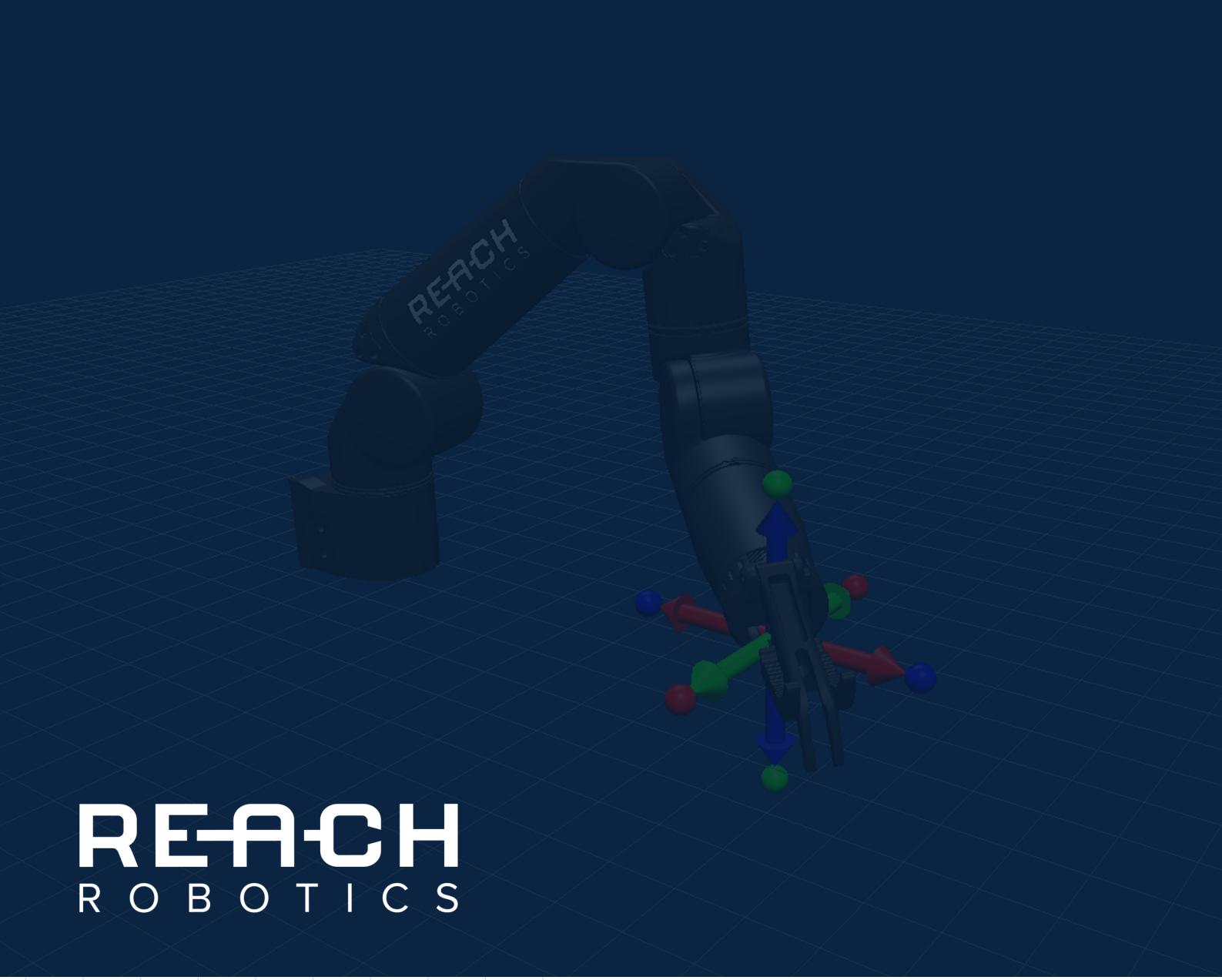


REACH
ROBOTICS

Reach Control User Manual

V4.1

Table of Contents

1 Introduction

This manual is designed help users of Reach Control get familiar with the software.

Reach Robotics website and Help Centre

Our website, www.reachrobotics.com, holds all our documentation as well as FAQs, knowledge articles, and downloads. You can find some quick links below:

- Datasheets and manuals
- FAQs
- Product theory
- Software downloads

Reach Robotics contacts

If you can't find what you're looking for on our website or Help Centre, please get in touch with Reach Robotics Support at support@reachrobotics.com. You can also get in touch with us at sales@reachrobotics.com (for all sales enquiries), or info@reachrobotics.com (for any other enquiries).

Feedback

If anything in our manuals, FAQs or knowledge articles is out-of-date, poorly explained, or erroneous, please don't hesitate to let us know. We always appreciate the opportunity to improve our documentation for the benefit of all users.

2 Safety Information

This section describes the necessary safety information and precautions relevant to the setup and operation of Reach Robotics products. To ensure correct and safe use of Reach Robotics products and to avoid injury and damage to property, carefully read this section and make yourself well acquainted with the contents. Follow any warnings and cautions included; these are highlighted by warning triangles and are shown as follows according to the level of danger. In conjunction with this manual, it is important that the users have knowledge of safety considerations and make correct judgments on safety procedures during operation.

2.1 Hazard Classification

 **DANGER**	Denotes a hazard with a **high** degree of risk that will result in death or serious injury if not mitigated or avoided.
 **WARNING**	Denotes a hazard with a **medium** degree of risk that will result in death or serious injury, or serious damage to the product, if not mitigated or avoided.
 **CAUTION**	Denotes a hazard with a **low** degree of risk that will result in moderate or minor injury, or damage to the product, if not mitigated or avoided.
 **INFO**	Denotes important information about a product or procedure.

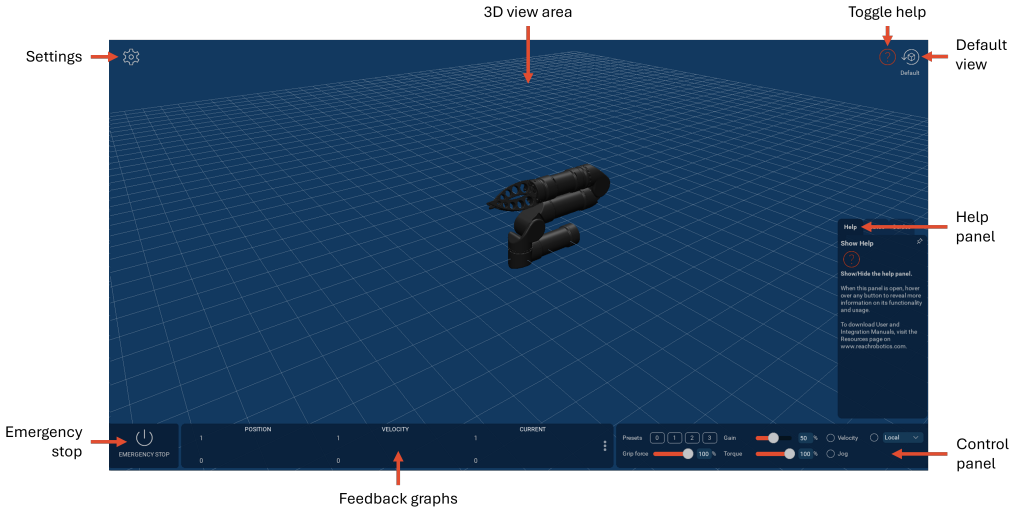
3 Getting Started

Install the latest version of Reach Control (Windows/Linux) from the Reach Robotics website. Contact Support for assistance if required.

> **CAUTION**
>
> If installing a Linux version, **do not** run the software with the **sudo** command, as this may result in unexpected behaviour.

3.1 Software Overview

When you first open Reach Control, you will see the screen below with the following elements.



3D visualisation view area
The 3D view can be navigated using a computer mouse or trackpad with the following actions:

- Right-click: pan
- Left-click: rotate
- Scroll wheel: zoom

Help panel
Hovering the mouse pointer over an element in Reach Control will bring up help text relevant to that element in the help panel. The help panel also incorporates a Guides tab (including a Reach Control tour and device setup assistance) and a Status tab (see Help Panel).

Control panel
The control panel is used to set the manipulator to preset positions, adjust grip force, gain and torque settings, and change between control modes (see Types of Motion).

Feedback graphs
These show the position (°), velocity (°/s) and current (mA) of each joint. Click on each graph to show the numeric values, or use the ellipsis [...] to expand the panel.

Emergency stop
Selecting the emergency stop will put the arm into a software disabled mode. It will not respond to controls but will still provide feedback from each of the joints.

WARNING

Selecting the emergency stop in Reach Control **does not remove power to the manipulator** which can pose a risk of electrocution or injury from unexpected movements. A physical E-stop should always be included in the bench setup or full integration.

3.2 Icon Guide


Settings: used to navigate to most functions in Reach Control


Help: used to toggle the Help panel.


Default: return the 3D View Area to the default view.


Port: add and modify connection ports for connecting devices.


Device: add devices and modify device specific settings including jaw type, obstacles, and presets.


Control: create, edit, or remove your controllers.


Tools: access auxiliary tools, such as the camera stream, health panel, or software updates.


Display: configure the software display options.


Expand: used to expand panels.


New: used to add a port, device, or controller.

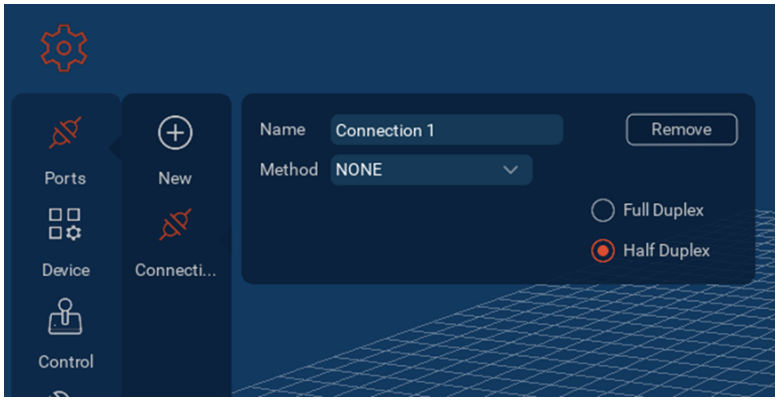
4 Connecting a Manipulator

This section will walk through how to set up a Reach Robotics manipulator for basic use and bench testing.

4.1 Add a Port

A manipulator connects with Reach Control through a **port**. To add a port, open **Settings** and select **Ports**.

Click the **New** button and a new port will appear. Select this icon and the connection panel will open. Rename the connection if desired.

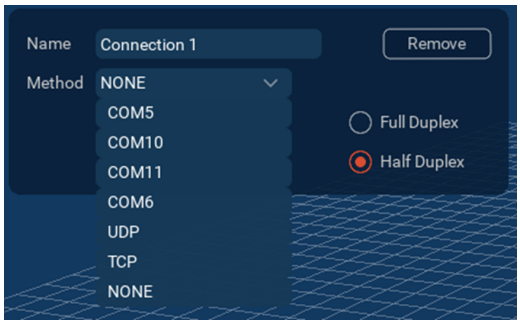


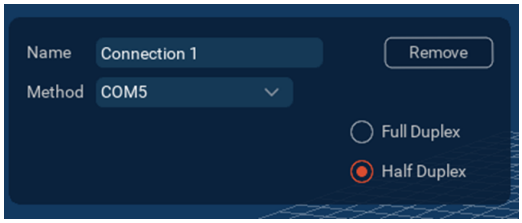
The connection method will depend on the type of device being connected and which port it is connected to on the computer.

Serial communication

To connect to a device over serial, select the appropriate COM port under **Method**.

- If you are connected over RS232, select **Full Duplex**.
- If you are connected over RS485, select **Half Duplex**.





INFO

If you are unsure of the correct COM port, unplug the USB cable from your PC and see which COM port disappears from the list under the Method dropdown – this will be the COM port that the manipulator is using.

