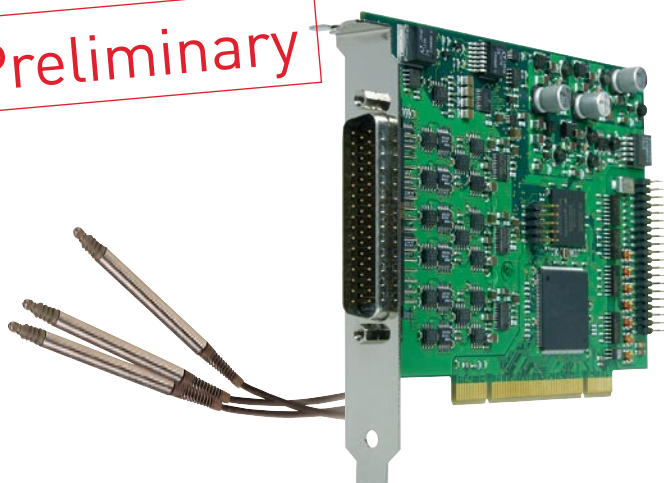


Length measurement board, isolated, 16-bit, simultaneous acquisition of 5 inductive transducers, LVDT, half-bridge



Preliminary



RoHS
compliant



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

It operates with a resolution of 16-bit, i.e. with a precision of 0.1 μm according to the transducer type. It is particularly suitable for dynamic measurement, especially for multi-location measurement systems.

The calibration tool SET3701 features a database with pre-calibrated transducers.

It supports the user from selecting an adequate transducer up to testing the channels.

Features

- PCI 3.3 V or 5 V
 - Acquisition of 5 inductive displacement transducers (half-bridge, LVDT)
 - 16-bit resolution
 - Sampling frequency depending on the transducer type: 2-20 kHz.
 - Example for the GT21 TESA transducer: 13.951 Hz per channel, 0.072 ms for one sequence
 - Measuring frequency, programmable through software: 2-20 kHz.
 - Conversion can be triggered through software, digital input or timer
 - End of conversion through software and/or interrupt
 - PCI-DMA access
 - On-board FIFO
 - Sequence RAM
 - 16 digital I/O channels, isolated, 24 V
 - Connection of the transducers through external box PX 3701-8. The box type depends on the transducer used. Please order separately.
 - Software operation
 - Automatic setting of the input levels (gain and offset) according to transducer sensitivity
 - Tool for individual database-managed calibration of the transducers
 - Database for connecting/calibrating a large range of predefined transducers:
 - Solartron • Tesa • Marposs • Schlumberger
 - Peter & Hirt • Mahr • RDP • Schaevitz
 - SMPR Controle
- Other transducers like for example Horst Knaebel can be calibrated on request.

Safety features

- Input filters

APCI-3702

Simultaneous acquisition of 5 inductive displacement transducers

Half-bridge, LVDT

16-bit resolution

16 isolated digital I/O, 24 V

Measurement of different transducer types with the same board!

- Diagnostic function in case of short-circuit or line break

EMC tested acc. to 89/336/EEC

- IEC 61326: electrical equipment for measurement, control and laboratory use

Applications

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

Software

SET3701 calibration tool (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

Software drivers for

Windows 32-bit Vista/XP/2000, Linux.
Real-time drivers for Windows XP/2000.
The board is supplied with **ADDIPACK**.

Samples for the following compilers:

Microsoft VC++ 5.0 • Borland C++ 5.01 • Visual Basic

ADDIPACK functions supported:

Transducer • Timer • Digital input • Digital output

Current driver list on the web: www.addi-data.com



Connection box for transducers

www.addi-data.com

Phone: +49(0)7223/9493-0
Fax: +49(0)7223/9493-97

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Preliminary

Specifications

Sine generator

Output signal:	Sine wave
Number of outputs:	2
Coupling:	AC
Preassigned signals	(Type: sine wave, differential)
Output frequency:	4.883 kHz (typ.) 6.975 kHz (typ.) 9.768 kHz (typ.) 13.951 kHz (typ.) 19.531 kHz (typ.)
Output impedance:	< 0.1 Ω (typ.), > 30 kΩ (typ.) in shut-down mode
Short-circuit current:	0.7 A (typ.) at 25 °C, with thermal protection
Circuit time for buffer Off/On:	1 μs (typ.)
Cut-off frequency (-3 dB):	0.65 Hz (high-pass filter On) 50 kHz (low-pass filter)
Frequency response	(10 Hz to 20 kHz): -0.7 dB (min.) 0 dB (max.)
Output voltage:	High Z after Power On

