EPM-1602

mPCIe to 4-RS-422/485 Module

User's Manual

1st Ed – 28 January 2021

Part No: E2047CS0200R

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.
THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTATLLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.
OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

A Message to the Customer

Avalue Customer Services

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.
To receive the latest version of the user's manual; please visit our Web site at:
http://www.avalue.com.tw/

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1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Always note that improper disassembling action could cause damage to the motherboard. We suggest not removing the heatsink without correct instructions in any circumstance. If you really have to do this, please contact us for further support.

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x EPM-1602 mPCIe to 4-RS-422/485 Module
- 1 x DB-9 connectors cable

If any of the above items is damaged or missing, contact your retailer.

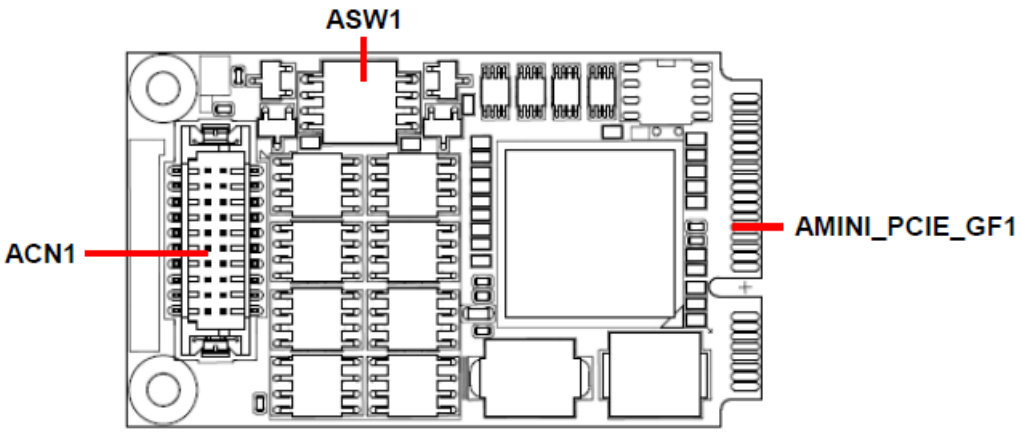
2.1 Product Specifications

Component	
I/O Chip	MAXLINEAR XR17V354
Form factor	mPCIe
Input I/F	1x PCI Express 2.0
Output I/F	4 x RS-422/485 (four DB9 connector with cable)
Mechanical & Environmental	
Power Consumption	3.3V
Operating Temp.	W/T temp: -40°C ~ +85°C (-40 ~185°F)
Storage Temp.	-40°C ~ +85°C (-40 ~185°F)
Operating Humidity	40℃@95% relative humidity, non-condensing
Size (L x W)	50.9mm*30mm
Weight	Board: 9g Cable: 41g
Vibration Test	Vibration: 5G @5~500Hz
Shock Test	Shock: 10G @ 11ms
OS Information	Windows 7/10 and Linux

Note: Specifications are subject to change without notice.

2. Hardware Configuration

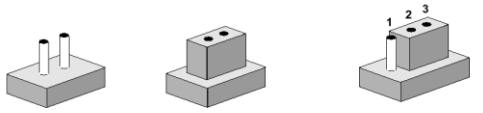
2.2 Product Overview



2.3 Jumper & Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



Open Closed Closed 2-3

The jumper settings are schematically depicted in this manual as follows:

Open Closed Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

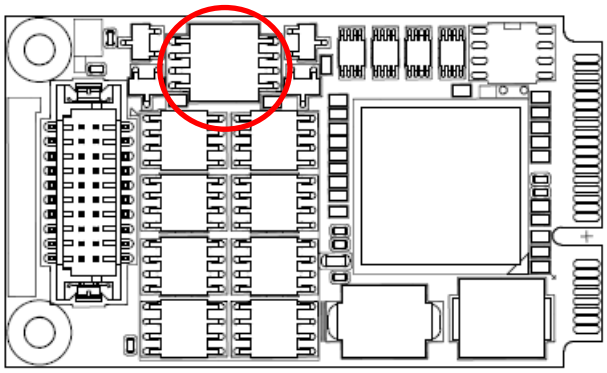
Label	Function	
ASW1	RS422/RS485 mode selector	SMT switch 4pin

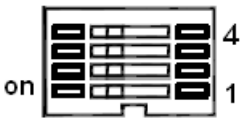
Connectors

Label	Function	
ACN1	RS422/RS485 connector	10 x 2 wafer, pitch 1.25mm
AMINI_PCIE_GF1	MINI PCIE(Golden Finger)	

