

# DT85G

Series 2

# dataTaker®

## GeoLogger

Landslide prevention

Tunnel excavation

Dam wall monitoring

Mining exploration

## For All Geotechnical Projects

The versatile **dataTaker DT85G GeoLogger** is the answer you are looking for.

- A cost effective data logger expandable to 300 channels.
- Supporting vibrating wire and other Geotechnical sensors
- Compatible with all major brands - Slope Indicator, RST Instruments, Geokon, Soil Instruments, Roctest, AGI - Applied Geomechanics Inc.
- Standalone or part of a network with powerful inbuilt communication options, allows access to data how or where you want.
- Includes USB memory stick support.
- Rugged design and construction provides reliable operation in the extremes of the geotechnical environment and applications.
- 16 analog channels capable of measuring up to 16 vibrating wire strain gauges with thermistors or 48 vibrating wire strain gauges without thermistors.
- Designed and manufactured in Australia to the highest quality standards.

Advanced design and technology plus 25 years of geotechnical expertise have produced the **dataTaker DT85G GeoLogger** - A versatile, powerful – yet low power and cost effective data logger.

### Getting the Data

View the data in real time or store up to 5 million data points. Data storage and retrieval can be achieved via USB memory stick, FTP, cell phone, Modbus for SCADA, Ethernet or Web. The web server allows browser access to data and files, FTP provides data to your office over the internet or mobile phone network, without the need for polling or specific host software.



### Key DT85G Features

- Vibrating Wire Support
- Low Cost Per Channel
- Expandable to 300 Channels
- USB Memory for data & program transfer
- Built in communication
- Strain Gauge Support
- Carlson, Electro Level & LVDT support
- Web & FTP client / server
- Modbus
- SDI-12
- Designed & Manufactured in Australia

### Generic Sensor Types

- Inclinator
- Extensometer
- Piezometer
- Pressure Cell
- Crack Meter
- Tilt Meter

**FREE**  
Software &  
Technical  
Support

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Specifications

Analog Channels

16 analog input channels (expandable to 300\*)  
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 wire with common reference terminal:  
48 (expandable to 800\*)  
Two wire isolated: 32 (expandable to 600\*)  
Three and four wire isolated: 16 (expandable to 300\*)  
\*Expansion requires optional CEM20

Fundamental Input Ranges

The fundamental inputs that the DT85G can measure are voltage, current, resistance and frequency.  
All other measurements are derived from these.

| Full Scale | Resolution | Full Scale | Resolution |
|------------|------------|------------|------------|
| ±30 mVdc   | 0.25 µV    | 100 Ω      | 1.5 mΩ     |
| ±300 mVdc  | 2.5 µV     | 1000 Ω     | 15 mΩ      |
| ±3 Vdc     | 25 µV      | 10,000 Ω   | 150.00 mΩ  |
| ±30 Vdc    | 250 µV     | 100 Hz     | 0.0002 %   |
| ±0.3 mA    | 2.5 nA     | 10 kHz     | 0.0002 %   |
| ±3 mA      | 25 nA      |            |            |
| ±30 mA     | 250 nA     |            |            |

Auto-ranging is supported over 3 ranges.

Accuracy

| Measurement at ... | 5°C to 40°C | – 45°C to 70°C |
|--------------------|-------------|----------------|
| DC Voltage         | 0.1%        | 0.35%          |
| DC Current         | 0.15%       | 0.45%          |
| DC Resistance      | 0.1%        | 0.35%          |
| Frequency          | 0.1%        | 0.25%          |

Accuracy table above is % of reading ±0.01% of full scale.

Sampling

Integrates over 50/60Hz line period for accuracy and noise rejection  
Maximum sample speed: 25Hz  
Effective resolution: 18 bits  
Linearity: 0.01%  
Common mode rejection: >90dB  
Line series mode rejection: >35dB

Inputs

Inter-Channel Isolation: 100V (relay switching)  
Analog Section Isolation: 100V (opto-isolated)  
Input impedance: 100KΩ, >100MΩ  
Common mode range: ±3.5V or ±35V on 30V range

Sensor Excitation (Supply)

Analog channels: selectable 250µA or 2.5mA precision current source, 4.5V voltage source, or switched external supply.  
General Purpose: Switchable 12V regulated supply for powering sensors & accessories. (max 150mA)

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

Types: B, C, D, E, G, J, K, N, R, S, T  
Calibration standard: ITS-90

RTDs

Materials supported: Pt, Ni, Cu  
Resistance range: 10Ω to 10KΩ

Vibrating Wire

Frequency range: 500 to 5kHz  
Coil resistance: 50 to 200Ω  
Stimulation method: single pulse pluck

Thermistors

Types: YSI 400xx Series, other types\*  
Resistance range: <10kΩ\*\*  
\* Other thermistor types are supported by thermistor scaling and calculated channels.  
\*\*Resistance range can be increased with the use of a parallel resistor.

