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Find the *Measurement Computing / Data Translation DT2802-4* at our website: *Click HERE*

DT2802 Series

24-Bit Chromatography Boards for the ISA Bus

The DT2802 Series are high resolution (to 24-bit), data acquisition boards for liquid (HPLC) and gas (GC) chromatography applications. One or two time-base independent integrators, each with two inputs, permit simultaneous sampling of up to four chromatographs.



M-5355

DT2802 Series 24-Bit Chromatography Boards for the ISA Bus

Summary

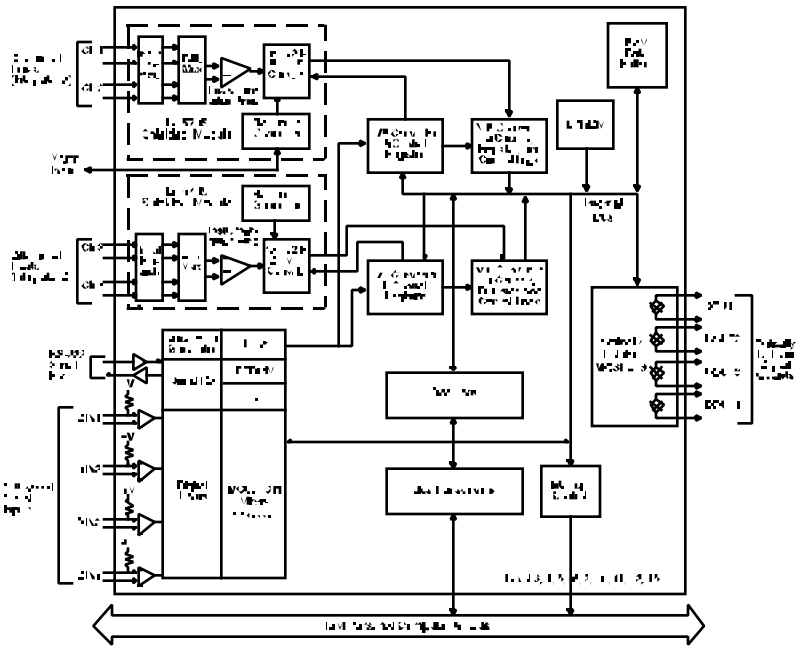
Integrators: 1 or 2 time-base independent integrators, each with two differential input channels and patented VCO circuitry; autocalibrating; 18 to 24-bit resolution; 2–120Hz throughput

Digital I/O: 4 differential in with pullups to sense contact closure, optionally debounced; 4 optically-isolated output switches

Memory: Memory stores up to 2K samples from each integrator

Interface: Programmed I/O; one interrupt, or RS-232 port

Miscellaneous: Full duplex RS-232 port



M-0255

DT 2802-4 Block Diagram

24-Bit Resolution Separates Minute Traces

Patented circuitry on DT2802 Series boards provides 24-bit resolution to distinguish even trace compounds in your sample. The boards can electronically resolve 1 part in 16,777,216 (at 24 bits; equivalent to 60 ppb, or 0.13 µV-s) from GC, HPLC, or capillary electrophoresis detectors. Resolution is variable on each integrator, letting you sample at higher speeds where less resolution is needed—from 2 samples per second at 24 bits to 120 samples per second at 18 bits (1 part in 262,144).

Auto-Acquire Mode for Automatic Background Operation

You can program a DT2802 Series board to operate in the background, with no intervention from the host PC. This multitasking operation permits data acquisition to occur on the board while analysis occurs simultaneously on the PC. The board's microprocessor can automatically perform a sequence of operations—take samples every four seconds on channel 1, for example. Data values can be stored in onboard memory buffers (up to 2 k samples per integrator).

Autocalibration for Consistent Sampling

An autocalibration function built into DT2802 Series boards lets you restore the board to factory-shipped accuracy at any time, automatically. This increases baseline stability, and minimizes noise and drift introduced by the integrator. Precision voltage references are built into the board—no external equipment is required for calibration.

Intelligent, Command-Driven Operation

A built-in microprocessor greatly simplifies DT2802 Series board operation. Rather than programming individual bits in the board's registers, you pass codes for high-level commands such as "Start Integrator" or "Calibrate Integrator." Commands are available to permit OEMs to develop software that runs only on designated hardware configurations. Setup of board subsystems, timing, data manipulation, error checking, and data formatting are handled by the microprocessor automatically, with no external intervention.

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Specifications

All specifications are typical at 25°C and rated voltage, unless otherwise specified.

