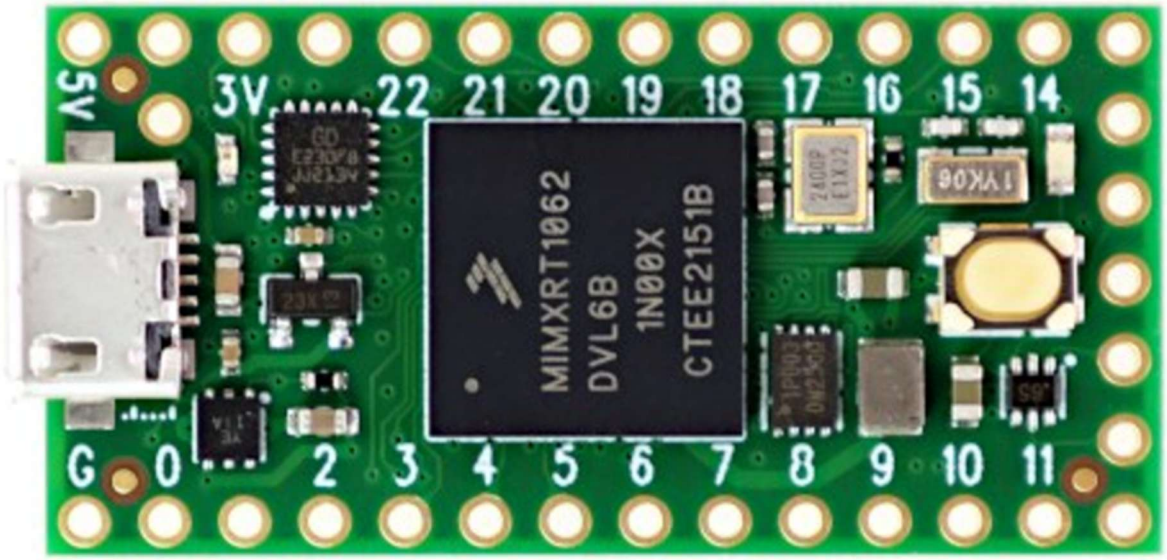
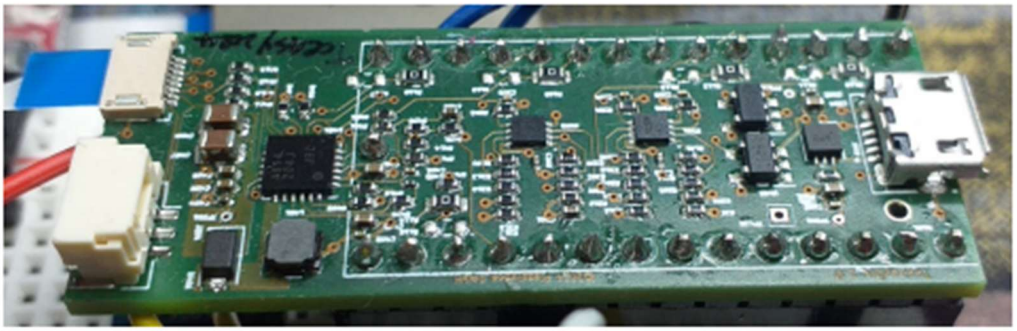
