VW Quattro Logger

52614099

This equipment should be installed, maintained, and operated by technically qualified personnel. Any errors or omissions in data, or the interpretation of data, are not the responsibility of Durham Geo Slope Indicator (DGSI). The information herein is subject to change without notification.

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Contents

Introduction

The Quattro Logger

The VW Quattro Logger is a compact datalogger designed to monitor up to four VW sensors, such as piezometers, crackmeters, strain gauges, or displacement sensors.

The Quattro Logger Manager software for Windows is used to program the Quattro Logger and also to retrieve readings that the logger has recorded.

Chapters in this Manual

Connecting to the Quattro Logger: Explains how to connect the Quattro Logger to your PC.

Setting Up the Logger: Explains how to set reading intervals and other functions of the Quattro Logger.

Connecting Sensors: Explains how to connect a sensor to the logger and start data logging.

Real-Time Readings: Explains how to view sensor readings in a real-time environment.

Retrieving Readings: Explains how to retrieve data from the logger and save it on your PC.

Appendix: Explains how to intall the Manager software, install the USB drivers and also includes advice on troubleshooting.
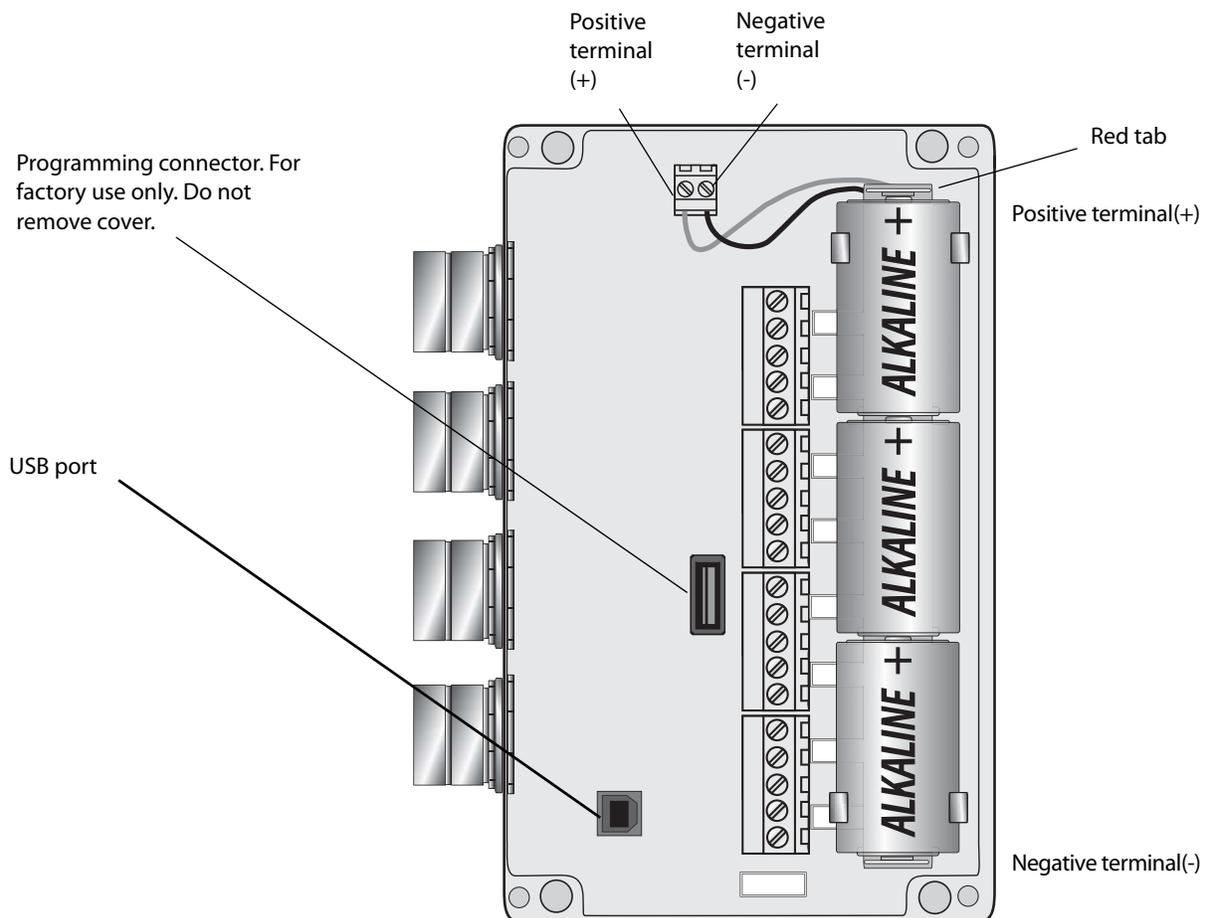
Connecting to the Quattro Logger

