

VW MiniLogger

52613399

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Introduction

The MiniLogger System The VW MiniLogger is a compact datalogger designed to monitor a single VW sensor, such as a piezometer, crackmeter, strain gauge, or displacement sensor.

MiniLogger Manager software is included with the VW MiniLogger. The software must be installed on a Windows PC. It is used to program the MiniLogger and also to retrieve the readings that the MiniLogger has recorded.

- Using the MiniLogger**
1. **Install the Manager Program:** This chapter tells how to install the software from a Resource CD or how to download it from the Slope Indicator website.
 2. **Connect MiniLogger to PC:** This chapter tells how to link the MiniLogger to the PC, either by serial cable or by radio.
 3. **Program the MiniLogger:** This chapter tells how to set reading intervals and other functions of the MiniLogger.
 4. **Start Data Logging:** This chapter tells how to connect a sensor to the logger, check settings, and verify proper operation of the logger.
 5. **Retrieve Data:** This chapter tells how to retrieve data from the logger.

Install the Manager Program

Introduction The Manager program is used to program the MiniLogger and to retrieve stored data. The program is on the Resource CD that is supplied with the recorder. Updates can be downloaded from www.slopeindicator.com.

Install from the Resource CD

1. Close all programs and insert the Resource CD.
2. Wait for your browser to start. If necessary, eject and reinsert the CD or start your browser, and navigate to the CD, and open `cdmenu.html`.
3. Choose Software.
4. Choose VW MiniLogger Manager 2.
5. A dialog appears. Choose "Open." On older browsers, choose "Run this program from its current location."
6. Follow on screen directions for the setup program.
7. Afterwards, you will find the manager program on your start menu under "VWMiniLogger 2" and on your hard disk under Program Files\VW MiniLogger 2.

Download Software Updates (Optional) The Manager program is updated from time to time. To download the most recent version of the program, visit slopeindicator.com

1. Start your internet browser.
2. Click in the address field, enter www.slopeindicator.com, and click Go.
3. When the website appears, click on Downloads.
4. Click on Software.
5. Read the instructions at the top of the page.
6. Click on "VW MiniLogger 2" to start the download.
7. The downloaded program is named "setupvwml2.exe." Double-click to start the installation program and follow on-screen instructions.

Start the Manager Program

1. Click on Start.
2. Choose Programs or All Programs.
3. Point at VW MiniLogger 2.
4. Double-click on VWMiniLogger 2.

Connect MiniLogger to PC

Overview This chapter tells how to power up the MiniLogger and connect the MiniLogger to the PC using either a serial cable or a radio.

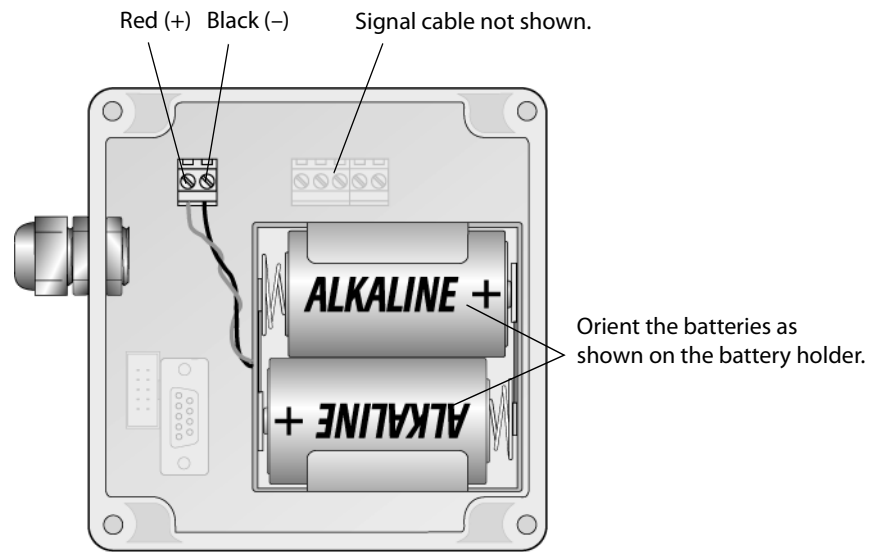
Serial Cable: The MiniLogger is supplied with a serial cable that connects between the serial ports on the PC and the MiniLogger (See page 4).

Radio: If your MiniLogger was purchased or retrofit with a Radio Lid, you can also make a wireless connection between the MiniLogger and the PC. A base station radio must be connected to the PC (See page 7).

Power Up the MiniLogger

The MiniLogger requires two D-cell batteries. Alkaline batteries normally provide about three months of service. Actual battery life depends on the temperature, the reading rate, whether or not a radio is used, and how frequently data is retrieved.