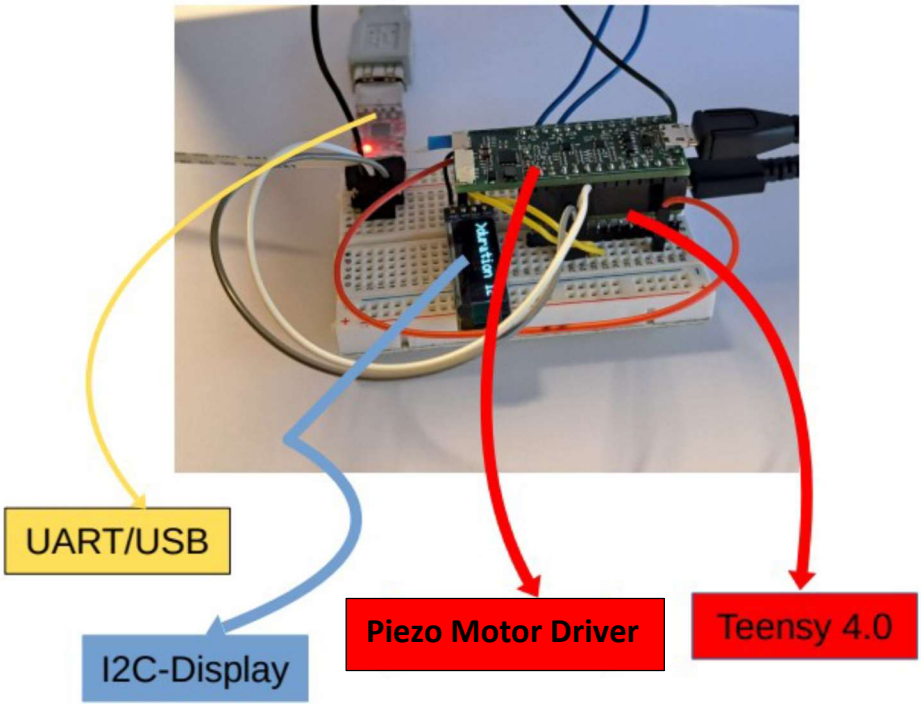
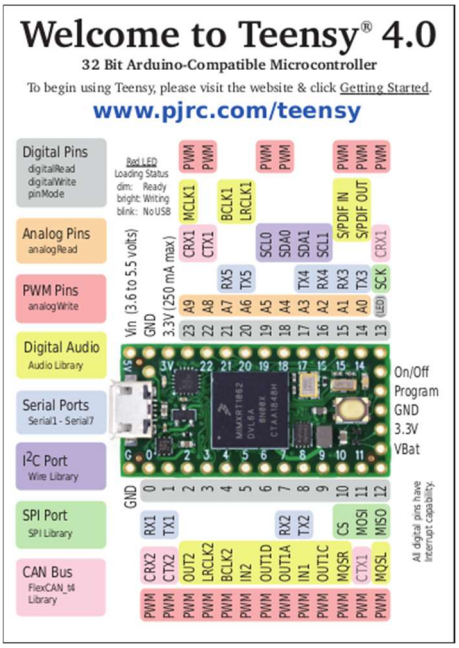
PMC2412 Controller with Teensy4.0

