

# DT80 Series 2

# dataTaker®

Data Logger

Intelligent Data Logging Products

- USB memory for easy data & program transfer
- Dual Channel Isolation Technology
- 2 Serial 'Smart Sensor' ports
- User Definable allocation of memory size & mode
- Web Interface
- FTP for automatic data transfer
- Modbus for SCADA connection
- SDI-12 (multiple networks)
- Up to 15 Analog ( $\pm 30V$ ) sensor inputs
- Expandable to 300 analog inputs
- 12 Flexible Digital channels



Specifications

## The Smarter Solution

The *dataTaker DT80* is a smart data logger that provides an extensive array of features that allow it to be used across a wide variety of applications. The *DT80* is a robust, stand alone, low power data logger featuring USB memory stick support, 18 bit resolution, extensive communications capabilities and built-in display. The *dataTaker DT80*'s Dual Channel concept allows up to 10 isolated or 15 common referenced analog inputs to be used in many combinations.

With support for multiple SDI-12 sensor networks, Modbus for SCADA systems, FTP and Web interface, 12V regulated output to power sensors, the *DT80* is ready to be rolled out into environmental, industrial and many other types of monitoring projects.

## Versatile Measurement

Analog and digital channels, high-speed counter inputs, phase encoder inputs and programmable serial sensor channels allow the *DT80* 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 2 serial sensor ports (RS232 or RS422/485), with our optional *CANgate* interface available for CAN bus applications.

Manage a variety of sensors or devices using the Sensor Power options via dedicated power output, digital outputs or the latching relay configurations.

## 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 *DT80* locally, remotely or over the Internet. The web interface allows users to configure the *DT80*, access logged data and see current measurements as mimics or in a list using a web browser. 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 *DT80* by contacting your local distributor or *dataTaker* office.

## Applications include:

- Research & Development
- Agricultural Research
- Weather Stations
- Total Energy Monitoring
- Environmental Monitoring
- Temperature Profiling
- Thermistor Arrays
- 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

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## Analog Channels

5 analog input channels (expandable to 100\*)  
 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:  
 15 (expandable to 300\*)  
 Two wire isolated: 10 (expandable to 200\*)  
 Three and four wire isolated: 5 (expandable to 100\*)  
 \*Expansion requires optional CEM20

## 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 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

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: 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

## Serial Sensor Port

Interface: RS232, RS422, 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 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](http://www.datataker.com)

**dataTaker**®

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

[www.datataker.com](http://www.datataker.com)



**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.  
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Your local distributor