Transducer inputs

Number:	5 (simultaneous acquisition)
Input type:	Single-Ended
Coupling:	DC
Resolution / Accuracy:	16-Bit / 13-Bit
Sampling rate fs on 5 channels:	Software-programmable 4.883 kHz (typ.) 6.975 kHz (typ.) 9.768 kHz (typ.) 13.951 kHz (typ.) 19.531 kHz (typ.)
Example: TESA GT21	13.951 kHz (on 5 channels)
Input impedance:	2 kΩ, 10 kΩ, 100 kΩ, 10 MΩ
Input ranges:	± 3.3 V (max., programmable)

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 (input channels 1 to 7)
Max. switching current at 24 V:	50 mA typ.
Input voltage:	0-30 V
Output voltage:	5-30 V

Noise immunity

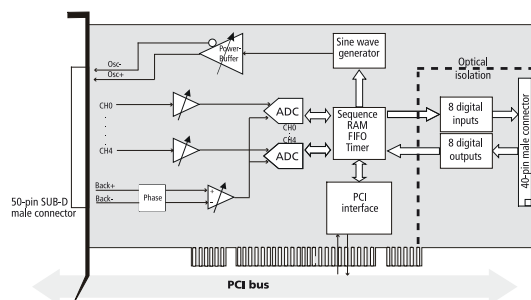
Test level:	- ESD: 4 kV - Fields: 10 V/m - Burst: 2 kV/4 kV Netz - Conducted radio interferences: 10 V
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Physical and environmental conditions

Dimensions:	109 x 138 mm
System bus:	PCI 32-bit 5 V/3.3 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, ± 5 % from PC; 24 V external
Current consumption (+ 5 V PC):	990 mA typ. without load
Front connector:	50-pin SUB-D male connector
Additional connector:	16-pin male connector for connecting the dig. I/O
Temperature range:	0 to 60 °C (with forced cooling)

APCI-3702

Simplified block diagram



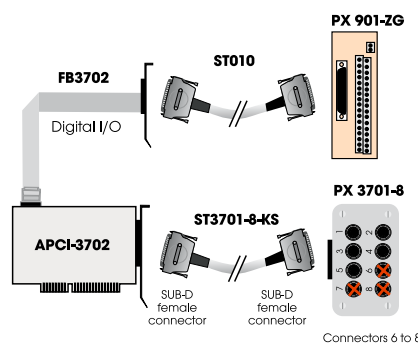
Pin assignment

50-pin SUB-D male connector

Pin	Pin	Pin	Pin	Pin			
34	BACK+	18	BACK+	34	BACK+	1	BACK+
35	BACK-	19	BACK-	35	BACK-	2	BACK-
36	OSC+	20	OSC+	36	OSC+	3	OSC+
37	OSC+	21	OSC+	37	OSC+	4	OSC+
38	OSC-	22	OSC-	38	OSC-	5	OSC-
39	PWRGND	23	OSC-	39	OSC-	6	OSC-
40	CH0	24	PWRGND	40	CH0	7	PWRGND
41	PWRGND	25	CH2	41	CH1	8	CH1
42	CH3	26	PWRGND	42	CH2	9	PWRGND
43	PWRGND	27	NC	43	CH3	10	CH4
44	NC	28	PWRGND	44	CH4	11	PWRGND
45	PWRGND	29	NC	45	NC	12	NC
46	NC	30	PWRGND	46	NC	13	PWRGND
47	PWRGND	31	NC	47	NC	14	NC
48	NC	32	PWRGND	48	NC	15	PWRGND
49	PWRGND	33	NC	49	NC	16	NC
50	NC			50	PWRGND	17	PWRGND

- Osc+/-: Phase-shifted supply signal of the inductive transducers
- Back+/-: Return lines of the supply voltage for measuring the amplitude. It serves as true 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, optically isolated, 16-bit, simultaneous acquisition of 5 inductive transducers, LVDT, half-bridge. Incl. technical description and software driver.

Connection for HB and LVDT transducers:

- PX 3701-HB-8:** Connection box for half-bridge transducers
- PX 3701-LVDT-8:** connection box for LVDT transducers
- ST3701-8-KS:** Connection cable between APCI-3702 and connection box PX 3701

Connection:

- FB3702:** Ribbon cable for digital I/O
- PX 901-ZG:** Terminal panel for digital I/O
- ST010:** Standard round cable, shielded, twisted pairs, 2 m