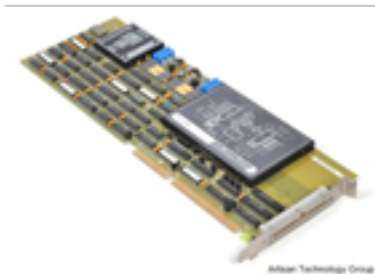


Data Translation DT2821

Data Acquisition Board



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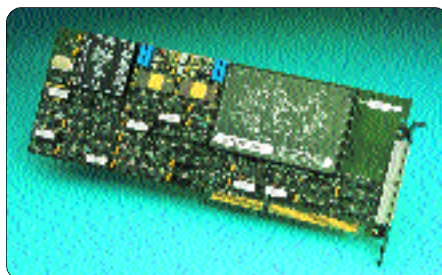
ISA Hardware

DT2821 Series

Analog and Digital I/O

The DT2821 Series is a family of high-speed, dual-channel DMA data acquisition boards for PC AT compatibles. By using two DMA channels, these boards provide continuous performance (gap-free) data transfers at the full throughput capability of the board—up to 250 kS/s. Each board provides two high-speed de-glitched analog outputs, eight digital inputs, and eight digital outputs. The channel gain list allows you to sample channels in non-sequential order or with different gains. Comprehensive software support allows the DT2821 Series to be programmed using a variety of languages and application packages.

- Dual-DMA design allows high-speed continuous performance (no lost samples)
- Choose from 12- or 16-bit A/D or D/A resolution, high or low-level (20 mV full-scale) gain, A/D throughputs to 250 kS/s, or optional SSH for simultaneous sampling of up to eight inputs
- Analog input circuitry is housed in a cold-rolled steel module, and is powered from an onboard DC/DC converter to ensure accuracy
- Two de-glitched, independent analog outputs are provided with up to 130 kS/s throughputs and a resolution of up to 16 bits (depending on version)
- Sample input channels in any sequence, at any gain, at full throughput



Summary

A/D: 12- or 16-bits; 30 to 250 kS/s throughput; gains to 500; SSH available

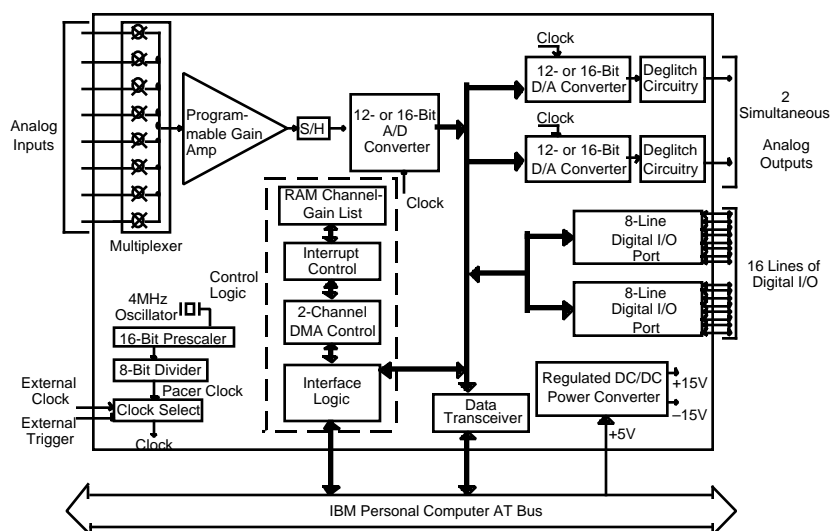
D/A*: 2 deglitched DACs; 12- or 16-bits; 100 to 130 kS/s throughput per DAC

Digital I/O: 16 lines

Clocks: One programmable clock

Interface: Dual-channel DMA or programmed I/O; line interrupt

*DT2824-PGH and DT2824-PGL have no analog output.



Analog Outputs

	DACs	Resolution (bits)	Throughput (kHz)	Ranges (V @ ± 5 mA min)	Settling Time (μ s)	Error (% of FSR)	Drift (ppm of FSR/ $^{\circ}$ C)
DT2821*	2, deglitched	12 (.024% FSR)	130/DAC	0–5, 10 $\pm 2.5, 5, 10$	5	$\pm .012$	± 10 , Zero ± 30 , Gain
DT2823, DT2829	2, deglitched	16 (.0015% FSR)	100/DAC	± 10	10	$\pm .0023$	± 10 , Zero ± 30 , Gain

