ALLDAQ
Competence in Measurement

Manual

Rev. 1.0 EN

ADQ-210 cPCI

Multi I/O board with 16 analog inputs up to 500 kHz, 32 digital I/Os, 3 x 16 bit counter

Imprint

Manual ADQ-210 series
Rev. 1.0
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Manufacturer and Support

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1. Introduction

Please check the box and the content for damages and completeness before taking the device into operation. If any fault should be detected please inform us immediately.

- Shows the packing some evidence to damaging during transport?
- Any traces of use to be recognized at the device?

The device may not be taken into operation if it is damaged. In case of doubt please contact our technical service department.

Please read – before installing the device – this manual watchfully!

Note for OEM version:

Unless otherwise specified the OEM version corresponds with the ADQ-212.

1.1 Scope of delivery

- ALLDAQ ADQ-211, ADQ-212, ADQ-215 or the OEM version as cPCI version
- 78-pin D-Sub male connector
- 25-pin D-Sub male connector
- Additional mounting bracket/bezel with 25-pin D-Sub female connector to 20-pin IDC connector for cPCI (ADQ-AP-D25F-cPCI)
- Data medium with driver software and documentation

1.2 Safety instructions

Necessarily note the following advices:

- Necessarily avoid touching of cables and connectors inside the PC with the board.
- Never expose the device to direct solar radiation during operation.
- Never run the device near heat sources.
- Protect the device before humidity, dust, liquids and fumes.
- Don´t use the device in damp rooms and never in explosive areas.
- A repair may only be done by trained and authorized persons.

- Please note before initial operation of the device especially when using voltages greater 42 V the installation rules and all relevant standards (including VDE standards).
- We recommend to tie all unused inputs basically to the corresponding reference ground to avoid cross talk between the input lines.
- Before connecting or removing cables with your board always disconnect your field wiring from the power supply.

- Ensure that no static discharge can occur passing the board when handling it. Follow the standard ESD safety precautions (see also chapter2.1 on page 9).
- Never connect devices with voltage-carrying parts, especially not with mains voltage.
- The user must take appropriate precautions to avoid unforseeable misuse.

For damages caused by improper use and subsequent damages any liability by ALLNET® GmbH is excluded.

1.3 Location of installation and mounting

The PC boards of the ADQ-210 series are digital I/O boards for industrial use. Depending on the version the models of the ADQ-210 series are…

… for installation into a free CompactPCI slot (ADQ-210-cPCI).

PC boards may not be taken into operation outside of appropriate PC systems. For the order of operation on installing the devices please read the chapter „Initial operation" in this manual and the documentation of your PC.

The ADQ-210 series may only be used in dry rooms. PC boards are not for use with tough environment conditions (e.g. outside). Ensure a very good ventilation. Take care for proper fitting of the connection cables. Installation has to be done in a way that the cables (PC connection and field wiring) are not in tension else they could release itself.

1.4 Short description

The PC plug-in boards of the ALLDAQ ADQ-210 series are **universal multi I/O boards for standard measuring and control tasks in laboratory, test bay and quality assurance**. Currently the models for CompactPCI bus are available. The boards offer either 16 single-ended (ADQ-211) or 16 differential (ADQ-212, ADQ-215) analog inputs with a total sample rate of up to **500 kHz at 16 bit** resolution. You can choose between the input voltage ranges ±10 V (ADQ-211), ±20 V (ADQ-212) and ±50 V (ADQ-215). See also Table 1 on page 15.

Overall the ADQ-210 series comes with **32 bi-directional digital I/Os** whose direction can be programmed by port (8 bit). Therefrom 16 digital I/Os are provided by the 78-pin D-Sub female connector at the mounting bracket of the board and further 16 digital I/Os can be used by an additional mounting bracket (included). The voltage level of all digital I/Os can be switched between +3.3 V and +5 V in common by software. Each output can drive up to 24 mA.

As a counter the established **standard counter chip of type 8254 with three 16 bit counter** is used. Each counter can be programmed separately. Cascading can be realized by an appropriate external wiring, e. g. for output of a signal with a variable duty cycle. As a clock source an external rectangular signal with max. 10 MHz must be provided.

Note for OEM version:

The OEM version provides an on-board crystal oscillator sourcing the clock input CLK_0 with 10 MHz. The counter outputs OUT_2..0 are of open collector type.

1.5 System requirements

1.5.1 Hardware

- PC system with Intel® Pentium® processor or a compatible processor
- A free CompactPCI slot

1.5.2 Software

The board includes a Plug & Play driver for Windows XP and higher (32 and 64 bit) as well as a function library (API) with example code for high-level language programming. Please note the corresponding help file *adqSDK.chm*.

Further details for programming can be found in the help file *adqDriver.chm*, which can be opened by the „ADQ-Manager" in the info area of the taskbar (usually at the bottom right corner of the screen) or by the Windows Start menu.

2. Initial operation

2.1 Installing the board

Please read the manual of your computer prior installing the board regarding the installation of additional hardware components.

Handling the board should be done with care to ensure that the device will not be damaged by electrostatic discharge (ESD), mechanical stress or current surges. Ensure to take all safety precautions to avoid an electric shock and follow the standard ESD safety precautions.

Follow this order of operation:

- Unplug the mains plug of your PC system.
- Open the housing as described in the manual of your PC system.

- Make sure that electrostatic discharge cannot occur via the board when you plug it in. At least one hand should be grounded in order to dissipate any static charge.
- Push the plug-in board carefully and with only a little force into the appropriate slot. Check that the board is not cant and fully plugged in.
- If you want to use the additional mounting bracket for the TTL digital I/Os choose two slots side by side for installation. Remove (if neccessary) an additional blind bracket for the slot.
- Screw all mounting brackets.
- Close the housing as described in the manual of your PC system

2.2 Software installation

2.2.1 Installation under Windows

Basically use the following procedure:

If you have the driver software available as an archive file please un-pack the software before installing the board to a directory on your computer (e. g. *C:\Temp\Alldaq\Driver*).

After installing the board (see chapter „2.1 Installing the board" on page 9) Windows recognizes the new hardware and starts the driver installation automatically. The installation is Window compliant - the procedure can differ depending on Windows version.

Additional to the driver a software package is included with your board which you can install on your computer. Run the setup program from the included data medium or in the target directory of your download. After successful installation the „ADQ-Manager" can be found in the info area of the taskbar (usually at the bottom right corner of the desktop) or by the Windows Start menu resp. start page. By the ADQ-Manager you have access to the software developer kit (SDK), several utility programs, help files and more.

2.2.2 Installation under Linux

Linux under development!

2.3 Test programm

Simple test programs can be found in the ALLDAQ-SDK. For each programming language a sub-directory „Applications" can be found with test programs for your ALLDAQ hardware.

2.4 ADQ-Manager

The ADQ-Manager under Windows gives you a quick overview of the parameters of the ADQ driver system and offers a central access to software tools and help files. You can find the ADQ-Manager in the info area of the taskbar (as a rule at the bottom right) or via the Windows start menue.

