STEALTH AND SOFTMOUSE 3D – USERS GUIDE

Contents

Stereo Mapping - Stealth and Softmouse 3D Support

Introduction

The 3D input devices used to support Stereo mapping in ArcGIS Pro has been expanded to also include Stealth mice with Z protocol and Softmouse 3D. These ergonomic devices enhance the stereoscopic mapping workflow by reducing digitizing fatigue with support for two handed mouse operation and lessen feature compilation duration by providing access to multiple editing commands at your fingertips. Each device is equipped with a horizontal scroll wheel for precise elevation definition and multiple programmable buttons to enhance the user experience. Additional information on installation, setup and use of these devices are given below.

Stealth (S4 shown, others similar)

Front View

Back View

The Stealth mouse is an ergonomic 3D input device designed specifically for use in topographic mapping applications. All Stealth mouse models have 10 programmable buttons and a high precision, horizontal thumbwheel to support height definition. The S4 model also has two joysticks which support fine adjustment of position and elevation. The ability to program or map commands to mouse buttons, enhances the stereoscopic editing workflow by exposing commonly used editing functions at the users' fingers tips. It also minimizes interruptions to the feature compilation process by lessening the need to access desired commands from ArcGIS Pro's main menu.

In ArcGIS Pro, the Stealth mouse can be used as both a system mouse and a stereoscopic input device. Unlike your regular system mouse, the Stealth S4 will not work outside the ArcGIS Pro environment.

Stealth Z protocol mouse Setup

To start working with the Stealth mouse (Z protocol) in ArcGIS Pro, the following is required:

1. Installation of the FTDI mouse driver
2. Configuration of the Stealth S4 for use in ArcGIS Pro

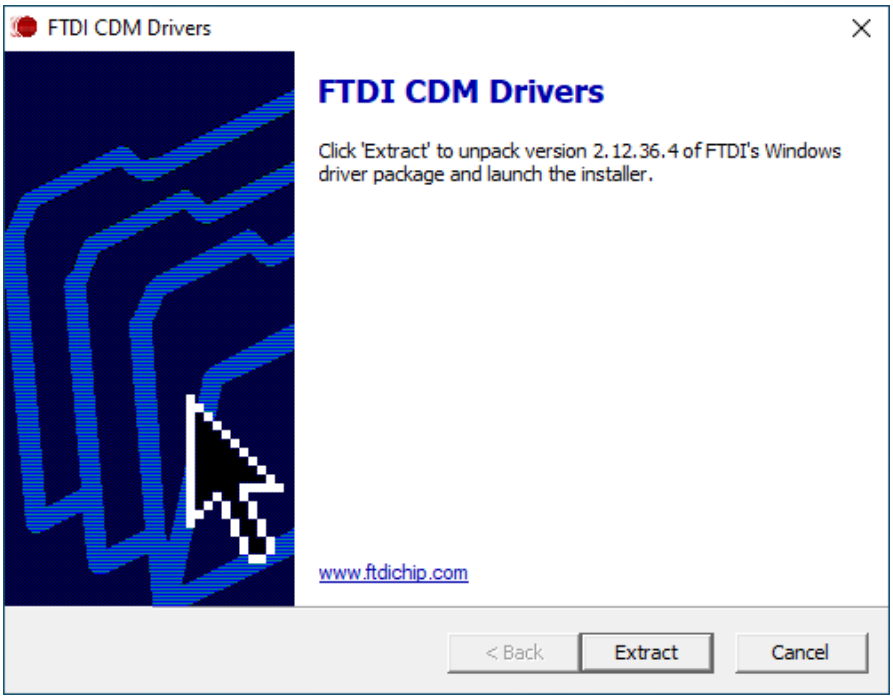
FTDI Mouse Driver Installation

A one-time installation of the Stealth S4 driver is required prior its use. The Stealth S4 needs to be disconnected from the system during the installation process. Use the following as a guide to download and install the required driver.