Overview
: This chapter tells how to connect a PC to the Quattro Logger using a USB cable.

Install the Software
: Install the Manager software prior to connecting the Quattro Logger to your PC. See instructions in Appendix A.

Install the Batteries
: The Quattro Logger requires three D-cell batteries. Alkaline batteries normally provide about three months of service. Actual battery life depends on the temperature, reading rate, and how frequently the data is retrieved.

1. Connect the wires of the battery holder to the terminal post, if necessary. View the diagram inside the cover for terminal polarity.

2. Insert the batteries as shown in the battery holder.

3. The Quattro Logger will power up.

Positive terminal (+)

Negative terminal (-)

Red tab

Positive terminal(+)

Programming connector. For factory use only. Do not remove cover.

USB port

ALKALINE +

ALKALINE +

ALKALINE +

Negative terminal(-)

Setting up the Logger

Preparations
1. Check that the Quattro Logger's batteries are in place.

2. Connect the Quattro Logger to the PC.

Launch
VW QL Manager
3. Click on "Start > Programs > VW QL Manager" to launch the program. Once a connection to the VW Quattro Logger has been established, the main menu will appear.

Edit Settings: Logger date / time, logging schedule, sensor id, cal. type, sweep, temp type and coefficients.
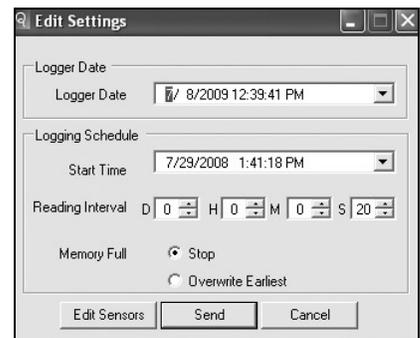
Check Readings: Read and display real-time sensor readings.

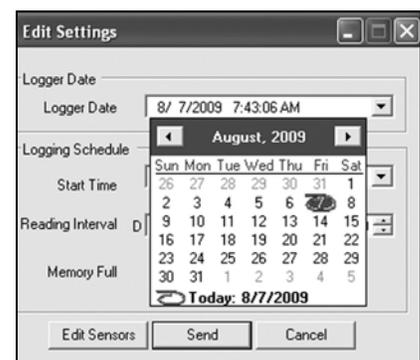**Retrieve Readings:** Retrieve logged sensor data in either .csv or Campbell Scientific format (.dat).

Exit: Exit the VW Quattro Logger program.

Edit Settings
4. Click "Edit Settings." The Manager program displays the settings screen to change logger date and time, setup the logging schedule and to edit sensor data.
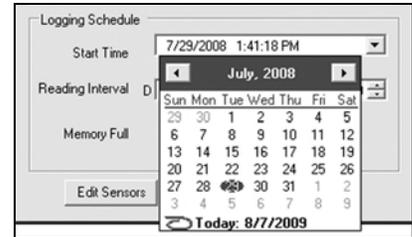
Check the Logger Date to make sure the date and time are correct. This sets the Quattro Loggers internal clock. Clicking on either the date inside the field or the drop-down arrow will open a calender to select the correct month, day and year. Click on the time to make any changes within that field. Clicking on "Today" will match the PC's clock.

