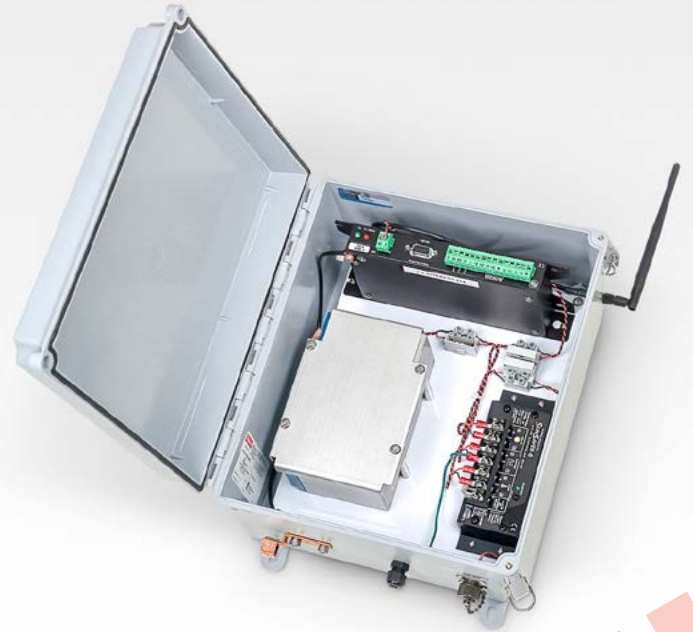


MODEL 8040 SERIES



Model 8040 2-Channel Wireless Vibrating Wire Interface Module.

APPLICATIONS

The Model 8040 is ideally suited for wireless data transmission with the Model 8600 Series Dataloggers. Applications include:

- Excavations
- Pump Tests
- Landfills
- Dams
- Structural monitoring



Model 8040T configured to read a Model 4500 Vibrating Wire Piezometer.

OPERATING PRINCIPLE

The 8040 Series Wireless Vibrating Wire interface is designed to expand the data collection possibilities of the Model 8600 Series Dataloggers.*

The wireless connectivity provided by the 8040 Series is particularly suitable where dataloggers are deployed over wide areas and where construction activity may render the use of conventional hard-wired systems impractical. The wireless connection also eliminates the need for running lengthy cables.

Available for 2, 4 or 16 sensors (VW plus thermistor), the 8040 Wireless Vibrating Wire Interface comprises Campbell Scientific's AWW206 (or AWW216) spectrum analyzer (with built-in 900 MHz or 2.4 GHz radio transmitter), power supply and antenna. It's housed in a rugged NEMA 4X enclosure designed for use in harsh environments with wide temperature tolerance, and resistance to moisture and humidity.

The 2 and 4 channel versions are also available in a rugged waterproof enclosure (Model 8040T). The standard enclosure is PVC (optional stainless steel also available). This design is particularly useful for installations below grade, in manholes containing the instrumentation to be monitored (see illustration left).

The AWW206 and AWW216 use an innovative spectral interpolation method for measuring the sensor's resonant frequency. With this spectral interpolation method, the module excites the vibrating wire sensor, measures the response, performs a Fourier transform on the response, and returns the result with a

resolution better than 0.001 Hz. Because spectral analysis can distinguish signal from noise on the basis of frequency content, this method offers improved immunity to competing noise.

The power supply for the 8040 is generally provided by a 12 V lead acid battery, rechargeable by solar panels or AC mains. The 8040T is powered using four 19 Ah lithium D cells.

The Model 8040 commonly uses a whip antenna for data transmission, but high gain Yagi and Omnidirectional antennae are also available (please consult GEOKON for selection of the appropriate antenna). The 8040T is typically supplied with a manhole lid antenna which allows for installations in roads, runways or other situations where a flush mounted system is required. This antenna is of a rugged (tamper-proof) design allowing it to be mounted directly onto a manhole lid. It is waterproof and resistant to motor oils and gasoline.

Wireless data transmission, from the Model 8040 to the Model 8600 Series Dataloggers is capable over distances up to several miles and relies on Line-Of-Sight (LOS). Where LOS is restricted, or where signals are required to go around corners (as may be found in urban environments), Repeater Stations can be incorporated into the monitoring system.

Several Model 8040s can be connected to Model 8600 Series Dataloggers, depending on the datalogger/multiplexer configuration (please contact GEOKON for details).

