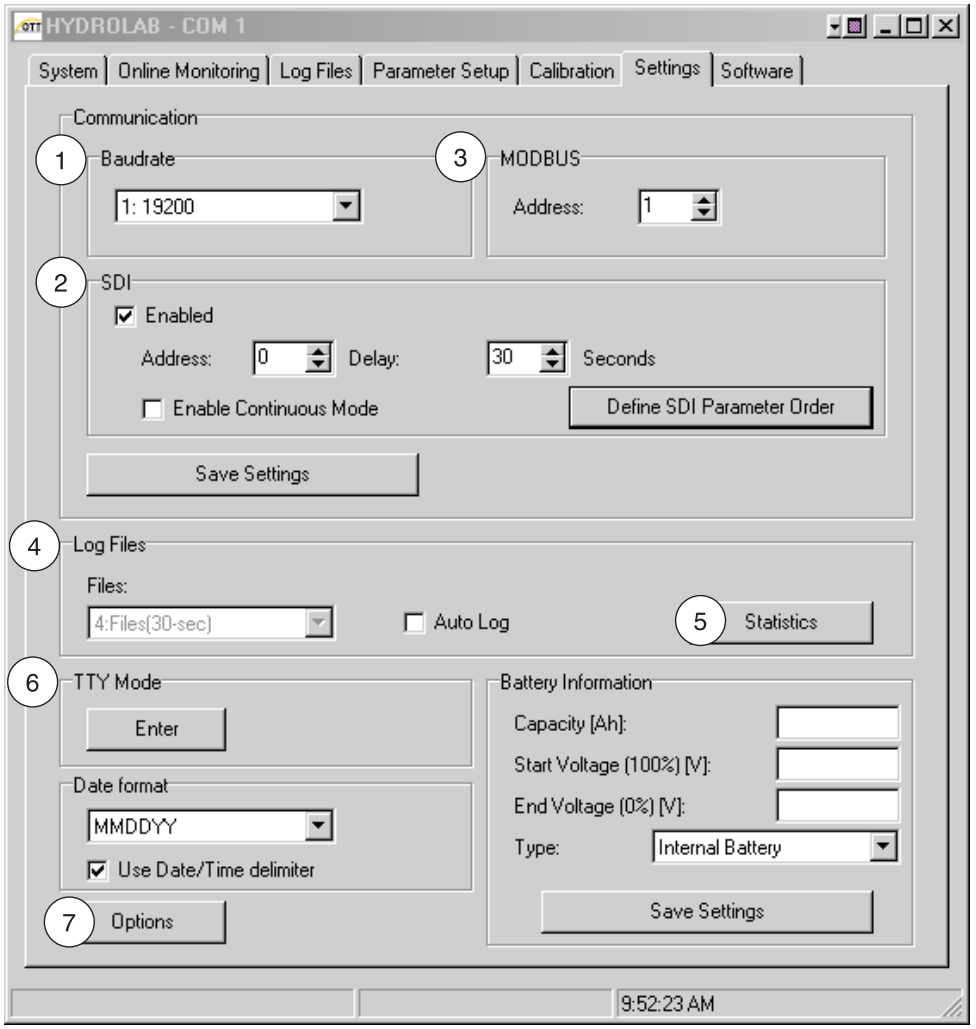


2.2.5 Calibration Tab

Click on the appropriate parameter and enter the calibration information for each parameter. Press **CALIBRATE** when all the calibration information is complete. Refer to the instrument manual for more calibration information.



