hummingbird

USER MANUAL

USB dongle

Magnetic clasp closure

Silicon neckband

Extension cable

Power pack port

Power pack
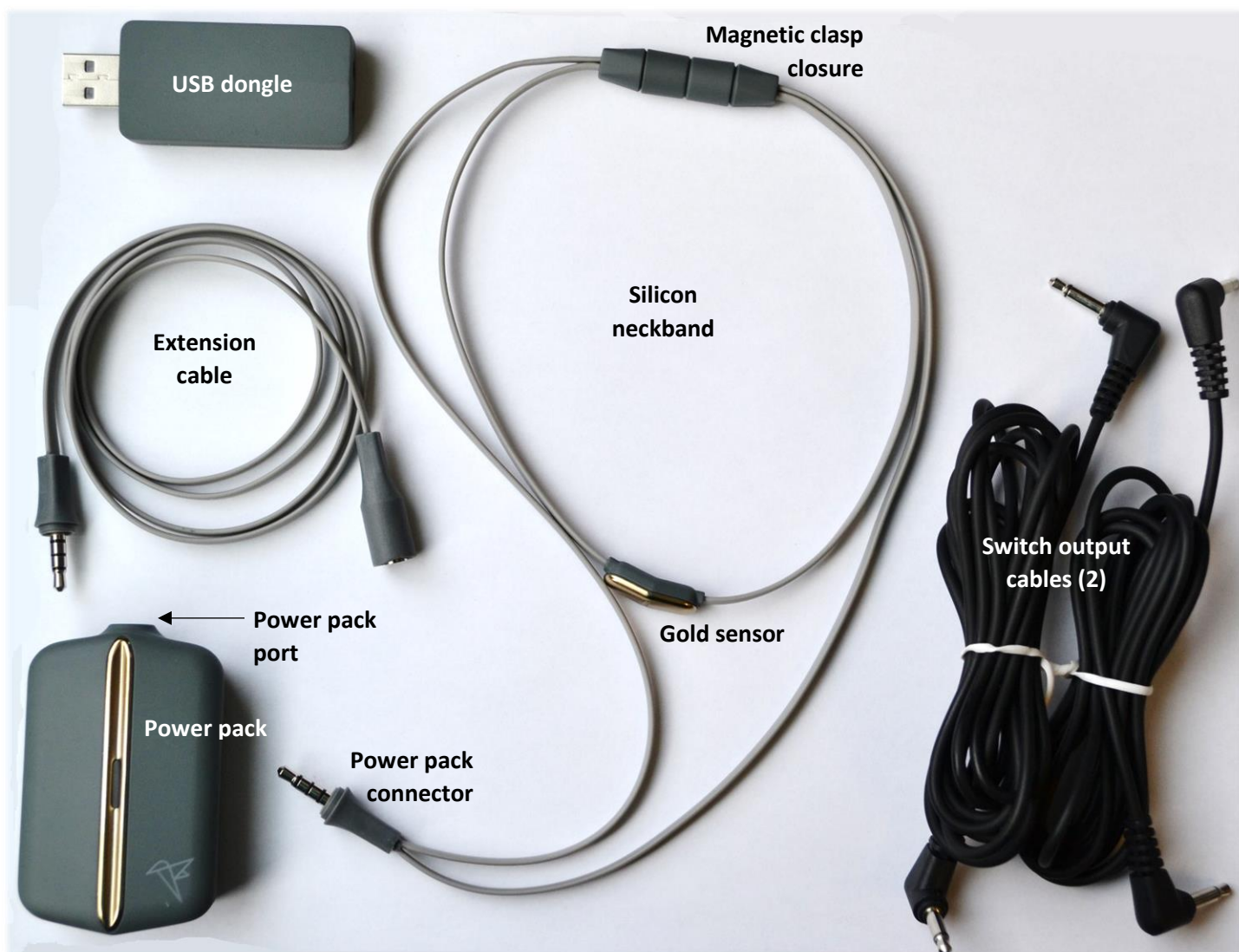
Power pack connector
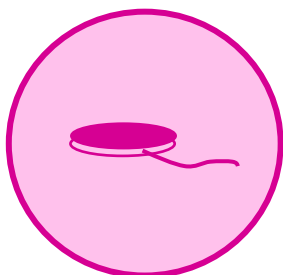
Gold sensor

Switch output cables (2)

What is the Hummingbird?

