



**CAMPBELL  
SCIENTIFIC**

WHEN MEASUREMENTS MATTER



# Vibrating Wire Spectral Analysis Technology

## VSPECT

*The only solution for vibrating-wire measurements*



- Eliminate noise spikes, false alarms
- Patented spectral analysis
- Have confidence in your measurements





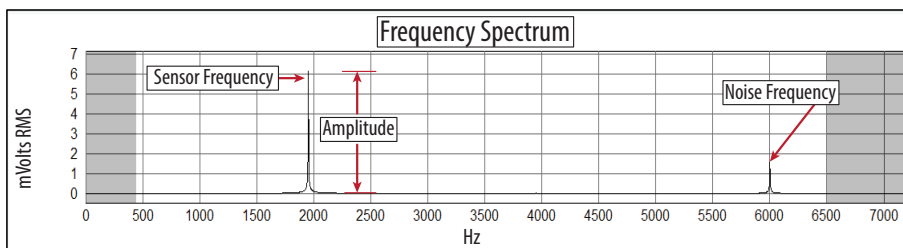
## Vibrating Wire

Spectral Analysis Technology

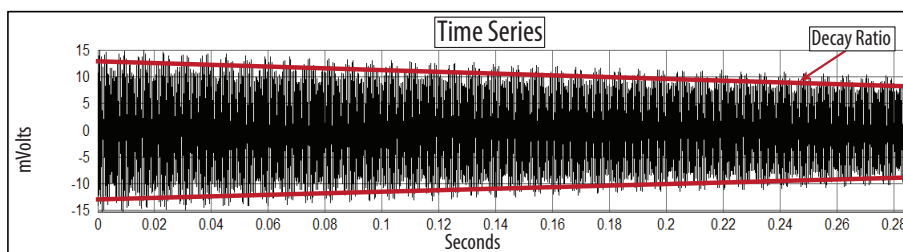
So....  
What is



VSPECT<sup>a</sup> is an innovative, patented technology that delivers the best measurement for vibrating wire sensors. VSPECT observes the incoming sensor signal, performs a Fourier transform and spectral analysis (transforming the Time Series into individual sinusoidal components in the Frequency Spectrum). The frequency is determined by identifying the largest signal in the acceptable range and disregarding unwanted noise.



VSPECT technology determines the sensor frequency from the Frequency Spectrum while ignoring noise signals.



Traditional vibrating-wire readers determine the sensor frequency from the Time Series where signal and noise can't be distinguished.

### VSPECT Outputs

- › **Sensor Frequency**  
(frequency of peak response)
- › **Amplitude**  
(signal strength)
- › **Signal-to-Noise Ratio**  
(measurement quality)
- › **Noise Frequency**  
(largest observed noise)
- › **Decay Ratio**  
(signal attenuation)
- › **Thermistor, if present**  
(Ohms or temperature)

## CR6 Measurement and Control Vibrating-Wire Datalogger



The CR6 measurement and control datalogger revolutionizes data acquisition systems. It is a smaller, faster, lighter, and more powerful than our previous systems with 24-bit resolution and VSPECT vibrating-wire analysis. The CR6 has what it takes to be the core of any system.

### Benefits and Features

- › Onboard VSPECT vibrating wire measurements
- › Supports dynamic vibrating wire measurements with CDM-VW300 series
- › Cost effective
- › U-terminal configurable to what you need: analog or digital, input or output
- › Integrated charge regulator
- › Ethernet 10/100
- › MicroSD card slot
- › Removable terminal blocks
- › Multiplexer expandable
- › CRBasic Programmable
- › Wi-Fi and RF options coming soon (2015)

<sup>a</sup>The VSPECT technology is protected under U.S. Patent No. 7,779,690.

questions & quotes: 435.227.9120

[campbellsci.com/vibrating-wire-interfaces](http://campbellsci.com/vibrating-wire-interfaces)



# CRVW3 3-Channel Vibrating Wire Datalogger

The CRVW3 is a self-contained, low cost 3-channel VSPECT vibrating-wire datalogger. It is designed to be an independent datalogger, or a reliable component in a larger data acquisition system. Arriving field ready from the factory with power, communications, and an enclosure, the CRVW3 is ready for your monitoring needs.