2.2.6 Settings Tab

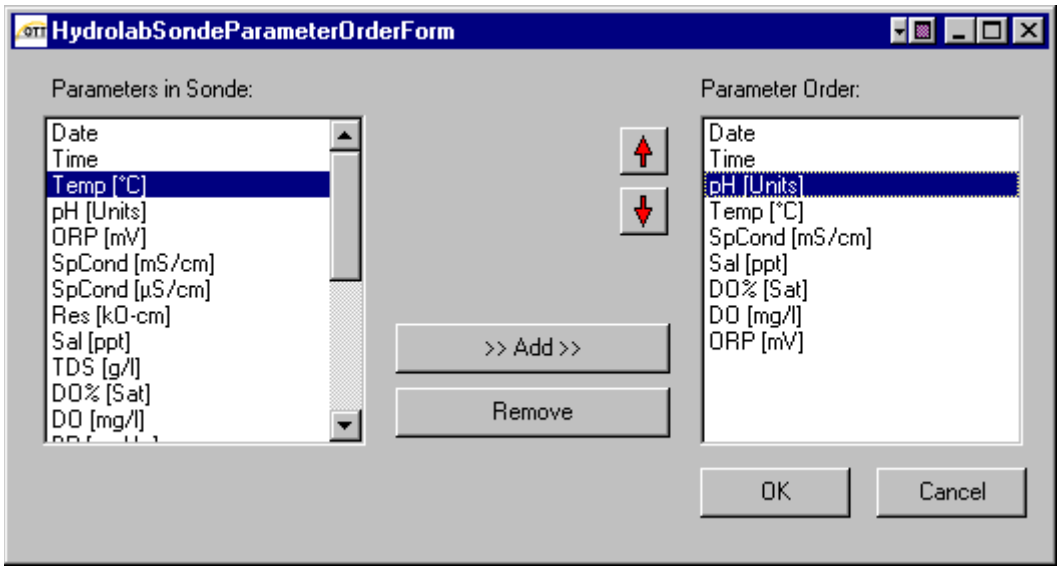


#	Function	Description
1	Baud Rate	Select the instrument baud rate (1200, 2400, 4800, 9600, or 19200). Note: If the automatic baud rate scan is enabled (section 2.2.8.2 DataSonde Tab on page 25), Hydras3LT will only scan for 9600 and 19200 baud rates.
2	SDI	Enable SDI when multiple sondes or other SDI-12 enabled sensors are connected to a single SDI-12 controller. Set the delay to allow the sensors to warm-up and stabilize for accurate measurements. The transmitter factory default SDI-12 address is 0 for all parameters. If continuous mode is enabled, the unit will never enter sleep mode and measurements will be available immediately upon receiving an SDI-12 data request.
3	MODBUS	The Modbus address default is 1. When using multiple sondes, assign a unique address (1 to 247) for each sonde. The Modbus works with even-parity, 8 data bit, and 1 stop bit.
4	Log Files	When Auto Log is selected, it works as a back-up logging file. Auto Log captures a reading of all available parameters, battery voltages, and turns on the audio and circulator with a two-minute warm-up (if installed) once every hour. 'No log files' must be selected in the Log Files tab for Autolog to run.
5	Statistics	Press the **STATISTICS** button to view a summary of the sonde.
6	TTY Mode	Use this option only when backwards compatibility is required. TTY mode provides data and limited menu access for external devices that interface with earlier generations of sondes. If TTY mode is entered, a user may exit TTY mode by opening a terminal screen and then pressing the space bar followed by a **Q** or **q** to quit.
7	Options	See Hydras 3 Options (F2) on page 24.

