Geotechnical Logger

Advanced design and technology plus 25 years of geotechnical expertise have produced the dataTaker DT80G GeoLogger – A versatile, powerful – yet low power & cost effective data logger.

It supports vibrating wire and other geotechnical sensors such as Slope Indicator, RST Instruments, Geokon, Soil Instruments, Roctest, AGI – Applied Geomechanics Inc. DT80G is also capable to test sensor integrity through audible frequency

With temperature compensation (thermistors), 5 analog channels are capable to read up to 5 vibrating wire sensors. If temperature compensation is not required this logger can read up to 15 vibrating wire sensors.

Further expansion up to 100 sensors (with temperature compensation) or 300 sensors (without temperature compensation) is possible.

Superior Data Storage & Communications

With the standard unit able to store up to 10 million data points (expandable) you can log as much or as little as you need. Overwrite or stop logging once allocated memory is full, archive data on alarm event, copy to USB memory or transfer via FTP/Email, the choice is yours.

Communications features include RS232, USB and Ethernet, connect to the DT80G locally, remotely through a modem or over the Internet. The web interface allows users to configure the DT80G, access logged data and see current measurements as mimics or in a list using a web browser.

FTP/Email provides data to your office over the internet or wireless network, without the need for polling or specific host software.

Warranty: All dataTaker Data Loggers are covered by a 3 year warranty on workmanship and parts. For further information on the dataTaker range, or for useful downloads, visit the dataTaker web site at www.datataker.com or contact your nearest dataTaker office or distributor.

Quality Statement: dataTaker operates a Quality Management System complying with ISO9001:2008. It is dataTaker’s policy to supply customers with products which are fit for their intended purpose, safe in use, perform reliably to published specification and are backed by a fast and efficient customer support service.

Trademarks: dataTaker is a registered trademark.

Specifications: dataTaker reserves the right to change product specifications at any time without notice.

Designed and Manufactured in Australia.

*Our ability to provide free software and support is dependent on applicable export control laws (including those of the United States) and the export policy from time to time of Thermo Fisher Scientific Inc.
dEX Logger Software

- Built-in software – no application to install
- Runs directly from your web browser
- Accessible by Ethernet or USB¹ connection
- Intuitive graphical interface
- Easy-to-use configuration editor
- Access live and historical data
- View data as charts, mimics and tables

**What is dEX?**

dEX is an intuitive graphical interface that allows you to configure your data logger, view real-time data in mimics, trend charts or tables and retrieve your historical data for analysis.

dEX runs directly from your web browser and can be accessed either locally or remotely, anywhere that a TCP/IP connection is available including worldwide over the Internet. You can use any of the logger’s built-in communications ports to view dEX including Ethernet, USB and RS-232.

**Easy configuration**

The dEX configuration editor allows you to view, edit and save logger configurations in an easy-to-use Windows Explorer style user interface.

**Real-time monitoring**

dEX displays real-time sensor measurements, calculations and diagnostic information using mimics, tables and trend charts.

**Data retrieval**

dEX allows you to retrieve your data at the click of a mouse button. Just select either All, Range or New Data Only.

¹ USB port equipped models only.
**Browser-based solution**

dEX comes pre-installed on every logger in the DT80 range\(^2\). The software loads in your web browser so there is no need to install cumbersome applications on your computer. Being browser-based, dEX is cross-platform and will work on all major operating systems including Windows, Mac and Linux. To simplify it even further, dEX starts automatically in your default web browser when you connect to your logger using a USB cable\(^1\).

**Data that is compatible with your applications**

Logged data is ready to import into common spreadsheet and data processing applications such as Excel for further analysis and reporting. Data can be saved to your computer in comma separated (.CSV) format or our proprietary binary (.DBD) format.

**Command window**

The command window provides a terminal interface which allows the built-in command language of the logger to be used. Macro buttons allow common commands to be sent on a button press.

