Data Loggers and Data Acquisition Products

High Performance

General Purpose

Low Power

Temperature

Flow

Pressure

Load

Voltage

www.datataker.com
What is Data Acquisition Anyway?

Data acquisition is simply the gathering of information about a system or process. It is a core tool to the understanding, control and management of such systems or processes. Parameter information such as temperature, pressure or flow is gathered by sensors that convert the information into electrical signals. Sometimes only one sensor is needed, such as when recording local rainfall. Sometimes hundreds or even thousands of sensors are needed, such as when monitoring a complex industrial process. The signals from the sensors are transferred by wire, optical fibre or wireless link to an instrument which conditions, amplifies, measures, scales, processes, displays and stores the sensor signals. This is the data acquisition instrument.

In the past data acquisition equipment was largely mechanical, using smoked drums or chart recorders. Later, electrically powered chart recorders and magnetic tape recorders were used. Today, powerful microprocessors and computers perform data acquisition faster, more accurately, more flexibly, with more sensors, more complex data processing, and elaborate presentation of the final information.

Real Time Data Acquisition and Data Logging

Data acquisition can be divided into two broad classifications – real time data acquisition and data logging. Real time data acquisition is when data acquired from sensors is used either immediately or within a short period of time, such as when controlling a process. Data logging on the other hand is when data acquired from sensors is stored for later use. In reality, there is a continuum of devices between real time data acquisition and data logging that share the attributes of both of these classifications.

Evolution in Data Acquisition

Data acquisition technology continues to evolve, with high speed data interfaces and networking forcing major change to previous practices. Sensitive low level signals can now be left in the field, with just the desired data being returned to a remote computer for analysis. This is the function of a dataTaker data logger or DAQ box, providing the functionality and speed of a DAQ board, adding the stand-alone capability to process, consolidate and log data for later downloading. A series of data loggers interconnected by a network allows data gathering closer to sensors, for improved signal quality and reduced installation cost.

Stand-alone or PC based?

Dedicated data loggers have many inherent advantages over PC based alternatives for the bulk of data acquisition tasks. These include low power operation, standby power sources and security of data in the event of power or communications failure. Being specifically designed for the task, errors due to influences such as poor noise immunity and unstable operating systems are minimised. A dedicated data logger supporting anything from thermocouples to strain gauge sensors, will process and return data to a PC in real time.
Right now dataTaker data loggers are being used in...

**Monitoring greenhouse conditions**
To maintain optimum greenhouse conditions to maximise crop production and minimise costs.

**Stress monitoring in mining equipment**
Monitoring of effectiveness of design modifications to a dredging bucket that holds 500kg of coal.

**Product development of masonry fasteners**
To measure the peak installation load and monitor how the load reduces as the fastener "bed's in".

**Remote communications**
Manufacturer uses SMS to assist in validation of a new product.

**Gas detection at a chemical plant**
To monitor and record hydrochloric gas and chlorine levels at different locations within the plant.

**Monitor ecological consequences of wastewater outflows**
Environmental Agency measures pollutants and temperatures, mapping discharge plumes in a heavily populated bay area fed by multiple waterways.

**New passenger vehicle brake test**
Monitor brake pad temperature, road speed, average deceleration and braking duration. Critical information used for the estimation of component life and setting of service intervals.

**“Hot soak” in the Middle East**
New prototype vehicle was placed in a hot dry environment to monitor and measure temperatures of items and surfaces on the inside and outside the vehicle.

**Lamb with 12 months un-refrigerated storage life**
Monitoring and recording of the food sterilisation process (F0).

**Rail infrastructure monitoring: Train third rail height**
Measurements on the track condition, rail height and voltage delivered simultaneously.

...and many more applications.

Visit our website for more details of these applications at www.datataker.com
High Performance Stand-alone Data Acquisition Unit

- 12 - 42 Sensor Channels, 16 Digital Channels
- Unique Universal Channels
- Over 130,000,000 Data Points
- ATA Flash PC Card for Removable Data Storage
- Easy Configurable 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.