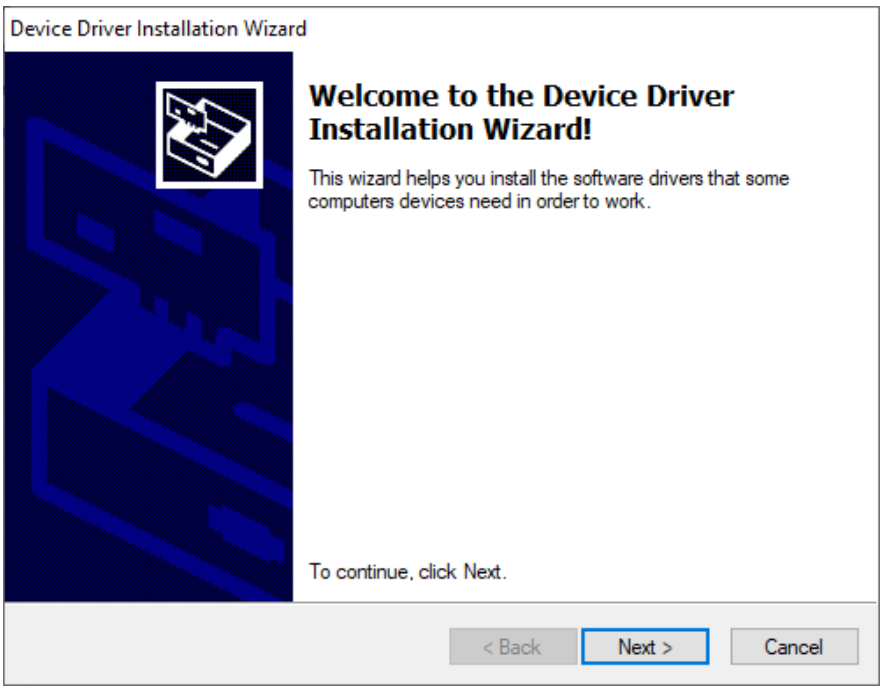
1. Download to a known location on disk, the Stealth S4 driver using the following link.

https://ftdichip.com/wp-content/uploads/2021/08/CDM212364_Setup.zip

2. Unzip the downloaded package.
3. Right-click the extracted setup file and select, **Run as administrator**.
4. Select “Yes” if prompted to continue with the installation process.



5. Select “Extract” on the FTDI CDM Drivers window to load the **Device Driver Installation Wizard**.

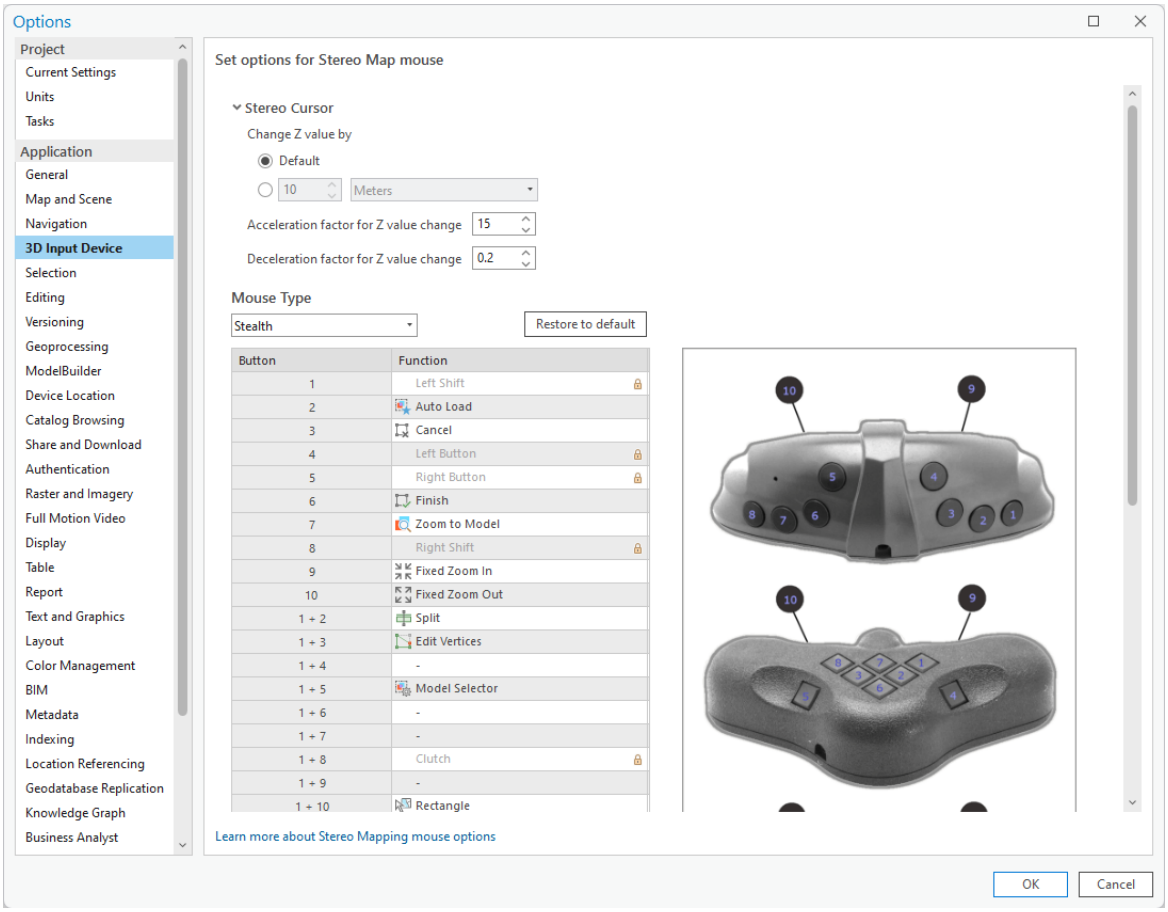


6. Click “Next” on the Welcome to the Device Driver Installation Wizard” page. This will load the License Agreement page.
7. Check the radio button next to “I accept the agreement”, then click “Next” to start the installation.
8. Click “Finish” once the installation process is complete. The FTDI device driver is now installed.

