

# AVW100 Vibrating Wire Interface

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*The AVW100 interface is an active version of the AVW1 Vibrating Wire Interface designed by engineers at Slope Indicator of Washington State, USA. The general principles of operation are the same as the AVW1/4; **please refer to the AVW1/4 manual supplied for general information.** This document describes the differences between the AVW100 and the AVW1 and where to find further information on the use of the AVW100 with specific sensors.*

## 1. Differences in Specification

Physically the AVW100 is identical to the AVW1 but electronically it differs in that it uses active circuitry, including electronic filters and amplifiers to precondition the vibrating wire signal. This allows the use of smaller, lower output sensors and sensors which can have a wider range of signal frequencies. The specifications on its inputs are:

- The minimum detectable signal level is approximately 0.5mV peak to peak (250 - 9900Hz), 0.1mV (500 - 5000Hz). (The signal output to the datalogger is amplified and conditioned to a +/-2.5V square wave.)
- It has an extended frequency range of 250-9900Hz compared to the AVW1.
- It has a fixed output drive of 4.8V peak-to-peak.

Users need to be aware that the high-gain active circuitry results in two other functional differences:

- The AVW100 consumes approximately 3mA of current continuously which may need to be taken into consideration in low-power applications.
- The high gain means there is inherent extra sensitivity to noise, particularly (but not solely) in the sensing frequency range (the interface can be affected by much higher frequencies that have harmonics or which are modulated in the sensing frequency range).

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**NOTE:** The extra noise sensitivity can be an issue in some applications. To help avoid such problems, take extra care in the screening of both the sensor and the cables to avoid electronic noise pickup. If possible, connect the sensor body to a grounding point, and consider using cables with individually screened pairs. In installations where high frequency noise is causing disturbance to the measurements, inductors or specialised signal filters may be required to block the noise.

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## 2. Differences in Programming

The AVW100 can be used with exactly the same datalogger instructions as the AVW1/4, i.e. instruction P28 or P131 in the CR510, CR10X or CR23X dataloggers or the VibratingWire instruction in the CR1000 and CR5000 dataloggers. Details of both instructions can be found in the relevant datalogger manuals and the on-line help in the program editors.

The choice of which instruction to use and the exact parameters required are specific to the sensor you have. Some details are given in the Campbell Scientific AVW1/4 manual for some of the Geokon sensors as an example. Most manufacturers of vibrating wire sensors publish data on how to use their sensors with Campbell Scientific dataloggers. They usually give full details of the required parameters needed to get the best readings from each model of their sensor – please contact your sensor supplier for advice.

Some manufacturers also make this information available on the Internet, e.g. a useful document is published by Slope Indicator here:

<http://www.slopeindicator.com/pdf/manuals/cr10-and-vw-sensors.pdf>

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