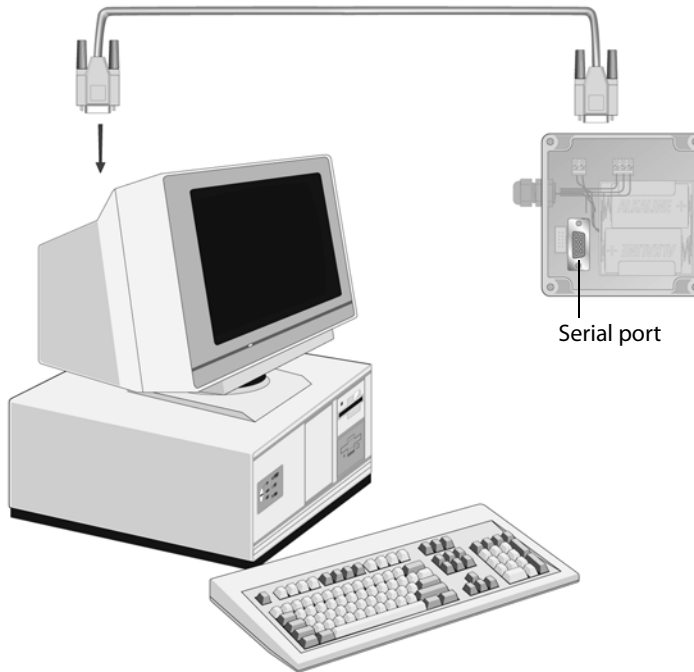
1. Connect the wires of the battery holder to the terminal post, if necessary.
2. Orient and insert the batteries as shown on the battery holder.
3. The MiniLogger takes a reading immediately and then waits for its next scheduled reading.



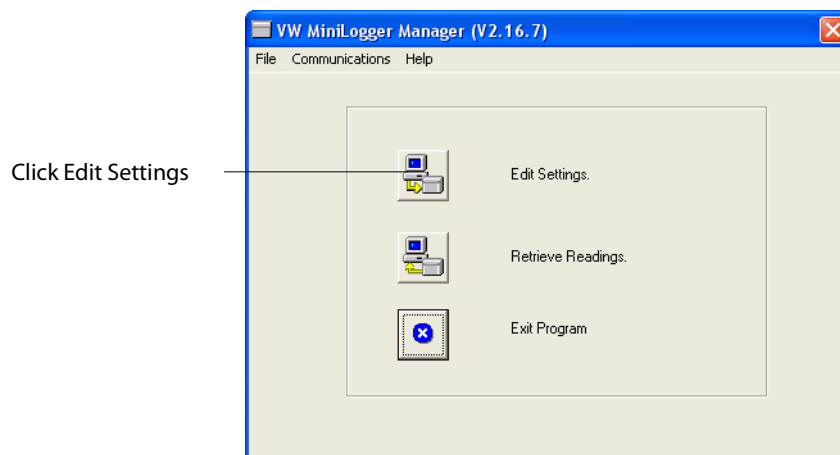
Connect by Serial Cable

A serial cable is supplied with the MiniLogger. It is a “modem cable” with straight-through wires. (Null-modem cables will not work).

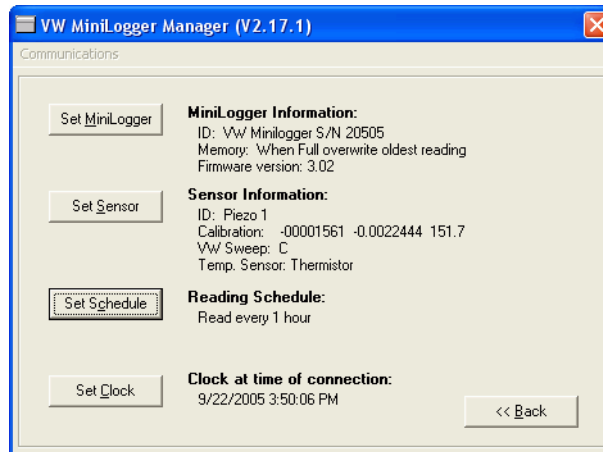
1. Find a serial port on your PC. Look for a 9-pin connector. Some laptops do not have have serial connectors. In that case, a USB to serial adaptor or a PC card is used to provide compatibility. See “No Serial Port?” later in this chapter.
2. Connect the interface cable to the PC’s serial port.
3. Connect the other end of the cable to the MiniLogger’s serial port.



4. Start the MiniLogger program.
5. Click on the Edit Settings button.



6. If you see a screen similar to the one below, you have successfully connected by serial cable..



Troubleshooting Serial Connections

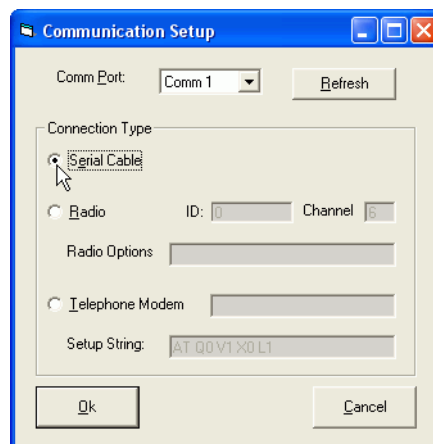
If you see an error message, click OK to clear the message. Then take one of the actions below, and try again.