UDP/TCP

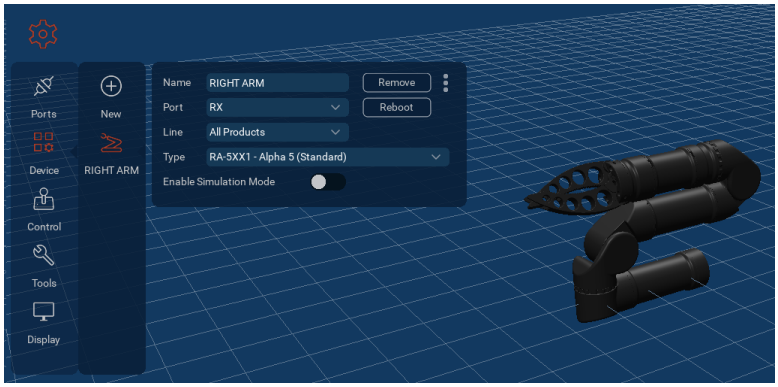
To connect to a device over UDP or TCP, select this under **Method** then enter the appropriate **IP address** and **port**.

4.2 Add a Device

Once the port has been added, a **device** can be connected. Go into the **Settings** menu and select **Device**.

By default, an Alpha manipulator called “RIGHT ARM” will already exist under the Device menu. You can edit this manipulator or remove it with the **Remove** button and add another one.

To add an additional device, click the **New** button. This will cause another manipulator model to appear in the list of devices and the 3D view. Select this new manipulator from the list to open the device panel.



In the device panel, rename the device if required. Select the port just created from the **Port** dropdown menu.

Select the product line from the **Line** dropdown menu, then select the product type.

Further settings and option for the device can be access by clicking the **Expand** icon (see Device Settings).

CAUTION	V3.11 removes the following discontinued products from the Product Type dropdown. Connecting a discontinued device to to a newer version of Reach Control may wipe the configured software settings from the current install. Contact Support if you are unsure whether your product has been discontinued.	
	• RA-2221 - Alpha Probe & Brush • RA-4001 - Alpha 4 • RA-1300 - Alpha Grabber	• RA-3003 - Alpha 3 Function Leg • RB-3X11 - Bravo 3 High Lift (LEFT) • RB-3X12 - Bravo 3 High Lift (RIGHT)

4.3 Checking Comms

Once the manipulator is connected to Reach Control, the position of the visualisation will match that of the physical device. The **feedback panel** at the bottom of the screen shows the position, velocity and current of each joint.

5 Controlling a Manipulator

5.1 Types of Motion

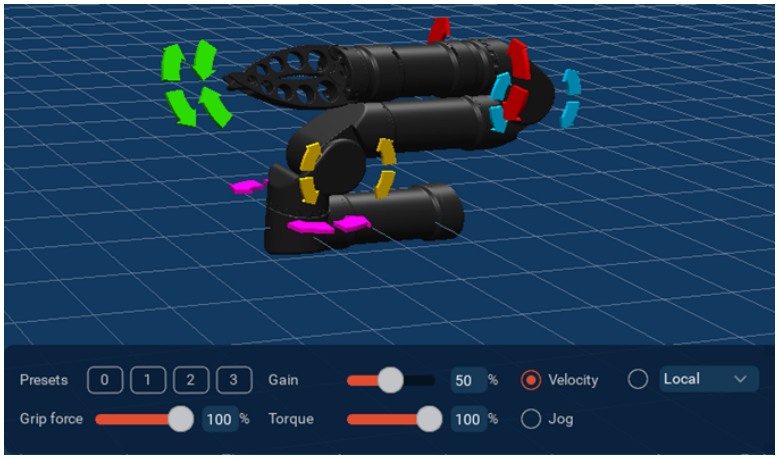
Once the manipulator has been connected, it can be controlled through Reach Control using the **Velocity**, **Jog** or **Kinematics** functions.

5.1.1 Joint Control

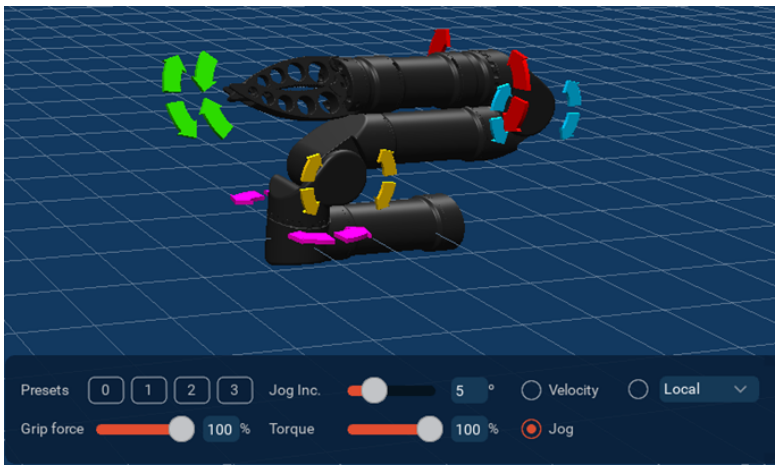
Each joint can be individually controlled using either the Velocity or Jog functions.

These functions can be accessed in the control panel. Each function can be enabled by selecting the checkbox next to the label.

When the **Velocity** function is selected, control arrows will appear on the manipulator model. Click and hold a control arrow to move the joint. The speed at which the joint moves can be adjusted by moving the **Gain** slider. This is a percentage of the set velocity limit for each joint.



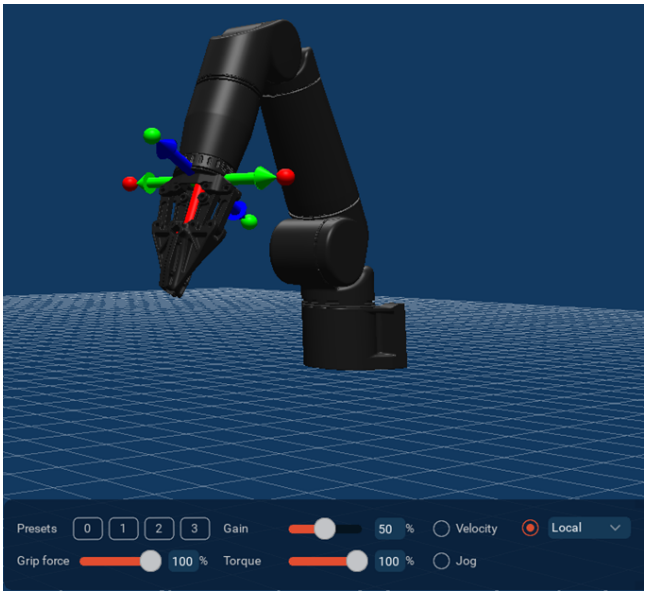
When the **Jog** function is selected the Gain slider will be replaced by a **Jog Inc.** slider. This slider controls the amount in degrees that the joint will move. Click and release a control arrow to move a joint by the specified amount.



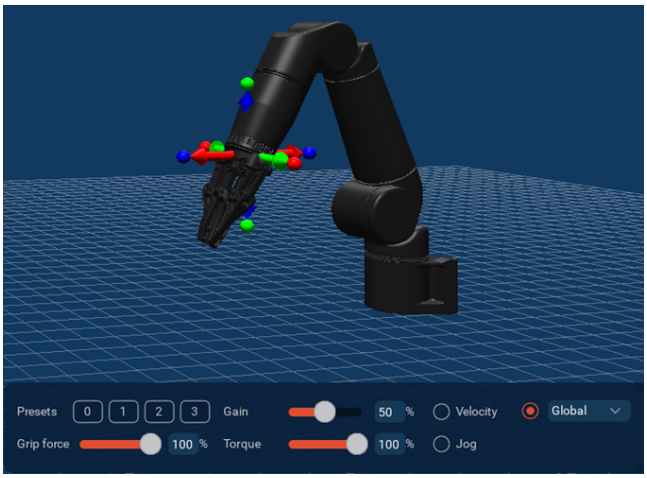
5.1.2 Kinematics

The kinematics function allows the manipulator to be controlled by moving the end effector, with the path of motion of each joint determined by the software of the arm. To enable the kinematics function, select a kinematics type from the dropdown and select the checkbox next to it.

In **Local** kinematics, the end effector will move relative to the current end effector position. The end effector can be moved by clicking and dragging the arrows on each axis to move linearly, and the balls at the end of each arrow to rotate.



In **Global** kinematics, the end effector will move relative to the base of the manipulator. The end effector can be moved using the arrow widget as in Local kinematics.



To use the axes widget, click and drag it to a desired target position. A transparent axes widget will remain at the current end effector position. Click **Reset** to return the axes widget to the current position.

Once the axes widget has been moved, the **Go** button will flash, indicating that the manipulator is ready to be moved. Select Go and the end effector will move to the target position.

If the target position cannot be reached, the Go button will stop flashing after being pressed and the manipulator will not move.

5.1.3 Grip Force and Torque

The amount of grip force and torque used by the manipulator can be adjusted using the slider in the control panel. The **Grip** force slider sets the maximum force with which the jaws will close. The **Torque** slider sets the maximum torque each joint will apply. Both grip force and torque are defined as a percentage of the set torque limit for the joint.

5.1.4 Position Presets

The manipulator can be set to a stored position by clicking and holding on one of the preset buttons. By default, manipulators are configured with a **Stow** position in Preset 0, and a **Deploy** position in Preset 1. The name of each preset will appear when the mouse hovers over the preset button. See Position Presets for more information.

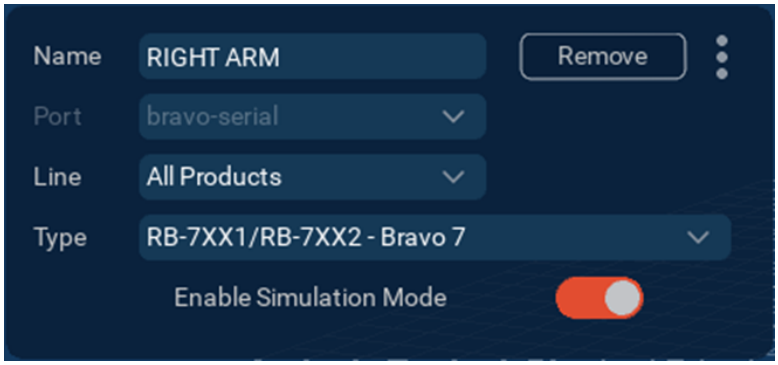
5.1.5 Simulation Mode

In simulation mode, the manipulator model can be controlled without a physical manipulator being connected to facilitate software and controller training.

CAUTION

Simulation mode can be confused for a working connection to a physical manipulator. Look for the flashing **STOP SIMULATOR** button in the bottom left of the screen to determine if you are in simulation mode.

To enter simulation mode, toggle **Enable Simulation Mode** in the device panel for any connected manipulator. This will put all devices into simulation mode. Now, each joint of the manipulator can be controlled by any method that control individual joints (e.g. velocity, Master Arm, keyboard, etc.).



INFO

Certain Reach Control functions (e.g. kinematics, position presets, obstacles) are not available in simulation mode. These functions will be disabled and greyed out.