2.2.6.1 Define SDI Parameter Order

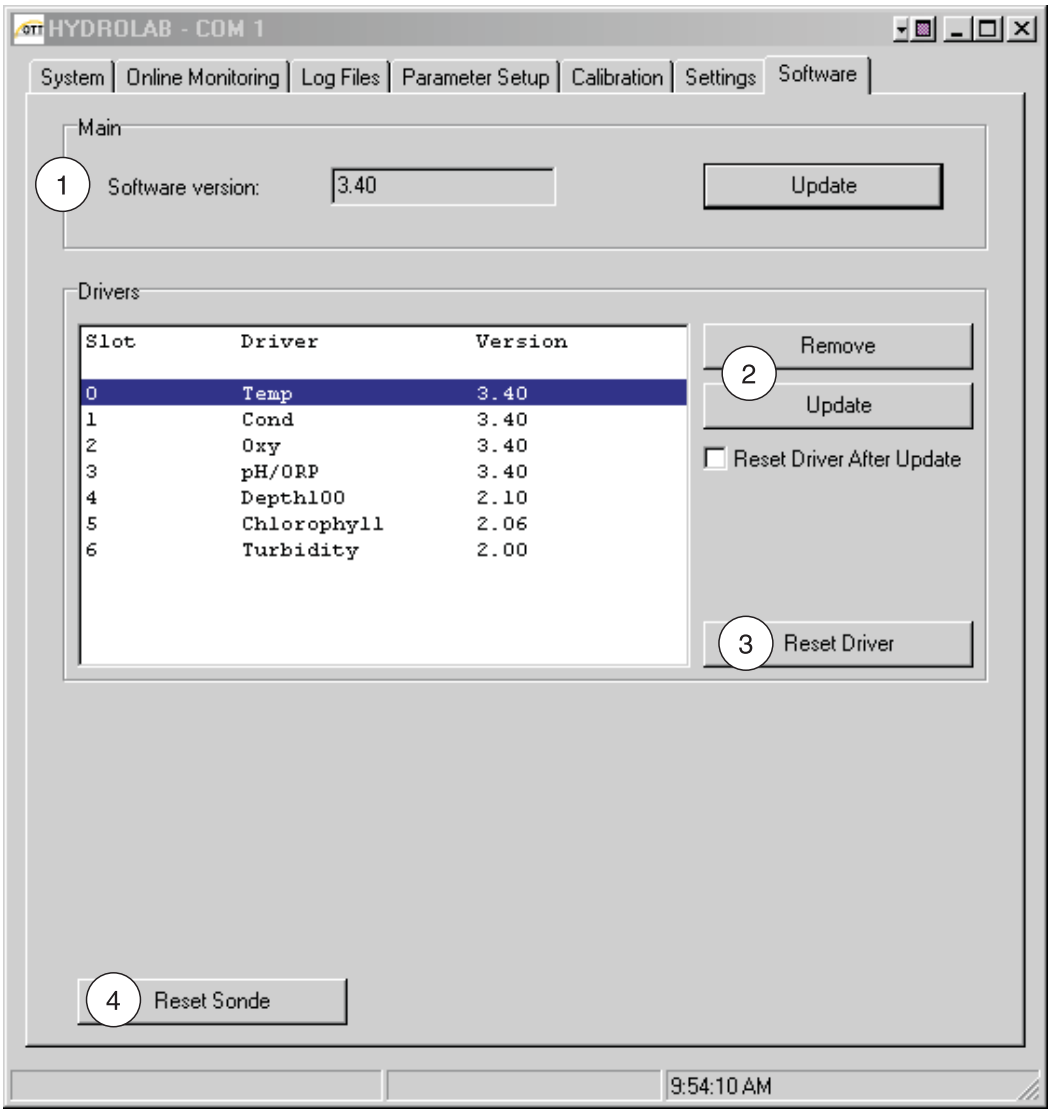
The user can define the order in which parameters are reported for an SDI–12 data request. In the HydrolabsondeParameterOrderForm screen, the user can add parameters to be reported using SDI–12 data requests. The user can also order the parameters by using the **UP** and **DOWN** arrows to arrange the parameters in the desired order.

Note: *The parameter order set in this screen will also be utilized by TTY mode for reporting data values.*



2.2.7 Software Tab

Important Note: *Level 3 Security Required. Software version 3.35 or higher is required to use the features on the Software screen. If the sonde has an older version of software, upgrade to the newest software version using terminal mode. Refer to the instrument manual for more information on updating the sonde software using terminal mode.*



#	Function	Description
1	Software Version	To update the firmware, click on the **UPDATE** button in the 'Main' group box. A prompt to select a file name will appear and then the selected file is uploaded to the sonde. After the upload, the sonde is reset to default values and the sonde window is created again.
2	Drivers/Remove	To remove a driver from a slot, select the driver and click the **REMOVE** button. After the driver is removed the sonde is reset and the sonde window is created again.
	Drivers/Update	To update a driver, select the slot of the driver and click the **UPDATE** button in the 'Drivers' group box. Select a file name when prompted. The selected file is then uploaded to the selected slot in the sonde. If 'Reset Driver After Update' is checked, all driver parameters are set to default values.
3	Reset Driver	Resets all driver calibration parameters to default values.
4	Reset Sonde	Resets all system parameters to default values.

