

# PCI-DAC6702 and PCI-DAC6703

## Specifications



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# Specifications

Typical for 25 °C unless otherwise specified.

Specifications in *italic text* are guaranteed by design

## Analog output

Table 1. Analog output specifications

D/A converter type	Enhanced R-2R
Resolution	16-bits, 1 in 65536
Number of channels	PCI-DAC6703: 16 voltage PCI-DAC6702: 8 voltage
<i>DNL</i>	<i>±1 LSB max</i>
<i>Monotonicity</i>	<i>16-bits, guaranteed after calibration</i>
Update rate, max	PCI-DAC6703: 1111 S/s per channel PCI-DAC6702: 1111 S/s per channel
Update modes	Software selectable per channel for update immediate (default), or update from NVRAM on command
<i>Output short-circuit duration</i>	<i>Indefinite @ 25 mA</i>
Power-on state	Independent, user-defined power-on states.

Table 2. Voltage output specifications

Range	±10.1 V
<i>Output coupling</i>	<i>DC</i>
Output impedance	0.1 Ω max.
Current drive	±10 mA max
Load capacitance	10,000 pF
Slew rate	0.5 V/μs typ.
Settling time (full scale step)	7.2 ms max to ±0.5 LSB
Noise	100 μV <sub>rms</sub> , DC to 1 MHz BW
<i>Offset temperature coefficient</i>	<i>±5 μV/°C</i>
<i>Gain temperature coefficient</i>	<i>±1 ppm/°C</i>
Protection	Short circuit to ground
Data transfer	Programmed I/O

Table 3. Absolute accuracy components - all values are (±)

Range <sup>1</sup>	% of Reading	Offset	Temp Drift <sup>2</sup> (%/°C)	Absolute Accuracy at FS
±10 V	0.0019	±710 μV	0.0001	±1 mV

**Note 1:** Temp drift applies only if the ambient temperature changes by more than ±10°C since the last calibration.

**Note 2:** Each PCI-DAC670x board is tested at the factory to assure that the overall error does not exceed the values specified in Table 3.

Table 4. Relative accuracy

Range	Relative Accuracy
±10 V	±1.0 LSB, max

Relative accuracy is defined as the measured deviation from a straight line drawn between measured endpoints of the transfer function.

## Analog output calibration

Table 5. Analog I/O calibration

Recommended warm-up time	15 minutes
Calibration	Auto-calibration, calibration factors for each range stored on board in non-volatile RAM.
Onboard calibration reference	<i>DC Level: 10.000 V<math>\pm</math> 1 mV. Actual measured values stored in EEPROM.</i>
	Tempco: 0.6 ppm/ $^{\circ}$ C max
	Long-term stability: $\pm$ 6 ppm/sqrt(1000 hrs)
Calibration interval	1 year

## Digital input / output

Table 6. Digital I/O

Digital type	Discrete, 5 V/TTL compatible
Number of I/O	8
Configuration	8 bits, independently programmable for input or output. Position available for pull-up/pull-down resistor network (not populated).
Input high voltage	2.0 V min, 7.0 V absolute max
Input low voltage	0.8 V max, -0.5 V absolute min
Output high voltage (IOH = -32 mA)	3.80 V min, 4.20 V typ
Output low voltage (IOL = 32 mA)	0.55 V max, 0.22 V typ
Data transfer	Programmed I/O
Power-up / reset state	Input mode (high impedance)

## Power consumption

Table 7. Power consumption specifications

+5 V	PCI-DAC6703: 1.1 A max PCI-DAC6702: 1.0 A max
+5 V available at I/O connector	0.75A max, protected with a resettable fuse

## Environmental

Table 8. Environmental specifications

Operating temperature range	0 to 55 $^{\circ}$ C
Storage temperature range	-20 to 70 $^{\circ}$ C
Humidity	0 to 90% non-condensing

## Mechanical

Table 9. Mechanical specifications

Card dimensions	PCI half card: 174.4 mm (L) x 106.9 mm (W) x 18.4 mm (H)
Form factor	Universal PCI keying. Compatible with either 3.3 V or 5 V PCI signaling environments.

