AN072: Using the MAX22191 with TMCM-0960-MotionPy

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This document introduces the usage of MAX22191PMB with the TMCM-0960-MotionPy. The MAX22191PMB provides the hardware to evaluate the MAX22191 parasitically powered digital input. The functionality and the implementation in the MicroPython environment are introduced.

Figure 1: MAX22191PMB

Contents

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1   Introduction

The MAX22191PMB[1] provides the hardware to evaluate the MAX22191[2] digital input. The MAX22191 translates a 24V industrial switching signal to a 3.3V/5V CMOS-level output, or to a 2.3mA (typ) current output for driving an optocoupler and/or LED. Operating power is derived from the input signal, eliminating the need for an external field-side power supply. For more information please refer to the MAX22191[2] product page. The MAX22190PMB contains two MAX22190, one of them is isolated via an optocoupler. The MAX22190PMB can be evaluated together with the TMCM-0960-MotionPy V2.X [4]. Therefore a basic example has been implemented in Python to use this setup in a MicroPython environment. This document will give a brief introduction on how to start up the example and use the basic functions of the module.

2   Requirements

- Set up TMCM-0960-MotionPy[4] as shown in AN061[3]

- Terminal connection to TMCM-0960-MotionPy[4]

- Wire up MAX22191PMB[1]

3   Connecting the PMOD board

There are multiple options to connect the MAX22191PMB to the TMCM-0960-MotionPy[4]. In the default configuration, the MAX22191PMB is connected to PMOD-0 connector on the TMCM-0960-MotionPy V2.X. This setup is shown in Figure 2. The corresponding pins can be found in Table 2.

MAX22191PMB	Pin	Description
DI1	C1	Output Signal.(isolated channel)
DI2	A7	Output Signal.

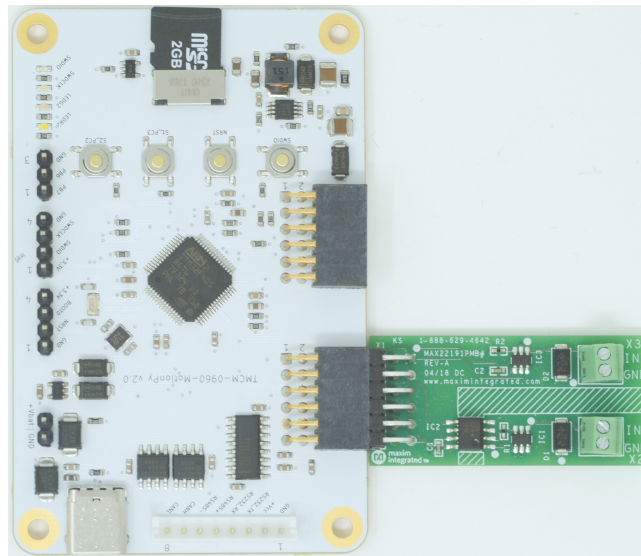*Table 2: Standard connection configuration*

Figure 2: MAX22191PMB connected to TMCM-0960-MotionPy V2.X

4 Running the example

Due to the simplicity of the MAX22191PMB only an example script max22191pmb.py[6] has been written. This script reads out the input pins assigned to DI1 and DI2 and prints the state. If the standard pin configuration is used simply execute the following command to run the script.

```
exec(open("PyTrinamicMicro/platforms/motionpy2/examples/modules/max/
    max22191pmb.py").read())
```

Otherwise, enter the script and change the assigned pins. The terminal should now print the states of the inputs.

```
DI1 state: X ; DI2 state: X
```

The readout updates regularly. Play around with the MAX22191PMB and have fun exploring it.

5 References

[1] MAX22191PMB product page:
     https://www.maximintegrated.com/en/products/interface/sensor-interface/MAX22191PMB.html

[2] MAX22191 product page:
     https://www.maximintegrated.com/en/products/interface/sensor-interface/MAX22191.html

[3] Application Note AN061-TMCM_0960_Module:
     https://www.trinamic.com/products/modules/details/tmcm-0960-motionpy/

[4] TMCM-0960-MotionPy product page:
     https://www.trinamic.com/products/modules/details/tmcm-0960-motionpy/

[6] Path to max14001pmb.py:
     PyTrinamicMicro/platforms/motionpy2/examples/modules/max22191pmb.py

6 Supplemental Directives

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7   Revision History

Version	Date	Author	Description
V1.00	08.04.2021	JH	Initial release version

Table 3: Document Revision