Configuration Considerations

Following the installation of the FTDI device driver, you are now ready to proceed with the Stealth mouse configuration in ArcGIS Pro. This can be done by doing the following:

1. Connect the Stealth S4 device to the computer via a USB port. Prior to opening ArcGIS Pro, plug the device into the USB port.
2. Open an existing Pro project or create a new one.
3. Once Pro is open, on the main menu, select **Project** then **Options**. This will open the **Options** window. Here you can set some preferred options to configure the use of the Stealth S4 device in ArcGIS Pro.
4. Within the **Application** section on the left, select **3D Input Device**. This will expose the **Set options for Stereo Map mouse** window.



5. Ensure the default mouse Type is **Stealth**.

6. The **Button/Function** user interface (UI) exposes some default button mappings and enables you to map commands to your preferred mouse buttons. A graphic of the various Stealth models can be seen to the right of the Button/Function UI. The Stealth S4 model is the topmost image.

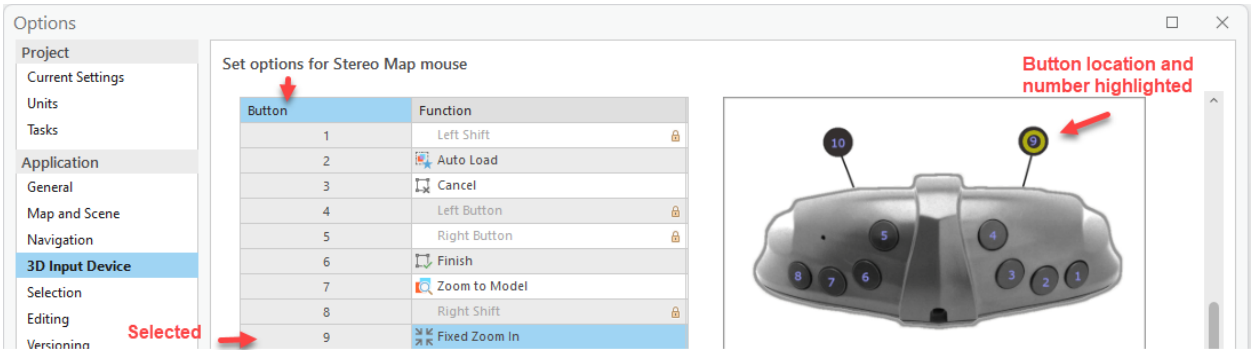
   Note: Buttons with associated functions that are grayed out and have a lock icon next to them are not customizable. Those includes Stealth mouse button 1 (left shift), 4 (left button), 5 (right button), 8 (right shift) and buttons 1 and 8, simultaneously clicked (clutch).

Mapping Mouse Buttons

Various editing and Stereo mapping functionalities can be mapped to the Stealth mouse buttons to enhance stereo mapping efficiencies. The Stealth mouse is equipped with 10 buttons, a thumbwheel, and optionally two joysticks. These buttons altogether can accommodate up to 32 programmable/mappable functions. Functions cannot be mapped to the joysticks. A list of commands that can be mapped to the mouse buttons can be seen in the **Commands Supported** section.

To map supported functions to a mouse button, do the following:

1. In the **Button** column, click on a specific button or button combination number that you would like to map a function to. This will:
   a. Highlight the function associated with the mouse button
   b. Highlight in yellow, on the Stealth S4 graphic, the button number selected. This also gives an indication of the location of that button on the Stealth mouse.



2. Click the highlighted row that aligns with the button number selected, to expose a drop-down list of supported functions.
3. Select from the drop-down list, the function you would like assigned to the associated buttons.
4. Repeat the above steps to map other functions to the Stealth S4 mouse buttons.
5. Once you have completed mapping functions to buttons, click **OK** at the bottom of the window to accept all changes.
6. To return to the default button mappings, click the **Restore to Default** button.

The table below provides a brief description of the Stealth S4 non-programmable (grayed out) function keys.