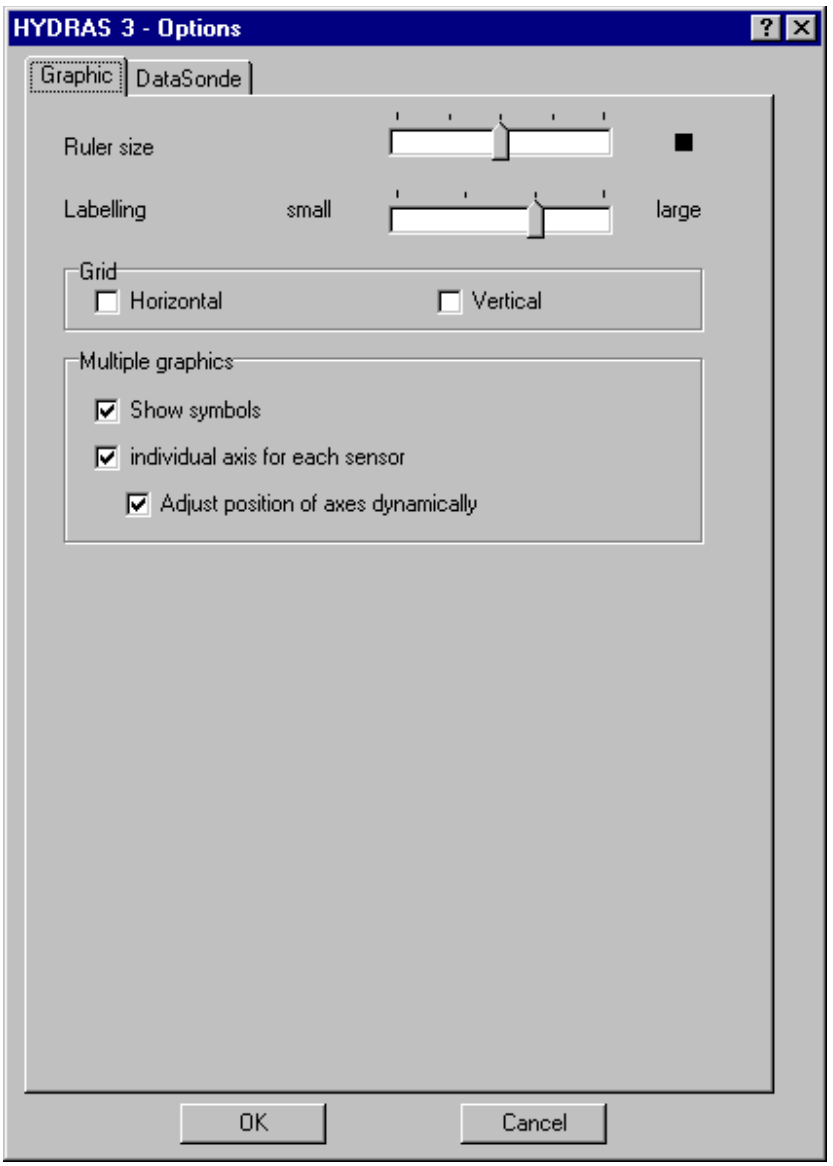
2.2.8 Hydras 3 Options (F2)

To set the sonde Options select File>Options or press **F2** from the sonde startup screen. The options menu contains two tabs, Graphics and DataSonde (sections 2.2.8.1 and 2.2.8.2).

2.2.8.1 Graphics Tab

The Graphics tab adjusts the settings and appearance of the graph (ruler size, labeling, type of grid, and multiple graph functions).

