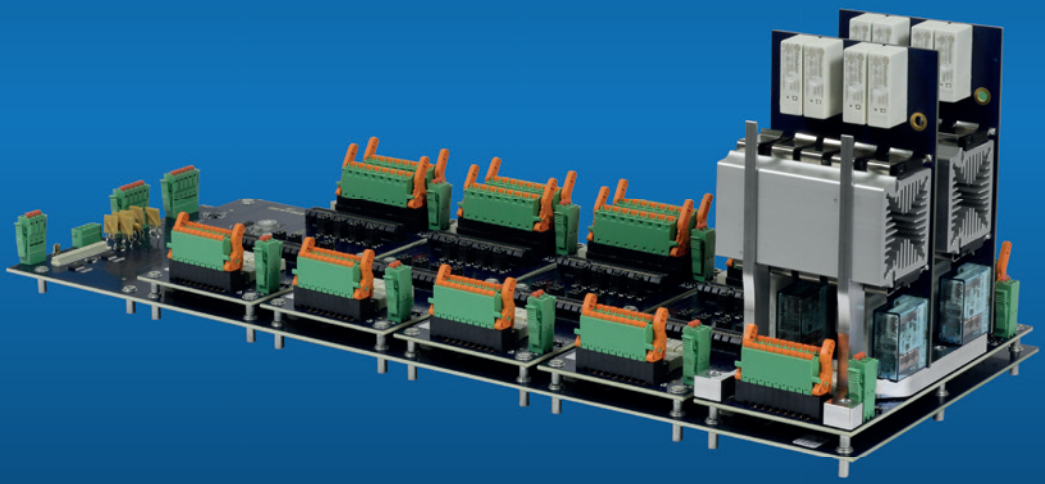
ALLDAQ

Competence in Measurement

Manual Ver. 1.1 EN



ADQ-LB-BB System

Imprint

Handbuch ADQ-LB-BB System Rev. 1.1

Manufacturer and support
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All information contained in this manual has been compiled with the utmost care and to the best of our knowledge.

Nevertheless, errors cannot be completely ruled out.

The specifications and contents of this manual are subject to change without notice and we would be grateful if you would inform us of any errors.

Contents

1. Introduction

Please check the packaging and contents for damage and completeness before commissioning. If there are any defects, please inform us immediately.

- Does the packaging indicate that something was damaged during transportation?
- Are there any signs of use on the device?

Under no circumstances should you operate the appliance if it is damaged. If in doubt, please contact our technical customer service.

Please read this manual carefully before installing the device!

1.1 Scope of delivery (depending on the expansion stage)

- ALLDAQ ADQ-LB-BB (control unit with ADQ-Link) for ADQ-LB-BM 2.X
- ALLDAQ ADQ-LB-BM 2.X carrier board for ADQ-LB-LM/VLM modules
- ALLDAQ ADQ-LB-LM (load module)ALLDAQ ADQ-LB-VLM (variable load module)
- ALLDAQ ADQ-LB-MH for mechanical mounting of the ADQ-LB-LM/VLM modules on the ADQ-LB-BM carrier board (optional). ADQ-LB-BM carrier board (optional)

1.2 Safety instructions

Please observe the following instructions:

- Never expose the device to direct sunlight during operation.
- Never operate the device near heat sources.
- Protect the device from moisture, dust, liquids and vapors.
- Do not use the device in damp rooms or in potentially explosive atmospheres.
- Repairs may only be carried out by trained, authorized personnel.
- Please observe the installation regulations and all relevant standards (including VDE standards) when commissioning the device, especially when operating with voltages greater than 42 V.
- We recommend that unused inputs are always connected to the corresponding reference ground in order to avoid crosstalk between the input channels.
- Always disconnect your field wiring from the power source before making or breaking cable connections with the card.
- Ensure that no static discharge can occur via the device when handling the board. Follow the standard ESD protection measures.
- Never connect the devices to live parts, especially not to mains voltage.
- Precautionary measures to prevent unforeseeable misuse must be taken by the user.

ALLNET® GmbH Computersysteme accepts no liability for improper use and the resulting damage.

1.3 Installation and mounting location

The ADQ-LB-BB system is intended for installation in measurement and test systems by qualified specialist personnel. The relevant installation regulations and standards must be observed.

The ADQ-LB-BB system may only be used in dry rooms. Ensure adequate heat dissipation. Make sure the connection cables are secure. The installation must be carried out in such a way that the cables are not under tension, otherwise they could come loose.

Please also be careful not to bend the cables or lay them in too tight a bending radius. If cable ties or similar are used to fasten, they must not be tightened too tightly to avoid internal short circuits in the cable.
We cannot accept any liability for any damage or failures resulting from this.

1.4 Brief description

The ALLDAQ ADQ-LB-BB signal conditioning unit was developed for use in industrial automation in order to subject the DUT to an appropriate ohmic load in automated measurement and test systems (e.g. loading audio power amplifiers). The ADQ-Link bus controls the ADQ-LB-BB system. For this purpose, ALLDAQ offers preconfigured ADQ-LB-LM modules and the variable ADQ-LB-VLM module. Other loads are possible on request.