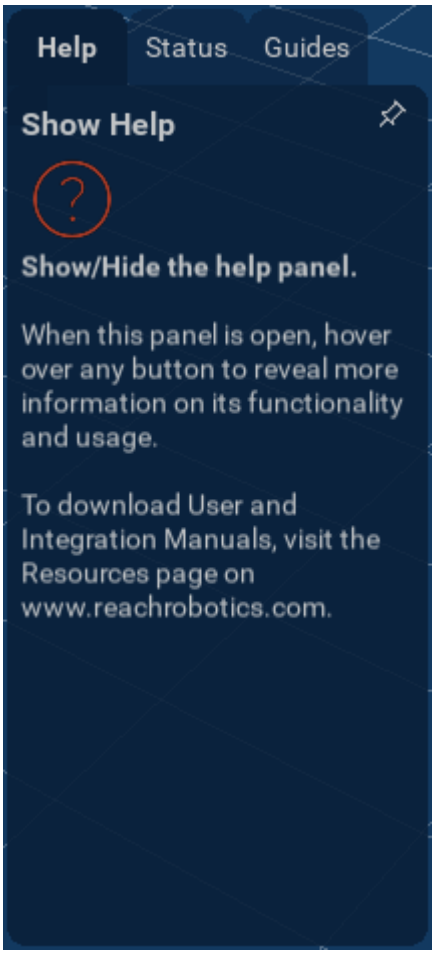
To exit simulation mode, either click the Stop Simulator button or toggle off **Enable Simulation Mode**.

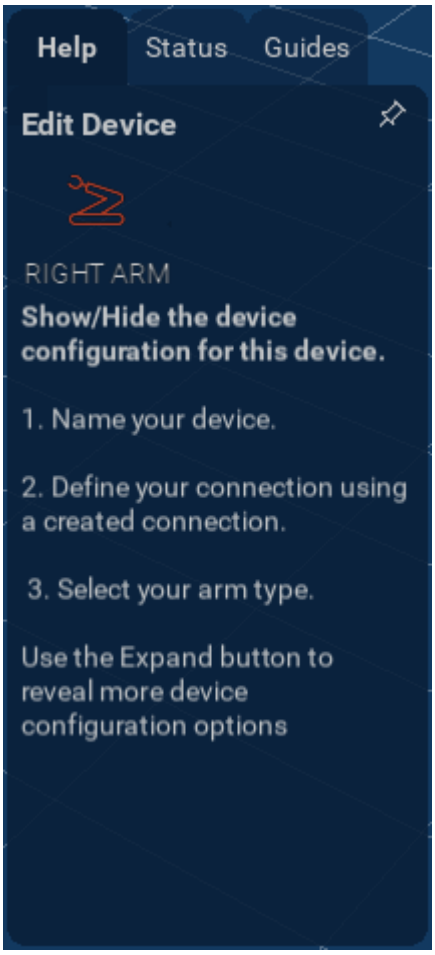
6 Help Panel

The help panel can be opened and closed by toggling the help icon.

6.1 Help Tab

The top of the help tab displays information on the current element the mouse is hovering over on the screen. Depending on the element, it will either be an explanation of the functionality or instructions on how to use the element.



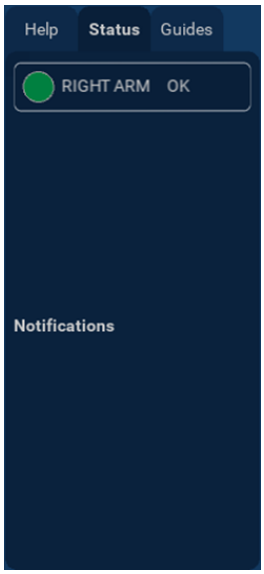


6.2 Status Tab

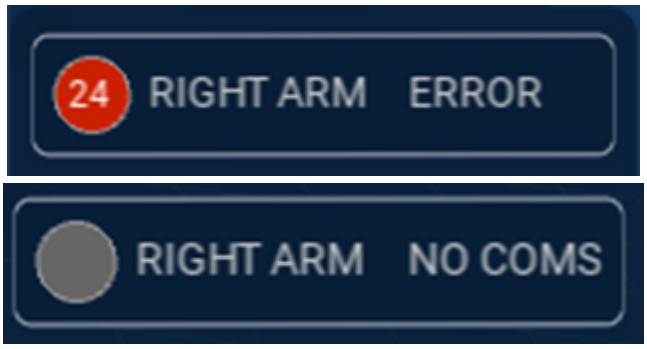
The status tab contains a status button for each added product at the top, and a notifications area at the bottom.

6.2.1 Product Status Button

The product status buttons provide a quick overview of the status of the connected manipulator(s). The LED and status will indicate if the arm is **OK**, in an **ERROR** state, or has **NO COMS**. Click the button to open the health panel.



If the arm is reporting errors, the LED will also show a count of new errors reported since the health panel was last opened.



6.2.2 Notifications

The bottom of the status tab contains a notifications area. This will contain product specific notifications such as if a jaw calibration is needed.

6.2.3 Error Auto-Open

When an error is reported, the status tab of the help panel will automatically open.

To prevent this happening, the help tab can be pinned by selecting the pin icon. If an error is reported while the help tab is pinned, the status tab will turn red.

If the entire help panel is closed, it will be automatically opened when an error is received. This can be turned off in **Display > General Settings** (see Display).

6.3 Guides Tab

The guides tab contains a number of interactive quick start guides. Select a guide button to open it.

7 Device Settings

Different settings and options for the device can be accessed by clicking the **Expand** icon in the device panel.

The **Remove** button removes the selected device from Reach Control.

Bravo/Reach X only: The **Reboot** button sends a reboot command to all joints, which can be useful for troubleshooting.

CAUTION

Using the Reboot button is only applicable for Bravo units with pre-V0.4.4 firmware. Please see Firmware Updates to update your firmware.

7.1 Jaws

The jaw type of the manipulator can be changed using the **Jaw Selection** section.

Selecting the correct jaw type ensures the physical limits of the jaws are reflected in the software, preventing damage from jaws being over extended. When the jaw type is selected, it will appear on the model. The model can be compared to the jaws mounted on the manipulator to ensure the correct option has been selected.

7.1.1 Reach Alpha

For an Alpha, select the check box next to the desired jaw type. The jaws will update in the visualisation.

Whenever you change jaw type, the jaws should be recalibrated by clicking the **Set Limits** button. Ensure you select the correct jaw type before starting the calibration.

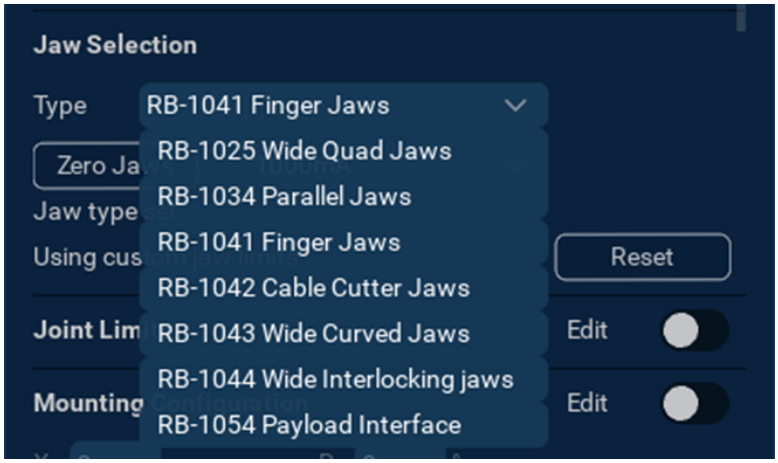
CAUTION

The jaws represent a **crush/cut hazard**. Ensure that there is nothing between the jaws and all personnel keep clear while the manipulator runs the autocalibration sequence.

The feedback will display **Complete** once the autocalibration has run successfully.

7.1.2 Reach Bravo

For a Bravo, select the jaw type from the dropdown menu. The jaws will update in the visualisation.



Whenever you change jaw type, the jaws should be recalibrated by clicking the **Zero Jaws** button. Ensure you select the correct jaw type before starting the calibration.

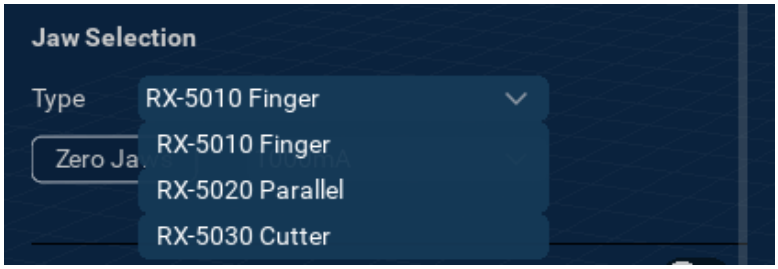
CAUTION

The jaws represent a **crush/cut hazard**. Ensure that there is nothing between the jaws and all personnel keep clear while the manipulator runs the autocalibration sequence.

If the joint limits for the jaw have been changed from the default, feedback text will indicate that the jaws are **using custom jaw limits**. Select **Reset** to change the limits back to default.

7.1.3 Reach X

For a Reach X, select the jaw type from the dropdown menu.



If the config update has been successful, the jaws will update in the visualisation. If not, they will remain as the currently configured jaws. Repeat the selection until the configuration updates correctly.

Whenever you change jaw type, the jaws should be recalibrated by clicking the **Zero Jaws** button. Ensure you select the correct jaw type before starting the calibration.

CAUTION

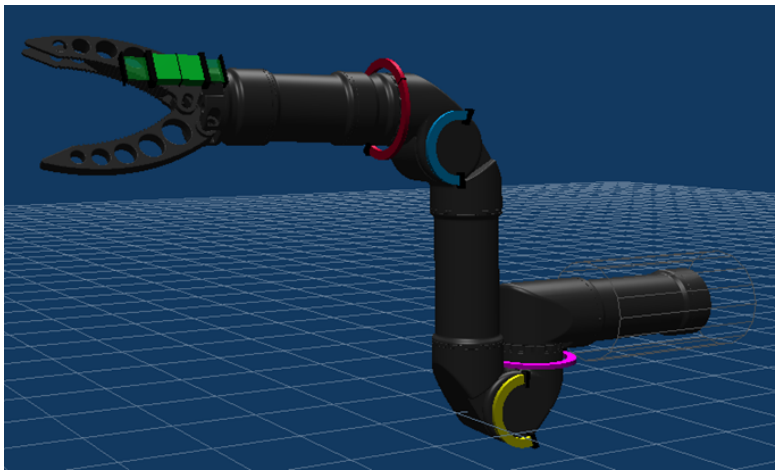
The jaws represent a **crush/cut hazard**. Ensure that there is nothing between the jaws and all personnel keep clear while the manipulator runs the autocalibration sequence.

7.2 Joint Limits

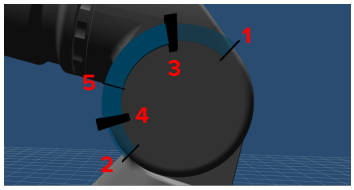
The position limits for each joint can be modified to restrict the movement of each joint. This also allows collision to be prevented in manipulators that do not have **Obstacle Avoidance** (manipulators with fewer than 5 functions).

In the **Joint Limits** section, toggle on the **Edit** switch.

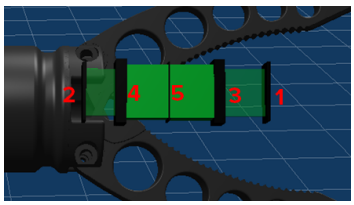
Joint limit sliders will appear on the manipulator in the 3D visualisation.



There are 5 different points on the joint limit sliders as follows.



Rotate joint



Linear joint

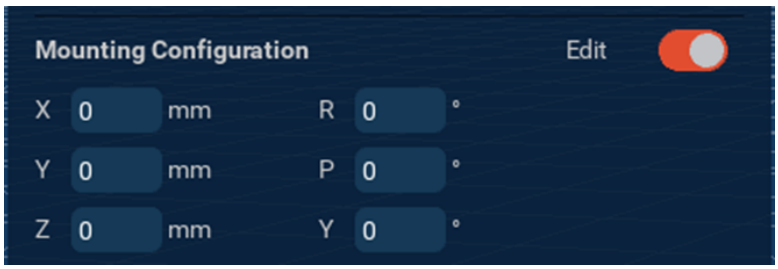
1. The factory maximum position limit.
   User joint limits cannot be configured beyond this value.
2. The factory minimum position limit.
   User joint limits cannot be configured below this value.
3. The user maximum position limit.
   Click and drag this slider to edit the modify the limits.
4. The user minimum position limit.
   Click and drag this slider to edit the modify the limits.
5. The current position of the joint.

