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ALPHA DATA

ADC-XMC-BREAKOUT
User Manual

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	Head Office	US Office
Address:	4 West Silvermills Lane, Edinburgh, EH3 5BD, UK	611 Corporate Circle Suite H Golden, CO 80401
Telephone:	+44 131 558 2600	(303) 954 8768
Fax:	+44 131 558 2700	(866) 820 9956 - toll free
email:	sales@alpha-data.com	sales@alpha-data.com
website:	http://www.alpha-data.com	http://www.alpha-data.com

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1 Introduction

The ADC-XMC-BREAKOUT is a standalone breakout adaptor for Alpha-Data XMCs. The board provides Ethernet, Serial COM, USB, SATA, GPIO and PCIe/HSSIO breakout functionality. To allow compatibility with various XMC board pinouts, a personality wiring card that matches the XMC pinout is used to route signals through to the breakout interfaces.

Apart from the breakout functionality, ADC-XMC-BREAKOUT provides a standard 24-pin ATX power connector, power switch, reset switch, current sense on both 12V0 and 3V3 supplies and a cooling fan. The ADC-XMC-BREAKOUT passes through the PCIe signals from connector J15 to connector P15.

Note that the ADC-XMC-BREAKOUT is a passive breakout adaptor. Interface support is dependant on the XMC type fitted to the adaptor.