Important features:

- Loads for analog Signals with different levels
- Loads for analog signals up to 200W/channel
- Modular design (max. 48 channels (6x ADQ-LB-BM 2.X), individually switchable load channels depending on the expansion level)
- Automatic fan control
- Switching off the automatic fan control (status information on fan operation)
- Emergency shutdown of individual loads if the load resistors overheat, independent of software control
- Status displays for power, relay, emergency shutdown and fan
- Optimized for operation with the ADQ-SCU or ADQ-SCU-LC
- Can also be used as a stand-alone (simple control via ADQ-153, ADQ-LINK card)
- API for easy integration into your application software
- Easy control via the ALLDAQ driver system

- Customer-specific extensions via plug-in module
- Easy control via ADQ-LINK-IN
- An ADQ LINK OUT port

In order to fully exploit the potential of the ADQ-LB-BB system, a combination with the ALLDAQ signal conditioning unit ADQ-SCU/LC and the multifunction measurement card ADQ-344/ADQ-348 is recommended.

1.5 System requirements

Hardware

- PC system with a current Intel® or compatible processor based on the x86 (64 bit) architecture
- Optional ALLDAQ driver

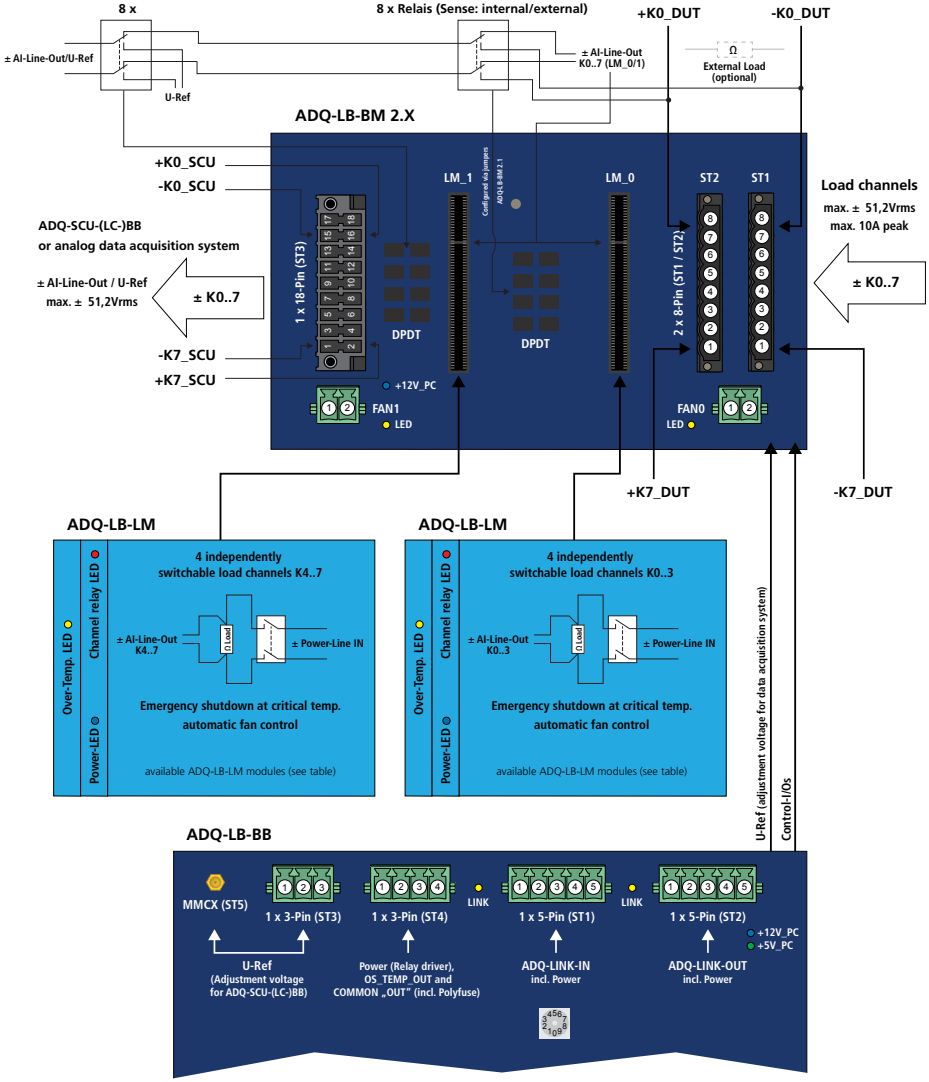
Software

On the ALLDAQ homepage you will find drivers for Windows 11/10/8.1/8/7 (64 bit, 32 bit on request) as well as a function library (API) with code examples for high-level language programming.

