



**ALL YOU NEED IS
DAQ**



ALLDAQ IS ALL YOU NEED



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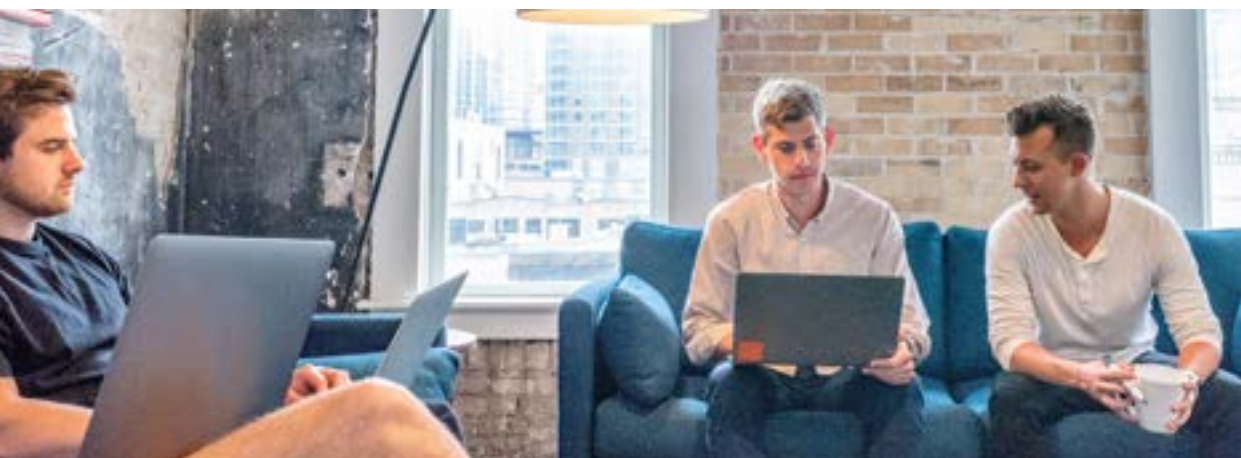
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ALLDAQ – Your partner for measurement technology and automation.



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„Our customers particularly appreciate the **flexibility of the products**, the **accuracy**, and the **reliability** of our measurement technology.

„Made in Germany“ at an excellent price-performance ratio!“

MEASURING + TESTING

Foreword

The well-coordinated development team, which had previously developed milestones in measurement technology together for many years in another well-known company, was re-established in 2014 under the roof of ALLNET GmbH.

The name of the newly founded ALLDAQ department is our motto:

ALL you need is **DAQ**

Thanks to the wide range of experience already gained in many years of cooperation, a considerable portfolio of PC-supported measuring and testing technology could be set up in a very short time.

The products we would like to present to you in this catalogue were developed during this time.

Among other things, our products, developed in-house and manufactured in Germany, are used worldwide by well-known manufacturers in the automotive and audio sectors for end-of-line testing and in development.

Our customers particularly appreciate the flexibility of our products, the accuracy and the reliability of our measurement technology.

"Made in Germany" at an excellent price-performance ratio!

We can adapt our hardware to your wishes within a certain framework or alternatively carry out developments of hardware and software for you.

Furthermore, we also have products from other manufacturers in our distribution programme, which perfectly complement our portfolio:

EMC measurement technology from TEKBOX, we are the first to have brought these products onto the market in Germany. Spectrum analysers, oscilloscopes as well as other bench top instruments from SIGLENT.

It will not be easy to find a manufacturer with a better price-performance ratio in this segment with a similarly high level of quality.

With CableEye, we then have another manufacturer of high-quality and sophisticated cable test systems at the start.

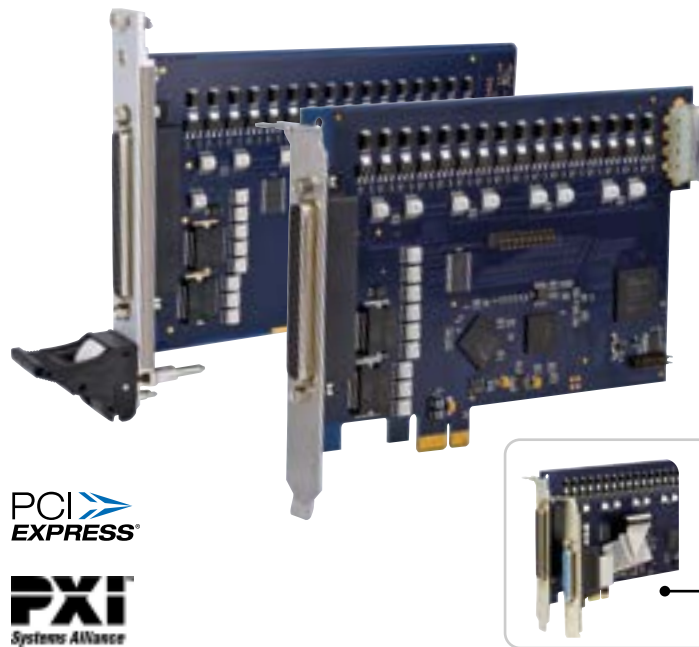
Have we aroused your interest with this catalogue and is there the right product for your task?

We are looking forward to your enquiry!



ADQ-10 series

Industrial digital I/O board for CompactPCI or PCI Express with 16 isolated digital inputs, 16 isolated digital outputs up to 0.7 A/channel, 16 bidirectional TTL digital I/Os



Features

- 16 opto-isolated digital inputs (2 x 8 bit)
- Input high level: 2.5..32 V
- Overvoltage protection for voltages >45 V
- Isolated input ports with possibility of interrupt generation on bit change or bit equality
- 16 opto-isolated digital outputs (2 x 8 bit)
- Output current: max. 0.7 A per channel with current limitation, channels can be connected in parallel
- Software streaming for digital input/output
- External supply for isolated outputs (10.5..45 V)
- Isolation voltage 1000 VACeff.
- ADQ-LINK (PXIe only)
- Bidirectional TTL digital I/Os (8 bit) can be used via adapter cable with additional slot plate (incl.)



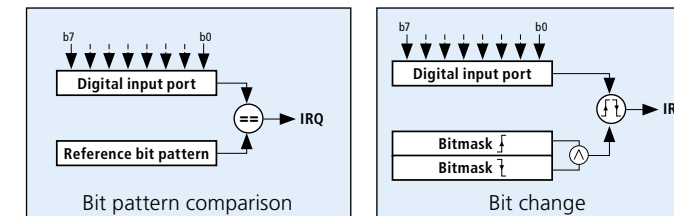
Software streaming



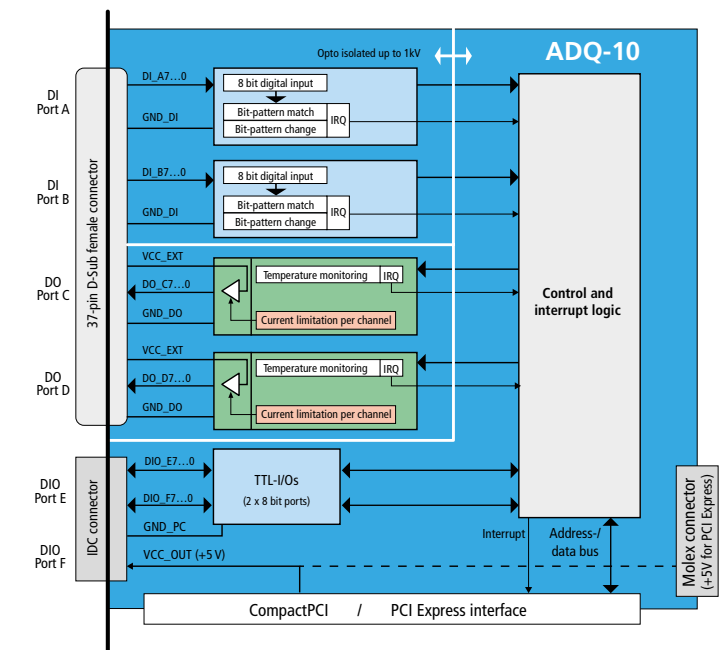
- Software-controlled streaming operation up to 1 kS/s
- Continuous reading of digital inputs
- Continuous output of a bit pattern stream

Isolated inputs with interrupt

If required, the two isolated input ports can be monitored for bit pattern change or bit pattern equality and evaluated as an interrupt event.



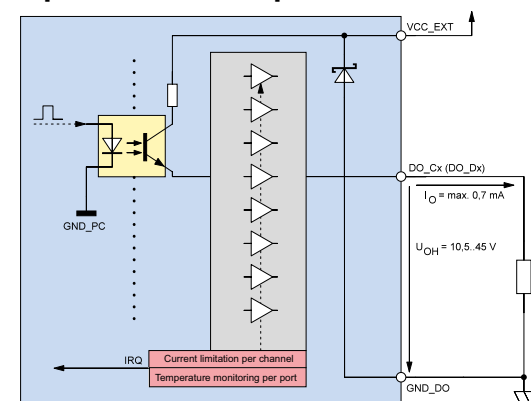
Block diagram



Ideal for automation technology

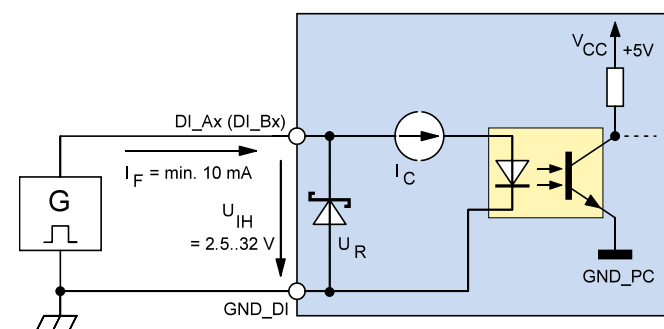
The ALLDAQ ADQ-10 is a digital I/O card for use in industrial automation and control technology. The board offers 16 opto-isolated inputs and 16 opto-isolated digital outputs with an isolation voltage of up to 1 kV. A further 16 TTL digital inputs/outputs can be used via an adapter cable with additional slot plate. The streaming mode enables continuous polling or output of a bit pattern stream up to 1 kS/s.

Optoisolated outputs



The 16 opto-isolated outputs can drive up to 0.7 A per channel in continuous operation in source mode. A parallel connection of the outputs to increase the output current is possible. In total, the outputs can drive up to 11.2 A, so that no external driver stage is required for many applications. The output voltage range is 10.5..45 V for driving programmable logic controllers (PLCs) according to IEC 61131. The driver modules are equipped with thermal overload protection, current limiting, short-circuit protection and undervoltage monitoring. The outputs are supplied via an external voltage source with sufficient power (not included in the scope of delivery).

Optoisolated inputs



The 16 opto-isolated inputs are equipped with overvoltage protection diodes that protect against input voltages > 45 V. All inputs can be monitored for bit pattern change or bit pattern equality and evaluated as an interrupt event.

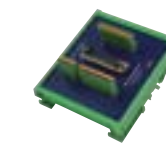
Ordering information / Accessories



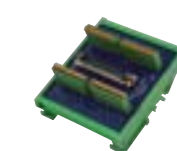
ADQ-10-cPCI (art. no. 107163) or ADQ-10-PCIe (art. no. 107162) with adapter cable to additional slot bracket



Shielded connection cables (see ordering information)



25-pin terminal block (111752)



37-pin terminal block (111753)

Name	Art. no.	Description
Digital I/O cards		
ALLDAQ ADQ-10-cPCI (PXI)	107163	Digital I/O board, 16 isolated DI, 16 isolated DO, 16 TTL-DIOs
ALLDAQ ADQ-10-PXIe	206848	Digital I/O board, 16 isolated DI, 16 isolated DO, 24 TTL-DIOs, ADQ-LINK
ALLDAQ ADQ-10-PCIe	107162	PCIe digital I/O card, 16 isolated DI, 16 isolated DO, 16 TTL DIOs
Accessories		
ALLDAQ ADQ-CR-D25M-D25F-1,8m	111752	Connecting cable shielded from 25-pin Sub-D plug to 25-pin Sub-D socket, length 1.8 m
ALLDAQ ADQ-CR-D37M-D37F-2m	111753	Connecting cable shielded from 37-pin Sub-D plug to 37-pin Sub-D socket, length 2 m
ALLDAQ ADQ-TB-D25M-HUT	111749	Connection block with 25-pin D-sub plug on Phoenix terminals
ALLDAQ ADQ-TB-D37M-HUT	111750	Connection block with 37-pin Sub-D plug on Phoenix terminals

ADQ-22/23 series

Industrial digital I/O boards for CompactPCI Serial or PCI Express with isolated digital inputs with filter, isolated digital outputs with power driver, 8 TTL digital I/Os, opt. change-over relay



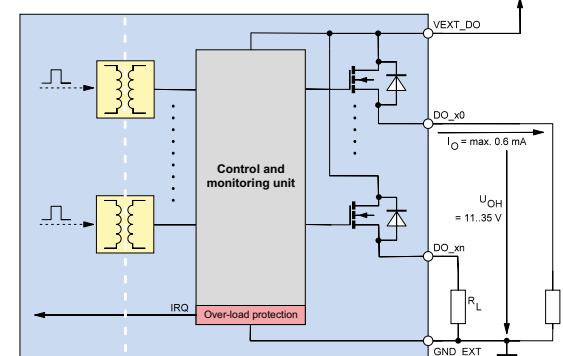
Features

- PXIe Serial and PCI Express models
- Inputs with Schmitt trigger characteristic according to IEC 61131-2 (type 1), max. input voltage: 35 V
- Inputs with interrupt function and status LEDs
- Digital filter programmable for each input port
- Output current: max. 0.6 A per channel with current limitation, channels can be connected in parallel
- Comprehensive overload protection with possibility of interrupt generation and error LED on board
- Software streaming for digital input/output
- External supply for isolated outputs (11..35 V)
- ADQ-23: 8 change-over relays, max. 35 V/1 A (DC/AC)
- Isolation voltage 500 VACeff.
- Bidirectional TTL digital I/Os (24 bit) can be used via adapter cable with additional slot plate (incl.)
- ADQ-LINK (PXIe) usable via adapter cable with additional slot bracket (incl.)

Specifications

I/Os at a glance	ADQ-22	ADQ-23
Isolated inputs	32 (2 x 16 bit)	24 (3 x 8 bit)
Isolated outputs	32 (2 x 16 bit)	16 (2 x 8 bit)
Bidirectional TTL I/Os	2 x 8 bit	1 x 8 bit
Relays	--	8 changeover relay (type C)

Isolated outputs

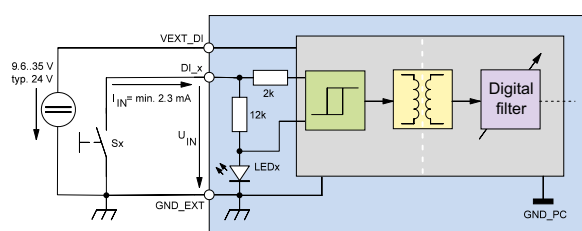


The isolated outputs can drive up to 0.6 A per channel. To increase the output current, parallel connection of several outputs is possible, so that an external driver stage is not necessary for many applications. An external voltage source with sufficient power must be provided to supply the outputs. The drivers are equipped with thermal overload protection, current limiting, short-circuit protection and under-voltage monitoring.

Well filtered and insulated

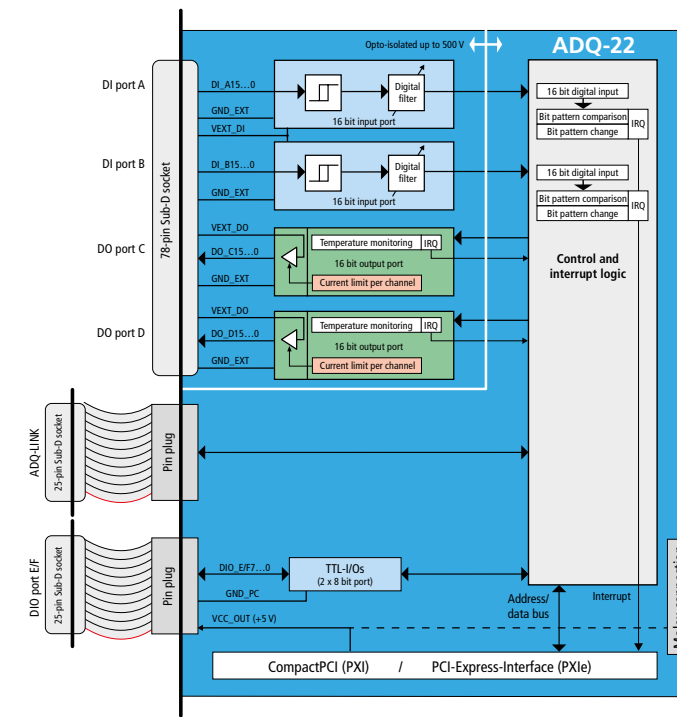
The cards of the ALLDAQ ADQ-22/23 series are digital I/O cards for use in industrial automation and control technology. In addition to the obligatory isolation, these cards also offer the possibility of programming a digital filter per input port, e.g. to protect against contact bounce. Furthermore, the galvanic isolation of 500 VACeff. between field wiring and PC effectively suppresses interferences. Streaming operation enables continuous polling of all digital inputs or output of a bit pattern stream up to approx. 1 kHz.

Isolated inputs

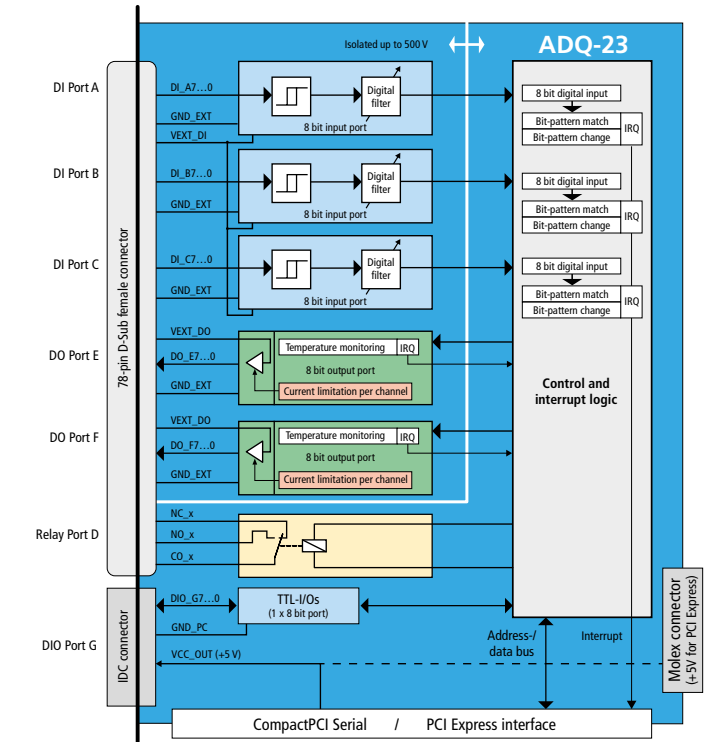


The isolated inputs have a Schmitt trigger characteristic according to IEC 61131-2 (type 1) and are designed for a maximum input voltage of 35 V. All isolated inputs are equipped with status LEDs and can generate an interrupt in case of bit-pattern change, bit-pattern equality as well as in case of missing external supply.

Block diagrams



Block diagram ADQ-22



Block diagram ADQ-23

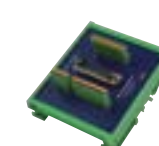
Ordering information / Accessories



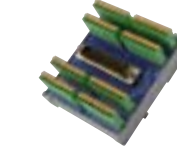
ADQ-22-PCIe (art. no. 115549) or ADQ-22-cPCIS (art. no. 115550) or ADQ-23-PCIe (art. no. 115551) or ADQ-23-cPCIS (art. no. 115552) with adapter cable to additional slot bracket



Shielded connection cables (see ordering information)



25-pin connection block (111752)



78-pin terminal block (111754)

Name	Art. no.	Description
ALLDAQ ADQ-22-PCIe	115549	Digital I/O board, 32 isolated DIs with filter, 32 isolated DOs, 16 TTL-DIOs, ADQ-LINK
ALLDAQ ADQ-22-PXIe	193104	Digital I/O board, 32 isolated DIs with filter, 32 isolated DOs, 16 TTL DIOs, ADQ-LINK
ALLDAQ ADQ-23-PCIe	115551	PCIe digital I/O board, 24 isolated DIs with filter, 16 isolated DOs, 8 changeover relays, 8 TTL DIOs
Accessories		
ALLDAQ ADQ-CR-D25M-D25F-1,8m	111752	Connecting cable shielded from 25-pin Sub-D plug to 25-pin Sub-D socket, length 1.8 m
ALLDAQ ADQ-CR-D78M-D78F-1,5m	111754	Connecting cable shielded from 78-pin Sub-D plug to 78-pin Sub-D socket, length 1.5 m
ALLDAQ ADQ-TB-D25M-HUT	111749	Connection block with 25-pin D-sub plug on Phoenix terminals
ALLDAQ ADQ-TB-D78M-HUT	111751	Connection block with 78-pin Sub-D plug on Phoenix terminals

ADQ-250 series

Isolated 8-channel voltage measurement card, high-precision A/D conversion up to 2 MS/s, digital I/Os



CompactPCI®

Ideal for high-speed data logging and audio signal analysis

The measuring cards of the ALLDAQ ADQ-250 series are cards for high-precision and fast voltage measurements in industry and laboratories. Thanks to potential-free voltage inputs and fully differential sampling, parasitic effects such as hum loops and common-mode interference can be suppressed in the best possible way. The input voltage range is ± 10.24 V so that a full 10 V can be measured. Optionally, an input voltage range of ± 102.4 V is possible. Due to the high A/D converter resolution of 16 bit to 24 bit (depending on the model), a very good accuracy is achieved without having to switch between several measuring ranges. All 8 analogue channels are galvanically isolated from each other and from PC ground up to 700 Vrms.

Application example

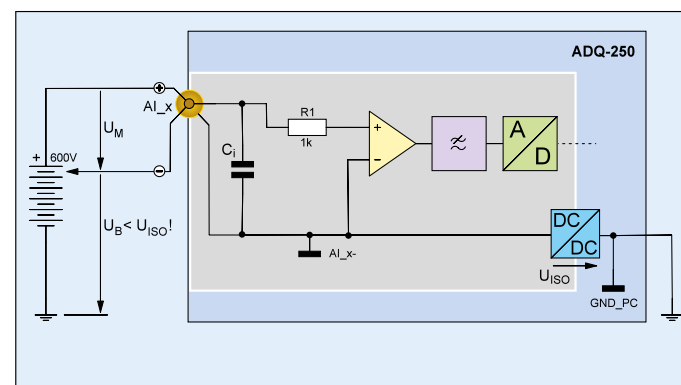
The cells of a high-voltage battery (e.g. 600 V) in the field of electromobility are to be measured. Grounding establishes a reference between battery ground and PC ground. If you measure the "upper" battery cells, for example, you must observe the relatively high voltage potential U_B , which must not exceed U_{ISO} . Irrespective of this, the measuring voltage must not exceed the respective input range of ± 10.24 V (standard) or ± 102.4 V (E versions).

Features

- 8 isolated, fully differential voltage inputs
- Isolation voltage: 700 V (channel to channel / channel to PC)
- 18 or 24 bit A/D converter per channel for synchronous sampling up to 2 MS/s (depending on model)
- Input voltage range: ± 10.24 V, optional: ± 102.4 V ("E" versions)
- Digital I/O port (8 bit) via HDMI connector + 16 bit usable via adapter cable with additional slot plate (incl.)
- 2 isolated trigger inputs for A/D section
- Monitoring of digital inputs for bit changes with interrupt generation
- ADQ-LINK (PXIe) usable via adapter cable with additional slot bracket (incl.)