* All DT2821 versions, including the DT2825, DT2827, and the DT2828

Analog Inputs

	Resolution (bits)	Throughput (kS/s)	Input Channels	Gain	Ranges (V)	System Error (% of FSR)	Conversion Time (μ s)	CMRR (dB @ 60 Hz)	S/H Aperture Uncertainty (ns)	Max. Input Volt. Pro- tection (On/Off)
DT2821	12 (.024% FSR)	50	16SE/8DI*	1,2,4,8	0-1.25, 2.5, 5, 10 \pm 1.25, 2.5, 5, 10	\pm .03, G=1 \pm .05, G=8	10	80	10	\pm 35/ \pm 20
DT2824-PGH	12 (.024% FSR)	50	16SE/8DI*	1,2,4,8	0-1.25, 2.5, 5, 10 \pm 1.25, 2.5, 5, 10	\pm .03, G=1 \pm .05, G=8	10	80	10	\pm 35/ \pm 20
DT2824-PGL	12 (.024% FSR)	50, G 10 3.8, G 100	16SE/8DI*	1,10,100,500	0-.02, .1, 1, 10 \pm .02, .1, 1, 10	\pm .03, G=1 \pm .10, G=500	10	80	10	\pm 35/ \pm 20
DT2821-F-16SE DT2821-F-8DI	12 (.024% FSR)	150	16SE 8DI	1,2,4,8	0-1.25, 2.5, 5, 10 \pm 1.25, 2.5, 5, 10	.03, G=1 .07, G=8	4	— 80	.5	\pm 27/ \pm 12
DT2821-G-16SE DT2821-G-8DI	12 (.024% FSR)	250	16SE 8DI	1,2,4,8	0-1.25, 2.5, 5, 10 \pm .625, 1.25, 2.5, 5, 10	.03, G=1 .07, G=8	2.5	— 80	.2	\pm 16/ \pm 1
DT2823	16 (.0015% FSR)	100	4DI	1	\pm 10	\pm .003	6	80	.2	\pm 27/ \pm 12
DT2825	12 (.024% FSR)	50, G 10 2.5, G 100	16SE/8DI*	1,10,100,500	0-.02, .1, 1, 10 \pm .02, .1, 1, 10	\pm .03, G=1 \pm .10, G=500	10	80	10	\pm 35/ \pm 20
DT2827	16 (.0015% FSR)	100	4DI	1	\pm 10	\pm .003	6	80	.2	\pm 27/ \pm 12
DT2828	12 (.024% FSR)	100	4SE, SS&H	1	0-10 \pm 10	\pm .04	4	—	\pm 5	\pm 31/ \pm 16
DT2829	16 (.0015% FSR)	30	8SE, SS&H	1	\pm 10	\pm .006	30	—	5	\pm 18/ \pm 18

* With multiple DT727 panels, up to 256SE/128DI.

Specifications

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

DIGITAL I/O

Number of Lines
16, organized as two
8-line ports that can
be set for input or
output
Fanout
30 LSTTL loads
Input Load
1 LSTTL load

PACER CLOCK

Function
Pacer clock initiates
A/D or D/A conver-
sions; clock is started
by software trigger or
external trigger.

Usable Range
From 4 μ s (250kS/s)
to 2 s (.5 Hz)
Description
Pacer clock consists
of a 4.00 MHz
oscillator (.25 μ s
increments), a
prescaler (divides
oscillator by powers
of two from 20 to
215), and an 8-bit
divider (divides
output of prescaler
by integers from
1 to 255).

OPERATING MODES

A/D
*Channel/Gain
Selection*—
16-location channel-
gain list
Operation—single
conversion; single
scan (once through
channel-gain list);
continuous scan
(continuous through
channel-gain list)
Data Transfer—pro-
grammed I/O; dual-
channel (Continuous
Performance) DMA

D/A

Channel Selection—
either channel singly
or both channels
simultaneously
Data Transfer—pro-
grammed I/O; dual-
channel (Continuous
Performance) DMA

GENERAL

Interface
IBM PC AT bus or
EISA Bus; I/O
mapped, 10-bit I/O
address; 16-bit data
path; one or two
DMA channels

Interrupt—one line,
jumper-selected
level; source: A/D,
D/A error; A/D done;
D/A ready; A/D scan
done; A/D, D/A
DMA done
Power Requirements
+5 V @ 2.4 A typical;
low-noise \pm 15 V
generated by onboard
DC/DC converter
Physical/
Environmental
Dimensions—full-
size PC AT board
mechanically

compatible
with ISA system
slots only;
12.07 x 33.66 x 1.9
(4.75 in. x 13.25 in. x
.5 in.); 12.86 x 34.29
x 1.91 (5.06 in. x
13.5 in. x .75 in.)
including bracket
Temperature—
operating: 0 to 70° C;
storage: -25 to 70° C
Relative Humidity—
to 95%,
non-condensing



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.

DT2821 Series boards ship with a DT-Open Layers
device driver for Windows 95/98, example programs,
diagnostics, and a comprehensive user manual.

- DT2821-50 kS/s, 12-bit A/D, PGH
- DT2824-PGH-High-level, A/D only
- DT2824-PGL-Low-level, A/D only
- DT2821-F-16SE-16 SE, 150 kS/s, A/D
- DT2821-F-8DI-8 DI, 150 kS/s, A/D
- DT2821-G-16SE-16 SE, 250 kS/s, A/D
- DT2821-G-8DI-8 DI, 250 kS/s, A/D
- DT2823-16-bit, A/D; 16-bit D/A
- DT2825-Low-level, A/D
- DT2827-16-bit, A/D; 12-bit D/A
- DT2828-SSH, 12-bit, 100 kS/s A/D

- DT2829-SSH, A/D; 16-bit D/A

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-Panel and cable
- DT707A-T-Panel and cable for thermocouples
- DT727-Channel expansion panel and cable
- DT727-T-Thermocouple 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
SPTPX-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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