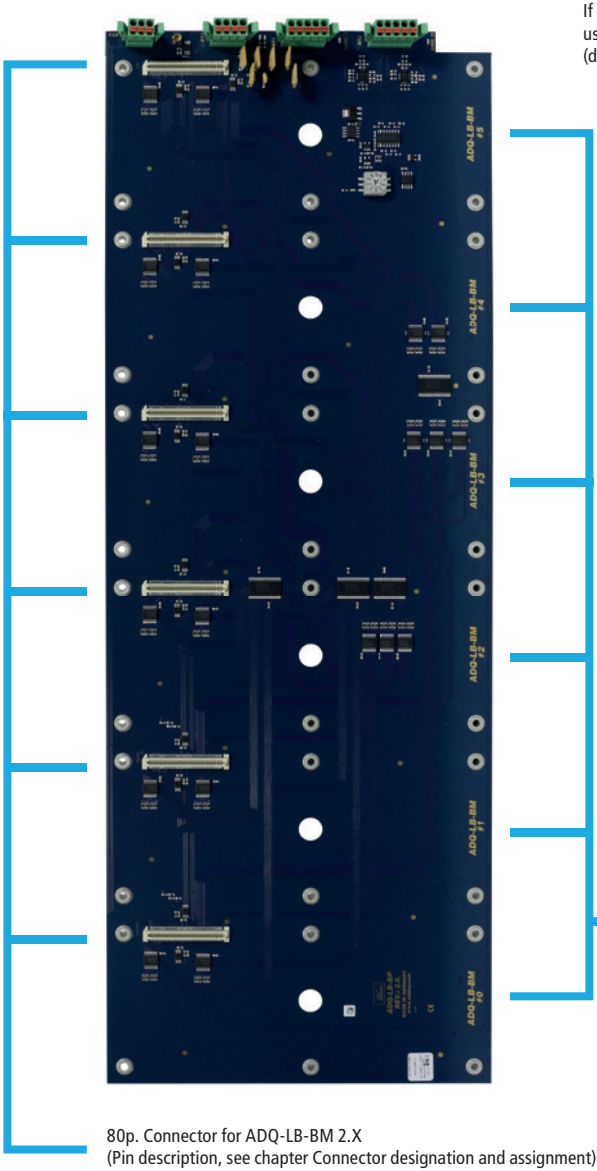
Please note the information in the associated help file adqSDK.chm. You can also find details about programming in the help file adqDriver.chm, which you can access via the "ALLDAQ Manager" in the information area of the taskbar (usually at the bottom right) or the Windows start menu.

2. Overview of the system

2.1 Block diagram



2.2 ADQ-LB-BB


If you do not use all ADQ-LB-BM 2.X, you can use the free openCollector switching outputs (default upon delivery).
6x ADQ-LB-BM 2.X
Carrier module for
ADQ-LB-LM/VLM modules
80p. Connector for ADQ-LB-BM 2.X
(Pin description, see chapter Connector designation and assignment)

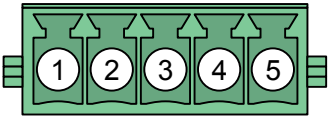
2.3 Connector and pin assignment

Specifications (ST1) and (ST2)

The ADQ-LB-BB can be controlled via the ADQ-LINK via this connector.

ADQ-LINK-IN (point to point): ST1

- Overvoltage protection of the cables up to ± 60 V / ADQ devices can be deployed up to 100 m (twisted cable)
- IEC Level 4 ESD ± 8 kV and EFT ± 5 kV
- Status LED (yellow) if there is a connection to a remote device



Würth 5-pin (691305130005)
Mating plug (691305130005)

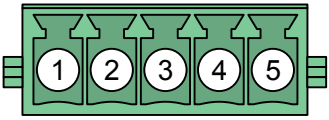
Pin	ST1	Description
1	+ADQ-LINK	Differential BUS
2	GND_PC	PC ground
3	+5V_PC	Power supply
4	-ADQ-LINK	Differential BUS
5	+12V_PC	Power supply

Note: Route the ADQ link via a simple twisted pair cable.

The ADQ-LINK-OUT is made available via this plug connector.

ADQ-LINK-OUT (point to point): ST2

- Overvoltage protection of the cables up to ± 60 V / ADQ devices can be deployed up to 100 m (twisted cable)
- IEC Level 4 ESD ± 8 kV and EFT ± 5 kV
- Status LED (yellow) if there is a connection to a remote device



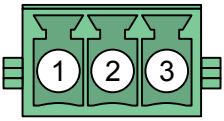
Würth 5-pin (691305130005)
Mating plug (691305130005)

Pin	ST2	Description
1	+ADQ-LINK	Differential BUS
2	GND_PC	PC ground
3	+5V_PC	Power supply
4	-ADQ-LINK	Differential BUS
5	+12V_PC	Power supply

Note: Route the ADQ link via a simple twisted pair cable.

U-Ref (ST3) and (ST5)

The adjustment voltage for ADQ-SCU-(LC-)BB) can be connected via this connector.



Würth 3-pin (691305130003)
Mating plug (691305130003)

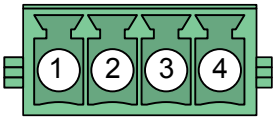
Pin	ST3	Description
1	GND_PC	PC ground
2	U-Ref (P)	+U-Ref
3	U-Ref (N)	-U-Ref

MMCX

Pin	ST5	Description
1	U-Ref (P)	IN
2	U-Ref (N)	OUT

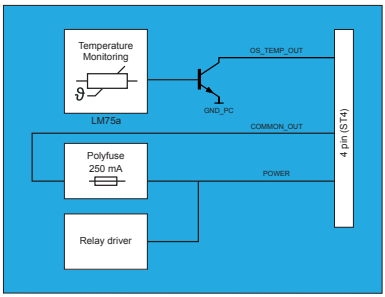
ST4 Power (Relais-Treiber), OS_TEMP_OUT und COMMON „OUT“ (incl. Polyfuse)

The relay drivers are supplied with voltage via this connector.



