PMC2001 Master Board

for Piezoelectric Module Multi Channel Control

V101 2022/10

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Subject to technical modifications without notice.
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 PMC-2001, which is offered in single axis configurations. The PMC-2001 performs digital position and velocity control for one axis, using incremental encoder devices as the main position feedback. It has the role of Master device for multipal channel system.

2. Features

- Industry's smallest piezo motor controller solution.
- PID Control IIR filter Algorithm.
- USB (Serial over USB) or I2C Interface.
- Data Recording.
- Multipal Axis configuration.

3. Safety Precautions

Connect or disconnect the stage cable from or to PMC-2001, only when the main power cord is disconnected from the wall outlet.

4. Specifications

Model	**PMC-2001**
Power	
Operating Voltage	5V [±10%]
Electrical power	1.5W
Power consumption	0.3A
Communication	USB (Serial over USB)
Baud rate	115200 bps
Transmission code	ASC II
Data length	8 bit
Stop bit length	1 bit
Parity check	Nil
User software	Piezo Terminal
Environmental	
Ambient operating temperature	0 to +50℃
Storage temperature	-20℃ to +70℃
Operating humidity	0 to 80%
Dimensions	73 mm x 25 mm x 14 mm
Weight	12g

Table 1. Technical Data

5. Block Diagram

This section describes the block diagram of PMC-2001

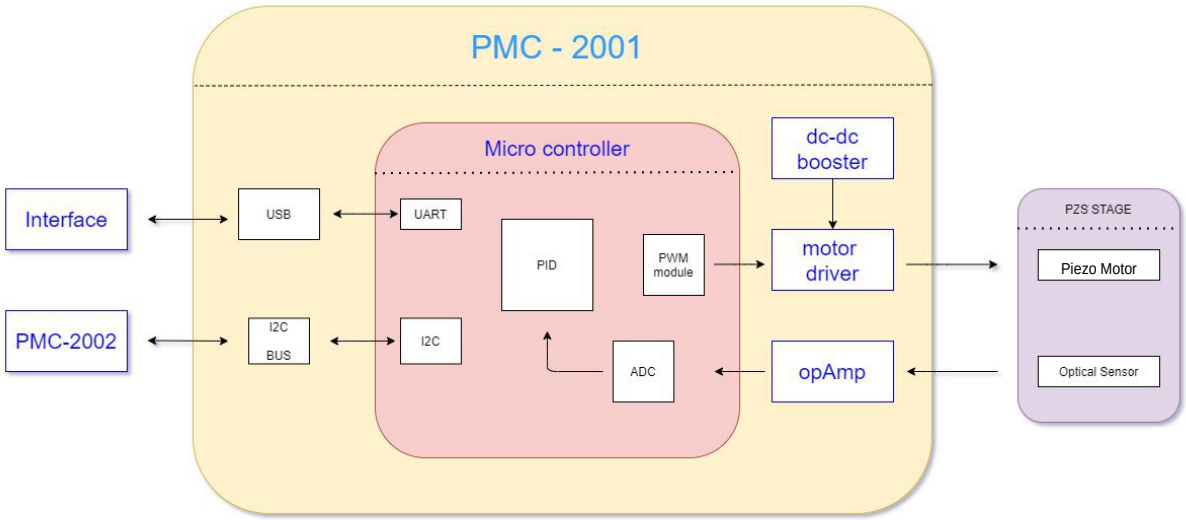


Figure 1: PMC-2001 Block Diagram

6. Layout

This section describes the layout of PMC-2001.