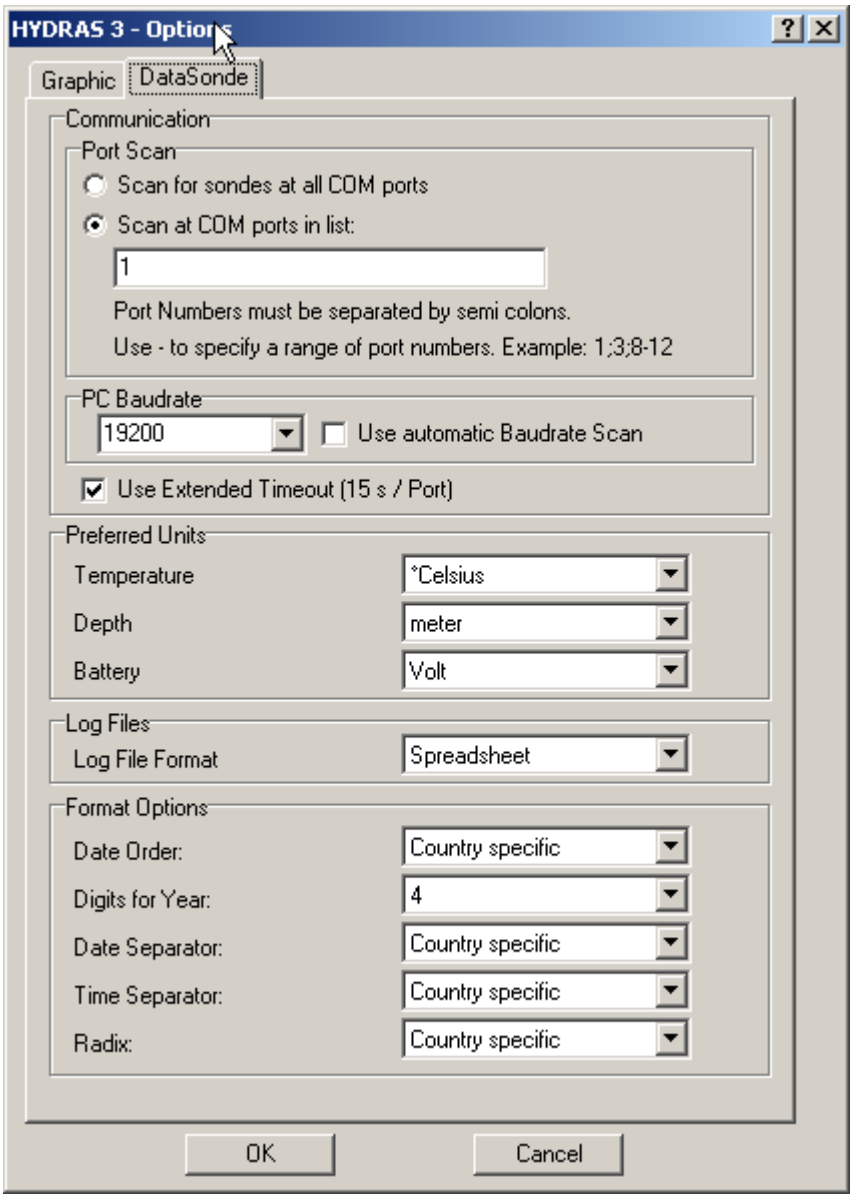
Up to six selected parameters can be displayed, with different colors and an individual axis range for every sensor. In the graphic options (F2), the user can select if every parameter has its own vertical axis displayed or that only 2 vertical axis are used (one left, one right).



2.2.8.2 DataSonde Tab

The user is able to define which serial ports to scan for sondes using the Options screen (**F2**). Hydras 3LT can be set to scan either all ports or only those ports indicated in the ports list. A default PC baud rate can also be set. An extended timeout can be used when the user is connecting to older Series 4a sondes, typically those built before 2002. If a user is having difficulty connecting to a sonde, it is recommended that they set the Communication screen to Auto Scan (all serial ports), check the automatic baud rate scan, and use the extended timeout.

The DataSonde tab is used to select the PC baud rate (1200, 2400, 4800, 9600, or 19200), measurement units (Celsius, Fahrenheit, Kelvin, depth, and battery voltage), log file formats (spreadsheet or printable), and format options such as date order, digits for year, date separator, time separator, and radix (decimal point or comma).



