Versatile Measurement

Connect an array of sensors through the versatile analog and digital channels, high-speed counter inputs, phase encoder inputs and programmable serial sensor channels. 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 DT80M flexibility.

Designed For Remote Applications

The dataTaker DT80M intelligent data logger is a fully featured low-powered logging platform with an integrated cellular modem, making it perfect for remote applications. The rugged design and wide operating temperature range of the DT80M provides reliable operation in virtually any environment.

The DT80M’s perfect balance of performance with low-power also allows you to use a smaller solar panel without compromising on functionality.

Automatic Data Delivery

Forget travelling long distances to get your data. Utilise the DT80M’s automatic data delivery features to schedule your data to be automatically emailed to your inbox every day, week, month or other time interval.

More sophisticated systems can make use of the automatic data delivery features to send logged data to an FTP server. Alarm conditions can also trigger data delivery in addition to sending alarm messages to multiple email addresses or mobile phones.

Easy To Configure

The DT80M is configured directly in your web browser using dataTaker’s dEX graphical interface. dEX takes you through the configuration of your logger, showing you wiring diagrams and allowing you to decide — in as much or as little detail — how you want the system to work, suiting both novice or advanced users.

Using the internal modem you can even re-configure your system remotely over the internet if required.

Applications include:

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

Dual Channel Isolation Technology
Up to 15 Analog (± 50V) sensor inputs
Expandable to 300 analog inputs
12 flexible digital terminals
2 Serial ‘Smart Sensor’ ports
SDI-12 (multiple networks)
Programmable Analog Output
Integrated cellular modem
Automatic data transfer via email or FTP
Sending alarm via SMS or email
Modbus for SCADA connection
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 ISO9001:2008. 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.
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, USB 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.

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1. USB port equipped models 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

\(^2\) dEX operates on all DT80 Series 2, Series 3 and Series 4 except Series 1.
Analog Channels

- 5 analog input channels (expandable to 100*)
- 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:
  - 2-wire common reference terminal: 15 (expandable to 300*)
  - 2-wire isolated: 10 (expandable to 200*)
  - 3- and 4-wire isolated: 5 (expandable to 100*)
*Expansion requires optional CEM20

Fundamental Input Ranges

- The fundamental inputs that the DT80M can measure are voltage, current, resistance and frequency. All other measurements are derived from these.

Sampling

- Integrates over 50kHz line period for accuracy and noise rejection
- Maximum sample speed: 40kHz
- Effective resolution: 18 bits
- Linearity: 0.01%
- Common mode rejection: >90dB
- Line series mode rejection: >50dB

Inputs

- Inter Channel isolation: 100V (relay switching)
- Analog Section isolation: 100V (opto-isolated)
- Input impedance: 160kΩ, >100MΩ
- Common mode range: ±3.5V or ±55V (attenuator on/off)

Sensor Excitation (Supply)

- Analog channels: selectable 2μA, 21μA or 2.5mA
- Precision current source: ±0.5V
- 4.5V voltage source
- Switched external supply

General Purpose: Switchable 12V/5V regulated supply for powering sensors & accessories (max 150mA).

Analog Outputs

- Isolated programmable 16-bit DAC: voltage 0-10V or current 0-24mA

Analog Sensors

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

Thermocouples

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

RTDs

- Materials supported: Pt, Ni, Cu
- Resistance range: 100 to 1MΩ

Thermistors

- Types: YS 400Ω Series, other types*
- Resistance range: up to 1MΩ
* Other thermistor types are supported by thermistor scaling and calculated channels.

Monolithic Temperature Sensors

- Types supported: LM334, AD590, 592, TMF70, LM135, 355

Strain Gauge and Bridge Sensors

- Configurations: ¼, ½, & full bridge
- Excitation: voltage or current
- 4-20mA Current Loop
- Internal 10Ω short or external shunt resistor

Digital Channels

- Digital Input/Outputs: 8 bi-directional channels
- Input Type: 8 logic-level (max 20V/30V)
- Output Type: 4 with open drain FET (max 30V, 100mA)
- 4 with logic output
- Relay Output: 1 latching relay, contacts (max: 30Vdc, 1A)

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 kHz

Dedicated Counter Inputs

- 4 high speed or 2 phase encoder (quadrature) inputs
- Size: 32-bit Max Count rate: 100kHz
- Input type:
  - 2 logic level inputs (max ±30V)
  - 2 sensitive inputs (100mA) for magnetic pickups (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)

Data Rates

- Baud rate: 300 to 115,200

Calculated Channels

- Combines 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 range outside
- Delay: optional time period for alarm response
- Actions: set digital outputs, transmit message, execute any data/alar command.

Scheduling of Data Acquisition

- Number of schedules: 11
- Schedule rates: 10ms to 8 days

Data Storage

- Internal Storage
- Capacities: 12MB (approx 10,000,000 data points)
- Larger storage available refer to technical support.

- Removable USB 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, Modbus (Master & Slave)

USB Port

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

Serial Sensor Port

- Interface: RS232, RS422, RS485
- Speed: 300 to 115,200 baud
- Flow Control: Hardware RTS/CTS, Software (XON/XOFF), None
- Protocols: Modbus (Master & Slave), Serial Sensor

Network (TCP/IP) Services

- Uses Ethernet and/or integrated modem

Command Interface

- Access the ASCII command interface of the DT80M via TCP/IP

Web Access

- 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)

Modbus Client (master)

- Read/Write data from modbus sensors and devices including PLCs, data logger tags, modbus displays etc.

FTP Server

- Access logged data from any FTP client or web browser

Temperature

- Measured range: –30°C to 70°C
- Accuracy: ±1 min/year (0°C to 40°C), ±4 min/year (~40°C to 70°C)

Physical and Environment

- Construction: Powder coated zinc and anodized aluminum.
- Dimensions: 180 x 137 x 65mm
- Temperature range: –30°C to 70°C
- Weight: 1.5kg (4.5kg shipping)
- Temperature range: –30°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.
- Conn's cable: USB cable
- Line adaptor: 110/240Vac to 15Vdc, 800mA

FTP Server

- Automatically upload logged data direct to an FTP server

System

- Display and Keypad
- Types: LCD, 2 line by 16 characters, backlit.
- Display Functions: channel data, alarm, 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: 200 μs
- Accuracy: ±1 minute/year (~4°C to 40°C), ±4 minute/year (~40°C to 70°C)

Power Supply

- External voltage range: 10 to 30Vdc
- Peak Power: 12W (12Vdc 1A)
- Average power Consumption: Using TCP/IP external power source

Value within brackets represent the additional power required by the
- modem to push data daily to FTP server.

Sampling Speed

- 1 analog channel(s) (avg)
- 6 analog channel(s) (avg)

<table>
<thead>
<tr>
<th>Sampling Speed</th>
<th>1 channel</th>
<th>6 channels</th>
<th>1 second</th>
<th>540 mW</th>
<th>4440 mW</th>
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<tbody>
<tr>
<td>10 seconds</td>
<td>250 mW</td>
<td>2100 mW</td>
<td></td>
<td></td>
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<tr>
<td>60 seconds</td>
<td>50 mW</td>
<td>430 mW</td>
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<td>30 mW</td>
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<tr>
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<td>10 mW</td>
<td>1025 mW</td>
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</tbody>
</table>

FTD Client

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