

Intelligent Data Logging Products



- Up to 48 Analog ($\pm 30V$) sensor inputs
- 12 Flexible Digital channels

- USB memory for easy data & program transfer
- Dual Channel Isolation Technology
- 2 Serial 'Smart Sensor' ports
- User Definable allocation of memory size & mode
- Web server for browser access
- FTP for automatic data transfer
- Modbus for SCADA connection
- SDI-12 (multiple networks)

Specifications

Step up to the DT85

The *dataTaker DT85* extends the *DT8x* range to applications requiring more sensors or complex wiring combinations. The *dataTaker DT85*'s Dual Channel concept allows up to 32 isolated or 48 common referenced analog inputs to be used in many combinations. Regulated 12Vdc output, flexible digital I/O and 'smart sensor' ports allow difficult applications to be easily implemented. All *DT8x* features are retained including USB memory stick support, Modbus for SCADA, Ethernet, Web, FTP and multiple SDI-12 sensor networks.

Versatile in Measurement and Control

Analog and digital channels, high-speed counter inputs, phase encoders inputs and programmable serial sensor channels allow the *DT85* to easily connect to most sensors and data measurement sources. 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. Group sampling, logging, alarm and control tasks within schedules to suit your requirements. Smart sensors, GPS, PLCs and other intelligent devices are supported via 2 serial sensor ports (RS232 or RS422/485), with our optional *CANgate* interface available for CAN bus applications.

Manage a variety of sensors or devices using the Sensor Power options via dedicated power outputs, digital outputs or the latching relay configurations.

Superior Data Storage and Communications

Store up to **5 million** data points in user defined memory, log as much or as little as you need with independent control of schedule size and mode. 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 with modem support, USB, Ethernet and USB memory stick ports. Connect to the *DT85* locally, remotely or over the Internet. The web server allows browser access to data and files, FTP provides data to your office over the internet or mobile phone network, without the need for polling or specific host software.

Take a step up and experience the *DT85* by contacting your local distributor or *dataTaker* office.

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
- *CANgate* (optional)
 - CAN bus
 - J1939
 - OBDII



APPLIED MEASUREMENTS LTD.

3 Mercury House, Calleva Park, Aldermaston, Berkshire, RG7 8PN

Tel: +44 (0) 1189 817339 | Web: www.appmeas.co.uk

Fax: +44 (0) 1189 819121 | Email: info@appmeas.co.uk



Analog Inputs

The maximum number of inputs depends on sensor wiring configuration. Sensor configurations may be mixed.

Two wire with common reference terminal: 48

Two wire isolated: 32

Three and four wire isolated: 16

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.

Multiplexer (Input Selector)

Relay Multiplexer – provides isolation between inputs

Input impedance:

100KΩ, >100MΩ, programmable

Common mode range: ±3.5V or ±35V on 30V range

Sampling

Sampling for accuracy and noise rejection by integrating over 50/60Hz line period.

Maximum sample speed: 25Hz

Effective resolution: 18 bits

Linearity: 0.01%

Common mode rejection 30mV range: >90dB

Line (50/60Hz) series mode rejection: >35dB

Sensor Excitation (Supply)

Analog channels: Controlled excitation of 4.5V, 250µA, 2.5mA or Switched external supply.

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

Sensor Support

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

Resistance range: <10kΩ,

<20kΩ with parallel resistor

Monolithic Temperature Sensors

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

Bridge Sensors

Configurations: ¼, ½ & full bridge

Excitation: voltage or current

4-20mA Current Loop

Shunt: Internal 100Ω to a shared common or external shunt resistor.

Digital Channels

Digital Input/Outputs

Number of channels: 8 Bi-directional channels for state & count input or state output.

Input Type: 8 logic level (max: 10Hz, 4 x 30V, 4 x 20V)
Measure state or low speed counts

Low speed counters do not function in sleep mode.

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

Relay Output

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

Dedicated Counter Inputs

Number: 4 high speed counters or 2 phase encoder (quadrature) inputs (max: 10kHz, 2 x ±30V, 2 x ±10V).

2 Counters have 10mV sensitive inputs for magnetic pick-ups.

Size: 32 bit

SDI-12 Channels

Number: 4 SDI-12 inputs, shared with digital channels.

Serial Sensor Channel

Two channels available and programmable to allow data to be logged from smart sensors and data streams.

Dedicated Port: RS232, RS422, RS485

Host Port: RS232 only*

Handshake lines: RTS, CTS

Baud rate: 300 to 115200

**If used as Serial Sensor channel 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, execute any *dataTaker* command, transmit message.

Scheduling of Data Acquisition

Number of schedules: 11

Schedule rates: 10ms to days

Data Storage

Internal Store

Capacity: 64MB = approx 5,000,000 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

Interface: 10BaseT

Protocols: TCP/IP (UDP, FTP, HTTP, Modbus)

RS232

Speed: 300 to 115k baud (57,600 default)

Handshake lines: DCD, DSR, DTR, RTS, CTS

Modem support: auto-answer and dial out

Protocols: PPP, TCP/IP (UDP, FTP, HTTP, Modbus)

USB

USB 1.1, 12Mb/sec – virtual COM port.

Web Server

Built-in pages to view current data and status. Custom pages can be defined.

Modbus Server (slave)

Access to current data and status.

Available ports, Ethernet, Host Port (RS232)

Serial Sensor (RS232, RS422, RS485)

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: 110 to 30Vdc. Input is reflected on dedicated output terminal (300mA max) for connection to accessories.

Power Consumption

Normal mode: 5W (15V 330mA)

Charging flat battery: 12W (15V 800mA)

Sleep mode: 3mW (500µA from Internal 6V battery)

Internal Main Battery

Voltage (Capacity): 6V (4AHr) lead acid gel cell

Operating time: continuous sampling: 3 hour

10 minute sampling: 24 days

1 hour sampling: 63 days

Memory and Real Time Clock Battery

Voltage (Capacity): 3.6V (400mAHr) lithium, 1/2 AA

Physical and Environment

Construction: Powder coated zinc & anodized aluminum.

Dimensions: 300 x 136 x 63mm

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

Training sensor kit

Optional Accessories

A range of accessories are available.



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