DT85 Series 3 Data Logger

Intelligent Data Logging Products

» Dual Channel Isolation Technology
» 2 Serial ‘Smart Sensor’ ports
» FTP for automatic data transfer
» Up to 48 Analog (± 30V) sensor inputs
» Expandable to 960 analog inputs
» 8 Flexible Digital channels
» Modbus for SCADA connection
» SDI-12 (multiple networks)
» USB memory for easy data and program transfer

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.

Applications include:

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

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.

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 ISO9001:2008. 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.

*Our ability to provide free software and support is dependent on applicable export control laws (including those of the United States) and the export policy from time to time of Thermo Fisher Scientific Inc.

www.datataker.com

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» Built-in software - no application to install
» Runs directly from your web browser
» Accessible by Ethernet or USB1 connection
» Intuitive graphical interface
» Easy-to-use configuration editor
» Access live and historical data
» View data as charts, mimics and tables

What is dEX?
dEX is an intuitive graphical interface that allows you to configure your data logger, view real-time data in mimics, trend charts or tables and retrieve your historical data for analysis.

dEX runs directly from your web browser and can be accessed either locally or remotely, anywhere that a TCP/IP connection is available including worldwide over the Internet. You can use any of the logger’s built-in communications ports to view dEX including Ethernet, USB1 and RS-232.

Easy configuration
The dEX configuration editor allows you to view, edit and save logger configurations in an easy-to-use Windows Explorer style user interface.

Real-time monitoring
dEX displays real-time sensor measurements, calculations and diagnostic information using mimics, tables and trend charts.

Data retrieval
dEX allows you to retrieve your data at the click of a mouse button. Just select either All, Range or New Data Only.
Browser-based solution

dEX comes pre-installed on every logger in the DT80 range\(^2\). The software loads in your web browser so there is no need to install cumbersome applications on your computer. Being browser-based, dEX is cross-platform and will work on all major operating systems including Windows, Mac and Linux. To simplify it even further, dEX starts automatically in your default web browser when you connect to your logger using a USB cable\(^1\).

Data that is compatible with your applications

Logged data is ready to import into common spreadsheet and data processing applications such as Excel for further analysis and reporting. Data can be saved to your computer in comma separated (.CSV) format or our proprietary binary (.DBD) format.

Command window

The command window provides a terminal interface which allows the built-in command language of the logger to be used. Macro buttons allow common commands to be sent on a button press.

Configuration editor

The configuration editor allows you to view, edit and save logger configurations in an easy-to-use Windows Explorer style user interface. Tree view of configuration allows definition of measurement schedules and measurements.

Wiring diagrams show available wiring configurations for each sensor type. Configuration can be stored and retrieved on either the logger or a local computer.

Channel list

Displays name, value, units, alarm state, time stamp and logging state for each measurement.

Customisation of the application

The menu options, mimics panels and mimics can be added or removed to suit novice or advanced users. The color and brand name images within dEX can be customised to match corporate requirements or for personal preference.

Mimics are organised into panels which can be modified to highlight custom alarm conditions or data grouping. Mimics include dials, bar graphs, thermometers etc. Real-time chart recorder mimic allows you to view trends and historical data over a custom time/date range. Up to 16 mimics can be displayed on up to 5 mimic pages (default is 1 page of 6 mimics).

Minimum system requirements

- Web Browser (tested with): Internet Explorer V7 and above, Firefox, Safari & Google Chrome
- TCP/IP connection
- Adobe flash player 10 or higher
- Screen resolution of 1024 x 768

Chart recorder mimic

Real-time trending for sensors, calculations or other data. Supports up to 5 traces per chart and up to 2 Y-axes. Backfills with historical data stored in logger.

1. USB port equipped models only.
2. dEX operates on all DT80 range Series 2 & Series 3 models (DT80, DT81, DT82E, DT85, DT80G, DT85G). The latest firmware which includes dEX is available for download from the dataTaker website. DT80 range Series 1 models do not support dEX.

The difference is dEX!
Technical Specifications

Analog Channels
16 analog input channels (expandable to 320*)
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 960† Two wire isolated: 32 (expandable to 640†) Three and four wire isolated: 16 (expandable to 320**) Expansion requires optional CEM20

Fundamental Input Ranges
The fundamental inputs that the DT85 can measure are voltage, current, and resistance. Frequency and other measurements are derived from these.

<table>
<thead>
<tr>
<th>Full Scale</th>
<th>Resolution</th>
<th>Full Scale</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>±330mVdc</td>
<td>0.25μV</td>
<td>100 mV</td>
<td>1.5 mV</td>
</tr>
<tr>
<td>±33mVdc</td>
<td>25μV</td>
<td>1000 mV</td>
<td>15 mV</td>
</tr>
<tr>
<td>±3Vdc</td>
<td>250μV</td>
<td>100 Hz</td>
<td>0.0002%</td>
</tr>
<tr>
<td>±3mA</td>
<td>2.5 mA</td>
<td>10 kHz</td>
<td>0.0002%</td>
</tr>
<tr>
<td>±30mA</td>
<td>25 mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Auto-ranging is supported over 3 ranges.

Accuracy
Measurement at...

| DC Voltage | ±0.1% | 0.25% |
| DC Current | ±0.15% | 0.4% |
| 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)
Analogue Section Isolation: 100V (opto-isolated)
Input Impedance: 150KΩ, >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)
Switchable 5V regulated supply for powering analog sensors (max 25mA)

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
Calibration standard: ITS-90

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

Thermistors
Types: YSI 40xx Series, other types*
Resistance range: <1KΩ

Monolithic Temperature Sensors
Types supported: LM34 - 30Vdc, 40mV

Strain Gauge and Bridge Sensors
Configurations: ¾, ½ & full bridge
Excitation: voltage or current

Digital Channels

Digital Input/Outputs
8 bi-directional channels

Internal 100Ω shunt or external shunt resistor

Network (TCP/IP) Services
Uses Ethernet and/or Host RS232 (FPP) 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

Modbus Client (master)
Read/write data from modbus sensors and devices including PLC’s, dataTaker loggers, modbus etc.

FTP Server
Access logged data from any FTP client or web browser

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

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: 9Vdc 4Ahre lead acid
Peak Power: 12W (12Vdc 1A)

Average power consumption
Using 12Vdc external power source

<table>
<thead>
<tr>
<th>Sampling Speed</th>
<th>Average Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 second</td>
<td>1350 mW</td>
</tr>
<tr>
<td>5 second</td>
<td>500 mW</td>
</tr>
<tr>
<td>30 second</td>
<td>135 mW</td>
</tr>
<tr>
<td>5 minutes</td>
<td>70 mW</td>
</tr>
<tr>
<td>1 hour</td>
<td>60 mW</td>
</tr>
</tbody>
</table>

Typical Operating Time
from internal 6Vdc, 4Ahre battery

<table>
<thead>
<tr>
<th>Sampling Speed</th>
<th>Operating Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 second</td>
<td>1 day</td>
</tr>
<tr>
<td>5 second</td>
<td>3 days</td>
</tr>
<tr>
<td>1 minute</td>
<td>1 month</td>
</tr>
<tr>
<td>1 hour</td>
<td>9.5 months</td>
</tr>
</tbody>
</table>

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

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

For technical specifications download the user’s manual from our website www.dataTaker.com.

Your local distributor

*required battery life and LCD operations outside range –15°C to 50°C

For more information contact Your local distributor

Technical Specifications