Specifications

	ADQ-255	ADQ-256	ADQ-258	ADQ-259
Channels	8 differentiell	8 differentiell	8 differentiell	8 differentiell
Resolution	16bit	16bit	18bit	24bit
Sampling rate	250kS/s	2MS/s	1.6MS/s	1.5MS/s
Bandwidth	50kHz (0dB)	280kHz (-3dB)	280kHz (-3dB)	280kHz
Signal-to-noise ratio	91.7 dB _{FS,RMS}	91.7 dB _{FS,RMS}	102.3 dB _{FS,RMS}	102.3 dB _{FS,RMS}
Input range	± 10.24 V	± 10.24 V	± 10.24 V	± 10.24 V
Input impedance		$R_i > 100$ M Ω , typ. 240 M Ω , $C_i = 4$ pF		
Expanded measurement uncertainty ¹⁾	± 0.332 mV	± 0.376 mV	± 0.353 mV	± 0.353 mV

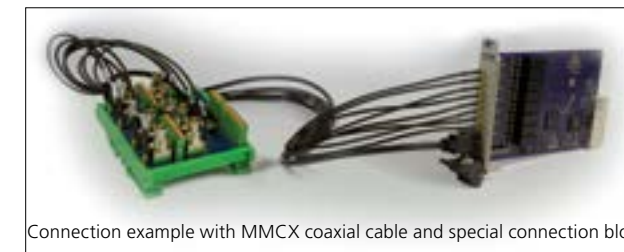


¹⁾ Expanded measurement uncertainty at 10 V (coverage factor k = 2)

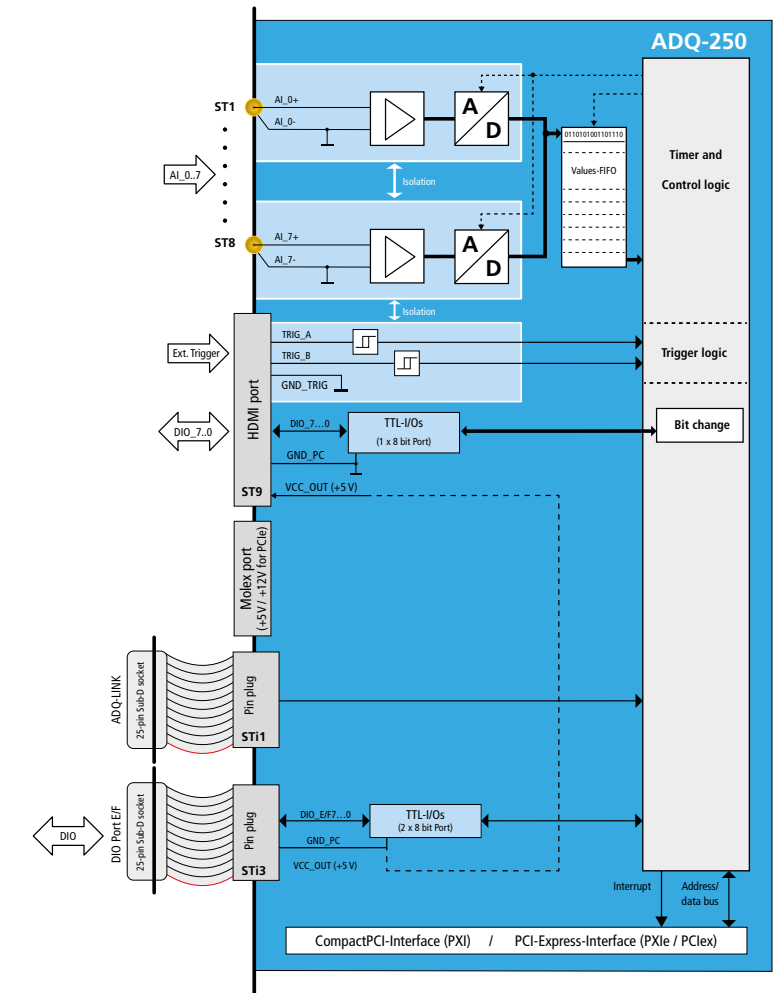
Connection options

On the special terminal block for the ADQ-250 series

the analogue inputs can be connected either via BNC sockets or Phoenix terminals, the digital I/Os, trigger inputs and auxiliary voltage via two 10-pole Phoenix terminals.



Connection example with MMCX coaxial cable and special connection block



Ordering information / Accessories

Name	Art. no.	Description
ALLDAQ ADQ-255-cPCI (PXI)	122581	Measuring card with 8 potential-free voltage inputs, 16 bit A/D converter up to 250 kS/s synchronous, 2 ext. trigger inputs, 8 TTL digital I/Os
ALLDAQ ADQ-256-cPCI (PXI)	122582	Measuring card with 8 potential-free voltage inputs, 16 bit A/D converter up to 2 MS/s synchronous, 2 ext. trigger inputs, 8 TTL digital I/Os
ALLDAQ ADQ-258-cPCI (PXI)	122583	Measuring card with 8 potential-free voltage inputs, 18 bit A/D converter up to 1.6 MS/s synchronous, 2 ext. trigger inputs, 8 TTL digital I/Os
ALLDAQ ADQ-255-PXIe	198023	Measuring card with 8 potential-free voltage inputs, 16 bit A/D converter up to 250 kS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-256-PXIe	198029	Measuring board with 8 potential-free voltage inputs, 16 bit A/D converter up to 250 kS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-258-PXIe	198030	Measuring card with 8 potential-free voltage inputs, 18 bit A/D converter up to 250 kS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-259-PXIe	206114	Measuring board with 8 potential-free voltage inputs, 24 bit A/D converter up to 1.5 MS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-255-PCle	126175	PCI Express DAQ board with 8 potential-free voltage inputs, 16 bit A/D converter up to 250 kS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-256-PCle	126176	PCI Express DAQ board with 8 floating voltage inputs, 16 bit A/D converter up to 2 MS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-258-PCle	126177	PCI Express measuring card with 8 floating voltage inputs, 24 bit A/D converter up to 1.5 MS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-259-PCle	207189	Measuring card with 8 potential-free voltage inputs, 24 bit A/D converter up to 1.5 MS/s synchronous, 2 ext. trigger inputs, 24 TTL digital I/Os, ADQ-LINK
Accessories		
ALLDAQ ADQ-TB-COAX-HDMI-HUT	127389	Special connection block for ADQ-250 series and ADQ-610 series, analogue channels can be routed either via 8 BNC sockets or Phoenix terminals, digital I/Os, trigger inputs and auxiliary voltage via 2 x 10-pole Phoenix terminals
ALLDAQ ADQ-CR-MMCXM-MMCXM-8x-1m	122585	8 x coaxial cable from MMCX connector to MMCX connector (1 m)
ALLDAQ ADQ-CR-MMCXM-BNCM-8x-1m	122586	8 x coaxial cable from MMCX plug to BNC plug (1 m)
ALLDAQ ADQ-CR-HDMI-MM-1m	127015	HDMI cable (all wires connected 1:1), black, shielded, gold-plated contacts (1 m)

ADQ-412 / 414

2-channel current measuring card for highly accurate and dynamic measurement of currents up to 50 A



Features

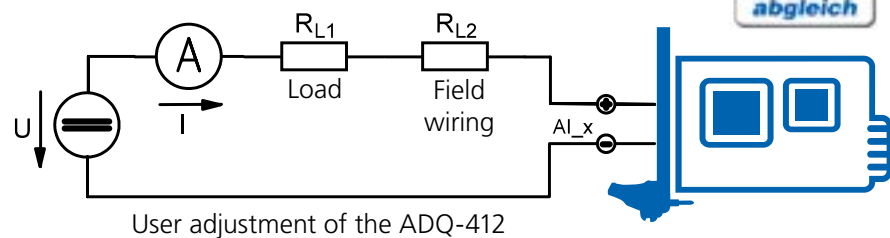
- Dynamic current measurement from a few μA to 50 A with precision shunts from Isabellenhütte
- 2 differential current measurement channels with isolation
- Isolation voltage: 700 VDC/VACeff. (channel to channel and channel to PC ground)
- High bandwidth for current measurement: 20 kHz (square wave)
- Two 18 bit A/D converters up to 1.6 MS/s sampling rate synchronous (ADQ-412); 24 bit \rightarrow ind. AVG (averaging) up to 2.0 MHz (ADQ-414)
- Current measuring ranges: $\pm 25\text{ mA}$ ($10\ \Omega$ shunt), $\pm 50\text{ A}$ ($5\text{ m}\Omega$ shunt)
- Uninterruptible range switching
- Interrupt when exceeding or falling below the $\pm 25\text{ mA}$ threshold
- Short-term overload protection is guaranteed
- Start/stop trigger: software, ext. digital trigger
- Two TTL trigger inputs (RP-SMA sockets)
- 16 bit TTL digital I/Os can be used via adapter cable with additional slot plate (incl.)
- ADQ-LINK (PXIe) usable via adapter cable with additional slot bracket (incl.)

Precise and dynamic current measurement up to 50 A

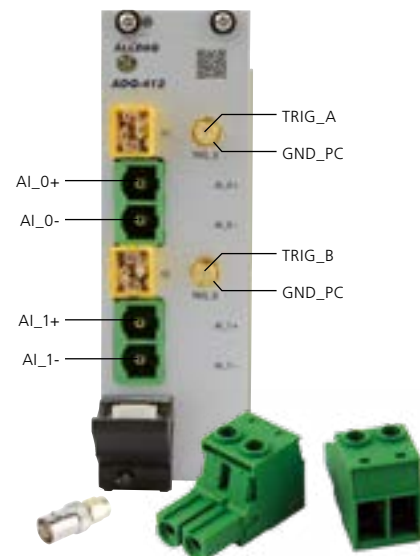
The ADQ-412 / 414 is used for PC-supported current measurement up to 50 A. Two isolated analogue channels with the current measuring ranges $\pm 25\text{ mA}$ and $\pm 50\text{ A}$ are available. The relay-controlled switching between the shunts ($10\ \Omega / 5\text{ m}\Omega$) is carried out by the application without interrupting the circuit of the device under test (DUT). A hardware comparator automatically switches to the 50 A measuring range

as soon as the 25 mA range is exceeded by more than 12.5%. This protective mechanism works independently of the operating system and application software. A corresponding interrupt event is generated and can be evaluated by the application.

Application-specific adjustment



All analogue ALLDAQ measuring cards can be calibrated by the user, taking into account the field wiring. Depending on the application scenario, specific adjustment data can be stored in an EEPROM on the card in addition to the factory adjustment data. The selection can be changed at any time via the ALLDAQ manager.



Incl. 2 x coaxial adapters from RP-SMA plug to BNC socket as well as 2 x high-current terminals, type Phoenix for wire cross-sections up to 16 mm^2 .

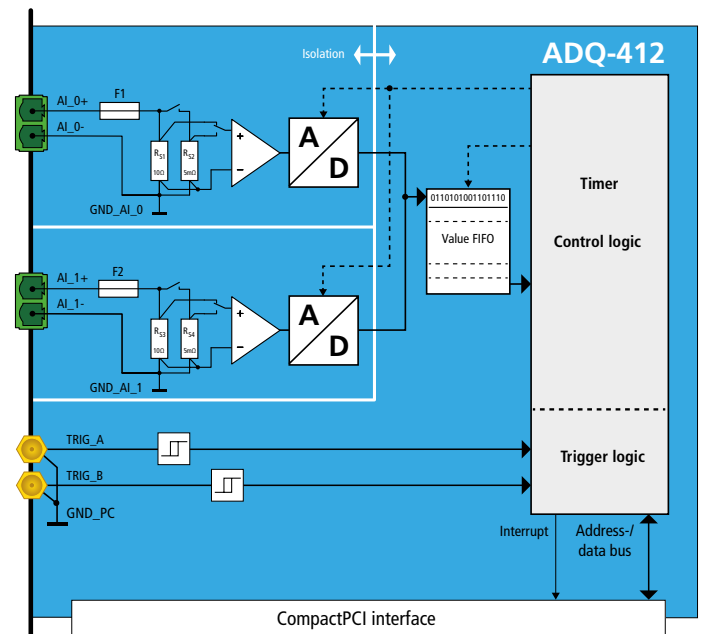
Whitepaper



"Dynamic current measurement with the measuring card"

Download now and inform at: www.alldaq.com/whitepaper

Block diagram



Block diagram ADQ-412 / 414

Specifications

	ADQ-412	ADQ-414
Current measuring channels		2 differential, ranges: $\pm 25\text{ mA}$ ($10\ \Omega$ shunt), $\pm 50\text{ A}$ ($5\text{ m}\Omega$ shunt)
Insulation		isolated up to 700 VDC, 700 VAC (60 Hz) (channel to channel and to PC ground)
A/D converter	1.6 MHz, 18 bit, synchronous sampling of both channels	1.5 MHz, 24 bit, synchronous sampling of both channels
Bandwidth		20 kHz (rectangle)
Signal-to-noise ratio (SNR)		< -100 dB
Overall accuracy		$\pm 25\text{ mA}$ range: typ. 0.002% at full scale, $\pm 50\text{ A}$ range: typ. 0.004% at full scale
Trigger modes		Start/stop trigger via software or ext. trigger inputs
Trigger inputs		2 x 5 V TTL trigger inputs with Schmitt trigger characteristic (RP-SMA sockets)
I/O's 16 + ADQ-LINK	✗	✓
Operating temperature		0..70 °C (ensure sufficient air circulation)
Power consumption card		+3.3 V: typ. 125 mA; +12 V: max. 625 mA
Dimensions		3 U CompactPCI card, 8 TE wide
Connections		Current measuring channels: 2-pole Phoenix terminals for wire cross-sections up to 16 mm^2 , trigger inputs: RP-SMA sockets (Reverse Polarity SMA)

Ordering information / Accessories

Name	Art. no.	Description
ALLDAQ ADQ-412-cPCI (PXI)	111757	Current measuring card with 2 isolated analogue inputs for current measurement up to 50 A (18 bit)
ALLDAQ ADQ-412 (PXIe)	206116	Current measuring card with 2 potential-separated analogue inputs for current measurement up to 50 A (18 bit), 24 TTL digital I/Os, ADQ-LINK
ALLDAQ ADQ-414 (PXIe)	206117	Serial current measuring card with 2 electrically isolated analogue inputs for current measurement up to 50 A (24 bit)
Accessories		
ALLDAQ ADQ-AP-RP-SMAM-BNCF	118731	Coaxial adapter from RP-SMA plug to BNC socket (2 pieces included)

ADQ-422

2-channel measuring card for currents up to $\pm 100A$ and voltages up to $\pm 750V$



Features

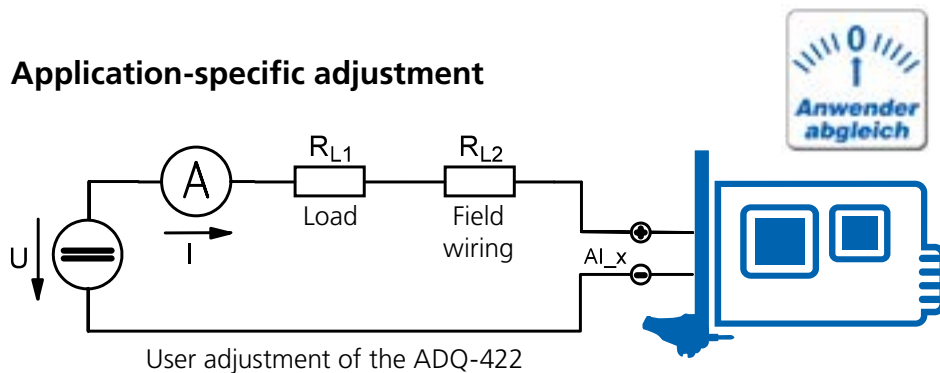
- One potential-free current measurement channel
- Shunt-based measurement up to $\pm 100A$
- One potential-free voltage measurement channel up to $\pm 750V$
- Synchronous start of both channels for power measurement
- Two isolated trigger inputs (+5 V TTL level)
- High-precision 24-bit A/D converter up to 1.5MS/s
- Possibility of averaging with
- digital filter stage (AVG)
- Signal-to-noise ratio up to -140dB
- Safety shutdown of the voltage channel at $\pm 845V$
- Alarm output when current $> \pm 100A$

Brief description

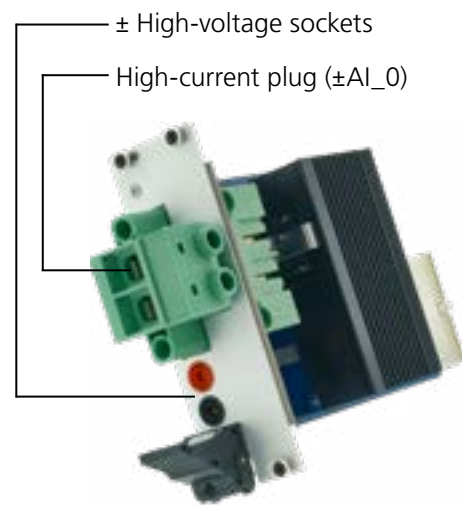
The ADQ-422 is used for PC-supported current/voltage measurement. Two isolated analogue channels are available with a current range of $\pm 100A$ and a voltage range of $\pm 750V$. Hardware comparators monitor the current and voltage values independently of the software. If there is a current-voltage increase of more than 12.5%, a corresponding alarm output is set. This alarm output can then be used in the application to switch off the current path/voltage path.

In addition, a high-voltage relay is built into the voltage measurement path on the board, which then additionally interrupts the path. This protection mechanism works independently of the operating system and the software application. A corresponding interrupt event is generated and can be evaluated by the application.

Application-specific adjustment



All analogue ALLDAQ measuring cards can be calibrated by the user, taking into account the field wiring. Depending on the application scenario, specific adjustment data can be stored in an EEPROM on the card in addition to the factory adjustment data. The selection can be changed at any time via the ALLDAQ manager.



Whitepaper



"Dynamic current measurement with the measuring card"

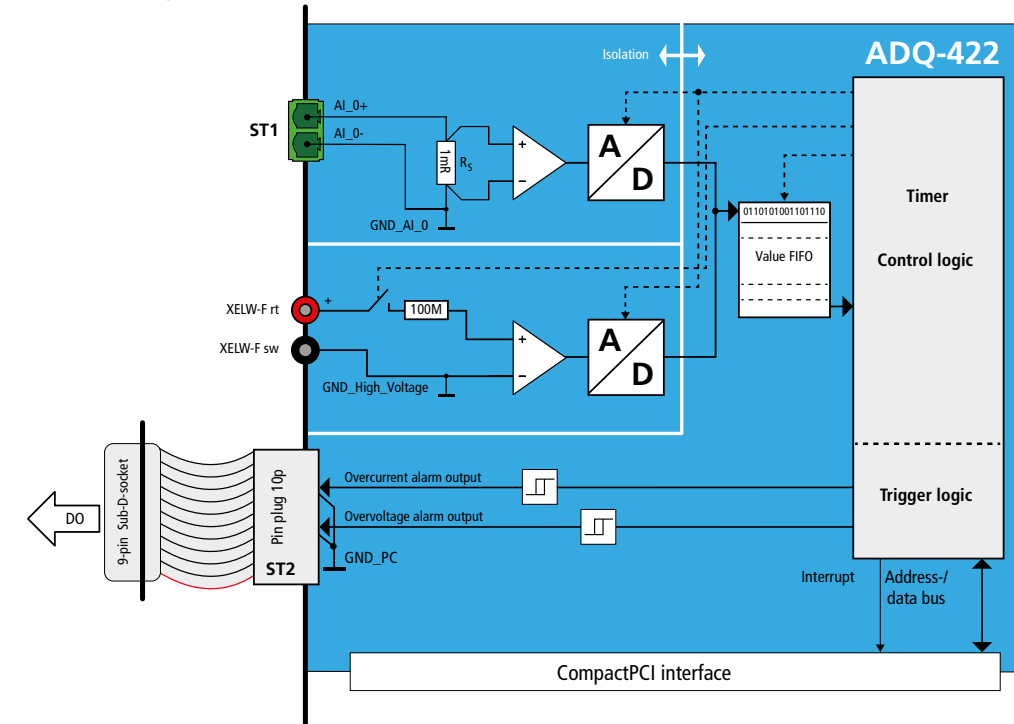
Download now and inform at: www.alldaq.com/whitepaper

Ideal as a power meter in the field of e-mobility!

3-in-1: Ammeters, voltmeters and power meters!

For power measurement, the channels can also be started synchronously.

Block diagram



Specifications

ADQ-422	
Current measuring channel	1 differential range: $\pm 100 A$ (1m Ω shunt)
Voltage measuring channel	1 differential range: $\pm 750 V$, $R_i = 100m\Omega$
Insulation	Isolated up to 700 VDC, 700 VAC (60 Hz) (channel to channel and to PC ground)
A/D converter	1.5 MHz, 24 bit synchronous sampling possible
Trigger modes	Start/stop trigger via software or ext. trigger inputs
Trigger inputs	2 x 5 V TTL trigger inputs with Schmitt trigger characteristic (RP-SMA sockets)
Connections	Current measuring channel: 2-pole Phoenix for wire cross-sections up to 35 mm ² , voltage measuring channel: 4mm socket

Order information

Name	Art. no.	Description
ALLDAQ ADQ-422-cPCI (PXI)	151235	Current/voltage measuring card with 2 potential-separated analogue inputs 24 bit, alarm outputs

ADQ-618

Isolated 4/8-channel voltage output board, high-precision D/A conversion up to 500 kS/s, digital I/Os



Features

- 4/8 potential-free channels for voltage output
- Output voltage range: ± 10 V
- Output rate: 500 kS/s synchronous
- Independent 16 bit D/A converter per analogue output
- Isolation voltage: 700 V (channel to channel / channel to PC)
- 8 external trigger inputs, one per analogue output
- 8 bit digital I/O port (5 V TTL level) via HDMI connector
- Monitoring of digital inputs for bit changes with interrupt generation
- Digital I/O port (16bit) usable via adapter cable with additional slot plate (incl.)
- ADQ-LINK can be used via adapter cable with with additional slot bracket (incl.)

Specifications

	ADQ-618
Channels	8 voltage outputs
Resolution	16 bit
Output rate	500 kS/s
Total Harmonic Distortion (THD)	at 10 Vpp, f = 100 kHz (sine): -96 dB
Settling time	0.9 μ s
Output voltage	± 10 V
Output current	± 15 mA per output
Capacitive load	max. 1 nF
Total Accuracy	± 2 LSB (± 0.6 mV)

Ideal as an audio signal generator and for hardware-in-the-loop (HiL) simulations

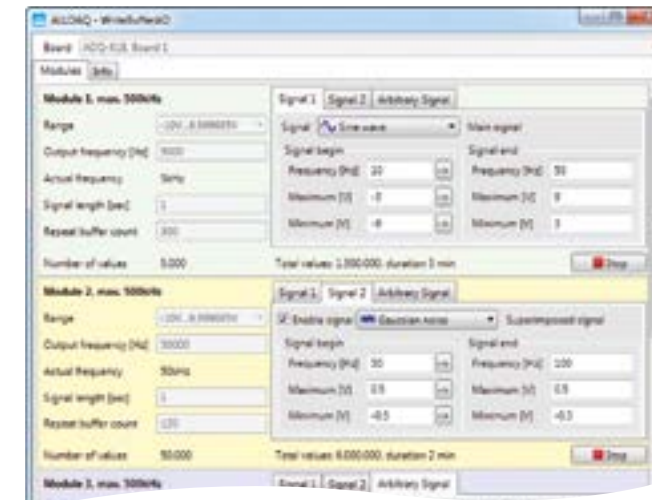
The D/A converter cards of the ALLDAQ ADQ-610 series are used for high-precision voltage output, e.g. for testing embedded systems in the context of hardware-in-the-loop (HiL) simulations or for generating audio signals.

They are equipped with 8 analogue outputs which are galvanically isolated from each other and from PC ground up to 700 V_{rms}. Each channel is equipped with a 500 kHz D/A converter with 16 bit resolution. The output voltage range covers ± 10 V and automatically outputs a 0 V level after switching on. All channels can be started independently or synchronously by software or external trigger signal. The values can be output individually or timer-controlled. Each analogue channel is assigned an external digital trigger input that is isolated from PC ground and the analogue channels.

Due to the high insulation voltage of 700 V, series connection of the voltage outputs is also possible. This means that up to 80 V can be precisely output by cascading all 8 channels.

The bidirectional 8 bit digital I/O port and the 8 trigger inputs can be tapped via the HDMI connection on the front panel. If the digital port is configured as an input, the inputs can be monitored for bit changes and generate an interrupt.

Signal generation



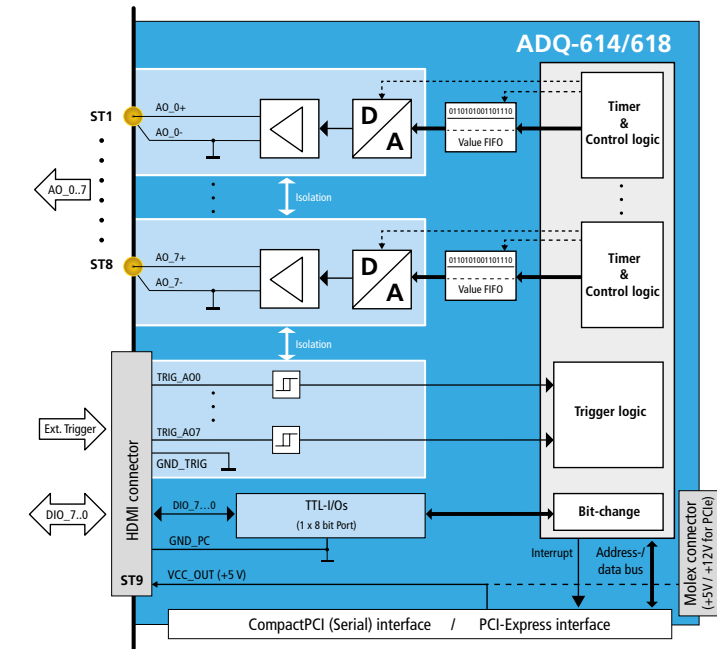
Utility software for convenient signal generation with the ADQ-610

The following signal shapes are predefined in the utility software:

- Rectangle
- Sine
- Triangle
- Sawtooth rising/falling
- Sinc function
- Sine with phase angle
- Sinusoidal modulated square wave
- Sweep signal
- NRZ-coded signal

If required, either Gaussian noise or white noise can be superimposed on all signal types. In addition, an arbitrary signal can be imported via CSV file.