The Hummingbird is a Bluetooth-enabled **assistive device** that allows people to use humming sounds (i.e., vibration of vocal cords) to control technology and toys.

The Hummingbird works like an accessible switch but does not require the user to have control over any limbs. Users can control up to two outputs by producing long and short hums. The Hummingbird can connect to devices through switch cables, a USB port or Bluetooth, allowing for wireless control of a variety of devices using the power of your vocal cords.
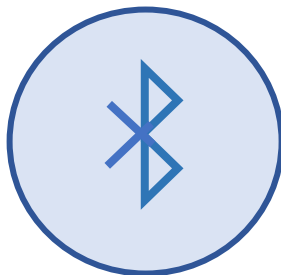
What can the Hummingbird control?

The Hummingbird works in one of three ways. It can function as a:

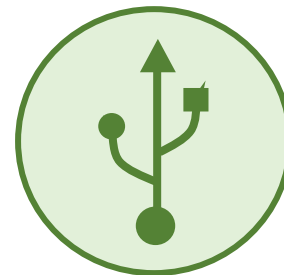| Switch Output	Bluetooth Output	USB Output
Output signals: switch output	**Output signals**: virtual keystrokes	**Output signals**: virtual keystrokes
Use: with devices that have switch output jacks, such as audio outputting communication devices (e.g., Big Mac, Step-by-Step, etc.), switch-adapted toys or accessible environmental controls.	**Use:** with Bluetooth-enabled devices, such as tablets and laptops.	**Use**: with devices which are not Bluetooth-enabled, such as desktop computers and certain laptops.
	This setting is often used to control communication applications or play games.	This setting is often used to control communication applications or play games.

To see videos on how to set up and use the Hummingbird, go to www.hollandbloorview.ca/Hummingbird.

Who would benefit from using the Hummingbird?

The Hummingbird is designed to be used by individuals who have limited control of their limbs and have difficulty accessing technology and toys. Users must only be able to vibrate their vocal cords (it doesn't even have to be an audible hum sound!). The Hummingbird has the ability to control up to two outputs which can be used for step-scanning or controlling two completely separate devices.

Device Setup

1 ## Insert batteries
Slide the back of the power pack downward to reveal the battery compartment and insert two AA batteries.

2 ## Put on the neckband
Pull apart the magnetic clasp and place the neckband around the user's neck so that the big loop with the power pack connector hangs on the user's chest.
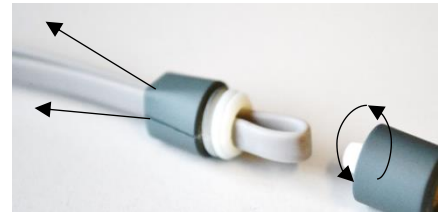The gold sensor should sit in the middle of the user's neck.

3 ## Adjust the neckband
Adjust the neckband if it is too loose or too tight.

For more details, see p. 9.

4 ## Connect the power pack to the neckband
Plug the neckband into the port at the top of the power pack.

You can also use the extension cable to position the power pack further away from the user's neck.

5 ## Turn on the Hummingbird
Press the power button on the back of the power pack.

The light on the front will flash green or blue when the device is on. You may now use the Hummingbird with the configuration settings currently loaded onto it.
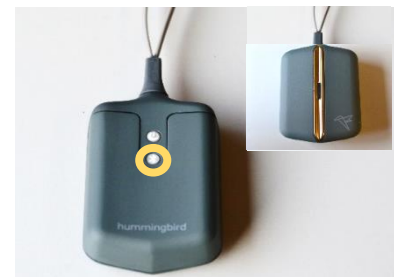

6 ## Turn off the Hummingbird
When you are finished using the Hummingbird, turn it off. Hold the power button on the back of the power pack.