With all these functions rolled into a single cost effective package, you can be confident the DT800 is your solution for a wide range of tasks.

Visit our website for more details of this product at www.datataker.com
Speed
- 100kHz sampling
- Triggered burst mode (similar to digital oscilloscopes)
- Pre & post triggering

Sampling Modes
- Burst mode: to 100kHz with 13 bit resolution
- Normal mode: to 200Hz with 16 bit resolution

Easy Programming
- Graphical (GUI) based
- Text based

Analog Inputs
- 12 to 42 channels (depending on sensor type)
- Protected ±40V solid state multiplexer
- 13 to 16 bit resolution
- ±10mV to ±10V full scale, auto-ranging
- Accuracy: 0.02% at 25°C, 0.1% -20 to +60°C
- Built-in sensor excitation and conditioning
- Internal house keeping channels

Analog Output
- Single ±10V output
- 12 bit resolution
- ±20mA current

Digital I/O
- 8 bi-directional channels
- Counters, state, relay drives
- 2 sensitive inputs for inductive pickups
- 8 input only channels

Serial Sensor Channel
- RS-232, RS-485 and SDI-12
- Programmable prompt and data parsing

Sensor Support Includes:
- 11 thermocouple types
  - ±0.1°C linearisation conformance to ITS90
  - ±0.3°C reference junction accuracy ( -20 to +60°C )
- RTDs – 10Ω to 10kΩ, Pt, Ni and Cu types, ±0.2°C
- Thermistors
- Bridges
- Inductive pickups
- Conductivity probes

Alarms
- Up to 500 alarms

PC Card Slot
- ATA FLASH
- Windows/DOS file formatting

Data Storage
- Over 130,000 time stamped data points
- Expandable via PC Card to >130,000,000 data points

Ethernet
- 10 BaseT with TCP/IP
- RS-232
  - 300 to 115k baud
  - Handshake: DCD, DTR, DSR, RTS, CTS, RI, XON/XOFF

Low Power
- 5mW sleeping
- 5W normal operation
- Stand alone operation from internal battery

Power Supply
- 11 to 28Vdc
- Internal 12V 2.2Ah battery
- Ensures data integrity during over voltage and brown out conditions

Rugged Construction
- Fabricated steel
- Powder coated

Environmental Operation
- Temperature range -45°C to 70°C
The dataTaker DT50 is a general purpose low cost data logger. The DT50 features 5 to 10 analog channels depending on sensor type, five digital input/output channels, 3 high speed counters and sampling speed up to 70 samples per second.

Data can be conveniently and securely stored in battery backed RAM and removable PC cards, the latter providing storage for up to 1,390,000 data points. The DT50’s rugged steel construction makes the unit suitable for harsh environments.
DT51 & DT53

General Purpose
Economical
Low Power
Data Loggers

- Unique Universal Channels
- Up to 166,500 Data Points
- Stand-alone & Real Time Data Acquisition
- Embedded Program Option
- Easily Configurable Software
- Remote Monitoring & Control
- Removable Screw Terminals
- Internal Battery Option
- Display + Keypad Option

The dataTaker DT51 and DT53 retain all the core features of the DT50 providing economical solutions to applications requiring fewer channels.

DT51
- 1-3 Analog Channels
- 7 Digital Channels
- Up to 70 samples per second

DT53
- 7 Digital Channels
- Up to 100 samples per second

Typical Applications
- Concrete Curing
- Sterilisation (F0)
- Traffic Counters
- Simple Weather Station
- Water Flow and Metering
- Tipping Bucket Rain Gauge
- Process & Machine Monitoring
- Utility Monitoring
- Product Testing
- Fault Finding
- Research and Development
- Event Profiling

Visit our website for more details of these products at www.datataker.com
The *dataTaker DT500 & DT600* range of general purpose, battery powered data acquisition and data logging systems measure inputs from most sensor types. Data can be conveniently and securely stored in battery backed RAM and removable memory cards.