ANALOG INPUTS

Number of Integrators

DT2802-2—one (2 DI input channels)
DT2802-4—two (4 DI input channels)
Each integrator has an independently controlled time base

Input Range

–0.2 to +2.0 V (can accommodate –0.5 V to +5.0 V and –1.0 V to +10.0V ranges with DT777 a user-supplied attenuator network)

Integrator Resolution

Programmable for 18 through 24 bits (up to 60 ppb); throughput varies inversely with resolution from 120 Hz at 18 bits to 2 Hz at 24 bits

Settling Time to 0.1% FSR (Full-Scale Step)

1 ms

Input Impedance

>100 MΩ

Bias Current

<±50 nA

Maximum Input Voltage Without Damage

±40 V, steady state; ±100 V, transient (10% duty cycle; 5 minute maximum pulse width)

Common Mode Input Range

±5 V

Common Mode Rejection Ratio

>72 dB

Normal Mode Rejection Ratio (Line Frequency ±0.1% of Nominal)

>60 dB (19–24 bit operation only)

Integral Nonlinearity

0.05% FSR max

Differential Nonlinearity

1 LSB max

Monotonicity

Guaranteed

Dynamic Range

>140 dB (10^7: 1)

Zero Drift

5 ppm of FSR/°C max (improves with autocalibration)

Full Scale Drift

20 ppm of FSR/°C max (improves with autocalibration)

Gain Error

0.03% FSR max

Noise

140 nV rms TYP @ 24 bits, 0 Vin
1.0 µV rms TYP @ 20 bits, 0 Vin
(2 µV + 1 µV//Vin) rms MAX @ 20 bits

Channel-to-Channel Crosstalk

Less than –120 dB

DIGITAL I/O

Number of Lines

4 differential inputs; internal pullups; active on rising edge, falling edge, or either (programmable); debouncing selectable under program control; 4 optically isolated outputs

Compatible Inputs

Contact Closure, TTL, CMOS

Overvoltage Protection

±50 V, input and output lines

Input Common Mode Range

±5 V

Output Switch

±24 Vdc @ 10 mA; Ron = 200 Ω max; Roff = 10 MΩ min; each line has separately isolated common

ONBOARD CONTROLLER

Function

Controls all operations; serves as interface and command interpreter; handles host I/O; serial I/O; autocalibration and control of integrators; and digital I/O; permits background mode and remote operation of DT2802

Microprocessor

MC68HC11

RS-232 PORT

Function

Permits remote operation by providing complete board interface; also permits direct communication with any RS-232 device

Configuration

Full duplex; one start bit, one stop bit, eight data bits, no parity; 300, 1200, 2400, 4800, 9600, 19.2 K, or 38.4 K baud rate, software-selectable

GENERAL

Interface

ISA Bus or EISA Bus; I/O mapped; 8-bit data; or RS-232 port remote control
Interrupt—one line, jumper-selected level (3, 4, 5, 6, or 7 on J1 connector; 10, 11, 12, or 15 on J2 connector); source: Data Available, Digital Input Active, Serial I/O, Error

Power Requirements

+5V @ 1.25 A max; +12V @ 75 mA max; –12V @ 75 mA max

Physical/Environmental

Dimensions—full-size PC board mechanically EISA compatible for any available system slot
Connectors—analog and digital I/O signals: 37-pin industry-standard D-shell; RS-232: RJ11, 6-pin
Temperature—operating: 0 to 50° C; storage: –25 to 70° C
Relative Humidity—to 95%, non-condensing
Altitude—to 7000' (2134 m)

RS-232 Interface Permits Remote Operation

An RS-232 port lets you control the DT2802 directly from any remote host—IBM,® Sun Workstation,® or mainframe computer, for example. All functionality is directly accessible via the RS-232 interface. Alternatively, the interface can be used to control an external device.

Versatile Digital I/O

Digital input lines have pullups, to sense switch closure without external power. Digital output lines are optically isolated to directly control 24 V lines.

Resolution vs Input Range

	RESOLUTION		
INPUT RANGE	Bits	Parts per Billion	µV
Autoranging, ±10V	16	15,259	305
Autoranging, ±0.1V	16	15,259	3.05
–0.2 to +2.0V	18	3,815	8.39
–0.2 to +2.0V	24	59.6	0.13

Free Software, Broad Application Support

Each DT2802 Series board ships with free subroutine library and driver software callable from programs written in Microsoft® C. In addition, the board is fully supported by leading chromatography software applications.

Ordering Summary

All Data Translation products are covered by a 1-year warranty. For pricing information, see a current price list, visit our web site, or contact your local reseller.

DT2802 Series

Each DT2802 Series board is shipped with the DT2802 Device Driver and Subroutine Library software, example programs in C, and diagnostics on 3.5 in. 1.4 MB disk. A comprehensive User's Manual is also included.

- DT2802-2—One integrator, 2DI inputs
- DT2802-4—Two integrators, 4DI inputs

Call for information on an OEM version of the DT2802 Series, with special pricing.

Accessories

- DT777—Screw terminal panel; needs EP777
- EP246—Electrically shielded enclosure for DT777
- EP256—5 V attenuator kit for DT777
- EP777—2.4 m (8 ft.) shielded twisted pair cable assembly

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