Section 3 Contact Information

U.S.A. Customers

By Telephone:
6:30 a.m. to 5:00 p.m. MST
Monday through Friday
(800) 949-3766 or
(970)669-3050

By Fax:
(970)461-3921

By Mail:
Hach Environmental
P.O. Box 389
Loveland, Colorado 80539-0389 U.S.A.
Ordering information by e-mail: sales@hydrolab.com

Ordering Information Required

- Account number (if available)
- Your name and phone number
- Purchase order number
- Brief description or model number
- Billing address
- Shipping address
- Catalog number
- Quantity

International Customers

To locate the representative nearest you, send an e-mail to: sales@hydrolab.com or contact:

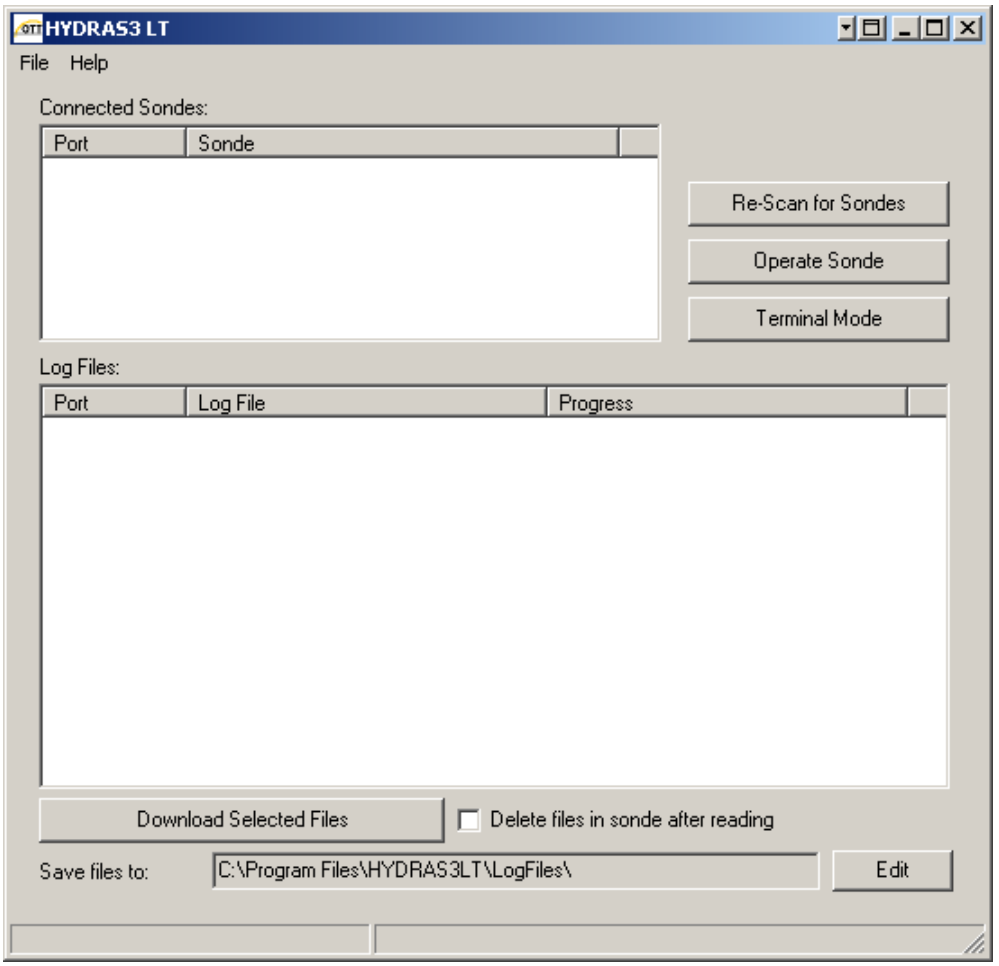
Hach Environmental World Headquarters; Loveland, Colorado, U.S.A.
Telephone: (970) 669-3050; Fax: (970) 669-2932

Technical and Customer Service (U.S.A. only)

Call 1–800–949–3766 or e-mail techsupport@hydrolab.com

Appendix A Troubleshooting

If Hydras 3LT does not automatically detect the Sonde when launched, the following screen will appear after a period of time:



Note: *For some users with more than one active serial port, it will take some time for Hydras 3LT to try to auto-detect sondes on all ports. It may take up to 30 seconds per active serial port to do the auto-scan.*

If the sondes is not automatically detected, press the **RE-SCAN FOR SONDES** button. If communication is still not established after several attempts, try the following:

Verify the Hardware.