The initial position of the joint must be between the desired limits. The user position limits cannot be moved past the current position of the joint.

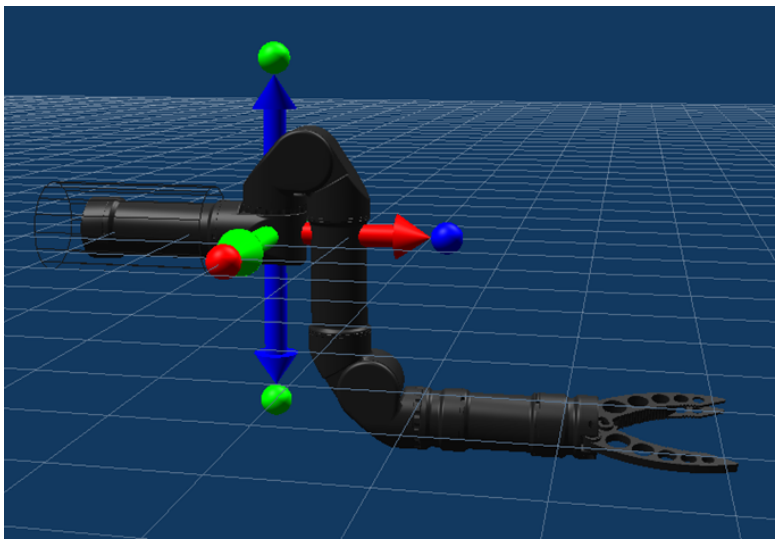
7.3 Mounting Configuration

The mounting configuration of a manipulator in Reach Control can be edited to reflect the physical setup.

In the **Mounting Configuration** section, toggle on the **Edit** switch.



An axis widget will appear at the base of the model.



Click and drag the arrows to translate the model along each axis. Click and drag the spheres to rotate the model about each axis. Any obstacles present will also move with the model. Precise **X/Y/Z** and **Roll/Pitch/Yaw** values can also be entered into the relevant text boxes. For example, this model has been inverted about the X axis, and moved up along the Z axis.

7.4 Obstacle Setup

Obstacles can be added to a manipulator to prevent collisions between itself and its surroundings. Obstacles are visible by default unless you toggle them off in Display.

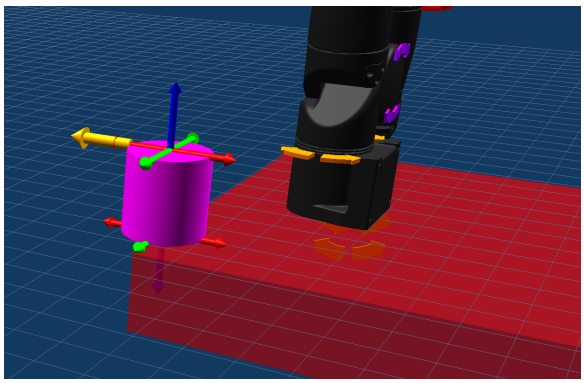
7.4.1 Adding Obstacles

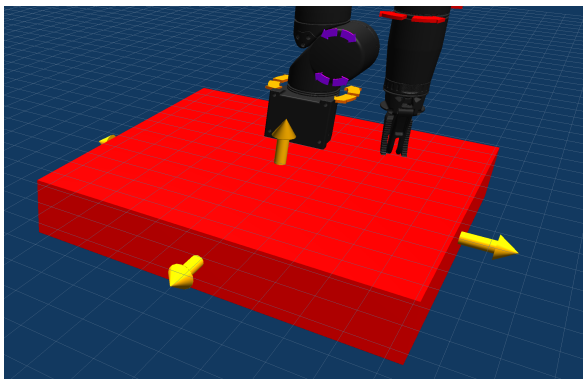
INFO

We recommend making the virtual obstacle slightly larger than the real-world obstacle to provide some buffer. Do not make the virtual obstacle exactly the same size as the real-world obstacle, as you may see minor collisions due to arm compliance.

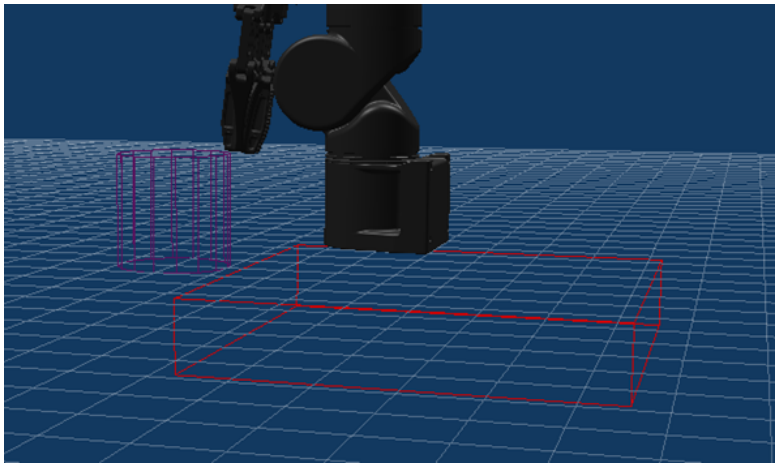
In the **Obstacle Setup** section, toggle on the **Edit** switch.

Select **Add Cylinder** or **Add Box**. A cylinder/box will appear on the 3D visualisation. Select the obstacle to edit it. Click and drag the arrows to change the obstacle dimensions and orientation. Click and drag the obstacle body to move it in the 3D space. Select the obstacle again to finish editing it.





Turn off the **Edit** toggle and the obstacles will appear as wireframes and/or transparent objects.



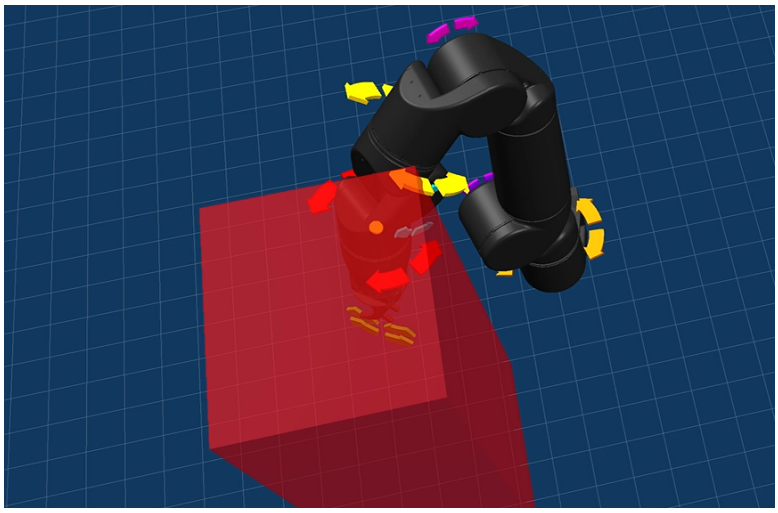
7.4.2 Removing Obstacles

To remove an obstacle, select the **Remove** button. Obstacles will be removed in the reverse order of how they were added.

7.4.3 Obstacle Visualisation

By default, the obstacles will only show in the visualisation when the **Device** panel is expanded.

If a collision is detected, it will be indicated by a yellow dot at the point of collision and the obstacle will be shown.



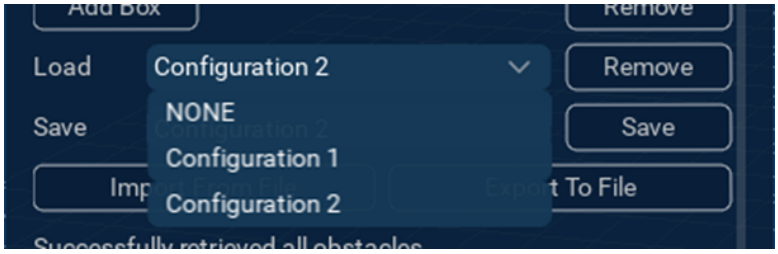
To always show the obstacles, turn on the **Obstacles** toggle in the **3D View** settings.

7.4.4 Obstacle Configurations

Obstacle setups can be saved as configurations in .json file format. These can be loaded as needed and exported/imported to different manipulators.

To save an obstacle setup, enter a name and click the **Save** button.

To load a saved configuration, select it from the **Load** dropdown menu.

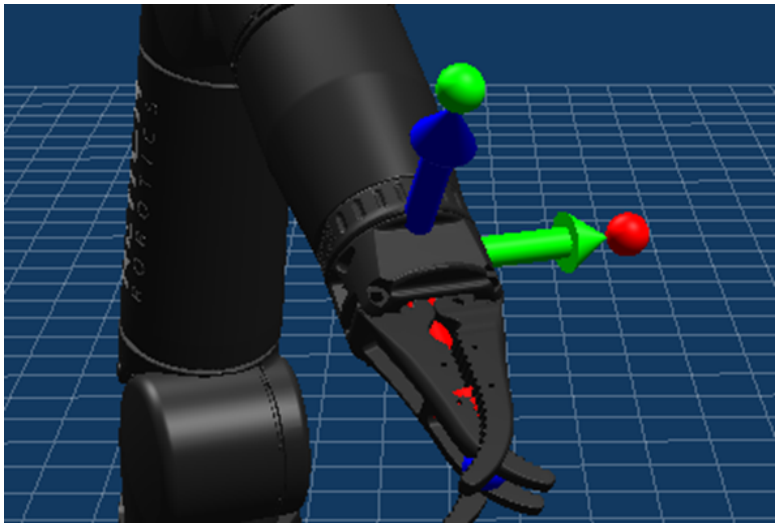


Obstacle configurations can also be exported in .json format. Select **Export To File** and use the file explorer that opens to save the file.

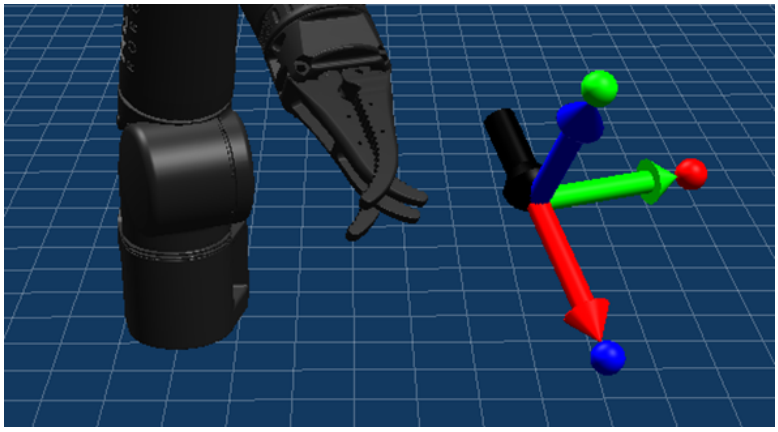
To import a configuration, select **Import From File** and use the file explorer that opens to select a previously exported .json file.

7.5 Probe Offset

In the **Probe Offset** section, toggle on the **Edit** switch. An axes widget will appear at the current end effector position.



Move the widget to change the position of the end effector. This will impact how kinematics behaves.



Multiple probe offsets can be stored as presets.

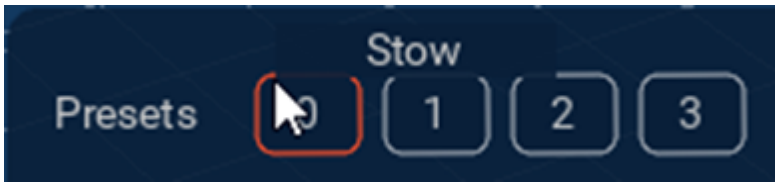
Select **Save** to store the current probe offset as the preset selected in the **Preset** dropdown.