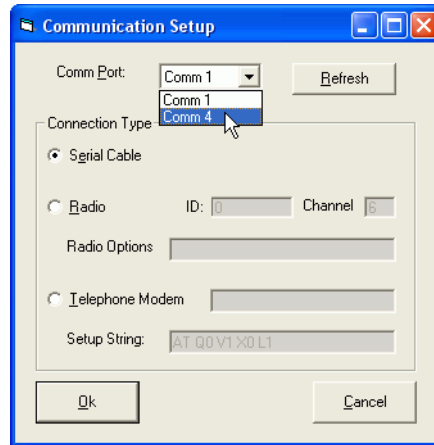
- Check that the cables are firmly connected to MiniLogger and computer.
- Check the connection type, as explained below.
- Change the comm port, as explained on the next page.

Check Connection Type

1. Click “Communications” on the menu bar.
2. Confirm that “Serial Cable” is selected. If it was not selected, select it, click OK, and try connecting again.



-
- Change the Comm Port
1. Click “Communications” to display the Communications Setup dialog.
 2. Click the Refresh Button.
 3. Choose a different Comm port from the drop list and click OK.



4. If there is only one choice on the Comm Port list, then some other device probably has control of the serial port.

Do you have a PDA? Sometimes PDA synchronization software takes control of the serial port. In this case, turn off the PDA program, and then try connecting to the MiniLogger again.

No Serial Port? Some computers have only USB ports . In this case, you must use a USB-to-Serial adaptor or a PC card (PCMCIA card) to connect to the MiniLogger.

USB to Serial Adaptors USB-to-serial adapters are less expensive and are available in computer stores and office-supply stores. In the package, you will find driver software and instructions. Follow the instructions exactly.

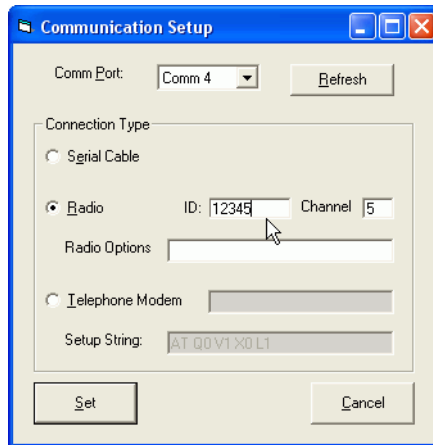
If the adapter does not work when you try it, download and install the latest driver from the manufacturer's website. There are usually instructions with the adaptor that tell how to do this.

PC Card Serial Port If your computer has a PC Card slot, you can use a PC card to provide a serial interface card. PC cards are typically a little more expensive than the adaptors above, but the PCMCIA standard is fairly mature and the card is likely to work well.

Connect by Radio	Using a base station radio and a radio-equipped MiniLogger, you can make a wireless connection between the PC and the MiniLogger. Once the connection is established, the Manager program works just as if the PC and MiniLogger were connected by a serial cable.
Radio MiniLogger	<p>The radio is embedded in the MiniLogger's lid and is connected to the MiniLogger base by a cable. One end of the cable plugs into the MiniLogger's serial port. The other end of the cable plugs into the radio lid.</p> <p>Each radio lid has an ID and a Channel number. This information will be needed to make the wireless connection. You can find the ID and channel on a label afixed to the top of the radio lid.</p>
Base Station Radio	<p>The base station radio is connected to the PC via a USB cable. One end of the cable plugs into the radio and the other end of the cable plugs into a USB port on your PC. As with most USB devices, you must install a software driver to make the unit work. This is explained below.</p> <p>The base station radio is powered through the USB cable. If you are using a portable PC, consider that its battery will be powering the radio as well as the PC itself. If you are away from mains power, you may find it necessary to buy a car charger for the PC.</p>
Install the Base Station Software	<p>You must install two USB drivers to allow the PC to operate the base station radio. The instruction sheet provided with the radio tells how to do this. A short summary is given below:</p> <ol style="list-style-type: none">1. Start the PC.2. Connect the base station radio to the PC via its USB cable. The PC will detect the radio as a USB device.3. An installation wizard appears. Follow the prompts and insert the CD as requested. Windows installs the driver and prompts you to click Finish.4. After you click finish, the installation wizard appears again. Follow the prompts and allow Windows to install the second driver from the CD. Finally, click Finish.

Set the Base Station Radio

1. Click “Communications” to display the Communications Setup dialog.
2. Refresh the list of Comm ports, then choose one. Try the highest number first (The Manager program will remember your choice).
3. Choose Radio for connection type. The Manager program will remember this next time.
4. Enter the ID and Channel of the Radio MiniLogger that you want to call.
5. Click Set. The base station radio is now ready to call the MiniLogger.

