DT81

Data Logger

dataTaker®

- **USB memory stick for data transfer**
- **SDI-12**
- **Modbus**
- **Web**
- **Rugged construction**
- **± 30V inputs**
- **Ethernet / USB / RS232 / Modem support**
- **1-3 Analog sensor inputs**
- **8 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 sensor network, Modbus for any 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

The *DT81*'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 *DT81*'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.

Superior Data Storage and Communications

With up to **5 million** data points stored in a secure, non-volatile internal memory the *DT81* 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 *DT81*'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 *DT81* by contacting your local distributor or *dataTaker* office :-

FREE
Software &
Technical
Support

Analog Inputs

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

Two wire with one shared terminal: 3
Three and Four wire: 1

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 – 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: 4 Bi-directional channels for state & count input or state output.
Input Type: 4 logic level (max 30V).
Measure state or low speed counts (max 10Hz)
Low speed counters do no function in sleep mode.
Output Type: 3 with open drain FET (30V 100mA), 1 with logic output.

Relay Output

1 latching relay (30vdc, 1A max)

Dedicated Counter Inputs

Number: 4 high speed counters or 1 phase encoder (quadrature) inputs.
100kHz max
2 Counters have 10mV sensitive inputs for magnetic pick-ups.
Size: 32 bit

SDI-12 Channels

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

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

Status Indicators

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

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 (500uA 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 (400mAHr) 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 outside range ø –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.jsinstruments.com

dataTaker®

Your local distributor

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