Block diagram



Block diagram ADQ-610 series

Ordering information / Accessories

Name	Art. no.	Description
ALLDAQ ADQ-618-cPCI (PXi)	127289	Measuring card with 8 potential-free voltage outputs, range: ± 10 V, 16 bit D/A up to 500 kS/s, ext. trigger, 8 digital I/Os
ALLDAQ ADQ-618-PXie	206868	Measuring card with 8 potential-free voltage outputs, range: ± 10 V, 16 bit D/A up to 500 kS/s, ext. trigger, 24 digital I/Os, ADQ-LINK
Accessories		
ALLDAQ ADQ-TB-COAX-HDMI-HUT	127389	Special connection block for ADQ-250 series and ADQ-610 series, analogue channels can be routed either via 8 BNC sockets or Phoenix terminals, digital I/Os, trigger inputs and auxiliary voltage via 2 x 10-pole Phoenix terminals
ALLDAQ ADQ-CR-MMCXM-MMCXM-8x-1m	122585	8 x coaxial cable from MMCX connector to MMCX connector (1 m)
ALLDAQ ADQ-CR-MMCXM-BNCM-8x-1m	122586	8 x coaxial cable from MMCX plug to BNC plug (1 m)
ALLDAQ ADQ-CR-HDMI-MM-1m	127015	HDMI cable (all wires connected 1:1), black, shielded, gold-plated contacts (1 m)

ADQ-210 series

16 bit multi-I/O board series with 16 analogue inputs up to 500 kS/s, 32 TTL digital I/Os, 3 x 16 bit counters



CompactPCI®



Features

- ADQ-212/215: 16 differential analogue inputs
- 500 kS/s sum sampling rate, 16 bit A/D converter
- Input voltage range: ± 20 V or ± 50 V
- Programmable channel list: 16 entries
- Start/stop trigger: software, ext. digital trigger
- Two bidirectional 8 bit digital I/O ports can be used via adapter cable with additional slot plate (incl.)
- Voltage level of the digital I/Os can be switched between 3.3 V and 5 V via software (TTL-compatible)
- 3 x 16 bit counters (type: 8254), 6 modes programmable
- External square-wave signal for counter: max. 10 MHz

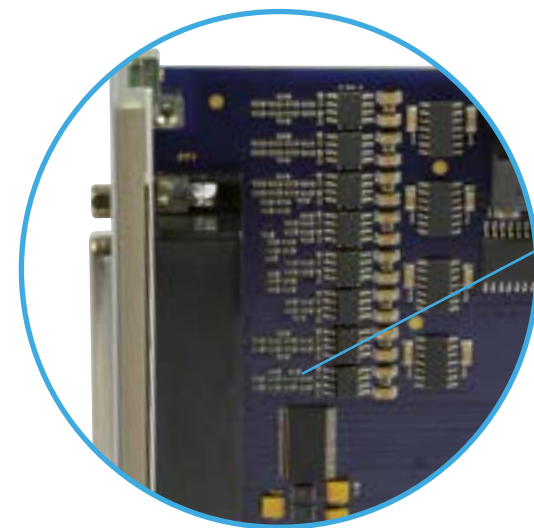
Specifications

	ADQ-212	ADQ-215
Channels	16 differential	16 differential
Bandwidth (square)	3 kHz	2 kHz
Resolution	16 bit	16 bit
Total sampling rate	500 kS/s	500 kS/s
Input range U_{AI}	± 20 V	± 50 V
Input impedance	20 M Ω	80 M Ω

Voltage measurement up to ± 50 V

The analogue input channels of the ADQ-210 series are sampled sequentially at max. 500 kHz according to the channel list, i.e. when sampling all channels, the max. sampling rate per channel is: 500 kS/s / 16 channels = 31.25 kS/s. Bandwidth and input impedance vary depending on the model (see table). The ADQ-210 series cards are all-round multi-I/O cards. The ADQ-215 is especially suitable for high-precision voltage measurement up to ± 50 V.

You want a customised analogue front end?

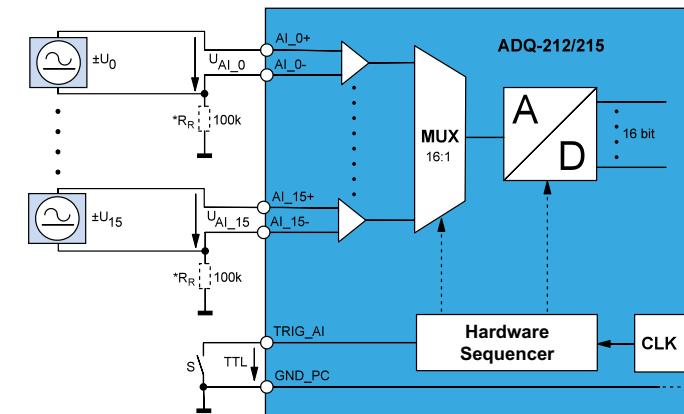


Do you need an individually dimensioned filter stage or an adaptation of the input voltage range according to your wishes? The analogue inputs of the ADQ-210 series are designed in such a way that we can economically realise modifications in wide ranges even for small series.

Ask our measurement technology experts!

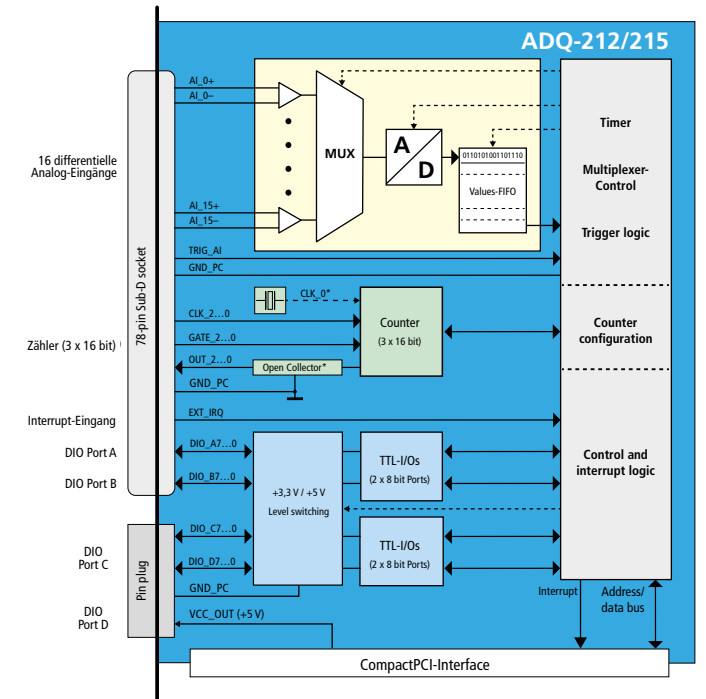
Differential inputs

A differential input ideally measures only the potential difference between positive and negative input. Common-mode interference is thus effectively suppressed. This is particularly advantageous for the detection of signals without common ground reference, for the suppression of ground loops and generally in noisy environments. The potential difference between the negative and positive input of a channel must not exceed 20 V for the ADQ-212 and 50 V for the ADQ-215.



*Depending on the application, it is recommended to provide a reference resistor R_R to prevent the channel from "floating away".

Block diagram



Block diagram ADQ-210 series

Ordering information / Accessories



ADQ-21x incl. adapter cable to additional slot plate for 16 TTL-DIOs

Shielded connection cables (see ordering information)

25-pin terminal block (111752)

78-pin terminal block (111754)

Name	Art. no.	Description
ALLDAQ ADQ-212-cPCI	128411	cPCI multi-I/O board, 16 bit A/D section up to 500 kS/s with 16 differential analogue inputs (± 20 V), 32 bidirectional TTL digital I/Os (level switchable: 3.3V/5V), counter (type: 8254)
ALLDAQ ADQ-215-cPCI	128412	cPCI multi-I/O board, 16 bit A/D section up to 500 kS/s with 16 differential analogue inputs (± 50 V), 32 bidirectional TTL digital I/Os (level switchable: 3.3V/5V), counter (type: 8254)
Accessories		
ALLDAQ ADQ-CR-D25M-D25F-1,8m	111752	Connecting cable shielded from 25-pin Sub-D plug to 25-pin Sub-D socket, length 1.8 m
ALLDAQ ADQ-CR-D78M-D78F-1,5m	111754	Connecting cable shielded from 78-pin Sub-D plug to 78-pin Sub-D socket, length 1.5 m
ALLDAQ ADQ-TB-D25M-HUT	111749	Connection block with 25-pin D-sub plug on Phoenix terminals
ALLDAQ ADQ-TB-D78M-HUT	111751	Connection block with 78-pin Sub-D plug on Phoenix terminals

ADQ-300 series

Isolated multifunction card - up to 32 analogue inputs, 4 analogue outputs, 32 digital I/Os, counter

Ideal for universal use in industry and laboratory

The new ALLDAQ CompactPCI multifunction cards of the ADQ-300 series are ideal for interference-free measurements in industrial environments thanks to optional isolation. Common to all models is the simultaneously sampling 18 bit analogue input section with 32 differential channels, which sample between 200 kS/s and 800 kS/s depending on the number of actively used channels. The input ranges ± 10.24 V, ± 5.12 V, 0-10.24 V and 0-5.12 V always guarantee the best accuracy.

The 16-bit analogue output section with 4 channels can output the analogue values individually or timer-controlled with up to 500 kS/s per channel. In addition to sine, triangle, square and ramp, arbitrary signals can also be generated, e.g. for hardware-in-the-loop (HiL) applications.

Of the 32 digital I/Os, one 8-bit port each is available on the ADQ-340 models as an isolated input or output port. The isolated outputs can drive up to 600 mA.

Connection options

2 x 68-pin VHDCI cables

HDMI cable



ADQ-TB-300-HUT

Special connection block for ADQ-300 series, 8 analogue inputs and 4 analogue outputs accessible via BNC sockets. All other signals via 14 x 10-pole Phoenix terminals. The connection to the board is made via 2 x 68-pin VHDCI and one HDMI connector.

12 V and 5 V output for field wiring

18 bit A/D section up to 800 kS/s, 32 channels

16 bit D/A part up to 500 kS/s, 4 channels

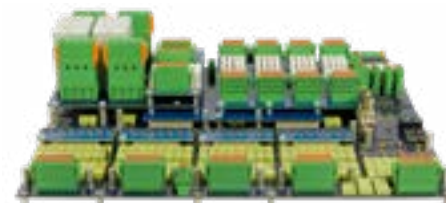
16 TTL digital I/Os, or...

Opt. 8 isolated digital inputs

Opt. 8 isolated digital outputs

32 bit counter, I2C bus, incremental encoder

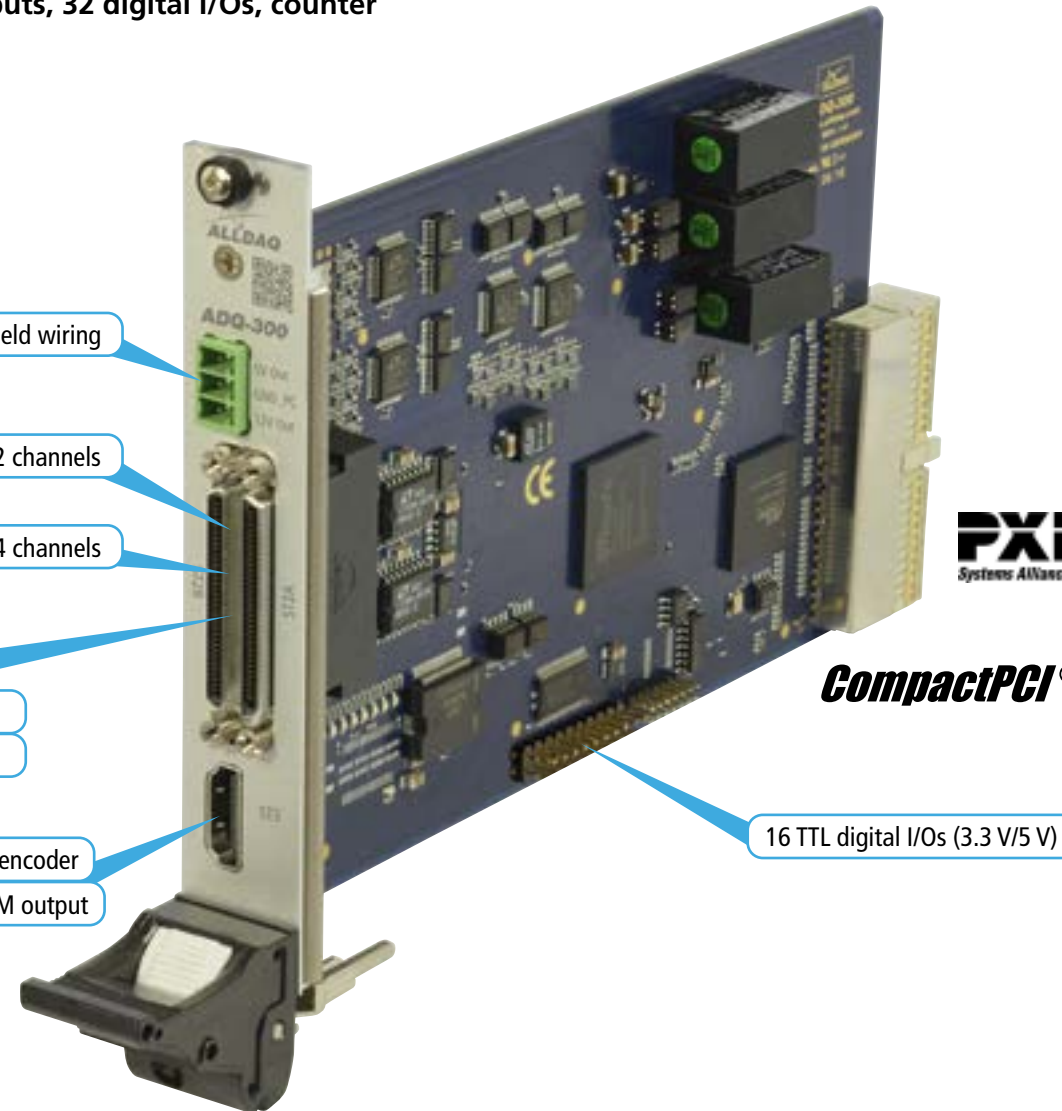
Frequency measurement, PWM output



ADQ-SCU

Signal conditioning

The ADQ-SCU signal conditioning unit was developed to optimally adapt a multitude of analogue and digital inputs/outputs to the requirements of a complex, automated test system. The signals are acquired and generated synchronously via the multifunctional ADQ-348 measurement and control board, which simultaneously controls the ADQ-SCU via I2C bus.



PXI
Systems Alliance

CompactPCI®

16 TTL digital I/Os (3.3 V/5 V)

Features

- 32 differential 18 bit voltage inputs up to 800 kS/s
- Input ranges: ± 10.24 V, ± 5.12 V, 0-10.24 V, 0-5.12 V (0-20 mA on request)
- Isolation voltage A/D section ADQ-34x: 1500 VDC (60 s)
- 4 16 bit voltage outputs (± 10.24 V) up to 500 kS/s with ADQ-344; 4 16 bit voltage outputs (± 2.56 V) up to 500 kS/s with ADQ-348
- Isolation voltage D/A section ADQ-34x: 1500 VDC (60 s)
- 16 TTL-DIOs (3.3 V/5 V), max. 20 mA per output
- 8 isolated digital inputs (High: 15..35 V)
- 8 isolated digital outputs up to 600 mA/output
- Isolation voltage DIO part ADQ-34x: 500 VAC
- Special functions: 32 bit counter, I2C bus port, incremental encoder port, frequency measurement for square-wave signals, PWM output for square-wave signals with adjustable duty cycle

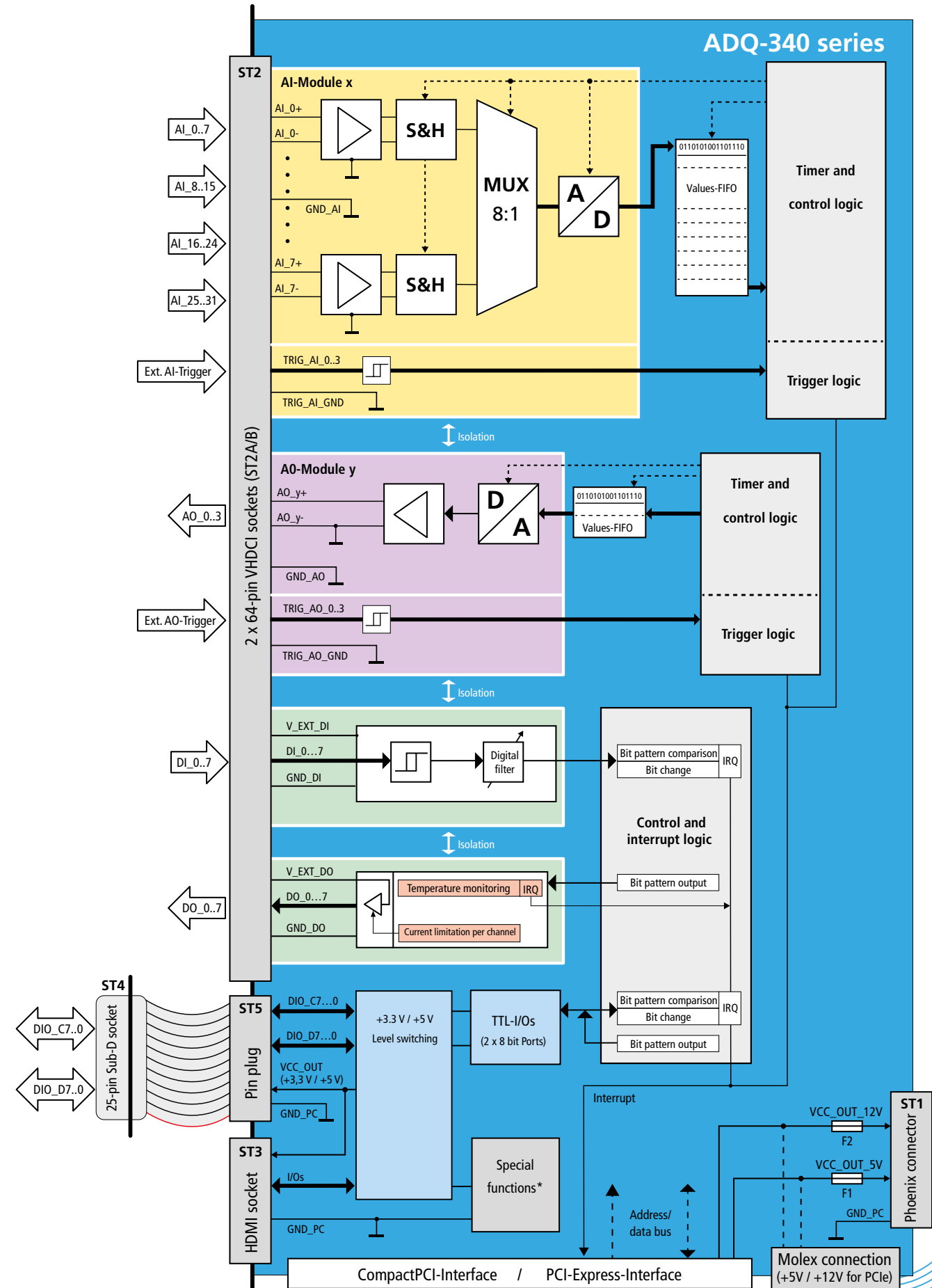
Ordering information / Accessories

Name	Art. no.	Description
ALLDAQ ADQ-344-cPCI (PXI)	142256	CompactPCI multifunction board with 32 diff. 18 bit AIs isolated, 4 x 16 bit AOs isolated, 16 TTL digital I/Os, 8 isolated DIs, 8 isolated DOs, 32 bit counter, I2C bus port, incremental encoder port, frequency measurement, PWM output
ALLDAQ ADQ-348-cPCI (PXI)	180875	CompactPCI multifunction card with 32 diff. 18 bit AIs isolated, 4 x 16 bit AOs isolated, 16 TTL digital I/Os, 8 isolated DIs, 8 isolated DOs, 32 bit counter, I2C bus port, incremental encoder port, frequency measurement, PWM output
Accessories		
ALLDAQ ADQ-TB-300-HUT	146811	Special connection block for ADQ-300 series
ALLDAQ ADQ-CR-VHDCI-68M/68M-1,2m	150597	Round cable double shielded from 68-pin VHDCI plug to 68-pin VHDCI plug, length: approx. 1.2 m
ALLDAQ ADQ-CR-VHDCI-68M/68M-1,8m	146813	Round cable double shielded from 68-pin VHDCI plug to 68-pin VHDCI plug, length: approx. 1.8 m
ALLDAQ ADQ-CR-HDMI-MM-1m	127015	HDMI cable (all wires connected 1:1), black, shielded, gold-plated contacts (1 m)

Technical data

	ADQ-344 (Art. no. 142256)	ADQ-348 (Art. no. 180875)
Analogue inputs		
Number	32 differential	
Resolution	18 bit	
Sampling rate	200 kS/s to 800 kS/s synchronous (1 channel: 800 kS/s, 2 channels: 550 kS/s, 8 channels: 200 kS/s)*	
Input ranges	±10.24 V, ±5.12 V, 0..10.24 V, 0..5.12 V (0-20 mA on request)	
Input impedance	100 MΩ 680 pF	
Common mode rejection	typ. 128 dB between adjacent channels	
Isolation A/D section	1500 VDC (60 s) with respect to PC ground	
Analogue outputs		
Number	4 channels	
Resolution	16 bit	
Output rate, range	500 kS/s synchronous, ± 2.56V	500 kS/s synchronous, ±10.24 V
Output current	±10 mA per output	
Insulation D/A section	1500 VDC (60 s) with respect to PC ground	
Digital inputs/outputs		
TTL-I/Os	16 TTL-DIOs (3.3 V or 5 V switchable)	
Output current TTL-I/Os	20 mA per TTL output	
Isolated digital inputs	8 isolated digital inputs (High: 15..35 V)	
Isolated digital outputs	8 isolated digital outputs up to 600 mA per output	
Isolation DI & DO section	500 VAC with respect to PC ground	
Interrupt	Possibility of interrupt generation on bit change of input ports	
Streaming mode	Streaming operation for continuous input/output on all DIO ports up to approx. 10 kHz**	
Other		
Special functions via HDMI connector	32 bit counter, I2C bus port, incremental encoder port, frequency measurement for square wave signals, PWM output for square-wave signals with adjustable duty cycle	
PC interface	cPCI: 32 bit, 33 MHz CompactPCI Rev. 2.2	
External trigger	One ext. trigger input per AI module (8 channels) and one ext. trigger input per analogue output***	
Ext. supply	12 V (max. 2 A) and 5 V (max. 3 A) for field wiring, via 3-pole Phoenix terminal, short-circuit-proof	
Environment	Operating temperature: 0..70 °C; operating humidity: 20%..55% (non-condensing)	
Connections	2 x 68-pin VHDCI socket, HDMI connector, 3-pin Phoenix terminal	
Dimensions	cPCI models: 3 U high / 4 HP wide (without slot bracket and connector)	

*Sampling rate depends on the number of actively used channels per channel group (AI module), a channel group consists of 8 channels.
 Depending on operating system and computer configuration. *Isolated with ADQ-34x models.



* Special functions: 32 bit counter, I2C bus port, incremental encoder port, frequency measurement and PWM output.

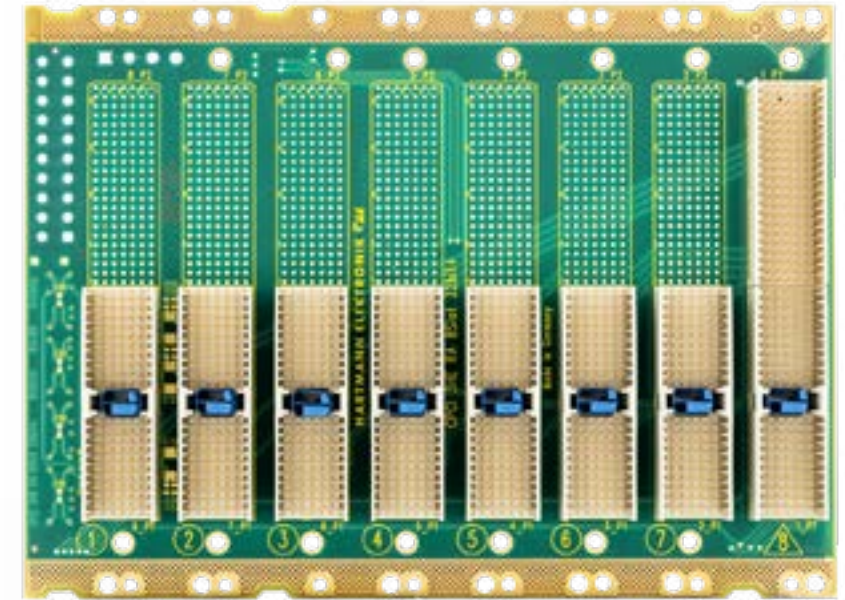
Complete systems | cPCI 8-Slot

A universal solution for your measuring task



The remote measuring system can be freely equipped with cPCI or PXI boards, and other manufacturers are not excluded. These racks are used by our customers primarily in industry for all conceivable tasks, especially in end-of-line testing. Here, the so-called DuT, i.e. Devices under Test, are subjected to a final test after production and checked for complete functionality. Due to constant model changes of the DUTs or stricter requirements on accuracy, e.g.

quiescent current measurement is a hot topic here, a flexible test system with quickly exchangeable measuring equipment is a big plus. Likewise, when calibration is due, the boards can be successively exchanged and adjusted. DAkkS certification in an accredited calibration laboratory can also be carried out on our boards on request, either before or after purchase.



