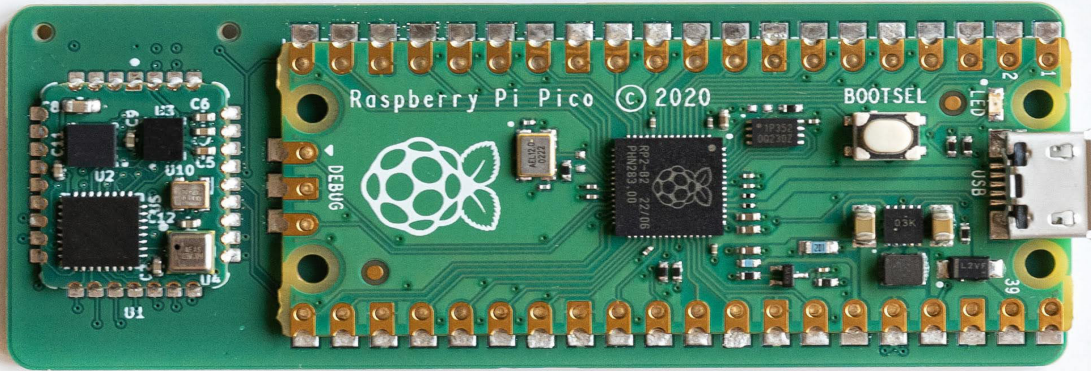




MOTION NODE



IMU Embedded Dev-kit

Motion Node embedded dev kit includes a MotionNode PCB module connected to a host embedded processor with USB connectivity on a PCB. Firmware examples show how to interface via UART and SPI to read IMU data.

- ✓ Designed and manufactured in the USA
- ✓ Lifetime software license
- ✓ Robust, rich data stream
- ✓ Free, open source SDK

Visit www.motionnode.com for videos and more.

Fast-track your embedded IMU design

Firmware examples

Read streaming IMU data via UART or SPI interface

Configure your datastream

Select which data channels to read for minimal

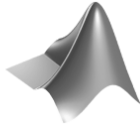
Simple dev environment

Use our firmware examples to easily build and flash the firmware

Free open source SDK

Live-stream and record using our free, open source SDK. Visit our github repository for the SDK and firmware examples how to configure the MotionNode PCB Module and read data over SPI and UART interfaces using the embedded dev-kit.

www.github.com/motion-workshop



TensorFlow



Embedded dev-kit sensor data

Read live measurement data from the MotionNode PCB module using SPI or UART interfaces.

- Rotation
- Angular velocity
- Calibrated accelerometer, gyroscope, and magnetometer signals

Configure data rate to read at 100Hz to 1000Hz. (Note: some data rates are not available depending on configured channels in the data stream)

The host embedded system is a [Raspberry Pi Pico](#), which has a fast [RP2040](#) microcontroller. The host features a dual-core Arm Cortex-M0+ processor with 264kB internal RAM.

Firmware examples for the Raspberry Pi Pico host microcontroller are available on our github repository at www.github.com/motion-workshop

Technical specs

Sensors

3-axis accelerometer, gyroscope, and magnetometer

Sample rate

1000Hz update rate

Selectable output data rate

100Hz to 1000Hz

Host PC Connectivity

Micro USB connector.

1 meter USB-A to Micro USB-B included.

Size

70x 26 x 3mm

Embedded Connectivity

UART (1Mbaud 8N1)

flow control optional

SPI

Orientation

Drift free, 3D rotation

0.5° static accuracy

2° dynamic accuracy

Full 360° range for each axis

Host Microcontroller

RP2040 ARM Cortex M0+

Sensor specs

	Range	Resolution	Noise
Accelerometer	±8 g	0.18 mg	65 (µg/rt-Hz)
Gyroscope	±2000 °/s	0.06 °/s	2.8 mdps/rt-Hz
Magnetometer	±8 gauss	0.25 mG	0.4 mG RMS

