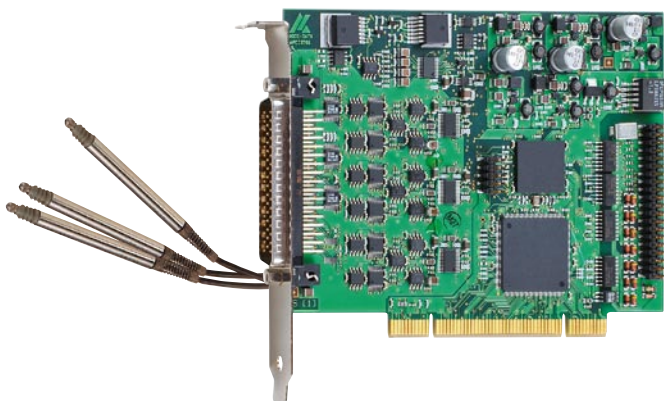


Length measurement board, 16-bit, simultaneous acquisition of 5 inductive transducers, LVDT, half-bridge



PCI 32-bit



LabVIEW™

The PCI length measurement board APCI-3702 is designed for the simultaneous acquisition of 5 half-bridge or LVDT transducers.

It operates with a 16-bit resolution.

It is suited for dynamic measurement, e.g. for measuring moving parts or applications with time-critical measurement cycles – especially in test equipment with several sensors.

The calibration tool SET3701 includes a data base with pre-calibrated transducers. It guides you through each step of the installation beginning with the selection of a transducer up to testing the channels.

Features

- PCI interface to the 32-bit data bus, 3.3 V or 5 V
 - Acquisition of 5 inductive transducers (half-bridge, LVDT)
 - 16-bit resolution
 - Sampling rate depending on the transducer: 2-20 kHz
 - Example for TESA transducers GT21:
13.951 kHz per channel,
0.072 ms for one sequence of up to 5 channels
 - Measuring frequency through software programmable: 2-20 kHz
 - Conversion triggered through software, digital input or timer
 - End of conversion through software and/or interrupt
 - PCI-DMA access
 - Onboard FIFO
 - Sequence RAM
 - 16 digital inputs and outputs, optically isolated, 24 V
 - Connection of the transducer through external box PX3701-8. The box type depends on the transducers used.
Please order separately.
 - Software operation
 - Automatic setting of the input levels (gain and offset) according to the transducer sensitivity
 - Tool for individual database-managed calibration of the transducers
 - Database for connecting/calibrating a large range of industry-standard transducers:
 - Solartron • Tesa • Marposs • Schlumberger
 - Peter & Hirt • Mahr • RDP • Schaevitz
 - SMPR Controle
- Further transducers like for example Horst Knäbel can be calibrated on request.

APCI-3702

Simultaneous acquisition of 5 inductive transducers

Half-bridge, LVDT

16-bit resolution

16 digital inputs and outputs, optically isolated

Safety features

- Input filters
- Diagnostic function in case of short-circuits or line break

Applications

- Gear wheel control
- Gauge block
- Acquisition of sensor data
- Quality control
- Industrial process control
- Automatic parts control
- R&D instrumentation

Software

Calibration tool SET3701 (supplied with the board)

- Easy transducer calibration
- Step by step from the transducer selection up to testing each single channel.
- Database with more than 50 pre-calibrated transducers
- Update of the APCI-3702 firmware

Standard drivers for:

- Linux
- 32-bit drivers for Windows 8 / 7 / Vista / XP / 2000
- Signed 64-bit drivers for Windows 8 / 7 / XP

Real-time use with Linux and Windows on request
Drivers for the following compilers and software packages:

- .NET
- Microsoft VC++ • Borland C++ • Visual Basic • Delphi
- LabVIEW • LabWindows/CVI

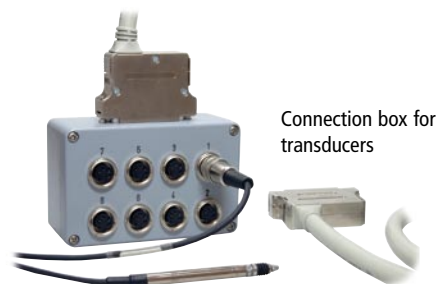
ADDIPACK functions:

Transducer • Timer • Digital input • Digital output

On request:

Further operating systems, compilers and samples.

