

# DT50

Data Logger

**dataTaker**<sup>®</sup>

Intelligent Data Logging Products

Specifications

- General Purpose Low Cost, Low Power Data Logger
- 5-10 Sensor Channels, 8 Digital Channels
- Unique Universal Channels
- Up to 1,390,000 Data Points
- Stand Alone & Real Time Data Acquisition
- Remote Monitoring & Control
- Removable Screw Terminals



## The *dataTaker* DT50 General Purpose Low Cost Unit

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 channels, 3 high speed counters and sampling speed of 25 - 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. Alarms may be set for all channels. The DT50's rugged steel construction makes the unit suitable for harsh environments.

### Applications include:

- Fault Finding
- Weather Stations
- Process Monitoring
- Building Monitoring
- Automotive Testing
- Flood Warnings
- Machine Down Time
- Strain Guages
- Temperature Profiling
- Research & Development
- Load Cells

## *dataTaker* software and Resource CD

The *dataTaker* Resource CD is provided FREE with every new logger. It contains software to enable easy setup, fast download, real time viewing of data and direct export to excel spreadsheets. The Resource CD also contains helpful training videos, manuals, application and technical notes and other valuable utilities.

*DeLogger™ 4 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

Number of input channels depends on sensor wiring configuration. Sensor configurations may be mixed:  
 Two wire: 5  
 Two wire with one shared terminal: 10  
 Three wire: 5  
 Four wire: 5  
 4-20mA current loop: 5 with shared common + with 10 external shunts

## Fundamental Input Ranges

The DT50 hardware measures voltage, current, resistance and frequency. From these, all other measurements are derived.

Full Scale	Resolution	Full Scale	Resolution
±25.00 mVdc	2.00 µV	50 Ω	.25 mΩ
±250.0 mVdc	20.00 µV	500 Ω	2.50 mΩ
±2.50 Vdc	200.00 µV	5,000 Ω	25.00 mΩ
±0.25 mA	0.20 µA	100 Hz	0.01 %
±2.50 mA	1.00 µA	10 Hz	0.01 %
±25.00 mA	10.00 µA		

## Accuracy

Measurement at	25°C	-45°C to 60°C
DC Voltage	0.15%	0.25%
DC Current	0.25%	0.35%
DC Resistance	0.20%	0.30%

### Sensor Excitation

Each channel: 4.5V (10k source), 250µA or 2.5mA switched on when channels is selected  
 DC Voltage: 5V at 100mA (max.) switched

### Multiplexer (Channel Selector)

Type: solid-state ±5V input ratings  
 Input impedance: 1M or >100M, programmable  
 Common mode range: ±3.5V

### Internal Channels

Temperature (thermocouple reference junction): 1  
 Reference voltage channels: 1  
 Internal battery voltage: 1

### Sampling

Sampling for accuracy and noise rejection by integrating over 50/60Hz line period.  
 Maximum sample speed: 25Hz  
 Effective resolution: 15 bits  
 Linearity: 0.01%  
 Common mode rejection 25mV range: >90dB  
 Line (50/60Hz) series mode rejection: >35dB

## Sensor Support

Supports a wide range of sensors types including, but not limited to the following:

### Thermocouples

Types: B, C, D, E, G, J, K, N, R, S, T  
 Reference junction compensation accuracy:

Case temperature	2.5°C	-20 to +60°C
Accuracy	±1.0°C	±1.5°C

### RTDs

Types: Pt, Ni, Cu  
 Resistance range: 10Ω to 20k  
 Measurement accuracy: 4 wire: 0.15% of resistance value  
 3 wire: 0.25% of resistance value

### Thermistors

Types: YSI 400xx Series  
 Resistance range: <10kΩ,  
 <20kΩ with parallel resistor

### Monolithic Temperature Sensors

Types supported: LM335, LM34, LM35, AD590

### Bridge Sensors

Configurations: 4-wire and 6-wire  
 Excitation: voltage or current  
 Bridge completion: external or internal half bridge

### 4-20mA Current Loops

Shunt value: 100Ω to a shared common  
 Accuracy: 0.25% at 25°C

### Sensors - Comments

A wide range of sensor scaling and linearising facilities are provided including polynomials, expressions and functions.

