dataTaker®

DT82EM Series 3 Data Logger

Designed especially for environmental monitoring

Applications include:

Environmental Monitoring	Agricultural Research
Research & Development	Total Energy Monitoring
Weather Stations	Temperature Profiling
Thermistor Arrays	Aquaculture
Wind Power Generation	

***FREE** Software & Technical Support*

Designed For Remote Applications

The dataTaker DT82EM intelligent data logger is a 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 DT82EM provides reliable operation in virtually any environment. The DT82EM'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 DT82EM'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 DT82EM 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 to 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.

» Ultra low-power design

» Integrated cellular modem

» Automatic data transfer to email or FTP

» Support for up to 10 SDI-12 sensors

» Up to 6 Analog (± 30V) sensor inputs

» Flexible digital channels & counters

» Modbus for SCADA connection

» Switchable 12V & 5V supplies for powering sensors

www.datataker.com

Analog Channels

2 analog input channels
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: 6
Two wire isolated: 4
Three and four wire isolated: 2

Fundamental Input Ranges

The fundamental inputs that the DT82EM 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	150.0 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: >100MΩ, 100KΩ (30v range)
Common mode range: ±3.5V or ±30V 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 and linearising facilities including polynomials, expressions and 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 100Ω shunt or external shunt resistor

Digital Channels

Digital Input/Outputs

4 bi-directional channels
Input Type: 4 logic level (max 20/30V)
Output Type: 3 with open drain FET(max: 30V, 100mA), 1 with logic output.

Relay Output

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

Counter Channels

Low Speed Counters

4 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 inputs
Size: 32 bit
Max count rate: 100 kHz
Input type: 2 logic level inputs (max ±30V), and 2 programmable inputs as either logic level inputs or sensitive inputs (10mV) for magnetic pick-ups (max ±10V)

Serial Channels

SDI-12

1 SDI-12 input shared with a digital channel
Supports up to 10 SDI-12 sensors.

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 via SMS or email, 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

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

Network (TCP/IP) Services

Uses Ethernet port or integrated modem

Command Interface

Access the ASCII command interface of the DT82EM via TCP/IP

Web Server

Access *dEX* to view data or configure the logger.
Define custom dynamic web pages.
Download data in CSV or DBD format.
Command interface window.
Define mimic displays.

FTP Server

Access logged data from any FTP client or web browser.

FTP Client

Automatically upload logged data direct to an FTP server.

Modbus Server (Slave)

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

Email Client

Email data or alarms directly from the logger.

DDNS Client

Browse directly to the logger over the Internet using Dynamic DNS.

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: Ethernet, 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
Peak Power: 12W

Average Power Consumption (typical)

Using 12Vdc external power source
Values within brackets represent the additional power required by the modem to push data daily to an FTP server.

Schedule Rate	1 analog sample Average Power (mW)	6 analog samples Average Power (mW)
1 sec	540 (9)	840 (27)
5 sec	250 (3)	330 (7)
30 sec	50 (2)	65 (2)
1 min	30 (2)	40 (2)
5 min	15 (2)	15 (2)
30 min	10 (2)	10 (2)
1 hrs	10 (2)	10 (2)

Inbuilt Modem

Features

Alarms: Send email or SMS messages
Data: Send data to an email address or FTP server
Remote access: Connect to dEX or Command interface
SIM interface: SIM Socket (1.8V/3V)

Networks and Frequencies

USA Only:
Interfaces: EDGE, GPRS, GSM, CSD
All other places:
Interfaces: EDGE, GPRS, GSM, WCDMA, HSUPA, HSDPA
Frequencies:
EDGE/GPRS/GSM: 850/900/1800/1900 MHz
WCDMA/HSUPA/HSDPA: 850/1900/2100 MHz

Physical and Environment

Construction: Powder coated steel and anodized aluminum.
Dimensions: 180 x 137 x 65mm
Weight: 900 gram (3kg shipping)
Temperature range: -30°C to 70°C *
Humidity: 85% RH, non-condensing
*reduced LCD operation outside range -15°C to 50°C

Accessories Included

Resource CD: includes software, video training and user manual.
Comms cable: Ethernet crossover cable
Line adaptor: 110/240Vac to 15Vdc, 800mA
Antenna with 2m cable

Optional Accessories

A range of accessories are available.

For full technical specifications download the user's manual from our website www.datataker.com.

Your local distributor

TS-0081-F1