

## PC Card-EZ (DT7100 Series)

### Easy-to-Use, High Accuracy PC Cards for Data Acquisition

PC Card-EZ™ is a series of high accuracy, multifunction data acquisition PCMCIA cards. Capabilities include one or two 12-bit, 100 kS/s A/D converters, up to 16 input channels, and two 50 kS/s, 12-bit DACs (not available on all models). Windows® 95 software support is provided by HP VEE™, DTx-EZ™, DT-LV Link™ and the DataAcq SDK™.



### Analog Inputs

		DT7101	DT7102	Units
<b>General</b>				
Resolution	Min	12	12	Bits
<b>Throughput</b>				
One Channel	Min	100*	100*	kS/s
Channel Scan	Min	100*	100*	kS/s
Simultaneous Mode**	Min	N/A	200, aggregate*	kS/s
<b>Inputs</b>				
Number of A/D Converters		1	2	
Number of Channels				
Single-Ended		8	16	
Pseudo-Differential†		4	8	
<b>Input Ranges</b>				
(Unipolar)		0 to +5	0 to +5	Volts
(Bipolar)		±2.5	±2.5	Volts
<b>Simultaneous Sampling</b>				
Channel Pairs Sampled Simultaneously		—	0/1, 2/3, 4/5, 6/7, 8/9, 10/11, 12/13, 14/15	
Channel-to-Channel Phase Match	Typ	—	±0.1 @ 10 kS/s	Degrees
<b>Input Impedance</b>				
Power On	Typ	100/16	100/16	MΩ/pF
Power Off	Typ	4.7	4.7	kΩ
<b>Input Bias Current</b>				
	Typ	25	25	nA
<b>Maximum Input Voltage</b>				
Power On/Off	Max	±35/±25	±35/±25	Vdc
<b>ESD Protection (Mil 38510 class 2)</b>				
	Max	1500	1500	Volts
<b>Common Mode Rejection Ratio (@dc, 1 kΩ source)</b>				
	Min	72	72	dB
<b>Common Mode Input Range</b>				
	Max	±5	±5	Volts
<b>DC Accuracy</b>				
System Error	Max	0.27	0.27	% FSR
Integral Nonlinearity	Max	±0.75	±0.75	LSB
Differential Nonlinearity	Max	±1	±1	LSB
System Noise	Typ	0.2	0.2	LSB rms
<b>AC Accuracy</b>				
Signal/Noise Ratio (@10 kS/s input, 100 kS/s Sampling Rate)	Typ	72	72	dB
Effective Number of Bits	Typ	11.6	11.6	bits
<b>Total Harmonic Distortion (@10 kS/s input, 100 kS/s Sampling Rate)</b>				
	Typ	–80	–80	dB

### System Requirements

To use PC Card-EZ, you will need:

- IBM PC AT-Compatible computer
  - At least one available Type II or Type III PC Card slot
  - At least 4 MB of RAM (8 MB or more recommended)
  - At least one 3.5 in. high capacity drive
- PCMCIA Standard, Release 2.1 or higher compliant Card and Socket Services

### Connector Panel Specifications

	DT783	DT784
Compatible Board	DT7101	DT7102
Dimensions	2.4 in. W x 3.8 in. L	2.75 in. W x 4.6 in. L
	x 0.9 in. H (6.1 x 9.7 x 2.3 cm)	x 0.9 in. H (7.0 x 11.7 x 2.3 cm)
Cable Length	18 in. (.46m)	18 in. (.46m)

### Analog Outputs (DT7102 only)

General			Units
Resolution		12	Bits
Throughput	Maximum	50/DAC	kS/s
Outputs			
Number of DACs		2	
Output Range		±5	V
Current Output	Maximum	±1	mA
Output Impedance	Typical	0.1	Ω
Protection	Short Circuit to Analog Common		
Accuracy			
System Error	Maximum	±0.4	% FSR
Integral Nonlinearity	Maximum	±1.5	LSB
Differential Nonlinearity	Typical	±1	LSBs
System Noise	Typical	±0.5	LSB
	Monotonicity Guaranteed		
Dynamic Performance			
Setting Time (to ±1 LSB)			
10 V Step	Typical	16	μs
100 mV Step	Typical	0.7	μs

Notes to table at left:

\* Exceeding these throughputs may result in inaccurate dynamic measurements.

\*\*In simultaneous mode, both A/D converters operate at the same time, sampling two channels at once. Each A/D converter is capable of 100 kS/s, for an aggregate throughput of 200 kS/s.

† In pseudo-differential mode, both the signal +in and –in are connected to separate multiplexer channels. However, unlike conventional differential circuits, only the +in side is sampled. This requires that the –in side remain stable to within ±0.5 LSB during conversion.

## 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.

### PC Card-EZ

Each PC Card-EZ board is shipped with installation software, diagnostics to check for correct board operation, and comprehensive hardware and software user manuals. Software is supplied on 3.5 in. 1.4 MB disk.

