# DT81 *Series 2*

## Data Logger

### Intelligent Data Logging Products

- **USB memory for easy data & program transfer**
- **Dual Channel Isolation Technology**
- **Serial 'Smart Sensor' port**
- **User Definable allocation of memory size & mode**
- **Web server for improved browser access**
- **FTP for automatic data transfer**
- **Modbus for SCADA connection**
- **SDI-12 (multiple networks)**
- **Up to 3 Analog (± 30V) sensor inputs**
- **8 Flexible Digital channels**

## Feature Packed Value for Money!

The *dataTaker DT81* is the answer to the end user or OEM requiring fewer channels whilst demanding the powerful features and flexibility of the *DT80*.

With support for SDI-12 sensors, Modbus for SCADA systems and Web enabled features, the *DT81* is ready to be rolled out into tomorrow's environmental or industrial monitoring projects.

The *DT81* is a robust, stand alone, low power and economical data logger. It's USB memory stick support, 18 bit resolution and extensive communications capabilities make it a powerful partner.

## Versatile Measurement

Analog and digital channels, high-speed counter inputs, phase encoder input and programmable serial sensor channel allow the *DT81* to easily connect to most sensors and data measurement sources. 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. Group sampling, logging, alarm and control tasks within schedules to suit your requirements. Smart sensors, GPS, PLCs and other intelligent devices are supported via a serial sensor port (RS232), with our optional *CANgate* interface available for CAN bus applications.

## Superior Data Storage and Communications

Store up to **10 million** data points in user defined memory, log as much or as little as you need with independent control of schedule size and mode. 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 with modem support, USB, Ethernet and USB memory stick ports. Connect to the *DT81* locally, remotely or over the Internet. 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.

Take the next step and experience the *DT81* by contacting your local distributor or *dataTaker* office.

### Applications include:

- Research & Development
- Agricultural Research
- Weather Stations
- Total Energy Monitoring
- Environmental Monitoring
- Temperature Profiling
- Aquaculture
- Structural Monitoring
- Strain Gauges
- Process Monitoring
- Fault Identification
- Machine Down Time
- Pressure
- Load Cells
- Flow
- Vehicle Testing
- GPS
- *CANgate* (optional)
    - CAN bus
    - J1939
    - OBDII

**FREE**
**Software & Technical Support**

### Australasia

Datataker
5 Caribbean Drive
Scoresby, Melbourne
Victoria 3179
Tel: +61 3 9757 4477
Fax: +61 3 9753 3483
Email: sales@datataker.com.au

### China

Datataker China Limited
Room 1635,
Haidian New Technology Building,
No. 65 West Road North 4th Ring Road,
Haidian District, Beijing P.R.C.:100080
Tel: 86-10-8288 6646
Fax: 86-10-8288 6649
Email: info@datatakercn.com

### Europe

Grant Instruments (Cambridge) Ltd
Shepreth
Cambridgeshire
SG8 6GB
Tel: +44 (0) 1763 264780
Fax: +44 (0) 1763 262410
Email: sales@datataker.co.uk

### Americas

Computer Aided Solutions
8588 Mayfield Rd, Suite One
Chesterland, OH 44026
Tel: +1 800 9 LOGGER
Tel: +1 440 729 2570
Fax: +1 440 729 2586
Email: sales@dataloggerinc.com

# www.datataker.com

## Analog Channels

1 analog input channel
The channel supports: one isolated 3-wire or 4-wire input, or two isolated 2-wire inputs, or three common referenced 2-wire inputs.

### 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: 100KΩ, >100MΩ
Common mode range: ±3.5V or ±35V on 30V range

### Sensor Excitation (Supply)

Analog channel: 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 or 1 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

1 SDI-12 input, shared with digital channel.
The 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: 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: 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

### 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

## Network (TCP/IP) Services

Uses Ethernet and/or Host RS232 (PPP) ports

### Command Interface

Access the ASCII command interface of the *DT80* 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 1.2Ahr 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, 1.2Ahr battery

| Sampling Speed | Operating Time |
|---|---|
| 1 second | 6.5 hours |
| 5 second | 1 day |
| 1 minute | 10 days |
| 1 hour | 3.5 months |

### Physical and Environment

Construction: Powder coated zinc and anodized aluminum.
Dimensions: 180 x 137 x 65mm
Weight: 1.5kg (4kg 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

**dataTaker**®