

# DT800

Data Logger



# dataTaker®

Intelligent Data Logging Products

Specifications

- High Speed Data Acquisition
- 12 - 42 Sensor Channels, 16 Digital Channels
- Unique Universal Channels
- Up to 130,000,000 Data Points
- ATA Flash PC Card for Removable Data Storage
- Easy Configurable Windows Based Software
- Stand Alone & Real Time Data Acquisition
- Remote Monitoring & Control
- Removable Terminal Base Assembly
- Serial Sensor Channel
- Fatigue Cycle Counting
- Ethernet



## The Next Generation

Combining the roles of data acquisition, data logging and controller, the *DT800* is a robust, stand alone, high speed unit featuring 16 bit resolution, battery backed internal SRAM and ATA Flash memory card support, 12V or internal battery operation, and a powerful operating system and internal file structure.

## Versatile Measurement

The *DT800* has 42 analogue inputs, giving 42 separate single ended channels or 24 differential channels. These are isolated and over voltage protected, with measurement across 12 auto-scaling ranges from 10mV to 13V full scale.

All common measurement types are supported, including DC and AC(RMS) voltage, current, resistance, temperature, bridges, strain gauges, 4-20mA loops and frequency. Adjustable excitation and triggering are provided on all channels. A Serial Sensor Port is also included for sensors with RS232/485 or SDI-12 capability

Digital I/O consists of 8 digital input channels, and 8 digital I/O channels. Two of the digital inputs have adjustable threshold for the monitoring of low level signals. Digital state, counts at up to 10kHz and triggering are supported on all digital channels.

## Superior Data Storage and Communications

An RS232 port, a 10baseT Ethernet port and a PC card port are provided as standard for *dataTaker* programming and data retrieval. Data can either be returned in real time or stored to internal RAM or a memory card. The *DT800* stores programs and data in DOS format enabling full compatibility with Windows.

The *DT800* has modem dial-in and dial-out capability. TCP/IP is supported, which means that the *DT800* can communicate over a local area network. In addition, an on-board FTP server is provided so that files can easily be transferred via the Ethernet or RS232 ports.

## The dataTaker Windows Based Software

Datataker produces a number of software packages for interfacing with the *dataTaker* data logger range.

*DeTransfer* provides a text-based interface for programming and management, with simple plotting provided by the *DeView* utility. *DeLogger 5* is our standard GUI (Graphical User Interface) for 'drag and drop' programming, spreadsheet presentation of data, plotting of charts and simple mimics. *DeLogger 5 Pro* is the enhanced graphical package including additional automation, reporting, database and remote *dataTaker* management features.

For your unique application, contact your local distributor or your local Datataker office.

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## Analog Channels

### Channel Number

Two wire: 24, or 42 with one shared terminal  
 Three wire: 12, or 18 with one shared terminal, 36 with two shared terminals

Four wire: 12, or 18 with two shared terminals  
 Six wire bridges: 6, or 18 with two shared terminals  
 Sensor configurations may be mixed in any combination.

### Fundamental Input Ranges

The fundamental inputs that the **DT800** can measure are voltage, resistance and frequency. All other measurements are derived from these.

Full Scale	Resolution	Full Scale	Resolution
±10 mVdc / mVac	1 µV	20 Ω	100 µΩ
±20 mVdc / mVac	2 µV	50 Ω	25 µΩ
±50 mVdc / mVac	5 µV	100 Ω	500 µΩ
±100 mVdc / mVac	10 µV	200 Ω	1 mΩ
±200 mVdc / mVac	20 µV	500 Ω	3 mΩ
±500 mVdc / mVac	50 µV	1,000 Ω	5 mΩ
±1 Vdc / Vac	100 µV	2,000 Ω	100 mΩ
±2 Vdc / Vac	200 µV	5,000 Ω	25 mΩ
±5 Vdc / Vac	500 µV	10,000 Ω	50 mΩ
±10 Vdc / Vac	1 mV	10 kΩ	0.01 Hz
±13 Vdc / Vac	2 mV		

### Accuracy

Measurement at ...	25°C	-45°C to 70°C
DC Voltage	0.02%	0.10%
AC Voltage (50Hz - 1kHz)	1.0%	1.5%
DC Resistance	0.04%	0.20%
Frequency	0.02%	0.04%

Accuracy table above is % of reading ±0.01% of full scale.

### Sensor Excitation

Programmable with 12 bit resolution, available on any analog channel as a balanced output:  
 DC Voltage mode: 0 to 20V  
 DC Current mode: 0 to 15mA  
 DC Power mode: 0 to 200mW

### Multiplexer

Type: solid-state  
 Common mode range: ±13V or -2V to 22V selectable  
 Over voltage protection: ±40V  
 Lighting protection: secondary, via ±30V varistors

### Sampling Modes

#### Normal Mode

Sampling for accuracy and noise rejection by interleaved sampling over one or more line cycle periods.