ADQ-Manager in overview:

- Informations on the installed ALLDAQ hardware in overview
- XML export of the driver configuration for archiving and support
- Tool for interactive illustration of the pin-assignment with the possibility to generate a PDF
- Tool for user calibration
- Convenient access to the software developer kit (SDK) for high-level language programming with examples and simple test programs
- Quick access to the help files (*.chm)

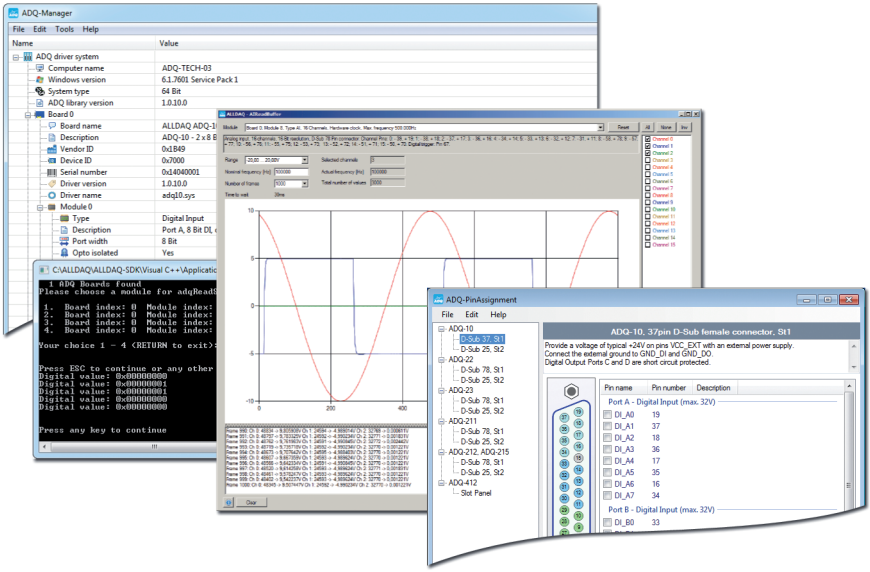


Figure 1: ADQ-Manager

2.5 Calibration

2.5.1 Factory calibration

The boards of the ADQ-210 series will be calibrated before delivery. The calibration data will be stored into an EEPROM. If a re-calibration should be neccessary please contact our service department. For contact details see chapter 4.4 on page 34.

2.5.2 User calibration

You have the possibility to perform a calibration yourself and storing these user-specific calibration data beside the factory calibration data into the EEPROM. By the ADQ-Manager you can select which calibration data record (factory or user calibrated) should be used for your measurement.

Please follow the procedure below:

1. Power-on the system with the ADQ-21x.
2. Connect the part of the field wiring you want to include with the calibration.
3. Apply a constant voltage to one channel after the other and monitor the voltage by a high-precision voltmeter (e. g. multimeter). Make sure, that the voltmeter has a higher accuracy than the accuracy of your board. See also Figure 2.
4. Run the calibration tool in the ADQ-Manager under "Tools - Calibration" and follow the procedure in the appropriate help file. See also chapter 2.4 on page 10.

TIP: To achieve the best accuracy, we recommend to set that sample rate which one you want to use in your measurement later.

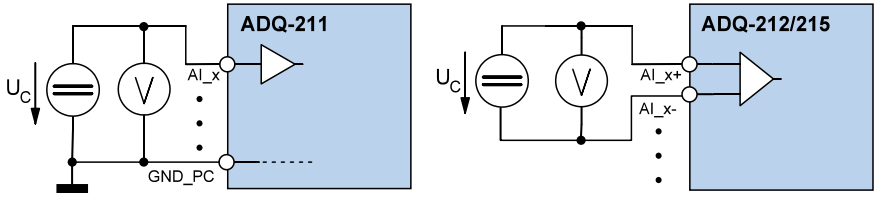


Figure 2: Wiring for calibration

2.5.3 DAkks calibration

We collaborate with independent test laboratories accredited by the Deutsche Akkreditierungsstelle GmbH (DAkks). On-demand please contact our service department. For contact details see chapter 4.4 on page 34.

3. Functional groups

3.1 Block diagrams

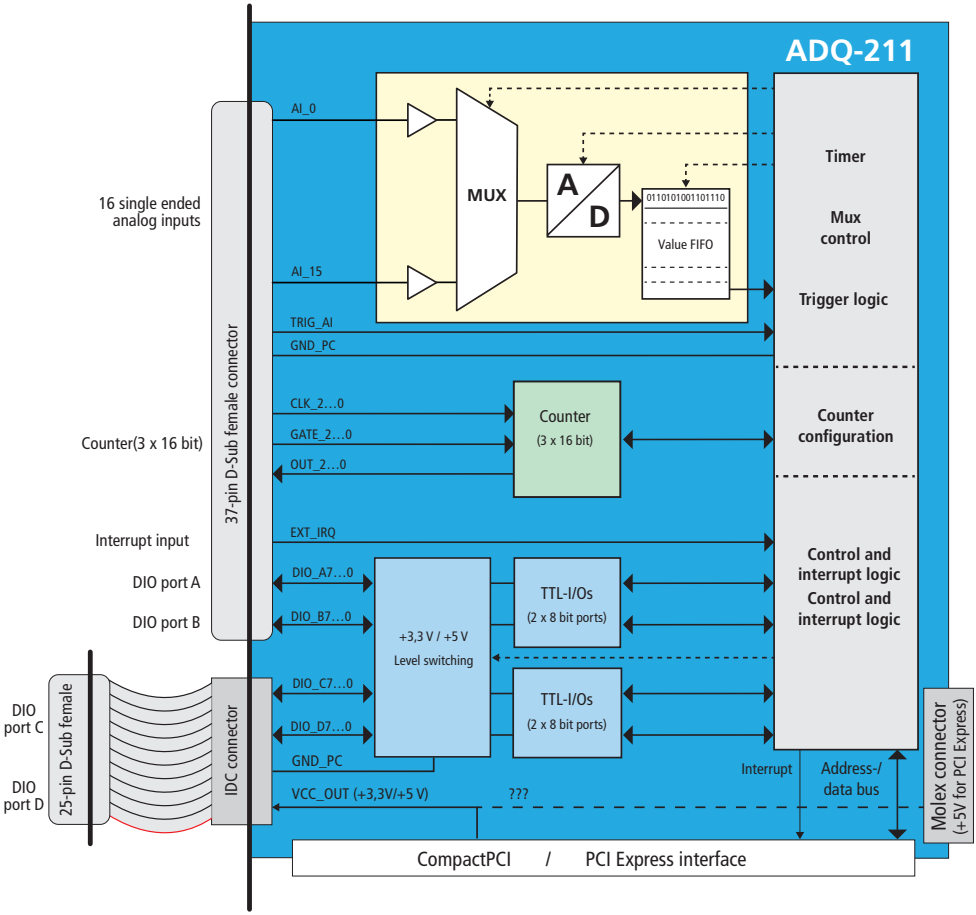


Figure 3: Block diagram ADQ-211

- 16 single-ended analog inputs
- 16 bi-directional TTL digital I/Os (2 x 8 bit ports) at the 78-pin D-Sub female connector
- 16 bi-directional TTL digital I/Os (2 x 8 bit ports) can be used by an additional mounting bracket on demand (included)
- 3 x 16 bit counter (type: 8254)
- 1 x external interrupt input