Würth 4-pin (691305130004)
Mating plug (691305130004)

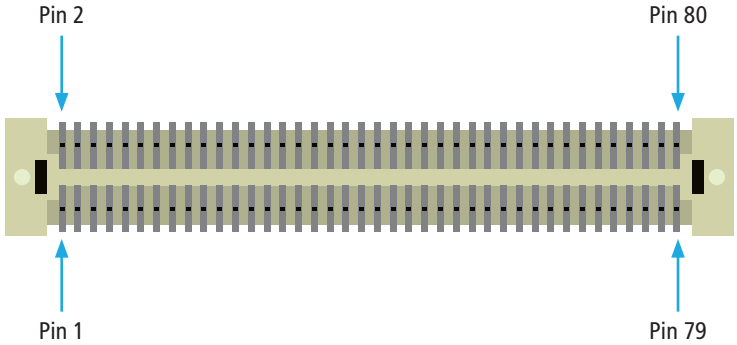
Pin	ST4	Description
1	COMMON_OUT	Voltage output incl. polyfuse
2	OS_TEMP_OUT	Open collector output of the temperature monitoring on the baseboard (VCE = 50 V / Imax. = 250 mA)
3	GND_PC	PC ground
4	Power	Voltage level for relay drivers



Connector plug (STB_BM 0..5)

Note: Pin description of the connection plug (STB_BM0..5) between the ADQ-LB-BB and the ADQ-LB-BM 2.X is only relevant when using a customer-specific add-on board instead of the ADQ-LB-BM 2.X.

All control signals are exchanged between the ADQ-LB-BB and the ADQ-LB-BM 2.X via this connector.



Pin	Description Circuit diagram	Type
1	Cal_N	-URef
2	Cal_P	+URef
3	GND	POWER
4	GND	POWER
5	Mx_FTR_7	Output (relay driver)
6	Mx_FTR_0	Output (relay driver)
7	Mx_FTR_6	Output (relay driver)
8	Mx_FTR_1	Output (relay driver)
9	Mx_FTR_5	Output (relay driver)
10	Mx_FTR_2	Output (relay driver)
11	Mx_FTR_4	Output (relay driver)
12	Mx_FTR_3	Output (relay driver)
13	GND	POWER
14	GND	POWER
15	GND	POWER

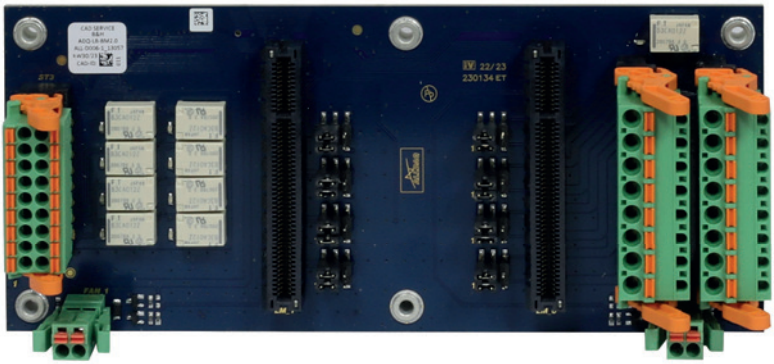
Pin	Description Circuit diagram	Type
16	GND	POWER
17	Mx_FINDER_6	Output (relay driver)
18	Mx_FINDER_2	Output (relay driver)
19	Mx_FINDER_7	Output (relay driver)
20	Mx_FINDER_3	Output (relay driver)
21	BMx_2	Output (relay driver)
22	BMx_0	Output (relay driver)
23	BMx_FREE1	Output (relay driver)
24	BMx_FREE0	Output (relay driver)
25	Mx_FINDER_5	Output (relay driver)
26	Mx_FINDER_1	Output (relay driver)
27	Mx_FINDER_4	Output (relay driver)
28	BMx_1	Output (relay driver)
29	BMx_3	Output (relay driver)
30	Mx_FINDER_0	Output (relay driver)

Pin	Description Circuit diagram	Type
31	GND	POWER
32	GND	POWER
33	GND	POWER
34	GND	POWER
35	Mx_Sense_1	LM/VLM Modul-ID-Spannung
36	Mx_Sense_0	LM/VLM Modul-ID-Spannung
37	GND	POWER
38	GND	POWER
39	GND	POWER
40	GND	POWER
41	Open_Collector_A	Fan status
42	Open_Collector_B	Fan status
43	GND	POWER
44	GND	POWER
45	GND	POWER
46	GND	POWER
47	NC	not occupied
48	NC	not occupied
49	NC	not occupied
50	NC	not occupied
51	NC	not occupied
52	NC	not occupied
53	NC	not occupied
54	BMx_FREE2	Output (relay driver)
55	NC	not occupied

Pin	Description Circuit diagram	Type
56	BMx_FREE3	Output (relay driver)
57	NC	not occupied
58	BMx_FREE4	Output (relay driver)
59	NC	not occupied
60	BMx_FREE5	Output (relay driver)
61	NC	not occupied
62	NC	not occupied
63	NC	not occupied
64	NC	not occupied
65	NC	not occupied
66	NC	not occupied
67	NC	not occupied
68	NC	not occupied
69	NC	not occupied
70	NC	not occupied
71	NC	not occupied
72	NC	not occupied
73	GND	POWER
74	GND	POWER
75	GND	POWER
76	GND	POWER
77	12V	POWER
78	12V	POWER
79	12V	POWER
80	12V	POWER

2.4 ADQ-LB-BM 2.0 (discontinued)

Carrier module for the ADQ-LB-LM/VLM modules.