Logging Schedule

The logging schedule is applied to all four channels.

Start Time: The start time defines the time at which the Quattro Logger takes its first reading. If the start time has already passed, the logger will take its first reading after the USB cable has been disconnected.
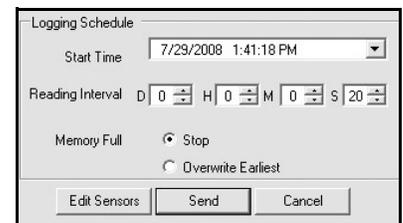

Set the date and time that logging should begin. It is best to set minutes and seconds to 00.

The Quattro Logger ignores any start time that is in the past. Instead, it starts logging the instant the USB cable is disconnected. This arbitrary start time may result in undesirable time stamps for your data, so it is best to set the start time in the future.

Clicking on the drop-down arrow will open a calender to select the correct month, day and year. Click inside the date / time field to make any changes within that field.

Reading Interval: The reading interval controls how often readings are taken. There is a separate field for entering the Day (D), Hour (H), Minute (M), and Second (S) for reading intervals. For example, if you enter a "1" in the

"Hours" field, the Quattro- Logger will take one reading every hour, with the first reading taken according to the start time setting. The shortest valid interval is 20 seconds (default). The longest interval is 7 days.The reading interval can be adjusted using the up/down arrows next to each box.

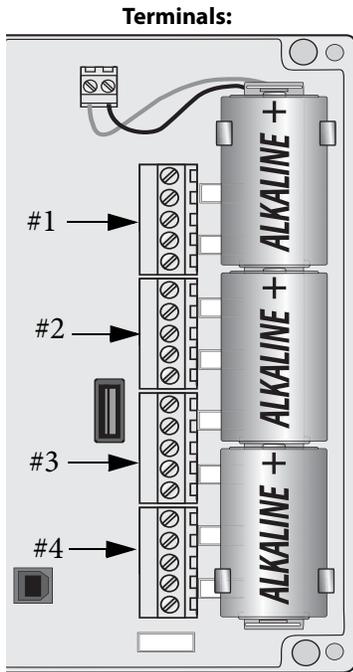 **Memory Full:** When the Quattro Logger's memory is full there are two options available:

1. Stop storing readings.

2. Overwrite the earliest reading with the current reading.

Edit Sensors

Note: Sensor calibration sheets will be needed to complete this section.

Click on "Edit Sensors". A screen similar to the one below will open.

	Terminal	Sensor ID	Serial #	Cal Type	Coefficients	Sweep	Temp Type
▶	1	Sensor ID 1	111111	ABC ▾	Set	C ▾	RTD ▾
	2	Sensor ID 2	123456789	TI ▾	Set	A ▾	RTD ▾
	3	Sensor ID 3	333333	TI ▾	Set	C ▾	Thermistor ▾
	4	Sensor ID 4	444444	TI ▾	Set	C ▾	Thermistor ▾

Back

Terminals:

#1 →
#2 →
#3 →
#4 →

Terminal: One of the four terminals (See illustration on left).

Sensor ID: Enter a name (Max. 16 char.) for the sensor.

Serial #: Enter the serial number of the sensor. This is a required field (max. 16 char.).

Cal Type: Choose ABC or TI factors to convert Hz readings to kPa or psi. TI factors integrate temperature readings to automatically correct for temperature effects.

Coefficients: Click "Set" to enter calibration coefficients (factors) for each sensor. Be sure to check that serial numbers match those on the calibration sheet. Click "Close" when finished.

The Manager program applies these factors to readings that it retrieves from the Quattro Logger. The resulting data file will contain both the original Hz values and also the calculated values.

	Serial #	C0	C1	C2
▶	111111	0.000000E+000	1.000000E+000	0.000000E+000

Close

Sweep: Choose a sweep frequency that matches the frequency range of your sensor. "C" is the most commonly used sweep. See the table on the next page to find the sweep frequency suggested for your sensor.

