Datataker 600
DATA LOGGER

The Datataker 600 is a microprocessor based battery powered data logger which measures inputs from most sensor types.

Data manipulation includes statistical functions, calculations and sensor calibration. Data is stored in battery backed RAM and removable memory cards. Alarms can be set for all channels.

The Datataker 600 has an integral display and keypad.

Suitable for scientific, industrial and public utility applications.

Analog Inputs
- 10 differential or 30 single ended, can be used in any mix.
- Expansion by external modules of 10/30 analog channels.
- Autocalibrating and autoranging, 3 decades.
- Resolution 15 bit plus sign, 1μV.
- Sampling rate 25 samples/second.
- Accuracy better than 0.15% of full scale.
- Linearity better than 0.05%
- Input impedance 1MΩ, or >100MΩ selectable.
- Common mode range ±3.5VDC
- Common mode rejection >90db, 110db typical.
- Series mode line rejection >35db
- 4, 3 and 2 wire resistance, RTD and thermistor measurement.
- Sensor excitation of 5V, 250.0μA or 2.500mA each channel.
- Full, half and quarter bridges, voltage or current excitation.
- CMOS multiplexer.

Digital Inputs
- 4 TTL/CMOS compatible digital input channels for digital state, byte, events and low speed counters 10Hz, 16 bit, presettable.
- Digital inputs share with digital output channels.
- Expansion by external modules of 10 digital I/O channels.
- 3 high speed counters, 1KHz or 1MHz, 16 bit, presettable.
- Analog channels also read digital states, definable threshold.

Temperature
- Thermocouple types B, C, D, E, G, J, K, N, R, S and T, with cold junction compensation and linearization.
- Platinum RTDs, α=0.00385 & 0.003916Ω/Ω/°C, any resistance
- Nickel RTDs, α=0.005001Ω/Ω/°C, any resistance.
- Thermistors, Yellow Springs YSI 400xx series.
- Semiconductors, AD590, LM335, LM34 and LM35.

Digital Outputs
- 4 TTL/CMOS compatible digital output channels for general purpose switched outputs, relay control, alarm annunciation and sensor support. Bit and byte (4 bit) management.
- Open collector lines, rated to +30VDC @ 200mA.
- Digital outputs share with the digital input channels.
- 3 LEDs, display backlight and a beeper on the display panel.

Ranges (3 decade for analog channels)

Input Type	Range	Units	Resolution
DC Voltage	±25.000	mV	1μV
	±250.00	mV	10μV
	±2500.0	mV	100μV
Attenuated DC Voltage	Any range	mV	
DC Current	±0.2500	mA	200nA
Internal Shunts	±2.500	mA	1μA
	±25.00	mA	10μA
External Shunts	Any range	mA	
4-20mA Loop	0 to 100	Percent	0.01%
Resistance	10.000	Ohms	1mΩ
	100.00	Ohms	1mΩ
	500.0	Ohms	5mΩ
	7000.0	Ohms	50mΩ
Frequency	0.1 to 300,000.0	Hz	0.01Hz
Period	30,000 to 3	μSec	1μS
Temperature	-250.0 to 1800.0	Deg C	0.01%
	-420.0 to 3200.0	Deg F	0.01%
Strain Gauges	-10^4 to 10^4	ppm	1ppm
and Bridges	-10^5 to 10^5	ppm	10ppm
	-10^6 to 10^6	ppm	100ppm
Digital Bit	0 or 1	State	1
Digital Byte (4 bits)	0 to 15	State	1
Digital Average	0.00 to 1.00	State	0.01
Counter	0 to 65535	Counts	1
Up Down Counter	-32768 to 32767	Counts	1
Analog State	0 or 1	State	1
Polynomials	$±9.9e^{-18}$ to $±9.9e^{18}$	User	0.0001
Linear Spans	$±9.9e^{-18}$ to $±9.9e^{18}$	User	0.0001
Calculations	$±9.9e^{-18}$ to $±9.9e^{18}$	User	0.0001

Time and Date
- Resolution 1 second.
- Accuracy 2 seconds/day.
- Date in DD/MM/YYYY, MM/DD/YYYY, day number DDDDD, and decimal day DDDDD.DDD
- Time in HH:MM:SS, seconds SSSSS and decimal hour HH.HHHH
- 4 auto-incrementing internal timers (second, minute, hour and day of week) for use in sequencing, alarms, calculations, etc.
- Real time clock used for scan scheduling, date and time stamping of data, alarm timing and in calculations.

Scanning Input Channels
- 1 immediate scan schedule, can include one or more channels.
- 4 repetitive scan schedules, can include one or more channels.
- Time based scanning from 1 second to months, in increments of 1 second, 1 minute, 1 hour or 1 day.
- Event based scanning on digital or counter channel events.
- Poll based scanning initiated by host requests.
- Conditional scanning while any digital input is high.
- Alarm based scanning and scan modification.

Data Manipulation

- Statistical data including the average, standard deviation, minimum and maximum with optional date and time of minimum and maximum, and integral for each channel.
- Delta, rate of delta (differential) and integral between scans.
- Histogram, with user definable number of classes.
- Expression evaluation using channel data and constants, with arithmetic, logical and relational operators, logarithmic, trigonometric, and other intrinsic functions.
- 20 user definable polynomials (5th order) and linear spans, for linearizing most sensor types.