Block diagram ADQ-212/215

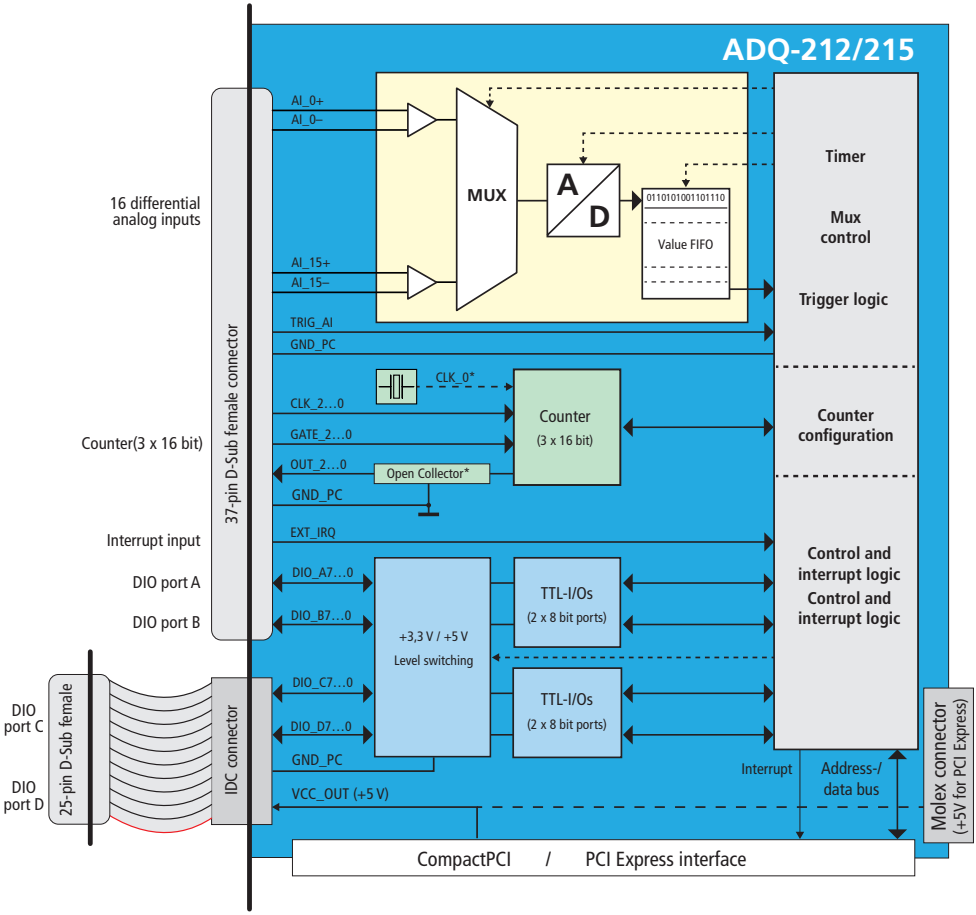


Figure 4: Block diagram ADQ-212/215

- 16 differential analog inputs
- 16 bi-directional TTL digital I/Os (2 x 8 bit ports) at the 78-pin D-Sub female connector
- 16 bi-directional TTL digital I/Os (2 x 8 bit ports) can be used by an additional mounting bracket on demand (included)
- 3 x 16 bit counter (type: 8254)*
- 1 x external interrupt input

* The OEM version sources the clock input CLK_0 with a 10 MHz on-board crystal oscillator (in this case pin 63 is not connected). The counter outputs OUT_2..0 are of open collector type.

3.2 Analog inputs

The model ADQ-211 provides 16 single-ended channels, the models ADQ-212 and ADQ-215 provide 16 differential input channels. All channels are scanned sequentially, i. e. if you scan all channels the maximum sample rate per channel calculates as follows: 500 kHz / 16 channels = 31.25 kHz. All models are decoupled by a high-impedance input buffer. The input impedance differs depending on model (see Table 1).

Input characteristics of the ADQ-210 series in overview:

	ADQ-211	ADQ-212 (OEM)	ADQ-215
Channels	16 single-ended	16 differential	16 differential
Bandwidth (rectangular)	150 kHz	3 kHz	2 kHz
Resolution	16 bit	16 bit	16 bit
Total sample rate	500 kHz	500 kHz	500 kHz
Input range U_{AI}	-10.000000...9.999695 V	-20.000000...19.999390 V	-50.000000...49.998474 V
Input impedance	min. 300 MΩ, typ. 600 MΩ	20 MΩ	80 MΩ

Table 1: Input characteristics

The input voltage range is defined by the hardware and depends on model.

Note, that the maximum voltage at the analog inputs must not exceed the input voltage range of the particular model by more than 5 V ±(U_{AI} + 5 V). Otherwise the board can be damaged irreversibly.

3.2.1 Nyquist-Shannon sampling theorem (Oversampling)

The Nyquist-Shannon sampling theorem tells us, that the sample rate for a periodic signal, whose maximum frequency component should be f_{Pmax}, must be at least twice as high, i. e. 2 • f_{Pmax} or higher.

In practice we recommend to choose a sampling rate by the factor 5 or 10 higher than f_{Pmax} to replicate the signal form truely. This issue is also called "oversampling".

Example:

The max. frequency component $f_{Pmax.}$ of the signal frequency should be 50 kHz. The sample rate f_S should be at least 5 x 50 kHz = 250 kHz.

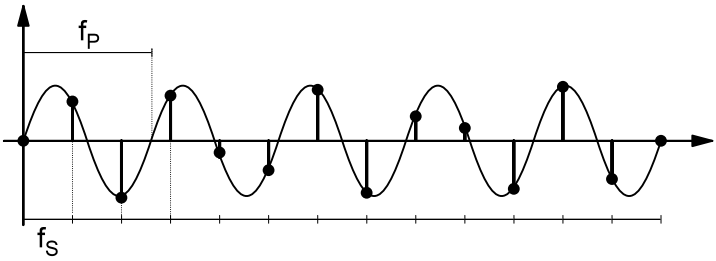


Figure 5: Nyquist-Shannon sampling theorem

3.2.2 Wiring

Basically we recommend using of high-quality shielded cables.

3.2.2.1 Single-ended inputs

The input stage of the ADQ-211 is optimized for the precise measurement of high-impedance signals. Make sure that all channels refer to a common ground potential. The PC ground (GND_PC) serves as reference ground. The input voltage range is defined by the hardware and is ±10 V for the ADQ-211.

