Multifunction board, optically isolated, 16 SE / 8 differential inputs, 4/8 analog outputs, 16-bit

Features

Analog inputs
- 16 single-ended / 8 differential inputs
- 16-bit resolution
- Optical isolation 500 V
- Throughput: 100 kHz
- Input ranges: 0-10 V, ±10 V, 0-5 V, ±5 V, 0-2 V, ±2 V, 0-1 V, ±1 V, 0-20 mA (option) freely programmable through software for each channel
- Gain PGA x1, x2, x5, x10 freely programmable through software for each channel
- DMA for analog data acquisition
- Overvoltage protection
- Input filters: 159 kHz

Analog acquisition
- One single channel, several channels, several channels through scan list
- Automatic analog acquisition through cyclic timer control
- Acquisition through scan list: up to 16 entries with gain, channel, unipolar/bipolar
- Acquisition triggered through software, timer, external event
- Trigger functions:
  - Software trigger or external trigger: the analog acquisition (single or sequence) is started through signal switching from 0 V to 24 V at the digital input 0.
  - Interrupt: end of single channel, end of multichannel, end of scan list

Analog outputs
- 4 or 8 analog outputs, optically isolated 500 V
- Voltage or current outputs
- 16-bit resolution (15-bit for 0-10 V)
- Output voltage: ±10 V, 0-10 V (through software)
- Output voltage after reset: 0 V
- Each output has its own ground line (without optical isolation)
- Output current ±5 mA max. for voltage outputs
- Current outputs: 0-20 mA, min. load 10 Ω, max. load 560 Ω at 20 mA
- EMI filters

Digital
- 4 digital inputs including 1 interruptible input
- 4 digital outputs, 24 V, optically isolated

Timer
- 2 timers, incl. 1 which can be used as a watchdog

Safety features

- Optical isolation 500 V min.
- Creeping distance IEC 61010-1
- Overvoltage protection ± 40 V, analog inputs
- Protection against high-frequency EMI
- Input filters: 159 kHz
- Noise neutralisation of the PC supply

Applications

- Industrial process control
- Industrial measurement and monitoring
- Multichannel data acquisition
- Control of chemical processes
- Factory automation
- Acquisition of sensor data, current measurement
- Laboratory equipment, instrumentation

Software drivers

A CD-ROM with the following software and programming samples is supplied with the board.

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 and samples for the following compilers and software packages:
- .NET
- Microsoft VC++ • Borland C++
- Visual Basic • Delphi
- LabVIEW • LabWindows/CVI

ADDPACK functions
- Analog input • Analog output • Digital input
- Digital output • Watchdog • Timer

On request:
Further operating systems, compilers and samples.

Driver download: www.addi-data.com/downloads

Also for
- APCI-3120, page 180
- CompactPCI™

* Preliminary product information
Specifications*

**Analog inputs**

Number of inputs: 16 single-ended / 8 differential inputs or 8 single-ended / 4 differential inputs

Precision: 16-bit

Optical isolation: 500 V through opto-couplers from PLC to peripheral

Input ranges: software-programmable for each channel

Throughput: 16 bit

Gain: Software programmable (x1, x2, x5, x10)

Relative precision (max.): ± 2 LSB max. (AD converter)

Gain MUX: ± 10 LSB max. (AD converter)

Dynamic range (± dB): Limited to 103 kHz with low-pass filter

Tolerance: Through software, fitter, external event (24 V input)

Data transfer: Data to the PC through FIFO memory, I/O commands, interrupt at EOC (End Of Conversion) and EOS (End Of Sequence), DMA transfer at EOC

Interrupts: End of conversion, all timer overran, end of sequence

**Analog outputs**

Number of outputs: 8 or 4

Precision: 16-bit

Optical isolation: 500 V through opto-couplers

Output range: 0-10 V, ± 10 V switchable through software (0-20 mA optional)

Overvoltage protection: ± 15 V

Max. output current / load: ± 3 mA, 2 kΩ

Short-circuit current: ± 20 max. (short time)

Max. output current / load: ± 5 mA, 2 kΩ

Output voltage after reset: 0 V

**Digital I/O**

Number of I/O channels: 4 digital inputs, 4 digital high-side outputs, 24 V

Optical isolation: 1000 V through opto-couplers

Input current at 24 V: 10 mA typ.

Input range: ± 30 V

Supply voltage: 5-36 V

Max. switching current: 65 mA typ.

**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: 160 x 100 mm

System bus: PICMG CPCIs-3121

Space required: 1 x CompactPCI slot for analog I/O

Operating voltage: +12 V, ± 5 %

Current consumption: +20 mA, ± 10 %

Front connector: 37-pin D-Sub male connector

Temperature range: -40 °C to +85 °C

MTBF: In preparation

**CPCIs-3121**

Multifunction board, opt. isolated, 16 SE / 8 diff. inputs, 4/8 analog outputs, 16-bit, for CompactPCI Serial. Incl. techn. description and software drivers.

**Versions**

- CPCIs-3121-16-8: Version with 16 SE / 8 diff. inputs, 8 analog outputs
- CPCIs-3121-16-4: Version with 16 SE / 8 diff. inputs, 4 analog outputs
- CPCIs-3121-8-8: Version with 8 SE / 4 diff. inputs, 8 analog outputs
- CPCIs-3121-8-4: Version with 8 SE / 4 diff. inputs, 4 analog outputs

**Options**

Please indicate the number of channels

- Option SF: Precision filter for 1 single-ended channel
- Option DF: Precision filter for 1 diff. channel
- Option PC: Current input 0(4)-20 mA for 1 channel

- PC-SE: for single-ended PC-Diff: for differential

**Ordering information**

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