IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

Overview MCS-Box Platform

The MCS Platform is an extensible, cross functional, and modular system designed for advanced measurement, control, and switching applications.

Core Functional Domains

2.1 Measurement
- Current and voltage measurement
- Integration of external sensor inputs
- High precision measurement capabilities (module dependent)

2.2 Control
- Bus based control architecture
- Supported bus interfaces include CAN, A2B, and LIN
- Centralized and distributed control logic possible

2.3 Switching/Multiplexer
- Digital input/output interfaces
- Relay based switching options
- High speed switching for communication bus lines

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

Switching/Multiplexer

Model	Key Features
MCS-7102usb-Link	USB 3.x and USB 2.0 differential switch 2:1/1:2 MUX/DEMUX
MCS-7102hmtd-Link	100BASE-T1 and 1000BASE-T1 differential switch 2:1/1:2 MUX/DEMUX
MCS-7101-Link	2x 4:1 2 Channel MUX/DEMUX
MCS-7301s34-Link	Switch-Box: 6x Relays Type S34 (SPDT) max. 30VDC/6A
MCS-7301ftr-Link	Switch-Box: 3x Signal-Relays Type FTR (DPDT) max. 30VDC/1A

Digtal IN/OUT

Model	Key Features
MCS-1301-Link	POWER DIO: 8x DI / 8x DO (typ. 24V)

Analog IN/OUT

Model	Key Features
MCS-2101-Link	Analog IN: 4x AI (single-ended) / 4x AI (differential)

Power supply

Model	Key Features
MCS-5201-Link	Supply unit up to 10A adjustable via software

A2B

Model	Key Features
MCS-8101-A2B	Simple A2B node

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-1301-Link rev. 1.0
Article number: 253820



Main Features:

- POWER DIO: 8x DI / 8x DO
- Supports two I2C Host-Channels
- Status LEDs for selected connection, power and ADQ-LINK state
- Controllable via ADQ-LINK
- ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x30)

Prototype

ST1
LINK IN-OUT/ I2C

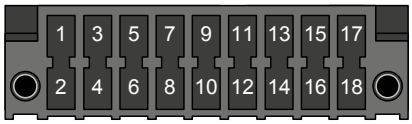


Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	Reference mass (ADQ-LINK input)
5	I2C-SCL0	CLK
6	I2C-SCL1	CLK
7	I2C-SDA0	DATA
8	I2C-SDA1	DATA
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

ST2
DIO



Phoenix Contact Plug: 1790551

Pin	Assignment	Description
1	GND	GND (isolated from PC ground GND_PC)
2	UEXT	16..35 VDC, typ. 24 VDC for control technology
3	DO_6	Digital output
4	DO_7	Digital output
5	DO_4	Digital output
6	DO_5	Digital output
7	DO_2	Digital output
8	DO_3	Digital output
9	DO_0	Digital output
10	DO_1	Digital output
11	DI_0	Digital input
12	DI_1	Digital input
13	DI_2	Digital input
14	DI_3	Digital input
15	DI_4	Digital input
16	DI_5	Digital input
17	DI_6	Digital input
18	DI_7	Digital input

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-7101-Link rev. 1.0
Article number: 253821



Main Features:

- Multiplexer Box for MUX/DEMUX
- 2x 4:1 2 Channel Multiplexer
- MUXER: Dual Powersupply Range +/-22V
- MUXER: Single Powersupply Range 0-44V
- Status LEDs for selected connection, power and ADQ-LINK state
- Controllable via ADQ-LINK-IN, ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x30)

Prototype

ST1
ADQ-LINK in- / AN, AP / BN, BP



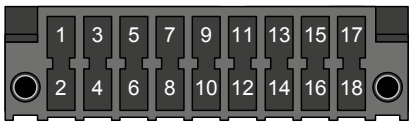
Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	Reference mass (ADQ-LINK input)
5	AN	DRAIN (can be an input/output)
6	AP	DRAIN (can be an input/output)
7	BN	DRAIN (can be an input/output)
8	BP	DRAIN (can be an input/output)
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