Description

- With the ALLDAQ 8 slot PXI to PCIe systems, we offer you an interesting and maximally flexible option for integrating measurement and circuit boards that comply with the PXI/cPCI standard into your overall system or test bench.
- This means that you can combine A/D, D/A, multifunction or DIO boards developed and manufactured by ALLDAQ as well as measurement technology from other manufacturers that conforms to this standard.
- The all-aluminium 19" racks (84TE/3HE) are robust and can be set up in a versatile modular way.
- The 8-slot systems are also available in table-top housings (42TE/3HE). The 8-slot backplane has one system slot on the right and seven additional cPCI/PXI slots.
- The connection of the Expand system to the host computer via host card, PCIe cable (1m or 3m) and the bridge card in the rack is completely transparent, you do not need to install any drivers for it.
- Since there is practically no delay and the boards installed in the rack also appear in the device manager, you will not notice any difference to boards installed in the host computer. This solution is much cheaper compared to a CPU board installed in the rack.
- Of course, this also applies if higher computing power is required at a later date and upgrading is necessary. Incidentally, the systems can also be cascaded via additional express cables. The number of cascaded systems is primarily limited by the host PC, as the PCIe bus in the bridge card is regenerated during downstream.
- Only one PCIe X1 lane slot is required in your host PC for the host card, which is available with a 2U or 3U slot bracket.



- If seven slots are not enough for you, you have the option of ordering our 19" racks with two 8-slot backplanes (14 active slots/two system slots) or alternatively an 18-slot PXI backplane (17 active slots).
- For more details on this and the new hybrid systems, please see the following pages.
- When ordering a complete system, the ADQ boards are already installed, tested and calibrated on delivery.
- To ensure that your ADQexpress system rack arrives safely, the systems are shipped to you in special "suspended packaging".

ADQexpress 8 Slot PXI Complete System

Netzteil 300W/ADQ-10/ADQ-DIO/ADQ-212/ADQ-412/ADQ-412/Bridgecard/500W NT:

The 300W power supply supplies the boards in the system via the backplane. In addition, a 500W industrial power supply is optionally installed in this rack. The outputs are fed out via the STP1 and STP2 connectors. Suitable for supplying two ADQ-SCU signal conditioning units.



The systems are configured according to your wishes incl. measuring, control and interface cards. Depending on the application, you can choose between compact desktop housings in various designs and systems for 19" rack mounting.

Complete systems | Classic

The universal platform for customised measuring systems



ALLDAQ complete systems are CompactPCI-based solutions for universal use in industry and laboratories. The measuring system, which is remote from the host computer, is connected to it via a PCI Express bus extension in a fail-safe and high-performance manner. The concept is characterised by great free-

dom in the selection of hardware components and can be easily integrated into various software environments. In view of ever shorter product cycles, a modular and open solution that can be adapted cost-effectively to future requirements is advantageous.

Modular systems - open for PXI

Many analogue and digital I/Os - flexibly configurable

Isolated current and voltage measurement - ideal for industrial environments

Offen für PXI*

Anwendungsbeispiele

- End-of-Line-Tests im Rahmen der Qualitätskontrolle
- Vielkanalige Audioanalyse aller relevanten Kennwerte
- Leistungsmessung von Elektromotoren
- Dynamische Strommessung im automatischen Funktionstest
- Isoliert messen in der Elektromobilität z.B. Spannungsmessung an Batteriezellen innerhalb einer Akkueinheit mit hohem Gleichtakt-Anteil



Jetzt informieren und Whitepapers herunterladen unter: www.alldaq.com/whitepaper

Vorteile der PCI-Express-Buserweiterung

- Kostengünstige Anbindung der Messhardware an Ihren Desktop- oder Industrie-PC – keine teure CompactPCI-CPU erforderlich
- Transparenter Zugriff auf die Mess-Hardware im CompactPCI-Subsystem über kostengünstige PCI-Express-Buserweiterung
- Zuverlässiger und schneller Datentransfer via PCI-Express
- Einfache Realisierung vieler isolierter Analog- & Digital-Kanäle
- Leicht erweiterbar: z. B. mit CAN- oder RS-232/485-Schnittstellen
- Offen: CompactPCI-basierend, d.h. offen für Karten anderer Hersteller – auch PXI-Karten können integriert werden (ohne Unterstützung der PXI-Trigger- und Sync-Leitungen)

Beispielkonfiguration

- 4 x ADQ-618: 32 einzeln isolierte Analog-Spannungsausgänge
- 2 x ADQ-412: 4 einzeln isolierte Strommesskanäle bis 50 A
- 4 x ADQ-255: 32 einzeln isolierte Analog-Spannungseingänge
- 4 x ADQ-212: 64 differentielle Analog-Spannungseingänge, zahlreiche Digital-I/Os, 12 Zähler
- 1 x ADQ-344: 32 isolierte Analog-Spannungseingänge, 4 isolierte Analog-Spannungsausgänge, 16 TTL-Digital-I/Os, 8 isolierte Digital-Eingänge, 8 isolierte Digital-Ausgänge, 32bit Zähler, Inkrementalgeber, Frequenzmessung, PWM-Ausgang, I²C-Port

Maximalzahl der Peripheriekarten hängt von verwendeter Backplane und BIOS des Host-Rechners ab.

Cascading of two subsystems

Subsystem 2 with 8-slot backplane, PCIe-to-cPCI bridge and ATX power supply unit

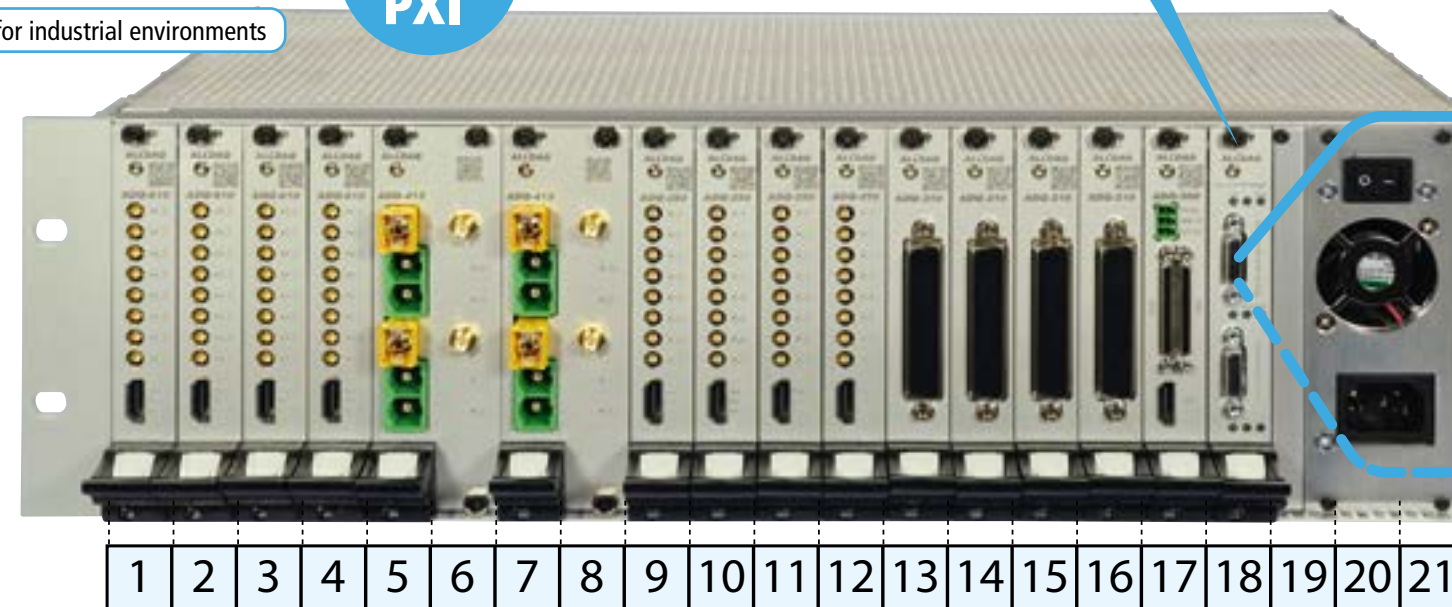
Subsystem 1 with 8-slot backplane, PCIe-to-cPCI bridge and ATX power supply unit

PCIe-to-cPCI bridge in the CompactPCI subsystem

PCIe x1 host adapter optionally with standard or low-profile slot bracket.

PCIe x1 connection cable to the host. Available cable length: 1 m.

Alternative: "Stand-alone" system with CompactPCI CPU.



21 slots (4 HP each) = 84 HP, of which up to 17 peripheral slots (4 HP each) and at least one system slot for a CompactPCI bridge or slot CPU.

The possible combinations...

- 1 The classic PCI Express bus extension with connection of the measuring system via a PCIe x1 lane offers a transfer rate of 5.0 GT/s (PCIe Gen 2.0). Cascading of several subsystems is possible. As host adapter you can choose between a standard PCIe card for desktop computers or a low-profile PCIe card, e.g. for embedded box PCs.
- 2 As an alternative to the bus extension, you can also use a CompactPCI processor card. This gives you the entire computing power exclusively for your measuring system.

The systems are configured according to your wishes incl. measuring, control and interface cards (e.g. CAN bus). Depending on the application, you can choose between compact desktop housings in various designs and systems for 19" rack mounting. Depending on the enclosure and backplane, system variants with up to 17 peripheral slots (4 HP each) are available.

Complete systems | Hybrid 8 Slot

The new generation of the proven ALLDAQ ADQexpress systems is here!



To match the newly developed ADQ boards in the fast PXIe standard, we have also updated the next generation of our proven ADQexpress systems for you. 2x 8 slot systems in one rack are also possible.

Benefit from the speed of our new systems and ADQ boards! Flexible and reliable in use for your application!



Application example

ADQexpress rack of the latest generation with X4 lane bridge card and four built-in ADQ-348 multifunction boards, three further slots are still free. The connection to the computer is made via the X4 cable and the PCIe card built into the host computer.

The measurement task of this configuration was the synchronous sampling of 128 analogue input channels with 100KHz each, which this system was able to master!

New Kits in Town

The components of the new Hybrid Kit: Hostcard, x4 Lane Cable, Bridgecard and Backplane



Brief description

The system controller slot 1 of the backplane is a system slot with 4-link configuration as defined in the CompactPCI Express and PXI Express specification.

The backplane connects the system slot to the peripheral slots via three PCIe X4. One PCIe link of the system slot is connected to a PCIe switch via PCIe Gen 2 X1. The PCIe-to-PCI bridge provides the PCI connection to the PXIe hybrid slots and the PXI legacy slot.

The PXIe hybrid slots 3 and 4 are connected to the PCI bus. The PCIe-to-PCI bridge provides a 32-bit, 33Mhz PCI bus.

To support higher data rates on the PCI bus, the PCI bus can be configured for 32-bit and 66Mhz operation according to the CPCI specification.

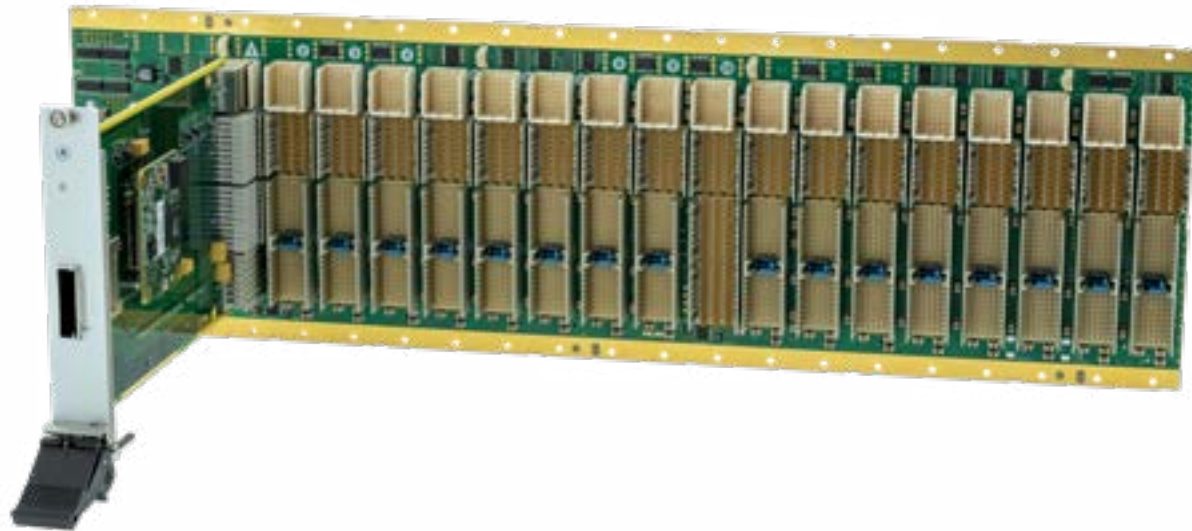
The system controller slot also provides connectivity for PXI_CLK10, PXI Trigger Bus and PXI Local Bus 6.

The mechanical button on the front panel switches PWRBTN# from open circuit to GND to open circuit. The system board uses this ON/OFF state to control the PS_ON# signal. The PS_ON# signal turns on the main power supply to the backplane.

PXIe peripheral slot: The backplane has a PXIe peripheral slot 2. The peripheral slot is fully compliant with the PXI-5 PXI Express hardware specification. The backplane connects the system slot to the PXIe peripheral slot via PCIe Gen2 X4.

Complete systems | PXIe / cPCI 18 Slot

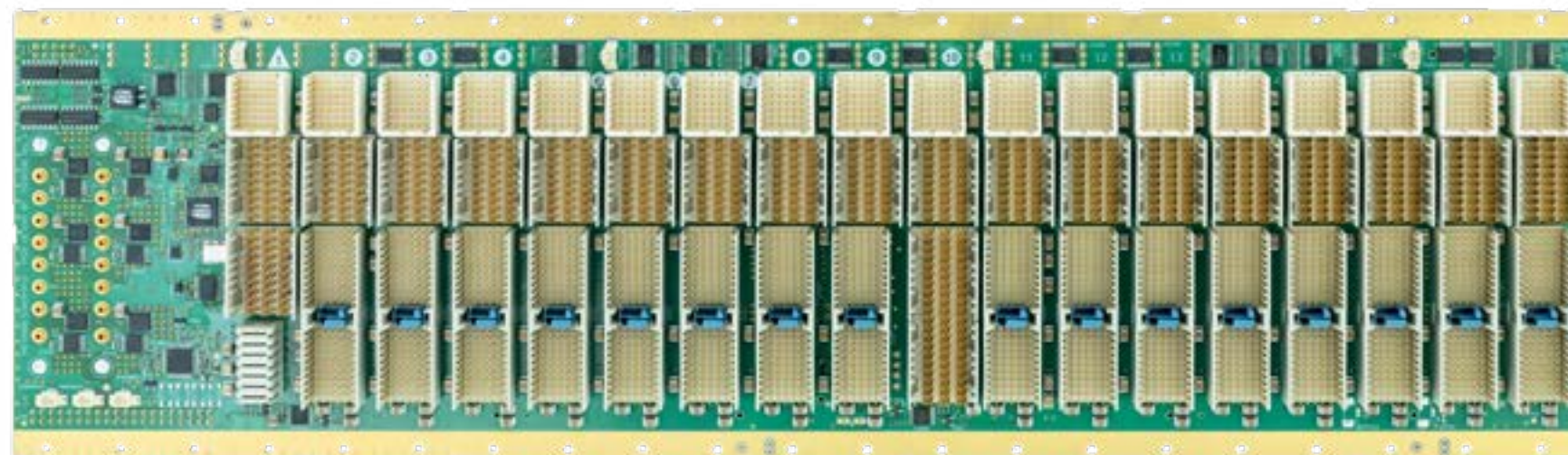
The new hybrids



18 slot PXIe/cPCI hybrid backplane with bridge card

- Complies with PXI and CompactPCI specification
- 0-70°C temperature range
- PXI Express clock with low jitter and 25 ppm stability
- Multi-vendor software interoperability
- Multi-vendor interoperability of PXI modules
- 10 MHz PXI_CLK10 clock input / output
- Galvanically isolated HD trigger input and output connectors
- INHIBIT control switch connector
- Voltage monitoring connector
- Microcontroller-based:
- Fan control
- Status indicator LED connections Detection of
- Fan failure detection
- Filtered fan power and connections for PWM-based fan control
- Isolation of various PXI_Trigger segments
- Power input via power bucks
- Power input via 2 8W8 DSUB power connectors (2400W without considering derating EFORE, RCB1200 PSU)
- Power rail controller to support PSU-Failover / 1+1 redundant PSUs
- Three info LED outputs

- The backplane is fully compliant with the PXI-5 PXI Express hardware specification.
- On the backplane are one PXIe system slot, 16 fully hybridised peripheral slots and 1 PXIe system timing slot are available.
- The backplane is not a stand-alone device.
- For proper PXI Express functionality, the backplane must be equipped with the correct set of mezzanine modules.



Everything fits in there!

Here you can see an example of two ALLDAQ boards with form factors that fit into this backplane.

- The brand new ADQ-259 PXIe with 24Bit 1.5Ms/S Analogue Acquisition
- The classic ADQ-412 cPCI

So you can mix and match as you like, whether PXIe or cPCI - up to 17 boards in total. You can also use boards from other manufacturers of this standard.

PXIe connection



ADQ-259 PXIe

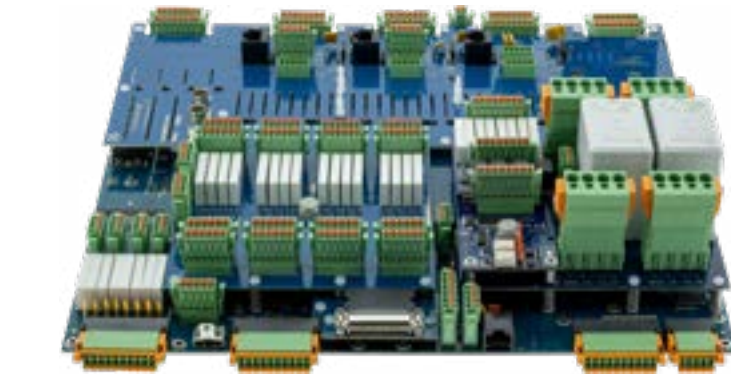
cPCI connection



ADQ-412 cPCI

ADQ-SCU

Signal conditioning



ADQ-ADJ adjustment/calibration adapter

Features

- 32 analogue input channels with different attenuations and programmable low-pass filters for audio signal analysis
- Input coupling (AC/DC)
- Measurement and mathematical evaluation of relevant parameters
- Monitor and playback function for any two input channels
- 8 analogue output channels short-circuit-proof for generating signals (e.g.: audio).
- 8 digital inputs with a typical input voltage of 24 Vdc
- 8 digital outputs with a max. output current of 600 mA per channel
- 8 freely assignable SPDT relays for ext. components with self-healing 4 A fuses
- Expandable via plug-on modules (ADQ-RB-16/8, ADQ-RB-32/0, ADQ-SCU-PB50)
- 3x ADQ-LINK for integration of external components (e.g.: ADQ-LB-SYSTEM, ADQ-48)
- Simple control via ALLDAQ driver system
- API for easy integration into your applications
- Temperature monitoring with threshold setting and opto-decoupled alarm outputs
- Optimised for operation with the ADQ-348 isolated measuring and control card

Brief description

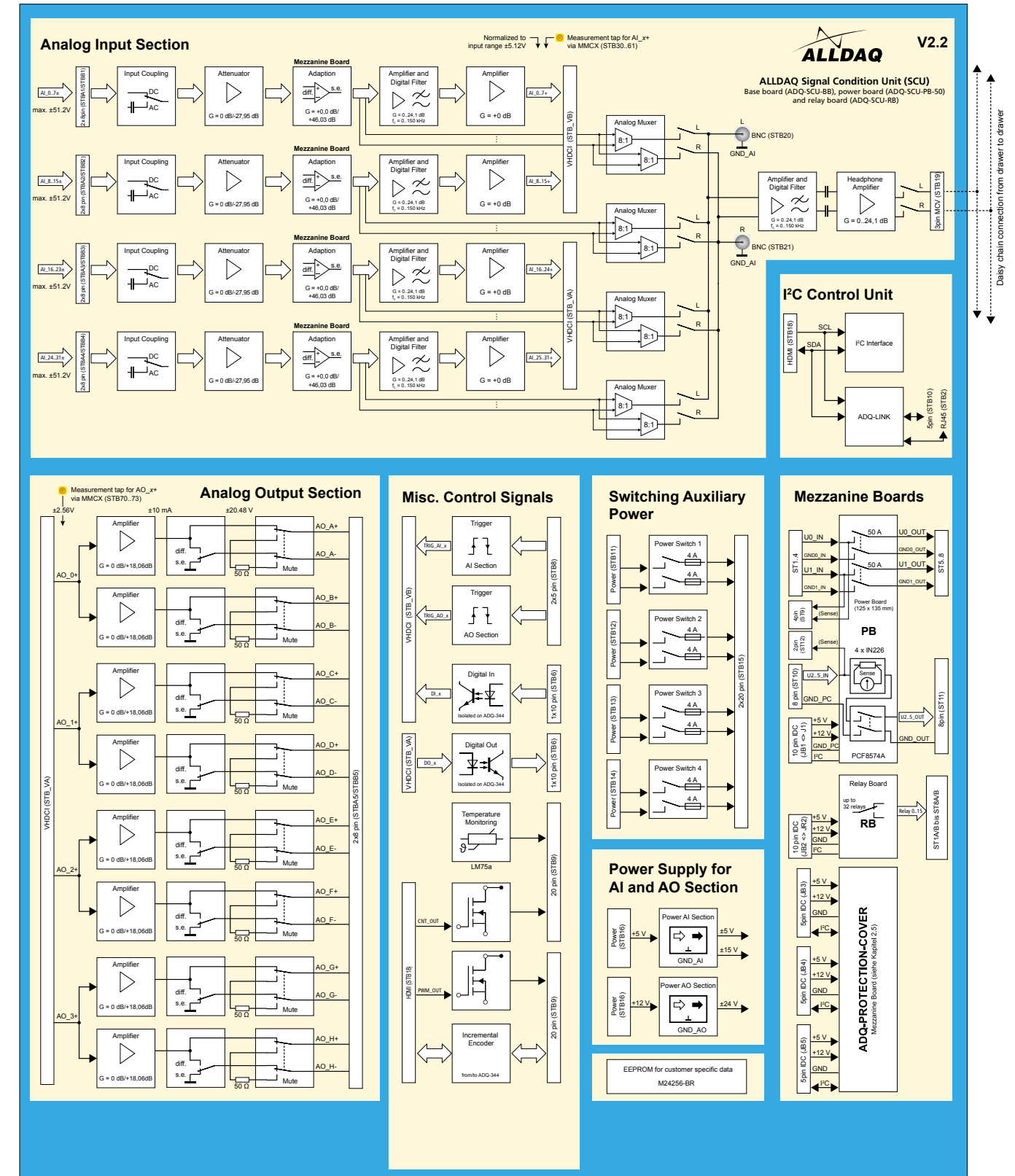
The development is permanently in motion. Even though digitalisation continues to advance, many components still have analogue inputs and outputs, as well as switching outputs for external components that need to be tested or adjusted in detail.

The ALLDAQ ADQ-SCU signal conditioning unit was developed to optimally adapt a large number of analogue and digital inputs/outputs to the requirements of a complex, automated measurement and test system. The signals are acquired and generated synchronously via the multifunctional ALLDAQ ADQ-348 measurement and control board, which simultaneously controls the ADQ-SCU via I2C bus. Equipped with an ADQ-412 current measuring card, dynamic currents including quiescent current measurement of the DUT can also be recorded.

The ADQ-ADJ adapter is available for the adjustment of a complete measuring system with ALLDAQ signal conditioning. This is fully supported by the ALLDAQ driver and enables on-site adjustment.

The ADQ-ADJ adapter is also available with DAKS certification.