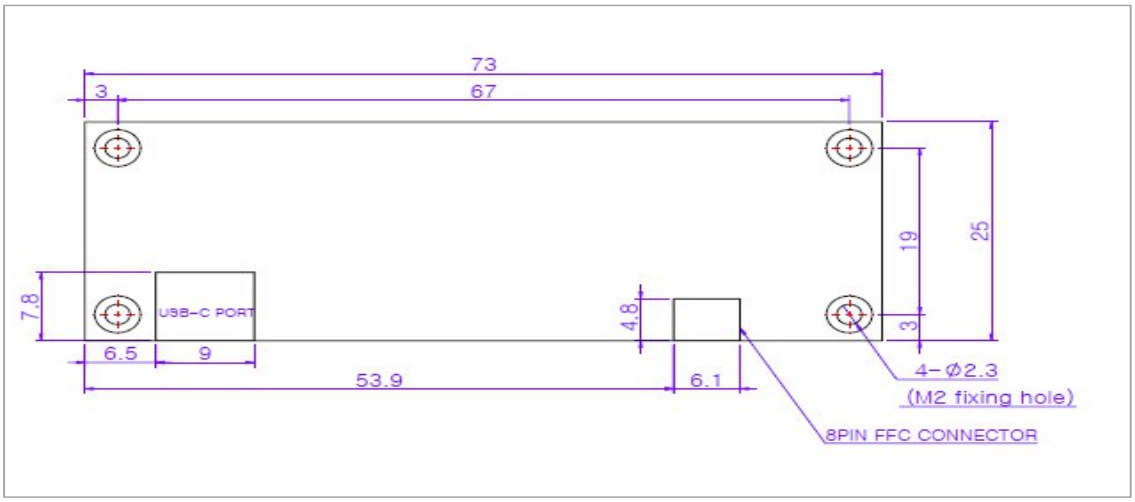


Figure 2: PMC-2001 Dimension

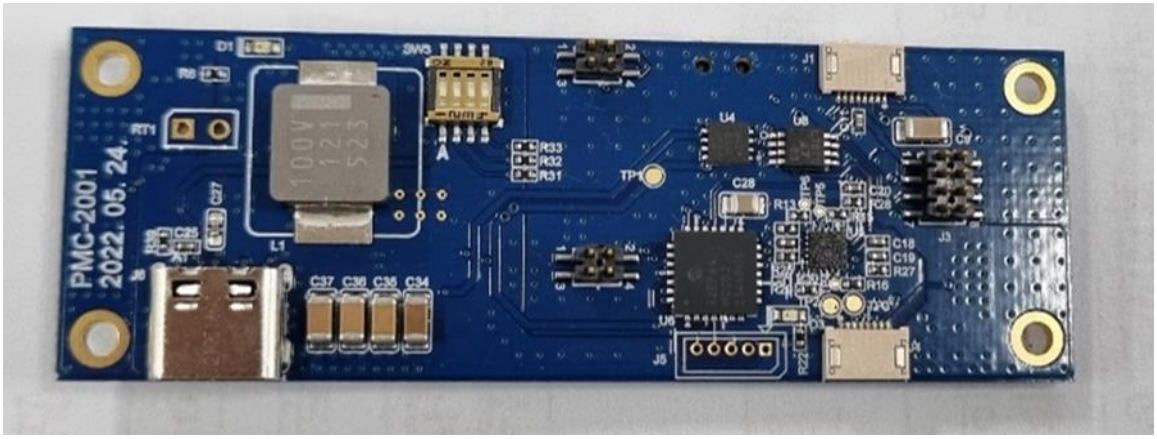


Figure 3: PMC-2001_Top view

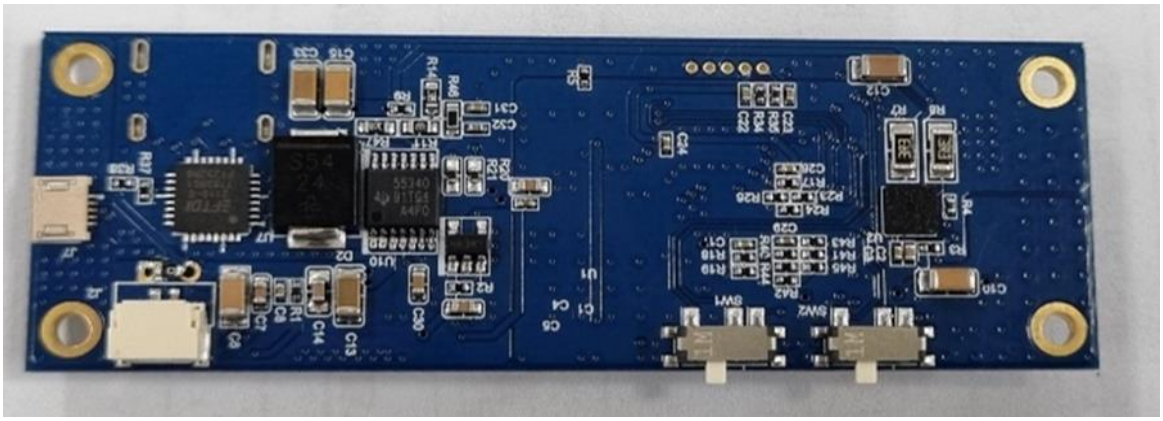


Figure 4: PMC-2001_Bottom view

7. Switch Setup

This section describes the switch 1,2,3 which are selected sensor type of PMC-2001.