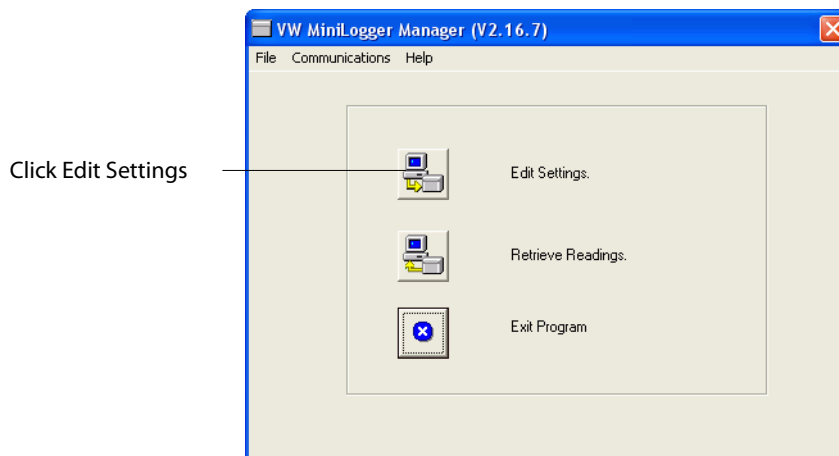


Note: The communication setup dialog will close when the base station is ready to communicate. If dialog does not close, the base station is not ready:

- Check that the base station is powered. It should show three green lights.
- Try a different comm port.

Check the Connection

1. Start the MiniLogger Manager program.
2. Click on on the Edit Settings button.

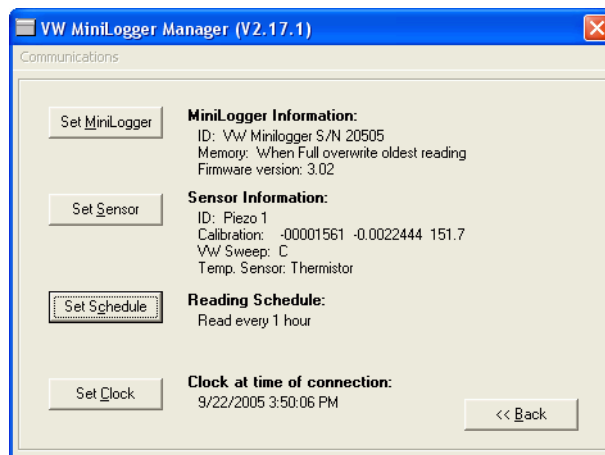


3. You should see lights on the base station flicker, and then the main screen will appear.

Program the MiniLogger

- Preparations**
1. Check that the MiniLogger's batteries are in place.
 2. Connect the MiniLogger to the PC.

- Edit Settings**
1. Click "Edit Settings." The Manager program displays the settings screen.
 2. To edit a setting, click a button on the left. For example, click on Set Schedule to set the MiniLogger's reading schedule. Settings are explained below.



- Set MiniLogger** Click "Set MiniLogger."

MiniLogger ID: Enter an identifier for the MiniLogger.

When Logger Memory is Full: Choose either stop recording or continue recording.

In the Stop mode, the MiniLogger stops recording when its memory is full. It will not record again until you retrieve the data and clear its memory.

In the Continue mode, the MiniLogger continues recording readings when its memory is full. It overwrites the earliest readings with the most recent readings.

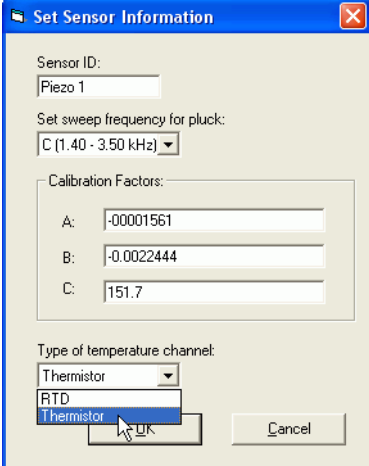


Set Sensor

Click the Set Sensor button to enter the sensor serial number, the sweep frequency, and sensor calibration factors.

Sensor ID: Enter the serial number of the sensor.

Sweep Frequency: Choose a sweep frequency that matches the frequency range of your sensor. "C" is the most commonly used sweep. The table on the next page suggests sweep frequencies for various sensors.



Calibration Factors: The MiniLogger stores readings in Hz. If you enter calibration factors, the Manager program can apply them when it retrieves the data. The data file will then contain both the Hz readings and calculated readings).

Enter values for A, B, and C. The values are unique for each sensor and must be obtained from the sensor calibration record. (Do not use IDA_ABC factors). Factors are applied as follows:

$$\text{Reading in engineering units} = AX^2 + BX + C$$

where X is the Hz reading, and A, B, and C are factors from the calibration record.

To obtain a different engineering unit, multiply the A, B, and C factors by a conversion value to obtain a new set of A,B and C factors. For example, to convert ABC factors for psi to kPa, multiply each factor by 6.8947. Then enter the three new values into the ABC fields.

RTD or Thermistor: Choose RTD or Thermistor.