Temp. Type: Choose the temperature sensor type. Most VW sensors use thermistors. This information can be found on the calibration sheet.

Important: Make a note of terminals and corresponding serial numbers. This information will be needed when you connect sensor cables to the logger.

Terminal	Serial number
1	12345
2	67890
4321	54321
4	09876

Sensors and Sweeps

Locate your sensor by name or part number. Then find the appropriate sweep in the same row. In general, it is best to use the lowest sweep range that covers the sensor frequencies.

Sensor Name	Required Sweep
Crackmeter	Sweep C. If necessary, try sweep B.
Displacement Sensor, Extensometer	Sweep C. If necessary, try sweep B.
Jointmeter, Mass Concrete	Sweep C. If necessary, try sweep B.
Jointmeter, Submersible	Sweep C. If necessary, try sweep B.
Piezometer	Sweep C
Rebar Stressmeter	Sweep C. If necessary, try sweep B.
Settlement Cell, 20 psi	Sweep C. If necessary try sweep B.
Settlement Cell, 50 or 100 psi	Sweep C
Strain Gauge, Arc-Weldable	Sweep B. If necessary, try Sweep A
Strain Gauge, Embedment	Sweep B. If necessary try sweep A
Strain Gauge, Concrete Surfaces	Sweep B. If necessary, try Sweep A
Strain Gauge, Spot-Weldable	Sweep B for measuring compression Sweep C for measuring tension
Stress Station, VW Transducers	Sweep C
Total Pressure Cell	Sweep C
Total Pressure Cell, Radial	Sweep C
Total Pressure Cell, Tangential	Sweep C

Sweep Frequencies

If your sensor is not listed above, check your sensor calibration sheet to find the lowest and highest frequencies in the calibration. Then choose the sweep that is closest to those frequencies.

Sweep	Starting Freq	Ending Freq
Sweep A	450	1125
Sweep B	800	2000
Sweep C	1400	3500
Sweep D	2300	6000

Connecting Sensors
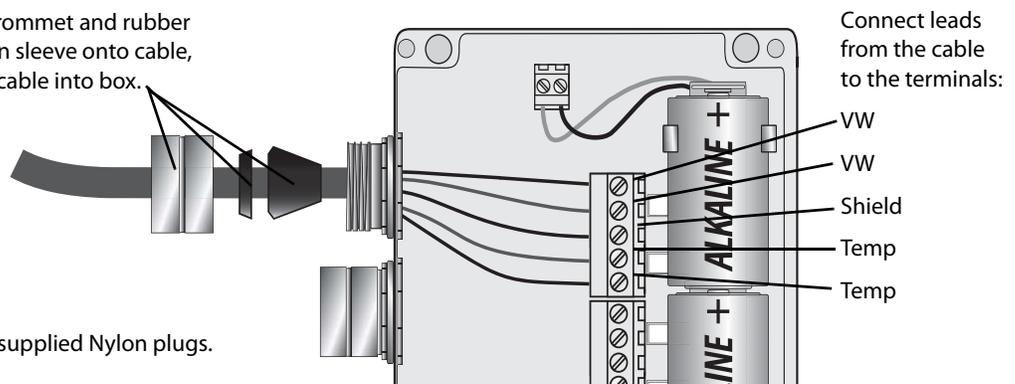
Overview
1. Connect the sensors to the Quattro Logger.
2. Insert new batteries, if necessary.
3. Check the Quattro Logger's settings.
4. Verify operation using "Check Readings" (Optional).

Connect the Sensor
1. Identify sensors and signal cables. There is a serial number tag on every signal cable.
2. Remove the Quattro Logger's lid.
3. Insert cable through the cable gland: remove the nut, the nylon washer, and the rubber compression sleeve. Slide the nut, nylon washer, and rubber compression sleeve onto the sensor's signal cable.
4. Connect the sensors to the proper terminals, referring to the table that was created in the last chapter. Use wiring diagram below. There is also a wiring diagram located inside the logger.

