dataTaker®

Data Acquisition and Data Logging Systems

www.datataker.com

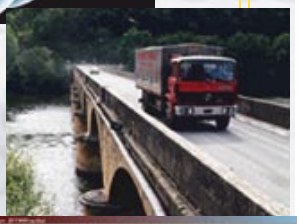
dataTaker DT800

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 DePlot utility. DeLogger4 is our standard GUI (Graphical User Interface) for 'drag and drop' programming, spreadsheet presentation of data, plotting of charts and simple mimics. DeLogger4 Pro is the enhanced graphical package including additional automation, reporting, database and remote *dataTaker* management features.

For your unique application, contact your local datataker office or your local dealer.

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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	10k Hz	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
Lightning 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

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
Reistance, 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			

The table above 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's* settings.

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 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 %

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, 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
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_{dc}
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 months
1 hour sampling: 4 months
Memory and Real Time Clock Battery
Voltage (Capacity): 3.6V (400mAHr) 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

Software: DeLogger4, DeTransfer, DePlot, Slice on CD
Line adaptor: 110/240Vac, 500mA
Manuals: "Getting Started with *DT800*" and "*DT800* User's Manual"
Sensors: 1 Type K thermocouple, 1 potentiometer
Line adaptor: 110/240V_{ac} to 12V_{dc}, 1Amp
RS232 cable: for PC with 9 to 25 pin adaptor
Tools: single and dual cage clamp tools

Warranty

The *dataTaker* DT800 is 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 or contact your nearest Datataker office or dealer.

dataTaker®

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TS-0039-B2

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