## Benefits and Features

- Complete data acquisition system in a single product
- 3-channel vibrating wire datalogger
- Wireless routing communications with integrated radio options
- Charge regulator for easy solar panel connection
- Enclosure rated to IP66
- Software configurable; no programming required
- Rechargeable and alkaline battery options
- PakBus router/radio repeater capabilities
- Compatible with current Campbell Scientific datalogger networks



# AVW-HANDHELD Vibrating Wire Analyzer

Campbell Scientific's Handheld Vibrating Wire Analyzer brings new capabilities to VSPECT technology. With built-in graphical display, you can see and understand how the sensor is working, troubleshoot sensor installation in the field, and get real time results of system performance. With our PDF document generator, the Handheld Vibrating Wire Analyzer lets anyone create as-built printed or electronic documentation of installation or traditional field visits.

## Benefits and Features

- Generates field calibration sheet and installation record
- Works with all vibrating wire gages
- Graphical display of VSPECT vibrating wire measurements
- Sensor troubleshooting
- Integrated GPS, takes you to the sensor location
- Reports measurement frequency, quality and competing noise
- Geolocates stored readings
- Field replaceable batteries
- Field ready



**Vibrating Wire Report** | Installation Verification | Field System Performance | Troubleshooting

Big Fish Consultants | 1234 5th Ave. Reno, NV | Rev. 04/2015 | 10/01/2015

Project Information		Measured Results	
Project No.	123456789	Sensor Frequency	2436.671 Hz
Site	123456	Digit. (Raw/1000)	5925.546
Sensor ID	123456	Calc. Inst. Engineering Units	29.9 Ft
Date & Time	28 Jan 2014 14:26	Temperature Resistance	123.542 Ohms
Operator	David Brown	Calc. Inst. Temperature	29.9 C, 79.8 F
Client	123456	Frequency Spectrum	
Location	123456	Time Series	
Notes	123456		

Field Notes:

Printable Reports

IPxx

# CDM-VW305 8-Channel Dynamic Vibrating-Wire Interface



The CDM-VW305 is an 8-channel VSPECT vibrating wire module that allows high speed simultaneous vibrating wire measurements with traditional vibrating wire gages. Several CDM-VW305 modules can be connected to a single CR6 datalogger for a large channel count system; modules can be strategically located near sensors reducing cabling and installation costs without compromising measurement quality. Also available is a 2-channel model (CDM-VW300). U.S. Patent No. 8,671,758.

## Benefits and Features

- › Revolutionary VSPECT dynamic vibrating wire measurements
- › 8-channels with 1 to 333 Hz measurement speed
- › Simultaneous measurements
- › Use traditional vibrating wire sensors
- › Replace eight sensor cables with a single CAT5e cable
- › Retrofit existing installations with dynamic capabilities

# AVW200-Series Vibrating Wire Interfaces

The AVW200-series interfaces are the proven standard for vibrating measurements with over 10,000 installations worldwide. They allow traditional dataloggers (CR800, CR850, CR1000, and CR3000) to use the VSPECT technology for the best vibrating wire measurement possible since 2007.

## Benefits and Features

- › 2 channels for static vibrating measurements
- › Multiplexer expandable channels
- › Patented VSPECT technology
- › Wireless communication options



# Comparison Table

Model	Solutions	USB Configuration	Ethernet	Expandable Memory	Wireless Communications	Channel Count	Multiplexer Capable	Static VW	Dynamic VW	GPS	Power Input
CR6	Fully functional datalogger with onboard vibrating-wire measurements	✓	✓	✓	Wi-Fi and radio options available soon	12 universal	✓	✓	with CDM-VW300 Series		12 to 32 Vdc
CRVW	3-channel stand-alone vibrating-wire datalogger	✓			Radio options	3 vibrating wire		✓			12 to 28 Vdc
AVW Handheld	Handheld diagnostics and report generation	✓				1 vibrating wire		✓		✓	5 AA batteries
CDM-VW300 Series	Dynamic vibrating-wire analyzer	✓				2 or 8 vibrating wire (depends on the model)	Other CDMs	✓	✓		9.6 to 32 Vdc
AVW200 Series	Vibrating-wire analyzer				Radio options	2 vibrating wire	✓	✓			12 Vdc