

OpenIMU ROS Driver

Application Note

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REVISION HISTORY

Rev. 0, August 2020

Initial Revision

Rev. 0.1, March 2020

Installation and Using the OpenIMU ROS Driver sections updated

INTRODUCTION



Figure 1. OpenIMU300ZI

The OpenIMU product line from Aceinna (see <https://www.aceinna.com/inertial-systems>) consists of high performance and highly configurable IMUs. They are open source and can be configured via downloadable apps as well as by editing the source code that is available on GitHub. IMU, tilt sensor, and AHRS applications are all available.

The Robot Operating System driver for OpenIMU is provided to help the user implement a ROS system utilizing the OpenIMU. The driver currently supports the [OpenIMU300RI](#), [OpenIMU300ZI](#) and the [OpenIMU330BI](#) and is written for ROS Noetic Ninjemys and the Ubuntu 20.04 operating system. The driver may require edits for other ROS versions, is written in Python and is available at: https://github.com/Aceinna/ros_openimu.

HARDWARE CONNECTIONS

The ROS driver uses the UART interface of the OpenIMU300ZI and OpenIMU330BI. A USB-to-UART converter is required or alternatively the user can connect to an OpenIMU evaluation platform via USB cable.

For the OpenIMU300RI, the RS232 interface is used. A USB-to-RS232 adapter is required if the device running ROS is not equipped with a serial port.

The OpenIMU Developer Manual is available at <https://openimu.readthedocs.io/en/latest/> and details the interfaces of both the parts and those of the evaluation platforms.

INSTALLATION

To install the OpenIMU driver for the Robot Operating System:

1. Clone the repository to the src folder of your catkin workspace

```
$ cd $~/catkin_ws/src  
$ git clone github.com/Aceinna/ros_openimu
```
2. Build the catkin package

```
$ cd ~/catkin_ws  
$ catkin_make
```
3. Finally source your environment

```
$ source devel/setup.bash
```

USING THE OPENIMU ROS DRIVER

Ensure that `openimu_driver.launch` and `openimu_driver.py` are executable (`chmod +x <filename>`).

1. Open a terminal and issue the `roscore` command:

```
$ roscore
```
2. Open a second terminal and if not already performed source the environment:

```
$ source ~/catkin_ws/devel/setup.bash
```
3. Then run the `ros_openimu` node with the following command:

```
$ roslaunch ros_openimu openimu_driver.launch
```

At this stage the driver will detect the part that is connected and publish IMU messages.

TROUBLESHOOTING

In the event of connections issues to the OpenIMU it may be necessary to grant access to the serial port. One of the ways this can be performed is by issuing:

```
$ sudo chmod 666 /dev/ttyUSB0
```

Alternatively, you can check if your username is in the `dialout` group by issuing:

```
$ getent group dialout
```

If your username is not listed you can add it to the `dialout` group via:

```
$ sudo usermod -a -G dialout <username>
```