



dataTaker

DT85 Series 2 Data Logger

Intelligent Data Logging Products



- » Dual Channel Isolation Technology
- » 2 Serial 'Smart Sensor' ports
- » FTP for automatic data transfer
- » Up to 48 Analog ($\pm 30V$) sensor inputs
- » Expandable to 900 analog inputs
- » 12 Flexible Digital channels
- » Modbus for SCADA connection
- » SDI-12 (multiple networks)
- » USB memory for easy data and program transfer

Warranty: All dataTaker Data Loggers are 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.

Trademarks: dataTaker is a registered trademark.

Specifications: dataTaker reserves the right to change product specifications at any time without notice. **Designed and Manufactured in Australia.**

Applications include:

Research & Development	Structural Monitoring	Vehicle Testing
Agricultural Research	Strain Gauges	GPS
Weather Stations	Process Monitoring	CANgate (optional)
Total Energy Monitoring	Fault Identification	- CAN bus
Environmental Monitoring	Machine Down Time	- J1939
Temperature Profiling	Pressure	- OBDII
Thermistor Arrays	Load Cells	
Aquaculture	Flow	

1 FREE Software & Technical Support

The Smarter Solution

The dataTaker DT85 smart data logger provides an extensive array of features that allow it to be used across a wide variety of applications. The DT85 is a robust, stand alone, low power data logger featuring USB memory stick support, 18 bit resolution, extensive communications capabilities and built-in display. The dataTaker DT85's Dual Channel concept allows up to 32 isolated or 48 common referenced analog inputs to be used in many combinations. With support for multiple SDI-12 sensor networks, Modbus for SCADA systems, FTP and Web interface, 12V regulated output to power sensors, the DT85 is a totally self contained solution.

Versatile Measurement

Connect an array of sensors through the versatile analog and digital channels, high-speed counter inputs, phase encoder inputs, programmable serial sensor channels and the optional CANgate interface available for CAN bus applications. Temperature, voltage, current, 4-20mA loops, resistance, bridges, strain gauges, frequency, digital, serial and calculated measurements can all be scaled, logged and returned in engineering units or within statistical reporting. Set up sampling, logging, alarm and control tasks to suit your own requirements while interfaces for smart sensors, GPS and other intelligent devices expand the DT85 flexibility.

Superior Data Storage & Communications

With the standard unit able to store up to 10 million data points (expandable) you can log as much or as little as you need. Overwrite or stop logging once allocated memory is full, archive data on alarm event, copy to USB memory or transfer via FTP, the choice is yours. Communications features include RS232, USB and Ethernet, connect to the DT80 locally, remotely through a modem or over the Internet. The web interface allows users to configure the DT85, access logged data and see current measurements as mimics or in a list using a web browser. FTP provides data to your office over the internet or mobile phone network, without the need for polling or specific host software.



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Analog Channels

16 analog input channels (expandable to 300*)
Each channel is independent and supports: one isolated 3-wire or 4-wire input, or two isolated 2-wire inputs, or three common referenced 2-wire inputs. The following maximums apply. Two wire with common reference terminal: 48 (expandable to 900*) Two wire isolated: 32 (expandable to 600*) Three and four wire isolated: 16 (expandable to 300*) *Expansion requires optional CEM20

Fundamental Input Ranges

The fundamental inputs that the DT85 can measure are voltage, current, resistance and frequency. All other measurements are derived from these.

Full Scale	Resolution	Full Scale	Resolution
±30 mVdc	0.25 µV	100 Ω	1.5 mΩ
±300 mVdc	2.5 µV	1000 Ω	15 mΩ
±3 Vdc	25 µV	10,000 Ω	150.00 mΩ
±30 Vdc	250 µV	100 Hz	0.0002 %
±0.3 mA	2.5 nA	10 kHz	0.0002 %
±3 mA	25 nA		
±30 mA	250 nA		

Auto-ranging is supported over 3 ranges.

Accuracy

Measurement at ...	5°C to 40°C	-45°C to 70°C
DC Voltage	0.1%	0.35%
DC Current	0.15%	0.45%
DC Resistance	0.1%	0.35%
Frequency	0.1%	0.25%

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

Sampling

Integrates over 50/60Hz line period for accuracy and noise rejection
Maximum sample speed: 25Hz
Effective resolution: 18 bits
Linearity: 0.01%
Common mode rejection: >90dB
Line series mode rejection: >35dB

Inputs

Inter-Channel Isolation: 100V (relay switching)
Analog Section Isolation: 100V (opto-isolated)
Input impedance: 100KΩ, >100MΩ
Common mode range: ±3.5V or ±35V on 30V range

Sensor Excitation (Supply)

Analog channels: selectable 250µA or 2.5mA precision current source, 4.5V voltage source, or switched external supply. General Purpose: Switchable 12V regulated supply for powering sensors & accessories. (max 150mA)

Analog Sensors

Supports a wide range of sensors including, but not limited to, those listed below. A wide range of sensor scaling & linearising facilities including polynomials, expressions & functions.

Thermocouples

Types: B, C, D, E, G, J, K, N, R, S, T
Calibration standard: ITS-90

RTDs

Materials supported: Pt, Ni, Cu
Resistance range: 10Ω to 10KΩ

Thermistors

Types: YSI 400xx Series, other types*
Resistance range: <10kΩ**

* Other thermistor types are supported by thermistor scaling and calculated channels.