## Main connector and pin out

Table 10. Main connector specifications

Connector type	Shielded SCSI 100 D-Type
Compatible cables	C100HD50-x, unshielded ribbon cable. x = 3 or 6 feet
	C100MMS-x, shielded round cable. x = 1, 2, or 3 meters
Compatible accessory products (with C100HD50-x cable)	BNC-16SE BNC-16DI CIO-MINI50 CIO-TERM100 SCB-50
Compatible accessory products (with C100MMS-x cable)	SCB-100 BNC-16DI-FE

Table 11. PCI-DAC6703 pin out

Pin	Signal Name	Pin	Signal Name
1	AGND	51	AGND
2	VCH0	52	n/c
3	AGND0	53	AGND
4	VCH1	54	n/c
5	AGND1	55	AGND
6	VCH2	56	n/c
7	AGND2	57	AGND
8	VCH3	58	n/c
9	AGND3	59	AGND
10	VCH4	60	n/c
11	AGND4	61	AGND
12	VCH5	62	n/c
13	AGND5	63	AGND
14	VCH6	64	n/c
15	AGND6	65	AGND
16	VCH7	66	n/c
17	AGND7	67	AGND
18	AGND	68	AGND
19	VCH8	69	n/c
20	AGND8	70	AGND
21	VCH9	71	n/c
22	AGND9	72	AGND
23	VCH10	73	n/c
24	AGND10	74	AGND
25	VCH11	75	n/c
26	AGND11	76	AGND
27	VCH12	77	n/c
28	AGND12	78	AGND
29	VCH13	79	n/c
30	AGND13	80	AGND
31	VCH14	81	n/c
32	AGND14	82	AGND
33	VCH15	83	n/c
34	AGND15	84	AGND
35	n/c	85	DIO0
36	n/c	86	DIO1
37	n/c	87	DIO2
38	n/c	88	DIO3
39	PC 5V	89	DIO4
40	DIO0	90	DIO5
41	DIO1	91	DIO6
42	DIO2	92	DIO7
43	DIO3	93	n/c
44	n/c	94	n/c
45	DIO4	95	n/c
46	DIO5	96	GND
47	DIO6	97	n/c
48	DIO7	98	n/c
49	n/c	99	n/c
50	GND	100	GND

**Note 3:** DIO[7:0] signals are provided in two locations in order to provide flexibility for applications which use the C100HD50-x ribbon cable.

Table 12. PCI-DAC6702 pin out

Pin	Signal Name	Pin	Signal Name
1	AGND	51	AGND
2	VCH0	52	n/c
3	AGND0	53	AGND
4	VCH1	54	n/c
5	AGND1	55	AGND
6	VCH2	56	n/c
7	AGND2	57	AGND
8	VCH3	58	n/c
9	AGND3	59	AGND
10	VCH4	60	n/c
11	AGND4	61	AGND
12	VCH5	62	n/c
13	AGND5	63	AGND
14	VCH6	64	n/c
15	AGND6	65	AGND
16	VCH7	66	n/c
17	AGND7	67	AGND
18	AGND	68	AGND
19	n/c	69	n/c
20	AGND	70	AGND
21	n/c	71	n/c
22	AGND	72	AGND
23	n/c	73	n/c
24	AGND	74	AGND
25	n/c	75	n/c
26	AGND	76	AGND
27	n/c	77	n/c
28	AGND	78	AGND
29	n/c	79	n/c
30	AGND	80	AGND
31	n/c	81	n/c
32	AGND	82	AGND
33	n/c	83	n/c
34	AGND	84	AGND
35	n/c	85	DIO0
36	n/c	86	DIO1
37	n/c	87	DIO2
38	n/c	88	DIO3
39	PC 5V	89	DIO4
40	DIO0	90	DIO5
41	DIO1	91	DIO6
42	DIO2	92	DIO7
43	DIO3	93	n/c
44	n/c	94	n/c
45	DIO4	95	n/c
46	DIO5	96	GND
47	DIO6	97	n/c
48	DIO7	98	n/c
49	n/c	99	n/c
50	GND	100	GND

**Note 4:** DIO[7:0] signals are provided in two locations in order to provide flexibility for applications which use the C100HD50-x ribbon cable.

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