Function	Wire Color	Alt Wire Color
VW	Orange	Red
VW	White & Orange	Black
Shield (Drain)	Bare wire	Bare wire
Temperature	Blue	White
Temperature	White & Blue	Green

5. Gently pull on the wires to check the connection, then tighten the gland nut.

Slide nut, grommet and rubber compression sleeve onto cable, then insert cable into box.

Connect leads from the cable to the terminals:
VW
VW
Shield
Temp
Temp

Note:

Plug all unused ports with supplied Nylon plugs.

6. (Optional) Connect PC to check settings and verify readings (See next chapter).
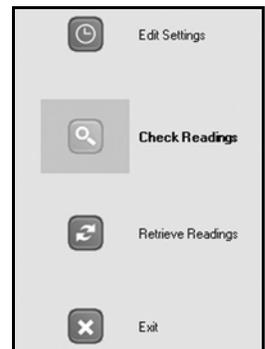7. Disconnect PC and replace lid.

Real-Time Readings

Check Readings

Click on the Check Readings button in the main menu to view real-time readings.

Terminal: One of the four terminals in the logger.

Serial Number: The serial number of the sensor connected to that terminal.

Sweep: The sweep is available in this mode for testing. If you find a better sweep, go back to edit sensors to make the change.

Hertz: The current reading in Hertz.

Temp C: The temperature of the sensor in degrees C. If the temperature value is not reasonable, go back to the 'Edit Sensor" menu to change the temperature type.

Eng. Units: The current reading calculated using the coefficients and model entered in the Edit Settings menu.

Cancel: Click the "Cancel" button to abort and return to the main menu.
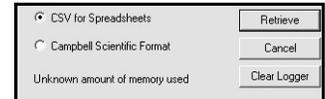
Retrieving Readings

Retrieving Readings

Retrieval time will increase with the number of stored readings in the VW Quattro Logger. Minimize retrieval times by regularly clearing the Quattro-Loggers memory after you collect the readings.
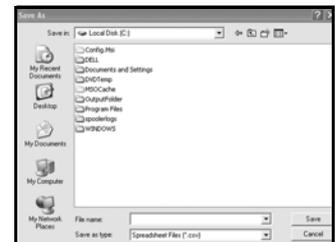
1. Connect the logger to your PC and start the Manager program.

2. Click "Retrieve Readings". A dialog will appear.

3. Choose "Format" and select which format you want to save the data in. Select "CSV for Spreadsheet" or "Campbell Scientific Format".
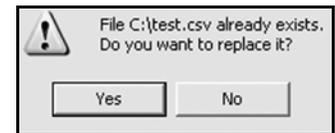

4. Click the "Retrieve" button. Choose a location and enter a file name then click "Save". You will be prompted to choose the file destination and file name.
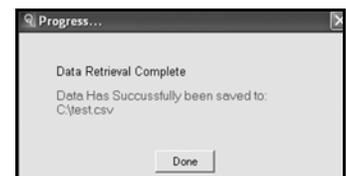
5. Specify the location for the file.

If the file already exists, click "Yes" to over-write the existing file or click "No" to return to the menu and save the file under another name.

6. The transfer will begin and a progress bar will appear.

7. After the transfer is complete a screen will appear similar to the one shown. Notice it will also display the path where the file is saved.

8. Click "Done".

Clearing Memory

Back: Click back to return to the main menu.

Clear Logger Memory: Select to erase all the loggers memory. You will be given a prompt to cancel this procedure if selected in error. Clicking "Cancel" will abort the operation and return you to the main menu.

Appendix A

Installing the Manager Software

The Manager program is used to program the Quattro Logger and to retrieve stored data. You can download the most recent version of the program from www.slopeindicator.com or install the program from a resource CD.

Installing from the Web

If you have a good internet connection, we recommend that you download the Quattro Logger Manager program. The Slope Indicator web site always has the most recent version. If you don't have a good internet connection, install the software from a resource CD as instructed in the following section.