To apply a stored probe offset preset, select it from the preset dropdown and select **Load**.

7.6 Position Presets

7.6.1 Using a Preset

Click and hold a preset button to send the manipulator to that stored preset position. The name of the preset will appear as the mouse hovers over each button.

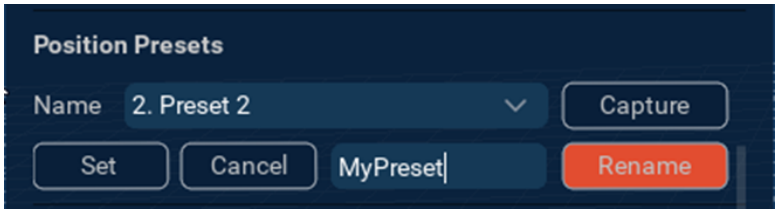


7.6.2 Capturing a Preset

Move the manipulator into the position to be stored. Select a preset slot from the **Name** dropdown menu to store the position to. Select **Capture**.

7.6.3 Renaming a Preset

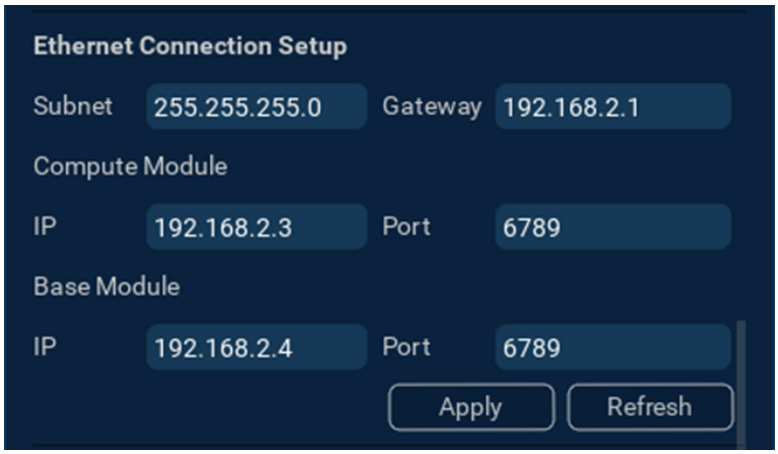
Select the **Rename** button. Enter the new name in the text box that appears. Click **Set** to save the name or **Cancel** to exit.



7.7 Ethernet Connection

INFO	Ethernet connection settings are only applicable to some Bravo and Reach X manipulators.

Connect to the manipulator over **serial**. Change the Ethernet settings as required, then select **Apply**. If a setting is not successfully saved, it will revert to the original value. Change it to the required value and select **Apply** again.



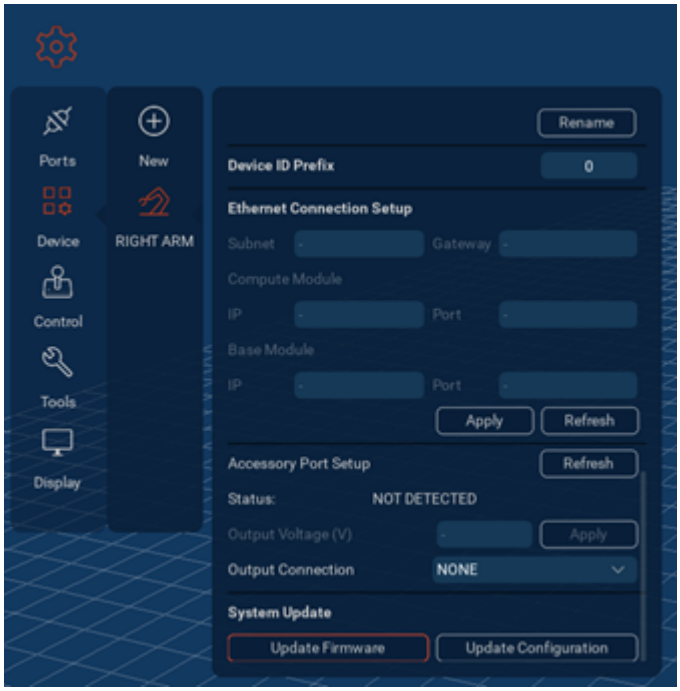
7.8 Module Swap (RX only)

This tool can only be used if you have a Reach X Spares Kit. Please contact Support for more information, or check your provided Reach X Spares Kit Manual.

7.9 Firmware Updates

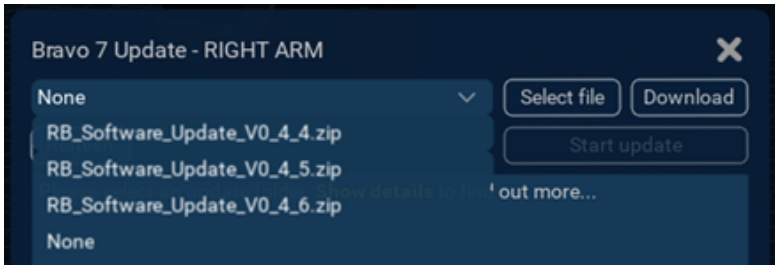
We recommend regularly checking for firmware updates using Reach Control to gain access to upgrades and bug fixes.

With the manipulator is connected, go to Settings > Device > RIGHT ARM, click the ellipsis [...] in the top right corner to expand the panel, then scroll down to “Update Firmware”.

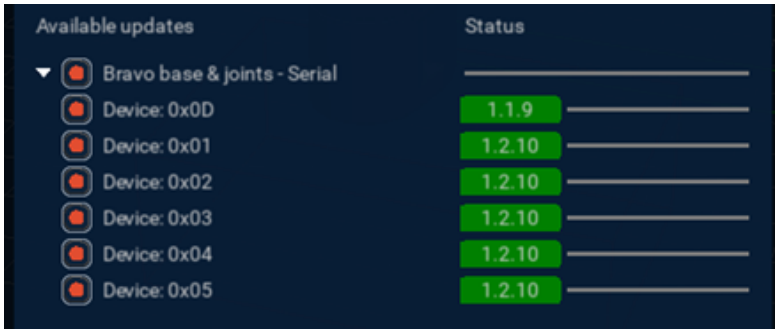


There are three ways to update the firmware from the panel that opens:

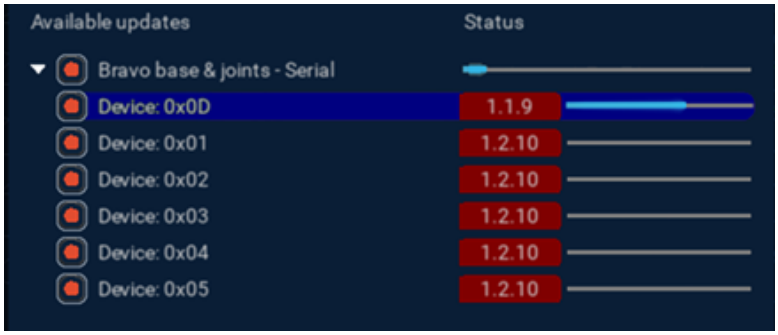
- Click “Download” to retrieve the latest software from the Reach Robotics server. Your PC must be connected to the internet.
- Click “Select file” to choose a .zip file containing the firmware you want to upload.
- Select an existing .zip file from the drop-down menu.



Once you have selected the correct firmware file, ensure that all the joints are selected under the available updates.



Click “Start update”. **Do not disconnect the manipulator during the update.** The joints will now update one-by-one.



When all the joints have updated and you get a success message, you can close the Firmware Update panel.

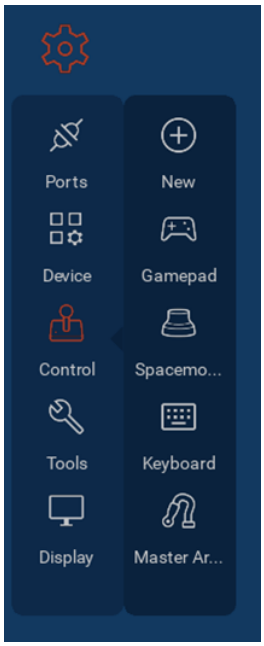
7.9.1 Firmware Update Errors

When updating the firmware, you may encounter the following errors:

Error/warning message	Solution
Error: Connections of type [...] are not supported.	The device port has not been selected. Check that the connection is secure and try again.
Error: Bad zip file.	The .zip file selected is empty or corrupted. Download again or contact Support for assistance.
Error: Unable to get software version from device 0x1, 0x2, 0x3, 0x4,...	Check that the device is powered. If the device is powered correctly, contact Support for assistance.
Error: Unable to Update. Select Refresh to try again.	The update cannot go through. Click Refresh to try again. If unsuccessful, contact Support.
Warning: No valid software files found.	The .zip file selected doesn't have valid software files inside it. Check that the file is complete and uncorrupted.

8 Controllers

Reach Control supports several controller types. There are all accessed from the **Control** menu under **Settings** > **Control**.

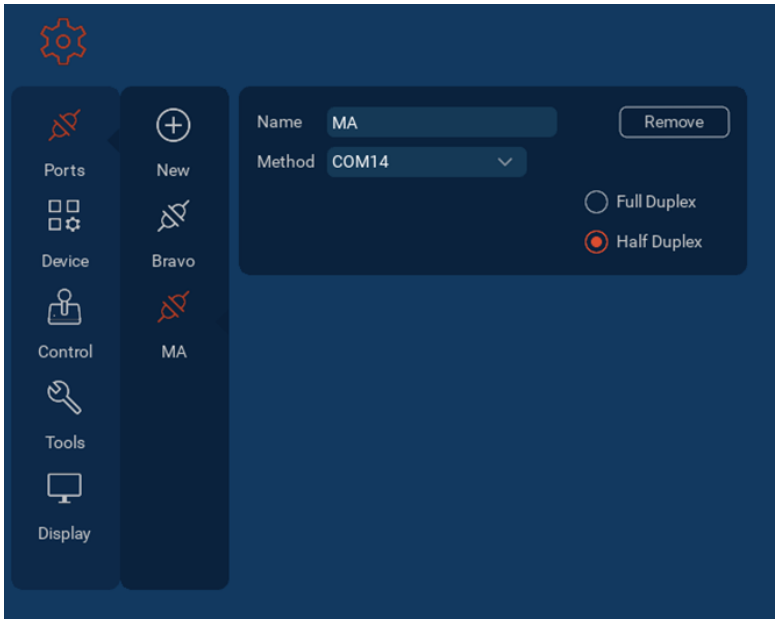


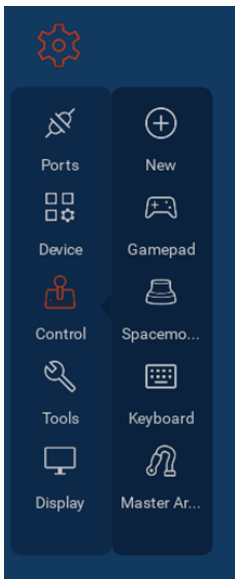
8.1 Master Arm

Before adding a Master Arm, a port needs to be added.

