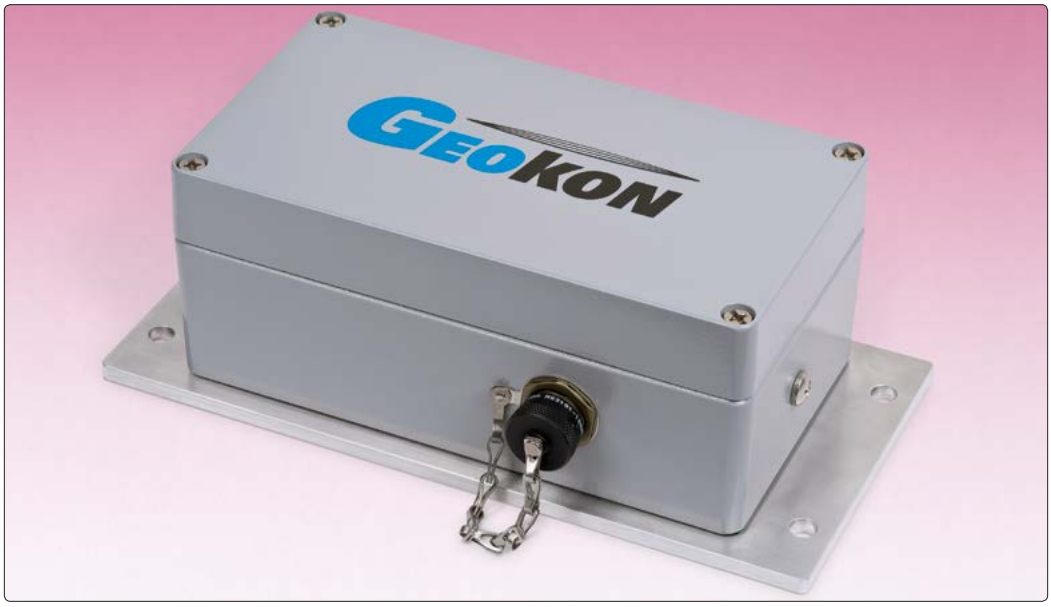
LC-3 MEMS Dataloggers

Applications

The Model 8003 Series LC-3 MEMS Dataloggers are designed to measure and record tilt in structures including…

- **Buildings**
- **Dams**
- **Embankments**
- **Slopes**
- **Excavation walls**
- **Open pits**

Model 8003A-1 MEMS Datalogger.



Model 8003C-2 MEMS Datalogger.

Operating Principle

The Model 8003 Series LC-3 MEMS Dataloggers are designed to read MEMS sensors and their integral thermistors. As standalone dataloggers, the 8003 Series are especially useful for the remote and continuous monitoring of isolated sensors.

The dataloggers are housed inside NEMA 4X enclosures, which makes them very robust, weather-proof and particularly well-suited to operation in harsh environments. Low power consumption provides long battery life and main battery condition is reported as an element in the data array.

Several versions are available: The 8003A and 8003B are standalone dataloggers to which external MEMS sensors are connected via cables, while the 8003C and 8003D are dataloggers containing integral MEMS sensors (please see Ordering Information on the next page for further details).

Data memory consists of 512 kB of EEPROM, which translates into a memory storage capacity of 21,000 arrays. Each array consists of the datalogger ID, day (Julian or month/day format), time (HHMM), seconds, main battery voltage, datalogger temperature, MEMS reading (in engineering units), temperature and array number. The array transmission is in comma delineated ASCII text, for easy importation into popular spreadsheet programs.

Power

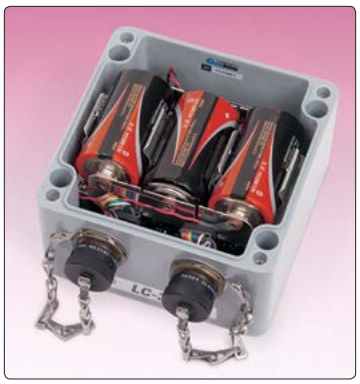
The Model 8003 Series LC-3 MEMS Dataloggers are powered by three, easily accessible, alkaline D cells, or by an optional 12 V source (please contact **GEOKON®** for details). When operating the Model 8003 Series in extremely cold environments (colder than –20 °C), the standard Alkaline batteries should be replaced with Lithium 'D' cell batteries. This type of battery can operate at much lower temperatures. For extended battery life, a solar panel and rechargeable batteries can be used.

