

# DT80

## Data Logger

# dataTaker®

### Intelligent Data Logging Products

Specifications

- USB memory stick for data transfer
- SDI-12
- Modbus
- Web
- Rugged construction
- $\pm 30V$  inputs
- Ethernet / USB / RS232 / RS485 / Modem support
- 5-15 Analog sensor inputs
- 12 Digital channels
- Serial sensor channel



### Take the next step!

Experience the *dataTaker DT80*. A robust, stand alone, low power data logger featuring USB memory stick support, 18 bit resolution, extensive communications capabilities and built-in display.

With support for multiple SDI-12 sensor networks, Modbus for any SCADA systems and Web enabled features, the *DT80* is ready to be rolled out into tomorrow's environmental or industrial monitoring projects.

### Versatile Measurement

The *DT80's* universal analog input channels can automatically select measurement range based on the signal level. These channels are isolated and over voltage protected to provide reliable monitoring in noisy environments.

Supported measurement and sensor types include temperature, DC voltage, current, 4-20mA loops, resistance, bridges, strain gauges and frequency - all returned in engineering units of your choice. Switchable excitation and triggering are provided on all channels to simplify wiring and installation.

The *DT80's* universal digital channels provide input, output and counter inputs to 100KHz. Some channels can also be used as phase encoder inputs. In addition, two dedicated counter channels have adjustable thresholds for the monitoring of low level signals such as magnetic pick-ups. Other digital features include trigger input for event logging and a latching relay output to control or power external devices.

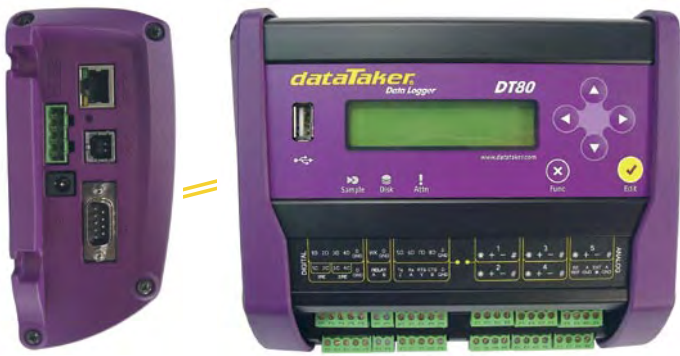
Connecting the *DT80* to GPS, scales, PLC's, gateways and other intelligent devices is made simple with a serial sensor port offering RS232/422/485 connectivity.

### Superior Data Storage and Communications

With up to **5 million** data points stored in a secure, non-volatile internal memory the *DT80* gives peace of mind data logging. Versatile, user defined memory allocation provides flexible data storage solutions. A further option allows channel data to either overwrite or stop logging once the memory is full.

The *DT80's* superior communications devices provide RS232, Ethernet, USB and USB memory stick ports together with modem dial-in and dial-out functions. TCP/IP is supported enabling communications over a local or wide area network.

Take the next step and experience the *DT80* by contacting your local distributor or *dataTaker* office :-



## Analog Inputs

The maximum number of inputs depends on sensor wiring configuration. Sensor configurations may be mixed.

**Two wire with one shared terminal:** 15

**Three and Four wire:** 5

## 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.

## Multiplexer (Input Selector)

Relay Multiplexer – provides isolation between inputs  
**Input impedance:** 100K, 1M or >100M, programmable  
**Common mode range:** ±3.5V or ±35V on 30V range

## Sampling

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

**Maximum sample speed:**

25Hz (up to 70Hz without noise rejection)

**Effective resolution:** 18 bits

**Linearity:** 0.01%

Common mode rejection 30mV range: >90dB

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

## Sensor Excitation

**Each channel:**

4.5V, 250µA or 2.5mA or Switched external supply.

## 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 is provided including polynomials, expressions and functions.

## Thermocouples

**Types:** B, C, D, E, G, J, K, N, R, S, T

**Calibration standard:** ITS-90

## RTD's

**Materials supported:** Pt, Ni, Cu

**Resistance range:** 10 to 10K

## Monolithic Temperature Sensors

**Types supported:** LM34 - 60, AD590, 592, TMPxx

## Bridge Sensors

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

**Excitation:** voltage or current

## 4-20mA Current Loop

**Shunt value:** 100Ω to a shared common or external shunt 20Ω – 200Ω resistor

## Digital Channels

### Digital Input/Outputs

**Number of channels:** 8 Bi-directional channels for state & count input or state output.

**Input Type:** 8 logic level (max 30V).

Measure state or low speed counts (max 10Hz)

Low speed counters do no function in sleep mode.

**Output Type:** 4 with open drain FET (30V 100mA), 4 with logic output.

### Relay Output

1 latching relay (30vdc, 1A max)

### Dedicated Counter Inputs

**Number:** 4 high speed counters or 2 phase encoder (quadrature) inputs.

100kHz max

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

**Size:** 32 bit

## SDI-12 Channels

**Number:** 4 SDI-12 inputs, shared with digital channels.

## Serial Sensor Channel

**Modes:** RS232, RS422, RS485

**Handshake lines:** RTS, CTS

**Baud rate:** 300 to 115200

Programmable prompt string

Data parsing allows multiple assignments to variables

## Calculated Channels

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

**Functions:** sin(), cos(), tan(), asin(), acos(), atan(), abs(), sqrt(), average, maximum, minimum, time of max, time of min, variance, integral, histogram, rainflow (fatigue analysis)

## 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)

### 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)

### USB

USB 1.1, 12Mb/sec – virtual COM port.

## 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:** 3 for sample, disk and attention.

### Firmware Upgrade

**Via:** RS232, Ethernet, USB coms. 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

### Power Consumption

**Normal mode:** 5W (15V 330mA)

**Charging flat battery:** 12W (15V 800mA)

**Sleep mode:** 3mW (500µA from Internal 6V battery)

### Internal Main Battery

**Voltage (Capacity):** 6V (1.2Ahr) lead acid gel cell

**Operating time:** continuous sampling: 1 hour

**10 minute sampling:** 8 days

**1 hour sampling:** 21 days

### Memory and Real Time Clock Battery

**Voltage (Capacity):** 3.6V (400mAh) lithium, 1/2 AA

### Physical and Environment

**Construction:** Powder coated zinc and anodized aluminum

**Dimensions:** 181 x 136 x 63mm

**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:** input: 110/240Vac output: 15VDC 800mA

## Optional Accessories

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