2.4 Setting Jumpers & Connectors

2.4.1 RS422/RS485 mode selector (ASW1)





In Serial Port 1 mode

	RS-422	RS-485
1	OFF	ON

In Serial Port 2 mode

	RS-422	RS-485
1	OFF	ON

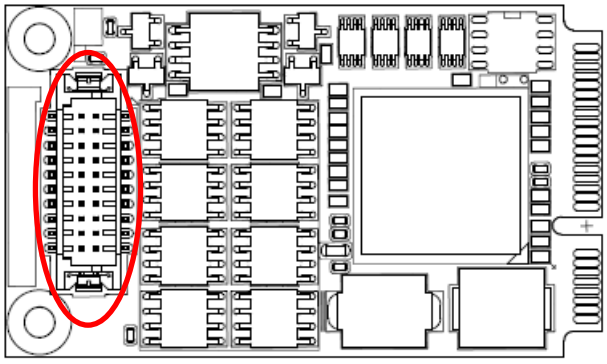
In Serial Port 3 mode

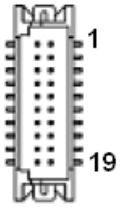
	RS-422	RS-485
1	OFF	ON

In Serial Port 4 mode

	RS-422	RS-485
1	OFF	ON

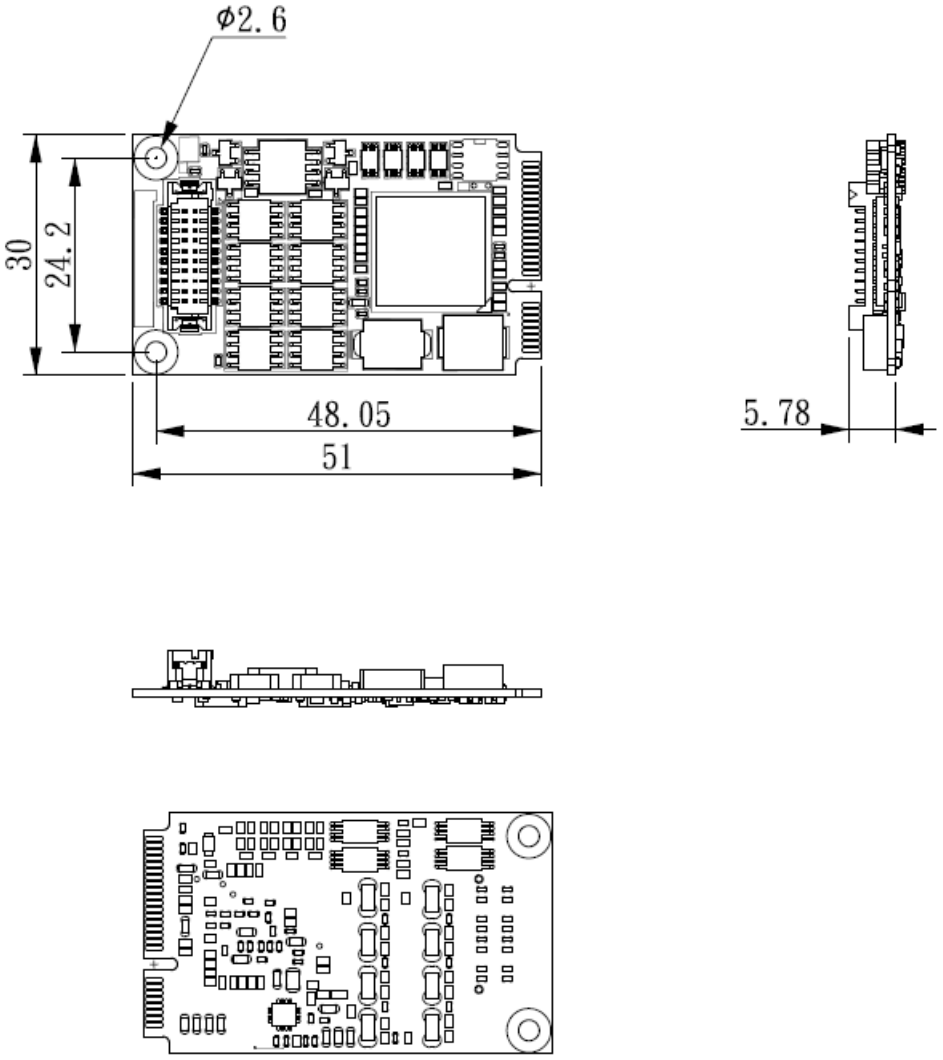
2.4.2 RS422/RS485 connector (ACN1)





Signal	PIN	PIN	Signal
A_485_422TX1+	2	1	A_485_422TX1-
A_422RX1-	4	3	A_422RX1+
GND	6	5	GND
A_485_422TX2+	8	7	A_485_422TX2-
A_422RX2-	10	9	A_422RX2+
A_485_422TX+-	12	11	A_485_422TX3-
A_422RX3-	14	13	A_422RX3+
GND	16	15	GND
A_485_422TX4+	18	17	A_485_422TX4-
A_422RX4-	20	19	A_422RX4+

3. Mechanical Drawing



Unit: mm