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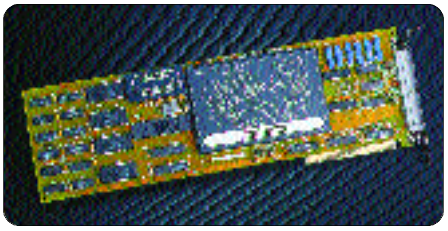
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DT2801 Series

Analog and Digital I/O

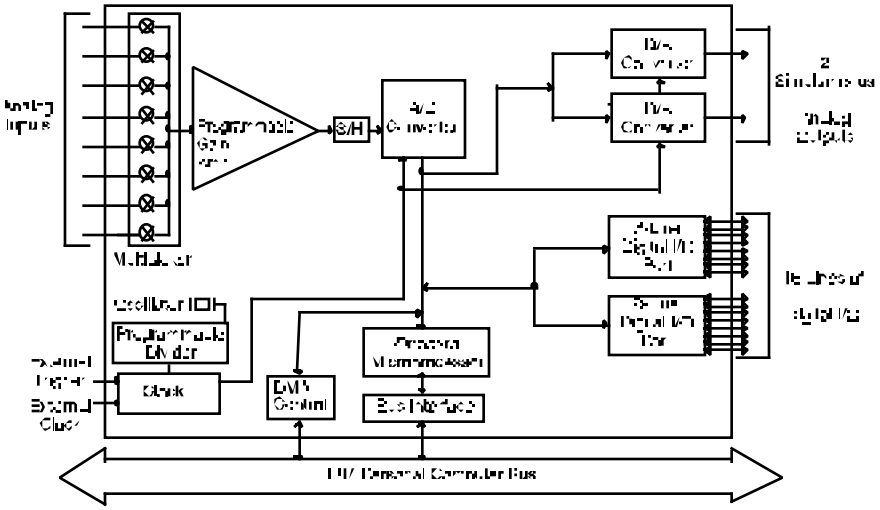
The DT2801 Series is a family of IBM PC/XT/AT-compatible analog and digital I/O boards that support DMA transfers. An onboard microprocessor simplifies programming, and controls critical timing and error-checking operations. DT2801 Series boards are used in tens of thousands of industrial and scientific sites worldwide and are supported by numerous software packages including HP VEE and DT VPI for Windows.

- Versions with simultaneous sampling, 12- or 16-bit resolution, 27.5 kS/s throughput, and gains to 500
- Two independent D/A converters with 12-bit resolution and 16 digital I/O lines; with channel expansion up to 64 SE or 32 DI analog inputs
- Speed maximized with DMA data transfers
- Pacer clock to automatically initiate multiple A/D or D/A conversions



Summary

A/D: 12 or 16 bits; 7.5 to 27.5 kS/s throughput; gains to 500; SSH available
D/A: 2 DACs; 12 bits; 14.8 to 29.5 kS/s throughput
Digital I/O: 16 lines
Clocks: One programmable clock (controls A/D or D/A operations)
Interface: Single-channel DMA or programmed I/O



Abundant Options

Six models let you choose the features that best suit your application. Simultaneous sampling, 16-bit resolution, 27.5 kS/s throughput, and gains to 500 (20 mV full-scale range) are available.

Two DACs, Digital I/O

All models contain two independent D/A converters (DACs) with 12-bit resolution that can be updated singly or simultaneously, as well as 16 digital I/O lines to monitor or drive TTL-level signals.

Shielded A/D Module, DC/DC Converter

To reduce RFI and EMI noise and assure accuracy, sensitive analog input circuitry is housed in a cold-rolled steel module. Analog circuitry is powered from an onboard DC/DC converter that provides high noise isolation from the computer's +5 V supply.

DMA

All DT2801 Series boards support DMA data transfers for transferring data to the maximum speed allowed by the board's A/D or D/A converters.

Programmable Clock

For high speed DMA operation, a pacer clock is provided to automatically initiate multiple A/D or D/A conversions.

Extensive Software Support

DT2801 Series boards are supported by many application software packages, including HP VEE and HP VEE Lab with DT VPI for Windows, TestPoint, DataAcq SDK,™ and DT-LVLink.

Accessories

Model	Screw Terminal Panel	Channel Expansion	16DI Inputs	For Thermocouples
	STP-EZ, DT707	DT727 (needs DT707A)	DT709-Y (needs DT752)	DT707-T, STP-EZ-T
DT2801	✔	✔	✔	
DT2801-A	✔	✔	✔	
DT2801/5716A	✔	✔		
DT2805	✔	✔		✔
DT2805/5716A	✔	✔		✔
DT2809	✔			

