

# Product Guide

**dataTaker**®

## Data Loggers and Data Acquisition Products



**High Performance**

**Superior Communications**

**Low Power**



Temperature



Flow



Pressure



Load



Communications



Voltage





## 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.

### 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.

### 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.



# Quick Selection Guide



## Product Index

Products	Analog Channels Digital & Counter Channels Input Range (volts) Serial Sensor Channel Samples per Second $\Delta 1$ Time Resolution (Sec.) Burst Speed Data Points Stored USB Device Data Points PC Card Data Points Expandable Display Communications $\Delta 2$														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>DT80</b>	5-15	12	±30	Y	70	200µs	–	5mil	90k/MB	–	N	Y	U,E,R	Page 3	
<b>DT800</b>	12-42	16	±10	Y	200	200µs	100kHz	130k	–	90k/MB	N	opt.	U,E,R	Page 5	
<b>DT50</b>	5-10	8	±2.5	N	70	1	–	166k	–	1,390k	N	opt.	U,R	Page 7	
<b>DT51</b>	1-3	7	±2.5	N	70	1	–	166k	–	1,390k	N	opt.	U,R	Page 7	
<b>DT53</b>	0	7	±2.5	N	100	1	–	166k	–	1,390k	N	opt.	U,R	Page 7	
<b>DT500</b>	10-30	7	±2.5	N	70	1	–	166k	–	1,390k	Y	opt.	U,R	Page 8	
<b>DT505</b>	10-30	7	±100	N	70	1	–	166k	–	1,390k	Y	opt.	U,R	Page 8	
<b>DT600</b>	10-30	7	±2.5	N	70	1	–	166k	–	1,390k	Y	Y	U,R	Page 8	
<b>DT605</b>	10-30	7	±100	N	70	1	–	166k	–	1,390k	Y	Y	U,R	Page 8	
<b>DT515</b>	10-30	7	±100	N	70	1	–	166k	–	1,390k	Y	opt.	U,R	Page 8	
<b>DT615</b>	10-30	7	±100	N	70	1	–	166k	–	1,390k	Y	Y	U,R	Page 8	
<b>Software &amp; Resources</b>														Page 9	
<b>Accessories</b>														Page 10	

$\Delta 1$  Single channel, reduced accuracy     $\Delta 2$  U = USB    E = Ethernet    R = RS232

### 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.

# DT80

## Superior Communications Versatile Measurement Data Management Low Power Data Logger



### Take the next step!

Experience the *dataTaker DT80*. A robust, stand alone, low power data logger featuring USB memory stick support, 18 bit resolution, extensive communications capabilities and built-in display.

- USB memory stick for data transfer
- Rugged construction
- $\pm 30V$  inputs
- Ethernet / USB / RS232 / RS485 / Modem support
- 5-15 Analog sensor inputs (Isolated)
- 12 Digital channels
- Serial sensor channel
- 5 million data points
- web accessible

### Superior Data Storage and Communications

User defined files size and mode for up to 5 million data points in secure, non-volatile internal memory plus a USB Flash drive port. Flexible data storage includes multiple files with overwrite or stop when full modes.

The *DT80* provides RS232, Ethernet, USB and USB memory stick ports together with modem dial-in/out. Web access via TCP/IP or FTP enables global access to data.

### Versatile Measurement

Universal analog inputs select measurement range based on the signal level. Isolated and over voltage protected for reliability in noisy environments.

Supports wide range of measurement and sensor types - in engineering units of your choice. Switchable excitation and triggering simplify installation.

Digital channels for input, output and 100kHz counters plus phase encoder inputs. Digital features include triggers for event logging and a latching relay output.

Connect to GPS, PLCs, and other intelligent devices with the serial sensor port offering RS232/422/485 connectivity.

**FREE**  
Software &  
Technical  
Support



## The Channels

### Analog Inputs

- 5 to 15 channels (depending on sensor type)
- Protected and isolated
- 18 bit resolution
- $\pm 30\text{mV}$  to  $\pm 30\text{V}$  full scale, auto-ranging
- Built-in sensor excitation and conditioning

### Digital I/O

- 8 Bi-directional channels for state & count input or state output.
- 1 latching relay output (30Vdc, 1A max)

### Dedicated Counter Inputs

- 4 high speed counters or 2 phase encoder inputs (100kHz)

### Calculated Channels

Log data calculated from analog, digital and serial sensor measurements using expressions involving variables and functions.