The range includes models: *DT500, DT505, DT515, DT600, DT605, DT615*.

The *DT600* and *DT605* both have an integral display and keypad that allows users to view channel data, alarm status, and system information including time, battery status and amount of data stored. Programmable function keys allow keypad control over the unit’s operation.

**Easy Programming**
- Graphical (GUI) based
- Text based

**Analog Channels**
- 10 to 30 depending on sensor type
- ±25mV to ± 2.5V full scale, auto-ranging (*DT500, DT600*)
- ±25mV to ± 100V full scale, auto-ranging (*DT505, DT605*)
- Accuracy ±0.15% at 25°C
- Resolution 15 bits (to 1µV)
- Up to 70 samples per second
- Direct sensor connection (no need for sensor conditioning)

**Digital Channels**
- 4 input/output/low speed counters
- 3 high speed counters

**Channel Expansion Port**
- 30 Analog Inputs
- 20/10 Digital input/output

**Sensor Support Includes**
- 11 thermocouple types
- RTD types PT, Cu, Ni (10Ω to 2KΩ)
- Thermistors
- Bridges

**Alarms**
- Conditional Test
- Delay
- Control

**Networking**
- RS-485
- Up to 32 *dataTaker* data loggers

**Host Communications**
- RS-232

**Display & Keypad (DT600 & DT605 only)**
- Current data
- Alarm states
- Programmable Keys
- Beeper for alarms

**Internal Battery**
- Memory back-up
- UPS function

**Power Supply**
- 9 to 18Vac or 11 to 24Vdc

**Rugged Construction**
- Fabricated steel
- Powder coated

**Environmental Operation**
- Temperature range -45°C to 70°C

**Options**
- PC card: extra memory (up to 1,390,000 data points)
- Channel Expansion Module (CEM-AD)
- Display + Keypad (PMD: *DT500, DT505, DT515*)

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Geotechnical Low Power Data Loggers

- 10-30 Sensor Channels, 7 Digital Channels
- Vibrating Wire Sensor Support
- Microphone Output for Audible Tuning
- Unique Universal Channels
- Up to 1,390,000 Data Points
- PC Card for Removable Data Storage
- Easily Configurable Software
- Stand-alone and Real Time Data Acquisition
- Remote Monitoring and Control
- Removable Screw Terminals
- Expandable To 90 Channels

There are two versions of the GeoLogger, the dataTaker DT515 and DT615. Both units retain all the core features of the DT505 and DT605 models plus Vibrating Wire Sensor Support with 500Hz to 5kHz frequency range and unique phase lock loop filtering.

Sensor Support Includes
- Vibrating wire sensors
- 11 thermocouple types
- RTD types PT, Cu, Ni (10Ω to 2KΩ)
- Thermistors
- Bridges

Typical Geotechnical Applications
- Pressure in dam walls using vibrating wire stain gauges
- Land fill stability
- Measuring pore pressure in retaining walls
- Creep monitoring on building foundations
- Mine wall monitoring
- Cable tension monitoring
- Landslide monitoring and alarm warning
- Tunnel monitoring using extensometers

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Free Resource CD

Supplied with dataTaker data loggers

Includes
Entry level software and powerful tools to setup and manage your dataTaker.

Instruction Manuals
Soft copies of Getting Started and User Manuals to view and search on your PC.

Video Tutorials
Short, practical tutorials covering common sensor interface and setup of your dataTaker.

Technical Notes and Application Examples
Support documents for dataTaker data loggers and typical accessories.

Utilities
Additional software tools for dataTaker data loggers and accessories such as modems and memory card readers.