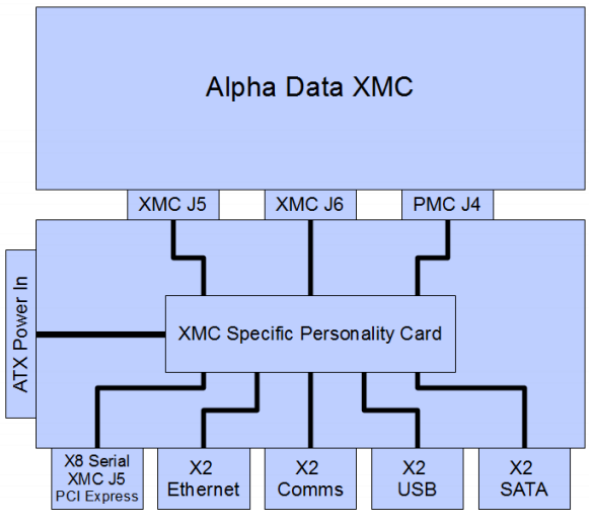


Figure 1 : ADC-XMC-BREAKOUT Block Diagram

2 Board Features

The following photos highlight the various features of the ADC-XMC-BREAKOUT

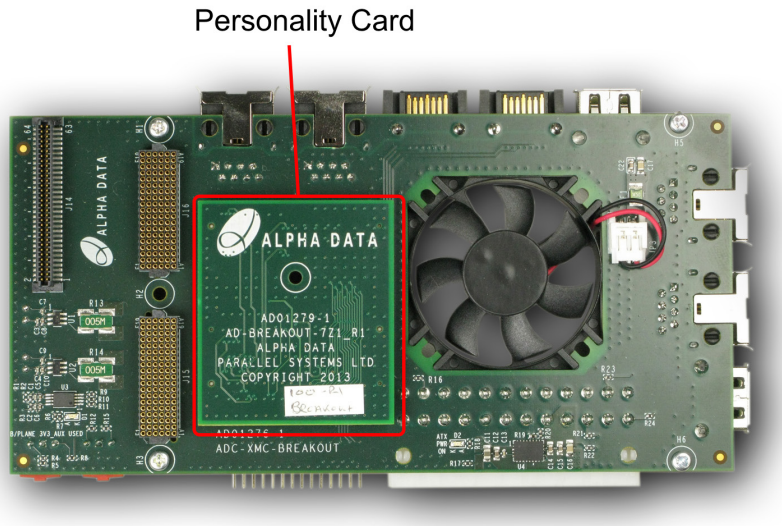


Figure 2 : ADC-XMC-BREAKOUT Features Front

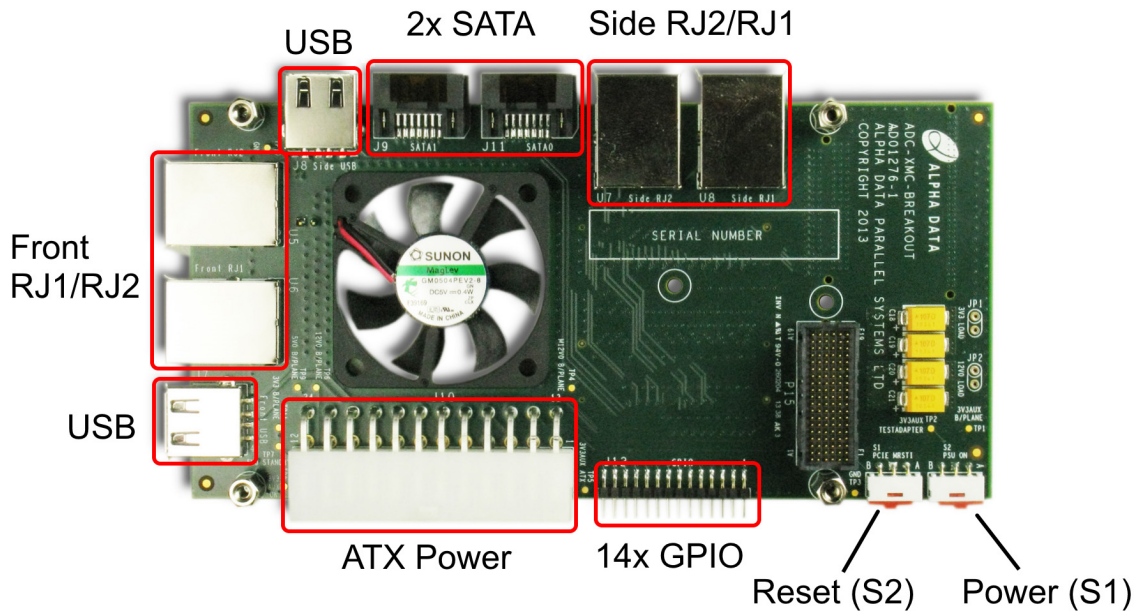


Figure 3 : ADC-XMC-BREAKOUT Features Back

3 Installation and Power Up

The required personality card should be attached to connectors J21, J22 and J23 prior to attaching the XMC card to J14, J15 and J16.

To power up the board, ensure that the PCIe reset switch S1 is OFF (position A on the silkscreen) and the power switch S2 is OFF, and turn on the ATX power supply. To turn the board ON, switch the power switch S2 to ON (position B on the silkscreen).

4 Connector Pin Assignments

The pinout depends on the personality board used. Select the correct table below for the pinout.

Signal Name	J16 Pin	Function
SATA0_TX_P	A1	Sata0 Tx+
SATA0_TX_N	B1	Sata0 Tx-
SATA0_RX_P	A11	Sata0 Rx+
SATA0_RX_N	B11	Sata0 Rx-
SATA1_TX_P	D1	Sata1 Tx+
SATA1_TX_N	E1	Sata1 Tx-
SATA0_RX_P	D11	Sata1 Rx+
SATA0_RX_N	E11	Sata1 Rx-
GPIO_14	B19	GPIO14
GPIO_13	A19	GPIO13
GPIO_12	F14	GPIO12
GPIO_11	F15	GPIO11
GPIO_10	C14	GPIO10
GPIO_9	C15	GPIO9
GPIO_8	F16	GPIO8
GPIO_7	F17	GPIO7
GPIO_6	C16	GPIO6
GPIO_5	C17	GPIO5
GPIO_4	F18	GPIO4
GPIO_3	F19	GPIO3
GPIO_2	C18	GPIO2
GPIO_1	C19	GPIO1