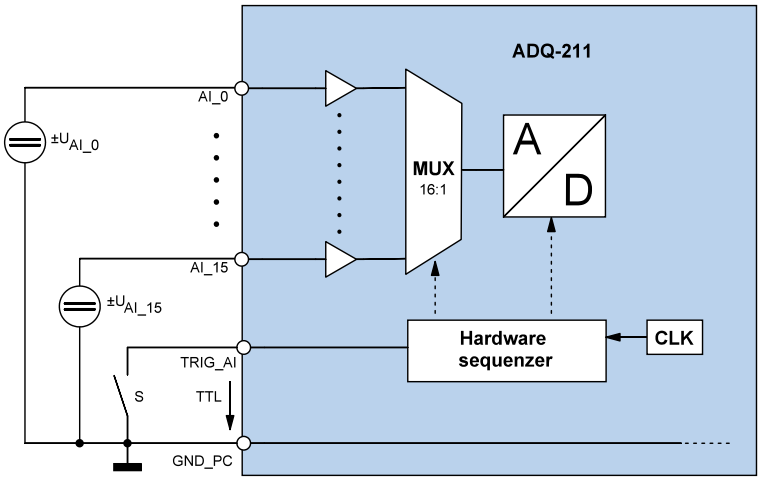


Figure 6: Single-ended inputs

3.2.2.2 Differential inputs

Using differential inputs common mode interferences is largely suppressed. Each input channel has a positive and a negative input for measuring bi-polar signals without the need of a ground reference. This is very favourably to acquire low-level signals and signals without common ground reference. The input voltage range is defined by the hardware and differs depending on the model.

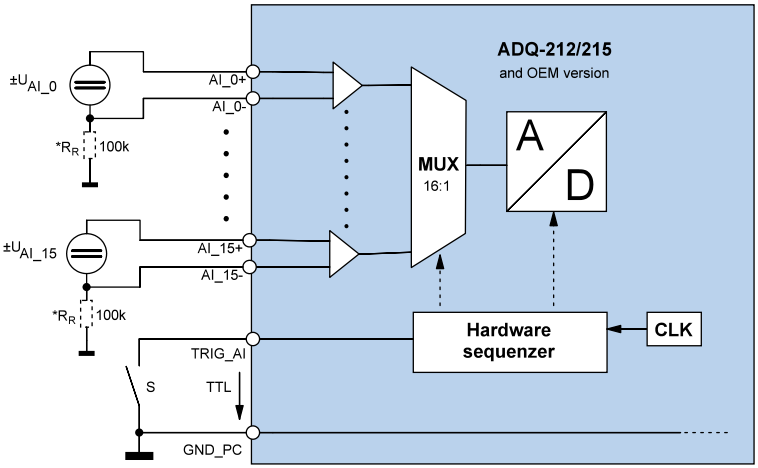


Figure 7: Differential inputs

***TIP:** In some cases it can be necessary to connect the differential input stage with PC ground by a reference resistor R_R (100 kΩ recommended) as shown in Figure 7.

3.2.2.3 External trigger A/D section

All models of the ADQ-210 series provide a digital trigger input for the A/D section. Depending on configuration the conversion can be started by a rising, a falling or any of both edges.

The digital trigger input (TRIG_AI, pin 67) is designed for a TTL high-level of +5V. The trigger signal requires a reference to PC ground (GND_PC).

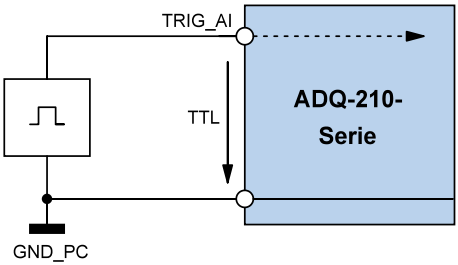


Figure 8: Wiring digital trigger A/D section

3.2.3 Programming

For programming the analog acquisition there is a differentiation between the so-called "Single value acquisition" and the "Timer-controlled acquisition".

3.2.3.1 Single value acquisition

This operation mode is for acquiring single values without fixed time reference.

Depending on configuration the conversion can be started by software or by a rising, falling or any edge at the external trigger input (TRIG_AI).

Please note the order of operation as described in the online help.

3.2.3.2 Timer-controlled acquisition

With the timer-controlled acquisition you can sample signals in defined time intervals. You can acquire a pre-defined number of frames or continuously. The so-called A/D value FIFO is a fast buffer memory to enable a continuous data transfer to the PC. The channel multiplexer are controlled by channel-list, which can include 16 entries maximum.

Depending on configuration the conversion can be started by software or by a rising, falling or any edge at the external trigger input (TRIG_AI).

Please note the order of operation as described in the online help.

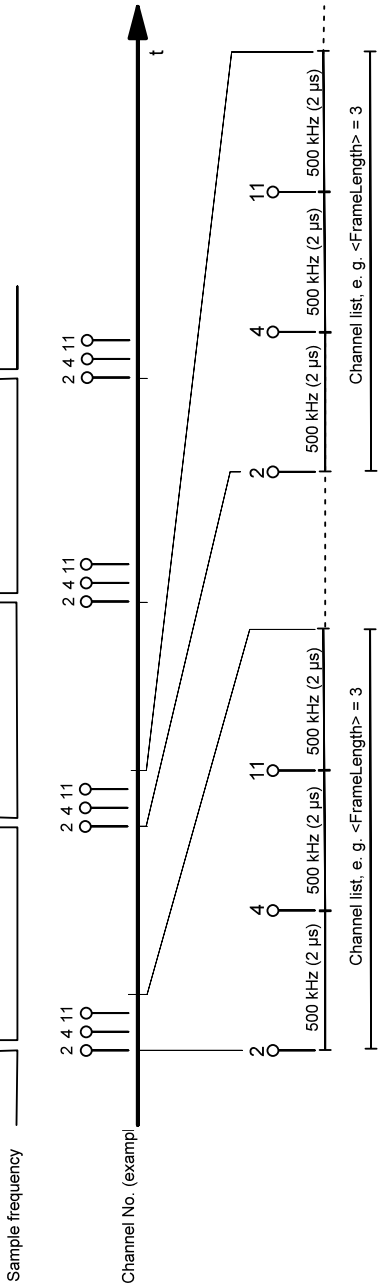


Figure 9: Timer-controlled acquisition

In dependency of the number of channels used the max. sample frequency is calculated as follows:

Number of channels	max. sample frequency	Number of channels	max. sample frequency
1	500 kHz	9	55.55 kHz
2	250 kHz	10	max. 50 kHz
3	166.66 kHz	11	max. 45.54 kHz
4	125 kHz	12	max. 41.66 kHz
5	100 kHz	13	max. 38.46 kHz
6	83.33 kHz	14	max. 35.71 kHz
7	71.43 kHz	15	max. 33.33 kHz
8	62.5 kHz	16	max. 31.25 kHz

Table 2: Maximum sample rate per channel

3.3 Bi-directional digital I/Os

The ADQ-210 series provides four bi-directional 8 bit wide digital I/O ports. 2 of the ports (DIO_Ax and DIO_Bx) can be attached by the 78-pin D-Sub female connector at the mounting bracket of the board itself, 2 more ports (DIO_Cx and DIO_Dx) can be used on demand by an additional 25-pin D-Sub female connector. An additional front bezel for cPCI slots (ADQ-AP-D25F-cPCI) is included (see pinout on page 32).