Sensors and Sweeps Locate your sensor by name or part number. Then find the appropriate sweep in the same row.

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

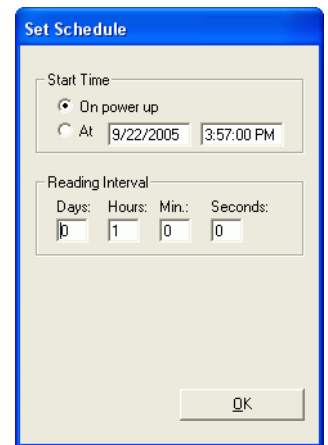
Set Schedule

Click on the “Set Schedule” button to choose the start mode and reading interval. Then click OK.

Start Time: You can choose to have the MiniLogger start when batteries are inserted or you can choose a specific time to start.

If you choose “On power up,” the MiniLogger uses the moment that you insert the batteries as the base time for subsequent readings.

If you choose “At” and enter a time and date, the MiniLogger will use the time and date as the base time for subsequent readings.

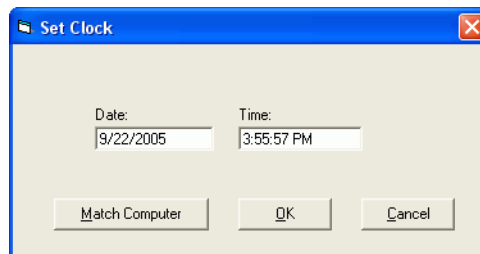


The default start time is always 2 minutes in the future according to the MiniLogger’s clock. Edit this as needed, but be sure to specify a start time that is in the future. (If you specify a start time that is in the past, the MiniLogger will not wake up to take readings).

Reading Interval: The reading interval controls how often readings are taken. For example, if you enter a 1 in the “hours” Hours field, the MiniLogger will take one reading every hour, with the first reading taken according to the Start Time setting. The shortest valid interval is 2 seconds. The longest is 7 days.

Set Clock

Click on the “Set Clock” button to set the MiniLogger’s clock. To synchronize the MiniLogger clock to your computer’s clock, click the “Match Computer” button. If you want to set a different time, click in the date and time fields, type in values, and click OK.



Note 1: The date display format is controlled by the short date setting in Windows (Control Panel > Regional Settings > Date).

Note 2: Both the MiniLogger and the Manager program use four-digit years internally.

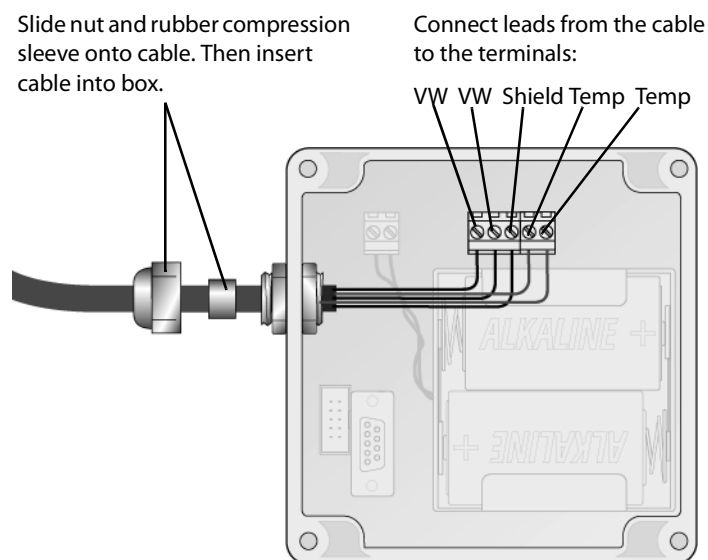
Start Data Logging

- Overview**
1. Connect the sensor to the MiniLogger.
 2. Insert new batteries, if necessary.
 3. Check the MiniLogger's settings.
 4. Verify operation using terminal mode (Optional).

- Connect the Sensor**
1. Remove the MiniLogger's lid.
 2. Prepare to insert cable through the cable gland: remove the nut, the nylon washer, and the rubber compression sleeve. Earlier models of the MiniLogger do not have the nylon washer. Slide the nut, nylon washer, and rubber compression sleeve onto the sensor's signal cable
 3. Insert the cable through the cable gland and connect the wires the the MiniLogger's terminals as explained below.

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

4. Pull gently on the wires to make sure they are properly connected.



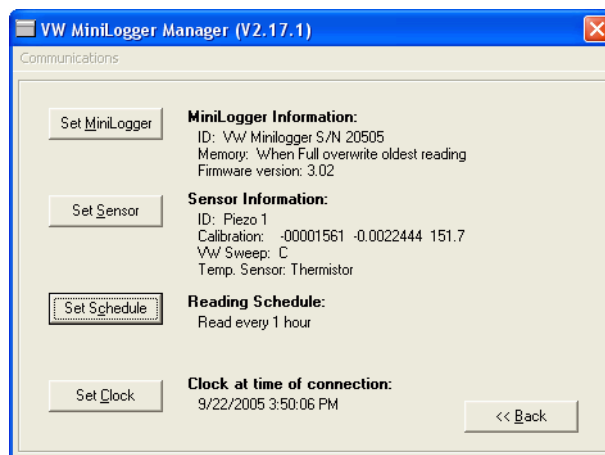
Insert Batteries

The MiniLogger requires two D-cell batteries. Alkaline batteries normally provide about three months of service. Cold temperatures and radio usage will shorten battery life.

