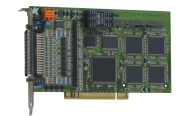
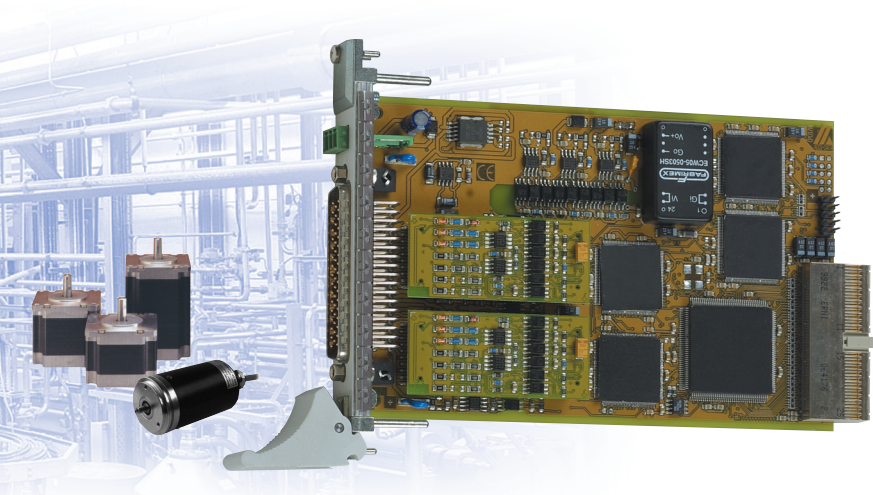


# Multifunction counter board CPCI-1710, isolated



also for **PCI**

## Function selected through software:

**Incremental counter**  
see page 36

**SSI Synchronous  
Serial Interface**  
see page 36

**Chronos**  
see page 37

**Counter/Timer**  
see page 38

**TOR**  
see page 39

**Pulse counter**  
see page 40

**PWM**  
see page 40

**ETM**  
see page 41

**Digital I/O**  
see page 41



The board CPCI-1710 is a fast multifunction and multichannel counter board for the CompactPCI bus. The strengths of this board are its wide range of applications and high precision and reliability for tough industrial applications. With this board you can realise many different applications on the same hardware base. The board is supplied with a pool of functions which provides the user with maximum efficiency yet minimum space and parts requirement. The functions are individually configured for each channel through the supplied software. The flexible programming facilities on this board allow many different user applications to be quickly and easily developed or reconfigured as further requirements arise.

Thanks to the FPGA board structure, further counting applications can be realised through software adaptation. Contact us!

## Features

- Can be inserted in PXI systems, with restricted functionalities
- 32-bit data access
- Counter component with 32-bit counting depth and 5 MHz counting frequency
- Signals in TTL or RS422 mode, 24 V signals optional
- Four onboard function modules
- Programmable functions

## Functions (detailed description on page 42 and following)

- Incremental counter for the acquisition of incremental encoders (90° phase-shifted signals)
- SSI synchronous serial interface. The SSI function is an interface for systems which allow an absolute position information via serial data transfer.
- Counter/timer (82x54)
- Pulse acquisition
- Frequency measurement
- Pulse width measurement
- Period duration measurement
- Velocity measurement
- Edge time measurement (ETM)
- PWM (Pulse Width Modulation)
- Digital I/O
- Customised functions

## Available channels for the 4 function modules

- 20 isolated channels for digital inputs
- 8 isolated channels, programmable either as digital input or output

## CPCI-1710

### Available functions:

**incremental encoder, SSI synchronous serial interface, counter/timer, pulse acquisition, measurement of frequency, pulse width, period duration and velocity measurement, PWM, digital inputs and outputs, ...**

### Function selection through software

**Optical isolation, MTBF: 54,287 hours at 45 °C**

**TTL, RS422, 24 V**

### Tailored functions

- 4 isolated digital power outputs

### Available lines for each function module

8 lines are available for each function module,

- Input lines:
  - 2 x TTL and RS422 (CPCI-1710), or 2 x 24 V (option)
  - 3 x 24 V, optional 5 V for channels E, F, G
- Output lines:
  - 1 x 24 V, optional 5 V (power output)
- 2 channels, programmable either as digital input or output, isolated: 2 x TTL, RS422

### Safety features

- Creeping distance 3.2 mm on the printed circuit
- Optical isolation 1000 V
- Noise neutralization of the PC supply

### EMC tested according to 89/336/EEC

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

### Applications

- Event counting
- Position acquisition
- Axis control
- Batch counting,...

### Software drivers

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

### Standard drivers for:

Windows XP/2000/NT/98/95, Windows 3.11, MS-DOS, Real-time driver for Windows XP/2000/NT/98/95 on request: RTX-Treiber

### Samples for the following compilers:

Depending on the function, the samples are not always available for each compiler. See a detailed list on the web.

Microsoft VC++ 5.0 • Microsoft C 6.0  
Borland C++ 5.01 • Borland C 3.1  
Visual Basic 1.0; 4.0; 5.0 • Delphi 1 • Delphi 4  
Turbo Pascal 7.0

### Drivers for the following application software :

LabVIEW 5.01 (according to the function)

**On request:** DasyLab 6/7 • Diadem 6/7

Current driver list on the web: [www.addi-data.com](http://www.addi-data.com)

The software functions can be adapted to your application on request. The board can also be implemented for other application software. Contact us!