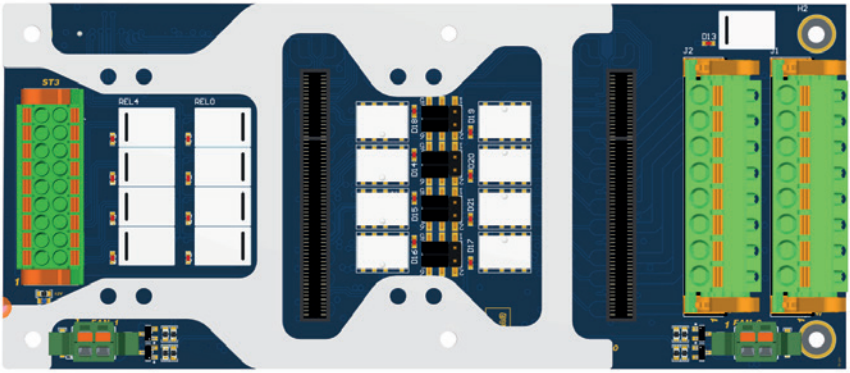


ADQ-LB-MH (not use for new design)

Module holder for ADQ-LB-LM (item no. 189126)

2.4 ADQ-LB-BM 2.1

Carrier module for the ADQ-LB-LM/VLM modules.



The jumpers are set to „auto" by default.

Function of the jumpers (see block diagram, page 8)

The relay (sense: internal/external) is used to decide where the voltage (sense) is measured at the load.

- **Option 1:** On the plugged ADQ-LB-VLM/LM modules.
- **Option 2:** Directly on the external load (optional).

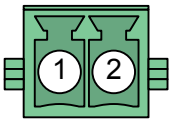
With the eight jumpers on the module, you can decide which respective relay (sense: internal/external) should be switched by software „auto" or „manual". The relays (internal/external) are switched by software on all channels that are jumpered to „auto". If the jumper is set to „manual", this relay can´t switched via software.

Relay (Sense: internal/external)	auto	manuell
Relay K0..K7	3-5 / 4-6	1-3 / 2-4

ADQ-LB-MH Module holder for ADQ-LB-LM (Art.-Nr. 229877)

2.4.1 Connector and pin assignment

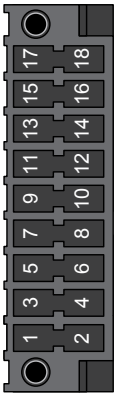
Fan connection (FAN0) and (FAN1)



Würth 2-pin (691305130002)
Mating plug (691305130002)

Pin	FANO/FAN1	Description
1	+12V_PC	Power supply
2	Switching ou (GND_PC)	Type: Open Collector Negative pole from a 12VDC fan (Imax. 0.5A)g

± AI-Line-Out / U-Ref (ST3)

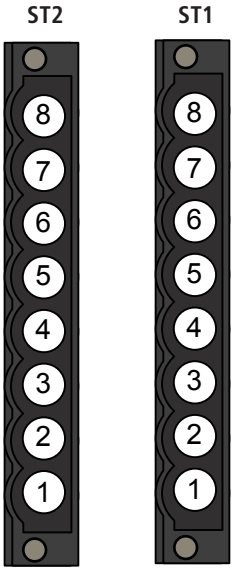


Typ: Phoenix Contact (1711100)

Mating plug (1790551)

Pin	ST3	Description
1	-K7	± AI-Line-Out / U-Ref
2	+K7	± AI-Line-Out / U-Ref
3	-K6	± AI-Line-Out / U-Ref
4	+K6	± AI-Line-Out / U-Ref
5	-K5	± AI-Line-Out / U-Ref
6	+K5	± AI-Line-Out / U-Ref
7	-K4	± AI-Line-Out / U-Ref
8	+K4	± AI-Line-Out / U-Ref
9	-K3	± AI-Line-Out / U-Ref
10	+K3	± AI-Line-Out / U-Ref
11	-K2	± AI-Line-Out / U-Ref
12	+K2	± AI-Line-Out / U-Ref
13	-K1	± AI-Line-Out / U-Ref
14	+K1	± AI-Line-Out / U-Ref
15	-K0	± AI-Line-Out / U-Ref
16	+K0	± AI-Line-Out / U-Ref
17	AGND	Analog reference ground for data acquisition system (e.g. ADQ-SCU/LC)
18	AGND	Analog reference ground for data acquisition system (e.g. ADQ-SCU/LC)

Load channel connections (ST1) and (ST2)

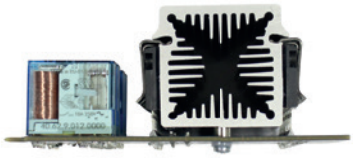


Typ: Phoenix Contact (1792795)
Mating plug (1792575)

Pin	ST2	ST1
8	+K0	-K0
7	+K1	-K1
6	+K2	-K2
5	+K3	-K3
4	+K4	-K4
3	+K5	-K5
2	+K6	-K6
1	+K7	-K7

2.5 ADQ-LB-LM

Load modules with the corresponding load resistors (see table).