V1.00 2025/01/20









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All details provided are technical data which do not constitute warranted qualities.

Contents

1 Introduction

This user manual provides information about the electrical specifications of the PMC2412. PMC2412 is a specific driver board to couple with Teensy4.0 for driving miniature piezo linear motors. The PMC2412 controller is offered in single axis configurations with 2 motor connectors that can be used only alternatively.

2 Features

- Industry's smallest piezo linear motor controller solution.
- Serial RS-232 interface
- Single axis configuration.
- 2 motor connectors (3pin / 8pin)

3 Safety Precautions

Connect/disconnect the stage cable from/to PMC2412, only when the main power cable is disconnected from the wall outlet.

4 Specifications

Model	**PMC2412 for Teensy 4.0**
Power	
Operation Voltage	5V (±10%)
Electrical Power	1.5 W
Power Consumption	0.3 W
Communication	RS-232
Baud Rate	115200
Transmission Code	ASCII
Data Length	8 Bit
Stop Bit	1
Parity Check	-
User Software	PZM Teensy
Environmental	
Ambient operation temperature	0 to 50 °C
Storage temperature	-20°C to 70°C
Operating humitidy	80%
Dimensions	50.7 x 20.3 x 2.8 mm

5 Block Diagram

6 This section describes the block diagram of PMC2412.

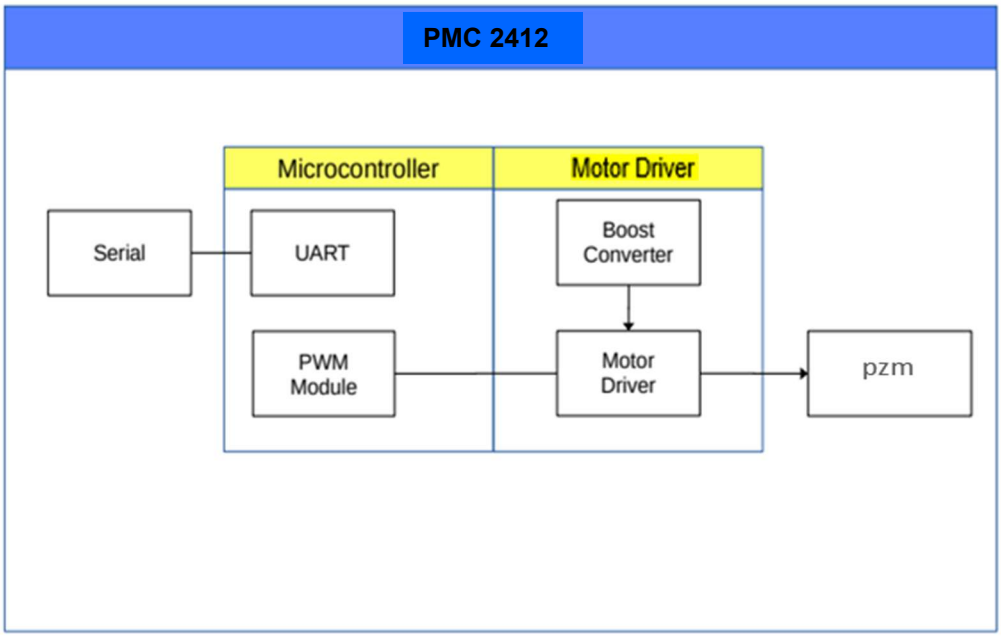


Figure 1: PMC2412 Block Diagram

PMC-Teensy consists of one Standard Teensy 4.0 Board (https://www.pjrc.com/store/teensy40.html) and the piezo linear motor specific driver board. PMC2412 is controlled by an UART interface that is connected to an USB/UART converter.

7 Layout

This section describes the layout of PMC2412.

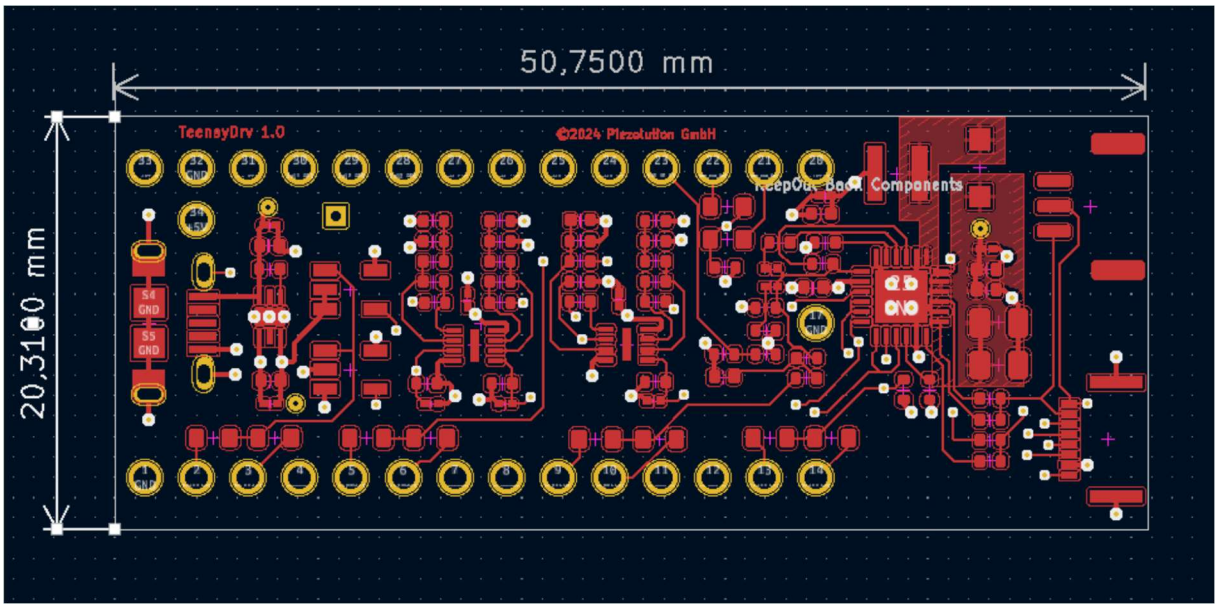


Figure 2: PMC2412 Layout Dimension

8 Connector Pin Configuration

This section describes the motor and encoder connector pin out.

