

Multifunction board, optically isolated, 16 SE or 8 diff. inputs, 4 analog outputs, 16-bit

New!*



CompactPCI™ 32-bit

The board CPCI-3009 is a fast multifunction and counter board for the CompactPCI bus. It is characterised by flexible applications, high accuracy, speed and reliability in severe industrial environments.

With this board you can put into practice a large range of applications on the same hardware basis thanks to FPGA technology. The board is supplied with a pool of functionalities allowing a high efficiency on just one board. The functions are programmed using the supplied software. You can adapt the functions of the board to the requirements of your application and change them as required. On request, further counter applications can be adapted per software thanks to the the FPGA. Contact us!

Features

- CompactPCI 3.3 V or 5 V
- Can be inserted in PXI systems, with restricted functionalities

Analog inputs

- 16 diff. inputs, optically isolated 1000 V
- Resolution: 16-bit
- Throughput: 200 kHz
- Voltage inputs: 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

Analog acquisition

- Different input modes for the analog acquisition:
 - 1) Simple mode
 - 2) Scan modes
 - 3) Sequence modes
 - 4) Auto Refresh mode
- Onboard FIFO
- PCI-DMA for analog data acquisition

Analog outputs

- 4 analog outputs, optically isolated
- 12-bit resolution, setup time 15 μ s typ
- Output voltage after reset: 0 V
- Each output has its own ground line (without optical isolation)
- Output voltage range: - 10 V to + 10 V
- Output current: ± 5 mA
- Short-circuit current: ± 20 mA

CPCI-3009

16/8/4 SE or 8/4/2 diff. inputs

16-bit resolution, 100 kHz

Voltage and current inputs (optional)

4 analog outputs, 12-bit

Reprogrammable counter function module

8 optically isolated digital I/O, 24 V

24 V digital I/O

- 4 digital inputs, 24 V, optically isolated
- 4 digital outputs, 24 V, optically isolated

Reprogrammable counter function module

- 32-bit data access
- Counter component with 32-bit width and 5 MHz counting frequency, signals in RS422 mode

Functions:

- Incremental counter for the acquisition of incremental encoders (90° phase-shifted signals)
- Chronos for frequency, pulse width and period duration measurement
- Digital inputs and outputs, 24 V, TTL, RS422

Further functions on request:

- SSI synchronous serial interfaces. The SSI function is an interface for systems which allow an absolute position information via serial data transfer.
- Counter/timer (82x54)
- Pulse acquisition
- Velocity measurement
- PWM (Pulse Width Modulation)
- Customised functions

Timer/Counter/Watchdog

- 3 / 3 / 2, 16-bit

Safety features

- Optical isolation 1000 V min.
- Creeping distance IEC 61010-1
- Circuit part of the analog acquisition is separated from the circuit part of the digital function
- Overvoltage protection ± 40 V
- Protection against high-frequency EMI
- Input filters
- Noise neutralisation of the PC supply
- Connection of the I/O-signals via robust industry-standard SUB-D connector

Softwaretools or drivers

Drivers, samples and a software calibration tool (in preparation).

*Preliminary
product information

Multifunction board, optically isolated, 16 SE or 8 diff. inputs, 4 analog outputs, 16-bit

Specifications

Analog inputs

Number of inputs:	16 differential inputs, 16-bit resolution
Optical isolation:	1000 V through opto-couplers from PC to peripheral
Voltage inputs:	software-programmable for each channel 0-10 V, ± 10 V, 0-5 V, ± 5 V, 0-2 V, ± 2 V, 0-1 V, ± 1 V 0-20 mA optional
Gain:	software programmable (x1, x2, x5, x10)
Throughput:	100 kHz
Trigger:	through software, timer, ext. event (24 V input)
Data transfer:	data to the PC through FIFO memory, Interrupt at EOC (End Of Conversion), DMA transfer at EOC
Interrupts:	End of conversion, End of timer, End of scan

Analog outputs

Number of outputs:	4, 12-bit resolution
Optical isolation:	1000 V through opto-couplers

Voltage outputs

Output range:	- 10 V to + 10 V (- 1 LSB)
LSB:	4.8828 mV
Accuracy:	11-bit
Time to Ready:	typ. 4.5 μ s
Setup time:	typ 15 μ s (at 10 V step)
Max. output current:	± 5 mA
Short-circuit current:	± 20 mA
Output voltage after reset:	0 V

Counter components

Counting depth:	32-bit, counting frequency: up to 5 MHz
Optical isolation	1000 V

Free programming of the functions

For programming your function module select one function from the list on the right.

