

Micro-10 Datalogger

Applications

The Micro-10 is ideally suited for remote, unattended monitoring of a variety of sensors in geotechnical, hydrologic, meteorologic and oceanographic fields. Applications include...

- Dam monitoring
- Tunnel and underground excavation monitoring
- Structural monitoring
- Water and stream levels
- Pump tests
- In-Place Inclinator readout
- Alarm actuation



• Model 8020 Micro-10 Datalogger.



• Model 8032 Multiplexer (MUX).



• Model 8020 Micro-10 Datalogger (right) and the Geokon Model 8032 16 Channel Multiplexer (left).

Compatibility

The Geokon Micro-10 Datalogger is designed around the Campbell Scientific Inc. (CSI) Model CR10X Measurement and Control Unit following a collaboration between CSI and Geokon to enable the CR10X to read vibrating wire sensors. The CR10X has great power, versatility and reliability making it one of the most popular MCU's in the world. These virtues are retained and further enhanced by several Geokon innovations.

Reliability

Every Geokon Micro-10 Datalogger is housed in a fiberglass enclosure and built for use in harsh environments with low power consumption, wide temperature tolerance, resistance to moisture and humidity and protection against lightning damage. In addition, the Micro-10 Datalogger incorporates Geokon's unique digital signal processing (DSP®) to eliminate the effects of electrical noise and interference on vibrating wire sensors. The mean time between failures for the CR-10 is more than 80 years!

Versatility

Virtually any type of sensor can be read: this includes vibrating wire sensors, Carlson type sensors, thermistors, thermocouples, TDR cables plus all voltage type devices, 4-20 ma transmitters and numerous other specialty

items for meteorological measurements. The list is long. Additional versatility is achieved using Geokon Model 8032 Multiplexers. The Multiplexers, which can be easily adapted for local manual readout, are very useful when setting up the datalogger system initially, and subsequently for verifying automatic readings.

Capacity

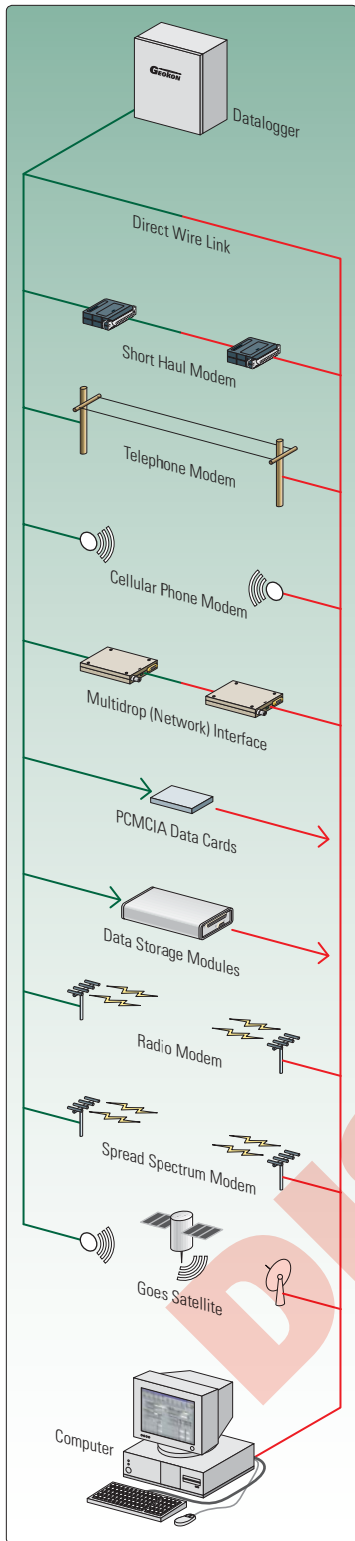
The basic CR10X MCU can directly handle up to 12 single ended sensors. This number can be expanded by connecting up to 8 Multiplexers, each with 32 channel capacity, for a total of 256 channels. Using the Campbell Scientific MD9 Multidrop System, over 200 dataloggers can be daisy-chained together and accessed on a single coaxial cable which may be up to 5 km in length.