IMPORTANT INFORMATION ABOUT ALLDAQ MCS
(Measurement Control Switching)

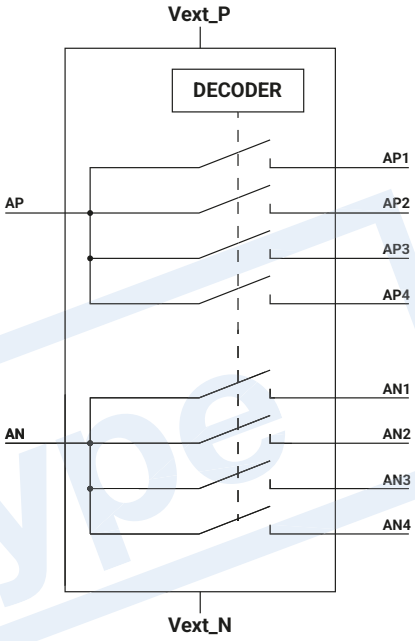
ST2

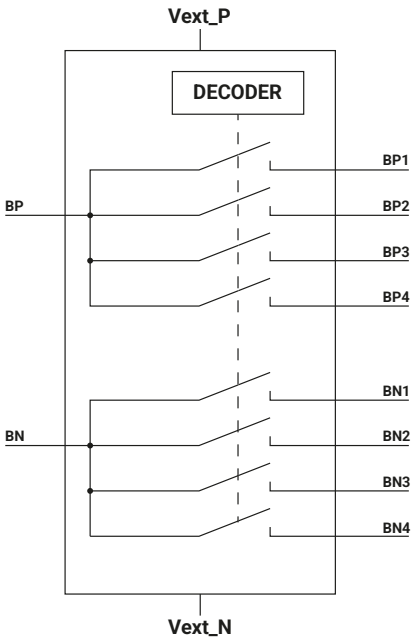
MUXER: Vext, APx, BPx



Phoenix Contact Plug: 1790551

Pin	Assignment	Description
1	VEXT_N	GND or negative Powersupply (max -22V)
2	VEXT_P	Positive Powersupply 44V by 0V on PIN1 or 22V by negative supply on PIN 1
3	BN4	Source (can be input or output)
4	BP4	Source (can be input or output)
5	BN3	Source (can be input or output)
6	BP3	Source (can be input or output)
7	BN2	Source (can be input or output)
8	BP2	Source (can be input or output)
9	BN1	Source (can be input or output)
10	BP1	Source (can be input or output)
11	AN4	Source (can be input or output)
12	AP4	Source (can be input or output)
13	AN3	Source (can be input or output)
14	AP3	Source (can be input or output)
15	AN2	Source (can be input or output)
16	AP2	Source (can be input or output)
17	AN1	Source (can be input or output)
18	AP1	Source (can be input or output)





Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-7301s34-Link rev. 1.0
Article number: 258474



Main Features:

- Switch-Box: 6x Relays Type S34 (SPDT) max. 30VDC/6A
- Status LEDs for selected relay, power and ADQ-LINK state
- Controllable via ADQ-LINK-IN, ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x45)

Prototype

ST1
LINK IN-OUT/ I2C

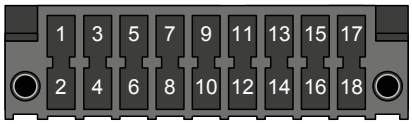


Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	Reference mass (ADQ-LINK input)
5	I2C-SCL0	CLK
6	I2C-SCL1	CLK
7	I2C-SDA0	DATA
8	I2C-SDA1	DATA
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

IMPORTANT INFORMATION ABOUT ALLDAQ MCS
(Measurement Control Switching)