Block diagram

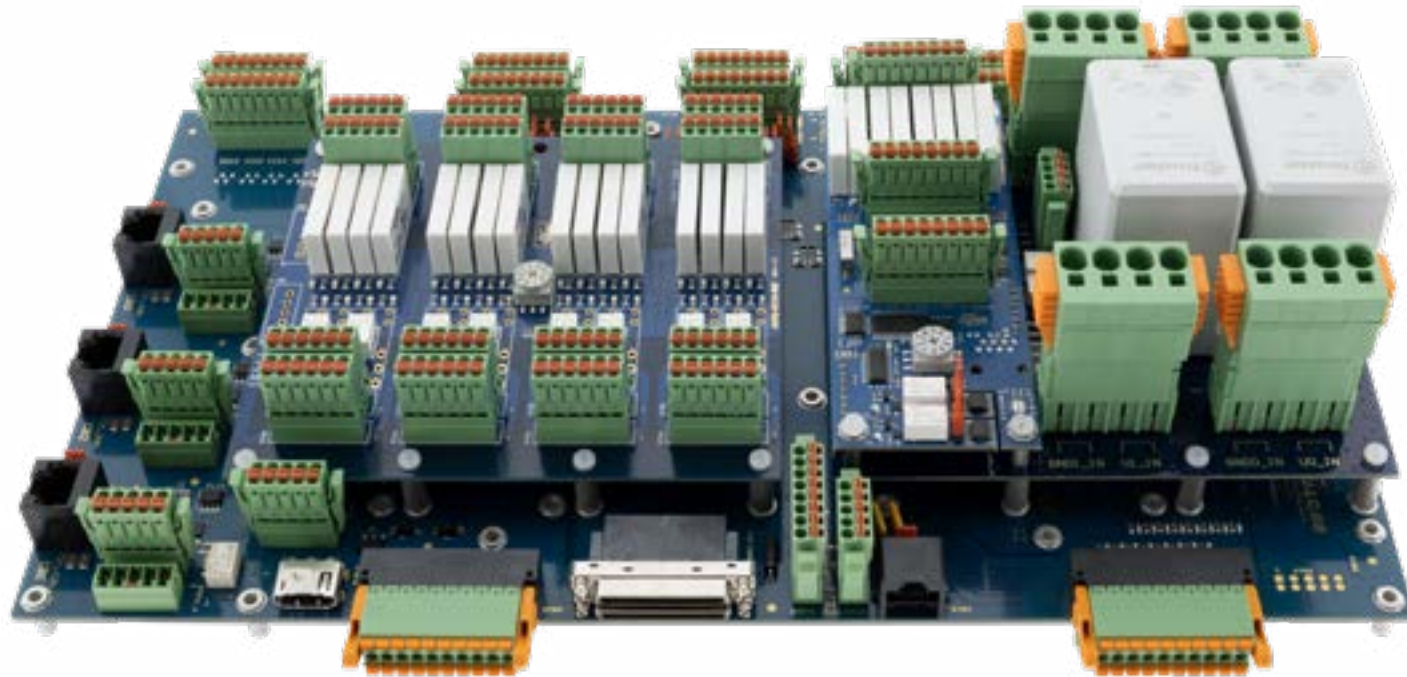


Order information

Name	Art. no.	Description
ALLDAQ ADQ-SCU-BB	193697	Baseboard for Signal Condition Unit (SCU)

ADQ-LC

Signal conditioning



Features

- 32 analogue input channels for the analysis of signals
- Input coupling (AC/DC), selectable via jumper
- Measurement and mathematical evaluation of relevant characteristic values
- 8 analogue output channels for generating signals (e.g.: audio).
- 8 digital inputs with a typical input voltage of 24 Vdc
- 8 digital outputs with a max. output current of 600 mA per channel
- Expandable via plug-on modules (ADQ-RB-16/8, ADQ-RB-32/0, ADQ-SCU-PB50)
- 3x ADQ-LINK for integration of external components (e.g.: ADQ-LB-SYSTEM, ADQ-48)
- Simple control via ALLDAQ driver system
- API for easy integration into your applications
- Temperature monitoring with threshold setting and opto-decoupled alarm outputs
- Optimised for operation with the ADQ-344 isolated measuring and control card

Brief description

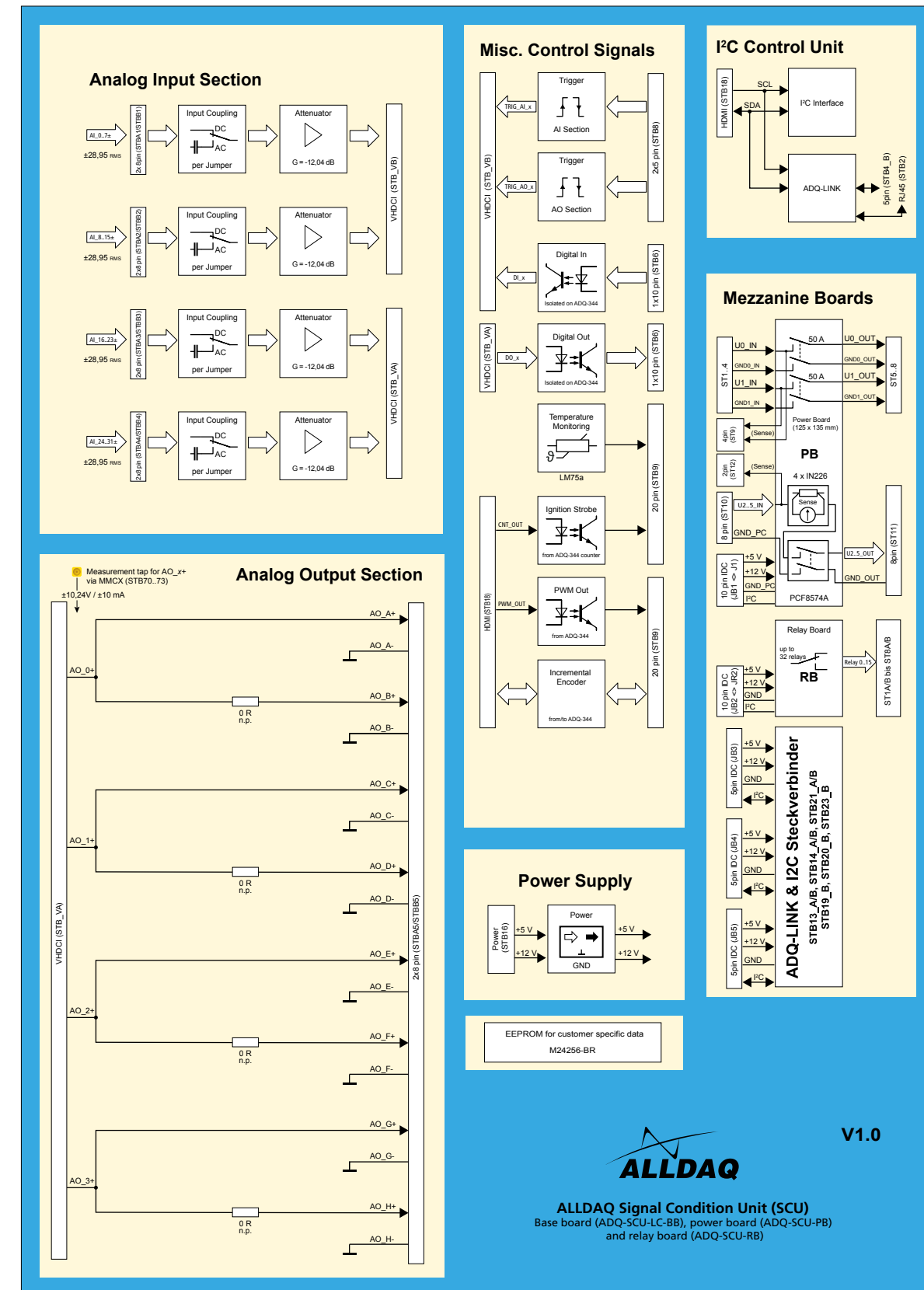
The ALLDAQ ADQ-SCU-LC signal conditioning unit was developed to optimally adapt a multitude of analogue and digital inputs/outputs to the requirements of a complex, automated measuring and test system. The signals are ac-

quired and generated synchronously via the multifunctional ALLDAQ ADQ-344 measurement and control card, which simultaneously controls the ADQ-SCU-LC via I2C bus.

Bestellinfos

Name	Art. no.	Description
ALLDAQ ADQ-LC-BB	172350	Low Cost Baseboard Signal Condition Unit

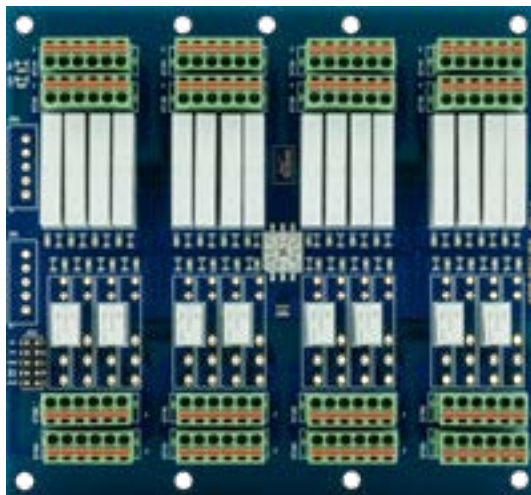
Block diagram



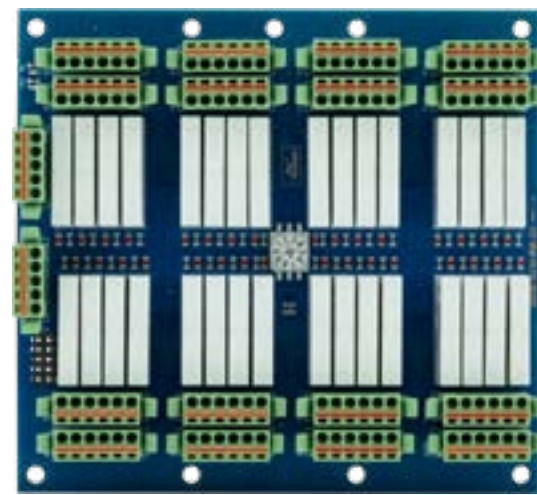
ALLDAQ V1.0
ALLDAQ Signal Condition Unit (SCU)
 Base board (ADQ-SCU-LC-BB), power board (ADQ-SCU-PB)
 and relay board (ADQ-SCU-RB)

Plug-on relay boards for ADQ-SCU / ADQ-LC

ADQ-SCU-RB - Plug-on relay boards for Signal Condition Unit ADQ-SCU and ADQ-SCU-LC



Plug-on relay board ADQ-RB-16/8



Plug-on relay board ADQ-RB-32/0

Brief description

Consumers with higher power ratings often have to be switched on or off. Since in most cases the control current of digital circuits is seldom sufficient, relays are suitable for this purpose. The use of a relay also creates a galvanic separation between the load circuit and the control of the relay. ALLDAQ offers the corresponding relay types which differ in the switching current. The small-signal relay has a silver-nickel contact with a galvanically applied hard gold plating. Gold is largely less sensitive to industrial atmospheres. In the range of small switching capacities, lower and more constant contact resistances result than with other contact materials.

Features

- Relay plug-on board (I2C-controlled from baseboard)
- 16 change-over relays (SPDT, type C), max. 30 VDC/6 A (ADQ-RB-16/8), 8 small-signal change-over relays (SPDT, type C), max. switching power 62.5VA/30W DC (ADQ-RB-16/8), contact resistance 1 A/6VDC max. 75mΩ at 1 A/6VDC
- 32 change-over relays (DPDT, type C), max. 30VDC (ADQ-RB-32/0)
- Other relay configurations possible
- Status LED per relay

Order information

Name	Art. no.	Description
ALLDAQ ADQ-RB-16/8	181516	Plug-on relay board for SCU/LC baseboard
ALLDAQ ADQ-RB-32/0	181487	Plug-on relay board for SCU/LC baseboard

ADQ-SCU-PB-50 with ADQ-PB-ADDON1- Powerboard for the Signal Condition Unit (SCU) for plugging onto the ADQ-SCU(-LC)



ADQ-SCU-PB-50/20

Brief description

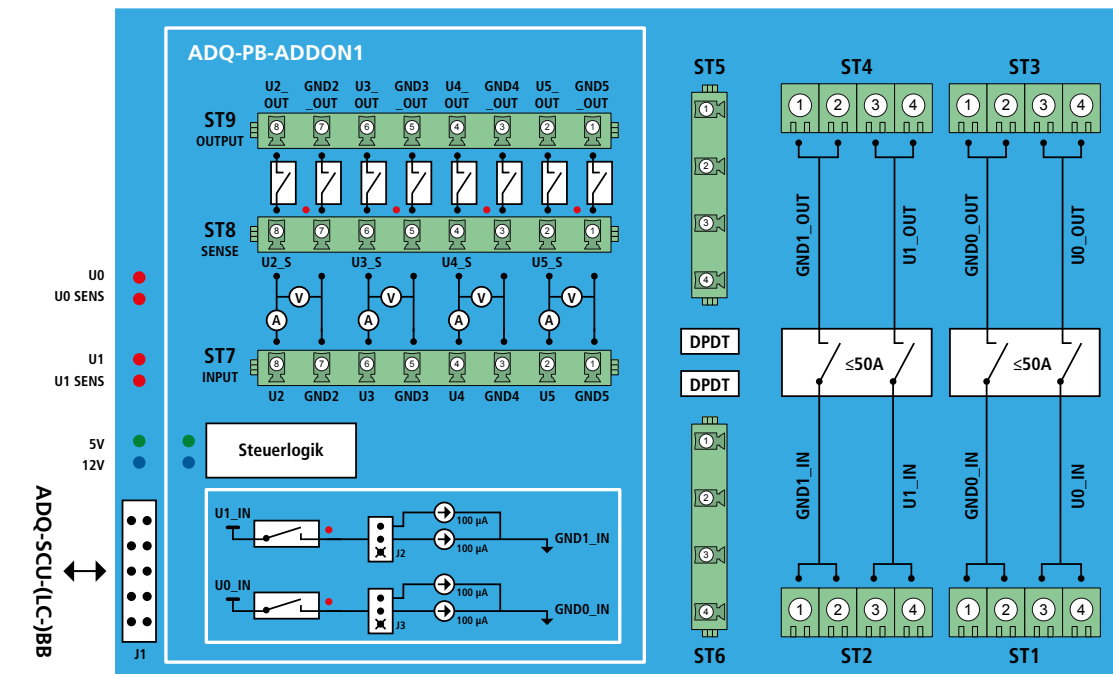
There are two switchable high-current paths up to 50A and 100VDC. The associated sense connections for the power supply can be switched either directly to the board or via the board to the DUT. These two paths can be loaded with two independent current sinks (100µA/200µA) and thus adjusted in-system. Optionally also by a customised load.

Furthermore, there are four independent and switchable supply paths, on each of which the voltage and current are also measured (max. ±40.96VDC/6A).

The DUT is always completely enabled on all six paths.

Block diagram

ADQ-SCU-PB-50



Order information

Name	Art. no.	Description
ADQ-SCU-PB-50/20 (V2.0)	187912	Powerboard for Signal Condition Unit (SCU) for plugging into ADQ-SCU-BB, Maximum voltage of the power measuring channels: 20.48V
ADQ-SCU-PB-50/40 (V2.0)	206246	Powerboard for Signal Condition Unit (SCU) for plugging into ADQ-SCU-BB, Maximum voltage of the power measuring channels: 40.96V

Overview ADQ-SCU systems

For the ALLDAQ signal conditioners described above, you can easily determine the variant that suits your application from the matrix.

The modules described with "Light" are the basic equipment. However, they can be easily supplemented later with the corresponding ALLDAQ data acquisition cards or ALLDAQ plug-on cards.

In addition, you will receive the appropriate software solution for acquisition, processing and evaluation through the ALLDAQ driver system. See chapter ALLDAQ software support.

Option	ADQ-SCU Light	ADQ-SCU	ADQ-SCU-LC Light	ADQ-SCU-LC
Analog AC/DC voltage measurement inputs	32 (max. 78 Vp)	32 (max. 78 Vp)	32 (max. 28 Vp)	32 (max. 28 Vp)
Analog AC/DC voltage generator outputs	8 (max. 14 Vp)	8 (max. 14 Vp)	4 (max. 10 Vp)	4 (max. 10 Vp)
Analog input ranges (in/out)	4/2	4/2	fix/fix	fix/fix
Programmable AC/DC coupling	✓	✓	2 jumpers (+/-)	2 jumpers (+/-)
Programmable low-pass filters	✓	✓	✗	✗
AUX relays	8	8	✗	✗
Monitor outputs	✓	✓	✗	✗
Headphone outputs	✓	✓	✗	✗
Power DIO	8//8	8//8	8//8	8//8
Standard I2C ports for external extensions	3	3	3	3
ADQ-LINK ports for external extensions	3	3	3	3
Dedicated current measurement channels	✗	✓	✗	✓
Power Board	✗	✓	✗	✓
GPIO Relay Board	✗	✓	✗	✓

✓ Supported

✗ Not supported

Monitor outputs

It is possible to route any two of the 32 analogue analyser channels to BNC sockets to forward the signals to an external measuring device.

Headphone outputs

It is possible to route any two of the 32 analogue analyser channels to headphones for human evaluation of the input signal.

Power DIO

Digital I/O section with 8 digital inputs and 8 digital outputs. Both the inputs and outputs can handle voltages up to 35 V; the outputs can supply up to 600 mA each.

ADQ link connections for external extensions

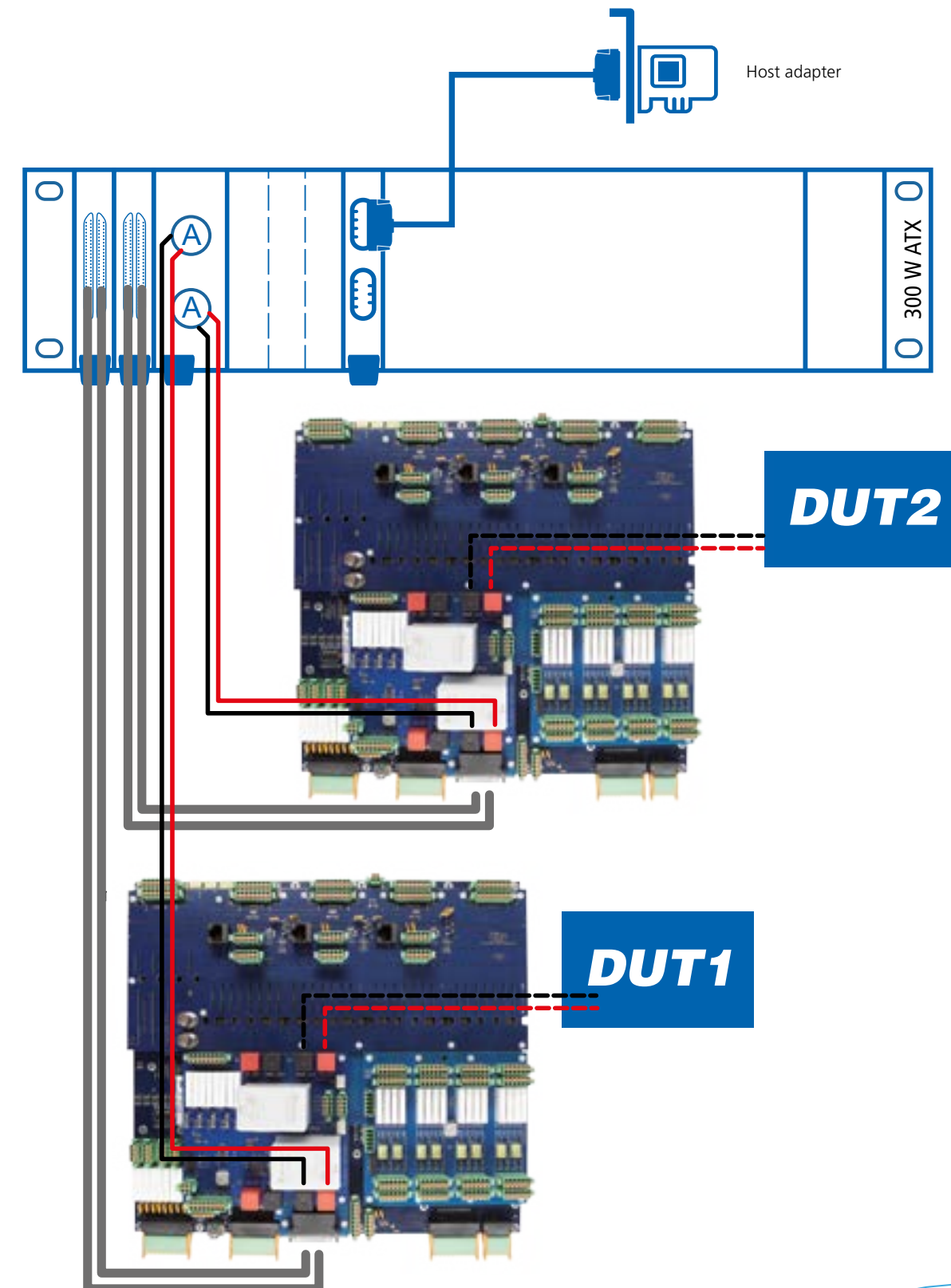
With the ADQ link, the system can be easily and reliably expanded with additional ALLDAQ hardware. For example, load box system, current sink, relay board, ...

Dedicated current measurement channels

There are always 2 dedicated, dynamic precision high current measurement channels available. If a power board is present, additional functions are available, e.g. reference current sink, auxiliary current paths with power measurement, ...

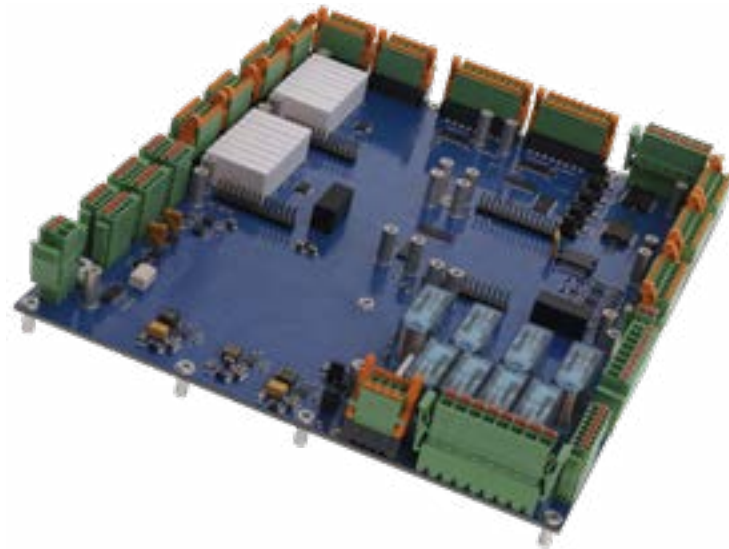
Example system configuration

Typical configuration from an ADQ-Express measuring system, equipped with 2 multifunction cards of the type ADQ-348 to control one signal conditioning unit ADQ-SCU each. In addition, one current measurement channel of the ADQ-412 is connected to a power board ADQ-SCU-PB-50 for each DUT.



ADQ-CDI-BB

Control and measuring unit for control in test systems and for automation processes



Features

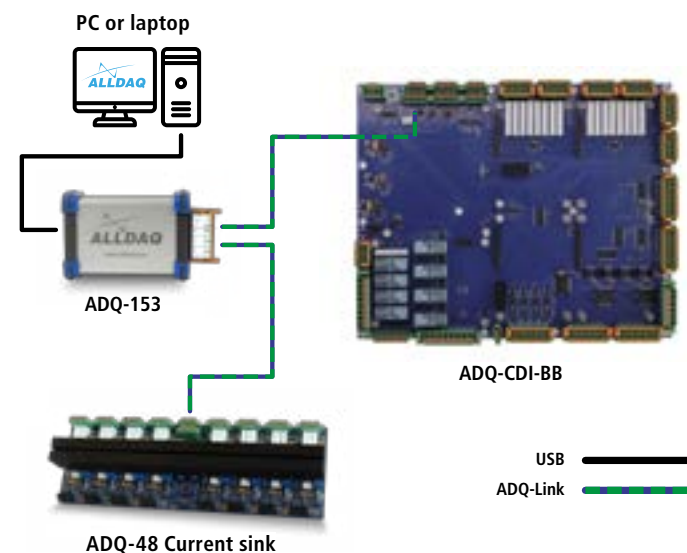
- 32 digital inputs 24VDC with programmable input filter
- 32 digital outputs 24VDC / 650mA (parallelisable)
- 4 switchable power measuring channels up to 30VDC with two current measuring ranges 10mA and 16A
- 4 temperature measuring channels for various thermocouples with 8 temperature-dependent alarm outputs
- 16 relays for up to 30VDC / 6A (optionally exchangeable with small-signal relays for digital and analogue signals)
- 12 analogue inputs up to 36VDC
- Onboard temperature monitoring (programmable) with fan output
- 2 ADQ-LINK outputs for further ALLDAQ peripherals such as relay board, load box or current sink
- Simple power supply 16-30VDC
- Onboard watchdog (programmable)

Brief description

The ADQ-CDI control and measurement unit has been developed for control in test systems and for automation processes. The numerous digital inputs and outputs as well as analogue inputs and relays easily cover most standard requirements. For further tasks, it is possible to add up to five project-specific plug-on boards or to connect further standard extensions from ALLDAQ via the ADQ-LINK.