## Digital Channels

### Number of Channels

Bi-directional channels: 5  
 Dedicated counter channels: 3

### Digital Input

Number: 5, shared with bi-directional channels  
 Input Type: logic level (protected with pull-up)

### Counter Channels

Number: 5 low speed (10Hz) shared with bi-directional channels  
 3 high speed (1kHz, sleep mode) with switchable internal clocking options

Size: 16 bit (65535 counts)

### Digital Output

Number: 5  
 Output type: open-collector npn transistor  
 Rating: +30V, 100mA

## Calculation Channels

Any expression involving variables and functions including: sin(), cos(), tan(), asin(), acos(), atan(), abs(), sqrt(), average, maximum, minimum, time of max., time of min., variance, integral, histogram

## Scheduling of Data Acquisition

Number of schedules: 4 acquisition schedules  
 Scan triggers: time base or digital event  
 Conditional scanning: while digital input high  
 Time based scheduling: from seconds to months in increments of 1 second, 1 minute, 1 hour and 1 day  
 Maximum scheduled rate: 1 second or as fast as possible, typically 25 samples per second  
 Dynamic scan time base change: yes  
 Maximum number of channel entries: 110

## Alarms

Condition: high, low, within range and outside range  
 Delay: optional time period for alarm response  
 Actions: set digital outputs, execute any dataTaker commands. Alarms can be combined in a logical fashion.

## Data Storage

### Internal

Type: battery backed SRAM  
 Capacity: 166,500 data points

### PC Card

Types: SRAM to 4MBytes, Type 1  
 Card voltage: 5V types  
 Capacity: up to 1,390,000 data points  
 Data format: proprietary

### Download Data Format

Format: ASCII floating point, fixed point or exponential formats  
 Compatibility: spreadsheets, word processors, graphing packages, statistical programs and SCADA software

## Serial Interface (RS232)

The DT50 is programmed and data extracted via the RS232 serial interface  
 Speed: 300 to 9600 baud (9600 default)  
 Handshake: XON and XOFF  
 Wake from sleep: yes  
 Isolation: 500V  
 Compatibility: computers, modems, satellite-modems, radio-modems and printers

## System

Processor type: Z180, 18 MHz  
 Program storage: FLASH  
 Data storage: SRAM, battery backed  
 Indicator LED: sampling

### Real Time Clock

For time stamping of data, scheduling and timers  
 Normal resolution: 1 second  
 Accuracy: 2 seconds per day (25°C)

### Power Supply

Voltage range: 11 to 24Vdc or 9 to 18Vac  
 External battery input: 6V lead acid

### Power Consumption

In normal mode: 1W (2W with ext. battery charging)  
 Sleeping: 2mW (350µA from 6V battery)  
 Typical low power operation: 20mW

### Internal Backup Battery

For real time clock and internal data storage backup  
 Type: 3V 1/2AA Lithium

## Physical and Environment

Construction: Powder coated fabricated steel  
 Dimensions:  
 260 x 110 x 55mm (height 104mm with PC Card)  
 Weight: 1.5kg (2.5kg shipping)  
 Environment temperature range: -45°C to 70°C  
 Humidity: 85%, non-condensing

## Accessories Included

Resource CD: includes software, video training and user manual  
 Comms cable: for PC RS232 and USB adaptor  
 Sensor demo kit  
 Line adaptor: 110/240Vac to 15Vdc, 800mA

## Optional Accessories

### External Battery (Recommended)

A battery can be connected for stand alone data logging. The battery can be re-charged by the DT50 when main supply is restored/applied.  
 Chemistry: lead acid gel cell  
 Voltage: 6V  
 Maximum charge current: 200mA  
 Temperature compensation charging: -10°C to +70°C

### External Battery (PROGC-4)

Capacity: 4Ahr for mounting external to the DT50  
 Normal: approx. 24 hours  
 Low power: approx. 12 months

### Internal Battery (ASYBATOPTION)

0.5Ahr (Lead Acid) - factory fitted  
 Normal: approx. 3 hours  
 Low power: approx. 1 months

### Portable Carrying Case (PROPE)

Capacity: 1 DT50 unit + battery  
 Environmental protection: IP67

### SRAM PC Card (PROMC-1024P, PROMC-4096P)

Capacity: 1MByte, approximately 340,000 data points  
 4MByte, approximately 1,390,000 data points

### DeLogger™ 4 Pro (PRODLP4-CD)

Graphical programming and supervision software. Supports a large network of DT50, DT500 and DT800 range units connected via modem. Features include comprehensive plotting, reporting, mimics, database, web publishing and other powerful capabilities.

www.datataker.com



Your local distributor

**dataTaker**®

**Warranty:** The dataTaker DT50 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 distributor.

**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.

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