ST2
Relay-Pining



Phoenix Contact Plug: 1790551

Pin	Assignment	Description
1	REL_0_NC	Closed contact of relay
3	REL_0_COM	Changeover contact of relay
5	REL_0_NO	Open contact of relays
7	REL_2_NC	Closed contact of relay
9	REL_2_COM	Changeover contact of relay
11	REL_2_NO	Open contact of relays
13	REL_4_NC	Closed contact of relay
15	REL_4_COM	Changeover contact of relay
17	REL_4_NO	Open contact of relays
2	REL_1_NC	Closed contact of relay
4	REL_1_COM	Changeover contact of relay
6	REL_1_NO	Open contact of relays
8	REL_3_NC	Closed contact of relay
10	REL_3_COM	Changeover contact of relay
12	REL_3_NO	Open contact of relays
14	REL_5_NC	Closed contact of relay
16	REL_5_COM	Changeover contact of relay
18	REL_5_NO	Open contact of relays

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-7301ftr-Link rev. 1.0
Article number: 258475



Main Features:

- Switch-Box: 3x Signale-Relays Type FTR (DPDT) max. 30VDC/1A
- Status LEDs for selected relay, power and ADQ-LINK state
- Controllable via ADQ-LINK-IN, ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x30)

Prototype

ST1
LINK IN-OUT/ I2C



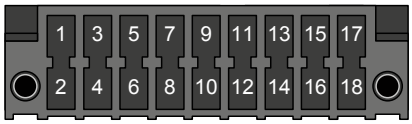
Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	Reference mass (ADQ-LINK input)
5	I2C-SCL0	CLK
6	I2C-SCL1	CLK
7	I2C-SDA0	DATA
8	I2C-SDA1	DATA
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

ST2

Relay-Pining



Phoenix Contact Plug: 1790551

Pin	Assignment	Description
1	REL_0_NC_A	Closed contact of relay
3	REL_0_COM_A	Changeover contact of relay
5	REL_0_NO_A	Open contact of relays
2	REL_0_NC_B	Closed contact of relay
4	REL_0_COM_B	Changeover contact of relay
6	REL_0_NO_B	Open contact of relays
7	REL_1_NC_A	Closed contact of relay
9	REL_1_COM_A	Changeover contact of relay
11	REL_1_NO_A	Open contact of relays
8	REL_1_NC_B	Closed contact of relay
10	REL_1_COM_B	Changeover contact of relay
12	REL_1_NO_B	Open contact of relays
13	REL_2_NC_A	Closed contact of relay
15	REL_2_COM_A	Changeover contact of relay
17	REL_2_NO_A	Open contact of relays
14	REL_2_NC_B	Closed contact of relay
16	REL_2_COM_B	Changeover contact of relay
18	REL_2_NO_B	Open contact of relays

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-7102usb-Link rev. 1.0

Article number: 253818



Main Features:

- USB 3.x and USB 2.0 differential switch 2:1/1:2 MUX/DEMUX
- Two operation modes:
  1x Source (USB-B) <> 2x Sink (USB-A)
  2x Source (USB-A) <> 1x Sink (USB-B)
- Supports Data Rates up to 10 Gbps on High-Bandwidth Path (SS)
- Two power modes:
  Self-powered: Internal 5 V, Imax = 400 mA (overcurrent protected)
  Bus-powered: Host VBus, Imax= 1800 mA
- Supports 4-wire VBus measurement via ADQ-4x.
- Internal VBus and current measurement (optional)
- Status LEDs for selected connection, power and ADQ-LINK state
- Secure initial state > no connection between source and sink
- Controllable via ADQ-LINK-IN, ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x45)

ST1

LINK IN-OUT/ ADQ-4x



Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	Reference mass (ADQ-LINK input)
5	Sense+	Positive voltage measuring line
6	IN_CH	Positive load path – current measuring line
7	Sense-	Negative voltage measuring line
8	GND_CH	Negative load path – current measuring line
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

ST2

USB Host connector USB3.x – type “B”