### Serial Sensor Channel

- RS232, RS422, RS485 Modes.
- Programmable baud rate, handshaking and data parsing.
- Send and receive text strings for intelligent devices.

### Sensor Support Includes

- Thermocouples
- RTDs
- Thermistors
- 4-20mA Current loops
- Bridges and Strain Gauges
- Inductive pickups
- Phase Encoders

## Data Management

- Raw, Scaled statistical or calculated data.
- Alarm and event logging.
- Flexible file sizes and modes.
- Full or selective download.
- Event driven file archive or copy.
- User friendly setup.

## Advanced Communications

### USB

- Fast simple connection to local host PC.

### USB Master Port

- Compatible with USB Flash drives.
- Transfer data and programs without a computer.

### Ethernet

- Local or remote connections LAN or WAN.
- Web and FTP connections.
- Multi user access.

### RS232

- Local or remote connections.
- Dial in and dial out modem support.
- Simple modem configuration.

## The Logger

### Display and keypad

- 2 line by 16 characters, backlit LCD.
- Display channel data, alarms and system status.
- Keypad for scrolling and programmable functions.
- LEDs indicate status, sample and disk activity.

### Rugged Construction

- Powder coated and anodized.

### Power and Battery

- External voltage range: 10 to 30Vdc.
- Internal Rechargeable Battery for UPS and stand alone operation.
- Optional high capacity external battery.

### Data Storage

#### Internal Store

- Standard 64MB = approx 5,000,000 data points
- Larger memory can be installed.

# DT800



## 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.

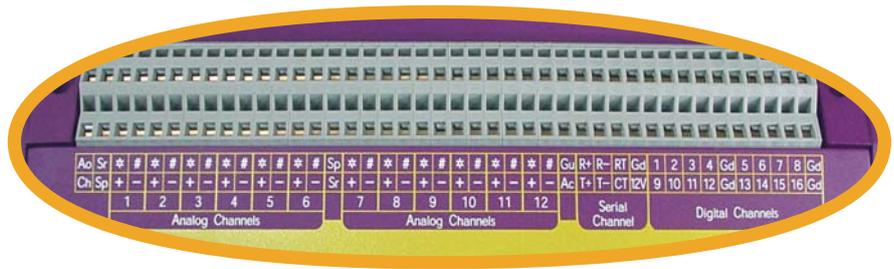
With all these functions rolled into a single cost effective package, you can be confident the *DT800* is your solution for a wide range of tasks.



Status indication  
at a glance...



Easy-to use cage  
clamp terminals



### 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  $\pm 40V$  solid state multiplexer
- 13 to 16 bit resolution
- $\pm 10mV$  to  $\pm 10V$  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  $\pm 10V$  output
- 12 bit resolution
- $\pm 20mA$  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

### Rugged Construction

- Fabricated steel
- Powder coated

### Sensor Support Includes:

- 11 thermocouple types
- $\pm 0.1^\circ C$  linearisation conformance to ITS90
- $\pm 0.3^\circ C$  reference junction accuracy ( -20 to +60°C )
- RTDs – 10 $\Omega$  to 10k $\Omega$ , Pt, Ni and Cu types,  $\pm 0.2^\circ C$
- 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 2.2Ahr battery
- Ensures data integrity during over voltage and brown out conditions

### Environmental Operation

- Temperature range -45°C to 70°C

# DT50



## General Purpose Low Cost Low Power Data Logger



- Sensor and Digital Channels - See Table
- Unique Universal Channels
- Up to 1,390,000 Data Points
- PC Card for Removable Data Storage
- Easily Configurable Software
- Stand-alone & Real Time Data Acquisition
- Remote Monitoring & Control
- Removable Screw Terminals
- Internal Battery Option
- Display + Keypad Option

The *DT50* range are general purpose, low cost, data loggers. Please refer to the table for channel information and sampling speeds. Each model includes three high speed counters.