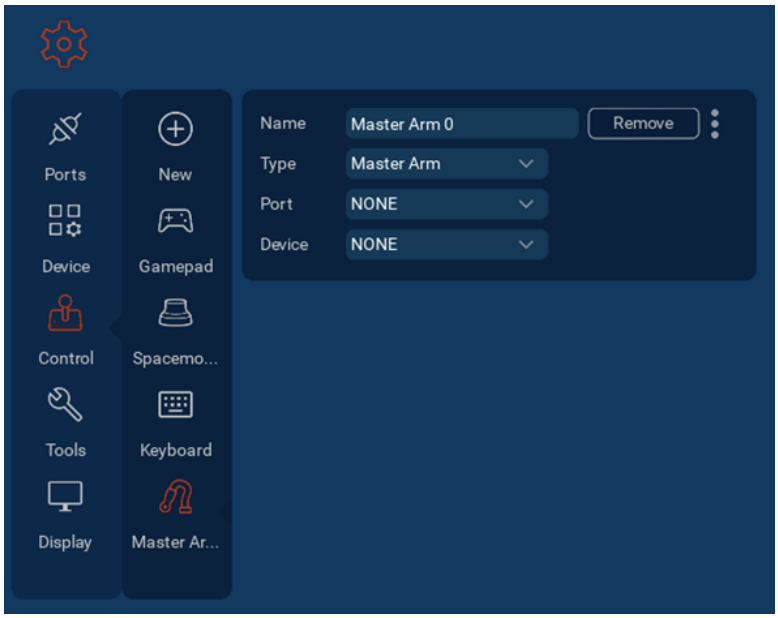
Open Reach Control, **Settings** > **Ports** > **New**. Assign the new port a **Name** and select the COM port the Master Arm is communicating on. Ensure **Half Duplex** is selected.

To add a Master Arm, select **New** in the control panel.

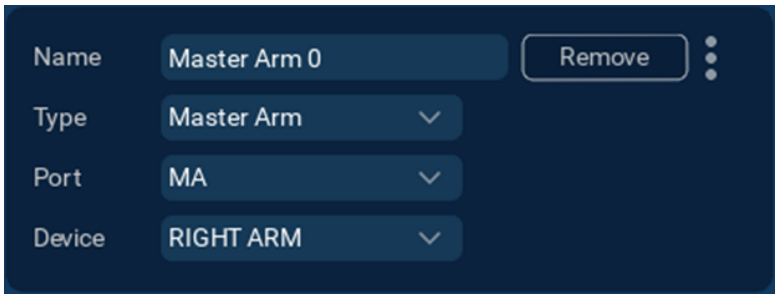




Select the newly added Master Arm to open the Master Arm panel.



Using the dropdown menus, select the newly added Master Arm port and the device to be controlled. Under **Type**, select **Master Arm**.



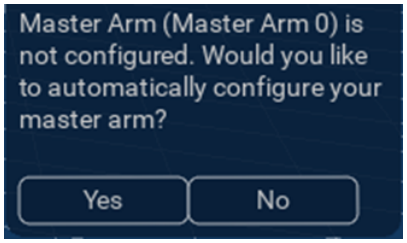
CAUTION

Do not select **Legacy Master Arm** if your Reach Control version offers it. This is only relevant for early prototype units and may result in unexpected Master Arm behaviour.

Multiple Master Arms can be added to control multiple manipulators.

8.1.1 Autoconfiguration

When Reach Control detects a Master Arm is not configured the selected device, an autoconfiguration popup will appear in the help panel. Select **Yes** to apply a default mapping for the connected manipulator.



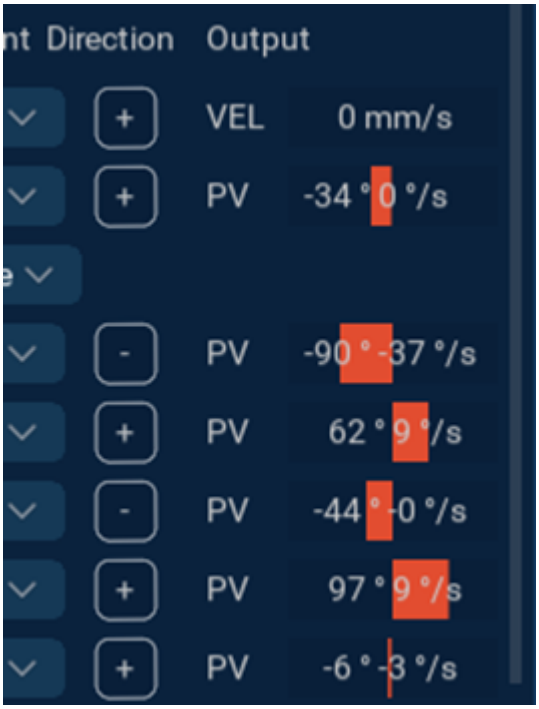
CAUTION

Autoconfiguring a Master Arm will reset all advanced configs to their default. Use this tool with caution if you have changed any configs such as **device_id**.

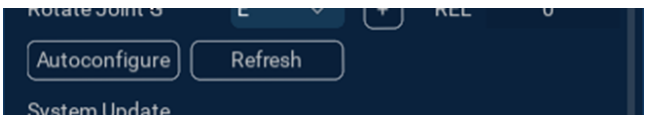
8.1.2 Custom Configuration

Expand the Master Arm panel. Each controller input is listed in the **Controller Axis** column. Use the dropdown menu to configure which joint each input controllers. Select the **Direction** button to reverse the mapping between negative and positive.

When the Master Arm is unpaused, the output values for each joint will be displayed.



To return the configuration to the default, select **Autoconfigure**.



8.2 Gamepad

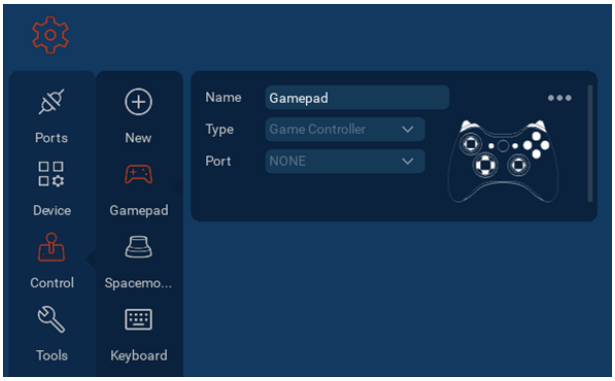
Reach Control only supports one gamepad connection at a time. When the gamepad is plugged in, it will be automatically detected by Reach Control.

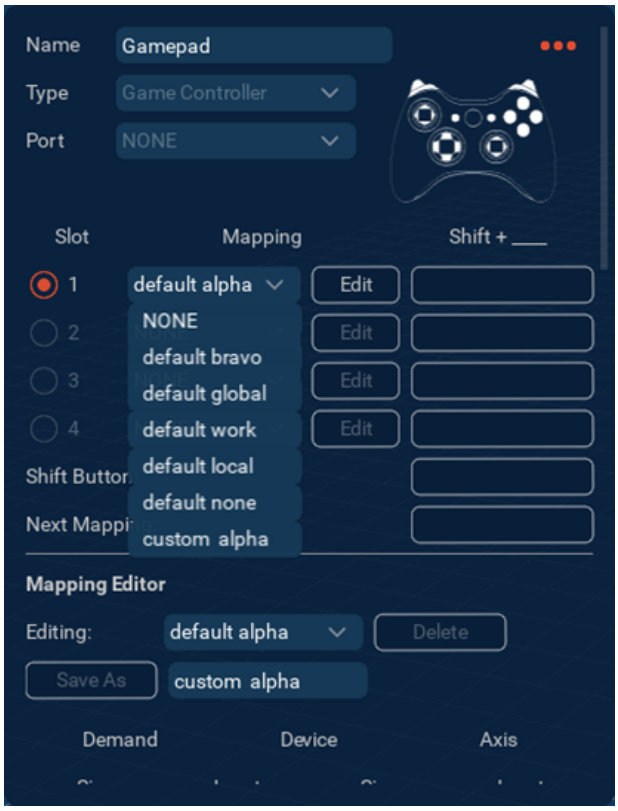
Supported gamepads (other devices may be compatible but have not been tested by Reach Robotics):

- Xbox 360 Wired Controller
- Xbox One Wired Controller
- Logitech F310 Gamepad

Select **Gamepad** from the Control menu. Click **Expand** to open the full Gamepad panel. Using the dropdown menu, select the appropriate default mapping for the connected manipulator.

For more advanced mapping configuration instructions, refer to the **Third-Party Controllers Manual**, available from Reach Robotics Support.





8.3 SpaceMouse

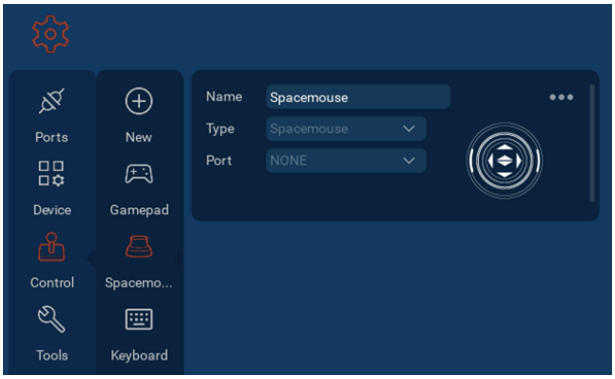
Reach Control only supports one SpaceMouse connection at a time. When the SpaceMouse is plugged in, it will be automatically detected by Reach Control.

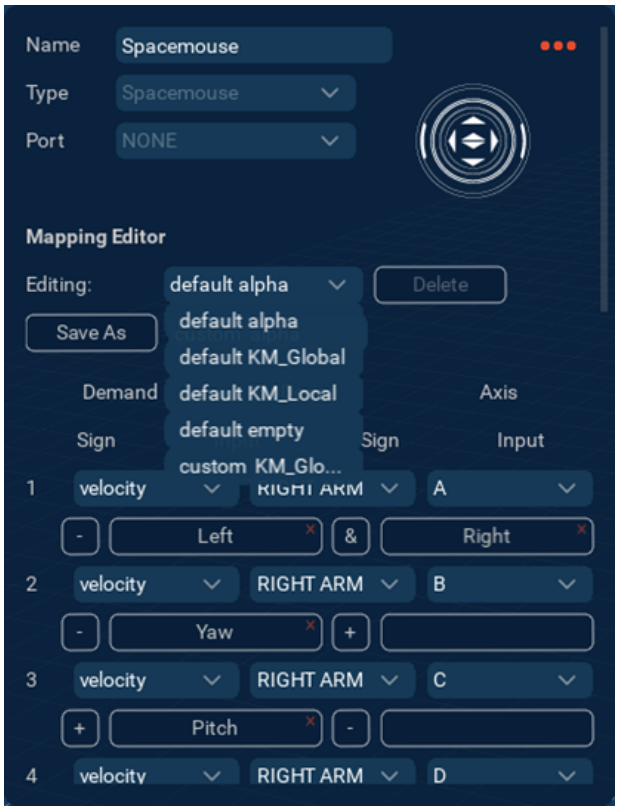
Supported SpaceMice (other devices may be compatible but have not been tested by Reach Robotics):

- 3D Connexion SpaceMouse Pro
- 3D Connexion SpaceMouse Pro Wireless
- 3D Connexion SpaceMouse Compact
- 3D Connexion SpaceMouse Wireless

Select **SpaceMouse** from the Control menu. Click **Expand** to open the full SpaceMouse panel. Using the dropdown menu, select the appropriate default mapping for the connected manipulator.

For more advanced mapping configuration instructions, refer to the **Third-Party Controllers Manual**, available from Reach Robotics Support.