Requirements

Operating System

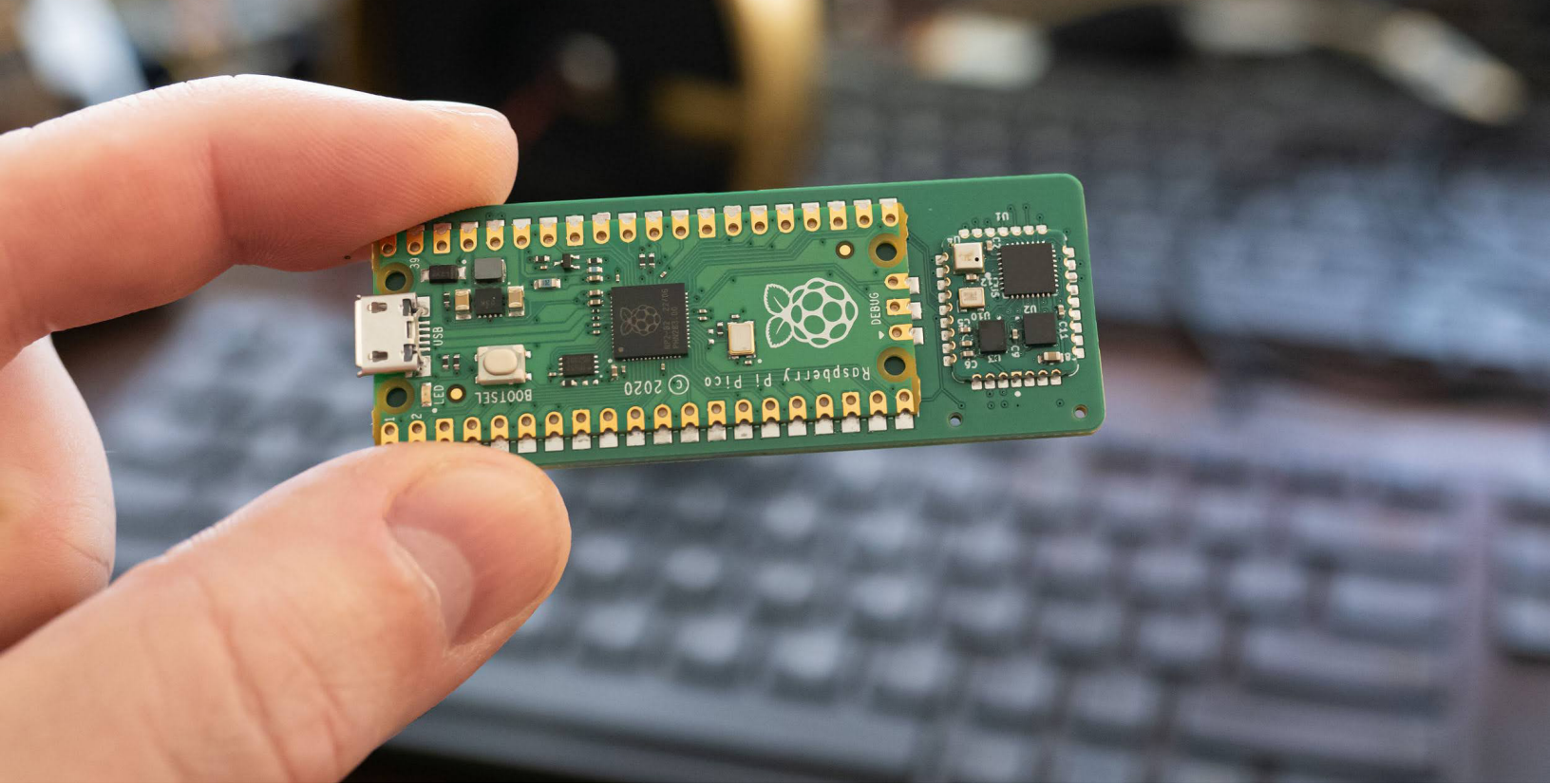
Works on Windows, macOS, Linux

Connectivity

Requires a USB Standard-A port

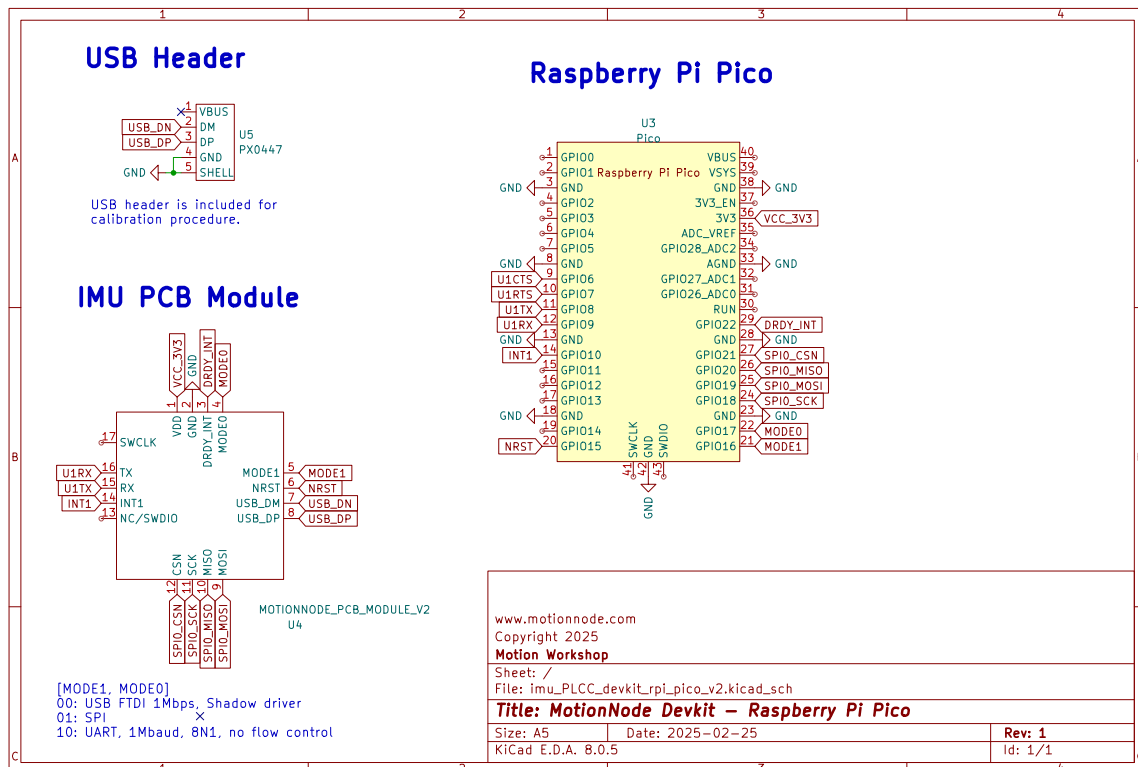
Internet access

Recommended for setup



Technical drawings

MotionNode embedded dev-kit schematic



Ordering Information

DEVKIT-RPI-PICO

MotionNode embedded dev-kit

Please contact us at info@motionnode.com to place an order.

Trust our proven solution

Field tested by the best and brightest in companies, research labs, and academic institutions.

QUALCOMM

SAMSUNG

B/E
AEROSPACE

SHARP

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OF CALIFORNIA

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UNIVERSITY OF
TORONTO

BOSTON
UNIVERSITY

THE UNIVERSITY
OF ARIZONA

UT DALLAS
The University of Texas at Dallas

Georgia
Tech

UC San Diego

THE OHIO STATE
UNIVERSITY

TU Delft
Delft University of Technology

West Point
The United States Military Academy

PENN STATE

CLEMSON
UNIVERSITY

Spec Sheet Version

Current Version: 1

Version	Date
1	February 25, 2025