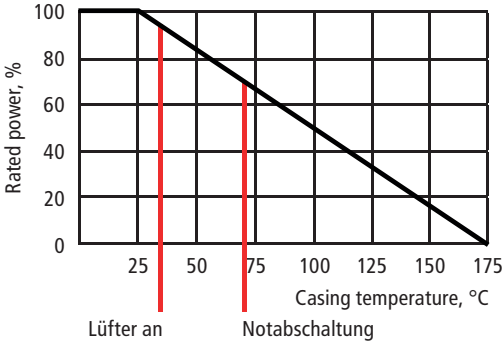


ID Label	ID Voltage(U)	Item no.	CH_0 (4)	CH_1 (5)	CH_2 (6)	CH_3 (7)
	6	183233*	2R/100W	2R/100W	2R/100W	2R/100W
	3	180736*	4R/100W	4R/100W	4R/100W	4R/100W
	9	180734*	8R/100W	8R/100W	8R/100W	8R/100W
	1,5	189210*	10R/100W	10R/100W	10R/100W	10R/100W
	4,5	189211*	16R/100W	16R/100W	16R/100W	16R/100W
ID75	7,5	180737	2R/200W	2R/200W	2R/200W	2R/200W
ID105	10,5	180618	4R/200W	4R/200W	4R/200W	4R/200W
ID075	0,75	180406	8R/200W	8R/200W	8R/200W	8R/200W
ID225	2,25	180619	10R/200W	10R/200W	10R/200W	10R/200W
ID375	3,75	189212	16R/200W	16R/200W	16R/200W	16R/200W
ID525	5,25	180620	8R/200W	8R/200W	10R/200W	2R/200W
ID11	11	For customized modules				

Conditions: TA = T_C = 25°C unless otherwise specified; warm-up time: 30 minutes.

* No longer available. Will be replaced by the 200W LM modules

Customized configuration of load resistors possible. Please contact our sales department.



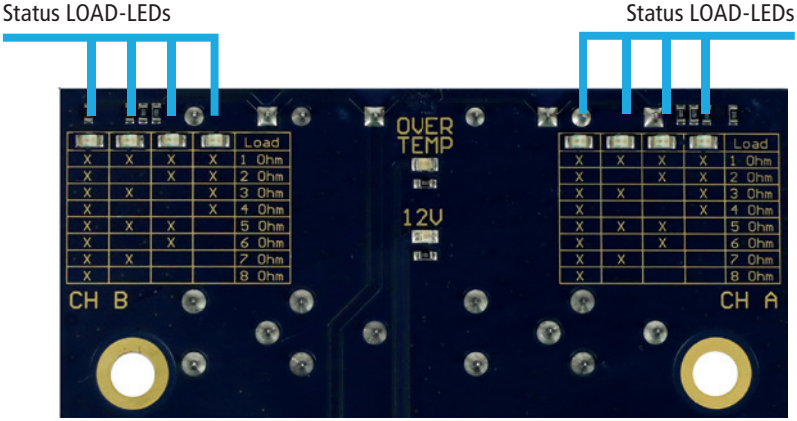
Derating with casing temperature (T_C):
Alle Leistungs- und zugehörigen Überlastwerte werden basierend auf der Gehäusetemperatur unter Verwendung der Derating-Kurve dargestellt.

Kurzzeitige Überlast nach Kaltstart:
1,5 x Kanal-Leistung (max. 4 sec.)

Conditions: TA = 25°C unless otherwise specified; warm-up time: 30 minutes.

2.5.1 ADQ-LB-VLM

Variable load module with the corresponding load resistors (see table).



ID Label	ID Voltage(U)	Art.-Nr.	CH_0	CH_1
ID0325	0,325	219051	1R to 8R	1R to 8R
ID11	11	For customized modules		

Slot (ADQ-LB-BM 2.X)	Channel VLM-Modul	ST2	ST1
LM0	CH_0	+K3	-K3
LM0	CH_1	+K2	-K2
LM1	CH_0	+K7	-K7
LM1	CH_1	+K6	-K6

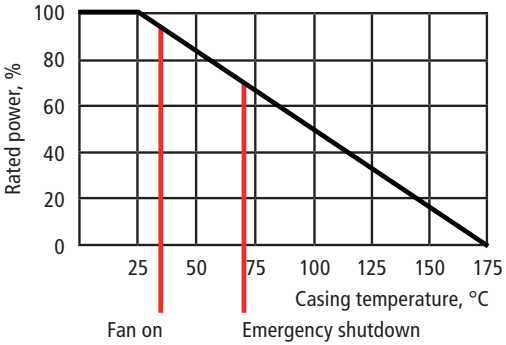
Technical specifications VLM module (1R to 8R).

Ω	V peak max	I peak max	Pmax
1Ω	10V	10A	100W
2Ω	20V	10A	200W
3Ω	21,21V	7,07A	150W
4Ω	28,28V	7,07A	200W
5Ω	25V	5A	125W
6Ω	30V	5A	150W
7Ω	35V	5A	175W
8Ω	40V	5A	200W

Conditions: TA = T_C = 25°C unless otherwise specified; warm-up time: 30 minutes.

Attention: Please note that the Pmax is not identical. The power loss varies depending on the power resistor (Ω).

Customized configuration of load resistors possible.
Please contact our sales department.



Derating with casing temperature (T_C):
All power and associated overload values are displayed based on the housing temperature using the derating curve.

Short-term overload after cold start:
1.5 x channel power (max. 4 sec.)

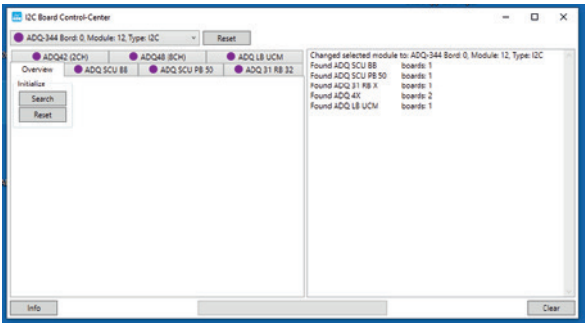
Conditions: TA = 25°C unless otherwise specified; warm-up time: 30 minutes.