Würth Socket: 692221030100, Plug: any USB3.x compliant plug/cable

Pin	Assignment	Description
1	VBus	Bus voltage, typ. 5 V, Imax = 1800 mA
2	D-	USB2.0 negative data line
3	D+	USB2.0 positive data line
4	GND	Reference mass for USB2.0
5	SSTX-	USB3.x negative TX line
6	SSTX+	USB3.x positive TX line
7	GND_DRAIN	Reference mass for USB3.x
8	SSRX-	USB3.x negative RX line
9	SSRX+	USB3.x positive RX line
Shell	Shield	Shield

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

ST3

USB0 connector USB3.x – type “A” stacked (bottom)



Würth Socket: 692141030100, Plug: any USB3.x compliant plug/cable

Pin	Assignment	Description
1	VBus	Bus voltage, typ. 5 V, Imax = 1800 mA
2	D-	USB2.0 negative data line
3	D+	USB2.0 positive data line
4	GND	Reference mass for USB2.0
5	SSRX-	USB3.x negative RX line
6	SSRX+	USB3.x positive RX line
7	GND_DRAIN	Reference mass for USB3.x
8	SSTX-	USB3.x negative TX line
9	SSTX+	USB3.x positive TX line
Shell	Shield	Shield

ST3

USB0 connector USB3.x – type “A” stacked (bottom)



Würth Socket: 692141030100, Plug: any USB3.x compliant plug/cable

Pin	Assignment	Description
10	VBus	Bus voltage, typ. 5 V, Imax = 1800 mA
11	D-	USB2.0 negative data line
12	D+	USB2.0 positive data line
13	GND	Reference mass for USB2.0
14	SSTX-	USB3.x negative TX line
15	SSTX+	USB3.x positive TX line
16	GND_DRAIN	Reference mass for USB3.x
17	SSRX-	USB3.x negative RX line
18	SSRX+	USB3.x positive RX line
Shell	Shield	Shield

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-7102hmtd-Link rev. 1.0
Article number: 253819



Main Features:

- 100BASE-T1 and 1000BASE-T1 differential switch 2:1/1:2 MUX/DEMUX
- Supports Data Rates up to 10 Gbps on High-Bandwidth Path (SS)
- Status LEDs for selected connection, power and ADQ-LINK state
- Secure initial state > no connection between source and sink
- Rosenberger single H-MTD connectors with z-coding (water blue)
- Controllable via ADQ-LINK-IN, ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x30)

ST1
LINK IN-OUT



Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	v
5	n/a	not applicable
6	n/a	not applicable
7	n/a	not applicable
8	n/a	not applicable
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

ST2

Single H-MTD source connector



Rosenberger Socket: E6S20A-40MT5-Z

Pin	Assignment	Description
1	D+	Positive data line
2	D-	Negative data line
Shell	Shield	Shield

ST3

Single H-MTD sink 0 connector



Rosenberger Socket: E6S20A-40MT5-Z

Pin	Assignment	Description
1	D+	Positive data line
2	D-	Negative data line
Shell	Shield	Shield

ST4

Single H-MTD sink 1 connector



Rosenberger Socket: E6S20A-40MT5-Z

Pin	Assignment	Description
1	D+	Positive data line
2	D-	Negative data line
Shell	Shield	Shield

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-8101-A2B

Article number: 247941



Main Features:

- Simple A2B node
- Bus-powered
- Audio components (Codec, TRS socket, …) not populated!
- Supports 4-wire VBus measurement via ADQ-4x.
- On-board E2P accessible via I2C tunneling
- Phoenix connector
- Comes with housing: ALU-BOX (90x65x30)

Prototype

ST1

A2B Port A - directed towards the upstream transceiver on the A2B bus



Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	AN	Bidirectional inverted data pin for A port
2	n/a	not applicable
3	AP	Bidirectional noninverted data pin for A port
4	n/a	not applicable
5	Sense+	Positive voltage measuring line
6	IN_CH	Positive load path – current measuring line
7	Sense-	Negative voltage measuring line
8	GND_CH	Negative load path – current measuring line
9	BP	Bidirectional noninverted data pin for B port
10	n/a	not applicable
11	BN	Bidirectional inverted data pin for B port
12	n/a	not applicable



ST2, ST3

TPS-sockets für audio input and output – not populated!