Alarms

- Alarms for monitoring input channels for high and low alarm, inside and outside of range alarm, with definable setpoints.
- Alarms can be combined by AND, OR and XOR operators.
- Optional delay period before an out of range condition is considered a true alarm, or recovery considered a true recovery
- Alarm action can switch digital outputs and display panel LEDs, return text to the host, and execute Datataker commands.

Data Storage

- Battery backed internal RAM, stores up to 13,650 readings.
- Removable memory cards, store up to 340,000 readings.
- Stack and circular buffer (overwrite) data storage modes.
- No data loss when memory cards are exchanged.
- Stored data can be returned for individual scanning schedules, and for selectable date and time periods.

Data Format

- All data is returned in ASCII floating point, fixed point or exponential formats.
- Data format is user configurable for channel identification, data resolution, units text and delimiters.
- Selectable host computer format with error detection protocol.
- Compatible with spreadsheets, graphics packages, statistical packages, text editors, etc.
- Compatible with most communications methods including direct connect, modems, radio, and satellite.

Programming

- All programming is by simple descriptive commands, which are entered from a host computer via the serial interface.
- Commands can be pre-recorded into a memory card, and are automatically executed whenever a memory card is inserted (useful for field programming).

Display and Keypad

- LCD type, 2 line x 16 character, backlit, alphanumeric.
- Displays channel data, alarm status and system information including time, battery status, amount of data stored, etc.
- 5 key keypad for display selection, scrolling, and backlight.
- Keypad also used as 4 user definable function keys.
- 3 LEDs, beeper and flashing backlight provide for local warnings of alarms, etc.

Host Communications

- RS232, full duplex. Also supports RS423.
- 300, 1200, 2400 and 4800 baud, switch selectable.
- Bi-directional XON/XOFF protocol.
- Compatible with computers, terminals, modems, radio modems, satellite ground terminals, serial printers, etc.

Network Communications

- RS485, with inbuilt error correcting protocol.
- Connected via a twisted pair cable, maximum 1000 metres.
- Up to 32 loggers can be in a Datataker network, with one host.

Power Supply

- Voltage 9 - 18VAC or 11 - 24VDC external power.
- Mains powered from 12VAC/DC mains adaptor.
- Automatically selects low power standby (sleep) mode.
- Current draw 120mA normal power mode, 400mA when charging internal battery, <450µA low power (sleep) mode.
- Internal 1.2Ah gel cell battery, recharged by external power.
- Approximate battery life for different scanning schedules and battery sizes is as follows

Sampling 10 channels every	1.2Ah Gel Cell Battery	17 Ah Alkaline Battery
Continuously	10 hours	6 days
1 minute	15 days	200 days
15 minutes	60 days	800 days
1 hour	90days	900 days

Mechanical Specification

- Robust modular construction using powder coated steel.
- Can be used directly, or housed in fixed or portable enclosures.
- Length 270mm (10.5 inches), Width 110mm (4.3 inches).
- Height 85mm (3.3 inches) with no memory card inserted.
- Height 105mm (4.2 inches) with a memory card inserted.
- Weight 2.3 Kg.
- Signal I/O connection by screw terminals.
- Operating temperature −20 to 70°C, humidity 95%.

Accessories Included

- 110/240VAC mains/line power adaptor.
- 1.2Ah gel cell internal battery.
- RS232 communications cable for IBM™ and compatibles, 9 and 25 pin adapting connector.
- Getting Started Manual and Concise User's Manual.
- DeTerminal software package for IBM™ and compatibles.

Options

- Channel expansion module, 10 differential/30 single ended analog inputs, 20 digital inputs, and 10 digital outputs.
- Relay multiplexer, replaces CMOS multiplexer.
- Portable carry case, clamshell design, waterproof.
- Industrial quality steel enclosures (IP65, NEMA 5).
- 4Ah gel cell rechargeable battery.
- 17Ah alkaline battery.
- 64K Datataker memory card, stores 16,000 readings.
- 256K Datataker memory card, stores 81,000 readings.
- 512K PCMCIA memory card, stores 170,000 readings.
- 1M PCMCIA memory card, stores 340,000 readings.
- PCMCIA memory card adaptor.
- Memory card readers.
- Communications cable for Apple Macintosh™.
- DeCipher Plus software package for IBM™ and compatibles.

Ordering

- Datataker 600, CMOS multiplexer   DT600
- Datataker 600, relay multiplexer   DT605
- Channel expansion module   CEM
- Portable carry case   PE
- Small industrial enclosure   SIE
- Large industrial enclosure   LIE
- Small industrial cabinet   SIC
- 64K Datataker memory card   MC-64
- 256K Datataker memory card   MC-256
- 512K PCMCIA memory card   MC-512P
- 1M PCMCIA memory card   MC1024P
- PCMCIA memory card adaptor   MC-ADP
- Memory Card Reader - RS232 Interface   MC-RS
- Memory Card Reader - Centronics Interface   MC-RP