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# **ROS Topics**

This page is a description of all the topics we are using (or plan to use) on the sub.

#### **Sensors**

#### /orientation

Message: geometry\_msgs/Quaternion

The current orientation of the sub, given as a quaternion. Any code wanting to know the sub's orientation should use this topic, not /orientation/rpy.

### /pretty/orientation

Message: robosub/Euler

The current orientation of the sub, given in roll, pitch, yaw. This is meant just for human readability of the sub's orientation, code should use the /orientation topic.

### /depth

Message: std\_msgs/Float32
The current depth of the sub.

#### **Movement**

#### /thruster

Message: robosub/thruster

Dynamic array of commands going to the thrusters. Order of the thrusters is dependent on their order in the settings file.

#### /control

Message: robosub/control

Send messages to this topic to move the sub around, the control system subscribes to this topic.

### /joystick\_driver

Message: robosub/joystick This is the raw joystick state, published by the joystick driver. Shows the

current state of all axes and buttons on the joystick.

#### /gamepad\_driver

Message: robosub/gamepad This is the raw gamepad state, published by the gamepad driver. Shows the current state of all axes and buttons on the gamepad.

## **Vision**

#### /camera/(left|right|bottom)/image

Message: wfov camera msgs/WFOVImage

Images from our cameras.

### /vision/buoy/(red|green|yellow)

Message: robosub/visionPosArray

Describes where the buoy is in the sub's view.

### /vision/start\_gate

Message: robosub/visionPosArray

Describes how many posts of the start gate can be seen and where they are located in the sub's view.

### /vision/navigate\_pass

Message: robosub/visionPosArray

Describes where the yellow channel is in the sub's view.

#### /vision/bins

Message: robosub/visionPosArray

Describes where the marker bins are in the sub's view.

# /vision/torpedo\_target

Message: robosub/visionPosArray

Describes where the torpedo targets are in the sub's view.

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#### /vision/octagon

Message: robosub/visionPosArray

Describes where the octagon is in the sub's view.

# **Hydrophones**

### /hydrophones/[Frequency]/deltas

Message: Duplicated for all frequencies in the pool. Contains the latest time deltas between the reference and other 3 hydrophones.

Header header duration d1 duration d2 duration d3

#### /hydrophones/[Frequency]/timestamps

Message: Duplicated for all frequencies in the pool. Contains the latest timestamps recorded by the system.

Header header
Time ref
Time t1
Time t2
Time t3

## /hydrophones/[Frequency]/debug

Message: Used for debugging the hydrophone system.

Header header Int64 frequency Int64 avg\_sig\_strength Float64 approx angle

# /hydrophones/[Frequency]/output/direction

Message: robosub/Euler

Used for sending the angle from the forward direction to the pinger. Roll will always be zero while Pitch and Yaw should be filled out.

### /hydrophones/[Frequency]/output/location

Message: geometry\_msgs/Point

Used for sending the final result of the Trilaterization calculations.

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