1. Check that wires from the battery holder are securely connected to the MiniLogger's terminal post.
2. Orient and insert the batteries as printed on the base of the battery holder.

Check Settings

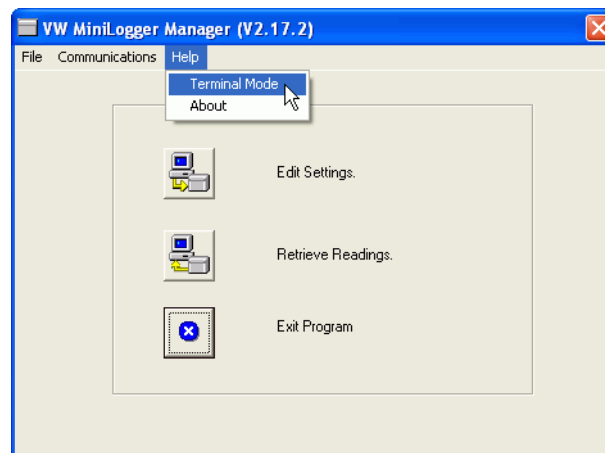
1. Connect the MiniLogger to your PC.
2. Start the Manager program
3. Click on the Edit Settings Buttons
4. Observe the settings displayed on the control panel. Make any necessary modifications. Then click the Back button.



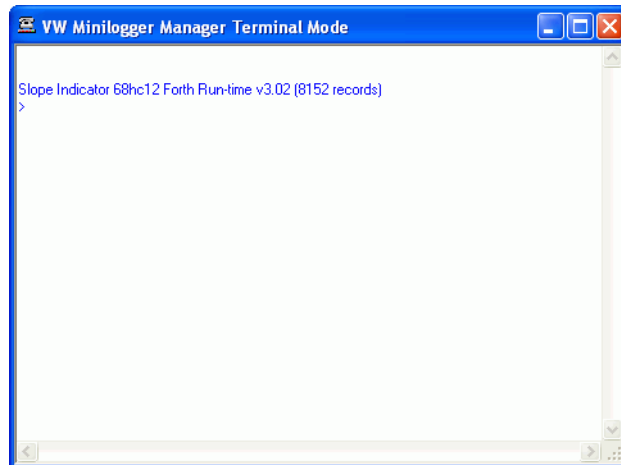
Verify Operation

While the MiniLogger is still connected to the PC:

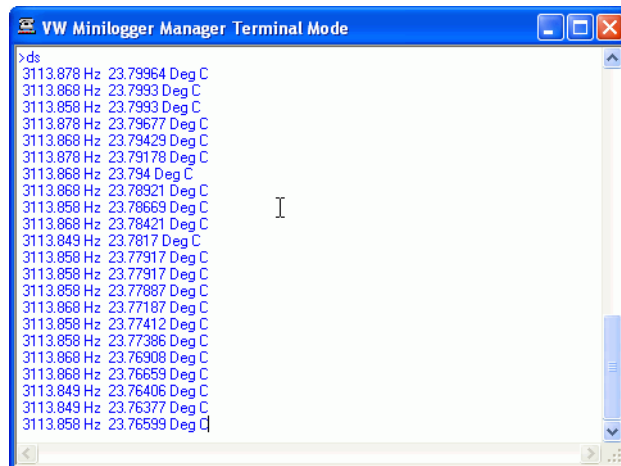
1. Click Help and choose Terminal Mode, as shown below.



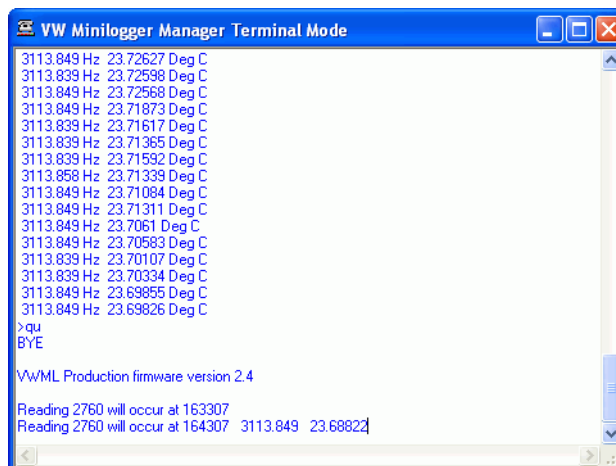
2. A blank terminal screen appears. Press Enter a number of times. The MiniLogger will respond, as shown below:



3. Enter "ds" and press Enter. The MiniLogger will take display readings continuously. Check the readings. You'll see a Hz value and a temperature value. If they look good, the system is working properly.



