



**dataTaker**

## DT82E Series 2 Data Logger

*Designed especially for environmental monitoring*

### Applications include:

Research & Development	Agricultural Research
Weather Stations	Total Energy Monitoring
Environmental Monitoring	Temperature Profiling
Thermistor Arrays	Aquaculture
Wind Power Generation	

<sup>1</sup> **FREE Software & Technical Support**



- » Low power design for remote applications
- » Dual Channel Isolation Technology
- » 1 SDI-12 input
- » Serial 'Smart Sensor' port
- » FTP for automatic data transfer
- » Up to 6 Analog ( $\pm 30V$ ) sensor inputs
- » USB memory for easy data and program transfer

**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](http://www.datataker.com) or contact your nearest Datataker office or distributor.

**Quality Statement:** Datataker operates a Quality Management System complying with ISO9001:2000. 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.

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**Specifications:** Biolab (Aust) Pty Ltd trading as dataTaker reserves the right to change product specifications at any time without notice. **Designed and Manufactured in Australia. Biolab (Aust) Pty Ltd trading as Datataker**

### The Smarter Solution

The *dataTaker* DT82E is a smart data logger designed especially for environmental monitoring. The DT82E is a robust, low power data logger featuring USB memory stick support, 18-bit resolution, extensive communications capabilities and built-in display. The *dataTaker* DT82E's Dual Channel concept allows up to 4 isolated or 6 common referenced analog inputs to be used simultaneously in various combinations. With advanced networking capability (FTP and Web interface), one SDI-12 sensor channel (supporting up to 10 sensors) and switchable 12V regulated output to power sensors, the DT82E is ready to be deployed.

### Versatile Measurement

Inputs include analog and digital channels as well as high-speed counters. Temperature, voltage, current, 4-20mA loops, resistance, bridges, strain gauges, frequency, digital, serial and calculated measurements can all be scaled, logged and returned in engineering units or within statistical reporting. Set up sampling, logging, alarm and control tasks to suit your own requirements, or interface with smart sensors, GPS and other intelligent devices expand the DT82E's flexibility.

### 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, the choice is yours. Communications features include RS232 and Ethernet, connect to the DT82E locally, remotely through a modem or over the Internet. The web interface allows users to configure the DT82E, access logged data and see current measurements as mimics or in a list using a web browser. FTP allows you to send data to your office over the internet or mobile phone network, without the need for polling or having to develop custom host software.

**Analog Channels**

2 analog input channels  
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: 6  
Two wire isolated: 4  
Three and four wire isolated: 2

**Fundamental Input Ranges**

The fundamental inputs that the DT80 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: >100MΩ, 100KΩ (30v range)  
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

**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

**4-20mA Current Loop**

Internal 100R shunt or external shunt resistor

**Digital Channels**

**Digital Input/Outputs**

4 bi-directional channels  
Input Type: 4 logic level (max 20/30V)  
Output Type: 3 with open drain FET(max: 30V, 100mA),

1 with logic output.

**Relay Output**

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

**Counter Channels**

**Low Speed Counters**

4 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 inputs  
Size: 32 bit  
Max Count rate: 10 kHz  
Input type: 2 logic level inputs (max ±30V), and 2 programmable inputs as either logic level inputs or 2 sensitive inputs (10mV) for magnetic pick-ups (max ±10V)

**Serial Channels**

**SDI-12**

1 SDI-12 input, a digital channel. Input can support up to 10 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: 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**

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 anydataTaker 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

**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

**Host RS232 Port**

Speed: 300 to 115,200 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), Serial Sensor

**Network (TCP/IP) Services**

Uses Ethernet and/or Host RS232 (PPP) ports

**Command Interface**

Access the ASCII command interface of the DT82E via TCP/IP

**Web Server**

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

**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 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  
Peak Power: 6W (typical) (12Vdc 500mA)

**Average power Consumption (typical)**

Using 12Vdc external power source

Schedule Rate	1 analog sample	6 analog samples
	Proposed Low Power Logger avg mW (12V)	Proposed Low Power Logger avg mW (12V)
1 sec	560	926
5 sec	250	337
30 sec	50	65
1 min	30	38
5 min	14	16
30 min	11	11
1 hrs	11	11

**Physical and Environment**

Construction: Powder coated steel and anodized aluminum.  
Dimensions: 180 x 137 x 65mm  
Weight: 900 gram (3kg shipping)  
Temperature range: -45°C to 70°C \*  
Humidity: 85% RH, non-condensing  
\*reduced LCD operation outside range -15°C to 50°C

**Accessories Included**

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

**Optional Accessories**

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

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

Your local distributor

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