VW Data Recorder

52613599

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 Slope Indicator Company. The information herein is subject to change without notification.

SLOPE INDICATOR

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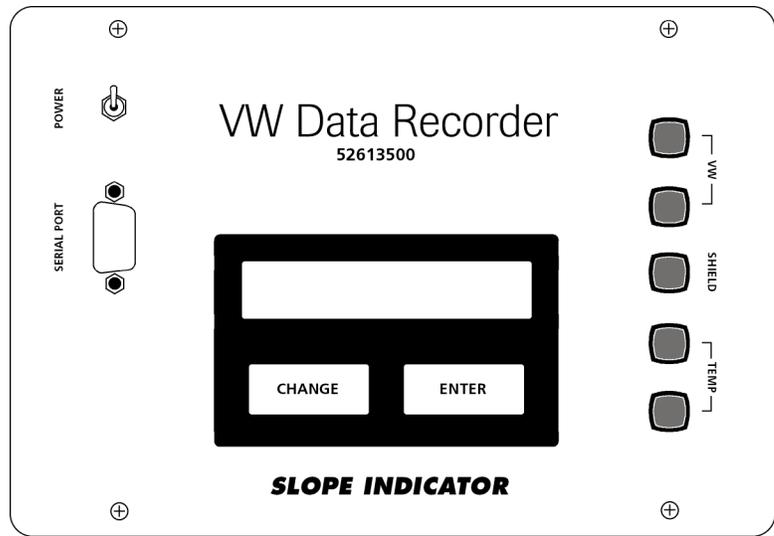E-mail: solutions@slope.com
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Contents

The VW Data Recorder

Introduction

The VW Data Recorder is a recording readout for vibrating wire sensors. The VW Data Recorder Manager program, which is supplied on CD with the Recorder, is used to transfer readings from the Recorder to a PC.

Controls & Connectors

Power Switch

The power switch toggles power on and off.

If no keys are pressed for a period of time, the Recorder goes into standby mode. To restore full power, press any key, or switch the Recorder off and on. When you are finished taking readings, switch the recorder off.

Serial Port and Serial Interface Cable

The serial port is used for communication with a PC. Use the supplied serial interface cable to connect the serial port on the Recorder to the serial port on your computer.

The cable is a standard "modem" cable that can be found at any computer supply store. Slope Indicator's part number for the cable is 50306869.

Controls & Connectors Continued

VW Data Recorder
52613500

POWER

SERIAL PORT

CHANGE   ENTER

VW

SHIELD

TEMP
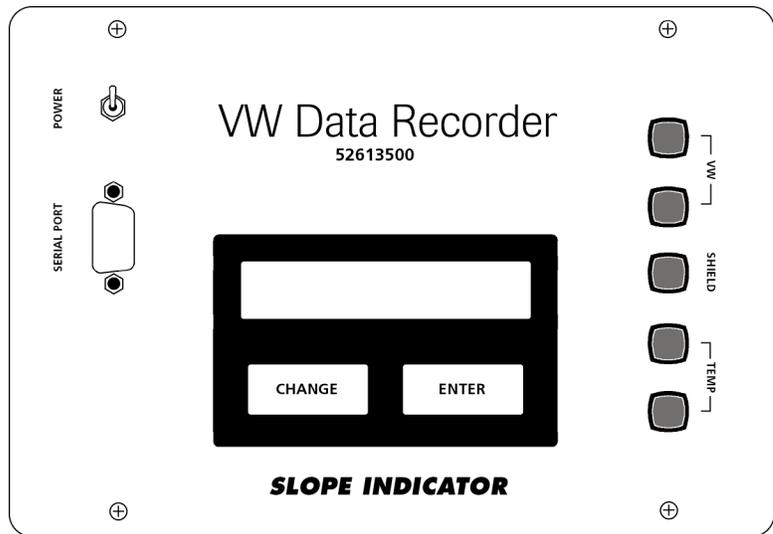
SLOPE INDICATOR

Binding Posts

Connect signal cable from the sensor directly to the binding posts on the right side of the front panel. The table below shows the wire colors for Slope Indicator's standard signal cable:

Binding Posts	Wire Color	Alt Wire Color
VW	Orange	Red
VW	White & Orange	Black
Temp	Blue	White
Temp	White & Blue	Green
Shield (Drain)	Bare wire	Bare wire

Optional Jumper Cable with Alligator Clips

If you have the optional jumper (52613550) with alligator clips, connect the jumper to the binding posts on the panel. Then connect the clips to the signal cable from the sensor.