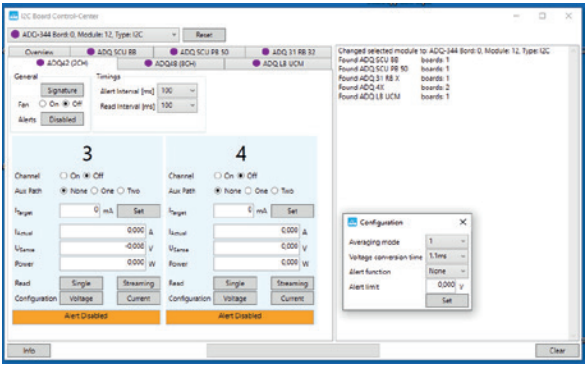
Fan for ADQ-LB-LM modules

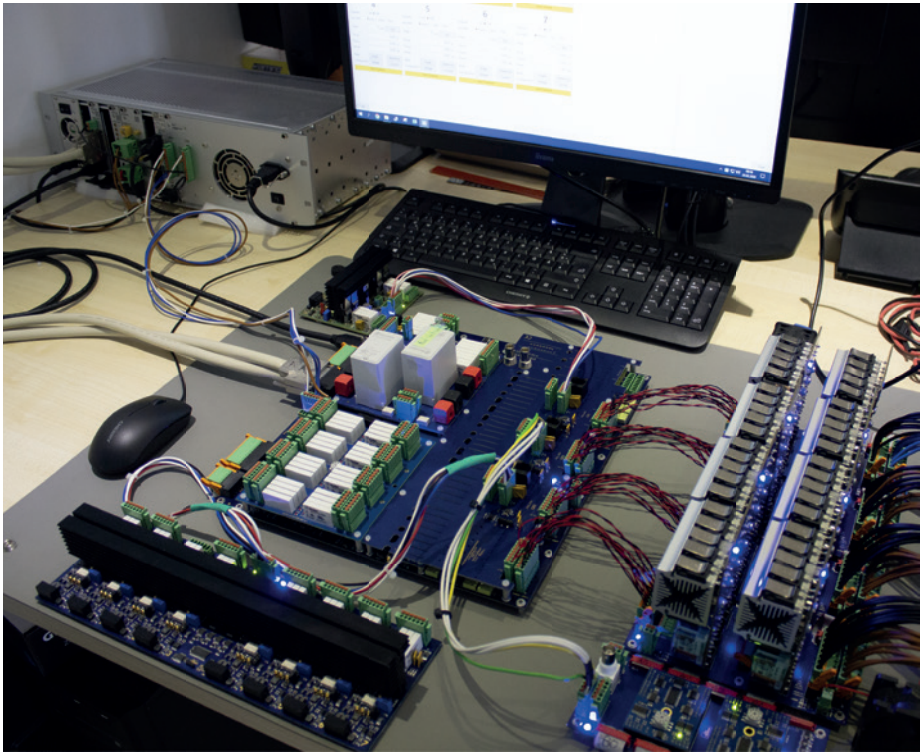
Fan for ADQ-LB-LM/VLM modules (item no. 189213)

3. ALLDAQ I2C Board Control Center

To get to know the operation of the ADQ-LB-BB, there is the I2C Board Control Center in the ALLDAQ Launcher under Tools.







4. Specifications

Conditions: TA = 25°C unless otherwise specified; warm-up time: 30 minutes.

Element	Condition	Specification
Supply	ST1 ADQ-LINK-IN	+5 V / +12 V supply via Würth connector from PC power supply unit
Frequency		100kHz
Isolation	ADQ-LINK+/-	50VDC
Cable length	2-core twisted	max. 100m

	ST2 ADQ-LINK-OUT	
Frequency		100kHz
Isolation	ADQ-LINK+/-	50VDC
Tap	+5V (Pin 3)	Protected by Polyfuse 2920L500/16 5A
	+12V (Pin 5)	Protected by Polyfuse 2920L500/16 5A
Cable length	2-core twisted	max. 100m

Quiescent current consumptionADQ-LB system full extension	No relay energized	+5 V: max. 50 mA +12 V: max. 100 mA
Power consumptio-nADQ-LB system full extension	ADQ-LB-BM 2.X all relays energized	+5 V: max. 128 mA +12 V: max. 80 mA
	ADQ-LB-LM all relays energized	+5 V: max. 130 mA +12 V: max. 490mA
	ADQ-LB-VLM all relays energized	+5 V: max. 130 mA +12 V: max. 735 mA
Status display LED	Power 5V	Green
	Power 12V	Blue
	LINK-LED	Yellow
Custom relay driver	12V (80p. connector plug)	0.5 A per channel (relay driver)
COMMON_OUT	Voltage output 12V incl. Polyfuse 300mA	Protected by Polyfuse 2920L030 300mA
OS_TEMP_OUT	Open-Collector-Aus-gang der Temperatur-überwachung auf dem Baseboard	VCE = 50 V / Imax. = 250 mA
Temperature range	Operation	0..60 °C (Standard)