7.1 SW1,SW2

Select sensor type
optical sensor mode (PT-XDT series)

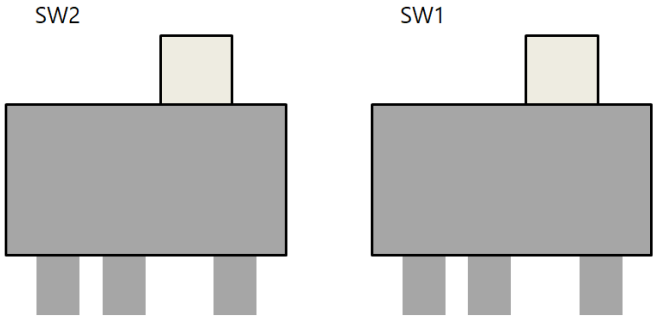


Figure 5: optical sensor mode

I2C mode

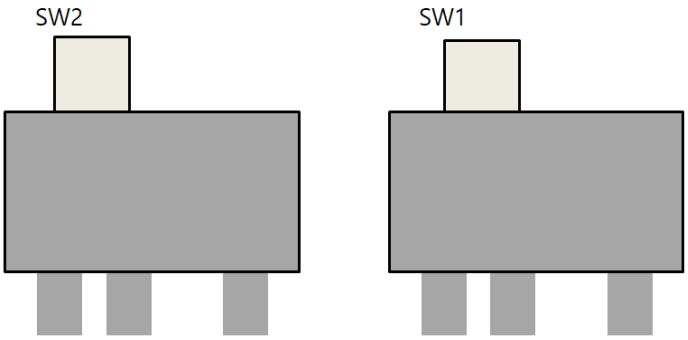
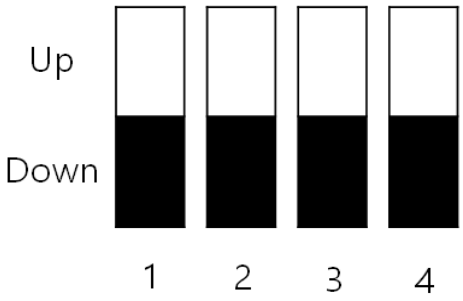


Figure 6: I2C encoder mode

7.2 SW3 (not function)



8. Connector Pin Configuration

This section describes the motor and encoder connector pin out.