Monolithic Temperature Sensors

Types supported: LM34 - 60, AD590, 592, TMPxx  
LM135, 235, 335

Strain Gauge and Bridge Sensors

Configurations: ¼, ½ & full bridge  
Excitation: voltage or current

Carlson Sensors

Built-in functions for strain and temperature.

4-20mA Current Loop

Internal 100R shunt or external shunt resistor

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 or 2 phase encoder (quadrature) inputs  
Size: 32 bit  
Max Count rate: 10 kHz  
Input type: 2 logic level inputs (max ±30V), 2 sensitive inputs (10mV) for magnetic pick-ups (max ±10V)

Serial Channels

SDI-12

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

Generic Serial Sensor

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) or Host RS232 Port\*  
Baud rate: 300 to 115200  
\*If used as a Serial Sensor channel then the Host Port is not available for other communications.

Calculated Channels

Combine 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: 64MB = approx 5,000,000 data points  
Removable USB store device (optional accessory)  
Types: compatible with USB 1.1 or USB 2.0 drives, e.g. Flash drive.  
Capacity: approx. 90,000 data points per megabyte.

Communication Interfaces

Ethernet Port

Interface: 10BaseT (10Mbps)  
Protocol: TCP/IP

USB Port

Interface: USB 1.1 (virtual COM port)  
Protocol: ASCII command

Host RS232 Port

Speed: 300 to 115200 baud (57,600 default)  
Flow Control: Hardware (RTS/CTS), Software (XON/XOFF), None  
Handshake lines: DCD, DSR, DTR, RTS, CTS  
Modem support: auto-answer and dial out  
Protocols: ASCII Command, TCP/IP (PPP), Modbus, Serial Sensor

Serial Sensor Port

Interface: RS232, RS422m RS485  
Speed: 300 to 57,600 baud  
Flow Control: Hardware (RTS/CTS), Software (XON/XOFF), None  
Protocols: Modbus, Serial Sensor

Network (TCP/IP) Services

Uses Ethernet and/or Host RS232 (PPP) ports

Command Interface

Access the ASCII command interface of the DT85 via TCP/IP

Web Server

Access current data and status from any web browser. Custom pages can be defined. Download data in CSV format. Command interface window. Define mimic displays.

Modbus Server (slave)

Access current data and status from any Modbus client (e.g. SCADA system)

FTP Server

Access logged data from any FTP client or web browser

FTP Client

Automatically upload logged data direct to an FTP server

System

Display and Keypad

Type: LCD, 2 line by 16 characters, backlight.  
Display Functions: channel data, alarms, system status.  
Keypad: 6 keys for scrolling and function execution.  
Status LEDs: 4 for sample, disk, attention and power.

Firmware Upgrade

Via: RS232, Ethernet, USB or USB disk.

Real Time Clock

Normal resolution: 200µs  
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  
Internal battery: 6Vdc 4Ahr lead acid  
Peak Power: 12W (12Vdc 1A)

Average power Consumption

Using 12Vdc external power source

| Sampling Speed | Average Power |
|----------------|---------------|
| 1 second       | 1350 mW       |
| 5 second       | 500 mW        |
| 30 second      | 135 mW        |
| 5 minutes      | 70 mW         |
| 1 hour         | 60 mW         |

Typical Operating Time

from internal 6Vdc, 4Ahr battery

| Sampling Speed | Operating Time |
|----------------|----------------|
| 1 second       | 1 day          |
| 5 second       | 3 days         |
| 1 minute       | 1 month        |
| 1 hour         | 9.5 months     |

Physical and Environment

Construction: Powder coated zinc and anodized aluminum.  
Dimensions: 300 x 137 x 65mm  
Weight: 2.5kg (5kg 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

Accessories Included

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

Optional Accessories

A range of accessories are available. Contact your local distributor or visit [www.datataker.com](http://www.datataker.com)

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For full technical specifications download the user's manual from our website.

www.datataker.com



**Warranty:** The dataTaker DT85G is 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](http://www.datataker.com) or contact your nearest Datataker office or distributor.  
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