VWP Indicator
52611999

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

Contents

VWP Indicator Controls

Front Panel
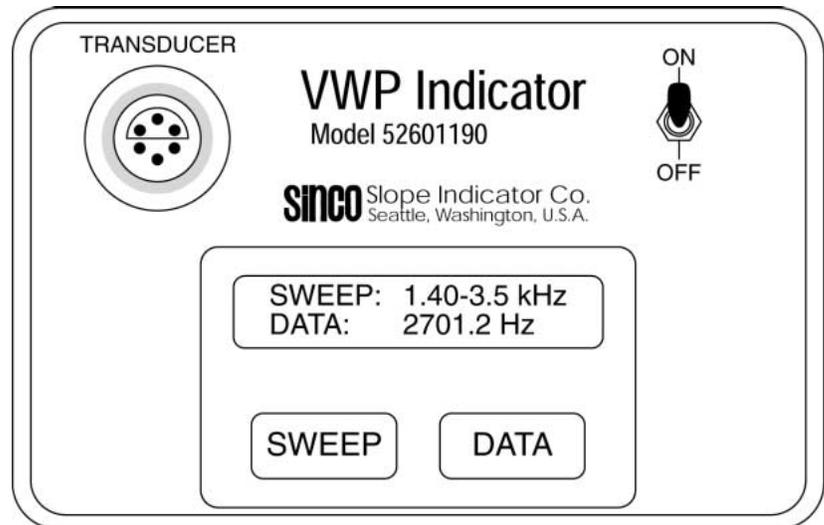
Transducer Socket Socket for a jumper cable, which is used to connect to cable from the sensor.

On/Off Switch Switches power on and off. The indicator has an auto-off mechanism that automatically switches power off 10 minutes after the last key press. To restore power, switch the indicator off, then on again.

To disable the auto-off feature, hold down the SWEEP key and the DATA key while you switch on the VWP Indicator. The Indicator will remain powered on until you switch it off.

Sweep Press the SWEEP key to select the range of frequencies suitable for exciting the sensor. Each press of the SWEEP key changes the sweep range.

Data The DATA key selects the type of data displayed. Each press of the DATA key displays a different type of data.

LCD Display The display shows the sweep range and the reading. The small blue dot in the upper right hand corner is a humidity indicator that turns pink when desiccant must be changed.

Taking Readings

Overview

There are four steps in taking a reading:

1. Switch the indicator on and connect to the sensor.

2. Select a sweep frequency range.

3. Select a data type. In general, we suggest using the Hz setting.

4. Observe the displayed reading.

Connect to the Sensor

The VWP Indicator is typically supplied with either of two jumper cables. Both are have a Lemo connector that plugs into the transducer socket on the front panel of the indicator.

Standard Jumper
52611950

This cable has alligator clips that are connected to wires of the signal cable as shown in the table below:

Clips	Wire Colors		Function
Red	Orange	Red	VW
Red	White & Orange	Black	VW
Black	Blue	White	RTD
Black	White & Blue	Green	RTD

Universal Jumper
52611957

This cable has a universal connector, which connects to the Universal terminal box or to signal cables that are terminated with a universal connector. It is supplied with a bare-wire adapter, which allows connection to wires of the signal cable as shown in the table below:

BWA	Wire Colors		Function
5	Blue	White	RTD
6	White & Orange	Black	VW
7	White & Blue	Green	RTD
8	Orange	Red	VW
10	Shield	Shield	Shield

Retired Jumpers

• Jumper 52611951 was used to connect to sensor cables that were terminated with a six-pin MS connector.

• Jumper 52611951 was used to connect to a six-socket MS connector on a terminal box

Select a Sweep Range

Press the SWEEP key to select the sweep range that is suitable for the transducer. Each press of the key displays a different range:

- 0.45 - 1.2 kHz

- 0.80 - 2.0 kHz

- 1.40 - 3.5 kHz

- 2.40 - 6.0 kHz

See the next page for suggested settings for specific sensors. In general, you should select a sweep range that matches the range of frequencies reported on the sensor calibration sheet.

When the indicator plucks the sensor, it displays an exclamation mark (!). If an incorrect sweep frequency range is selected, the display blinks or displays a zero.

Select a Data Type

Press the DATA key to select the type of data you require. The displayed reading and its label changes with each press of the key. Data types appear in the following order:

- Hz (Use with any vibrating wire sensor).

- $\mu\varepsilon$VW (microstrain - use only with Slope Indicator's VW spot-weldable strain gauge).

- $\mu\varepsilon$VS (microstrain - use only with Slope Indicator's retired arc-weldable or embedment strain gauge. Do not use with Slope Indicator's current arc-weldable or embedment strain gauge).

- Hz^2

- μSec

- °C (for RTD temperature sensors)

- Batt (battery test)

Suggested Settings

Here are sweep and data settings for specific sensors.