1. Start your internet browser and type www.slopeindicator.com in your browser. When the web site appears:

2. Click on "Downloads", then click on "Software".

3. Read the download instructions at the top of the page, then click on "Quattro Logger" to start the download.

4. Double-click on the downloaded file named "setupvwql.exe".

5. Follow on-screen setup instructions. Turn to page 11 and follow the instructions.

Installing the Manager from a Resource CD

If you don't have a good internet connection, it will be more practical to install the program from a resource CD.

1. Close all programs and insert the resource CD.

2. Click on "Downloads", then click on "Software".

3. Read the download instructions at the top of the page, then click on "Quattro Logger" to start the download.

4. Follow on-screen setup instructions. Turn to page 11 and follow the instructions.
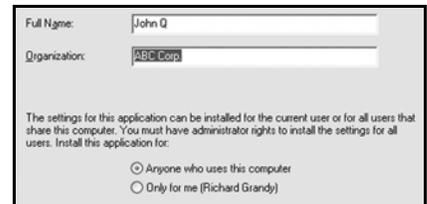
Installing the Manager Program

1. Close all programs and double-click setupvwql.exe to begin the installation process.
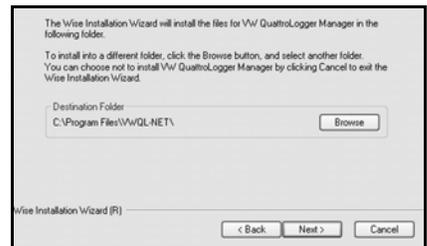
   If .Net framework 2.0 is not already installed on your computer you will be prompted to install it. Click "Next" and follow the prompts. When completed, the VW Quattro-Logger installation will begin.

2. Enter your name and company information, and select who will be allowed to use the program, then click "Next".

3. Click "Install" or browse to the path where you want to install the Quattro Logger Manager software.

4. The USB drivers are pre-installed. You may get a "Driver Not Verified" warning. Click "Continue Anyway" twice.

5. When the installation is complete, click "Finish".
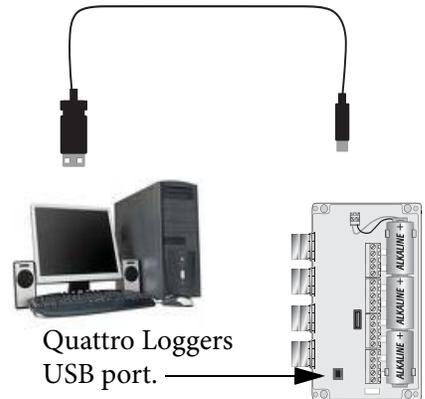
Updating the Manager Program

Follow the steps outlined below to make sure you have the most recent copy of the Quattro Logger software.

1. Start your internet browser and type www.slopeindicator.com in your browser. When the web site appears:

2. Click on "Downloads", then click on "Software".

3. Read the download instructions at the top of the page, then click on "Quattro Logger" to start the download.

4. If installing over an older version, you will be prompted to uninstall the old version first. Click "Yes" to uninstall. When finished, the new installation will continue.
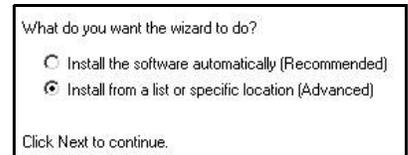
Installing the USB
Drivers

1. Connect the wires of the battery holder, if necessary, and insert three 'D' cell batteries in the Quattro Logger. Make sure they are oriented in the proper direction prior to insertion. The red terminal is positive (+) and the black terminal is negative (-).

2. Locate the USB port on your PC.

3. Connect the supplied USB cable to your PC and the Quattro Logger.

4. A window will open on your computer, letting you know it has found a new USB device. The first time the Quattro Logger is connected to your PC, USB driver's will need to be installed.
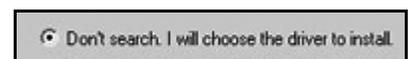
Quattro Loggers
USB port.

Note: Depending on your operating system, the USB drivers may automatically install without further prompting.