The light on the front will flash in different colours as it turns off.

Change the configuration of your Hummingbird

1 Install the Hummingbird Setup Wizard

Download and install the Hummingbird Setup Wizard from
www.hollandbloorview.ca/Hummingbird onto your computer or laptop. Refer to
"Installing the Hummingbird Setup Wizard" (p. 15) section if you face any issues during
the process or would like a step-by-step explanation.

The Wizard is used to modify the configuration of the Hummingbird through
communication with the Hummingbird USB dongle.

Run the installer to load the Setup Wizard on your computer.

2 Plug the Hummingbird USB dongle into your computer

Plug the Hummingbird dongle into a USB port on your
computer that runs Windows or macOS. Your
computer should recognize this dongle as both a USB
keyboard, and as a COM port, and may display
confirmation messages to you.

If you receive any error messages when connecting
the dongle, follow the instructions for Installing
Drivers for your Hummingbird USB Dongle (p. 11).

3 Run the Hummingbird Setup Wizard

a. Connect
To put the Hummingbird in Configuration mode, first ensure the device is off. Attach the
neckband to the Hummingbird power pack. Then, hold the Pairing button on the back of
the Hummingbird, and simultaneously press the power button once. The power pack
light will blink white quickly until it finds the dongle. When the flashing slows down, the
dongle has been found. Run the Hummingbird Setup Wizard, and follow the instructions.
For issues with USB dongle recognition, see Troubleshooting (p. 13).

b. Input Mode
You must select one of two input modes. The appropriate mode depends on the
functionality of the device you are controlling with your Hummingbird.
 → Direct Mode: A hum of any duration will activate a single control.
 → Long/Short Mode: A long hum and short hum can be used to activate two separate
controls. To control two devices, check off both the Long hum and Short hum
checkboxes.

c. Output Mode

Select your desired output mode. With help on which output mode is best for you, see p.5.

Switch output mode: In this mode, you have the option of setting the output length. If the user can only hum for a duration of 1.50 s, but the output signal needs to be 5.0 s long, you can set the hum output length to 5.0 s. For example, if the user wants to drive a toy car, and wants the car to move forward for 5 seconds, the user can hum for 1.50 s and make the car move forward for 5.0 s. The output length can be calibrated for both long and short hums.

d. Calibration

To adjust the clarity and duration settings, move the sliders until they have been set to your preferred values. To help you select your settings, place the Hummingbird on the user's neck. Click 'Show Clarity' and have your user hum to see the clarity of their hums. For Long/Short Mode, click 'Show Duration' and have your user hum to see how long the user's hums last.

e. Summary

Program your device by clicking "Save". In the next window, you may choose to save these settings to a file on your computer for future use. See "Programming the Hummingbird with Pre-Saved Settings Files" (p.10) for more details.

How do I know which Output Mode to pick?

How does the device that you want to control work?

When setting up my device, **I assign keystrokes to different functions**

(e.g. scanning software using F7=scan and F8=select, game using Space = shoot and Enter = jump, etc.)

Does your device have Bluetooth capabilities?
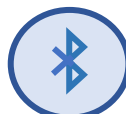
My device has a **switch input jack**

✓ **Yes**

✗ **No**

Switch Output

(p. 6)

Bluetooth Output

(p. 7)

USB Output

(p. 8)

A. Switch Output

Use **Switch Output** to allow your Hummingbird to control switch adapted toys and devices that have a physical switch output port (i.e., Big Mac, Step-by-Step, switch adapted toys, environmental control units, etc.).

1 Configure your Hummingbird for Switch Output

To change the configuration of your Hummingbird so that it will generate switch output, see "Change the configuration of your Hummingbird" on p. 4.
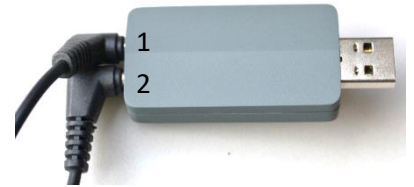
2 Connect the USB dongle to your switch device

Connect your switch device to the USB dongle with the **switch output cables**.

For Direct Mode, you only require one output cable to jack "2".