Memory

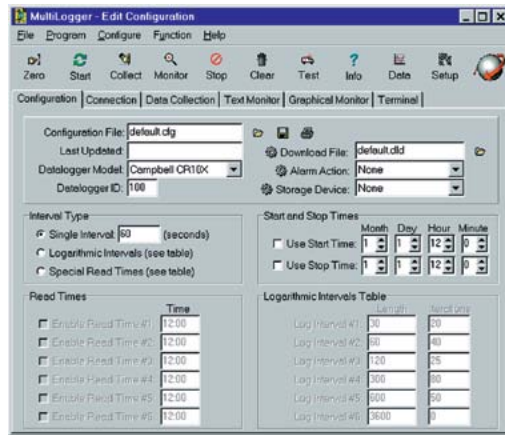
Standard memory storage capacity is 62,000 data points, optionally expandable to 1,000,000 data points. Data and programs are stored either in non-volatile flash memory or lithium battery-backed RAM.

Control

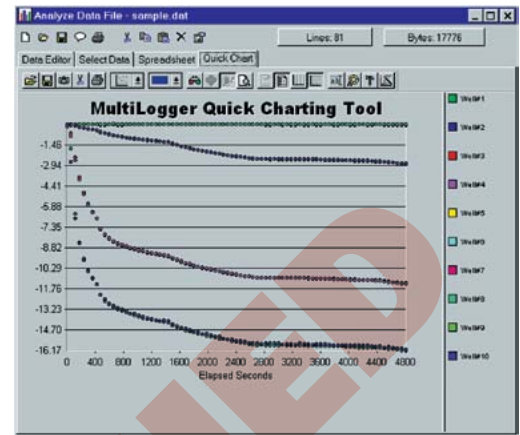
The CR10X MCU has 8 control ports which can be used for starting pumps, machinery, etc. and also for the actuation of alarms when pre-programmed sensor output limits are exceeded.



• Data retrieval options.



• MultiLogger screen shot shows datalogger configuration.



• MultiLogger screen shot shows datalogger data analysis.

Communications

The Micro-10 Datalogger is designed for use with IBM® compatible computers. Every type of telecommunications between the datalogger and the computer is supported.

Direct Links – Where the computer is close to the datalogger (15 m or less) an RS 232 interface supplies optically isolated connections. Short haul modems can transmit data in RS 232 format up to 8 km over four-wire cables (two twisted pairs). The MD9 Multidrop system mentioned previously uses a single coaxial cable up to 5 km long to daisy-chain dataloggers.

Telephone Links – By land line or cellular phone; a Hayes compatible modem at the base station computer is required. Remote RF or MD9 networks are also accessible by phone. A voice synthesized modem can be programmed to transmit, by voice, real-time data or historical data stored in the datalogger and/or to automatically call preset phone numbers to deliver messages.

Radio Frequency Links – Use RF 95 modems and a low-powered transceiver at the remote station(s) and a transceiver connected to an RF 232 Base Station at the computer site. Up to 255 stations can be interrogated over a single UHF or VHF frequency. Any station can serve as a repeater to extend the line-of-sight transmission of the base station beyond the maximum 40 km direct line-of-sight. Spread Spectrum Radio Modems use considerably less power and hence do not require FCC licenses. They are limited in range to around 1.5 km.

Software

Windows® based PC208W software provides two-way communication between computer and datalogger. Graph mode allows real-time graphical display of datalogger measurements. Windows® based MultiLogger software used in conjunction with Geokon 8032 Multiplexers or CSI AM32/416 Multiplexers, provide an easy means of configuring the datalogger, monitoring and collecting data and setting alarm limits. The Micro-10 Datalogger can optionally support MODBUS protocol allowing the datalogger to interface with SCADA and MMI software packages.

Power

The Micro-10 Datalogger can be powered by an external 12 volt battery and by an internal 12 V, 7.0 Amp hour battery connected via a built-in battery charger to the A/C main (120 V or 240 V) or to solar panels.

Technical Specifications

Range	(analog) ±2.5 millivolts to ±2.5 volts (frequency) DC to 200 kHz
Resolution	(analog) 0.33 microvolts to 333 microvolts (frequency) ±60 nS/no. cycles measured
Accuracy	(analog) ±0.1% F.S. (frequency) ±0.01% of reading
Excitation Output	±2.5 V at 20 mA, Frequency Sweep (2.5 V peak)
Temperature Range	-23°C to +50°C (-55°C to +80°C optional)
Battery	12 V, 7.0 Amp Ahr Gel Cell
L × W × H	(Datalogger) 406 × 356 × 203 mm (Multiplexer) 305 × 254 × 152 mm



Geokon, Incorporated
48 Spencer Street
Lebanon, NH 03766
USA

1 • 603 • 448 • 1562
1 • 603 • 448 • 3216
geokon@geokon.com
www.geokon.com