Driver download: www.addi-data.com, download menu



Specifications

Connection of inductive transducers

Inputs for inductive transducers

Number	5 (simultaneous)
Input type	Single ended
Coupling	DC
Resolution / Accuracy:	16-bit / 13-bit
Sampling rate f_s on 5 channels selectable per software:	Depending on the transducer 4.883 kHz (typ.) 6.975 kHz (typ.) 9.768 kHz (typ.) 13.951 kHz (typ.) 19.531 kHz (typ.)
Example with TESA GT21	13.951kHz (on 5 channels)

Input level

Input impedance	2 k Ω	software-programmable
	10 k Ω	
	100 k Ω	
	10 M Ω	

Sensor supply (sinus generator)

Type	Sinus differential (180° phase-shift)
Number of outputs:	2
Coupling	AC
Programmed signals:	
output frequency f_p (primary frequency)	2-20 kHz depending on the transducer (50 kHz Knäbel)

Output level

Output impedance	< 0.1 Ω typ. > 30 k Ω typ. in shutdown mode
Short-circuit current	0.7 A typ. at 25°C with thermal protection

Digital I/O

Number of I/O channels:	8 dig. inputs, 8 dig. outputs, 24 V
Optical isolation:	1000 V through opto-couplers
Input current at 24 V:	11 mA typ.
Max. input frequency:	5 kHz (inputs 1 to 7)
Max. switching current at 24 V:	50 mA typ.
Input voltage:	0-30 V
Output voltage:	5-30 V

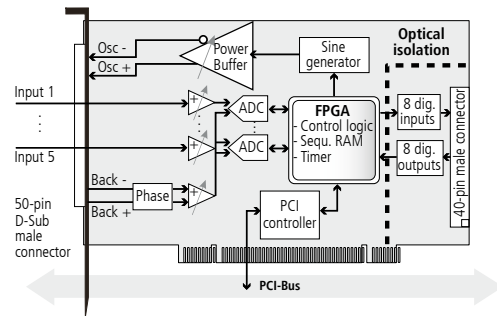
EMC – Electromagnetic compatibility

The product complies with the European EMC directive. The tests were carried out by a certified EMC laboratory in accordance with the norm from the EN 61326 series (IEC 61326). The limit values as set out by the European EMC directive for an industrial environment are complied with. The respective EMC test report is available on request.

Physical and environmental conditions

Dimensions:	109 x 138 mm
System bus:	PCI 32-bit 3.3/5 V acc. to spec. 2.2 (PCISiG)
Space required:	1 PCI slot for analog inputs, 1 slot opening for digital I/O with FB3702
Operating voltage:	+5 V, $\pm 5\%$ from the PC; 24 V external
Current consumption (+ 5 V from the PC):	990 mA typ. without load
Front connector:	50-pin D-Sub male connector
Additional connector:	16-pin male connector for connecting the dig. I/O
Temperature range:	0 to 60 °C (with forced cooling)

Simplified block diagram

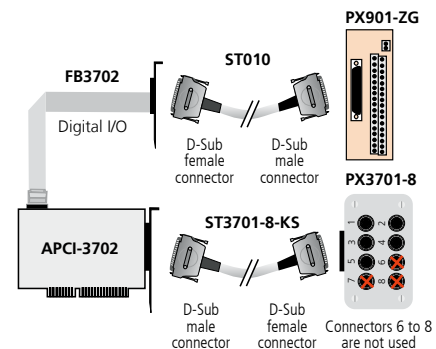


Pin assignment 50-pin D-Sub male connector

Pin	Pin	Pin	Pin	Pin	Pin
34	BACK+	18	BACK+	34	BACK+
35	BACK-	19	BACK-	35	BACK-
36	OSC+	20	OSC+	36	OSC+
37	OSC+	21	OSC+	37	OSC+
38	OSC-	22	OSC-	38	OSC-
39	PWRGND	23	PWRGND	39	OSC-
40	CH0	24	CH0	40	PWRGND
41	PWRGND	25	PWRGND	41	CH1
42	CH3	26	CH3	42	PWRGND
43	PWRGND	27	PWRGND	43	CH4
44	NC	28	NC	44	PWRGND
45	PWRGND	29	PWRGND	45	NC
46	NC	30	NC	46	PWRGND
47	PWRGND	31	PWRGND	47	NC
48	NC	32	NC	48	PWRGND
49	PWRGND	33	PWRGND	49	NC
50	NC			50	PWRGND

Osc+/-: Phase-shifted supply signal of the inductive transducers
 Back+/-: Return lines of the supply voltage for measuring the amplitude.
 Actual value signal of the oscillator for the supply voltage.
 CHx: Transducer input and input number
 PWRGND: Ground

ADDI-DATA connection



Ordering information

APCI-3702

Length measurement board, 16-bit, simultaneous acquisition 5 inductive transducers, LVDT, half-bridge. Incl. technical description and software drivers.

Accessories for HB and LVDT transducer:

PX3701HB-8:	Connection box of the APCI-3702
PX3701LVDT-8:	Connection box of the APCI-3702
ST3701-8-KS:	Shielded coaxial cable between APCI-3702 and connection box PX3701-8

Accessories:

FB3702:	Ribbon cable for digital I/O
PX901-ZG:	Screw terminal panel for digital I/O, for DIN rail
ST010:	Standard round cable, shielded, twisted pairs, 2 m