VWP Piezometer

Select Hz for data type. Use the 1.40 - 3.5 kHz sweep range. If the display blinks, try the 2.4 to 6.0 kHz sweep range.

VWP Spot-Weldable Strain Gauge

Select μεVW (microstrain) for data type. In general, the 0.8 - 2.0 kHz sweep range is suitable for measuring compression and the 1.4 - 3.5 kHz range is suitable for measuring tension. If the reading is below -1270 με, try the 0.45 - 1.2 kHz range. If the reading is above 420 με, try the 1.4 - 3.5 kHz range.

VW Arc-weldable and VW Embedment Strain Gauges

Select Hz as the data type. Use the 0.45 - 1.2 kHz range.

VS Strain Gauges (Retired)

Select μεVS for data type. Try the 0.80 - 2.0 kHz range first. If the display blinks or reads zero, try the 0.45 to 1.2 kHz range.

VS Force Transducer

Select Hz for data type. Try the 0.45 - 1.2 kHz range first. If the reading is zero or above 1000 Hz or if the display blinks, try the 0.8 - 2.0 kHz range. For readings above 1800 Hz, try the 1.4 - 3.5 kHz range.

Other VS Transducers

Select Hz for data type. Try the 1.4 - 3.5 kHz range. For readings below 1800 Hz, try the 0.8 - 2.0 range. For readings above 3000 Hz, try the 2.4 - 6.0 range.

Other Vibrating Wire Sensors

Use the sweep range that matches the range of frequencies reported on the sensor calibration record. If more than one range matches, choose the range that offers the widest coverage above and below the expected reading.

Observe Displayed Data

Here are some notes on how readings are displayed.

Hz: The VWP Indicator can display a maximum resolution of 0.01 Hz. With high frequency sensors, values smaller than 0.1 Hz may not stabilize.

μεVW: This microstrain data type is compatible only with Slope Indicator's spot-weldable strain gauge, which is 62 mm long. The VWP Indicator can display a maximum resolution of 0.1 με, but at higher frequencies the resolution may decrease. Note that actual strain must be calculated by comparing the initial and current values.

μεVS (Retired Sensor): Do not use this microstrain data type with Slope Indicator's current strain gauges.

Hz^2 The VWP Indicator has a maximum resolution is 100 Hz^2 (0.1 $Hz^2 x10^3$), but resolution may decrease with high frequency signals.

mSec Resolution is 0.1 microseconds.

°C Resolution is 0.1°C. Used only with RTDs that are built into VWP or VS sensors from Slope Indicator.

Batt Shows voltage output of battery.

Warning Signals

The indicator provides the following warnings:

Display Shows Zero: Zero is generally not a valid reading. Check the connection to the sensor, then try a different sweep frequency range. If there is still no reading, the sensor may have failed.

Slow Blink If an incorrect range is selected, the reading will blink at 2 second intervals. Try selecting a different sweep range.

Fast Blink: If the indicator's validity test fails, the reading will blink at 0.5 second intervals and should not be considered reliable. Try a different sweep range. Other possible causes the fast blink are strong vibrations near the sensor; electrical noise caused by a cable faulted to ground; or a malfunctioning sensor.

Maintenance

Keeping the Indicator Dry

Keep connector sockets capped to prevent humid air or water from entering the indicator. Moisture inside the case is controlled by desiccant. The small paper dot at the top right side of the display serves as a humidity indicator. When the dot looses its blue color, the desiccant must be replaced or reactivated

Changing Desiccant

The desiccant supplied by Slope Indicator can be reactivated a few times by heating in a conventional oven for 16 hours at 120C (250F). Do not use a microwave oven. Replacement packets can be ordered from Slope Indicator.

1. Take indicator to dry area. Remove caps from connector sockets.

2. Remove screws from bottom of case. Pull case off. Check that gasket remains attached to case.

3. Allow time for case and electronic components to dry. Reactivate desiccant during this time. Replace batteries, if necessary.

4. Place fresh desiccant near batteries and slip case onto indicator. Check that gasket is properly seated. Replace screws and tighten. Replace caps on connector sockets.

Battery test

1. Switch on the VWP Indicator.

2. Press the DATA key until Batt appears. The VWP Indicator operates on a nominal 6 volts. When battery output falls to 4.8 volts, the batteries must be replaced. Alkaline batteries provide approximately 60 hours of continuous use at moderate temperatures.

Replacing batteries

1. Remove the two screws from the bottom of the Indicator.

2. Pull off the black case slowly.

3. Replace the old batteries with fresh alkaline 'D' cells. Polarity is marked on the battery holder.

4. Switch on the Indicator and check the new batteries. New alkaline batteries typically output between 6.1 and 6.3 volts.

5. Change the packet of desiccant in the battery compartment.

6. Replace the black case, checking that the gasket at the top of the case is properly seated.

7. Replace the two screws at the bottom of the Indicator.