Data can be conveniently and securely stored in battery backed RAM. The *DT50* utilises Removable PC cards to provide storage for up to 1,390,000 data points. The rugged steel construction makes the unit suitable for harsh environments.

The *dataTaker DT51* and *DT53* retain core features of the *DT50* providing economical solutions to applications requiring fewer channels. (See Table)

Analog Channels  
Digital & Counter Channels  
Input Range (volts)  
Samples per Second  $\Delta 1$   
Data Points Stored  
PC Card Data Points

	Analog Channels	Digital & Counter Channels	Input Range (volts)	Samples per Second $\Delta 1$	Data Points Stored	PC Card Data Points
<b>DT50</b>	5-10	8	$\pm 2.5$	70	166k	1,390k
<b>DT51</b>	1-3	7	$\pm 2.5$	70	166k	–
<b>DT53</b>	0	7	$\pm 2.5$	100	166k	–

$\Delta 1$  Single channel, reduced accuracy



# DT500 - DT600 Ranges

## General Purpose Low Power Data Loggers



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, DT605 and DT615 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.

- 10-30 Sensor Channels, 7 Digital Channels
- 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

## Geotechnical Low Power Data Loggers



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.

### Typical Geotechnical Applications

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

# Software & Resources



## 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

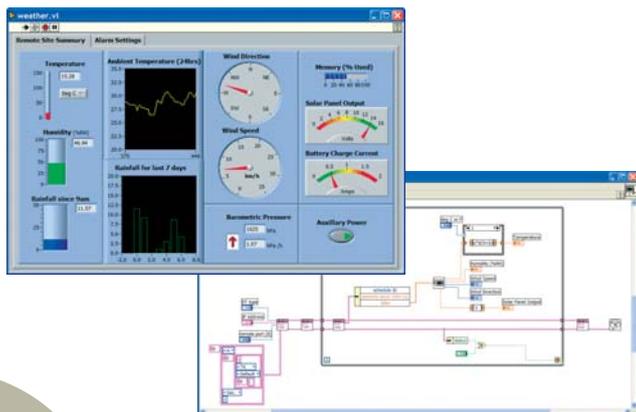
Support documents for *dataTaker* data loggers and typical accessories.

### Utilities

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

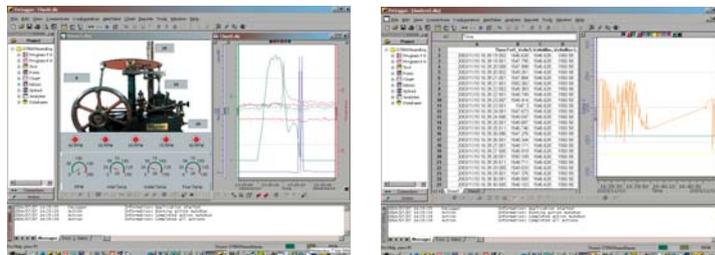
## LabVIEW™ Driver

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



## 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

# Accessories



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



- 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



- 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  
(10BaseTR232)**  
For *DT50*, *DT500*, *DT600* Range



- USB Memory device**
- Capacity approx. 90,000 data points per megabyte



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



- Modems**  
PSTN, GSM, Radio



- 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



- Industrial Enclosures**
- *DT50*, *DT500*, *DT600* & *DT800* Range
- Portable Enclosure**
- *DT50*, *DT500*, *DT600* & *DT800* Range



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

## 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

Visit our website for all your *dataTaker* Training needs

## *dataTaker* data loggers in use

Datataker is a leading supplier of data logging and data recording equipment to a broad range of customers throughout industry, public utilities, scientific and educational institutions.

### 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 distributor network.



**Quality Statement:** Datataker operates a Quality Management System complying with ISO9001:2000. It is Datataker's policy to supply customers with products which are fit for their intended purpose, safe in use, perform reliably to published specification and are backed by a fast and efficient customer support service.

**Trademarks:** *dataTaker* is a registered trademark of Datataker Pty Ltd.

**Specifications:** Datataker Pty Ltd reserves the right to change product specifications at any time without notice.

**Manufactured and designed in Australia.**

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