Example structure

The ADQ-CDI-BB, for example, can be conveniently and reliably controlled via USB by an ADQ-153. The ADQ-LINK is realised via a twisted 2-wire cable.

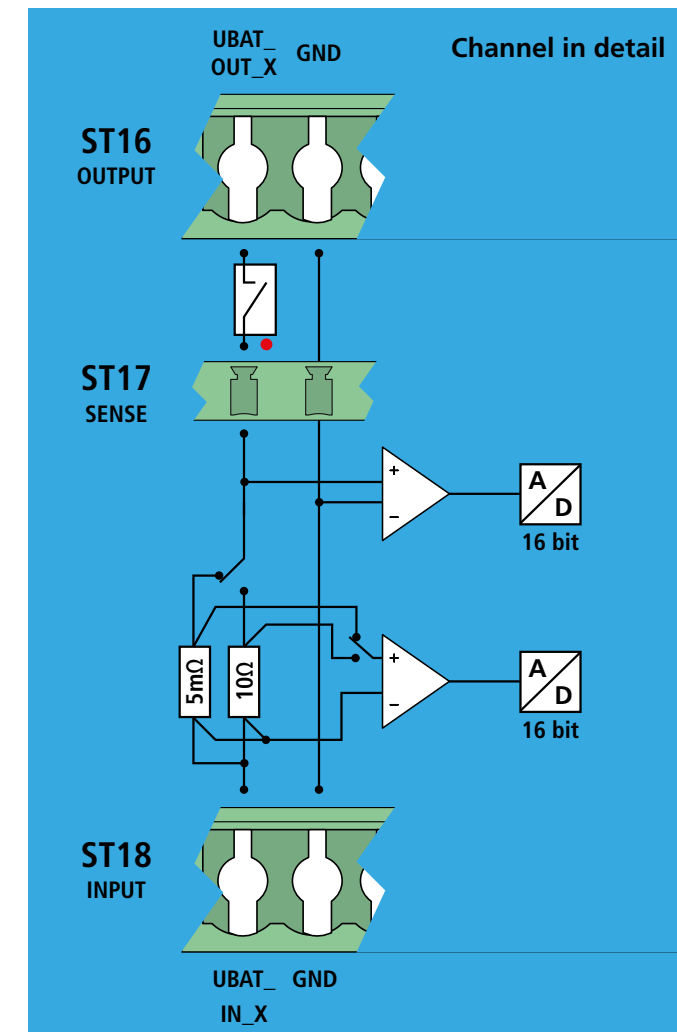


Supply paths with power measurement

Up to four independent supply voltages can be connected. The voltage and current can be measured on each path up to a maximum of 30VDC/16A. Measurements are made with 16 bit resolution and the recorded values can optionally be pre-processed (e.g. averaging).

In order to achieve the highest possible resolution for various standard measurement requirements such as quiescent current or maximum current consumption, there are two switchable current measuring ranges. Typically these are 16A and 8mA.

As soon as the current in the small current measuring range becomes too high, the ADQ-CDI-BB automatically switches to the large measuring range without interruption.



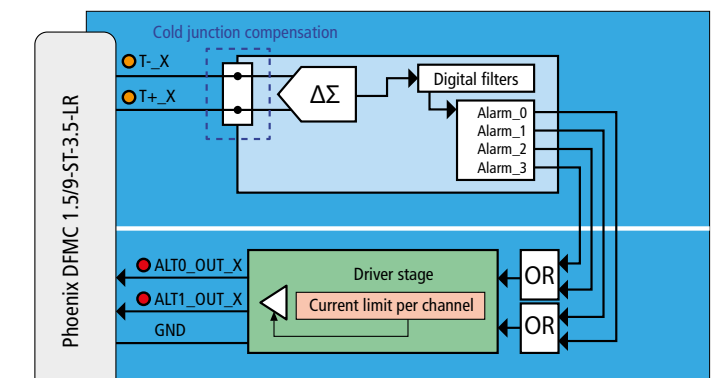
Block diagram of power measurement channels in detail

Temperature measuring channels

The ADQ-CDI-BB has 4 independent temperature measuring channels with integrated cold junction compensation. A thermocouple of type K, J, T, N, S, E, B or R can be connected to each channel. LEDs and the software indicate short-circuits and cable breaks at the thermocouple.

The galvanic isolation between the thermocouple and the PC effectively suppresses interference.

Independently of the system, two alarm outputs can be configured for each thermocouple, which are triggered in hardware when defined threshold values are exceeded or undershot. For example, a fan, a heater or a signal tone can be switched on directly depending on the application.



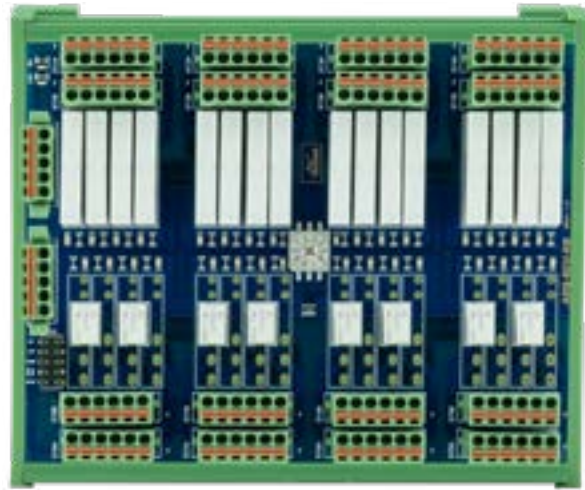
Block diagram of temperature measuring channels in detail

Order information

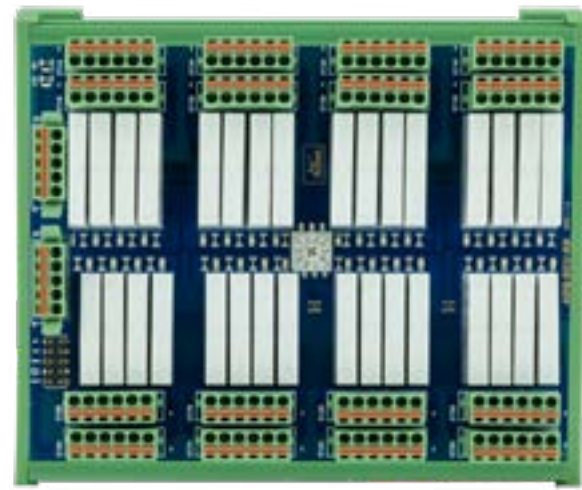
Name	Art. no.	Description
ALLDAQ ADQ-CDI-BB	195457	Base plate for Condensed Device Interface (CDI)

ADQ-31

32-channel relay board for top-hat rail mounting controllable via I²C/ADQ-LINK

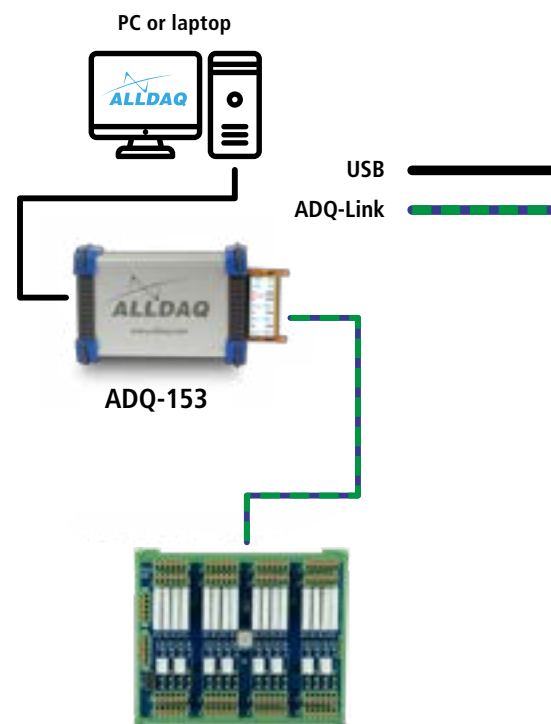


Relay board for HUT rail ADQ-31-16/8



Relay board for the HUT rail ADQ-31-32/0

Example structure



Brief description

Consumers with higher power ratings often have to be switched on or off. Since in most cases the control current of digital circuits is seldom sufficient, relays are suitable for this purpose. The use of a relay also creates a galvanic separation between the load circuit and the control of the relay. ALLDAQ offers the corresponding relay types which differ in the switching current. The small-signal relay has a silver-nickel contact with a galvanically applied hard gold plating. Gold is largely less sensitive to industrial atmospheres. In the range of small switching capacities, lower and more constant contact resistances result than with other contact materials.

Features

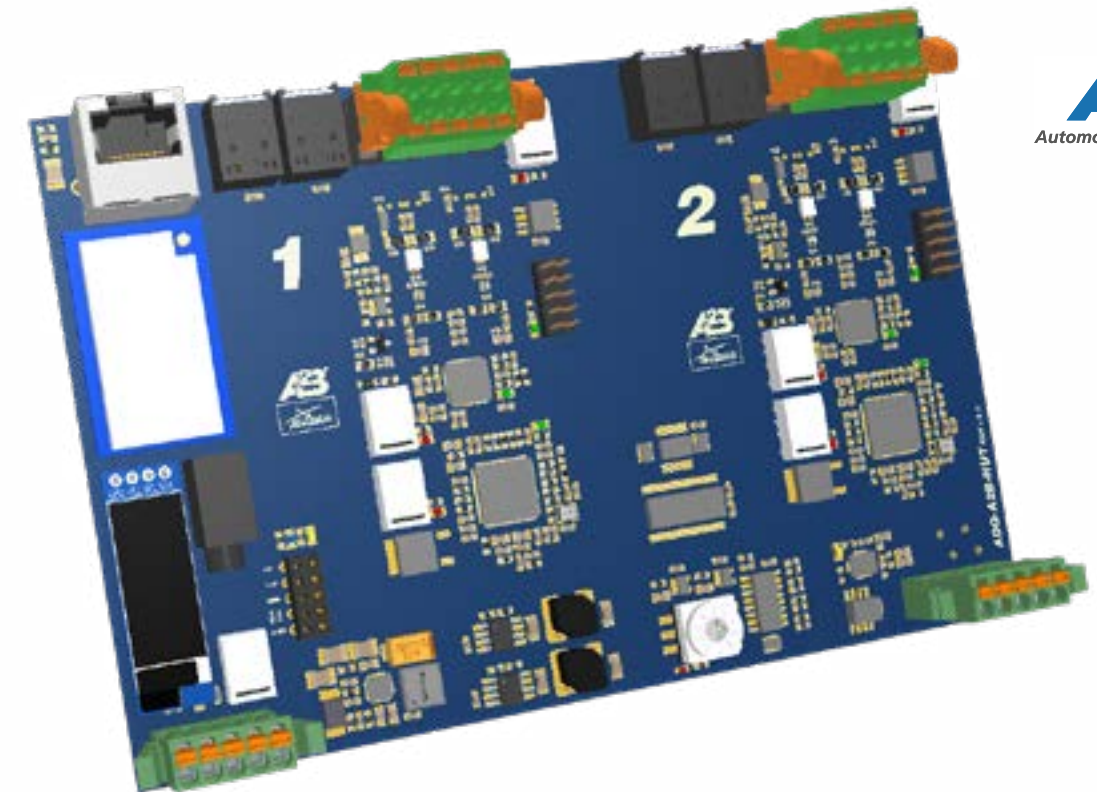
- Controlled by ADQ-LINK
- 16 change-over relays (SPDT, type C), max. 30 VDC/6 A (ADQ-RB-16/8), 8 small-signal change-over relays (SPDT, type C), max. switching power 62.5VA/30W DC (ADQ-RB-16/8), contact resistance 1 A/6VDC max. 75mΩ at 1 A/6VDC
- 32 change-over relays (DPDT, type C), max. 30VDC (ADQ-RB-32/0)
- Other relay configurations possible
- Status LED per relay

Order information

Name	Art. no.	Description
ALLDAQ ADQ-31-16/8 (V1.2)	181515	Relay board for the HUT rail, controlled via ADQ-LINK (e.g. ADQ-153)
ALLDAQ ADQ-31-32/0 (V1.2)	181065	Relay board for the HUT rail, controlled via ADQ-LINK (e.g. ADQ-153)

ADQ-A2B-HUT

Tool for the complete analysis of A2B systems



Brief description

The ADQ-A2B-HUT is a compact measurement and analysis unit for any SPDIF and A2B bus application. Audio streams can be routed arbitrarily via the inputs and outputs and simultaneously analysed digitally. At the heart of the ADQ-A2B-HUT is the analysis unit of the A2B bus, which can be used to emulate any conceivable role in the system. The full range of functions of the power supply of the A2B bus system can also be simulated in detail. From feeding phantom power to loading connected devices, everything is possible.

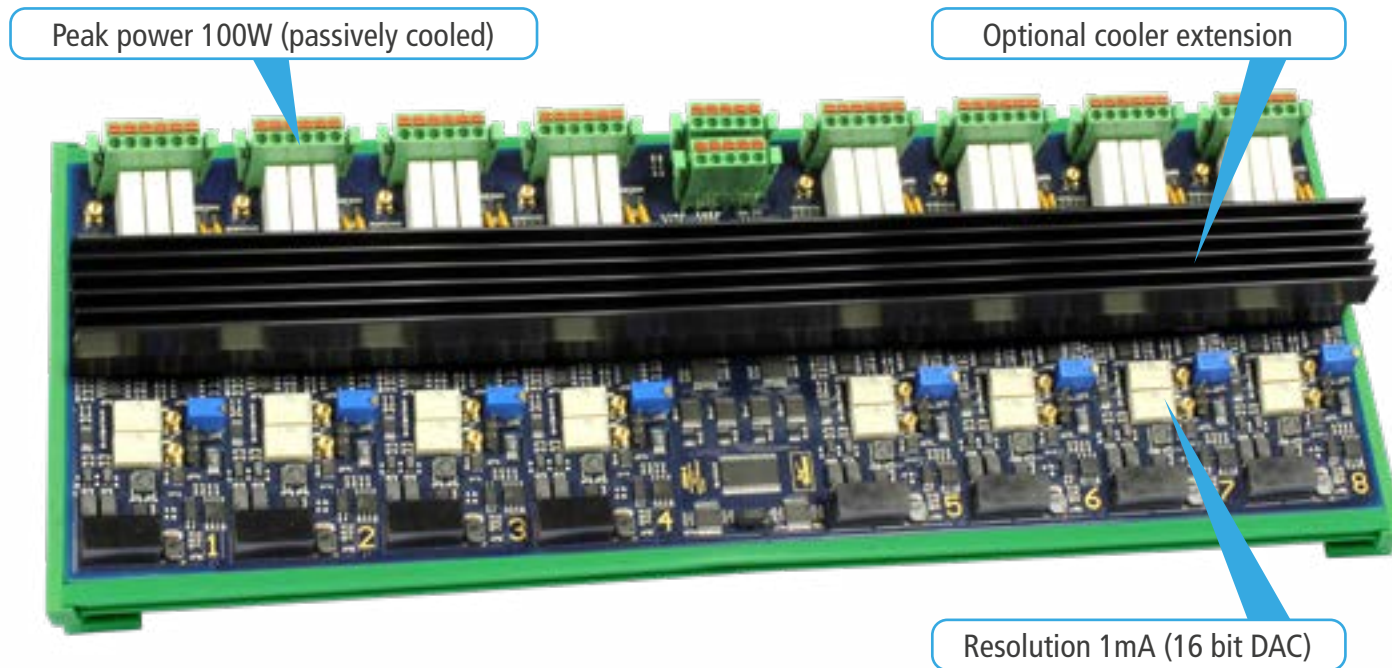
Features

- Signal analysis and generation for A2B & SPDIF
- Emulation of any role (master/slave) of the A2B system
- Full support for A2B Phantom Power
- 12-24V power supply
- Easy control via Ethernet or ADQ-LINK

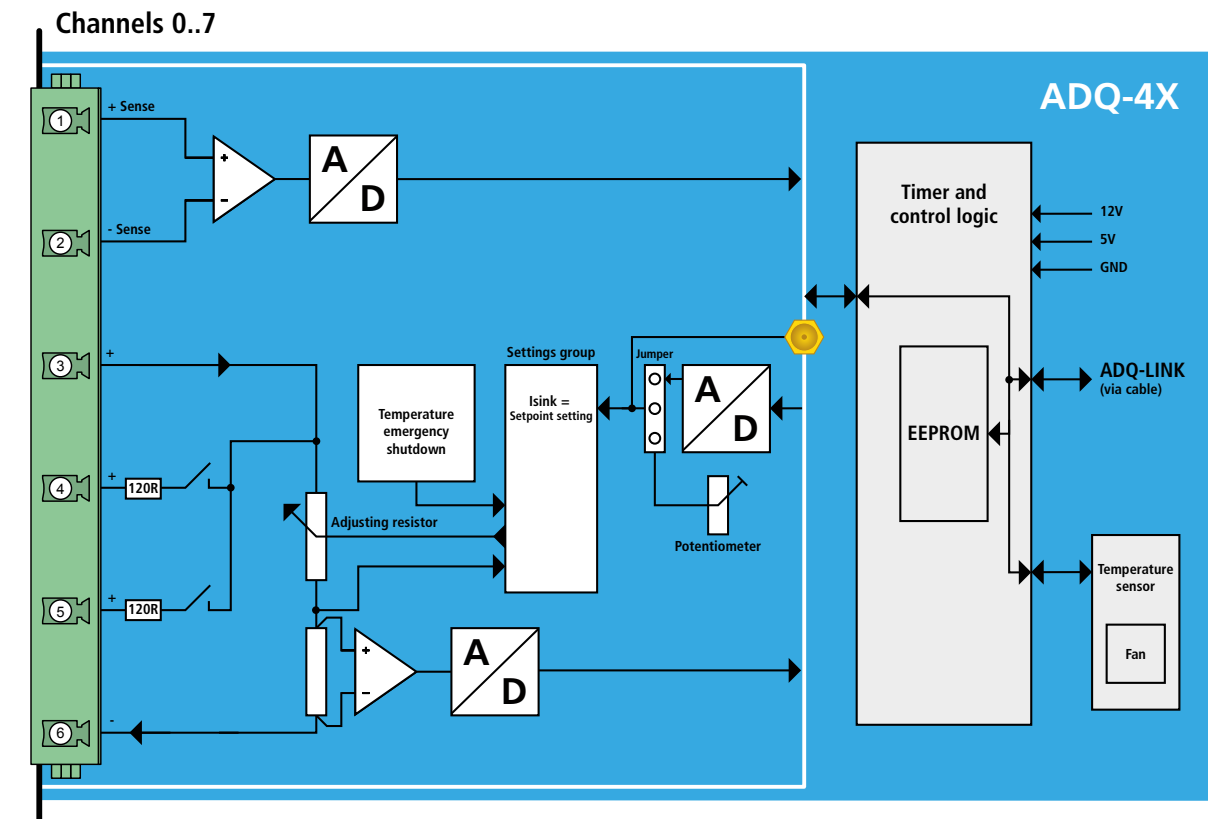
Of course, the most important parameters, such as phantom voltage or current, can be precisely monitored in all scenarios. The configuration and evaluation is done comfortably via the ALLDAQ driver or optionally via the SigmaStudio® tool from AnalogDevices. The control of the box also offers maximum flexibility. This can be done either via Ethernet or ADQ-Link. With a power supply of 12-24V, the DIN rail module can be easily integrated into existing measuring racks.

ADQ-40 series

Ideal for measurement technology, industry & automotive: programmable electrical load / current



Block diagram



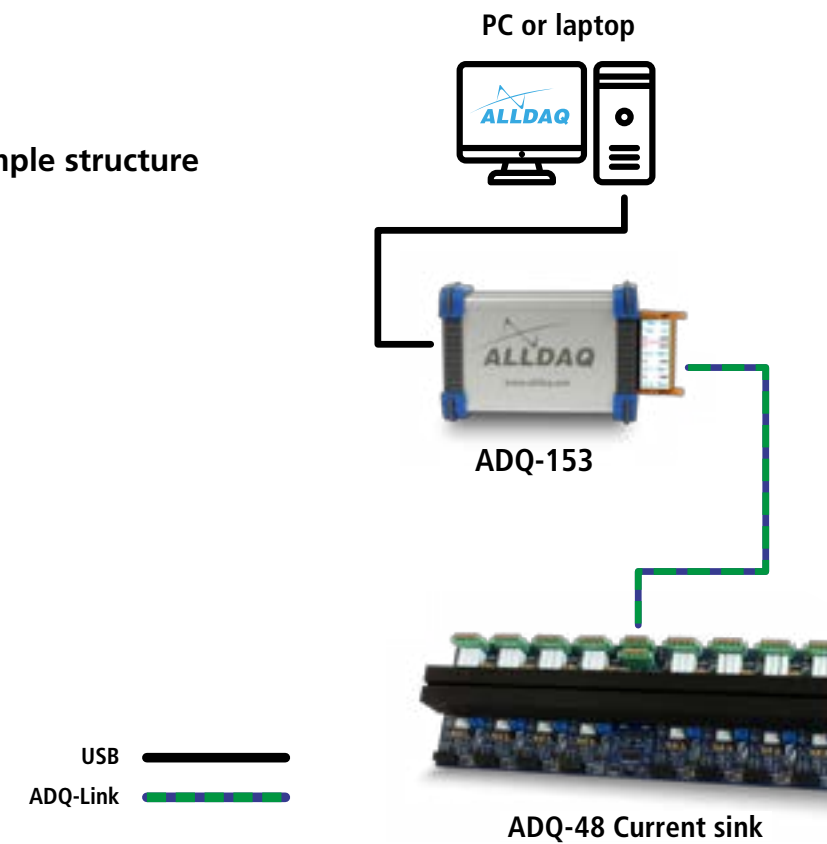
Features

- Up to 8 potential-free current sinks
- Continuous power 20W / peak power 100W
- Resolution 1mA (16 bit DAC)
- Up to 36V source voltage
- 12V supply voltage
- Internal measurement of current and voltage
- (16 bit ADC) per channel
- Sense line for monitoring source voltage
- Prog. Alert function (temperature, voltage, current) per channel
- Up to 40° ambient temperature (passively cooled)
- 12V fan connection for optional active cooler
- Emergency temperature shut-off with signal LED
- Programmable via I²C or analogue
- (via potentiometer or external control voltage)
- Simple address configuration via rotary switch
- Cascadable up to 8 boards per I²C bus
- ALLDAQ utility software incl. universal API
- Controlled via ADQ-LINK (e.g. ADQ-153)

Order information

Name	Art. no.	Description
ALLDAQ ADQ-42	187457	2 potential-free current sinks, ADQ-LINK, temp. emergency shut-off
ALLDAQ ADQ-44	158820	4 potential-free current sinks, ADQ-LINK, temp. emergency shut-off
ALLDAQ ADQ-48	158648	8 potential-free current sinks, ADQ-LINK, temp. emergency shut-off

Example structure



ADQ-LB system

ALLDAQ load box system - resistive loads up to 200W



Features

- Load of analogue signals of different levels
- Load of analogue signals up to 200W/channel
- Modular design (up to 32 channels, individually switchable load channels depending on expansion stage)
- Automatic fan control
- Emergency shutdown of individual loads in case of overheating of the load resistors, independent of software control
- Status indicators for power, relay, emergency shutdown and fan
- Optimised for operation with the ADQ-SCU or ADQ-SCU-LC
- Can also be used as stand-alone (simple control via ADQ-153)
- API for easy integration into your application
- Simple control via the ALLDAQ driver system
- Customer-specific extensions via plug-on modules
- Simple control via ADQ-LINK

Brief description

The signal conditioning unit ALLDAQ ADQ-LB system was developed for use in industrial automation in order to apply an appropriate ohmic load to the DUT in automated measurement and test systems (e.g. load of audio power amplifiers). The ADQ-LB system is controlled by the ADQ-LINK bus. ALLDAQ offers pre-configured ADQ-LB-LM modules for this purpose. Other loads are possible on request.

Up to 2 load modules are plugged into one base module and up to 16 x 4 channels can be operated. These modules not only provide a high precision resistor as a dummy load, but also forward the channel loaded in this way to the measurement mimic. This makes it possible to display the resulting signal fidelity e.g. on the virtual loudspeaker.