For Long-Short Mode, jack "1" will send short hum signals, and jack "2" will send long hum signals.

3 Power the Hummingbird USB dongle
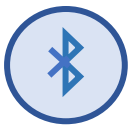
Power the USB dongle by plugging the dongle into:

(A) A USB wall adaptor that is plugged into the wall,
(B) A power bank with a USB port, or
(C) The USB port on a computer

USB dongle plugged into a power bank.

Restart your device using the power button on the back.

The light on the power pack will blink green occasionally when it is ready for use.

✳ B. Bluetooth Output

Use **Bluetooth Output** to allow your Hummingbird to send up to two virtual keystrokes over Bluetooth (i.e., to your tablet, computer, etc.).

1 ## Configure your Hummingbird for Bluetooth Output
To change the configuration of your Hummingbird so that it will generate Bluetooth output, see "Change the configuration of your Hummingbird" on p. 4.

2 ## Pair your Hummingbird
The first time you use your Hummingbird with a new device (e.g., laptop, tablet, or mobile phone), you will need to pair with it first.

- Restart your Hummingbird using the power button on the back. The light on the power pack will flash blue slowly.

- Hold the Pairing button on the back to enter **pairing** mode. The light on the front will flash blue rapidly to signal it is ready to pair.

- Enter Bluetooth Settings on your device to connect to the Hummingbird.

- Once paired and connected, the power pack will flash blue occasionally and will be ready for use.

- The next time you turn on your Hummingbird, it will automatically connect with this device again.

Power button

Slow flashing

Pairing button

Rapid flashing

C. USB Output

Use **USB Output** to allow your Hummingbird and USB dongle to send up to two keystrokes to a computer that does not have Bluetooth capabilities.

1 Configure your Hummingbird for USB Output

To change the configuration of your Hummingbird so that it will generate USB output, see "Change the configuration of your Hummingbird" on p. 4.

2 Plug the Hummingbird USB dongle into your computer

To use your Hummingbird for USB output, simply plug the USB dongle into the computer that you want to send keystrokes to. This does not have to be the same computer that you used to calibrate your device.
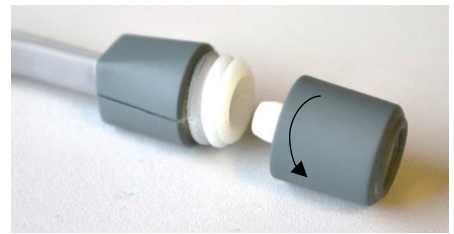
Restart your device using the power button on the back. The light on the power pack will blink green occasionally when it is ready for use.
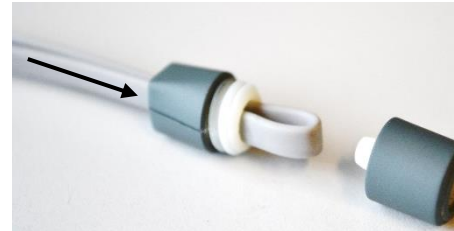
Adjusting the Neckband

If the neckband is too loose or too tight, you will need to adjust it so that the gold sensor sits comfortably against the skin on the neck of the user.

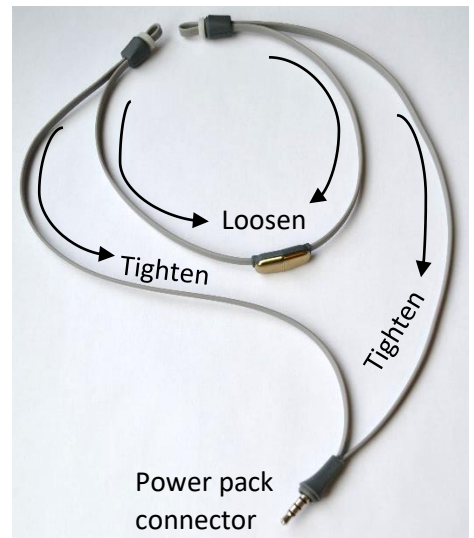**1** Unscrew both ends of the magnetic clasp closure

2 Push the silicon band through the clasp so it creates a loop on the side of the clasp with the threads.

3 Loosen: Pull the silicon strand that leads to the gold sensor (on the inside of the neckband).

Tighten: Pull the silicon strand that leads to the power pack connector (on the outside of the neckband).