**Configuration editor**

The configuration editor allows you to view, edit and save logger configurations in an easy-to-use Windows Explorer style user interface. Tree view of configuration allows definition of measurement schedules and measurements. Wiring diagrams show available wiring configurations for each sensor type. Configuration can be stored and retrieved on either the logger or a local computer.

**Channel list**

Displays name, value, units, alarm state, time stamp and logging state for each measurement.

**Customisation of the application**

The menu options, mimics panels and mimics can be added or removed to suit novice or advanced users. The color and brand name images within dEX can be customised to match corporate requirements or for personal preference. Mimics are organised into panels which can be modified to highlight custom alarm conditions or data grouping. Mimics include dials, bar graphs, thermometers etc. Real-time chart recorder mimic allows you to view trends and historical data over a custom time/date range. Up to 16 mimics can be displayed on up to 5 mimic pages (default is 1 page of 6 mimics).

**Minimum system requirements**

- Web Browser (tested with): Internet Explorer V7 and above, Firefox, Safari & Google Chrome
- TCP/IP connection
- Adobe flash player 10 or higher
- Screen resolution of 1024 x 768

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\(^1\) dEX operates on all DT80 Series 2, Series 3 and Series 4 except Series 1.

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**Analog Channels**

5 analog input channels (expandable to 100*)

- Each channel is independent and supports: one isolated 3-wire or 4-wire input, or two isolated 2-wire inputs, or three common referenced 2-wire inputs.
- The following maximums apply:
  - Two wired with common reference terminal: 15 (expandable to 300)
  - Two wire isolated: 10 (expandable to 200)
  - Three and Four wire isolated: 5 (expandable to 100)
- Expansion requires optional E2M20

**Fundamental Input Ranges**

The fundamental inputs that the DT80G can measure are voltage, current, and resistance. All other measurements are derived from these.

- **Sampling**
  - Integrates over 50/60Hz line period for accuracy and noise rejection
  - Maximum sample speed: 40kHz
  - Effective resolution: 18 bits
  - Linearity: 0.01%
  - Common mode rejection: >90dB
  - Line series mode rejection: >35dB

- **Inputs**
  - Inter-Channel Isolation: 100V (relay switching)
  - Analog Signal Isolation: 100V (opto-isolated)
  - Input impedance: 160KΩ, >100MΩ
  - Common mode range: ±3.5V or ±35V (attenuator on/off)

**Sensor Excitation (Supply)**

- Analog channels:
  - selectable 2μA, 213μA or 2.5mA precision current source
  - 4.5V voltage source
  - switched external supply

**General Purpose**

Switchable 12V/5V regulated supply for powering sensors & accessories (max 300mA).

**Analog Output**

Isolated programmable 16-bit DAC: voltage 0-10V or current 0-24mA

**Analog Sensors**

Supports a wide range of sensors including, but not limited to, those listed below. A wide range of sensor scaling and linearising facilities including polynomials, expressions and functions.

**Thermocouples**
Calibration standard: ITS-90
RTDs:
Materials supported: Pt, Ni, Cu
Resistance range: 10Ω to 1MΩ

**Vibrating Wire**
Frequency range: 500 to 5kHz
Coil resistance: 50 to 100Ω
Stimulation method: single pulse pluck

**Thermistors**
Types: Y9, 4000s Series, other types*
Resistance range: up to 1MΩ
* Other thermistor types are supported by thermistor scaling and calculated channels.