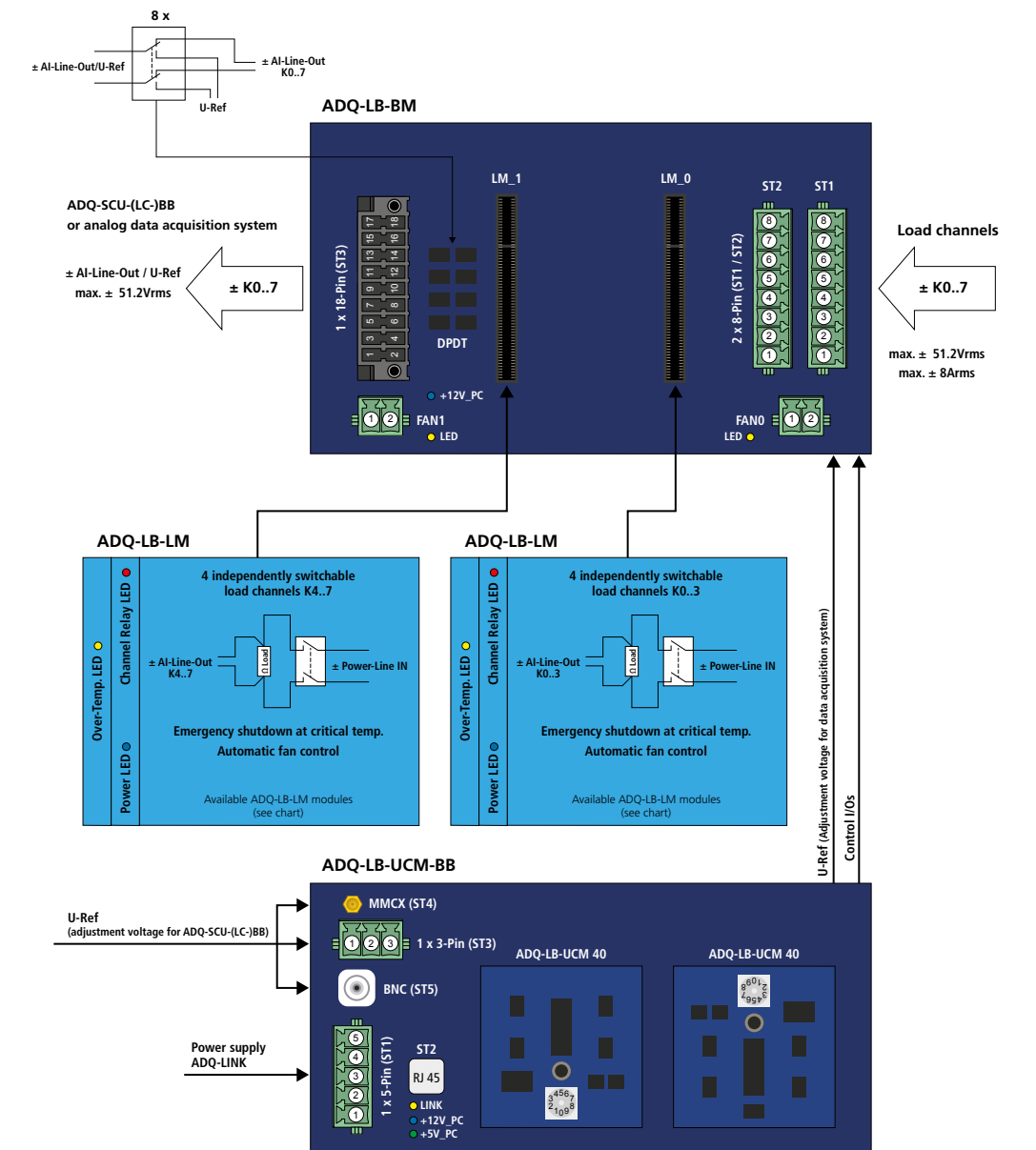
Due to the powerful passive and the automatic active cooling, it is also designed for continuous operation with up to 200W.

To fully exploit the potential of the ADQ-LB system, a combination with the ALLDAQ signal conditioning unit ADQ-SCU/LC and the multi-function measuring card ADQ-348 is recommended.

Specifications

ADQ-LB		
	ADQ-LB-BP	465 x 170 x 20 mm
Dimensions (W x D x H)	ADQ-LB-UCM	71 x 166 x 50 mm
	ADQ-LB-BM	115 x 76 x 49 mm
	Total height	145 mm

Block diagram



Block diagram ADQ-LB system

Order information

Name	Art. no.	Description (resistors and power per resistor)
ALLDAQ ADQ-LB-LM-2/2	180737	4x 2 Ohm, 200W
ALLDAQ ADQ-LB-LM-4/2	180618	4x 4 Ohm, 200W
ALLDAQ ADQ-LB-LM-8.8.10.2/2	180620	2x 8 Ohm, 1x 10 Ohm, 1x 2 Ohm, 200W
ALLDAQ ADQ-LB-LM-8/2	180406	4x 8 Ohm, 200W
ALLDAQ ADQ-LB-LM-10/2	180619	4x 10 Ohm, 200W
ALLDAQ ADQ-LB-LM-16/2	189212	4x 16 Ohm, 200W
ALLDAQ ADQ-LB-BP	184362	Backplane for the ADQ-LB series
ALLDAQ ADQ-LB-BM	180404	Backplane for the ADQ-LB-LM modules
ALLDAQ ADQ-LB-UCM	182356	Universal Control Module for controlling the ADQ-LB-SYSTEM via ADQ-LINK
ALLDAQ ADQ-LB-MH	189126	Mechanical holder for two load modules (ADQ-LB-LM) on one base module (ADQ-LB-BM)

Each load box module is designed for 4 channels. The following standard configurations are currently available; other configurations are possible and available on request.

ADQ-51

Ideal for automatic controllers and test benches with 8 digital inputs and outputs each



Features

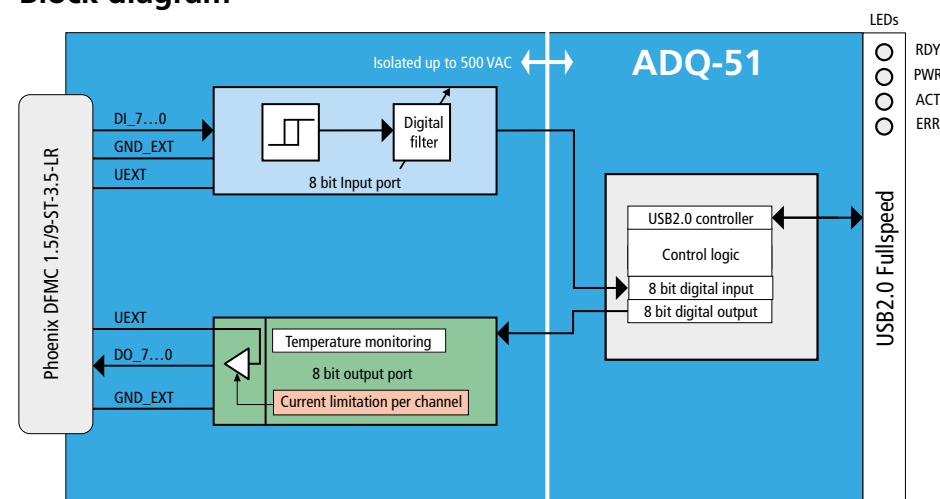
- Controllable via USB
- Isolated from USB
- 8 digital outputs (up to 600 mA each)
- Parallel connection of outputs possible
- 8 digital inputs
- I/O level: typ. 24 VDC (16..35 VDC)
- Various status LEDs
- All plugs locked or increased plug-in force
- Robust aluminium housing
- Extensive software support

Brief description

The ADQ-51 digital I/O box is suitable for use in industrial automation and control technology. The galvanic isolation of 500 VACeff. between field wiring and PC effectively suppresses interference. To protect against contact bounce, these boxes also offer the possibility of programming a digital filter per input port.

The ADQ boxes have 8 isolated digital inputs and 8 isolated digital outputs. The inputs have a Schmitt-trigger characteristic and are designed for a max. input voltage of 35 V. Each output can drive up to 0.6 A. To increase the output current, parallel connection of several outputs is possible, so that no external driver stage is necessary for many applications.

Block diagram



Order information

Name	Art. no.	Description
ALLDAQ ADQ-51	162744	USB2.0 to 8 isolated digital inputs, 8 isolated digital outputs with power driver
ALLDAQ ADQ-51	162782	Without housing

ADQ-54-TC

Ideal for automatic controllers and test benches with 4 isolated, independent thermocouple channels with digital alarm outputs



Features

- 4 thermocouple types: K, J, T, N, S, E, B, R
- Integrated cold junction compensation for each channel
- 8 digital alarm outputs (up to 600 mA each)
- Error detection in case of short circuit or cable break at thermocouple
- Isolated from USB of PC
- Controllable via USB 2.0
- Various status LEDs
- Locked plug or increased plug-in force
- Robust aluminium housing
- Extensive software support

Brief description

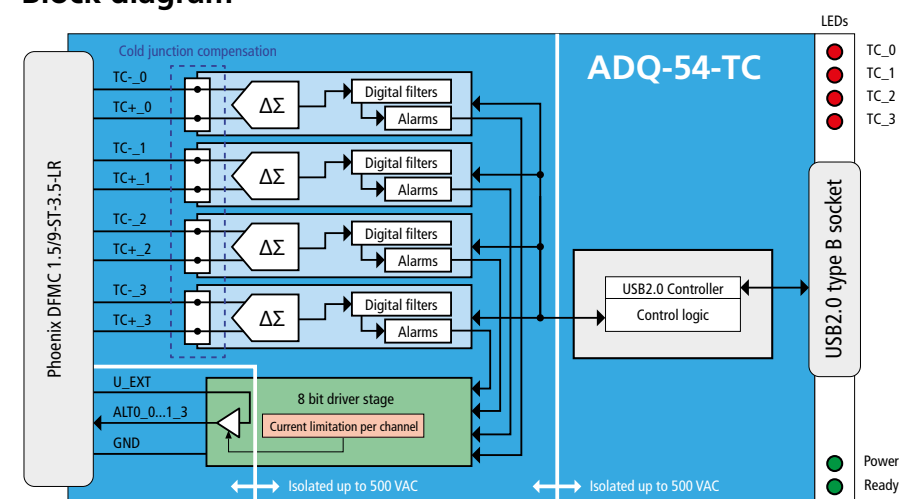
The ADQ-54-TC thermocouple box is suitable for use in industrial automation and control technology. The galvanic isolation between field wiring and PC effectively suppresses interference.

The ADQ box has 4 independent temperature measuring channels with integrated cold junction compensation. A thermocouple of type K, J, T, N, S, E, B or R can be connected

to each channel. LEDs and the software indicate short-circuits and cable breaks at the thermocouple.

Independently of the system, two alarms can be configured for each thermocouple, which are triggered in hardware when defined threshold values are exceeded or undershot. For example, a fan, a heater or a signal tone can be switched on directly depending on the application.

Block diagram



Order information

Name	Art. no.	Description
ALLDAQ ADQ-54-TC	193119	USB2.0 to isolated 4 thermocouple channels with 8 alarm outputs

ADQ-LINK

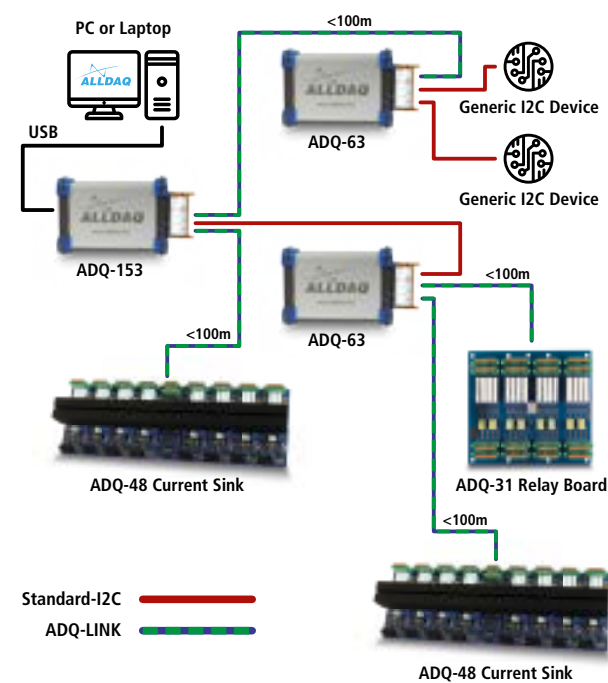
The simple and reliable connection for industry

Brief description

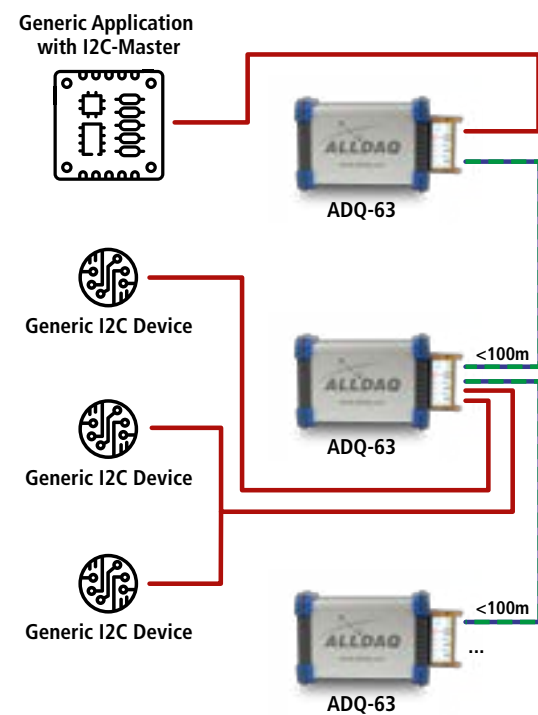
Two ALLDAQ products can be reliably and easily connected to each other via the ADQ-LINK (point-to-point) and communication can be established. Physically, there is a differential connection. This makes the ADQ-LINK perfectly suited for use in harsh environments. Even in compact control cabinets, where it is not always possible to maintain optimal cable routing and decoupling between power lines and analogue or digital signal/control lines, the ADQ-LINK works stably. The ADQ-LINK connects two participants up to 100m

without loss of speed or robustness. For shorter distances, the power supply can also be looped from one participant to the other through the same cable. The longer the cable, the higher the displacement of the respective ground potentials. However, this is not a problem due to the capacitively insulated link cables.

Example network with ALLDAQ driver



ADQ-63 as I2C repeater without ALLDAQ driver



ADQ-153 / 63

Ideally suited for use in industrial automation and control technology

Brief description

The ADQ-153 and ADQ-63 extend the simple I2C bus. One bus becomes three independent I2C buses or ADQ-LINKs per box. This means that you can, for example, operate three terminals with the same addresses on the same bus.

The ADQ-153 and ADQ-63 are suitable for use in industrial automation and control technology.

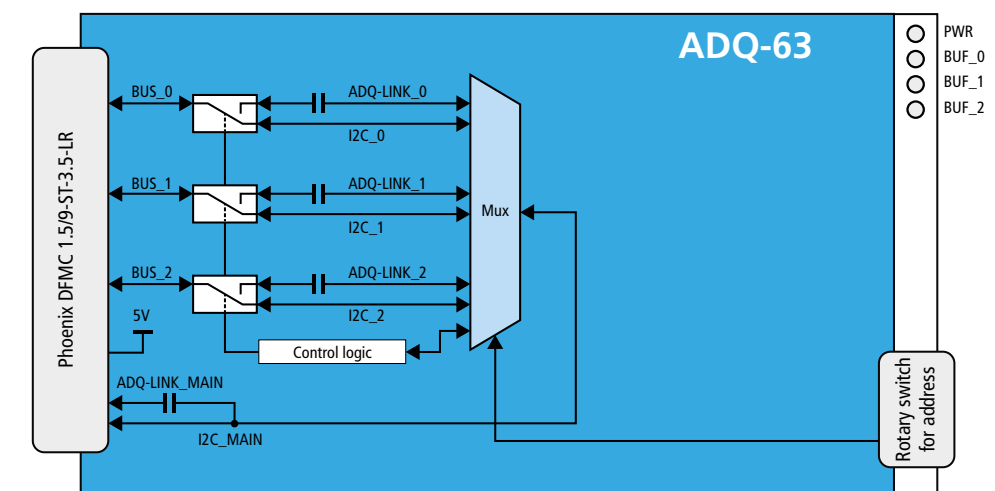
Eight different addresses can be set for the box with integrated multiplexer. Thus, several boxes can be operated on the same bus. Each of the three multiplexed buses can be individually switched to standard I2C or ADQ-LINK by soft-

ware. When using standard I2C, the internal pull-up resistors at 5V can be switched off. This means that existing pull-up resistors and other bus voltages in the range of 2.7-5V can be used. Thus, buses with different voltage levels can be combined.

With the ADQ-63, the main bus functions as a control line from an external ADQ-LINK/I2C controller. With the ADQ-153, the main bus is the main bus of the USB-to-I2C converter and is thus routed out before the multiplexer.



Block diagram



Order information

Name	Art. no.	Description
ALLDAQ ADQ-153	185076	ADQ-Box-I2C-MUX
ALLDAQ ADQ-63	188372	ADQ-LINK-I2C-MUX

USB 3.0 SuperSpeed Isolator

USB 3.0 SuperSpeed isolator for measurement technology, industry, automotive and audio technology



ADQ-USB 3.0-ISO(-PS)

ADQ-USB 3.0-ISO-W



USB 3.0 up to 5 Gigabit/s

NEW: Re-Clocking Technology!

True USB 3.0 SuperSpeed transmission

Up to 900 mA for USB 3.0 device with ext. supply

Isolation voltage (data and supply)*: 1 kVDC

Blue power LEDs on host and device side

Ext. supply optionally 5 VDC or 10..36 VDC (-W)**

Features

- Latest isolator technology supports SuperSpeed USB 3.0 devices up to 5 Gbit/s
- Re-clocking technology for all speeds
- Backwards compatible with USB 2.0/1.1/1.0
- Isolation voltage (data and supply)*: up to 1 kVDC permanent!
- ESD protection up to ±15 kV according to IEC 61000-4-2
- Maximum current for USB 3.0 devices: Without external supply: max. 200 mA
- With external supply: max. 900 mA
- Operating temperature: -20°C..+70°C
- Operating system support: Windows, MAC OS and Linux

Application examples

- Potential separation between measuring devices and PC
- Effective suppression of hum loops - ideal for music studios and event technology
- Protection against voltage peaks in the automotive sector, e.g. when testing control units
- Decoupling of different ground potentials in industrial control technology
- Can also be used as a "power injector" for USB devices that are normally supplied via the USB port, but this does not provide sufficient current for reliable operation of the USB device**

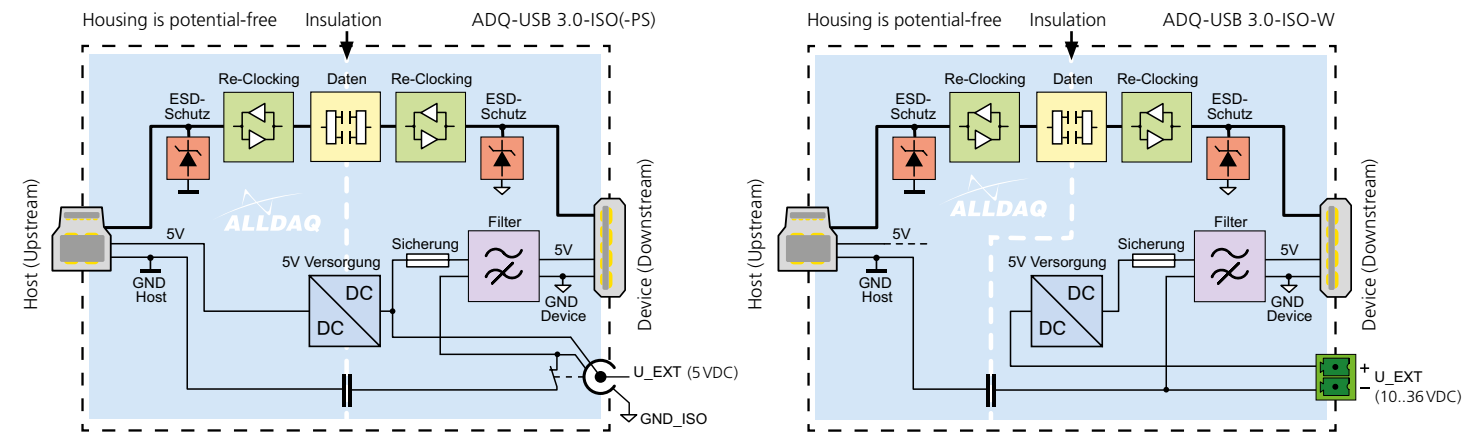
*ADQ-USB 3.0-ISO(-PS): 1 kVDC permanent/1,5 kVAC <60Hz (60s), ADQ-USB 3.0-ISO-W: 1,6 kVDC (60s).

**ADQ-USB 3.0-ISO-PS: 5V Plug-in power supply unit included in the scope of delivery. ADQ-USB 3.0-ISO-W: External supply must be provided.

Order information

Name	Art. no.	Descrip
ALLDAQ ADQ-USB 3.0-ISO-PS	143382	USB 3.0 super-speed isolator up to 5 Gbit/s, ext. 5 VDC input, incl. matching 5V plug-in power supply unit (ALLDAQ zbh. PA-5V1,4A-BJ), 1.5 m USB 3.0 cable double shielded, brief instructions
ALLDAQ ADQ-USB 3.0-ISO-W	141117	USB 3.0 super-speed isolator up to 5 Gbit/s, ext. 10..36 VDC input, incl. 1.5 m USB 3.0 cable double shielded (USB 3.0-A plug to USB 3.0-B plug), brief instructions

Block diagram



Specifications

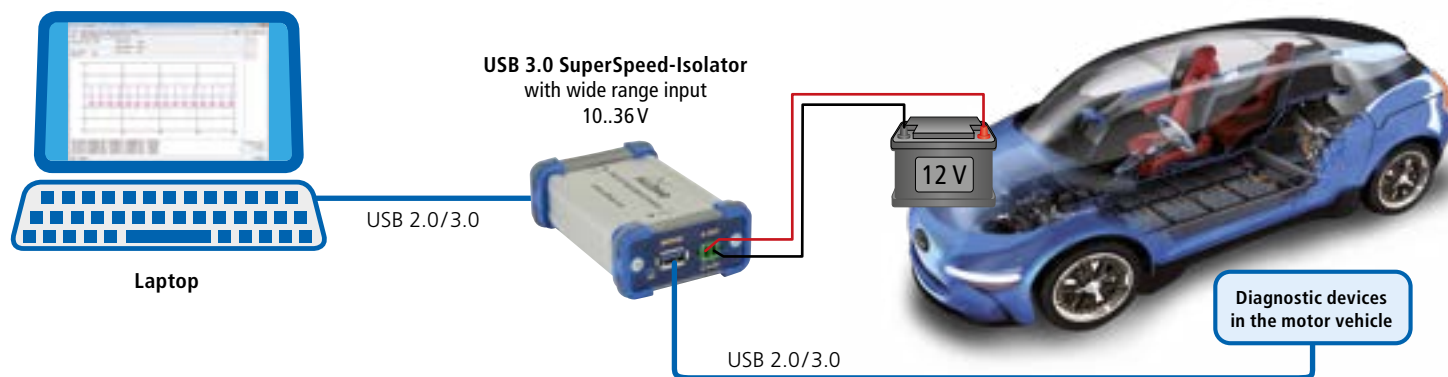
Element	ADQ-USB 3.0-ISO(-PS)	ADQ-USB 3.0-ISO-W
USB standard	USB 3.0 (downward compatible with USB 2.0/1.1/1.0)	
Data rate ¹⁾	5 Gbit/s (SuperSpeed), 480 Mbit/s (High-Speed), 12 Mbit/s (Full-Speed) or 1.5 Mbit/s (Low-Speed); automatic detection of data rate	
Re-clocking technology	✓	✓
Communication	bidirectional (DFP)	
Insulation voltage	1 kV <60Hz (permanent)	1.6 kV (60s)
ESD protection	±15 kV according to IEC 61000-4-2 air discharge, ±12 kV according to IEC 61000-4-2 contact discharge	
External supply	U_EXT = 5 VDC ±10% via 7 W plug-in power supply unit with integrated insulation and filter stage.	U_EXT = 10..36 VDC via ext. supply with integrated insulation and filter stage, power consumption max. 7 W
Connection ext. supply	Low-voltage connector with bayonet lock, contact diameter of the hollow plug on the power supply unit: outer Ø: 5.5 mm, inner Ø: 2.5 mm	2-pole Phoenix terminal (mating connector included); integrated reverse polarity protection
Max. Current for USB device (downstream)	USB 2.0 powered: max. 180 mA, USB 3.0 powered: max. 200 mA, with ext. supply: 900 mA	with ext. supply: 900 mA (Bus-powered not possible)
Connections	Host (upstream): USB 3.0 type B socket; Device (downstream): USB 3.0 type A socket	Host (upstream): USB 3.0 type B socket; Device (downstream): USB 3.0 type A socket
Power LED	+5 V from host / +5 V for device	
Fuse	ext. DC input short-circuit-proof thanks to self-resetting fuse	
Protection ext. DC input	Reverse polarity/short circuit	
Dimensions / Weight	90 mm x 62 mm x 32 mm (L x W x H incl. rubber buffer) / 125 g	
Environmental conditions	Operating temperature: -20°C..+70°C, rel. humidity: max. 95%	
Operating system support	Windows, MAC OS, Linux	
Certifications	EC Directive 2004/108/EC, Emission EN 55022, Immunity EN 50082-2, RoHS	

