CALIBRATING THE ICHTHYSTICK

The Ichthystick calibration process sets the location of the fish stop and the reference magnet relative to the sensor location allowing the measuring board to convert raw sensor units to a length measured from the fish stop. Because measurements are temperature compensated, calibrations tend to be stable of long periods of time and regular calibration is not required. Calibration is required after flashing a new firmware and is recommended if the board is dropped. You must also calibrate if you switch to a measurement stylus with a different magnet offset than the stylus used during the previous calibration.

To start the calibration process, first wait until the fish board is in measuring mode. Place the measurement stylus on the fish board window, right above the magnetic sensor just to the right of the status LED. The sensor is circled in red in the image to the right.

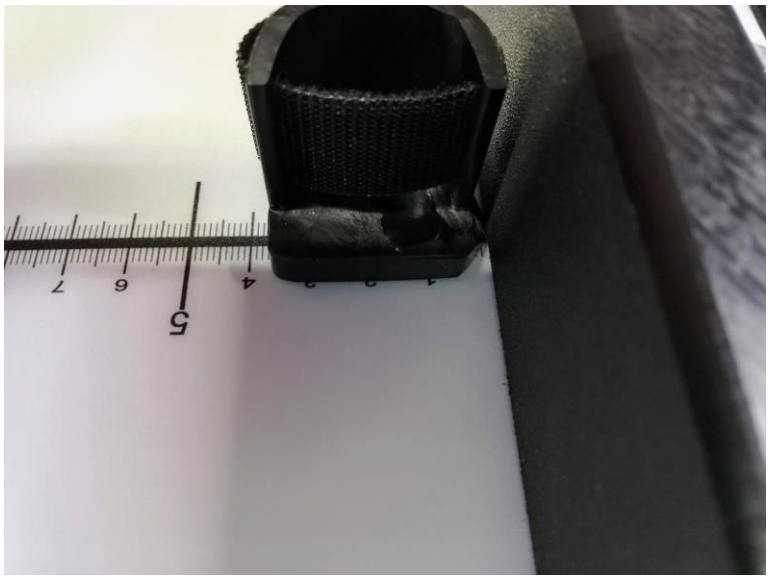
As you hold the stylus over the sensor the status LED will turn red. Continue to hold the stylus over the sensor for 3 seconds. (Ignore the LCD screen in the image on the right. The board will be in measuring mode and will not be displaying the start up screen.)

When the calibration process begins, the LCD will flash “Remove Stylus from Fishboard” (not shown.) At this point the board is determining the reference magnet location and it is important that no magnetic objects are on or near the fish board measurement surface.

Next, you will place the stylus at 0 cm. Place the stylus directly over the measurement centerline with the measurement point pushed up against the fish stop.

Ensure that the long axis of the stylus is parallel to the centerline. If the stylus is rotated the measured location will change. This has little effect with rotations +/- 5 deg. but measurements can be up to 3 mm off when the stylus is rotated 30 deg. or more from the centerline.

The board then records the location of the fish stop offset and displays the new offset value on the LCD.



After getting the offset value, the LCD will flash “**Place Stylus at 75 cm**” (Ignore the “80” in the image to the right. Starting with firmware version 12052020, the calibration location was moved to 75 cm.)

If you haven’t already, remove the stylus from the fish board after measuring the offset, do so now.

Using an accurate measuring tape or ruler, place the stylus at 75 cm (~29.5 in) from the fish stop.

After recording the stylus at 75 cm, the calibration will be complete. This display will show the calibration parameters for a few seconds, then the board will enter measurement mode.

If you made a mistake at any point during calibration, don’t worry and just start the calibration process over.

TROUBLESHOOTING

If problems with measurement accuracy persist after calibration, you can start the fishboard in “debug” mode to enable additional output from the board to aid in troubleshooting. (Debug mode was added in firmware version 12052020 and is not available in earlier versions.)

To start the board in debug mode, place the stylus over the same magnetic sensor used to get the board in calibration mode.

Next restart the fishboard. This can be done by cycling power, or toggling the DTR line on the cabled serial interface.

Leave the stylus in place until the board enters measurement mode.

In debug mode, the board will continually display RAW units.

With no stylus on the board, the displayed value will be the location of the reference magnet. This value should be stable and change no more than 1 unit from sample to sample. The board’s firmware can correct for some jitter in this value, but excessive jitter (> 200 units) will result in jitter in your measurements. It is normal for this value to change slowly as the temperature of the fish board changes.

If you observe excessive jitter, or the output is -1, it is possible there is an issue with the reference magnet. Place your measurement stylus over the reference magnet and observe the output. The reference magnet is located at about 86 cm and is usually easy

to find with the stylus since the magnets will be attracted to each other. If the reference magnet location stabilizes after placing the stylus over the reference magnet the reference magnet should be replaced. You can continue to use the fishboard with the spare stylus acting as a helper for the reference magnet until you can get the board repaired. When doing this, re-calibrate the board every time you place the helper magnet since it can change the location of the reference magnet.

If, after placing the helper magnet on the board, the output remains -1, the sensor has most likely failed. An output of less than 200 also indicates that the sensor has probably failed.

Debug mode will add extended output to the cabled and Bluetooth interfaces:

Raw, mm, cm, cal offset, cal slope, temp comp factor

16965,449,44.9,4027,0.03470294,0.999895
16936,448,44.8,4027,0.03470294,0.999895
16975,449,44.9,4027,0.03470294,0.999895
9735,198,19.8,4027,0.03470294,0.999895
9797,200,20.0,4027,0.03470294,0.999895

To exit debug mode, cycle the power or toggle the DTR line on the cabled serial interface