The voltage level of all digital I/Os can be switched between +3.3 V and +5 V in common by software. Each output can drive up to 24 mA.

Note: After power-up all ports are configured as input.

3.3.1 Wiring

When wiring the inputs and outputs take care that the TTL level is met (see specifications on page 28) and that a reference to PC ground (GND_PC) must be established. The max. output current is $I_O = I_{OL} = I_{OH} = 24$ mA.

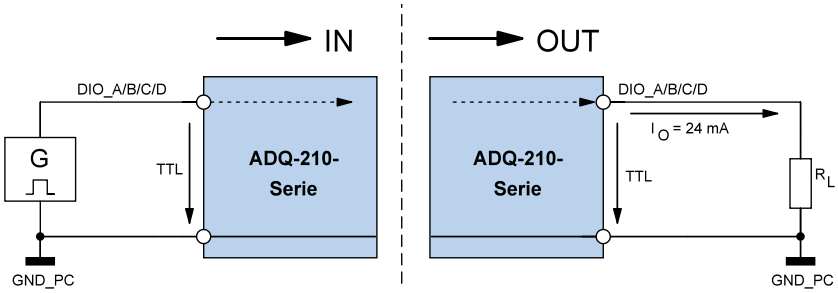


Figure 10: Wiring of the digital I/Os

3.3.2 Programming

The four digital I/O ports (DIO_Ax, DIO_Bx, DIO_Cx, DIO_Dx) can be programmed port-wise (8 bit wide) as input or output.

3.3.2.1 Simple input/output

The ports can be programmed independently of each other. The port direction is set by software. After power-up all bi-directional ports are configured as input. Follow the order of operation as described in the online help.

Note: A port configured as output can be read back also!

3.4 Counter

As counter the well-proven standard counter chip of type 8254 with **three 16 bit counter** is used. Each counter can be programmed separately. Cascading the counter, e. g. for output of a signal with a variable duty-cycle, can be realized by an appropriate external wiring. The clock must be provided by an external rectangular signal with max. 10 MHz. With the OEM version a 10 MHz crystal oscillator is on-board sourcing the clock input CLK_0.

3.4.1 Wiring

Please note the different wiring of the counter outputs from standard and OEM versions as well as the sourcing of CLK_0 by an on-board crystal oscillator on the OEM version.

3.4.1.1 Standard versions (ADQ-211/212/215)

The counter inputs and outputs are designed for TTL level and need a reference to PC ground (GND_PC). The max. output current at low-level is I_{OL} = 7,8 mA and at high-level I_{OH} = 6 mA.

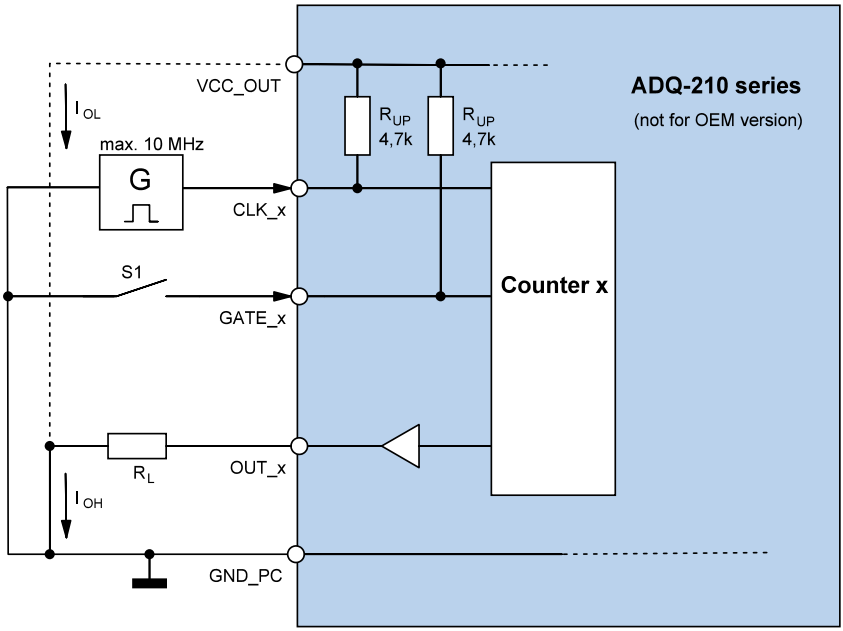


Figure 11: Wiring of the TTL counter I/Os

3.4.1.2 OEM versions

On the OEM version the counter outputs (OUT_0..2) are designed as open-collector outputs. This enables you to control external signals directly e. g. in industrial process and control where typically 24 V are used. As soon as the output is conductive (logical "1") the R_L will be switched against ground. A logical "0" means the output is in a high-impedance state so that no current I_O flows.

Note: the following limits may not be exceeded. Compliance has to be checked for each channel separately.

- Output current $I_O = U_{EXT} / R_L$ = max. 30 mA
- External voltage U_{EXT} max. 42 V
- Power loss $P_O = I_O \bullet U_O$ = max. 85 mW
- R_L = min. 330 Ω, max. 4 kΩ
- U_{OL} = typ. 0.35 V, max. 0.6 V

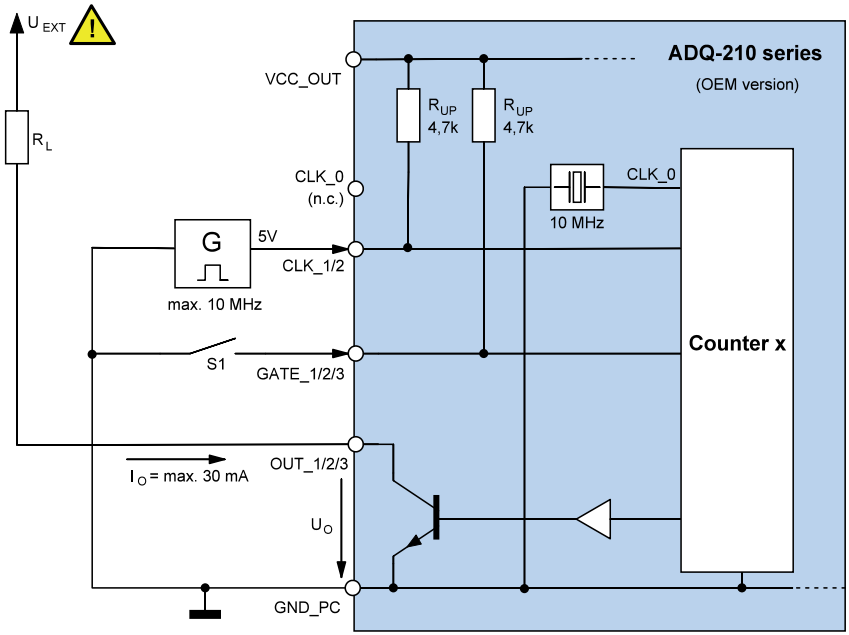


Figure 12: Counter with open-collector outputs

The counter inputs are designed for TTL level. The counter inputs as well as the counter outputs need a with a ground reference to PC ground (GND_PC). Also the ground of the counter outputs refers to PC ground (GND_PC).