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-2101-Link rev. 1.0
Article number: 267547



Main Features:

- 4 analog single inputs up to 48VDC
- 4 analog differential inputs ± 22, 796VDC
- Supports two I2C Host-Channels
- Status LEDs for selected connection, power and ADQ-LINK state
- Controllable via ADQ-LINK
- ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x30)

Prototype

ST1
LINK IN-OUT/ I2C



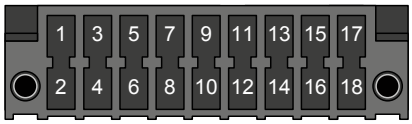
Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	Reference mass (ADQ-LINK input)
5	I2C-SCL0	CLK
6	I2C-SCL1	CLK
7	I2C-SDA0	DATA
8	I2C-SDA1	DATA
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

ST2

AI



Phoenix Contact Plug: 1790551

Pin	Assignment	Description
1	NC	not connected
2	NC	not connected
3	GND	Reference mass
4	UMESS_SE_3	Analog input
5	UMESS_Diff-_3	Analog input
6	UMESS_Diff+_3	Analog input
7	GND	Reference mass
8	UMESS_SE_2	Analog input
9	UMESS_Diff-_2	Analog input
10	UMESS_Diff+_2	Analog input
11	GND	Reference mass
12	UMESS_SE_1	Analog input
13	UMESS_Diff-_1	Analog input
14	UMESS_Diff+_1	Analog input
15	GND	Reference mass
16	UMESS_SE_0	Analog input
17	UMESS_Diff-_0	Analog input
18	UMESS_Diff+_0	Analog input

Prototype

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

MCS-5201-Link rev. 1.0
Article number: 267548



Main Features:

- Power supply: U_IN 24V
- Ouput adjustable via software from 4.8-18.4VDC/10A
- Status LEDs for selected connection, power and ADQ-LINK state
- Controllable via ADQ-LINK
- ADQ-LINK-OUT (Daisy-Chain)
- Comes with housing: ALU-BOX (90x65x30)

Prototype

ST1
LINK IN-OUT/ I2C

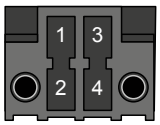


Phoenix Contact Plug: 1790522

Pin	Assignment	Description
1	ADQ-Link D+	Positive ADQ-Link data line input
2	12 V	12 V power input
3	ADQ-Link D-	Negative ADQ-Link data line input
4	GND	Reference mass (ADQ-LINK input)
5	NC	not connected
6	NC	not connected
7	NC	not connected
8	NC	not connected
9	ADQ-Link D+	Positive ADQ-Link data line output
10	12 V	12 V power output, Iout_max = 1.1 A (polyfused)
11	ADQ-Link D-	Negative ADQ-Link data line output
12	GND	Reference mass (ADQ-LINK output)

IMPORTANT INFORMATION ABOUT ALLDAQ MCS (Measurement Control Switching)

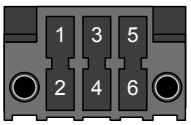
ST2
Power Input



Phoenix Contact Plug: 1787014

Pin	Assignment	Description
1	U_IN	Power supply Input
2	U_IN	Power supply Input
3	GND	Reference mass
4	GND	Reference mass

ST3
Power Output



Phoenix Contact Plug: 1787027

Pin	Assignment	Description
1	U_OUT	Ouput, adjustable
2	GND	Reference mass
3	U_OUT	Ouput, adjustable
4	GND	Reference mass
5	U_OUT	Ouput, adjustable
6	GND	Reference mass

Prototyp