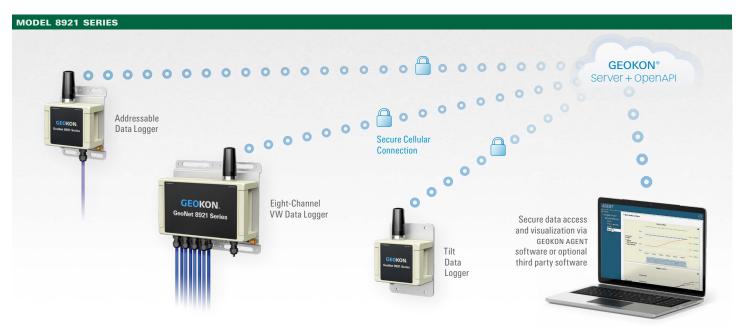
# GEONET CELLULAR DATA LOGGERS & DATA ACQUISITION SYSTEM





GeoNet Cellular Data Loggers & Wireless Data Hosting System with Cloud integration and secure data access

### **APPLICATIONS**

Typical applications include:

- Groundwater monitoring
- Tailings dams
- Mining/slope stability
- Structural monitoring of buildings, bridges, excavations, and tunnels
- Historical structures

#### INTRODUCTION

GEOKON Model 8921 Series Data Loggers offer a high-value, LTE Cat 1 compatible\*, networked data collection option for all GEOKON vibrating wire instruments and digital sensor (MEMS IPI and VW) strings. Each data logger comes from the factory ready for deployment and may commence with data acquisition in minutes.

Sensor data is collected and transferred via a cellular network to a secure cloud-based storage platform where it is securely stored. Data can be viewed in GEOKON Agent Software or exported to a third-party software platform through the Open API.

Commissioning, billing and configuration are accomplished via the easy to use GEOKON API Portal,

which allows users to activate data loggers, change settings, configure sensor channels, and view current data logger status.

The API Portal can be found at api.geokon.com and the GEOKON Agent program can be downloaded at www.geokon.com/software.

The system is compatible with most manufacturers' vibrating wire instruments and GEOKON addressable sensor strings (MEMS, VW, and thermistor). Sensor cables are connected through cable glands. Other available models include: A digital high power data logger capable of reading up to 250 MEMS, 500 Model 6140 MEMS Sensors, or any other sensor that utilizes RS-485 Modbus® communication protocol. A fourchannel analog data logger capable

of reading data from analog sensors. A tilt data logger that combines the functionality of a biaxial tiltmeter and a GeoNet data logger. And a data logger used to read time domain reflectometry cables.

Model 8960 Digital Vibrating Wire interfaces can be connected to GeoNet multi-channel and addressable data loggers to expand the capacity of the data logger. Multiple VW interfaces can be daisy-chained together to bus the data to a single data logger. The bus limit is 32 units or 64 channels. Refer to the Model 8960 data sheet for more information.

<sup>\*</sup>Compatible with all major cellular networks except Verizon

GENERAL SPECIFICA	ENERAL SPECIFICATIONS	
Power Supply	DHP models: Internal sealed lead acid (SLA) battery pack, 4V, 10 Ah / 5-24V external All other models: Rechargeable lithium battery / 5-24V external	
Operating Temperature	$-40^{\circ}$ C to +85° C (range varies by power source) (TLT model max of +65° C)	
Temperature Accuracy	±0.5° C	
Direct Connection Type	USB	
Enclosure	Die-cast aluminum, IP 68 rated to 1.5 m	
Dimensions	Refer to the product instruction manual	

VIBRATING WIRE SPEC	IBRATING WIRE SPECIFICATIONS	
Trueness	0.082 Hz	
Frequency Precision	±0.146 Hz (99% CI)	
Frequency Resolution	±0.002 Hz	
VW Frequency Range	400-6,500 Hz	

ANALOG DATA LOGGER	SPECIFICATIONS
Channels	4
Input Type	mV, V, mA, Ω
Input Range (individually configurable)	0-150 mV, 0-500 mV, 0-1 V, 0-5 V, 0-10 V, 0-15 V, ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±15 V, ±20 mA, 0-20 mA, 4-20 mA
Voltage Mode Accuracy	±0.1% or better
Current in Mode	±0.2% or better
Resolution	16-bit
Zero Drift	±6 μV/°C
Span Drift	±25 ppm/°C (typical)
CMR @ 50/60 Hz	92 dB min.

DIGITAL DATA LOGGER SPECIFICATIONS	
MEMS Sensors Limits per Model	ADR: 64 sensors (90 sensors, with the sensor string powered via external 12 V power supply) DHP: 250 MEMS or 500 Model 6140 MEMS Sensors
Communication Protocol	RS-485 Modbus

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Range <sup>1</sup>	±90°
Resolution <sup>2</sup>	0.00025° (0.004 mm/m)
Precision <sup>3</sup>	±0.0075° (±0.13 mm/m)
Nonlinearity	±0.005° across ±30° range (±0.09 mm/m)
Temperature Dependent Uncertainty	$\pm 0.001^{\circ}$ across $\pm 5^{\circ}$ angular range ( $\pm 0.016$ mm/m) $\pm 0.0016^{\circ}$ across $\pm 15^{\circ}$ angular range ( $\pm 0.026$ mm/m) $\pm 0.0026^{\circ}$ across $\pm 30^{\circ}$ angular range ( $\pm 0.042$ mm/m)
Axes	2

## ACCESSORIES

8900-SOL-10W-USB: GeoNet Series Solar Panel, 10W, unregulated. COM-169: USB 2.0 A Male to C Male Cable

KIT-GEONET-C: USB 2.0 A Male to C Male Cable, #3 Phillips Head Screwdriver, 3/32" Flat Head Screwdriver

# AVAILABLE MODELS



8921-01C Single-Channel VW Data Logger



8921-08C **Eight-Channel** VW Data Logger



8921-ADR Addressable Data Logger



8921-ANA Four-Channel Analog Data Logger



8921-TLT Tilt Data Logger



8921-DHP Digital High Power Data Logger







 $<sup>^1\</sup>text{Calibrated Range:}\pm30^\circ$   $^299\%$  confidence interval (i.e. 99 out of 100 individual readings fall within this tolerance).

<sup>&</sup>lt;sup>3</sup>Includes random walk (changes in consecutive readings with no discernible cause) and seismic noise during testing.