**Monolithic Temperature Sensors**
Types supported: LM34, LM35, AD590, 592, TMPxx,
LM135, 235, 335

**Strain Gauge and Bridge Sensors**
Configurations: ¼, ½, & full bridge
Excitation: voltage or current

**Digital Channels**

Digital Input/Outputs

- 8 bi-directional channels
- Input Type: 8 logic level (max 20/30V)
- Output Type: 4 with open drain FET (max 30V, 100mA) - 4 with logic output

**Relay Output**

1 latching relay, contacts (max: 30Vdc, 1A)

**Counter Channels**

Low Speed Counters
- 8 counters shared with digital inputs.
- Low speed counters do not function in sleep mode.
  - Size: 32 bit Max Count rate: 10 Hz

Dedicated Counter Inputs
- 4 high speed 2 phase encoder (quadrature) inputs
  - Size: 32 bit Max Count rate: 100 kHz
  - Input type:
    - 2 logic level inputs (max ±30V)
    - 2 sensitive inputs (100mV) for magnetic pickups (max ±10V)

**Serial Channels**

SDI-12
- 4 SDI-12 inputs, shared with digital channels. Each input can support multiple SDI-12 sensors.

**Generic Sensor Serial**
Flexible options to allow data to be logged from a wide range of smart sensors and data streams.

**Available ports:**
- Serial Sensor Port (RS232, RS422, RS485)
- Host RS232 Port*
- Baud rate: 300 to 115,200
- *If used as a Serial Sensor channel then the Host Port is not available for other communications.

**Calculated Channels**

Combines values from analog, digital and serial sensors using expressions involving variables and functions.

**Functions**:
An extensive range of Arithmetic, Trigonometric, Relational, Logical and Statistical functions are available.

**Alarms**
Condition: high, low, within range and outside range
Delay: optional time period for alarm response
Actions: set digital outputs, transmit message, execute any datataker command.

**Scheduling of Data Acquisition**
Number of schedules: 11
Schedule rates: 10ms to days

**Data Storage**

Internal Store
Capacity: 128MB (approx 10,000,000 data points)

Larger storage available refer to technical support.

**Low Speed Counters**
Types: compatible with USB 1.1 or USB 2.0 drives,
Larger storage available refer to technical support.

**Real Time Clock**
- Normal resolution: 200 μs
- Accuracy: ±1 min/year (0°C to 40°C),
- ±4 min/year (-40°C to 70°C)

**Power Supply**
- External voltage range: 10 to 30Vdc
- Peak Power: 12W (12Vdc 1A)
- Average power Consumption
  - Using 12Vdc external power source
    - Sampling Speed: 1.920kHz
    - Average Power: 1.25W
    - 5 seconds: 500mW
    - 30 seconds: 1.35W
    - 5 minutes: 70W
    - 1 hour: 60W

**Physical and Environment**

Construction:
- Powder coated steel and anodized aluminum.
- Dimensions: 180 x 137 x 65mm
- Weight: 1.5kg (4lb shipping)
- Temperature range: -45°C to 70°C
- Humidity: 85% RH, non-condensing
- Reduced battery life and LCD operation outside range (−15°C to 50°C)

**Modbus Client (master)**
Read/write data from modbus sensors and devices including PLC’s, datataker loggers, modbus displays etc.

**Firmware Upgrade**
Via: RS232, Ethernet, USB or USB disk.

**Accessories Included**
- Resource CD: includes software, video training and user manual.
- Comms cable: USB cable
- Line adaptor: 110/240Vac to 15Vdc, 800mA

For full technical specifications download the user’s manual from our website www.datataker.com

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**Network (TCP/IP) Services**
Uses Ethernet and/or Host RS232 (PPP) ports

**Command Interface**
Access the ASCII command interface of the DT80G via TCP/IP

**Web Server**
Access current data and status from any web browser.

**FTP Server**
Access logged data from any FTP client or web browser

FTP Client
Automatically upload logged data direct to an FTP server

**FTP**
- External voltage range: 10 to 30Vdc
- Peak Power: 12W (12Vdc 1A)
- Average power Consumption
  - Using 12Vdc external power source
    - Sampling Speed: 1.920kHz
    - Average Power: 1.25W
    - 5 seconds: 500mW
    - 30 seconds: 1.35W
    - 5 minutes: 70W
    - 1 hour: 60W

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**Technical Specifications**

For customer service, call +61 3 9757 4477
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For full technical specifications download the user’s manual from our website www.datataker.com