3.4.1.3 External wiring for variable duty-cycle (PWM)

A special use case for the counter is the output of a rectangular signal with variable duty-cycle – often called pulse width modulation – however this is misleading because there happens no real modulation. With an appropriate external wiring of the counter 0…2 you can output a rectangular signal with variable duty-cycle. The duty-cycle can be set between 1…99% in steps of 1%. Counter 0 (prescaler) must be sourced at CLK_0 by an external clock of max. 10 MHz. The result is a max. frequency for the output signal of 50 kHz.

The frequency f_{OUT_2} is calculated as follows:

$$f_{OUT\_2} = \frac{External\ clock}{Prescaler \bullet 100} \quad (with\ prescaler = 2..(2^{16}-1))$$

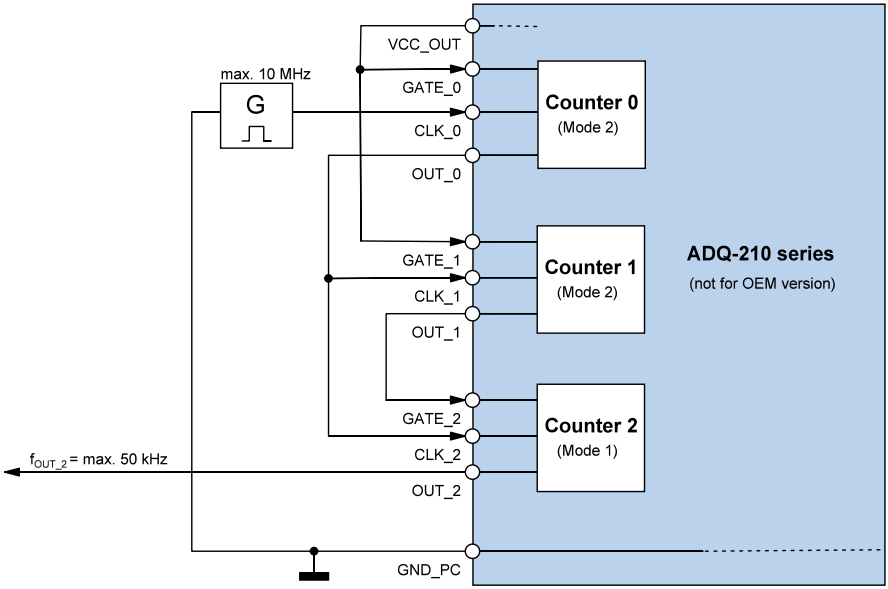


Figure 13: Wiring for variable duty-cycle (standard versions)

Note:

For wiring the counter outputs of the OEM version please contact our support department under: support@alldaq.com.

3.4.2 Programming

The counter chip of type 82C54 provides three 16 bit counter which can be configured separately.

Please note the order of operation as described in the online help.

3.4.2.1 Standard operation modes

Each of the counter can be configured independently for one of the following operation modes:

- Mode 0: Change of state on zero axis crossing
- Mode 1: Re-triggerable „One shot"
- Mode 2: Asymmetric divider
- Mode 3: Symmetric divider
- Mode 4: Counter start by software trigger
- Mode 5: Counter start by hardware trigger

For programming please note the order of operation as described in the online help.

3.5 External interrupt

3.5.1 Wiring

The external interrupt input (EXT_IRQ, pin 48) is designed for a TTL high-level of +5 V. The interrupt signal requires a reference to PC ground (GND_PC).

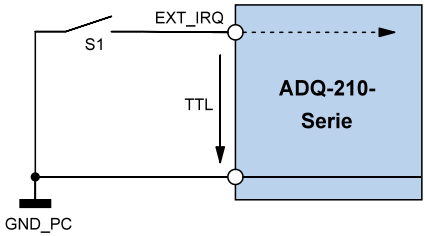


Figure 14: Wiring of the external interrupt input

3.5.2 Programming

By appropriate programming the external interrupt can be enabled for rising, falling or any of both edges. As soon as an interrupt occurs, it is sent directly to the PC.

Please note the order of operation as described in the online help.

4. Appendix

4.1 Specifications

Analog inputs

Condition: $T_A = 25°C$

Element	Condition	Specification
Channels	ADQ-211	16 single-ended
	ADQ-212/215	16 differential
A/D converter		500 kHz, 16 bit
Bandwidth (rectangular)	ADQ-211	150 kHz
	ADQ-212	3 kHz
	ADQ-215	2 kHz
Input voltage range	ADQ-211	-10.000000...9.999695 V (1LSB = 305 µV)
	ADQ-212	-20.000000...19.999390 V (1LSB = 610 µV)
	ADQ-215	-50.000000...49.998474 V (1LSB = 1.5 mV)
Over-voltage protection	ADQ-211	-15 V...+15 V
	ADQ-212	-25 V...+25 V
	ADQ-215	-55 V...+55 V
Total accuracy	ADQ-211	tbd.
	ADQ-212	typ. 0.01% at fullscale
	ADQ-215	tbd.
Input impedance	ADQ-211	min. 300 MΩ, typ. 600 MΩ
	ADQ-212	20 MΩ
	ADQ-215	80 MΩ
Value FIFO		8192 values
Channel list	channel selection	16 entries
Total sampling frequency	Streaming operation	max. 500 kHz (2 µs)
Sample frequency/ channel	depends on number of channels	1 channel: max. 500 kHz, min. ~0.008 Hz 16 channels: max. 31.25 kHz, min. ~0.008 Hz
Sample time range		2 µs to ~130 s (in steps of $30.\overline{30}$ ns)
Trigger modes	Start	Software, digital trigger input
	Stop	Software, digital trigger input
Ext. trigger edges		rising, falling, any
Ext. digital trigger	Pin 67 (TRIG_AI)	+5 V TTL input (see also digital-I/Os)
Ground reference		GND_PC

Bi-directional digital I/Os (TTL)

Condition: $T_A = 25°C$

Element	Condition	Specification
Channels		2 x 8 bit digital input/output ports
Type		bi-directional (direction port-wise configurable by software)
Level		+3.3 V/5 V (switchable for all ports in common by software)
U_{IH}	VCC = 5V	min. 2.0 V
U_{IH}	VCC = 5V	max. 0.8 V
I_I		typ. ±1 µA
U_{OH}	I_O = -24 mA	min. 2.4 V
U_{OL}	I_O = 24 mA	max. 0.5 V
I_O	per channel	±24 mA
Ground reference		PC ground (GND_PC)