*Requires an optional radio base station (with requisite antenna) built into the Model 8600 Series Dataloggers.

SOFTWARE

Windows® based LoggerNet® software provides the user with complete control over the datalogger, by allowing the user to create the program which is executed by the datalogger. Windows based MultiLogger software allows for an efficient means of deploying the datalogger by providing easy to use menus

and selections to build the datalogger program, monitoring the current activity, and collecting the data. Vista Data Vision (VDV) software provides a complete data management package for the previously collected data. VDV also provides the means for browsing, reporting and publishing data to the Internet.

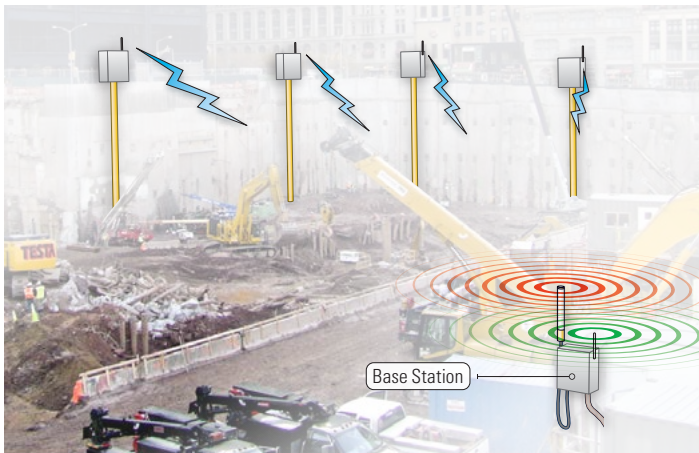


Illustration showing the Model 8040 Series Wireless Vibrating Wire Interface, monitoring in-place inclinometers.



Model 8040 16-Channel Wireless Vibrating Wire Interface Module (external battery option, battery not shown).



Remote datalogger base station (or hub) with receiving and transmitting antennae.

TECHNICAL SPECIFICATIONS WIRELESS VW INTERFACES

Input Range	(vibrating wire) 100 to 6500 Hz (thermistor) ± 2500 mV
Resolution	(vibrating wire) 0.001 Hz RMS (thermistor) 0.001 Ω RMS
Accuracy	(vibrating wire) $\pm 0.013\%$ of reading (thermistor) $\pm 0.25\%$ of reading
Wireless Transmission Range	up to 10 miles (when using a higher gain directional antenna, under ideal conditions)
Battery	12 V, 7 Ah Gel Cell
Temperature Range	-25 °C to +50 °C (-55 °C to +80 °C optional)
L x W x H*	8040-2 (2-Channel): 305 x 254 x 152 mm 8040-4 (4-Channel): 356 x 305 x 203 mm 8040-16 (16-Channel): 356 x 305 x 203 mm
Diameter x H	8040T-2/4 (2/4-Channel): 168 x 380 mm

*Does not include mounting feet

CR800

Range	(analog) ± 2.5 millivolts to ± 5 volts (frequency) DC to 200 kHz
Resolution	(analog) 0.33 microvolts to 1333 microvolts (frequency) ± 35 nS/no. cycles measured
Accuracy	(analog) $\pm 0.1\%$ of reading (frequency) $\pm 0.01\%$ of reading
Excitation Output	± 2.5 V at 25 mA (max)
Temperature Range	-25 °C to +50 °C (-55 °C to +80 °C optional)
Battery	C-Cell Lithium 8.5 AH

RADIO MODEM TECHNICAL SPECIFICATIONS

Operating Frequency	RF401A: 910 to 918 MHz; RF411A: 920 to 928 MHz; RF416: 2.450 to 2.460 GHz
Type	Frequency Hopping Spread Spectrum (FHSS) Transceiver
I/O Data Rate	38.4 K; 19.2 K; 9600, 4800 or 1200 bps
Transmitter Power Output	RF401A and RF411A: 100 mW nominal; RF416: 50 mW nominal
Power	9 to 16 VDC
Average Current Drain	Standby: < 1 mA (power-saving options used) Receiving: 24 mA (RF401, RF411), 36 mA (RF416) Transmitting: < 75 mA (RF401, RF411), 75 mA (RF416)
Operating Temperature	Standard: -25 °C to +50 °C Extended ¹ : -55 °C to +85 °C (RF401, RF411 only)

¹The push button that allows customers to check/edit programmable settings while the radio is connected to a computer may not operate at temperatures colder than -25°C.