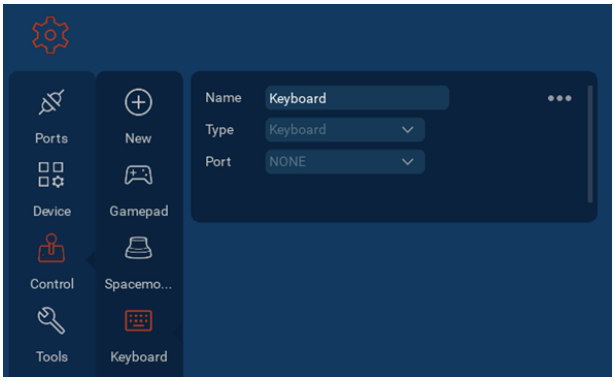


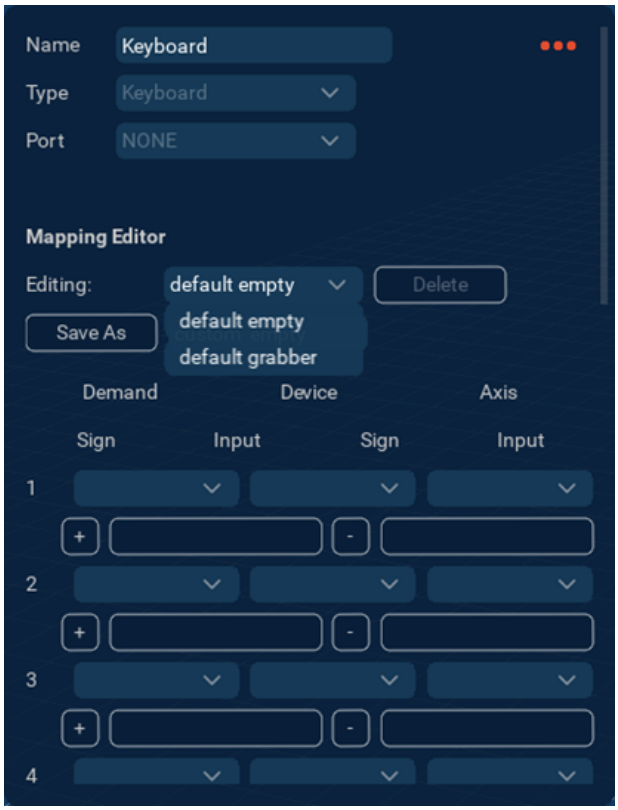
8.4 Keyboard

Reach Control only support one keyboard connection at a time. When the keyboard is plugged in, it will be automatically detected by Reach Control.

Select **Keyboard** from the Control menu. Click **Expand** to open the full keyboard panel. Using the dropdown menu, select the appropriate default mapping for the connected manipulator.

For more advanced mapping configuration instructions, refer to the **Third-Party Controllers Manual**, available from Reach Robotics Support.



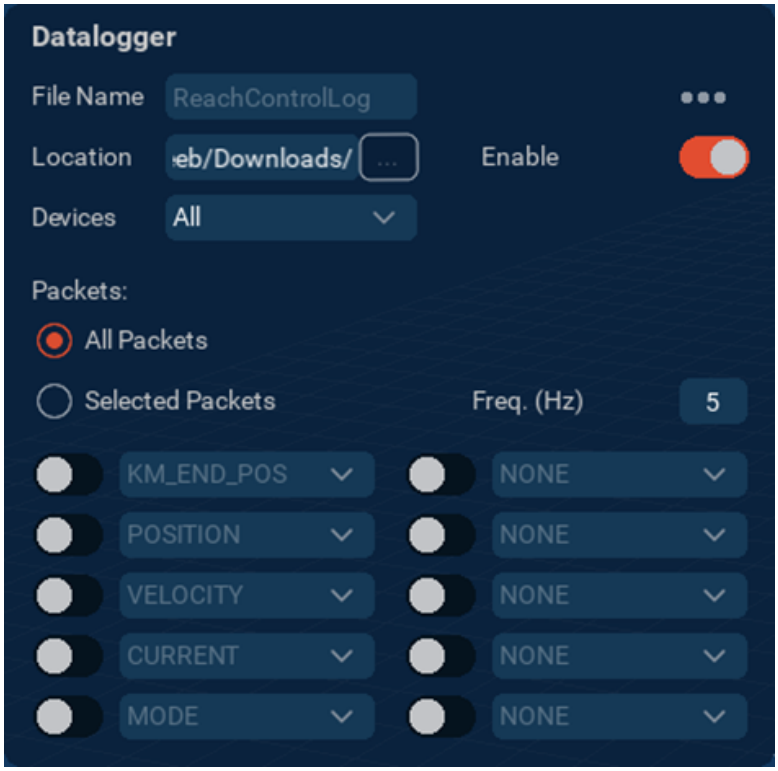


9 Tools

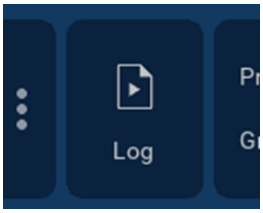
9.1 Datalogger

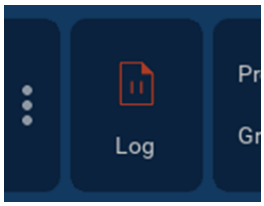
Reach Control can save data from one or all connected manipulators for later analysis using the datalogger function.

Select a location folder. Click the three dots next to **Location** to open the file explorer and navigate to the desired output folder location. Toggle the **Enable** switch.



The datalogger **Start/Pause** button will appear to the left of the control panel.





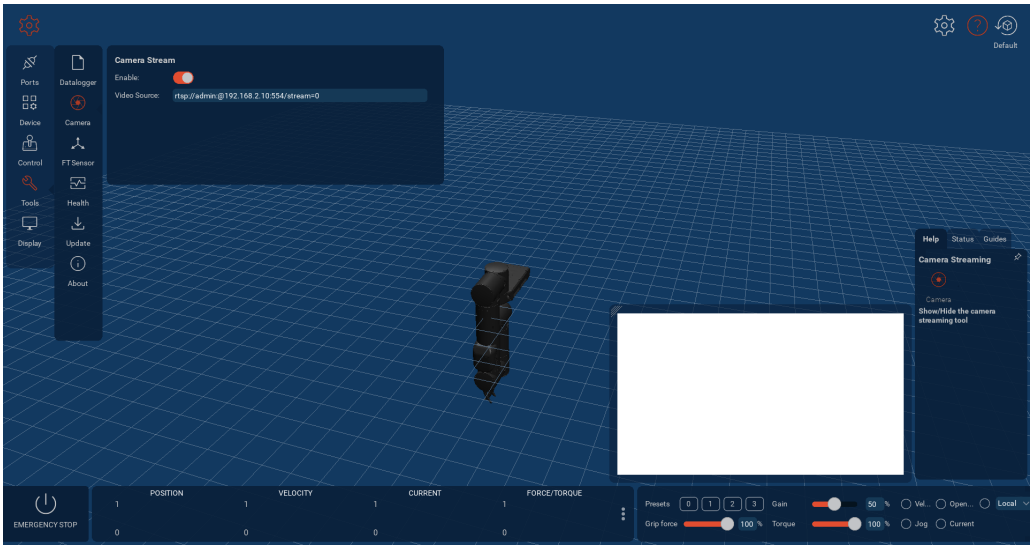
By default, all packets are logged from all connected devices. To log data from a single manipulator, select it from the **Devices** dropdown.

To log only specific packets, select the checkbox next to **Selected Packets**. Use the dropdown menus to select the desired packets and enable them using the toggle switches.

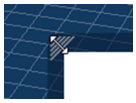
9.2 Camera

For instructions on how to set up the Alpha or Bravo IP camera, download the IP Camera Manual from our website.

To view the camera stream, turn on the **Enable** toggle in the Camera Stream panel.



Edit the URL in the **Video Source** input field as required. The camera stream can be resized by dragging the top left corner.



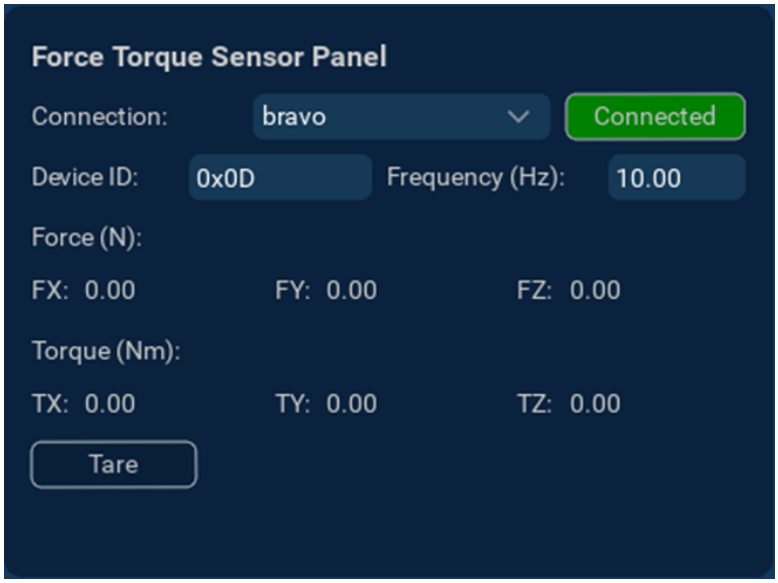
The stream window can also be moved by clicking and dragging anywhere in the window.

9.3 Force Torque Sensor

INFO

Only applicable to some Bravo manipulators.

Select the manipulator with the force torque sensor installed from the **Connection** dropdown. The sensor will automatically begin reading at the default frequency. Change the frequency at which the force/torque values are read using the text box or use the **Tare** button to zero the sensor.

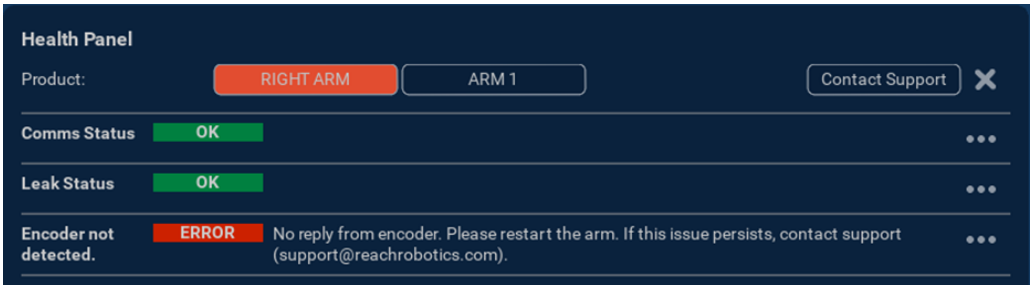


9.4 Health Panel

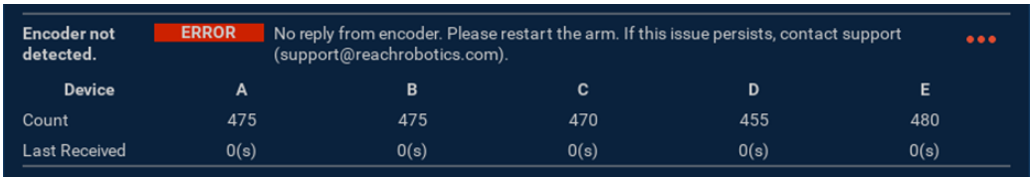
The health panel displays the comms status, leak status, and any hardware errors reported for each connected product.

The comms and leak status are always shown. Click **Expand** next to each section to see details for each joint.

When an error is reported, it will appear underneath the comms and leak status.

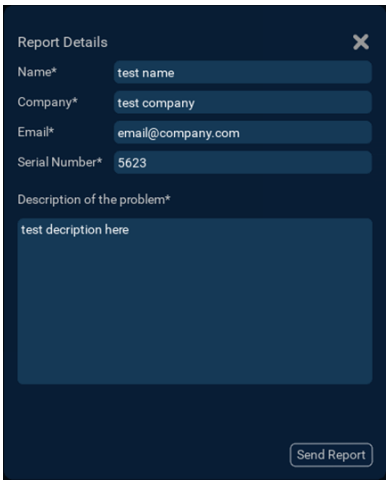


Expand the error to see details for each joint.