Effective resolution: 16 bits

Common mode rejection 20mV range: 130dB

#### Fast Mode

Fast continuous sampling with reduced noise rejection

Effective resolution: 15 bits

#### Burst Mode

Provides sampling of fast events with triggering capability

Sampling speed: 1kHz to 100kHz

Effective resolution: 13bits

Trigger: pre, mid and post triggering

Trigger sources: analog level or digital input

Buffer size: 100 to 65,000 raw samples

Minimum time between bursts: 100ms - 30ms

The table following indicates the speed in samples per second per channel attainable for various channel types and in different sampling modes with default settings. Higher speeds are possible by fine tuning the *dataTaker* data logger settings.

## Sampling Speed

Input Type	Mode	No. Channels			
		1	5	10	20
Voltage (no corrections)	Normal	37	27	14	9
	Fast	98	50	36	20
	Burst	50k	6k	3k	1.5k
Voltage, Current Strain (voltage excite)	Normal	29	8	4	2
	Fast	72	27	15	8
	Burst	25k	3k	1.5k	750
Thermocouple	Normal	25	6	3	1.7
	Fast	59	20	10	5
	Burst	12k	3k	1.5k	750
Resistance, RTDs Strain (current excite)	Normal	23	4	2	1
	Fast	48	15	8	4
	Burst	12k	1.5k	750	350
AC (rms) Voltage	Normal	1	0.2	0.1	0.05
Frequency	Normal	32	8	4	2
		Samples / Second / Channel			

## 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

Accuracy (case at 25°C): per NIST Monograph 125

Reference junction compensation accuracy:

Case Temperature	25°C	-20°C to +60°C
Accuracy	±0.2°C	±0.5°C

Thermocouple integrity testing by resistance measurement.

### RTD's

Materials supported: Pt, Ni, Cu

Resistance range: 10 to 10kΩ

Resistance measurement accuracy:

4 wire: 0.05 %, 3 wire: 0.15 %

### Thermistors

Types: YSI 400xx Series

Resistance range: <10kΩ,

<20kΩ with parallel resistor

### Monolithic Temperature Sensors

Types supported: LM34 - 60, AD590, 592

### Bridge Sensors

Configurations: 4-wire and 6-wire

Excitation: voltage or current

Bridge completion: external

### 4-20mA Current Loop

Shunt: External 20Ω - 200Ω resistor

## Analog Output

Number of channels: 1 (share with burst mode trigger)

Voltage range: -10V to +10V (10mV resolution)

Maximum current: 20mA

## Digital Channels

Bi-directional channels: 8, 2 of which have 10mV

sensitive inputs for magnetic pick-ups

Input only channels (logic level): 8

### Counter Channels

Number: 16, shared with digital I/O channels

Size: 32 bit (>4,000,000,000 counts)

Speed: Channels 1-6 100Hz (3Hz in Sleep Mode)

Channels 7-8 10kHz (1kHz in Sleep Mode)

Channels 9-16 100Hz (3Hz in Sleep Mode)

### Digital Output

Number: 8 shared with bi-directional channels

Output type: open-drain FET, +30V, 100mA

## Serial Sensor Channel

Modes: RS232, RS422, RS485, SDI-12

Handshake lines: RTS, CTS

Baud rate: 300 to 56k baud

Power for sensors: derived from system supply

(9-26 at 300mA)

Programmable prompt string

Data parsing allows multiple assignments to variables

## Calculation Channels

Any expression 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, rainfall (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

Maximum number of channels: 500

## Data Storage

### Internal RAM

Capacity: >130k data points, dual battery backed SRAM

### PC Card

Types: ATA FLASH and hard-disks, all sizes, 3V or 5V

Compact Flash, Smart Media, Sony Stick with adaptor

Capacity: >65,000 data points per megabyte,

5 channels/schedule, Windows file format

## Communication Interfaces

### Ethernet

Interface: 10BaseT

Protocols: TCP/IP (UDP, FTP)

### RS232

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

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

Modem support: auto-answer and dial out

Protocols: PPP, TCP/IP (UDP, FTP)

## System

### Firmware Upgrade

Via: RS232, Ethernet or FLASH PC Card

### Real Time Clock

Normal resolution: 200µs

Accuracy: 10s per month at 25°C

### PC Card (PCMCIA) Support

Number of slots: 1 x Type I, II or III (PCMCIA 2.1)

Card types: ATA FLASH

Socket voltage: 3V or 5V (400mA) and 12V (60mA)

### Power Supply

External voltage range: 11 to 28V<sub>dc</sub>

### Power Consumption

In normal mode: 5W

Sleep mode: 5mW (400µA from internal 12V battery)

### Internal Main Battery

Voltage (Capacity): 12V (2.2Ahr) lead acid gel cell

Temperature compensated charging: -10°C to +70°C

Operating time: continuous sampling: 5 hours

10 minute sampling: 1 month

1 hour sampling: 4 months

### Memory and Real Time Clock Battery

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

### Physical and Environment

Construction: Powder coated fabricated steel

Dimensions: 260 x 110 x 90mm

Weight: 3.1kg (5.5kg shipping)

Temperature range: -45°C to 70°C

Humidity: 85% RH, non-condensing

## Accessories Included

Resource CD: includes software, video training

and user manual

Line adaptor: 110/240Vac to 15Vdc, 800mA

Comms cable: for PC RS232 and USB adaptor

Tools: single and dual cage clamp tools

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

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



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