# Multifunction counter board CPCI-1710, isolated



CPCI-1710

## Specifications

### Counter components

Counting depth: 32-bit,  
Counting frequency up to 5 MHz

### Free programming of the functions

Acquisition of 32-bit/16-bit incremental encoders  
Acquisition of absolute value encoders/SSI  
Counter/timer  
Chronos/TOR for frequency measurement  
Pulse acquisition  
Chronos for pulse width measurement  
Chronos for period duration measurement  
TOR for velocity measurement  
Digital I/O, 24 V, TTL, RS422  
PWM  
ETM  
Customised functions

### Signals

Digital I/O signals  
TTL or RS422

### Inputs

Input channels: 20

#### Differential input channels

Differential inputs, 5 V 8/16 (8 can be used as input or output)  
Nominal voltage: 5 VDC  
Common mode range: +12/-7 V  
Max. differential voltage:  $\pm 12$  V  
Input sensitivity: 200 mV  
Input hysteresis: 50 mV  
Input impedance: 12 k $\Omega$   
Terminal resistor: 150  $\Omega$  serial with 10 nF (typ.)  
Signal delay: 120 ns (at nominal voltage)  
Max. input frequency: 5 MHz (at nominal voltage)

#### Mass-related inputs, 24 V (channels E, F, G):

Number of inputs: 12  
Nominal voltage: 24 VDC  
Input current at nominal voltage: 11 mA  
Logical input level:  
Unominal: 24 V  
UH max.: 30 V  
UH min.: 17 V  
UL max.: 15 V  
UL min.: 0 V

Signal delay: 120 ns (at nominal voltage)

Maximal input frequency: 2.5 MHz (at nominal voltage)

### Outputs

Nominal voltage: 5 VDC  
Maximum output frequency: 5 MHz (diff. outputs)  
Max. number of outputs: 8 (if they are not used as diff. inputs)

#### Digital outputs, 24 V:

Output type: High-Side (load at ground)  
Number of outputs: 4  
Nominal voltage: 24 VDC  
Range of the voltage supply: 10 V to 36 VDC (through 24V ext. pin)  
Max. current for 4 output channels: 2 A typ. (limited to the voltage supply)  
Max. output current: 500 mA  
Short-circuit current/output at 24 V,  $R_{load} < 0.1 \Omega$ : 1.5 A max. (output switches off)

ON resistance of the output

(RDS ON-resistance): 0.4  $\Omega$  max.

Overtemperature: 170°C (all outputs switch off)

#### Protection against overtemperature (24V outputs)

Activated: from approx. 150-170°C (chip temperature)

Deactivated (automatically): from approx. 125-140°C (chip temperature)

Outputs (at overtemperature): All outputs switch off

#### Undervoltage (effective at Vext < 5 V):

Outputs (at undervoltage): All outputs switch off

#### Switching characteristics of the outputs

(Vext = 24 V, T=25°C, ohmic load: 500 mA):

Switch ON time: 200  $\mu$ s

Switch OFF time: 15  $\mu$ s

#### Digital output channels, 5 V (Option):

Output type: TTL

Number of outputs: 4

Nominal voltage: 5 VDC

#### Switching characteristics of the outputs

(T=25°C, TTL load):

Switch ON time: 0.06  $\mu$ s

Switch OFF time: 0.02  $\mu$ s

#### Features for the option 24 V

24 V input channels (channels A to G).  
This board version is especially used for connecting 24 V encoders.  
Only 24 V signals can be connected to the input channels

Nominal voltage: 24 VDC / 10 mA

Max. input frequency: 1 MHz (at nominal voltage)

Logic input level: Unominal: 24 V

(Standard) UH max.: 30 V

UH min.: 17 V

UL max.: 15 V

UL min.: 0 V

### Safety

Optical isolation: 1000 V

### Noise immunity

Test level: - ESD: 4 kV - Fields: 10 V/m  
- Burst: 4 kV - Cond. radio interferences: 10 V

### Physical and environmental conditions

Dimensions: 3U/4TE

System bus: CompactPCI 32-bit 5 V acc. to spec. 2.1 (PCISIG)

Place required: 1 slot

Operating voltage: +5 V,  $\pm 5\%$  from PC

+24 V ext. / 10 mA

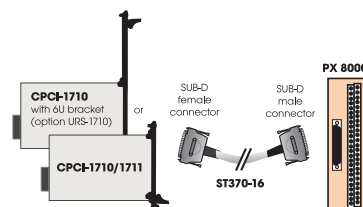
Current consumption: APCI-1710: 600 mA typ.  $\pm 10\%$

APCI-1710-24V: 450 mA typ.  $\pm 10\%$

Front connector: 50-pin SUB-D male connector

Temperature range: 0 to 60 °C (with forced cooling)

### ADDI-DATA connection



## ORDERING INFORMATION

### ADDICOUNT CPCI-1710

Isolated multifunction counter board with 4 function modules. Incl. technical description and software drivers.

### ADDICOUNT CPCI-1711:

Isolated multifunction counter board with 2 function modules. Incl. technical description and software drivers.

**URS-1710-6U:** 6U bracket for mounting in a 6U housing

**Option 24 V:** 24 V for differential input signals A to G  
(A and B for counter, I (index) and UAS (error) signals).

**Option 5 V** 5 V inputs signals instead of 24 V (channels E, F, G)

### Zubehör

**ST370-16:** Shielded round cable, 2 m

**PX 8000:** Terminal board with screw terminals for DIN rail

[www.addi-data.com](http://www.addi-data.com)

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