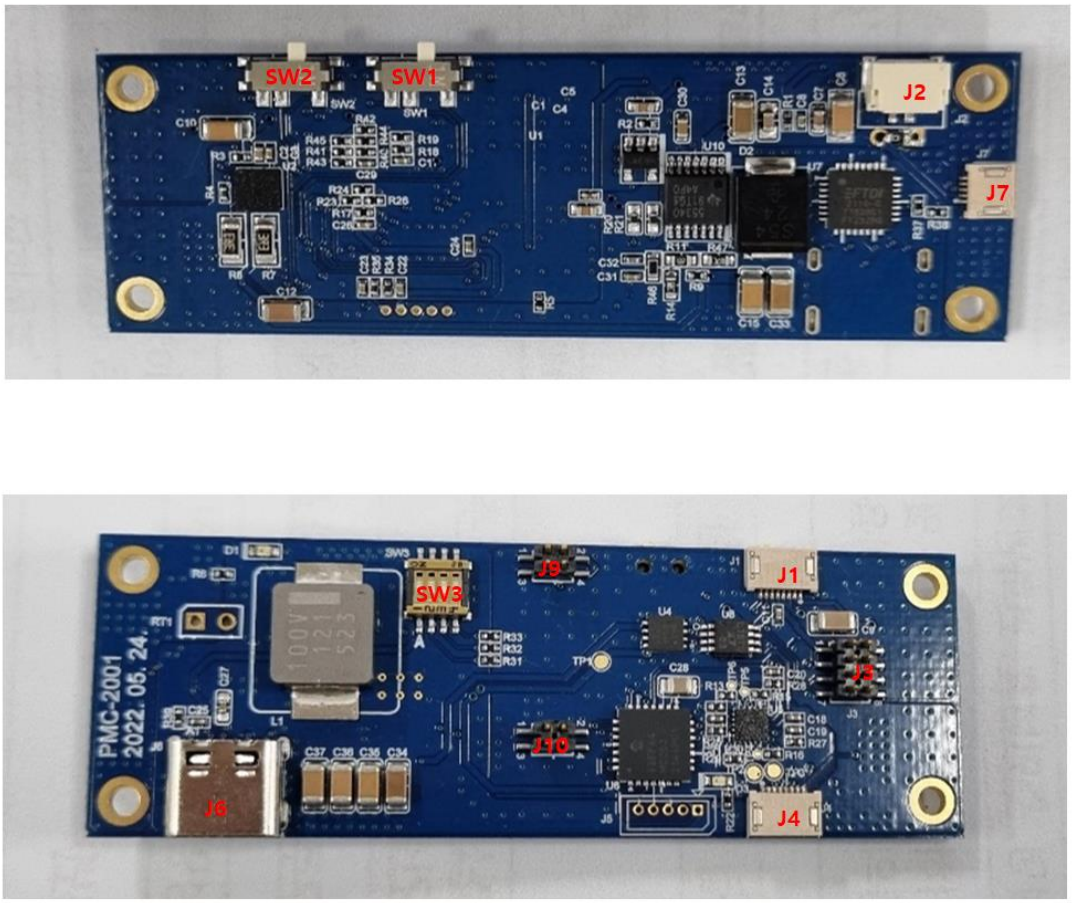


Figure 7. Description of PMC-2001 Connector and Switch

8.1 Power

Connector J2: JST, SM02B-GHS-TB

Pin#	Pin Name	Pin Type	Description
1	VCC5MAIN	P	Positive supply for PMC-2001
2	GND	-	Ground reference for PMC-2001

Table 2: PMC-2001 Main Power Connector Pin out

8.2 Motor & Encoder

Connector J4: Molex, 51281-0894 (optical sensor Mode)

Caution : FFC direction same side on the stage

Pin#	Pin Name	Pin Type	Description
1	GND	I	Encoder output C
2	3.3V	-	Common Voltage
3	OPT_B	I	Encoder output B
4	OPT_A	I	Encoder output A
5	LED_IN	-	Anode of Sensor
6	LED_OUT	-	Cathode of Sensor
7	MOT A	O	High voltage output A
8	MOT B	O	High voltage output B

(I2C encoder Mode)

Pin#	Pin Name	Pin Type	Description
1	OPT_C	I	Encoder output C
2	3.3V	-	Common Voltage
3	I2C_data	I	I2C Data
4	I2C_clock	I	I2C Clock
5,6	-	-	-
7	MOT A	O	High voltage output A
8	MOT B	O	High voltage output B

Table 3: PMC-2001 Stage Connector Pin out

8.3 FFC Connection to Peripherals (PMC-2002)

Connector J1: Molex, 51281-0894

Pin#	Pin Name	Pin Type	Description
1,2	Vout	-	Positive supply for Piezo Driver
3,4	DC 5V	-	Positive supply for PMC-2001
5	DC 3.3	-	Positive supply for Logic
6	GND	-	Ground reference for PMC-2001
7	I2C_Clock	O	I2C Clock
8	I2C_DATA	I,O	I2C Data

Table 4: PMC-2001 to PMC-2002 Connector Pin out

8.4 Stack Connection to Peripherals (PMC-2002)

Connector J3: Samtec, FTSH-104-02-L-D

Pin#	Pin Name	Pin Type	Description
1,3	DC 3.3	-	Positive supply for Logic
2,4	N.C	-	Not connected
6,8	GND	-	Ground reference for PMC-2001
5	I2C_Clock	O	I2C Clock
7	I2C_DATA	I,O	I2C Data

Table 5: PMC-2001 to PM C-2002 Connector Pin out

Connector J9: Samtec, FTSH-102-02-L-D

Pin#	Pin Name	Pin Type	Description
1,3	N.C	-	Not connected
2,4	Vout	-	Positive supply for Piezo Driver

Connector J10: Samtec, FTSH-102-02-L-D

Pin#	Pin Name	Pin Type	Description
1,3	N.C	-	Not connected
2,4	DC 5V	-	Positive supply for PMC-2001

8.5 USB C Type (Serial over USB)

Connector J6: Molex, 105450-0101

Pin#	Pin Name	Pin Type	Description
A4,B4 A9,B9	VCC5USB	I	Positive supply for FT232R
A7,B7	D-	I/O	Differential line D-
A6,B6	D+	I/O	Differential line D+
A2,B2 A3,B3 A5,B5, A8,B8	N.C.	-	Not connected
A1,B1 A12,B12	GND	-	Ground reference for PMC-2001

Table 6: PMC-2001 USB Connector Pin out

8.6 UART (TTL Level) or I2C

Connector J7: Molex, 51281-0594

Pin#	Pin Name	Pin Type	Description
1	VCC5MAIN	O	Positive supply for PMC-2001
2,5	GND	-	Ground reference for PMC-2001
3	TX	O	TX of UART from Host
4	RX	I	RX of UART from Host

Table 7: PMC-2001 Direct Connector from Host