LabVIEW™ Driver
An extensive driver library for developing Datataker applications in the National Instruments™ LabVIEW environments.

dataTaker Software

DeLogger™ 4 Pro

DeLogger 4 Pro is Datataker’s enhanced level graphical software.

DeLogger 4 Pro has enhanced features and capabilities including:
- PSTN, GSM and Radio modem connection to remote sites
- Automated and Scheduled Management of multiple local or remote dataTaker loggers. Supports multiple simultaneous connections to loggers using RS232, modem or Ethernet.
- Strong reporting capabilities, including web publishing to HTML pages for the main display views. These include Form View, Chart View, Mimic View, Spread View (Chart only) and Analysis View (Chart only)
- Sophisticated database for comprehensive and reliable data management
- Extensive mimic display and visual instrument displays
- DDE and OPC (OLE for Process Control) Server capability
- Additional charting options via the Analyse Window

DeLogger 4 Pro provides you with powerful and easy-to-use features for small or large systems based around dataTaker data loggers.

Typical Applications for DeLogger 4 Pro
- Automated data retrieval from multiple remote dataTakers
- Email management for notification of alarms
- Report generation for standard tests and production process results
- SCADA interface for dataTaker users

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**Panel Mount Display (PMD-01)**
- Use with DT50, DT500 Range
- Display current data, alarm states
- Programmable keys
- Factory installed in enclosure if required

**Modem Manager (MM-01)**
- Use with DT50, DT500 Range
- Robust modem communications
- Enhance Remote site applications
- SMS/pager/host call-out

**Ethernet to RS-232 Serial Interface**
*(10BaseTRS232)*
For DT50, DT500, DT600 Range

**Modems**
PSTN, GSM, Radio

**USB To RS232 Adapter (UC232A)**
For PCs without a Serial Port

**Channel Expansion Module (CEM-AD)**
- DT500 and DT600 Range
- 10 to 30 analog channels (relay multiplexer)
- 20 TTL/CMOS digital inputs
- 5 normally open relay contact outputs, 5 open collector outputs

**Radio Modem**
- Radio data rate up to 115 200 bits/sec
- License-free frequency
- Security against cross-talk between systems
- Single hop to 20+ miles
- Repeater function

**PC Cards**
- Extra memory or data transport
- 4MB SRAM for 1,390,000 data points
- 1MB SRAM for 340,000 data points
- 64 to 2,000 MB FLASH *(DT800 only)*
- Industrial Grade

**PC Card Reader (MCI-04)**
- Fast downloading of data to your PC
- RS-232 Interface
- Use with DT50, DT500, DT600 Range

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Training Workshops

Datataker would like to invite you and your colleagues to a Training Workshop. Our Workshop focus on data acquisition and data logging, guidelines for optimising data acquisition systems and demonstrations.

Our training workshops are run by application support staff, who develop working applications for end users. We have wide experience in all facets of data acquisition, measurement and solutions. Participants will also have an opportunity to ask questions and take part in practical sessions.

All sessions allow for discussion of user specific application issues.

Why should I attend?

• To understand the fundamentals of data acquisition and data logging
• Optimise your dataTaker data logger application
• Be up to date with dataTaker products
• Share your application stories with other users, learn from the experience of others
• Hands on tutorial with training by experienced dataTaker support staff

There are three main applications

• **Local** - Online data acquisition and display, control and alarms connected via PC
• **Remote** - Unattended data logging for single and multi-site applications. Reliable data collection using modems connected via telephone, satellite, radio, or internet communications
• **Stand-alone** - Flexible, low-power, battery-operated data loggers with removable data storage

Quality standards and warranty

Our commitment to manufacturing quality is total – as demonstrated by our certification to International quality standards. Environmental and functional testing ensures the highest level of reliability in all of our products. We are confident to back our products with a 3-year warranty, and service is available from the worldwide dealer network.

Technical support

Relax with the knowledge that technical support is available by telephone, email, fax or website. support@datataker.com.au