

MODEL GK-406



Model GK-406 Vibrating Wire Analyzer

APPLICATIONS

The GEOKON® Model GK-406 Vibrating Wire Analyzer can be used with all GEOKON vibrating wire sensors. The rugged and reliable, GK-406 provides the following:

- Handheld portability
- Large color (graphical) display
- USB communications port

- Internal real-time clock
- Temperature readout
- Battery-backed memory
- 5 × AA batteries (1.5 V)
- Cold weather operation

OPERATING PRINCIPLE

The Model GK-406 Vibrating Wire Analyzer is a portable, field-ready unit used to quickly read a GEOKON Vibrating Wire sensor, save the data, and visualize the results.

The Model GK-406 measures the resonant frequency of the vibrating wire using VSPECT, a patented vibrating-wire spectral analysis technology. VSPECT provides very fine measurement resolution and limits the

influence of external noise by discriminating between signal and noise based on frequency content. Because of this technology, the signal can be transmitted, without loss, through long cables in electrically noisy environments, with excellent reliability. A library of preset excitation and readout parameters for commonly used vibrating wire sensors is included.

ADVANTAGES & LIMITATIONS

The Model GK-406 Vibrating Wire Analyzer provides new and innovative features previously unavailable in portable vibrating wire readout devices. This easy-to-use, handheld unit weighs just 0.34 kg (0.75 lbs) and features a large color display and built-in GPS, yet it is capable of running continuously for more than 20 hours on 5 AA batteries. The GK-406 is IP62 rated, is water and dust-resistant, and operates at temperatures from -20 to +70 °C.

The large color display offers an easy-to-view graphical representation of sensor and thermistor output, allowing the user to see and understand how the sensor is

functioning, troubleshoot sensor installation in the field, and obtain real-time results of system performance. A built-in GPS allows the GK-406 to geolocate site and sensor positions and guide the user to those locations as necessary.

Data, reports, and project files for up to 40 sites (maximum 22 sensors per site) are stored in non-volatile memory. New data will begin overwriting the oldest data when the memory is full, so users will need to delete/transfer files as necessary to prevent data loss. Custom PDF reports and CSV files can be created and exported to a PC quickly and easily using the included USB Mini B connection.



Model GK-406 (Right) utilizing a Model GK-406-MUX (Center) to read a VW Load Cell (Left).



Model GK-406-C Combination of Models GK-406 and GK-406-MUX (includes patch cord, not shown, for connecting load cells with bare leads to the GK-406-MUX).

MODEL GK-406-MUX LOAD CELL MULTIPLEXER

The Model GK-406-MUX Vibrating Wire Load Cell Multiplexer is an optional accessory that can be used in conjunction with the Model GK-406 Vibrating Wire Analyzer to read GEOKON 3, 4 and 6 gauge Vibrating Wire Load Cells. The Model GK-406-MUX acts as a multiplexer to automatically switch the gauges of the Load Cell, allowing the Model GK-406 to calculate the

average reading change, apply the gauge factor, and display the load in engineering units and the temperature in degrees Celsius. The GK-406-MUX is a handheld, low-power device, capable of operating for more than 40 hours on two AA batteries. The unit is supplied with AA batteries, carrying case and interconnect cables.

ORDERING INFORMATION

- GK-406:** Vibrating Wire Analyzer Readout with carrying case, flying leads, USB cable, and AA batteries
- GK-406-MUX:** Vibrating Wire Load Cell Multiplexer (up to 6 gauges) for GK-406 VV Analyzer. Includes AA batteries, carrying case and interconnect cables
- GK-406-C:** Combination of Models GK-406 and GK-406-MUX
- GK-406-FL:** Replacement flying leads for Model GK-406, 914 mm (36")
- GK-406-MUX-CBL:** Replacement GK-406 to GK-406-MUX interconnect cable
- GK-406-MUX-PATCH:** Replacement patch cord for connecting load cells with bare leads to GK-406-MUX
- GK-406-CASE:** Replacement Carrying Case, holds GK-406 and GK-406-MUX

GK-406-MUX TECHNICAL SPECIFICATIONS

Power	3V (2 AA alkaline batteries supplied)
Standby Current	36 μ A
Reading Current	60 mA
Battery Type/Life	2 AA (1.5V), 40 hours continuous use
Low Battery Indicator	Battery voltage \leq 2.3V
Operating Temperature	-20 °C to +70 °C

GK-406 TECHNICAL SPECIFICATIONS

Memory ¹	1,700 site/sensor measurements (most recent ²) 40 unique sites, 22 sensors per site 240 single measurement (most recent ²) 16,500 continuous measurements (most recent ²) 80 MB USB memory (PDF, CSV, VWA, and other files ³)
USB Mini B	Direct connect to PC (Supplies power to retrieve data)
GPS	\pm 5 m (16.4 ft) typical; \pm 1 ms time sync (WGS 84 Datum)
Channel Count	1 channel (vibrating wire and thermistor reading)
Battery Type/Life ⁴	5 AA (1.5 V), 20 hours continuous use
Operating Temperature	-20 °C to +70 °C
Compliance	CE, RoHS
Enclosure	IP62
Dimensions	200 x 100 x 58 mm (7.9 x 3.9 x 2.3 in.)
Weight	0.34 kg (0.75 lb.)

¹Non-volatile memory stores data, reports and project files. ²When memory is full, new data will overwrite the oldest data. ³Memory managed by users, files will need to be deleted/transferred when full. ⁴Due to quiescent current draw in OFF mode, user is advised to remove batteries if the unit will sit idle for any length of time.

VIBRATING WIRE SPECIFICATIONS

Vibrating Wire Frequency Range	300 to 6500 Hz
Resolution	0.001 Hz RMS
Accuracy	\pm 0.005% of reading
Excitation	2 V, 5 V, 12 V (user-selectable)
Method	VSPECT™ (Vibrating Wire Spectral Analysis). U.S. Patent No. 7,779,690
Measurement Interval Range	1 second to 15 min. (continuous reading mode only)
Speed	1 second (fastest)

THERMISTOR SPECIFICATIONS

Resolution	0.01 Ω RMS
Accuracy	\pm 0.15% of reading