1.1 Power (PMC2412)

Connector J1: USB-Micro

Pin#	Pin Name	Pin Type	Description
1	VCC5USB	P	Supply voltage +5V
2	-	-	-
3	-	-	-
4	-	-	-
5	GND	P	Supply voltage 0V

Table 1: PMC2412 Main Power Connector (USB-Micro Pin out)

1.2 Power (Teensy 4.0)

Connector J1: USB-Micro

Pin#	Pin Name	Pin Type	Description
1	VCC5USB	P	Supply voltage +5V
2	D-	I/O	Differential Line D-
3	D+	I/O	Differential Line D+
4	-	-	-
5	GND	P	Supply voltage 0V

Table 2: Teensy 4.0 Main Power Connector (USB-Micro Pin out)

1.3 Motor (3-pin)

Connector J204: JST, SM03B-GHS-TB

Pin#	Pin Name	Pin Type	Description
1	MOT_A	O	High voltage output A
2	MOT_B	O	High voltage output B
3	-	-	-

Table 3: PMC2412 Motor Connector Pin out

1.4 Motor (8-Pin)

Connector J205: Molex, 51281-0894 (FPC connector)

Pin#	Pin Name	Pin Type	Description
1	-	-	-
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	MOT_A	O	High voltage output A
8	MOT_B	O	High voltage output B

Table 4: PMC2412 Motor Connector Pin out

1.5 RS-232

Connector Teensy Main Connector

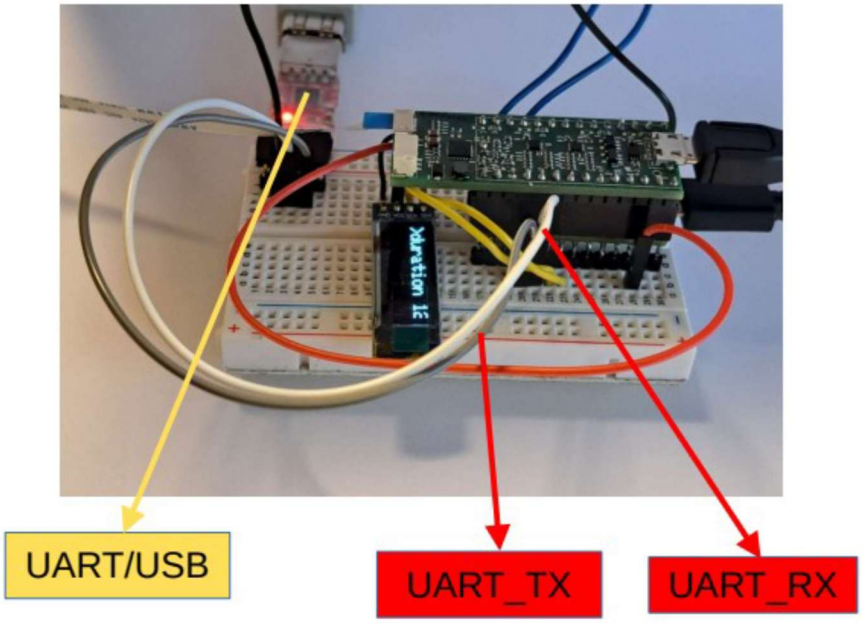
Pin#	Pin Name	Pin Type	Description
17	TXD	O	RS-232 Transmit (Teensy Names: A3/TX4)
16	RXD	I	RS-232 Receive (Teensy Names: A2/RX4)

Table 5: PMC2412 RS-232 Connector Pin out

1.6 USB (Serial over USB to be implemented)

Pin#	Pin Name	Pin Type	Description
1	VCC5USB	I	Positive supply for FT232R
2	D-	I/O	Differential line D-
3	D+	I/O	Differential line D+
4	N.C.	-	Not connected
5	GND	-	Ground reference for PMC-1804

Table 6: PMC2412 USB Connector Pin out



9 How to connect

The bellowing two pictures show the Teensy-Module unconnected and connected.

To run the PMC2412-Module correctly please plug both USB-micro connectors.