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Analog Inputs

	Resolution (bits)	Throughput (kS/s)	Input Channels	Gain	Ranges (V)	System Error (% of FSR)	Conversion Time (µs)	CMRR (dB @60 Hz)	S/H Aperture Uncertainty (ns)	Max. Input Volt. W/O Damage (On/Off)
DT2801	12 (.024% FSR)	13.7	16SE/8DI*	1,2,4,8	0–1.25,2.5,5,10 ±1.25,2.5,5,10	± .03, G=1 ± .05, G=8	10	80	10	±35/±20
DT2801-A	12 (.024% FSR)	27.5	16SE/8DI*	1,2,4,8	0–1.25,2.5,5,10 ±1.25,2.5,5,10	± .03, G=1 ± .05, G=8	10	80	10	±35/±20
DT2801/5716A	16 (.0015% FSR)	7.5	8DI*	1,2,4,8	±1.25,2.5,5,10	± .0075, G=1 ± .015, G=8	20	80	50	±27/±12
DT2805	12 (.024% FSR)	13.7, G≤10 2.5, G≥100	8DI*	1,10, 100,500	0–.02,.1,1,10 ± .02,.1,1,10	± .03, G=1 ± .10, G=500	10	80	10	±35/±20
DT2805/5716A	16 (.0015% FSR)	7.5, G≤10 2.4, G≥100	8DI*	1,10, 100,500	± .02,.1,1,10	± .0075, G=1 ± .05, G=500	20	80	50	±27/±12
DT2809	16 (.0015% FSR)	16	8SE, SS&H	1 (fixed)	±10	± .006	30	—	±5	±18/±18

*With a DT727 panel, up to 64SE and 7DI, or 39DI.

Analog Outputs

	DACs	Resolution (bits)	Throughput (kS/s)	Ranges (V @ 5 mA min)	Settling Time (µs)	Error (% of FSR)	Drift (ppm of FSR/°C)
DT2801, DT2801/5716A, DT2805, DT2805/5716A	2	12	14.8 (one ch.) 16 (two ch.)	0–5, 10 ±2.5, 5, 10	50	±.012	±30, Zero ±30, Gain
DT2801-A	2	12	29.5 (one ch.) 33 (two ch.)	0–5, 10 ±2.5, 5, 10	50	±.012	±30, Zero ±30, Gain
DT2809	2	12	29.5 (one ch.) 33 (two ch.)	0–5, 10 ±2.5, 5, 10	20	±.012	±30, Zero ±30, Gain

Specifications

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

DIGITAL I/O

Number of Lines
16, organized as two groups of 8 that can be set for input or output

Fanout
30 LSTTL loads

Input Load
One LSTTL load

PACER CLOCK

Function
Pacer clock initiates A/D or D/A conversions; clocks are started by software trigger or external trigger.

Usable Range
From 6.1 Hz* to maximum 33 kS/s

*Lowest clock rate is 12.2 Hz for DT2801-A and DT2809.

Description
Pacer clock consists of a 16-bit divider and an onboard or external, user-supplied oscillator; onboard oscillator is 400 kS/s (2.5 µs increments), except 800 kS/s (1.25 µs increments) on DT2801-A and DT2809.

ONBOARD MICROPROCESSOR

Handles board timing, data transfers, error checking, and performs diagnostic check on powerup. Also provides command interpreter.

GENERAL

Interface
IBM Personal Computer bus or EISA bus, for use with IBM PC/XT/AT and compatibles; I/O mapped, 10-bit I/O address; 8-bit data path; 1 DMA channel

Power Requirements
+5 V @ 1.6 A typical; low-noise ±15 V generated by onboard DC/DC converter

Physical/ Environmental

Dimensions—
full-size PC board mechanically EISA-compatible for any available system slot; 10.64 x 33.66 x 1.27 (4.19 in. x 13.25 in. x .5 in.);

Temperature—
operating: 0 to 50° C; storage: –25 to 70° C

Relative Humidity—
to 90%, non-condensing

EMI Compliance—
all models are FCC Class A verified; will not compromise FCC compliance of host computer

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.

Each DT2801 Series board ships with a DT-Open Layers device driver for Windows 95/98, diagnostics, example programs, and a comprehensive user manual.

- DT2801–13.7 kS/s, 12-bit A/D PGH
- DT2801-A–27.5 kS/s, 12-bit A/D, PGH
- DT2801/5716A–16-bit A/D, PGH
- DT2805–Low-level, 13.7 kS/s, 12-bit A/D PGL
- DT2805/5716A–Low-level, 16-bit A/D, PGL
- DT2809–SSH, 16-bit, autocal A/D, 8 inputs

Accessories

- DT707–Screw terminal panel and cable
- STP-EZ (DT780)–Screw terminal panel and cable
- DT707-T–Panel and cable for thermocouples
- STP-EZ-T (DT780-T)–Panel and cable for thermocouples
- DT707A–Screw terminal panel and cable
- DT707A-T–Panel and cable for thermocouples
- DT727–Channel expansion panel and cable

Software

The following products include a copy of the software, a single-user license, and a user manual. All software is supplied on CD-ROM, except as noted.

- HP VEE with DT VPI visual programming software Version 5.0 for Windows 95/98 SP1950-CD
- HP VEE Lab with DT VPI visual programming software version 5.0 for Windows 95/98 SP1950-LAB
- TestPoint software for designing test, measurement and D/A applications for Windows 95/98 SPTPXX–CD (see page 32 for details)
- DTx-EZ visual programming tools for Visual Basic and Visual C++ for Windows 95/98 SP0970-CD
- DataAcq SDK Software Development Kit for Windows 95/98 SP0945-CD
- DT-LV Link data acquisition connection to LabVIEW for Windows 95/98, on 3.5 in. 1.4 MB disk SP0810-CL

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