Make the same adjustments on both sides of the clasp to keep the sensor in the center of the neckband.

Loosen

Tighten

Tighten

Power pack connector

4 Pull the silicon band through the clasp until the loop is fully recessed into the clasp. Screw the magnetic ends back onto the clasp. You can also attach one out of the two available elastic band to the clasp

5 Try the adjusted neckband on the user's neck

If the neckband is still not sitting flat and comfortably on the user's neck, repeat steps 1-4.

The gold sensor should sit flat on the user's neck but not be so tight that it is uncomfortable.

Programming the Hummingbird with Pre-Saved Settings Files

When programming the Hummingbird using the Setup Wizard, you will be given the option to save your settings files at the very end. This is particularly useful if you expect to use your device in several different ways. You can save a configuration file for each setup. For example, you may sometimes use the Hummingbird as a USB Output, while at other times you may use it in Switch Output mode. You could save one settings file for USB Output mode, and another for Switch Output mode.

1 Plug USB dongle into your computer

To re-program you Hummingbird using pre-saved settings files, plug your Hummingbird USB dongle into a USB port on your computer.

2 Place the Hummingbird in Configuration Mode

First ensure the Hummingbird is off. Then, to place the device in Configuration mode, hold the Pairing button on the back of the Hummingbird, and simultaneously press the power button once.

3 Load Settings File into Setup Wizard

Run the Hummingbird Setup Wizard. Once the Wizard has successfully connected to your Hummingbird, it will give you the option to load a saved configuration. Click Load. In the file dialog box that appears, locate the settings file that you had previously saved. The settings within this file will then be loaded into the Hummingbird Setup Wizard.

4 Review Settings

Go through all the pages of the Setup Wizard and confirm the loaded settings are what you want. Make any changes as you need.

5 Program your Hummingbird

When you are ready to program the Hummingbird with these settings, click Save.

6 Restart your Hummingbird

Restart your Hummingbird by holding the power button on the back. The light on the power pack will flash different colours as it turns off. Press the power button to turn it back on. The light on the power pack will flash green or blue, depending on your settings.

Installing Drivers for the Hummingbird USB Dongle

If you receive errors when connecting the USB dongle or when running the Setup Wizard on your Windows computer, you may need to install drivers.

1   Plug USB dongle into your computer

To install the drivers for the USB dongle, first plug the dongle into a free USB port on your computer.

2   Open the Device Manager on your computer

Open the Device Manager by typing "Device Manager" into the search bar on the Start Menu. You may also open it from the Control Panel, also accessible from the Start Menu.

3   Right-click on "Hummingbird USB Dongle"

In the Device Manager, find Hummingbird USB Dongle from the list of devices displayed in the list. If you do not see it immediately, you may need to click on some of the items to expand the list and display more items. Right-click on Hummingbird USB Dongle once you have found it.

4   Select "Update Driver Software"

Click on "Update Driver Software" in the pop-up menu.

5   Select "Browse my computer" and find the driver folder on your computer.

Click Browse to open the Browse For Folder dialog. Find the folder where you installed your Hummingbird Setup Wizard drivers. If you chose the default installation options, this should be C:\Program Files (x86)\Hummingbird\Drivers. Click OK.

6   Begin driver installation

Click Next to install the drivers. If any messages appear on, select the appropriate option that allows the driver installation to proceed. Please wait while the drivers are installed. This may take some time.

7   Finish driver installation

Once driver installation is complete, close the driver installation windows. Confirm that the Hummingbird USB Dongle is identified as a COM port in the Device Manager. Close the Device Manager. From now on, your USB dongle should be properly recognized on this computer.

Maintenance and Care

After Use:

After using the Hummingbird, wipe down the silicon neckband with a soft cloth lightly dampened with water.

