

# 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 ( $\pm 30V$ ) sensor inputs
- 8 Flexible Digital channels



Specifications

### 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 **5 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

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## Analog Inputs

1 analog input channel  
The channel supports: one isolated 3- 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 DT81 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.

## Multiplexer (Input Selector)

Relay Multiplexer

**Input impedance:**

100KΩ, 1MΩ or >100MΩ, programmable

**Common mode range:** ±3.5V or ±35V on 30V range

**Note:** cannot mix low voltage (e.g. thermocouples) with high voltage (e.g. 0-10V) inputs.

## Sampling

Sampling for accuracy and noise rejection by integrating over 50/60Hz line period.

**Maximum sample speed:** 25Hz

**Effective resolution:** 18 bits

**Linearity:** 0.01%

Common mode rejection 30mV range: >90dB

Line (50/60Hz) series mode rejection: >35dB

## Sensor Excitation (Supply)

**Analog channels:** Controlled excitation of 4.5V, 250µA, 2.5mA or Switched external supply.

**General Purpose:** Switchable 12V regulated supply for powering sensors & accessories. (max 150mA)

## Sensor Support

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

**Resistance range:** <10kΩ

## Monolithic Temperature Sensors

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

## Bridge Sensors

**Configurations:** ¼, ½ & full bridge

**Excitation:** voltage or current

## 4-20mA Current Loop

**Shunt:** Internal 100Ω to a shared common or external shunt resistor.

## Digital Channels

### Digital Input/Outputs

**Number of channels:** 4 Bi-directional channels for state & count input or state output.

**Input Type:** 4 logic level (max: 10Hz, 3 x 30V, 1 x 20V)

Measure state or low speed counts

*Low speed counters do not function in sleep mode.*

**Output Type:** 3 with open drain FET (max: 30V, 100mA), 1 with logic output.

### Relay Output

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

### Dedicated Counter Inputs

**Number:** 4 high speed counters or 1 phase encoder

(quadrature) inputs (max: 10kHz, 2 x ±30V, 2 x ±10V).

2 Counters have 10mV sensitive inputs for magnetic pick-ups.

**Size:** 32 bit

## SDI-12 Channels

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

## Serial Sensor Channel

One channel available and programmable to allow data to be logged from smart sensors and data streams.

**Shared with Host Port:** RS232 only\*

Handshake lines: RTS, CTS

**Baud rate:** 300 to 115200

**\*If used as Serial Sensor channel 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, execute any *dataTaker* command, transmit message.

## 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

**Interface:** 10BaseT

**Protocols:** TCP/IP (UDP, FTP, HTTP, Modbus)

## RS232

**Speed:** 300 to 115k baud (57,600 default)

**Handshake lines:** DCD, DSR, DTR, RTS, CTS

**Modem support:** auto-answer and dial out

**Protocols:** PPP, TCP/IP (UDP, FTP, HTTP, Modbus)

## USB

USB 1.1, 12Mb/sec – virtual COM port.

## Web Server

Built-in pages to view current data, status, download data and send commands.

Custom pages can be defined.

## Modbus Server (slave)

Access to current data and status.

Available ports, Ethernet, Host Port (RS232)

## System

### Status Indicators

**Status LEDs:** 4 for sample, disk, power and attention.

### 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

Training sensor kit

## 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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