Binding Posts	Jumper Wires	Clip Colors	Signal Cable
VW	Orange	Red	Orange
VW	White & Orange	Red	White & Orange
Temp	Blue	Black	Blue
Temp	White & Blue	Black	White & Blue
Shield (Drain)	Bare Wire	Green	Bare Wire

Keypad and Display

Change: Displays different options.

Enter: Accepts the option.

To show that an option is available, the Recorder displays a prompt and a colon (:). Examples of option prompts are:

Type:, Sweep:, and Save As:

When you see an option prompt, press the Change key to display the various options. When you see the option that you want, press Enter.

Batteries

The Data Recorder requires two D-cell alkaline batteries. The Recorder displays battery voltage when you switch it on. Replace the batteries when voltage falls below 2V:

1. Remove the four screws from the panel.

2. Place your hand on the panel, then turn the Recorder over, so that the panel drops out of the box to rest on your hand.

3. Remove the batteries from the battery holder and

4. Replace with fresh batteries. The battery holder indicates the proper orientation of the batteries.

Taking Readings

Overview The steps in taking a reading are:

1. Connect sensor signal cable to the recorder.
2. Choose frequency units and temperature sensor.
3. Choose a sweep frequency, if necessary
4. Observe the reading.
5. Record the reading.

Connect Signal Cable Connect signal cable from the sensor to the binding posts on the front panel. Connect the shield wire if the reading is unstable.

Strip off about 75 mm (3") of the outer jacket of the cable so that wires are long enough to connect to the posts. The table below shows wire colors for Slope Indicator's standard signal cables:

Binding Posts	Wire Color	Alt Wire Color
VW	Orange	Red
VW	White & Orange	Black
Temp	Blue	White
Temp	White & Blue	Green
Shield (Drain)	Bare Wire	Bare Wire

Choose Type Switch on the Recorder and press Enter. At the Type prompt, choose the appropriate frequency and temperature settings. Press Change to display a different combination. Press Enter to select the option that is displayed.

Hz + Thermistor: The usual choice for Slope Indicator sensors.

Hz2 + Thermistor: The displayed is actually $Hz^2 / 1000$.

VWSG: uStrain + Thermistor: Microstrain units for Slope Indicator's spot-weldable strain gauge. Not suitable for any other strain gauge. Use Hz or Hz^2 for other strain gauges.

Hz + RTD: For Slope Indicator sensors before 1998.

Hz2 + RTD: The value displayed is actually $Hz^2 / 1000$.

VWSG: uStrain + RTD: Microstrain units for Slope Indicator's spot-weldable strain gauge. Not suitable for any other strain gauge. Use Hz or Hz^2 for other strain gauges. If temperature reading is strange, try uStrain + Thermistor setting.

Choose a Sweep Frequency

By exciting the sensor with a sweep of frequencies rather than a single pluck, the Recorder decreases the chance of error due to harmonics. However, it is necessary to choose the correct sweep range.

Check your sensor calibration sheet to find the highest and lowest frequencies in the calibration. Then choose the sweep that includes those frequencies.

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

Typical sweep ranges for Slope Indicator sensors are listed in the table below. Note that most sensors work with sweep C:

Sensor Name	Part	Recommended Sweep
Crackmeter	5263602x, 5263604x	Sweep C or B.
Displacement Sensor, Extensometer	5263602x, 5263604x	Sweep C or B
Jointmeter, for Mass Concrete	52632260	Sweep C or B
Jointmeter, for Reinforced Concrete	52636124	Sweep C or B
Jointmeter, Submersible	526321xx	Sweep C or B.
Load Cell, VW	9130xxxx	Sweep C
Piezometer	526110xx, 526210xx	Sweep C
Rebar Stressmeter	526309xx	Sweep C or B
Vented Settlement Cell, 20 psi	52612420	Sweep C or B
Settlement Cell, 50 or 100 psi	526120xx, 51419524	Sweep C
Strain Gauge, Arc-Weldable	52640306	Sweep B or A
Strain Gauge, Embedment	5264 0126	Sweep B or A
Strain Gauge, for Concrete Surfaces	526403xx	Sweep B or A
Strain Gauge, Spot-Weldable	5260210x	Sweep B (compression) Sweep C (tension)
Stress Station, VW Transducers	526081xx, 526114xx	Sweep C
Total Pressure Cell	526082xx, 5260828x	Sweep C
Total Pressure Cell, Radial	5260826x	Sweep C
Total Pressure Cell, Tangential	5260827x	Sweep C

Observe the Reading

The Recorder excites the sensor at two second intervals and displays the VW reading and the temperature reading (degrees C).