Humidity	Operation	20%..55% (non-condensing)
Dimensions (W x D x H)	ADQ-LB-BB	465 x 170 x 20 mm
	ADQ-LB-BM 2.0	115 x 76 x 49 mm
	Total height	180 mm (VLM module plugged in)
	Total height	145 mm (LM module plugged in)
Manufacturer's warranty incl. load modules		36 months

ADQ-LB-BM 2.0 carrier board

Element	Condition	Specification
Type		FTR-B3CA()Z Standard
Quantity	AI part	Up to 8 relays in the AI signal path
	Fan ON/OFF	1x FTR-B3CA()Z Standard
Type of contact		2-pole changeover contact (DPDT)
Contact material		Silver/nickel with gold plating
Contact impedance	1 A / 6 VDC	max. 75 mΩ at 1 A/6 VDC
Operating time	Response time	max. 3 ms
	Fallback time	max. 3 ms
Switching cycles	mechanical	min. 50.000.000
Switching output (FAN0/1)	Collector output	Imax. 0,5A
Status indicators LED	U-Ref relay	Red
	Automatic fan	Yellow
Massebezug	GND-PC	

ADQ-LB-LM module

Element	Condition	Specification
Quantity/Type		4 changeover relays (DPDT), type: Finder Series 40.62
Contact material		AgNi
Operating time	Response time	max. 12 ms
	Fallback time	max. 4 ms
Switch cycles	mechanical	min. 10.000.000
Electrical service life		min. 100 x 10^3
Min. switching load	mW (V/mA)	300mW (5V/5mA) must not be undershot
Max. Continuous current/ Max. inrush current	DC	10/20A
Max. Switching load	AC	2500VA
Pulse load	Short-term overload after cold start	1.5 x channel power (max. 4 sec.)
Status indicators LED	Channel relay	Red
	Power 12V	Blue
	Emergency shutdown	Yellow
Connection	Edge-Connector	

ADQ-LB-VLM module

Element	Condition	Specification
Quantity/Type		2 changeover relays (DPDT), type: Finder Series 40.62
Contact material		AgNi
Operating time	Response time	max. 12 ms
	Fallback time	max. 4 ms
Switch cycles	mechanical	min. 10.000.000
Electrical service life		min. 100 x 10^3
Min. switching load	mW (V/mA)	300mW (5V/5mA) must not be undershot
Max. Continuous current/ Max. inrush current	DC	10/20A
Max. Switching load	AC	2500VA
Pulse load	Short-term overload after cold start	1.5 x channel power (max. 4 sec.)
Quantity/Type		6 changeover contact relay (DPDT), type: Finder Series 43.41
Contact material		AgNi
Operating time	Response time	max. 6 ms
	Fallback time	max. 4 ms
Switch cycles	mechanical	min. 10.000.000
Electrical service life		min. 100 x 10^3
Min. switching load	mW (V/mA)	300mW (5V/5mA) must not be undershot
Max. Continuous current/ Max. inrush current	DC	10/15A
Max. Switching load	AC	2500VA
Pulse load	Short-term overload after cold start	1.5 x channel power (max. 4 sec.)
Status indicators LED	Channel relay	Red
	Ω-value display (see table on VMÖ module)	Red
	Power 12V	Blue
	Emergency shutdown	Yellow
Connection	Edge-Connector	

5. Appendix

5.1 Accessories

ADQ products

- ADQ-63 (item no. 188372), ADQ-LINK bus control box
- ADQ-153 (Art. No. 185076), control box USB to ADQ-LINK bus
- Fan for ADQ-LB-LM/VLM modules (item no. 189126)

5.2 Manufacturer and support

ALLNET® is a registered trademark of ALLNET® GmbH Computersysteme. If you have any questions, problems or require product information of any kind, please contact the manufacturer directly:

ALLNET® GmbH Computersysteme
Division ALLDAQ
Maistrasse 2, D-82110 Germering

E-Mail: support@alldaq.com
Phone: +49 (0)89 894 222 – 474
Fax: +49 (0)89 894 222 – 33
Internet: www.alldaq.com

5.3 Packaging Ordinance

„In principle, manufacturers and distributors are obliged to ensure that sales packaging is taken back by the end consumer after use and reused or recycled." (according to § 4 sentence 1 of the Packaging Ordinance). If you as a customer have any problems with the disposal of packaging and shipping materials, please send an e-mail to info@allnet.de.

5.4 Recycling notice and RoHS conformity

The ADQ-LB system bears the CE mark.
This device fulfills the requirements of EU Directive 2004/108/EC, the Electromagnetic Compatibility Directive and the mutual recognition of its conformity. Conformity with the above directive is confirmed by the CE mark on the device.

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

5.5 CE label

Das ADQ-LB-System trägt die CE-Kennzeichnung.
Dieses Gerät erfüllt die Anforderungen der EU-Richtlinie 2004/108/EG, Richtlinie über elektromagnetische Verträglichkeit und die gegenseitige Anerkennung ihrer Konformität. Die Konformität mit der o.a. Richtlinie wird durch das CE-Zeichen auf dem Gerät bestätigt.

5.6 Warranty

Within the warranty period, we will rectify manufacturing and material defects free of charge. You can find the warranty conditions valid for your country on the homepage of your distributor. If you have any questions or problems with the application, you can reach us during our normal opening hours on the following telephone number +49 (0)89 894 222 - 474 or by e-mail to: support@alldaq.com.

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