Good quality AA batteries should last XX days/weeks before they will need to be replaced. Battery life may vary, depending on the quality of your batteries.

Safety

Warning: The Hummingbird has not been tested with people using electronic medical devices such as pacemakers or Vagal Nerve Stimulation systems. While the magnetic strength of the clasps are low, magnets could interfere with some devices. Please contact your doctor prior to use if the user has an electronic medical device. Keep the magnetic clasp at least 25 cm (10 in) away from any other electronic medical devices.

Warning: The Hummingbird magnetic clasps, while unscrewed from the neckband, pose a choking hazard. These magnets are not toys. Keep them away from small children. If swallowed, seek medical attention immediately.

Warning: Use of lithium-ion batteries may result in excess heat build-up leading to severe burns in the event of battery failure. The use of lithium-ion batteries in the Hummingbird is not recommended.

Warning: Risk of choking if the neckband is worn to bed. Please remove prior to sleeping.

Warning: Although the product is equipped with a magnetic clasp designed to decouple when snagged, there is still a risk of choking if the neckband is caught on clothing or external objects. Remove the neckband when engaging in activities that may pose a risk of the product getting snagged or caught.

Installing the Hummingbird Setup Wizard

A.   MacOS

If you are using a MacBook, follow the instructions below to install the Hummingbird app.
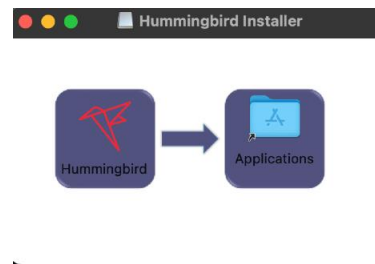
1

Download the installer

Open your preferred web browser and go to https://hollandbloorview.ca/hummingbird . Under software installers, select Hummingbird Setup Wizard - macOS installer. When prompted, select download. When prompted the second time, select download anyway.

2

Open the Hummingbird Setup Wizard

Select downloads from your task bar (this can also be accessed through Finder) and open the Hummingbird Setup Tool. It should begin to download. Once complete, drag the Hummingbird icon into applications on the small window that appears. In launchpad, the Hummingbird Setup Wizard application should appear automatically within your applications. If it does not, open Finder > Applications and scroll until you find it. Open the application.

3

If you encounter this error

You might receive the message seen here.

    a.   If yes, then click OK on the popup.
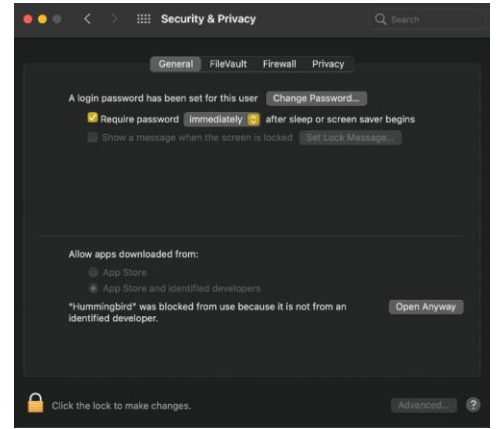   b.   If you don't receive this error, then continue to Step 5

4 Changes in System Preferences

Open the System Preferences application and go to Security and Privacy. There should be a message in the bottom quarter of the screen as seen below. Press "Open Anyways".

In some versions, your Mac may require you to click the lock at the bottom left
corner of the screen before you can make any changes. If this happens, press the
lock and input your login password. After you press "Open Anyway", press the lock
again, to save your changes.

Return to Finder > Applications and relaunch the Hummingbird Setup Wizard.

5 Finishing and Launch

After the application launches, delete the Hummingbird Installer that appeared on your desktop. You can now use the Hummingbird Configuration Wizard.

