

PCI-9524

24-Bit Precision Load Cell Input Card



Introduction

The PCI-9524 is a robust, multi-purpose module designed for turnkey material test systems (MTS). Equipped with four strain gauge-based transducer input channels, four general purpose analog input channels, and a 3-axis motion controller, the PCI-9524 delivers a complete hardware solution for MTS manufacturers. The PCI-9524 easily integrates physical quantity measurement and implements strategy of close-loop control in a single module package. For transducer measurement, the PCI-9524 supports sensitivity from 1.0 mV/V to 4.0 mV/V and provides a 1/200000 accuracy of measurement of full scale. These features make the PCI-9524 suitable for precise measurement in large-scale transducers.

The PCI-9524 is also equipped with four, 24-bit general purpose analog input channels that allow accurate measurements of the LVDT (Linear Variable Differential Transducer) and Linear wire potentiometer signals to achieve high-resolution of displacement.

With motion control capability and 16-bit DA channels, the PCI-9524 comes with three stepper/servo motor axes and two channels of hydraulic system control function. The built-in incremental encoder feedback channels enable the PCI-9524 to implement the stratagem of MTS' closed-loop control.

The impressive PCI-9524 features permit easy implementation of required control or measurement functionalities with just a single module, saving precious development and integration time for MTS manufacturers.

Features

Transducer Inputs for precise measurement of large-scale transducers

- 4-CH strain gauge-based transducer inputs
- Accuracy up to 1/200,000 counts at full-scale
- Sensitivity from 1.0 mV/V to 4.0 mV/V
- 2.5 / 10 Vdc excitation voltage
- Internal 24-bit A/D resolution

Motion Controller for stepper and hydraulic system control

- 3-axis motion controller with OUT/DIR output
- 2-CH 16-bit analog outputs

- A-B phase encoder input with 24-bit counter

General-Purpose Analog Inputs for accurate measurements of LVDT¹ and linear wire potentiometer signals

- 4-CH analog input with 24-bit resolution
- Programmable gains of ± 1.25 V, ± 2.5 V, ± 5 V, ± 10 V
- Up to 30 kS/s sampling rate (single channel)

Note 1: LVDT: Linear Variable Differential Transducer

Supported Operating Systems

- Windows Vista/XP/2000/2003
- Linux

Recommended Application Environments

- VB.NET/VC.NET/VB/Vc++/BCB/Delphi

Driver Support

- DAQPilot for Windows
- DAQPilot for LabVIEW™
- PCI-DASK for Windows
- PCI-DASK/X for Linux

Applications

- Material test system

The combination of these features makes the PCI-9524 an ideal solution for material testing systems, CNC machines, and civil testing equipment. With all the required functions for measurement and control, the PCI-9524 greatly reduces system development and integration time.

Specifications

4-channel Load Cell transducer input

Excitation voltage: 2.5 V/10 Vdc
 Internal A/D resolution: 24 bit
 Update speed when Auto-zero Disabled
 · Up to 30 KSPS (single channel)
 · Up to 4 KSPS (multi-channel)
 Update speed when Auto-zero Enabled
 · Up to 800 SPS (single channel or multi-channel)
 Transducer sensitivity: 1.0 mV/V to 4.0 mV/V
 Number of channels: 1.6
 Accuracy: 1/200000 of full scale
 (with remote sense & auto zero enabled)
 Onboard 256 samples A/D FIFO

Motion Control

Number of axis: 3
 Pulse output options: OUT/DIR (26LS31, differential line driver, driving current: up to 20 mA)
 Maximum output frequency: 500 kHz
 Encoder Input: 24-bit up/down counter for incremental encoder feedback

General Purpose Analog Input

Resolution: 24-bit
 Programmable range: ± 1.25 V, ± 2.5 V, ± 5 V, ± 10 V
 Number of channels: 4
 Sampling rate: 30 kS/s (non-multiplexing)
 Onboard 256 samples A/D FIFO

Isolated Digital Input

Number of channels: 8
 Maximum input range (non-polarity): 0 V to 24 V
 Input resistance: 2.7 K Ω

Isolated Digital Output

Number of channels: 8
 Output type: Power MOSFET
 Sink current: Up to 300 mA/channel

Analog Output

Resolution: 16-bit
 Output range: ± 10 V
 Number of channels: 2
 Update rate: Up to 5 kS/s
 Onboard 1 K samples D/A FIFO
 Driving capability: 5 mA

Terminal Boards

DIN-68S-01

Terminal Board with One 68-pin SCSI-II Connector and DIN-Rail Mounting (cables are not included; for information on mating cables, refer to Section 14, Accessories.)

Ordering Information

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Pin Assignment

CN1				CN2			
AI0+	34	68	AI0-	PULSE0_A+	34	68	PULSE0_A
VEEXEC0+	33	67	VEEXEC0-	PULSE0_B+	33	67	PULSE0_B
VEEXEC_SEM0+	32	66	VEEXEC_SEM0-	ISOVD0	32	66	ISOGND
N/A	31	65	N/A	PULSE1_A+	31	65	PULSE1_A
AI1+	30	64	AI1-	PULSE1_B+	30	64	PULSE1_B
VEEXEC1+	29	63	VEEXEC1-	ISOVD1	29	63	ISOGND
VEEXEC_SEM1+	28	62	VEEXEC_SEM1-	PULSE2_A+	28	62	PULSE2_A
N/A	27	61	N/A	PULSE2_B+	27	61	PULSE2_B
AI2+	26	60	AI2-	ISOVD2	26	60	ISOGND
VEEXEC2+	25	59	VEEXEC2-	ENCO_A+	25	59	ENCO_A
VEEXEC_SEM2+	24	58	VEEXEC_SEM2-	ENCO_B+	24	58	ENCO_B
N/A	23	57	N/A	ISOPWR	23	57	ISOGND
AI3+	22	56	AI3-	ENC1_A+	22	56	ENC1_A
VEEXEC3+	21	55	VEEXEC3-	ENC1_B+	21	55	ENC1_B
VEEXEC_SEM3+	20	54	VEEXEC_SEM3-	ISOPWR	20	54	ISOGND
N/A	19	53	N/A	ENC2_A+	19	53	ENC2_A
AGND	18	52	AGND	ENC2_B+	18	52	ENC2_B
AI4+	17	51	AI4-	ISOPWR	17	51	ISOGND
AI5+	16	50	AI5-	IDIO+	16	50	IDIO-
AI6+	15	49	AI6-	IDI1+	15	49	IDI1-
AI7+	14	48	AI7-	IDI2+	14	48	IDI2-
AGND	13	47	AGND	IDI3+	13	47	IDI3-
AGND	12	46	AGND	ISOPWR	12	46	ISOGND
AGND	11	45	AGND	IDI4+	11	45	IDI4-
AGND	10	44	AGND	IDI5+	10	44	IDI5-
AGND	9	43	AGND	IDI6+	9	43	IDI6-
AGND	8	42	AGND	IDI7+	8	42	IDI7-
AGND	7	41	AGND	ISOPWR	7	41	ISOGND
AGND	6	40	AGND	IDO0	6	40	IDO1
AGND	5	39	AGND	IDO2	5	39	IDO3
DA0_OUT	4	38	AGND	EXT_ISOPWR	4	38	ISOGND
AGND	3	37	AGND	ISOPWR	3	37	ISOGND
DA1_OUT	2	36	AGND	IDO4	2	36	IDO5
AGND	1	35	AGND	IDO6	1	35	IDO7