Reading Stability

You may see some variation in the decimal digit due to sensor performance, site conditions, electromagnetic noise, and the actual resolution of the recorder. Variations of up to ±0.3 Hz are not considered significant, since values within this range maintain the stated accuracy for VW sensors.

Questionable Readings

The Recorder performs a "quality" test on each reading and displays a question mark (?) in front of readings that fail the test. If the reading varies more than ±0.3 Hz or if you see a question mark, try the following steps to obtain a more stable reading:

- Connect the shield wire.
- Change the sweep frequency.

Record the Reading

When you save a reading, the Recorder tags the reading with an ID number, the date, and the time. You must choose an ID number from a fixed set of numbers (1 to 99).

The Recorder remembers the most recently used ID. This lets you record a second reading with the same ID or advance to the next ID with a single press of the Change key.

This ID system eliminates the need to pre-program the recorder with sensor serial numbers or other IDs. However, it does require some planning on your part because later, when you process the data, you must match these IDs to the actual sensor serial numbers and calibration records.

1. Press Enter when you want to save a reading. The Recorder prompts Save as: n. (n is an ID for the sensor that you are reading).

2. Choose an ID number from 1 to 99. Press Change to increment the number. Press Change + Enter together to decrement the number.

3. Press Enter to save the reading.

4. Press Enter again to continue.

Special IDs

When you save a questionable reading, the Recorder adds 100 to the sensor ID that you chose, so that the reading is clearly identified as questionable. For example, if you save a questionable reading as #4, the Recorder stores it as #104.

Connecting to LoggerManager

Introduction

LoggerManager is the DGSI program used to transfer readings from the Recorder to a PC. It is also used to change some of the Recorder's default settings. Note that not all functions will be usable, as LoggerManager is also the program used for all recorders and loggers manufactured by DGSI.

The LoggerManager program can be found at www.slopeindicator.com under downloads > software. You should periodically also check the website for updated versions of the software for stability and performance improvements.

Installation

1. Open a browser on your PC and go to http://slopeindicator.com/downloads/download-software.php

2. Scroll down to LoggerManager. Choose the 32 or 64 bit version based on your Windows OS.
   NOTE - most modern computers with Windows 7 or higher pre-installed use the 64 bit OS, but if you are unsure you can can check with your IT team or under Properties by right-clicking on your computer in File Explorer.

3. Download and run the loggermanager.exe file.

4. When the dialog box appears, agree to all licensing regulations and hit "next" until installation begins. When the installation process has been completed, click "finish".

Testing Communications

The LoggerManager program communicates with the Recorder through a serial connection. If your PC has a serial connection, simply connect the VW Data Recorder to your PC via a serial cable. Most modern PCs, however, do not have a serial port. You will need a USB-Serial adapter. We recommend and stock one from Sabrent, and you can download the driver from their resources or at www.slopeindicator.com

Connect the Data Recorder to your PC

1. Connect the VW Data Recorder to your PC.

2. Switch on the Recorder.

Start the Program

1. Open LoggerManager on your PC..

2. Click on Device Type on the horizontal toolbar at the top. Select VW Data Recorder.

3. Click Comm Setup on the horizontal toolbar at the top of the menu screen. Select the correct COM port (if this is your first time connecting the device, it will be the highest numbered COM port, remember this number for future connections).

4. You are now ready to edit the setup to your specific configuration needs in the Set Up menu.
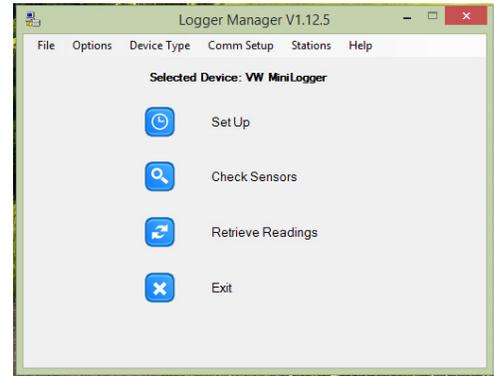
   NOTE - Your Main Menu will have "Check Sensors" grayed out, as that LoggerManager feature is not supported by the VW Data Recorder.