4. Enter "qu" to quit this mode. The MiniLogger says "Bye".

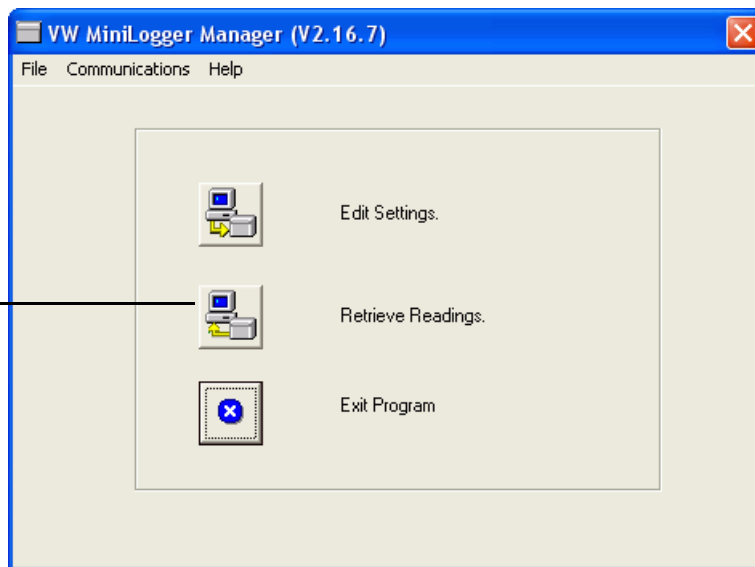


5. Exit terminal mode and the Manager program. If the MiniLogger box is open, disconnect the cable, and carefully screw down the lid.

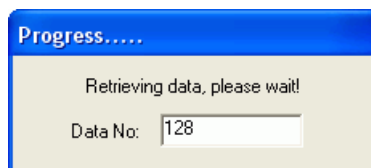
Retrieve Data

- Retrieving Readings
1. Connect the MiniLogger to your PC and start the Manager program.
 2. Click “Retrieve Readings.”

Click this button to retrieve readings.



3. The MiniLogger reports its progress.



4. The MiniLogger Manager displays time-stamped readings both in Hz and engineering units.

Click on Save to store the readings on your computer, as explained below.

Click on Erase to clear the MiniLogger's memory to make room for new readings.

DataNo	RecTime	Hz	EngineeringUnit	Temperature
1753	29-Feb-00 1:29:49 AM	3067.664	27.57952	19.69203
1754	29-Feb-00 1:29:51 AM	3067.701	27.55496	19.81264
1755	29-Feb-00 1:29:53 AM	3067.73	27.5356	19.69203
1756	29-Feb-00 1:29:55 AM	3067.833	27.46695	19.77262
1757	29-Feb-00 9:30:01 AM	3066.845	28.12519	20.69694
1758	29-Feb-00 10:10:01 AM	3066.723	28.2065	21.25749
1759	29-Feb-00 10:12:01 AM	3066.657	28.2504	21.37956
1760	29-Feb-00 10:27:01 AM	3066.751	28.1878	21.65821
1761	29-Feb-00 10:36:01 AM	3066.779	28.16909	21.66016
1762	29-Feb-00 10:41:01 AM	3066.704	28.21902	21.73926
1763	29-Feb-00 10:46:01 AM	3066.507	28.35024	21.81934
1764	29-Feb-00 11:59:01 AM	3066.61	28.28162	22.29785
1765	29-Feb-00 12:23:01 PM	3066.469	28.37561	21.9795
1766	29-Feb-00 12:28:01 PM	3066.469	28.37561	22.66162

5. Click "Save" to display options for saving the readings. These options are explained on the next page.

Step 1: Choose a folder and a file name for the data.

Step 2: Choose all readings or a range of readings.

Step 3: Choose a format. The default .csv format is suitable for spreadsheets. The optional CR10 .dat format is useful when the MiniLogger is used to supplement a CR10 system.

Retrieving data from the MiniLogger does not erase the data from the MiniLogger. Be sure to erase the MiniLogger's memory.

Save readings to:

Save all readings.

Save a range of readings.

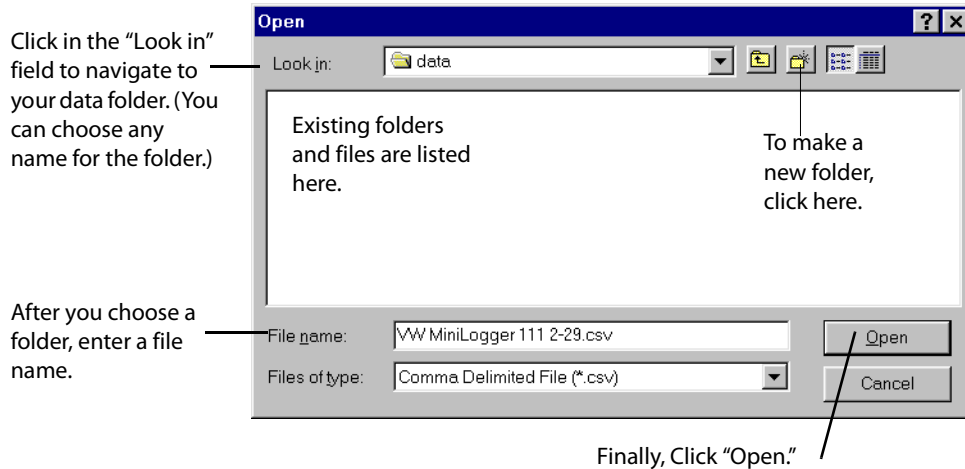
Range:

From: 29-Feb-00 12:23:47 AM

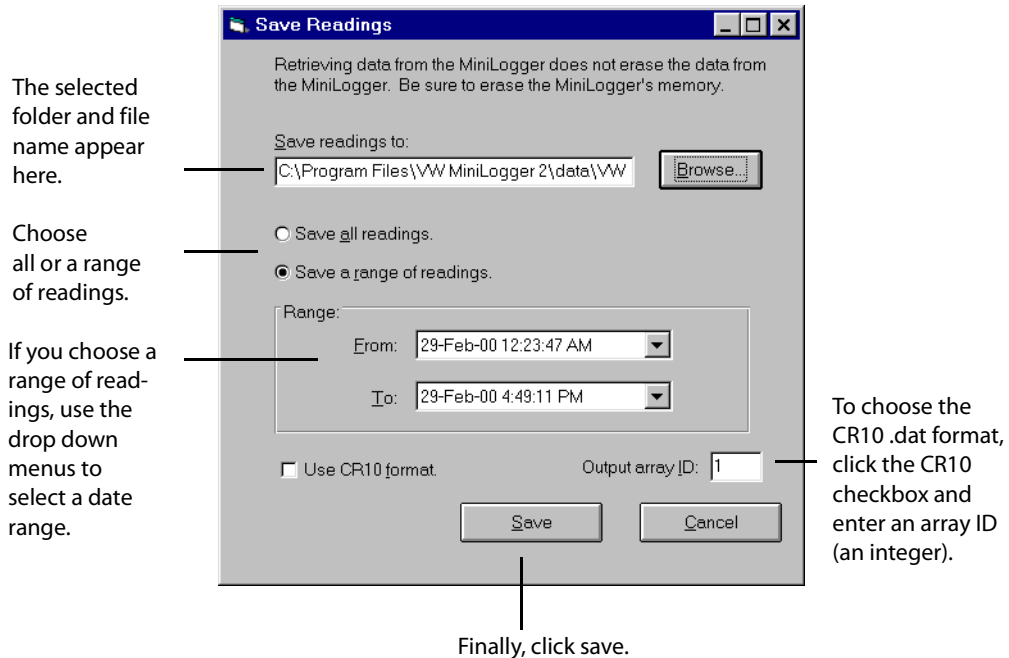
To: 29-Feb-00 4:49:11 PM

Use CR10 format. Output array ID: 1

Save readings to: Click the Browse button to specify a folder and a file name for the readings.

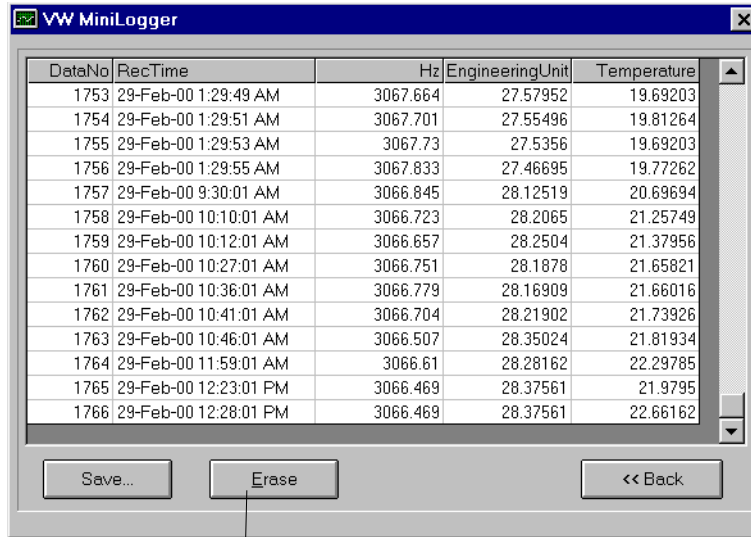


Retrieval Options Choose the range of readings that you want, the format (optional) and then click "Save."



Erase This is an important last step. After you retrieve readings from the MiniLogger, you must clear the DataMate's memory to make room for new readings.

1. Using your spreadsheet program or an ASCII file editor such as Notepad, check that the readings are safely stored on disk.
2. Return to the Manager program, click "Readings," and click the "Erase" button. Then click OK to confirm.



Click the "Erase" button, and then click OK to erase the readings in the MiniLogger.