Counter

Condition: $T_A = 25°C$

Element	Condition	Specification
Number		3 x 16 bit
Type		8254
Clock source	ADQ-211/212/215	external source, max. 10 MHz
	OEM version	10 MHz crystal oscillator on-board
Operation modes	programmable by software	Mode 0: Change of state on zero axis crossing Mode 1: Re-triggerable „One shot" Mode 2: Asymmetric divider Mode 3: Symmetric divider Mode 4: Counter start by software trigger Mode 5: Counter start by hardware trigger
U_{IH} (CLK_x, GATE_x)	VCC = 5V	min. 2.0 V
U_{IL} (CLK_x, GATE_x)	VCC = 5V	max. 0.8 V
I_I (CLK_x, GATE_x)		typ. ±1 µA
U_{OH} (OUT_x)	ADQ-211/212/215	min. +2.4V @ I_{OH} = -6 mA
	OEM version	max. 42 V
U_{OL} (OUT_x)	ADQ-211/212/215	max. +0.45V @ I_{OL} = 7.8 mA
	OEM version	typ. 0.35 V, max. 0.6 V
I_O	OEM version	max. 30 mA (see also pageSeite 23)
P_O	OEM version	U_{OH} x I_O = max. 85 mW
U_{EXT}	OEM version	max. 42 V
Ground reference		PC ground (GND_PC)

Interrupt-Eingang (TTL)

Condition: $T_A = 25°C$

Element	Condition	Specification
Number	Pin 48 (EXT_IRQ)	1 x external interrupt interrupt
Level		+5V TTL inputs (see also digital-I/Os)
Ground reference		PC ground (GND_PC)

Allgemein

Element	Condition	Specification
PC interface	cPCI models	CompactPCI bus (32 bit, 33 MHz) Rev. 2.2
Power consumption	+5 V	typ. 370 mA (without external load)
	+3.3 V	typ. 18 mA (without external load)
Temperature range	Operation	0..70 °C
	Storage	-40..100 °C
Humidity	Operation	20%..55% (not condensing)
	Storage	5%..90% (not condensing)
Physical size (without mounting bracket and connectors)	cPCI models	3 HE CompactPCI board
Connectors	cPCI models	78-pin D-Sub female connector (ST1) 25-pin D-Sub female connector (ST2) via additional mounting bracket
Certifications		EMC Directive 2004/108/EG, Emission EN 55022, Noise immunity EN 50082-2, RoHS
Manufacturer warranty		36 months