Signals

Digital I/O, 24 V signals, TTL or RS422

Digital I/O

Number of I/O channels:	4 dig. inputs, 4 dig. outputs (50 mA), 24 V
Logical "0" level:	0-14 V
Logical "1" level:	19-30 V
Optical isolation:	1000 V through opto-couplers from PC to peripheral

EMC – Electromagnetic compatibility

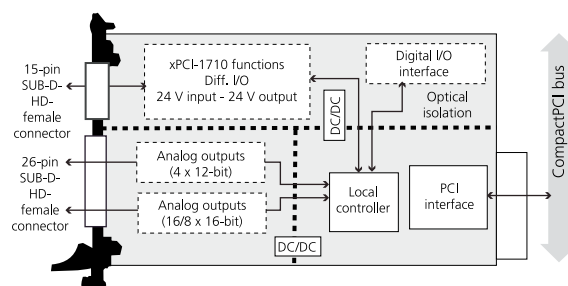
The product complies with the European EMC directive. The tests were carried out by a certified EMC laboratory in accordance with the norm from the EN 61326 series (IEC 61326). The limit values as set out by the European EMC directive for an industrial environment are complied with. The respective EMC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

Physical and environmental conditions

Dimensions:	3U/4TE
System bus:	PCI 32-bit acc. to CompactPCI specification 2.1
Space required:	1 x CompactPCI slot for analog I/O, counter 1 x slot opening for digital I/O with FB3001
Operating voltage:	+5 V, ± 5 %
Front connector:	26-pin SUB-D female connector (analog I/O) 15-pin SUB-D female connector (counter module) Separ. 37-pin SUB-D connector for 8 dig. I/O via FB3001
Temperature range:	0 to 60 °C (with forced cooling) -30° up to +70° in preparation

CPCI-3009

Simplified block diagram



Reprogrammable function module allows many different applications

The function module has numerous functions which can be programmed quickly and easily. For the programming of your function module, choose one of the following functions. If your application changes, just reprogram the function module and use another function from the list below.

Select one of the following functions:

- 1 x 32-bit acquisition of incremental encoders
- 2 x 16-bit acquisition of incremental encoders
- 1 x Chronos/TOR for frequency measurement
- 1 x Chronos for pulse width modulation
- 1 x Chronos for period duration measurement
- 8 digital I/O, 24 V, TTL, RS422

Further functions on request:

- 3 x acquisition of absolute encoders/SSI
- 3 x counter/timer
- 4 x pulse acquisition
- 2 x TOR for velocity measurement
- 2 x PWM
- 2 x ETM
- 1 x SSI monitor

For a detailed description of the functions, please see the datasheet of the board APCI-1710 on page 84

Ordering information

CPCI-3009

Multifunction board, optically isolated, 16 SE or 8 diff. inputs, 4 analog outputs, 16-bit.
Incl. technical description and software drivers.

Options:

Please specify the number of channels when ordering

URS-3009-6U:	6U bracket for mounting in 6U housing
Option SF:	Precision filter for 1 single-ended channel
Option DF:	Precision filter for 1 diff. channel (30Hz)
Option PC:	Current input 0(4)-20 mA for 1 channel PC-SE: For 1 single-ended channel PC-Diff: For 1 diff. channel (30 Hz)

Accessories

PX 901-A:	Screw terminal panel with transorb diodes for connecting the analog I/O
PX 901-AG:	Same as PX 901-A with housing for DIN rail
PX 901-ZG:	Screw terminal panel for connecting the digital I/O, for DIN rail
ST3009-DZ:	15-pin HD SUB-D female to 37-pin SUB-D male connector
ST3009-A:	26-pin HD SUB-D female to 37-pin SUB-D male connector
FB3001:	Ribbon cable for dig. I/O, with 37-pin SUB-D male connector on 3U bracket
ST010:	Standard round cable, shielded, twisted pairs, 2 m

* Preliminary product information