5. The Found New Hardware Wizard screen will appear, prompting you to choose to install the driver manually or automatically. Select "Install from a list or specific location" and click Next.
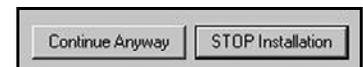
What do you want the wizard to do?
○ Install the software automatically (Recommended)
◉ Install from a list or specific location (Advanced)
Click Next to continue.

6. Click "Don't search, I will choose the driver to install". Click Next.

◉ Don't search. I will choose the driver to install.

7. Select "VW Quattro Logger USB", then click Next.

Model
Durham Geo Slope Indicator USB Device
VW Quattro Logger USB

8. The driver will start to install. During installation, you may get a screen saying the software has not been verified with Microsoft. Click "Continue Anyway"

Continue Anyway | STOP Installation

9. Click "Finish" after the installation has successfully completed.

Installing the Virtual Comm port

1. The Found New Hardware Wizard screen will appear, prompting you to choose to install the driver manually or automatically. Choose "Install from list or specific location", then click Next.

> What do you want the wizard to do?
> ○ Install the software automatically (Recommended)
> ● Install from a list or specific location (Advanced)
>
> Click Next to continue.

2. Next, click "Don't Search, I will choose the driver to install". Click Next.

> ● Don't search. I will choose the driver to install.
>
> Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

3. Select "VW QuattroLogger Virtual Comm Port", then click Next.

> Model
> Durham Geo Slope Indicator USB Device
> VW QuattroLogger Virtual Comm Port

4. The driver will start to install. During installation, you may get a screen saying the software has not been verified with Microsoft. Click Continue Anyway.

> **Hardware Installation**
>
> ⚠ The software you are installing for this hardware:
>
> VW QuattroLogger Virtual Comm Port
>
> has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
>
> **Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.**
>
> [Continue Anyway]   [STOP Installation]

5. Click "Finish" after the installaion is completed.

> **Completing the Found New Hardware Wizard**
>
> The wizard has finished installing the software for:
>
> VW QuattroLogger Virtual Comm Port

6. Insert the batteries as shown in the battery holder.

7. The Quattro Logger will power up.

Note:

> • Make sure the software and drivers have been installed prior to connecting your PC to the Quattro Logger.
> • The Quattro Logger must be powered before the USB cable is connected.
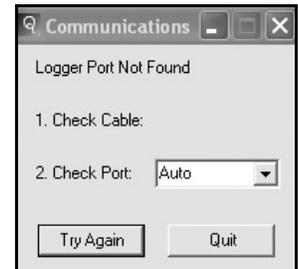> • The Quattro Logger will not log when connected to a PC.

Appendix C

Troubleshooting USB Connections

When troubleshooting, always make sure the most current version of the Quattro Logger software installed on your computer. To do this, go to www.slopeindicator.com.

"Logger Port Not Found"

If the USB cable becomes unplugged at any point while the Quattro Logger is communicating, the "Logger Port Not Found" screen will appear.

- Make sure the cables are firmly connected to logger and computer. Click "Try Again".

- Manually select the comm port by clicking on the pull-down arrow. If the operating system has detected the Quattro Logger, its comm port designation will be listed. Highlight the comm port to use and select "Try Again".

"Connection Failure"

This error will appear if the power becomes disconnected while checking readings.

1. Disconnect USB cable.

2. Remove the batteries from the Quattro Logger for 1 minute.

3. Reconnect the USB cable and click "Retry".

Unresponsive during data retrieval

If the Quattro Logger becomes unresponsive at anytime during data retrieval, a screen similar to the one at right will appear. If this happens, check your cable connections and click "Retry". Clicking "Cancel" will abort the data retrieval process. Clicking "Ignore" will _____.

Troubleshooting Tips:

- Make sure the software and drivers have been installed prior to connecting your PC to the Quattro Logger.

- The Quattro Logger must be powered before the USB cable is connected.

- The Quattro Logger will not log when connected to a PC.