4.2 Pinouts

4.2.1 78-pin D-Sub female connector (ST1) ADQ-211

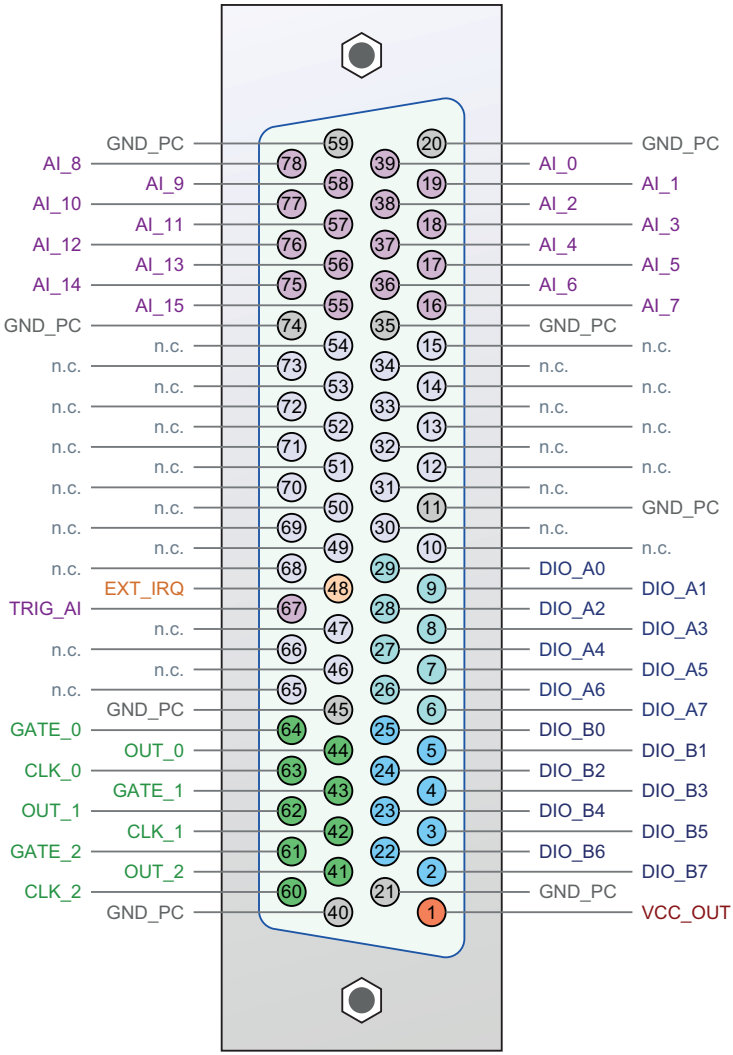


Figure 15: Pinout 78-pin D-Sub female connector (ST1) ADQ-211

4.2.2 78-pin D-Sub female connector (ST1) ADQ-212/215

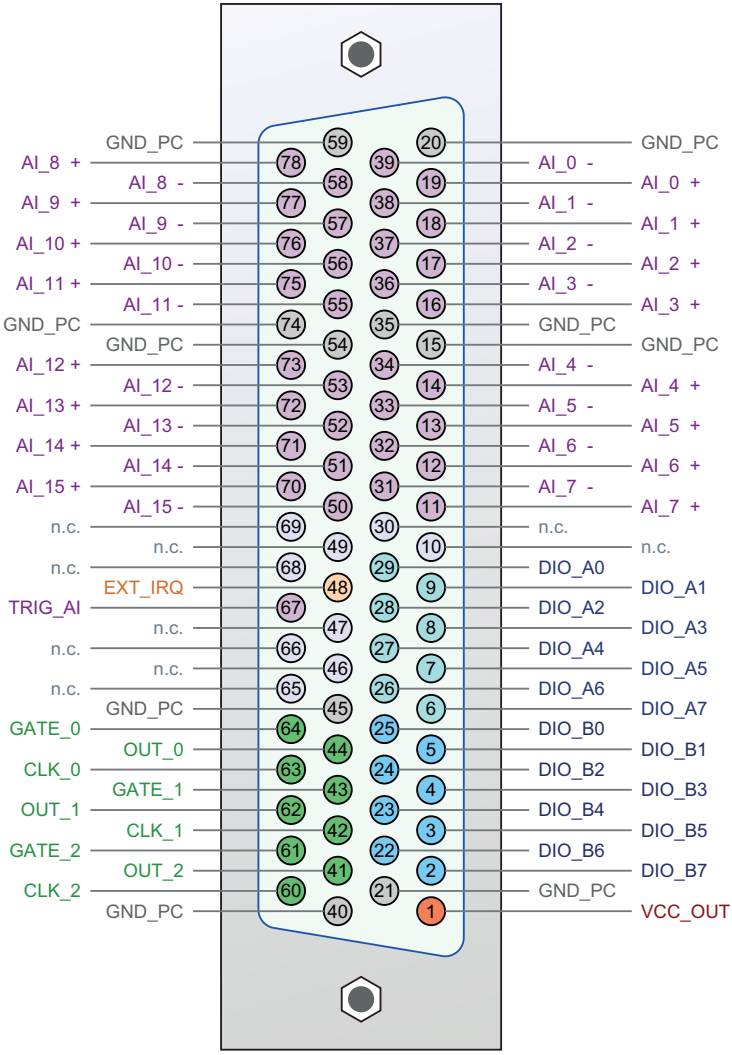


Figure 16: Pinout 78-pin D-Sub female connector (ST1) ADQ-212/215

***Note:** Pin 63 (CLK_0) is not connected on the OEM version.

4.2.3 25-pin D-Sub connector (ST2)

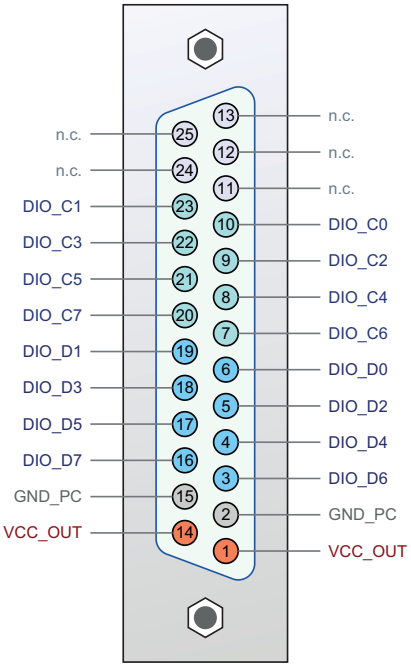
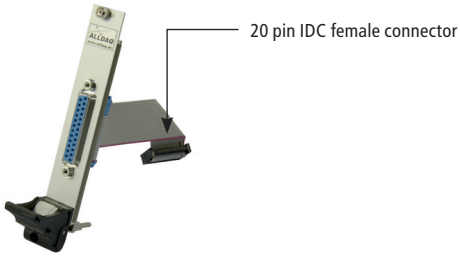


Figure 17: Pinout 25-pin D-Sub female connector (ST2)



CompactPCI bezel with 25-pin D-Sub female connector to 20-pin IDC female connector

Figure 18: Additional mounting bracket/bezel

Refer to page 22 for installation.

Connection of additional mounting bracket/bezel for ST2

For using the TTL digital I/Os (port C and D) an additional mounting bracket/bezel with 25-pin D-Sub female connector to a 20-pin IDC female connector is required (included).

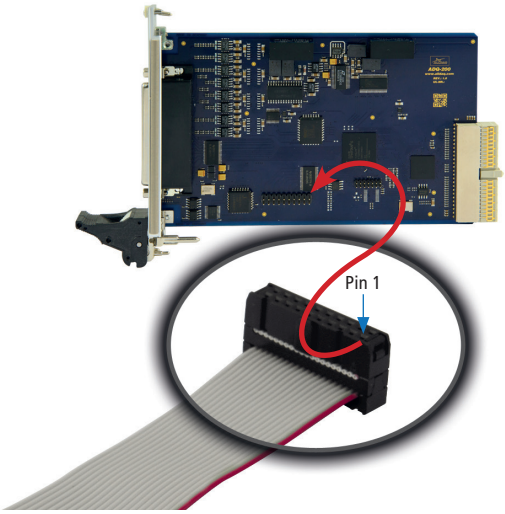


Figure 19: Connection of additional mounting bracket/bezel

Attention: when connecting the IDC female connector make sure to plug pin 1 of the flat ribbon cable (red marked line) to pin 1 of the IDC male connector ST2 as shown above.

4.3 Accessories

ADQ-TB-D25M-HUT (Art.-No. 111749)

25-pin connector block for mounting on DIN rail, 25-pin D-Sub male connector to clamps of type „Phoenix"

ADQ-TB-D78M-HUT (Art.-Nr. 111751)

78-pin connector block for mounting on DIN rail, 78-pin D-Sub male connector to clamps of type „Phoenix"

ADQ-CR-D25M-D25F-1,8m (Art.-No. 111752)

Shielded round cable from 25-pin D-Sub male connector to 25-pin D-Sub female connector, length: 1,8 m

ADQ-CR-D78M-D78F-1,5m (Art.-No. 111754)

Shielded round cable from 78-pin D-Sub male connector to 78-pin D-Sub female connector, length: 1,5 m

ADQ-AP-D25F-cPCI (Art.-Nor. 111755 - included with ADQ-21x-cPCI)

CompactPCI bezel with 25-pin D-Sub female connector to 20-pin IDC female connector

4.4 Manufacturer and support

ALLNET® and ALLDAQ® are registered trademarks of the ALLNET® GmbH Computersysteme. For questions, problems and product informations please contact the manufacturer directly:

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Phone: +49 (0)89 894 222 – 74
Fax: +49 (0)89 894 222 – 33
Internet: www.alldaq.com

4.5 Important notes

4.5.1 Packaging ordinance

Basically manufacturer and distributors are committed to take care, that sales packaging are withdrawn after use from the end user and applied to a new disposal or to a material recycling as a matter of principle (translated according to § 4 sentence 1 of VerpackVO). If you have problems as customer on disposal of packaging and shipping material please write an email to info@allnet.de.

4.5.2 Recycling note and RoHS compliance

Please note, that parts of products of ALLNET® GmbH should be disposed in recycling centers resp. may not be disposed via the household waste (printed circuit boards, power adapters and so on).

ALLNET® products are manufactured in accordance with RoHS (RoHS = Restriction of the use of certain hazardous substances).

4.5.3 CE certification

The ADQ-210 series is CE certified.

This device is compliant to the EU directive: 2004/108/EG regarding the electromagnetic compatibility (EMC) and the cross approval of their conformity. The conformity with the directive as stated above is confirmed by the CE sign on the device.

4.5.4 Warranty

Within the warranty time we eliminate manufacturing and material defects free of charge. The warranty terms valid for your country can be found on the homepage of your distributor. If you have questions or problems applying the warranty you can contact us during our normal opening hours under the following phone number +49 (0)89 894 222 – 74 or by email: support@alldaq.com.

5. Index

W

ALLDAQ

Competence in Measurement

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