9.4.1 Contact Support

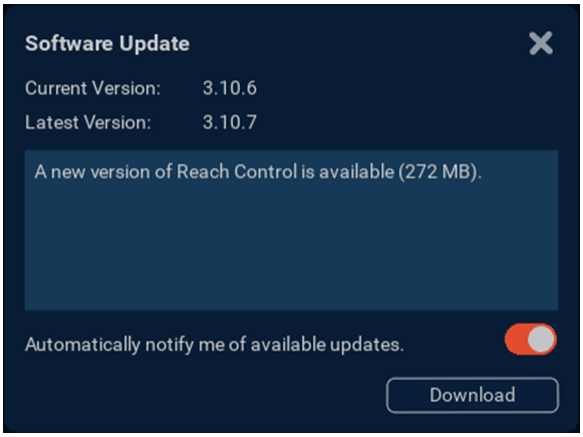
If an error recommends contacting Support, select the **Contact Support** button in the top right corner of the health panel. A report window will open. Fill in all the fields, giving as much detail on the problem as possible, then select **Send Report**. This will send a copy of the connected manipulator's config files to Reach Robotics Support, and they will get back to you via email to discuss the results.



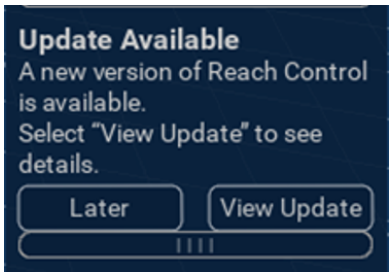
9.5 Update Software

When a new version of Reach Control is available, the **Update Available** notification popup will appear in the help panel.

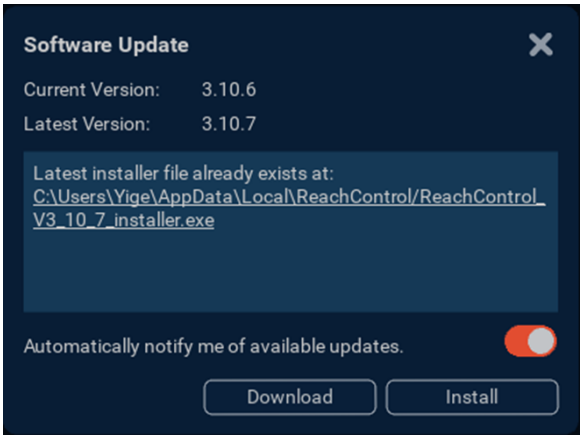
Selecting **View Update** will open the Update panel. The Update panel can also be accessed from the Tools menu.



Toggle off **Automatically notify me of available updates** to stop the Update Available notification popup in the help panel.



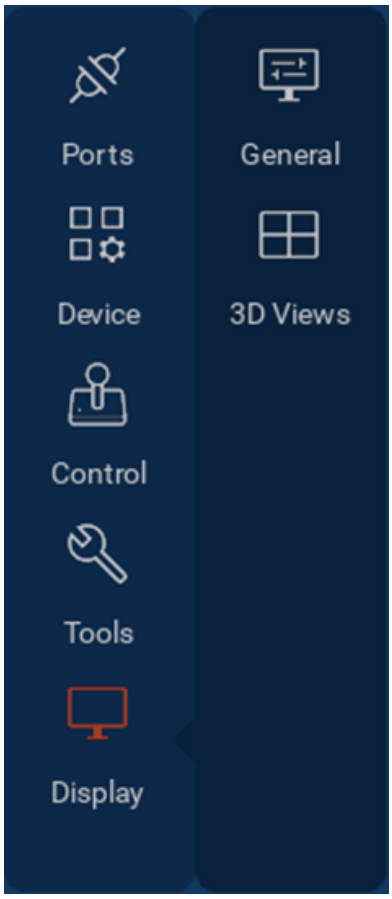
Select **Download** to download the installer. If the installer has previously been downloaded, the file path will be displayed. Select the path view the installer in the file explorer.



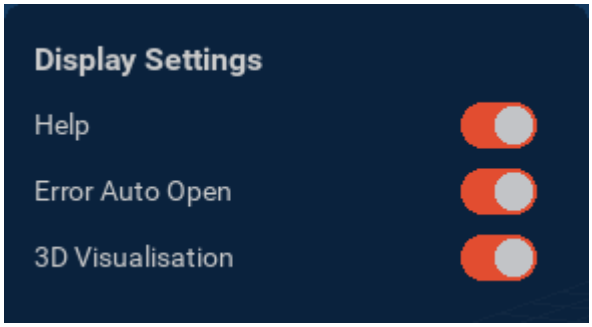
Select **Install** to close Reach Control and run the installer.

10 Display

The Display settings are separated into **General** and **3D** Views.



10.1 General Settings



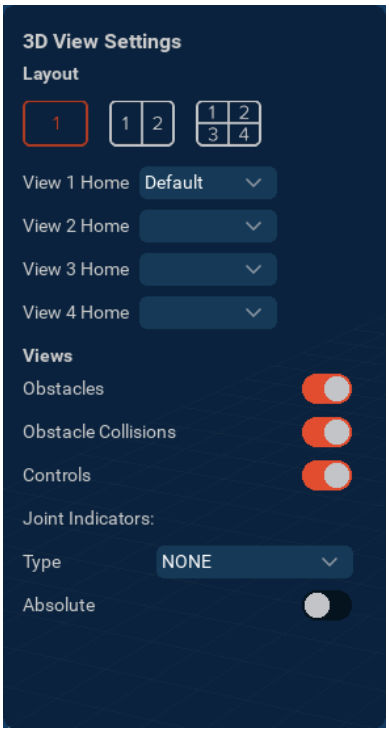
The **Help** toggle shows/hides the help panel. This is the same functionality as the Help panel button in the top right corner.

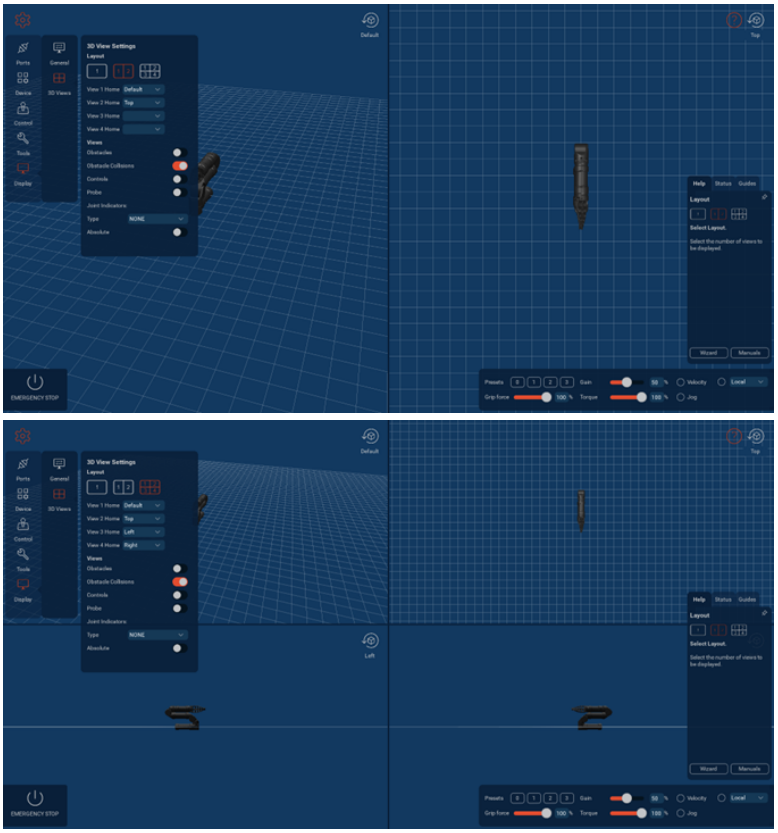
The **Error Auto Open** toggle enables/disables the automatic opening of the help panel to the Status tab when an error is received from a manipulator.

The **3D Visualisation** toggle shows/hides the 3D visualisation area of Reach Control.

10.2 3D Views

The layout of the 3D Visualisation area can be split into up to 4 viewports. Switch between layouts using the **Layout** buttons.





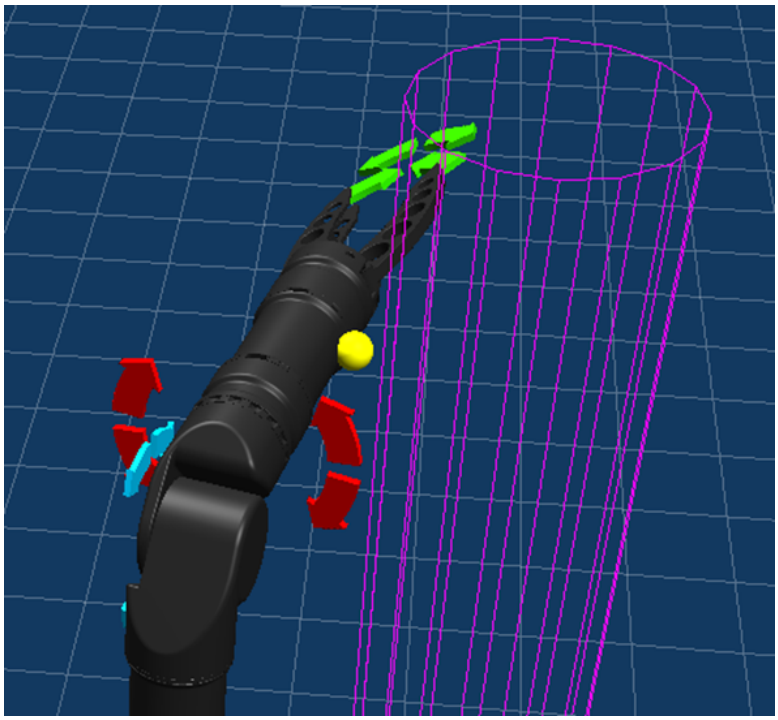
Set the home orientation for each viewport using the dropdown menu.

Each viewport can be reset to the home orientation using the **Reset View** button in the top right of the viewport.

To use a custom orientation, orient the viewport in the desired orientation, then select the **Set** button.

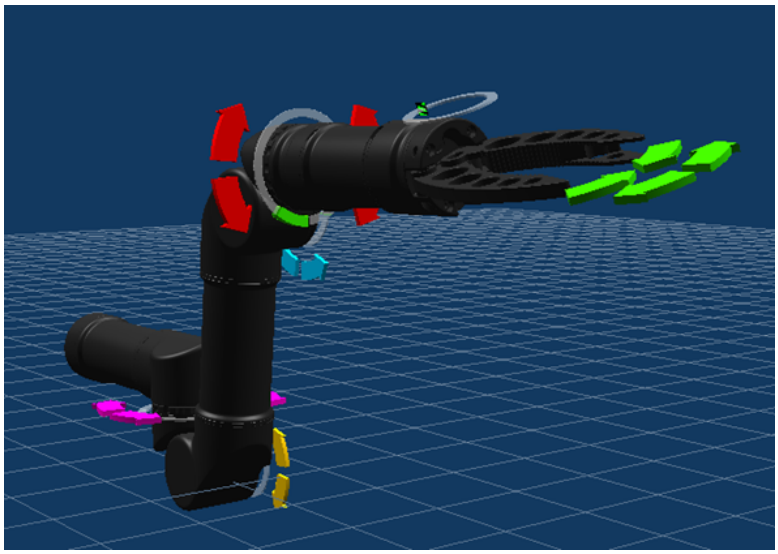
The **Obstacles** toggle shows/hides the obstacles setup for a manipulator.

The **Obstacle Collisions** toggle shows/hides obstacles when a manipulator collides with them. A small yellow sphere will be displayed at the collision point.



The **Controls** toggle shows/hides the control arrows on the most recently selected manipulator. It has the same functionality as selecting Velocity in the control panel.

Select a parameter from the **Joint Indicators** dropdown to display the parameter data on the manipulator visualisation.



11 Revision History

Version	Date	Author	Notes
V1.0	25/11/2018	Shaun Barlow	Initial version
V2.0	29/10/2020	James Spinks	General update
V3.0	17/05/2023	John Sumskas Yige Cao	Update for release of RC V3.10.7
V4.0	22/07/2024	Ellie Best	Additional information throughout Addition of hazard classifications
V4.1	30/03/2026	Ellie Best	Update for release of RC V3.11 Position kinematics removed Reach X information added