- DT7101—One 12-bit A/D converter (8SE/4DI inputs), no DACs, two digital inputs, two digital outputs
- DT7102—Two 12-bit A/D converters (16SE/8DI inputs), two 12-bit DACs, two digital inputs, four digital outputs

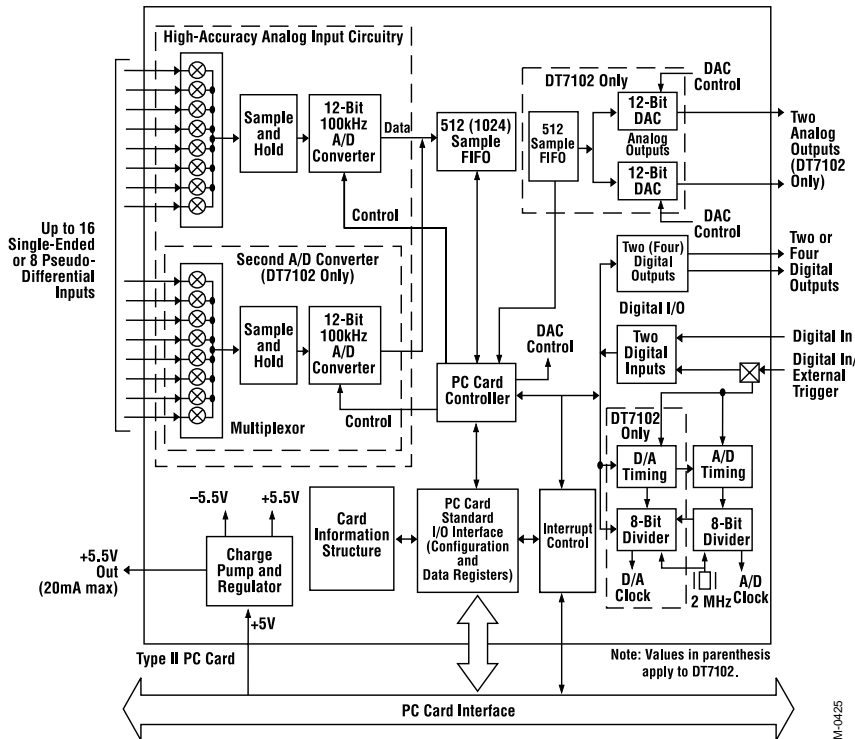
### Accessories

- DT783—Enclosed connector panel and 0.46m (18 in.) cable; for DT7101
- DT784—Enclosed connector panel and 0.46m (18 in.) cable; for DT7102

### 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 SP1950-CD
- DTx-EZ visual programming tools for Visual Basic and Visual C++ for Windows 95 SP0970-CD
- DataAcq SDK Software Development Kit for Windows 95 SP0945-CD
- DT-LV Link data acquisition connection to LabVIEW for Windows 95, on 3.5 in. 1.4 MB disk SP0810-CL



PC Card-EZ Block Diagram

## Specifications

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



### STATIC DIGITAL I/O

Number of Lines  
Two inputs, two outputs (four outputs, DT7102); one input is shared with external trigger line

### Outputs

TTL levels; fanout: 200mA (100 mA, DT7102); outputs are DMOS FETs, open-drain type and can be pulled up to +32 V max

### Inputs

Level sensitive; positive true; TTL levels; present one LSTTL load; unused inputs are pulled high

### PACER CLOCKS

#### Function

Independent A/D and D/A pacer clocks initiate A/D or D/A conversions; clocks are started by software trigger or (A/D only) a single external trigger

### Usable Range

A/D Pacer Clock—1 Hz to 100 kS/s single conversion mode supports rates below 1Hz

D/A Pacer Clock—7.84 kS/s to 100 kS/s

**Description**  
Consists of 2 MHz frequency source and a divider that can produce any integer value from 20 to 255

### External Trigger

**Function**—synchronizes A/D conversions with outside event  
**Electrical**—Edge sensitive; negative true; TTL levels; presents one LSTTL load; no termination, unused input is pulled high

### DATA FIFOs

A/D—A/D data values pass to the PC Card Interface via a 512-sample FIFO (1024-sample, DT7102). This allows

data transfers to occur totally asynchronously with A/D operation

D/A (DT7102 only)—D/A data values pass from the PC Card Interface via a 512-sample FIFO. This allows data transfers to occur totally asynchronously with D/A operation

### OPERATING MODES

#### A/D

**Channel Selection**—single channel channel scan

**Operating Modes**—single conversion; continuous conversions

**Simultaneous Sampling (DT7102 only)**—the DT7102 supports simultaneous sampling on pairs of input channels; in this mode, the board's two A/D converters run simultaneously,

permitting two channels to be sampled at the same time (for example, channels 0 and 1, 2 and 3, ... , 14 and 15)

**Data Transfer**—memory move; A/D data is buffered by a 512-sample FIFO (1024-sample, DT7102) on bus transfers

#### D/A (DT7102 only)

**Channel Selection**—either DAC singly or both DACs simultaneously

**Operating Modes**—single event; continuous conversions

**Data Transfer**—memory move

#### Standby

A standby mode is available that reduces power consumption; board automatically switches to standby mode if idle for more than 25 seconds; in

standby mode, digital outputs and registers are still active

### GENERAL

#### Interface

Type II PC Card; compliant with PCMCIA PC Card Standard Release 2.1; I/O mapped into system I/O space; programmed I/O with interrupt data transfer to host

#### User Connections

All user-accessible signals are brought out to a 15-pin (DT7101) or 32-pin (DT7102) miniature connector

#### Mating Connector—

DT7101: BERG 93540-150000;  
DT7102: BERG 93540-3200001

#### Compatible Connector Panel—

DT7101: DT783;  
DT7102: DT784

### Power Requirements

DT7101—+5 Vdc @ 30 mA typical operating, 10 mA typical standby

DT7102—+5 Vdc @ 55 mA typical operating, 30 mA typical standby

Low-noise ±5.5 Vdc generated onboard to power analog circuits

### Physical/

#### Environmental

**Dimensions**—Type II PC Card; 5.4 x 8.6 x .5 cm (2.126 in. x 3.37 in. x 0.2 in.)

**Weight**—0.9 oz (26 g)

**Temperature**—operating: 0 to 70° C; storage: -25 to 85° C

**Relative Humidity**—to 85%, non-condensing

#### Shock and

**Vibration**—conforms to PCMCIA PC Card Standard Release 2.1