** Resistance range can be increased with the use of a parallel resistor.

Monolithic Temperature Sensors

Types supported: LM34 - 60, AD590, 592, TMPxx
LM135, 235, 335

Strain Gauge and Bridge Sensors

Configurations: ¼, ½ & full bridge
Excitation: voltage or current

4-20mA Current Loop

Internal 100R shunt or external shunt resistor

Digital Channels

Digital Input/Outputs

8 bi-directional channels
Input Type: 8 logic level (max 20/30V)

Output Type: 4 with open drain FET
(max: 30V, 100mA), 4 with logic output.

Relay Output

1 latching relay, contacts (max: 30Vdc, 1A)

Counter Channels

Low Speed Counters

8 counters shared with digital inputs.
Low speed counters do not function in sleep mode.
Size: 32 bit
Max Count rate: 10 Hz

Dedicated Counter Inputs

4 high speed or 2 phase encoder (quadrature) inputs
Size: 32 bit
Max Count rate: 10 kHz
Input type: 2 logic level inputs (max ±30V), 2 sensitive inputs (10mV) for magnetic pick-ups (max ±10V)

Serial Channels

SDI-12

4 SDI-12 inputs, shared with digital channels. Each input can support multiple SDI-12 sensors.

Generic Serial Sensor

Flexible options to allow data to be logged from a wide range of smart sensors and data streams.
Available ports: Serial Sensor Port (RS232, RS422, RS485) or Host RS232 Port*
Baud rate: 300 to 115,200
*If used as a Serial Sensor channel then the Host Port is not available for other communications.

Calculated Channels

Combine values from analog, digital and serial sensors using expressions involving variables and functions.
Functions: An extensive range of Arithmetic, Trigonometric, Relational, Logical and Statistical functions are available.

Alarms

Condition: high, low, within range and outside range
Delay: optional time period for alarm response
Actions: set digital outputs, transmit message, execute any dataTaker command.

Scheduling of Data Acquisition

Number of schedules: 11
Schedule rates: 10ms to days

Data Storage

Internal Store

Capacity: 128MB = approx 10,000,000 data points
Larger storage optional refer to technical support.

Removable USB store device

(optional accessory)
Types: compatible with USB 1.1 or USB 2.0 drives, e.g. Flash drive.
Capacity: approx. 90,000 data points per megabyte.

Communication Interfaces

Ethernet Port

Interface: 10BaseT (10Mbps)
Protocol: TCP/IP

USB Port

Interface: USB 1.1 (virtual COM port)
Protocol: ASCII command

Host RS232 Port

Speed: 300 to 115,200 baud (57,600 default)
Flow Control: Hardware (RTS/CTS), Software (XON/XOFF), None
Handshake lines: DCD, DSR, DTR, RTS, CTS
Modem support: auto-answer and dial out
Protocols: ASCII Command, TCP/IP (PPP), Modbus, Serial Sensor

Serial Sensor Port

Interface: RS232, RS422m, RS485
Speed: 300 to 57,600 baud
Flow Control: Hardware (RTS/CTS), Software (XON/XOFF), None
Protocols: Modbus, Serial Sensor

Network (TCP/IP) Services

Uses Ethernet and/or Host RS232 (PPP) ports

Command Interface

Access the ASCII command interface of the DT85 via TCP/IP

Web Server

Access current data and status from any web browser.
Custom pages can be defined. Download data in CSV format. Command interface window. Define mimic displays.

Modbus Server (slave)

Access current data and status from any Modbus client (e.g. SCADA system)

FTP Server

Access logged data from any FTP client or web browser

FTP Client

Automatically upload logged data direct to an FTP server

System

Display and Keypad

Type: LCD, 2 line by 16 characters, backlight.
Display Functions: channel data, alarms, system status.
Keypad: 6 keys for scrolling and function execution.
Status LEDs: 4 for sample, disk, attention and power.

Firmware Upgrade

Via: RS232, Ethernet, USB or USB disk.

Real Time Clock

Normal resolution: 200µs
Accuracy: ±1 min/year (0°C to 40°C), ±4 min/year (-40°C to 70°C)

Power Supply

External voltage range: 10 to 30Vdc
Internal battery: 6Vdc 4Ahr lead acid
Peak Power: 12W (12Vdc 1A)

Average power Consumption

Using 12Vdc external power source

Sampling Speed	Average Power
1 second	1350 mW
5 second	500 mW
30 second	135 mW
5 minutes	70 mW
1 hour	60 mW

Typical Operating Time

from internal 6Vdc, 4Ahr battery

Sampling Speed	Operating Time
1 second	1 day
5 second	3 days
1 minute	1 month
1 hour	9.5 months

Physical and Environment

Construction: Powder coated zinc and anodized aluminum.
Dimensions: 300 x 137 x 65mm
Weight: 2.5kg (5kg shipping)
Temperature range: -45°C to 70°C *
Humidity: 85% RH, non-condensing
*reduced battery life and LCD operation outside range -15°C to 50°C

Accessories Included

Resource CD: includes software, video training and user manual.
Comms cable: USB cable
Line adaptor: 110/240Vac to 15Vdc, 800mA