Application examples

Interference-free measurement in the laboratory



Interference-free measurement in the motor vehicle



Music enjoyment without a hum loop



ALLDAQ USB 2.0 Isolator 5KV rms

Ideal für Industrie und medizinische OEM-Anwendungen



Robust bushes with increased insertion force

Power LEDs on host and device side

Up to 1.4 A for USB 2.0 devices

Ext. supply 5 VDC via bayonet catch

USB 2.0 isolator for measurement technology, medicine, industry, automotive and audio technology

Features

- USB 2.0 Low-, Full- and High-Speed 1.5 Mbit/s, 12 Mbit/s and 480 Mbit/s data rates (operating system independent)
- Bidirectional USB isolator with full host mode support
- Re-clocking for all speeds
- ± 8 kV IEC 61000-4-2 ESD protection via isolation barrier CISPR32/EN55032 Class B emissions at high speed (High common mode transient immunity: >50 kV/ μ s)
- High noise immunity
- Very low stand-by consumption
- Reverse polarity protection incl. fuse on device side
- Operating temperature: -40° .. $+125^{\circ}$ C
- Dimensions: approx. 50 x 70mm
- Galvanic potential separation between USB devices

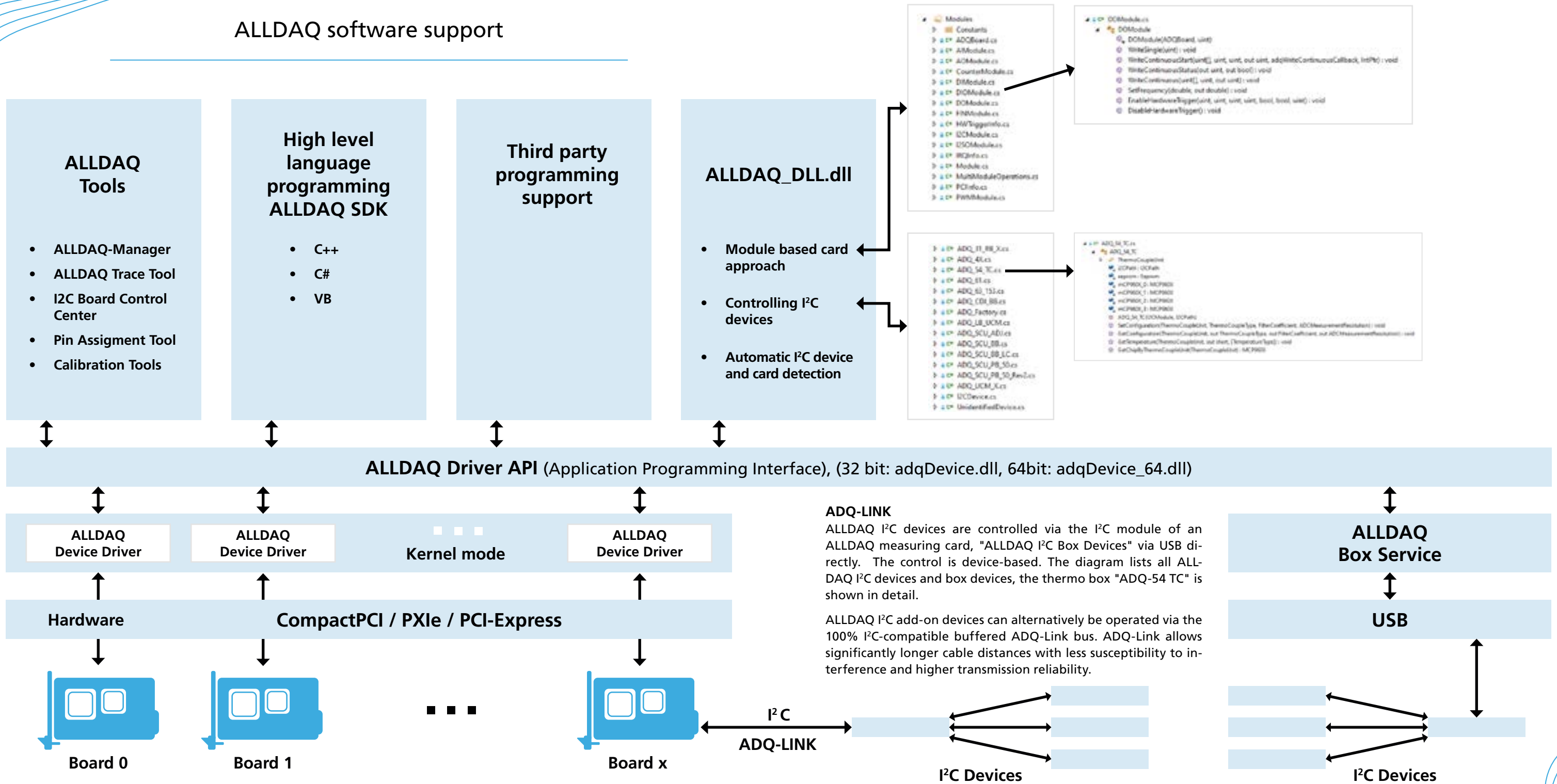
Application examples

- Protection against voltage peaks, e.g. when testing control units
- Decoupling of different ground potentials
- Can also be used as a power injector for USB devices that are normally supplied via the USB port

Order information

Name	Art. no.	Description
ALLDAQ ADQ-USB 2.0 - MED - OEM	206728	USB 2.0 MED; 5KV rms; high-speed isolator for galvanic isolation of the USB port. Supports low/full speed (USB 1.0/1.1) and high speed; ext.5VDC - input and USB cable 1.5 meter included.
ALLDAQ 5V ISO Netzteil	150494	Medical 5V power supply, bayonet connector. For use with 5V USB isolator.

ALLDAQ software support



ALLDAQ Driver API

The ALLDAQ driver system consists of kernel-mode device drivers for the individual card types and a user-mode DLL that provides the application programming interface (API). The API is exported from a shared library for the different Windows platforms (32/64 bit). During installation, the libraries are copied to the respective Windows system directory.

The actual API is a C++ DLL (adqDevice.dll) and contains all the functions needed to control ALLDAQ measuring cards. The ALLDAQ SDK offers ready-made classes in C++ / C# and VisualBasic for this purpose.

A so-called "board" represents an ALLDAQ measuring card; it is listed in the Windows device manager under "ALLDAQ Data Acquisition Devices". A board consists of modules of a certain type, e.g. "Digital Input", "Digital Output", "Analog Input", "Counter" or others. The individual modules can always be operated independently of each other.

ADQ-LINK

ALLDAQ I²C devices are controlled via the I²C module of an ALLDAQ measuring card, "ALLDAQ I²C Box Devices" via USB directly. The control is device-based. The diagram lists all ALLDAQ I²C devices and box devices, the thermo box "ADQ-54 TC" is shown in detail.

ALLDAQ I²C add-on devices can alternatively be operated via the 100% I²C-compatible buffered ADQ-Link bus. ADQ-Link allows significantly longer cable distances with less susceptibility to interference and higher transmission reliability.

ALLDAQ_DLL

The ALLDAQ_DLL.dll is a universal library for controlling ALLDAQ measuring cards, ALLDAQ I²C devices and ALLDAQ I²C box devices. It directly accesses the ALLDAQ Driver API. As a .net DLL, it can be integrated into most of today's programming environments. The DLL accesses the ALLDAQ measuring cards on a module basis. The modules essentially contain the API functions of the adqDevice.dll that match the module in question. The diagram above shows all modules as well as an example of the digital output module "DOModule" with its API functions. I²C add-on devices from ALLDAQ can alternatively be operated via the 100% I²C-compatible buffered ADQ-Link bus. ADQ-Link allows significantly longer cable distances with less susceptibility to interference or higher transmission reliability.

The DLL makes it really easy for programmers. After instantiating an "AdqFactory" object, for example, all connected cards are automatically listed.

For example, all connected cards are automatically listed. Using a search function, all cards connected via I²C / ADQ link can be found with one click. The approach is completely object-oriented. All parameters and methods have comprehensible names.

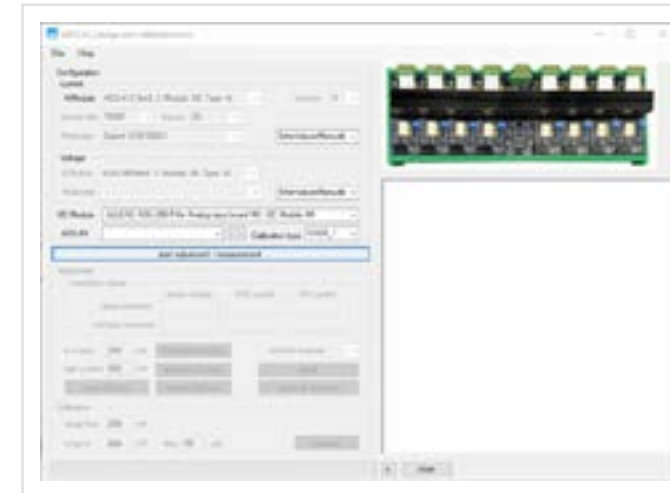
ALLDAQ Manager - the head office



Tree structure of the ALLDAQ Manager

- Information on installed ALLDAQ hardware in a clear tree structure
- Tool for interactive display of connector assignment with PDF generation
- Adjustment tools to include field wiring
- Access to the Software-Developer-Kit (SDK) for high-level language programming with examples and simple test programs
- Extensive help files for the ALLDAQ driver, the SDK and the ALLDAQ tools

Adjustment programmes



"ADQ-4X Adjustment and Calibration Tool" for current sinks.

All measuring and output channels of the ALLDAQ measuring cards and I²C devices are calibrated at the factory.

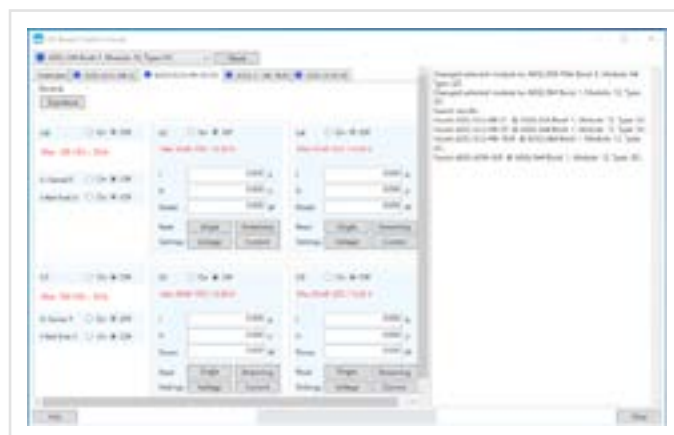
With the adjustment programs, the influence of the wiring of a measurement setup can be taken into account by a user calibration. The correction values determined during calibration are stored in the EEPROM of the respective device.

Pin assignment tool

The assignment of the connectors of an ALLDAQ measuring card can be conveniently viewed with this tool. The contacts required for a measurement setup can be selected and output as a PDF file.

ALLDAQ tools

I²C Board Control Center



All available I²C modules are automatically recognised, a search function finds all I²C devices connected there.

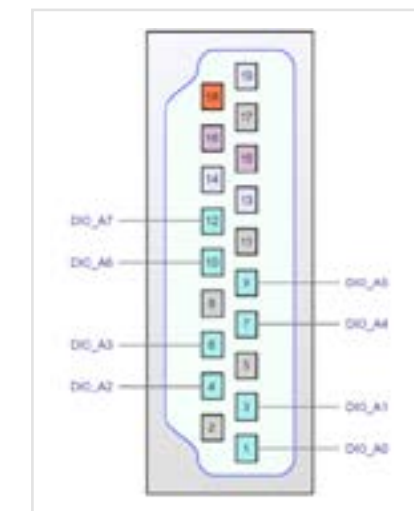
A tab is created for each I²C device. All features of the device can be tested there.

The I²C Board Control Center is a .net WPF application with integration of the ALLDAQ_DLL.dll.

Four I²C devices were found via the I²C module of an ADQ-344. The selected tab shows the user interface for a power board ADQ-SCU-PB-50/20.



The HDMI connector of an ADQ-250



Generation of a PDF file for Port A

PXIe-Karten Firmware-Updater



ALLDAQ PXIe cards obtain the firmware from their own EE-PROM at system start-up.

After installing a new driver release, the software can be used to check whether a newer firmware version than the one currently loaded exists for a currently connected ALLDAQ PXIe card. An update can then be carried out for the corresponding cards at the touch of a button.

This ADQ-258-PXIe currently has version 1.0 loaded, but 3.2 would already be available.

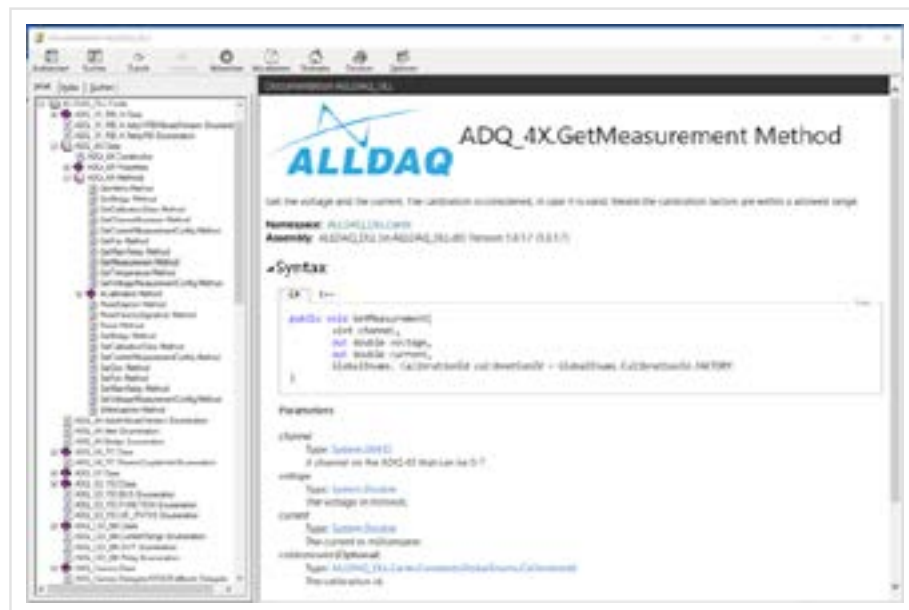
Networking of several test computers via LAN

Measuring cards can either be plugged directly into the computer (PCI Express) or into racks, each of which is connected to the computer via a host card.

If several test computers with ALLDAQ measuring cards are required that are located in the same network (LAN), the ALLDAQ driver system only has to be installed on one computer.

Automatically generated help files

Most help files are now generated automatically from comments in the source code of ALLDAQ programmes. This is how we ensure that the files are always immediately available and up to date.



The automatically generated help file for ALLDAQ_DLL.dll

Customised developments

Hardware adaptations

Based on ALLDAQ standard components, we realise hardware adaptations according to your wishes. This variant is also interesting for small quantities. Let our experts advise you!

Software adaptations

The scope of delivery of your ALLDAQ hardware already includes extensive software support, which is continuously being expanded. If you require further support, you have come to the right place. Our software specialists will be happy to advise you!

Customised developments

If you require a completely new development, ALLDAQ is a competent and experienced partner at your side. Together with you, we define milestones from development to series production. Our professional project management gives you security. What could your application of the future look like? Of course, you will also benefit from our support and training services after the active project phase has been completed. Let us convince you!

Retrofit measurement technology

There are many reasons to modernise existing, often very reliable systems. For a completely new system, costly new approvals are often necessary, or your software environment is no longer supported. Would you like to or do you have to migrate to a new bus system because the hardware used so far has been discontinued by the manufacturer without replacement? Our retrofit experts will be happy to support you in modernising with a sense of proportion.

Standard is good - individual is often more efficient

Your wishes with regard to technology and budget are our claim to find the optimal solution for you. Benefit from the many years of expertise of our development team. We will be happy to work with you to develop a customised solution in terms of price and performance. Your vision is our incentive!

Hardware adaptations	Software adaptations	Customised developments	Retrofit measurement technology
Adjustment of the input voltage range	Driver for specific operating system	New developments	Redesign of components that are no longer available on the market
Firmware additions	Adapt API for specific programming environments	OEM hardware Complete systems	Modernisation of existing plants
Also for small series	Costs depending on effort	Quantity-dependent	Depending on number of pieces

Solutions

Measuring system 128 channels 100 KHz

Synchronisation of ALLDAQ measuring cards

Synchronisation takes place either via

- an external trigger signal (hardware trigger)
- or a software synchronous start

In these cases, the measured values are recorded exactly at the same time.

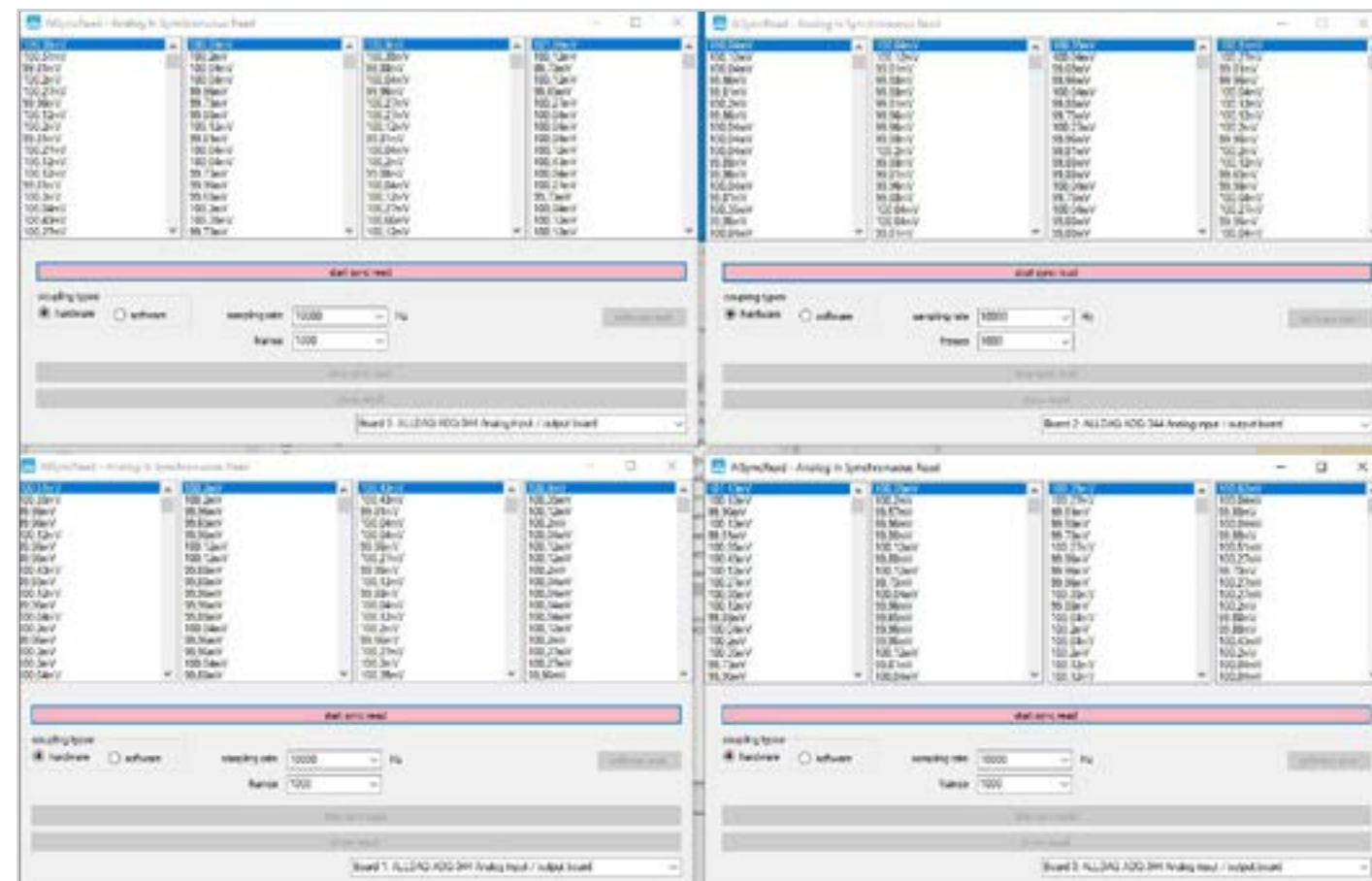
Brief description

In the present application, the deformation of a complex mechanically loaded component was to be measured dynamically.

For this purpose, 128 sensors were attached to the component, which convert the deformation into a voltage, which in turn is recorded by the ALLDAQ analogue measuring channels. 4 measuring cards with 32 analogue channels each are started synchronously and the measured values are stored.

In this case, at the customer's request, we adapted the firmware so that the cards provide raw values that are calibrated after the measurement.

This was the only way to record 128 channels with 100 KHz and 18 bit resolution. The temporal course of the deformation could thus be recorded very precisely and displayed three-dimensionally on the screen by means of special user software.



As a preliminary stage of the high-speed multi-channel measurement system, four instances of the "AISyncRead" programme record 128 channels synchronously and display 16 of them continuously on the screen.

Dynamic current measurement up to 1000A



Smart Current

Another option to measure currents dynamically is the **Smart Current Sensor**. With this you can measure currents up to 1000A, the insulation voltage is 1500VDC/1000VAC RMS.

The voltage output analogue to the current is measured using a DMM or one of our analogue-in boards, ideally with an **ADQ-258** (18bit).

Features

→ Typical applications:

- Battery systems
- UPS systems
- Motor drives
- Frequency converters
- Fuel cells

→ 1500VDC Insulation voltage

→ Output gain

→ 0.1% tolerance

→ Operating voltage 3.0V - 5.5VDC

→ Available versions:

100A / 250A / 500A / 1000A

→ Advantages over Hall effect technology:

- Better accuracy of current measurement
- Unipolar power supply
- Low temperature drift
- No periodic calibration necessary
- Wide operating temperature range

Differential analogue output voltages

100A = 12mV/A 250A = 5mV/A

500A = 2,5mV/A 1000A = 1.25mV/A

Offset max ≤ ± 0.3mV

Accuracy ± 0.1%

Linearity ± 0.1%

Bandwidth 300KHz

Response time 1.6µS

Insulation voltage 1500VDC / 1000V AC RMS

Resolution comparison of the different systems

Output voltage of the 100A sensor measured with:

ADQ-255/16Bit: LSB = 26.04mA

ADQ-258/18Bit: LSB = 6.51mA

Direct measurement with a current measuring card:

ADQ-412 ±50A/18Bit: LSB = 381.47µA

ADQ-422 ±100A/24Bit: LSB = 11.92µA

The ALLDAQ development



From an idea to the finished product.

Our professional team of hardware and software developers as well as production experts will be happy to support you in turning your creative ideas into finished products.



1 TECHNICAL ADVICE

We first develop a comprehensive requirements profile together with our customer. This results in a solution concept with the aim of implementing the respective requirements economically.



2 PROJECT MANAGEMENT

The cooperation of the individual team members from development, software and production is coordinated via a systematic project organisation - always in consultation with our customers.



3 LAYOUT

From the simple adapter board to the FPGA-controlled solution for devices in the automotive, industrial, medical technology and automation sectors - the aim of our developments are designs with their finger on the pulse.



4 RE-ENGINEERING

Many of our customers swear by our expertise when it comes to replicating obsolete hardware or updating outdated circuit diagrams and circuits. In this way, the proven production or test bench lives on and the costs remain manageable.



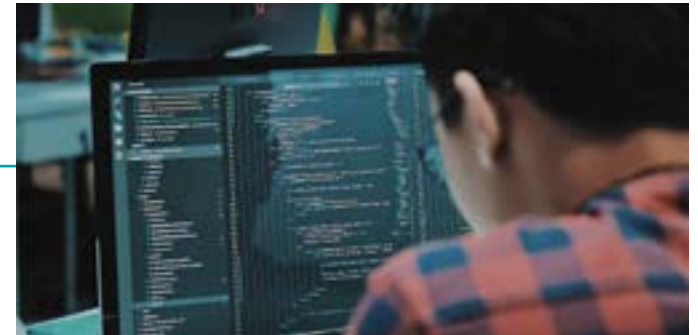
5 EMV-PRECOMPLIANCE

In the course of development, we also use our hardware and software from the field of EMC compliance. So there are no surprises and the final device is ready for the final test in the laboratory.



6 SOFTWARE

Whether integrating your hardware into an existing system or developing a new application - our experienced team speaks many (software) languages.



7 PRODUCTION

By using our worldwide network of ALLNET branches, we can also organise the assembly of your electronics for you, including the assembly of housings and packaging. In this way, you remain flexible with regard to points such as quantities, prices or delivery times.



We are happy to advise you!

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