Changing Default Settings

Overview The LoggerManager program lets you edit some of the Recorder's default settings. The most important of these is the Recorder's clock, since it is used to time-stamp recorded readings.

1. Connect the Recorder to your PC and turn it on.

2. Start the Manager Program.

3. Click on the "Setup" button on the home screen. A screen similar to the one at right appears.

4. Click on any of the four buttons to edit a setting.
   Text to the right of each button shows the current values of the settings.
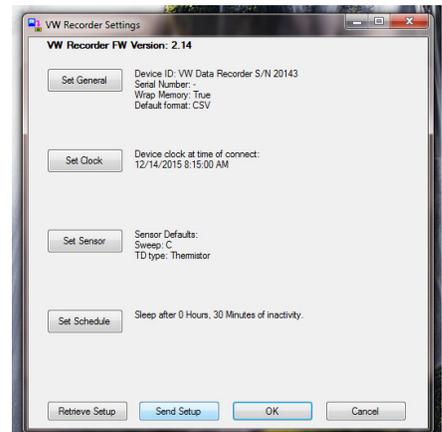
Set General **Device ID:** Enter an identifier for the Recorder. This ID does not appear in the data file.

Serial Number: Factory issued serial number.

FW Version: The VW Data Recorder firmware version installed. Updates will be periodically released for download at www.slopeindicator.com.

Data Format: The format the VW Data Recorder will export readings to. Default, CSV, is readable by many spreadsheet programs, including Excel.

When Memory is Full: Select whether you want the VW Data Recorder to overwrite records (oldest first) or not record new readings.
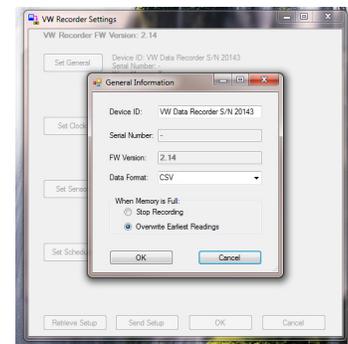
Set Sesnor

This dialog lets you set a default sweep frequency and temperature device. Note that both settings can be changed via the Recorder's keypad.

Sweep Frequency: Choose a default sweep frequency. Most sensors use the "C" sweep, but yours may not. You can find a list of sensors and recommended sweep frequencies in "Taking Readings" section of the manual.

Default temperature device: Choose Thermistor or RTD.
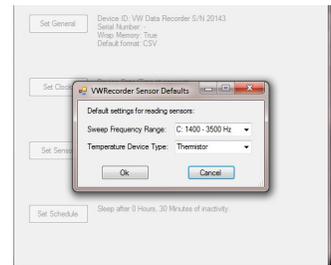
Set Clock

Click the "Match Computer" button to synchronize the Recorder's clock with your computer's clock.

To set a different time, click in the date and time fields, type in values, and click OK. The date display format in the dialog is controlled by the short date setting in Windows (Control Panel > Regional Settings > Date).
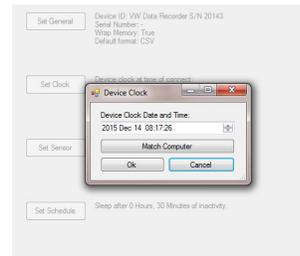
Retrieving Readings

Overview

1. Connect the Data Recorder to your PC and turn it on.

2. Start the LoggerManager program.

3. Choose Retrieve Readings.

4. Save the data in a file.

5. Clear the Data Recorder's memory.

Retrieve Data

1. Click the "Retrieve Readings" button. The LoggerManager program performs some checks and then displays a progress counter.

2. The Manager program then displays the retrieved readings in tabular form.

3. Click the "Save" button to open the Save dialog. Specify a location and file name, then click the dialog's Save button. The Manager program confirms when the readings are saved.
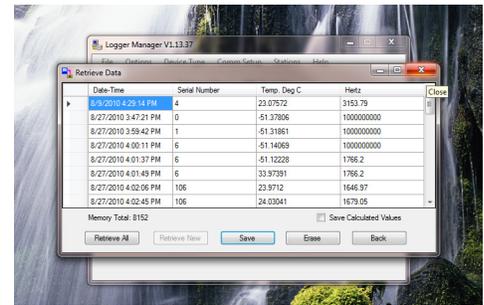
Clear Memory

Click the Erase button to clear the Recorder's memory.