Table 1 : ADM-XRC-7Z1 pcb revision 2 pinout for J16

Signal Name	J14 Pin	Function
Front RJ1 pin1	1	Ethernet0 MD0+
Front RJ1 pin2	3	Ethernet0 MD0-
Front RJ1 pin3	7	Ethernet0 MD1+
Front RJ1 pin4	2	Ethernet0 MD1-
Front RJ1 pin5	4	Ethernet0 MD2+
Front RJ1 pin6	9	Ethernet0 MD2-
Front RJ1 pin7	8	Ethernet0 MD3+
Front RJ1 pin8	10	Ethernet0 MD3-
Side RJ1 pin1	13	Ethernet1 MD0+
Side RJ1 pin2	15	Ethernet1 MD0-
Side RJ1 pin3	19	Ethernet1 MD1+
Side RJ1 pin4	14	Ethernet1 MD1-
Side RJ1 pin5	16	Ethernet1 MD2+
Side RJ1 pin6	21	Ethernet1 MD2-
Side RJ1 pin7	20	Ethernet1 MD3+
Side RJ1 pin8	22	Ethernet1 MD3-
Front RJ2 pin3	43	COM1 Tx
Front RJ2 pin6	42	COM1 Rx
Side RJ2 pin3	47	COM2 Tx
Side RJ2 pin6	48	COM2 Rx
Front USB DP	27	USB Data+
Front USB DM	25	USB Data-
Front USB VBus	29	USB Vcc
Side USB DP	28	USB Data+
Side USB DM	26	USB Data-
Side USB VBus	30	USB Vcc

Table 2 : ADM-XRC-7Z1 pcb revision 2 pinout for J14

Signal Name	J16 Pin	Function
SATA0_TX_P	B11	Ethernet1 Tx+
SATA0_TX_N	A11	Ethernet1 Tx-
SATA0_RX_P	E11	Ethernet1 Rx+
SATA0_RX_N	D11	Ethernet1 Rx-
Side RJ1 pin1	B13	1553 Ch1A+
Side RJ1 pin2	A13	1553 Ch1A-
Side RJ1 pin3	E13	1553 Ch1B+

Table 3 : ADM-XRC-7Z2 pcb revision 1 pinout for J16 (continued on next page)

Signal Name	J16 Pin	Function
Side RJ1 pin6	D13	1553 Ch1B-
Front RJ1 pin1	E1	Ethernet0 MD0+
Front RJ1 pin2	D1	Ethernet0 MD0-
Front RJ1 pin3	B1	Ethernet0 MD1+
Front RJ1 pin4	E3	Ethernet0 MD1-
Front RJ1 pin5	D3	Ethernet0 MD2+
Front RJ1 pin6	A1	Ethernet0 MD2-
Front RJ1 pin7	B3	Ethernet0 MD3+
Front RJ1 pin8	A3	Ethernet0 MD3-
Side RJ2 pin3	F18	COM2 Tx
Side RJ2 pin6	F19	COM2 Rx
Front RJ2 pin3	C18	COM1 Tx
Front RJ2 pin6	C19	COM1 Rx
Front USB DP	B19	USB Data+
Front USB DM	A19	USB Data-
Front USB VBus	F16	USB Vcc
Side USB DP	E19	USB Data+
Side USB DM	D19	USB Data-
Side USB VBus	F17	USB Vcc

Table 3 : ADM-XRC-7Z2 pcb revision 1 pinout for J16

5 Current Monitoring

The ADC-XMC-BREAKOUT provides high-side current sense functionality on both the 12V and 3V3 supplies. Connector JP1 provides the 3V3 load signal and JP2 provides the 12V0 load signal.

The formula for converting the voltage measured at JP1 and JP2 into amps is:

Current = Vjp*10

6 Auxillary Power Generation

The ADC-XMC-BREAKOUT generates the 3.3V auxillary power supply from the ATX supplies 5.0V standby supply.

7 Dimensions

Dimension	Measurement
X PCB	149mm
X including connectors	152mm
Y PCB	74mm
Y including connectors	88mm

Table 4 : ADC-XMC-BREAKOUT PCB dimensions

8 Order Code

ADC-XMC-BREAKOUT/X/T

Name	Symbol	Configurations
XMC Personality Card	x	7Z1 = ADM-XRC-7Z1, 7Z2 = ADM-XRC-7Z2, 6TGE = ADM-XRC-6TGE
XMC Connector Type	t	blank = XMC (VITA 42) Connectors, /X2 = XMC2 (VITA 61) Connectors

Table 5 : ADC-XMC-BREAKOUT Order Code

Revision History

Date	Revision	Nature of Change
August 2017	1.0	Preliminary issue

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Address: 4 West Silvermills Lane,
Edinburgh, EH3 5BD, UK
Telephone: +44 131 558 2600
Fax: +44 131 558 2700
email: sales@alpha-data.com
website: http://www.alpha-data.com

Address: 611 Corporate Circle Suite H
Golden, CO 80401
Telephone: (303) 954 8768
Fax: (866) 820 9956 - toll free
email: sales@alpha-data.com
website: http://www.alpha-data.com

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