

### INSTALLING AND RUNNING THE SOFTWARE

- Download the latest version of AutoSwim v2 from our website: [loligosystems.com/downloads](http://loligosystems.com/downloads). Follow the instructions on screen and then restart the PC.
- Insert the **Loligo® license dongle** (2a) in a USB port on the PC to unlock the full software. AutoSwim will run in demo mode, if the license dongle is not inserted. Insert the recommended **long-range Bluetooth adapter** (2b) in a USB port on the same PC, and let Windows initialize it. Disable any built-in/other Bluetooth radios on your PC.
- Running AutoSwim v2 in **demo mode** (i.e., without the license dongle inserted) enables you to simulate experiment and calibration data, and design water velocity ramping protocols.

### SETTING UP HARDWARE

#### DAQ-BT swim tunnel controller

Power the DAQ-BT (using its DC adapter and USB power cable) from a wall outlet. Press and hold the power button (4, **arrow**) on the front of the DAQ-BT until the POWER and STATUS LED flash green rapidly. Bluetooth pairing mode is now enabled, and the DAQ-BT is ready to connect in AutoSwim v2. Alternatively, the DAQ-BT can be powered and controlled via USB directly from your PC.

#### Connect devices

In AutoSwim v2 > Main menu > **Devices** > Select **Scan for new devices**. Choose if you want to connect via Bluetooth or USB. Each device can be renamed by clicking on its device name. Return to the main menu, when all connected devices have been found.

### CALIBRATION

**Calibrate water velocity:** Main menu > Calibration > Select a DAQ-BT (6, **arrow**). Now follow the instructions in the video:

[AutoResp™ v3 - How to calibrate your swim tunnel](#) on our YouTube channel.

Note that this video was produced for AutoResp™ v3, but the calibration procedure is the same in AutoSwim v2. You should perform the water velocity calibration in the Loligo® software you intend to use. If you calibrate in another Loligo® software, those calibration data will not be transferred into AutoSwim v2. Use only one Loligo® software at a time.

### PROTOCOL DESIGNER

Main menu > **Protocol designer:** Create custom ramping protocols for water velocity regulation. Select regulation type and direction in the **Type panel**, and customize each regulation in the **Period** and **Final panels**. Mouse-over each icon to get more information. The protocol can be visualized in the graph area above the panels.

Now select the **Time mode** and **Unit** for the protocol file in the **Misc panel**, and click the **Save protocol** button (📄) to save the current protocol as an editable text file. Load the saved protocol file during an experiment (i.e., choose **Protocol file** as experiment type).

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AutoSwim DEMO

Calibration

DAQBT-AEAE

RPM vs Time | Velocity vs Time | RPM vs Voltage | Velocity vs RPM

RPM

Time [hh:mm:ss]

Voltage [V]

Time 11:44:58

- RPM 0,00
- Voltage 0,00

Settings	Control	Calibration	Data
MovAvg samples [N] 5	Control knob	Voltage [V] 0,00	RPM 0,00
Swim tunnel model 170 mL		RPM 0,00	Velocity [cm/s] 0,00
Motor controller		0,00 0,00 0,00	R <sup>2</sup> 0,998
		1,00 611,77 7,20	
		2,00 1.512,22 19,70	
		3,00 2.412,67 29,20	

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STARTING AN EXPERIMENT

Main menu > **Experiment**. The experiment menu is sectioned into tabs at the top showing each of the connected DAQ-BT devices (i.e., one per swim tunnel).

Enter the **Animal length** (8, **arrow**) in the *Settings panel* to enable  $U_{swim}$  data in body lengths per second (BL/s). Enable and adjust **Solid blocking** in the *Correction panel* (8, **arrow**), if needed.

You can start logging data for each DAQ-BT using the **Start logging** button (8, **arrow**). Clicking the *Start logging button* will open a window (8a) where you can choose the following *Experiment types*:

- **Manual**. Use the  $U_{swim}$  or  $U_{water}$  input fields (8, **arrow**) to control the water velocity.
- **Protocol file**. Select a *Protocol file* designed using the *Protocol designer* (7) to ramp the water velocity according to the values in the file.

Now select where to save the **Log file**. You can save the data file as either a .csv or .txt file. Click the *Start button* to begin logging data and controlling the water velocity. To start logging data for additional swim tunnels, click the respective DAQ-BT tabs at the top and perform and follow the same instructions so far.

*NOTE: It is recommended to save the log file to your local drive on your PC as saving to a synchronized drive (like OneDrive) can corrupt your data.*

 *Swim tunnel motors can be stopped immediately by clicking this icon (Settings panel).*

When data is logging, the logging duration is shown in the **Experiment panel**. If you are running a protocol file, this panel also shows how much time is left of the protocol.

**Data panel**. Shows real-time data for  $U_{swim}$  and  $U_{water}$ . If solid blocking is enabled, the *Fractional error*,  *$U_{swim}$  corrected* and  *$U_{water}$  corrected* values will show as well.

Click **Stop logging** (8, **arrow**) to stop logging data. Logging will stop automatically at the end of a protocol file.

**Data graph legend panel**. Shows real-time data and velocity setpoint values (8b). The graph layout can be customized (8b, **arrow**) and exported (8b, **arrow**) to Excel or as a .png image using the fold-down legend menu.