B. Windows

If you are using a Windows OS, follow the instructions below to install the Hummingbird app.
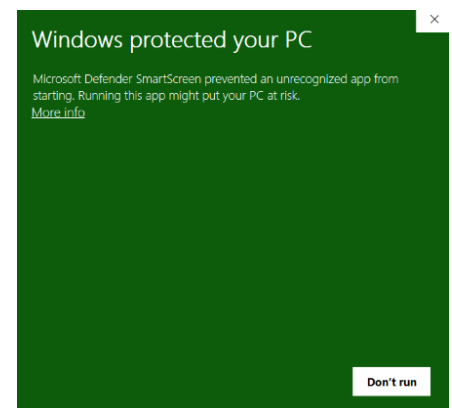
1 Download the installer

Open your preferred web browser and go to https://hollandbloorview.ca/hummingbird . Under software installers, select Hummingbird Setup Wizard - Windows Installer. When prompted, select download. You will see the Hummingbird Setup Installer in your downloads when the download completes.

2 Open the Hummingbird Setup Wizard

Select Hummingbird Setup Installer from your downloads. You might see a pop-up like the one in the picture. Select the "More info" and then select "Run anyway".
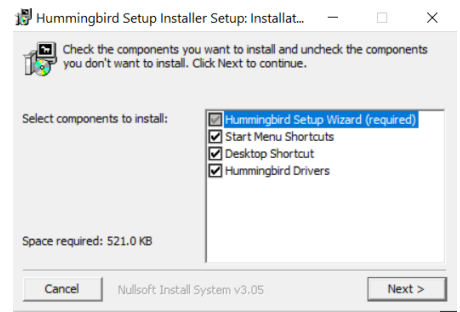
Select "Yes" if there is a second pop-up.

3 Setup process

When you arrive at the window you see here, click on "Next" and then "Install". Select "Close" when the installation is complete.

You are now ready to use the Hummingbird Setup Wizard

Troubleshooting

1

The neckband keeps popping off.
The neckband is probably too small if it keeps popping off the user's neck. Adjust the neckband by following the instructions on page 9.

2

The user's hum is not triggering an output every time.
If the Hummingbird does not activate every time the user hums:
- (A) The Clarity setting may be too high. Plug the Hummingbird USB dongle into your computer. Run the Hummingbird Setup Wizard. From the Calibration page, lower the clarity setting. Then, save your new settings to the Hummingbird.
- (B) The neckband may not be in the correct spot. Place your fingers gently on the front of the user's neck and ask them to make a hum sound. Ensure the gold sensor in the neckband sits on top of where you felt the vibration. Ensure the neckband is snug enough that it touches the skin.
- (C) The neckband may be too loose. Adjust the neckband by following the instructions on page 9.

3

The Hummingbird activates even when the user is not humming
If the Hummingbird activates when the user is not humming:
- (A) The Clarity setting may be too low. Plug the Hummingbird USB dongle into your computer. Run the Hummingbird Setup Wizard. From the Calibration page, raise the clarity setting. Then, save your new settings to the Hummingbird.
- (B) The user may be producing other sounds. The Hummingbird responds not only to hums, but to any sounds that the user makes, even if you cannot hear those sounds. Ensure the user is only making hums and sounds when they wish to activate the Hummingbird output.

4

I cannot pair my Hummingbird to use it for Bluetooth output
First ensure that your Hummingbird is in pairing mode. To enter pairing mode, turn on the Hummingbird, then hold the Pairing button on the back of the Hummingbird power pack until the light on the front is flashing quickly. The flashing indicates that the Hummingbird is ready to pair. If no lights are flashing, your batteries may need replacing.

5

My Windows computer is not recognizing the Hummingbird USB dongle
If you receive errors when connecting the USB dongle or when running the Setup Wizard, you may need to install drivers on your Windows computer. Follow the instructions on Installing Drivers for the Hummingbird USB Dongle (p. 11).

6

My Windows computer did not create the Hummingbird Setup Wizard desktop shortcut
Windows 10 often requires admin rights to install the Hummingbird software. It also often blocks the creation of the desktop shortcut. When that happens, you need to go to the Program Files (x86) folder on the C: drive. Open the folder and find the Hummingbird folder. Open that folder and right click on the Hummingbird Setup Wizard - then choose Create shortcut. It will give the option of putting the shortcut on the desktop and you should choose "yes".