Communications

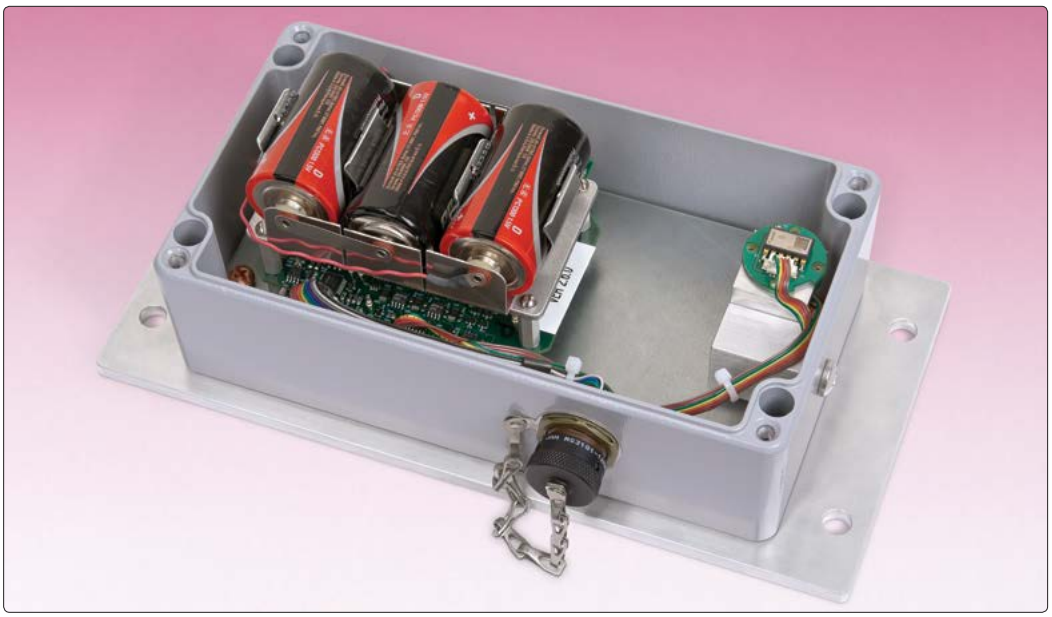
The Model 8003 Series LC-3 MEMS Dataloggers are available with an RS-232 Serial Interface and USB 2.0 connection; patch cords are supplied for this purpose.

Software

LogView Software simplifies the task of configuration, communication, monitoring, data collection and data reduction using the Model 8003 Series LC-3 MEMS Dataloggers. LogView is compatible with **Windows®** 7, Vista, XP Pro, XP, or 2000 (please see the Model 8001-3 LogView Software data sheet for more information).



Model 8003A-1 MEMS Datalogger shown with cover removed.



Model 8003C-2 MEMS Datalogger shown with cover removed.

Technical Specifications

Datalogger	
Accuracy	±0.05% F.S.
Resolution	18 bit
Data Connection	RS-232, USB
Storage Capacity (Arrays)	21,000
Temperature Range	–30 °C to +50 °C
Temperature Measurement	*(accuracy)* 1.0% F.S., *(resolution)* 0.1 °C
Communication Speed	2,400 » 230,400 bps (115,200 default)
Communication Parameters	8 data bits, no parity, 1 stop bit
Power Supply	4.5 VDC (3 Alkaline 'D' cells)
Communication Current	< 100 mA
Measurement Current	< 200 mA
Quiescent Current	< 500 µA
Scan Interval	5-86,400 seconds (24 hours)
Operating Time (20 °C)	3 days-3 years *(depends on scan interval)*
Sensor Connection	10-pin Connector
L × W × H	*(8003A/B)* 122 × 120 × 81 mm *(8003C/D)* 120 × 220 × 90 mm *(Mounting Panel)* 276 × 133 × 6 mm

MEMS Sensor	
Standard Range[1]	±15°
Full Scale Output	±4 Volts
Frequency Response	–3 db @ 8-28 Hz
Resolution[2]	±2 arc seconds
Accuracy	±5 arc seconds
Shock Survival	2000 g
Thermal Zero Shift	0.0003 Volt/°C rise

[1]Other ranges available on request.
[2]Depends on readout equipment. For best results a 4½ digit digital voltmeter is required. Averaging will yield resolution on the order of 2 arc seconds.

Ordering Information

RS-232 Data Connection

Model	*Description*
8003A-1	Includes (1) 10-pin bulkhead for (1) Biaxial MEMS Tiltmeter/ Inclinometer or (1) Uniaxial MEMS Tiltmeter/Inclinometer
8003A-2	Includes (2) 10-pin bulkhead for (1) Biaxial MEMS Tiltmeter/ Inclinometer or (2) Uniaxial MEMS Tiltmeters/Inclinometers
8003C-2	Includes (1) Biaxial MEMS Tiltmeter installed in enclosure, with Mounting Panel

USB Data Connection

Model	*Description*
8003B-1	Includes (1) 10-pin bulkhead for (1) Biaxial MEMS Tiltmeter/ Inclinometer or (1) Uniaxial MEMS Tiltmeter/Inclinometer
8003B-2	Includes (2) 10-pin bulkhead for (1) Biaxial MEMS Tiltmeter/ Inclinometer or (2) Uniaxial MEMS Tiltmeters/Inclinometers
8003D-2	Includes (1) Biaxial MEMS Tiltmeter installed in enclosure, with Mounting Panel

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