Datataker 505/605

DATA LOGGER

The Datataker 505 and 605 are microprocessor based, battery powered data loggers which measure inputs from most sensor types. Analog input channels are relay multiplexed, providing higher voltage measurement range, greater common mode range and tolerates larger withstanding voltages than Datataker 500 and 600.

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 605 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 with 10 differential or 30 single ended analog input channels. Maximum two modules supported.
- Autocalibrating and autoranging, 4 decades.
- Resolution 15 bit plus sign, $1\mu V$.
- Sampling rate 25 samples/second.
- Accuracy better than 0.15% of full scale.
- Linearity better than 0.05%
- Input impedance $1M\Omega$, or $>100M\Omega$ selectable.
- Common mode range $\pm100VDC$.
- Input withstanding voltages for analog channels
  - Unselected channels   - $\pm1.5KVDC$ for $10\mu S$
  -    - $\pm500VDC$ for 50mS
  -    - $\pm100VDC$ continuously
  - Selected channels   - $\pm100VDC$ continuously
- Common mode rejection >90db, 110db typical.
- Series mode line rejection >35db
- Sensor excitation of 5V, $250.0\mu A$ or $2.500mA$ each channel.
- 4, 3 and 2 wire resistance, RTD and thermistor measurement.
- Full, half and quarter bridges, voltage or current excitation.
- Relay 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.
- 3 high speed counters, 1KHz normally, or 1MHz optionally, 16 bit, presettable.
- Analog channels also read digital state, user definable threshold.

Ranges

Input Type	Range	Units	Resolution
DC Voltage	±25.000	mV	$1\mu V$
	±250.00	mV	$10\mu V$
	±2500.0	mV	$100\mu V$
	±100.00	V	10mV
DC Current	±0.2500	mA	200nA
Internal Shunts	±2.500	mA	$1\mu A$
	±25.00	mA	$10\mu A$
External Shunts	Any range	mA	
4-20mA Loop	0 to 100	Percent	0.01%
Resistance	10.000	Ohms	$0.5m\Omega$
	100.00	Ohms	$5m\Omega$
	500.0	Ohms	$50m\Omega$
	7000.0	Ohms	$500m\Omega$
Frequency	0.1 to 300,000.0	Hz	0.001Hz
Period	30,000 to 3	μSec	$1\mu S$
Temperature	-250.0 to 1800.0	Deg C	0.1%
	-420.0 to 3200.0	Deg F	0.1%
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
Phase Encoder	0 to 65535	Counts	1
Analog State	0 or 1	State	1

Temperature

- Thermocouple types B, C, D, E, G, J, K, N, R, S and T, with cold junction compensation and linearization.
- Platinum RTDs, $\alpha=0.00385$ & $0.003916\Omega/\Omega/°C$, any resistance.
- Nickel RTDs, $\alpha=0.005001\Omega/\Omega/°C$, any resistance.
- Copper RTDs, $\alpha=0.0039\Omega/\Omega/°C$, any resistance.
- Thermistors, Yellow Springs YSI 400xx series.
- Semiconductors, AD590, LM335, LM34 and LM35.

Time and Date

- Resolution 1 second, accuracy 2 seconds/day.
- Date in DD/MM/YYYY, MM/DD/YYYY, day number and decimal day.
- 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.

Digital Outputs

- 4 TTL/CMOS compatible digital output channels for switched outputs, relay control, alarm annunciation, sensor support.
- Open collector lines, rated to + 30VDC @ 200mA.
- Digital outputs share with the digital input channels.
- 3 LEDs, display backlight and beeper on the display panel.
- Expansion by external modules.

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 in increments of 1 sec, 1 min, 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.

Data Scaling

- Data read from input channels in terms of electrical units can be scaled to engineering units. All data manipulation is then performed on the scaled data.
- Up to 20 definable linear spans, declared as span co-ordinates.
- Up to 20 definable polynomials, from 1st to 5th order.
- Other forms of sensor calibration can be implemented using mathematical expressions.

Data Manipulation

- Statistical data including average, standard deviation, minimum and maximum with date and time of min and max, and integral.
- Delta, rate of delta (differential) and integral between scans.
- Histogram, with definable number of classes.
- Expression evaluation using channel data and constants, arithmetic, logical and relational operators, log, trig, and other functions.

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.
- Alarms can switch digital outputs & display panel LEDs, return text to the host, trigger scanning, 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 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 data format with bi-directional error detection protocol.
- Compatible with spreadsheets, graphic and statistical packages, etc.
- Compatible with most computers, 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 these are automatically executed whenever a memory card is inserted.

Display and Keypad   (DT605 only)

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

Host Communications

- RS232, full duplex. Also supports RS423.
- 300, 1200, 2400 and 9600 baud, switch selectable.
- Bi-directional XON/XOFF protocol.
- Compatible with computers, terminals, modems, satellite ground terminals, serial printers, etc.

Network Communications

- RS485, with error correcting protocol.
- Connected via a twisted pair, 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, <350µA low power (sleep) mode.
- Internal 1.2Ah gel cell battery, recharged by external power.
- Approximate battery life for different schedules and battery sizes

Sampling 10 channels every	1.2Ah Gel Cell Battery	17 Ah Alkaline Battery
Continuously	5 hours	3 days
1 minute	12 days	160 days
15 minutes	60 days	800 days
1 hour	110 days	1100 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 2.4Kg.
- 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.
- Getting Started Manual and User's Manual.
- DeTerminal software package for IBM™ and compatibles.

Options

- Channel expansion modules with 10 differential/30 single ended analog inputs, and 20 digital inputs, and 10 digital outputs.
- Portable carry case, clamshell design, waterproof (IP67, NEMA 6).
- Industrial quality steel enclosures (IP65, NEMA 5).
- 4Ah rechargable gel cell or 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 with display	DT605
• Datataker without display	DT505
• 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