1. Check power cables and connections:

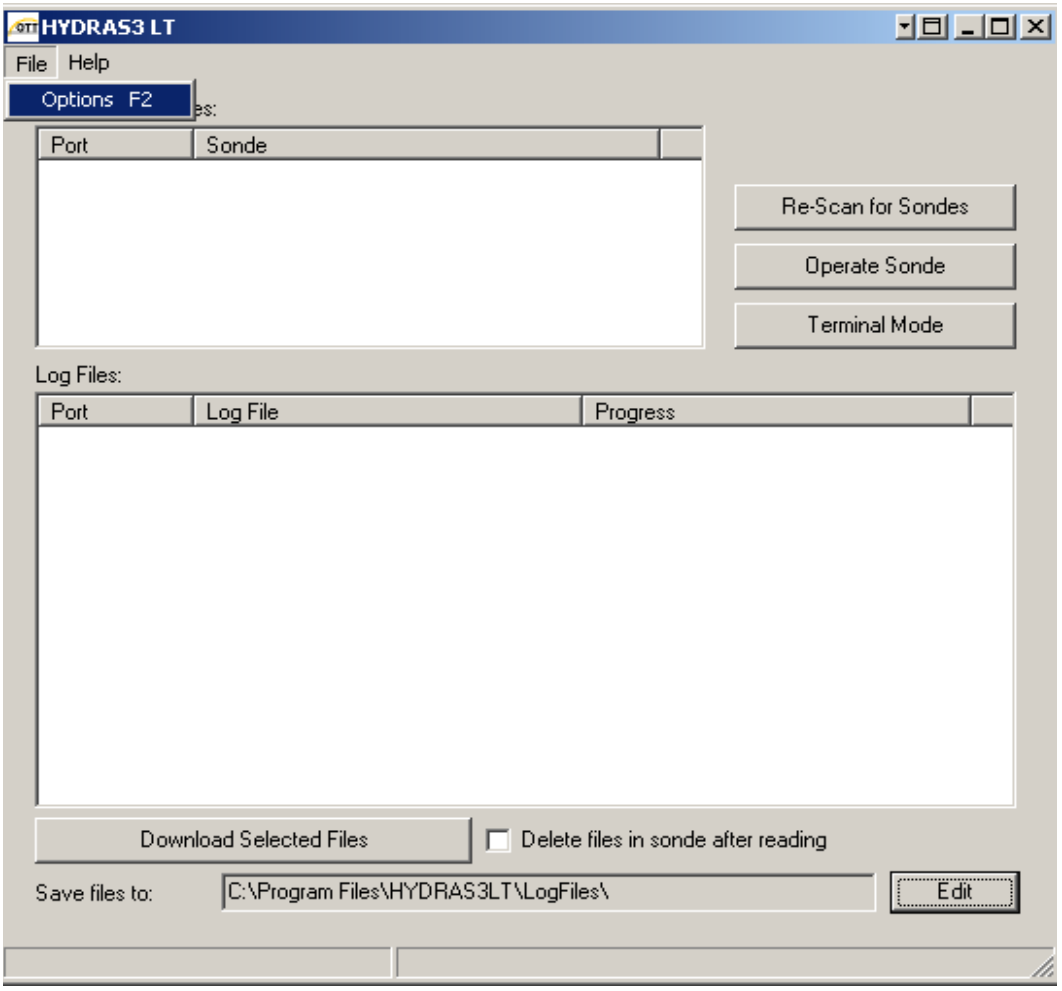
    a. Verify that your PC and multiprobe are properly connected to the wall outlet or external battery if used.

2. Verify that the input voltage to the multiprobe is between 7V and 14V.

3. If your multiprobe is equipped with an internal battery pack, check the batteries' polarity and voltages.

Verify the Hydras3LT Communication Settings.

1. Select File>Options from the Hydras 3LT Connection Screen.



2. If the Sondes/PC baud rate and COM port are known, disable the COM Port and baud rate auto scans and set Hydras3LT to use the known values. This requires Hydras 3LT to concentrate scan activities on only the serial ports of interest.

3. In some cases, extending the connection timeout from 10 to 15 seconds, will improve the connection procedure. This option allows time for additional retries. It is normally disabled to decrease the time taken to scan for a sonde.