7

The Hummingbird is flashing Green/Blue light even though I turned on calibration mode.
The Hummingbird is designed to go out of configuration mode if you remove and reconnect the neckband during the configuration mode. This is to ensure that the neckband is placed properly while configuring parameters like duration and hum clarity. Therefore, if the connection is improper between the Hummingbird and the neckband, the Hummingbird automatically goes back to operational mode and does not save your configuration progress.

Frequently Asked Questions

1

When do I use Direct Mode vs Long/Short Mode?
The Hummingbird can operate in one of two different Input Modes: Direct Mode and Long/Short Mode.

In **Direct Mode**, the output will send as soon as the user begins humming. The output will remain 'on' for as long as the user is humming. This mode will function similar to a physical button. Most users will select this mode if they are using the Hummingbird as a single switch.

Examples for use of Direct Mode:
- Selecting an option on a communication device with automatic scanning.
- Turning on a switch adapted toy for as long as the user is humming – analogous to holding a button to activate a toy.
- Playing a game that requires a single switch input.

In **Long/Short Mode**, your Hummingbird can be used to control two outputs. You can set the duration threshold that separates short hums from long hums. Any hum shorter than this setting will be considered 'short', while any hum longer than this setting will be considered 'long'. Set the duration threshold slightly above the duration of your user's short hums. For example, if your user would like a short hum to be less than 1 second, set the threshold for 1.1 seconds.

Examples for use of Long/Short Mode:
- Accessing a communication device or tablet with step scanning. Use a short hum to scan and a long hum to select.
- Controlling two different single-switch devices.

2

What is hum clarity?
Hum clarity is how clear your hums need to be for the Hummingbird to respond to it. When you are in the Hummingbird Setup Wizard, have your user hum into the Hummingbird. The Wizard will give you feedback on the hum's clarity in the form of a moving bar. Set the threshold in the Setup Wizard below the level achieved by your user's hums, but above the level seen when the user is not humming. If your user is unable to activate the output with every hum, you may have the hum clarity setting too high.

3

Are there alternatives to the power pack hanging on the user's neck?
You may connect the extension cable to the neckband and power pack, which allows you to place the power pack in a pocket or bag away from the user's chest.

4

Why would I save my configuration setting files to my computer?
When programming the Hummingbird using the Setup Wizard, you will be given the option to save your settings files at the very end. This is particularly useful if you expect to use your device in several different ways. You can save a configuration file for each setup. For example, you may sometimes use the Hummingbird as a USB Output, while at other times you may use it in Switch Output mode. You could save one settings file for USB Output mode, and another for Switch Output mode.

5

How far away can the neckband be from the dongle before it stops working?
If you are using your Hummingbird as a USB output or for switch output, you will be required to use the dongle. The neckband and dongle will continue to communicate with each other to send outputs as long as they are within 8 m of each other.

Understanding the Hummingbird Lights

Light Colour	Device Configuration	Blink Pattern	Status	Action Required
Green	Switch Output or USB Output Mode (requires Hummingbird dongle)	Slow	Searching for Hummingbird dongle	Plug in USB dongle
		Occasional	Ready for use	None; hum to activate
Blue	Bluetooth Output Mode	Slow	Searching for device	Turn on most recently used device (e.g. tablet, laptop, etc.)
		Fast	Ready to pair with new device	Initiate pairing on new device (e.g. tablet, laptop, etc.)
		Occasional	Ready for use	None; hum to activate
White	Configuration Mode (requires Hummingbird dongle)	Slow	Searching for Hummingbird dongle	Plug in USB dongle
		Occasional	Ready for use	None; Run Hummingbird Setup Wizard to configure
Purple	Sensor unplugged	Slow	Sensor not detected	Plug sensor into power pack
Red	Error	Any	System error	Restart Hummingbird (turn off using Power button, or remove batteries)
Green/Blue and Red	Sensor loose contact	Alternate	Sensor not detected	Unplug and re-plug the neckband
Multi-coloured	Any	Sequence	Turning off	None; device is turning off. To use the Hummingbird, press the Power button to turn it on.
Other	Any	Any	Possible low battery	Replace the AA batteries