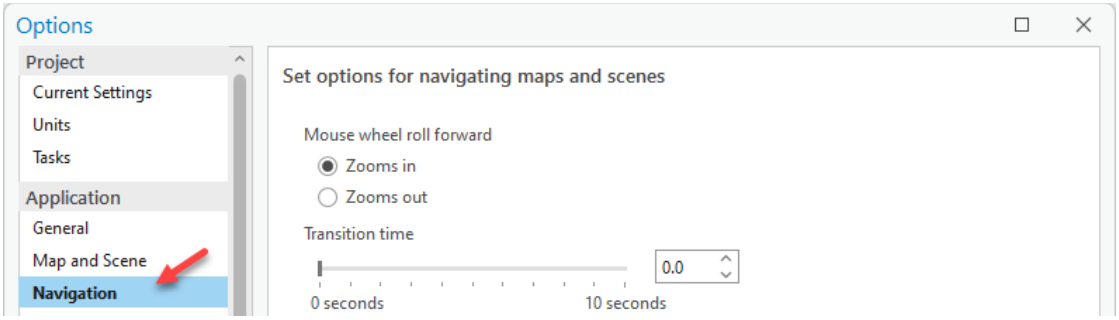
Stealth S4 - Non-Programmable Button Legend

Button	Function	Explanation
1	Shift Left	Similar to a function key, the **Shift** key works in combination with other keys to expand mouse button mapping capacity
8	Shift Right	Similar to a function key, the **Shift** key works in combination with other keys to expand mouse button mapping capacity
4	Left Click	Mimics left-click functionality on the system mouse
5	Right Click	Mimics right-click functionality on the system mouse
1 + 8	Clutch	Clutch enables the moving of the mouse without changing its X, Y, and Z position on the screen.

Invert Mouse Wheel Scrolling

To invert the scroll direction of the Stealth mouse device, please do the following:

1. Open ArcGIS Pro, if not already open. If already open, click **Project, Options** then continue with step 3.
2. Select **Settings** (on the left), then click **Options**. This will open ArcGIS Pro's **Options** window.
3. Under Application section (on the left), select **Navigation**.

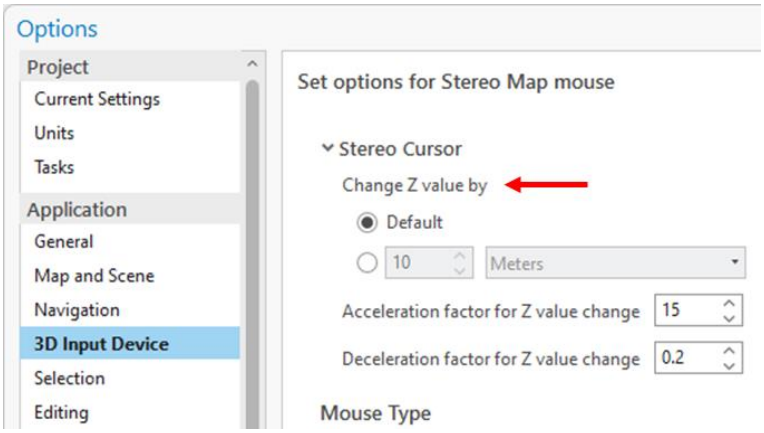


4. On the right side of the window, under **Mouse wheel roll forward**, click the unchecked radio button then click **OK** at the bottom of the window to accept the changes.
5. Click the back arrow to return to ArcGIS Pro's home page.

6. Open or create a project to continue.

Adjust Z Rate of Change

The thumbwheel on the Stealth S4 mouse enables accurate height adjustments in the stereo window. Height increment changes are controlled by the **Change Z Value By** option in the **Stereo Cursor** section found at the top of the **Set options for Stereo Map mouse** window.

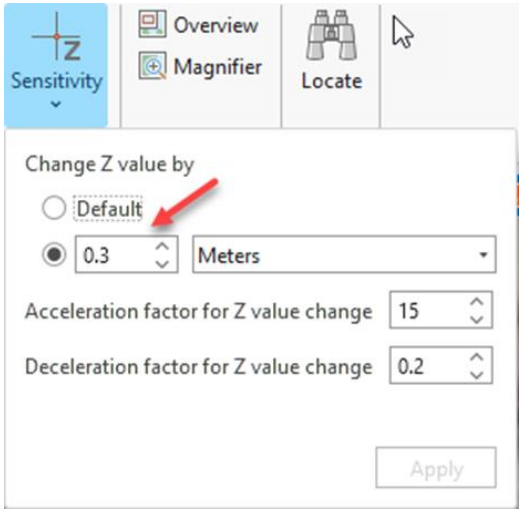


This option can also be found on Pro's main menu, **Stereo Map** tab, **Z Sensitivity** option in the **Cursor** category. For ease of access, it is recommended that the **Z Sensitivity** option be used when working in the Stereo window.

The height increment rate of change is primarily controlled by the **Default** or non-default settings. The default settings change the height value in increments of 65cm. For smaller increments, do the following.

1. Open a Stereo Map window. On Pro's main menu, select **Insert**, then from the **New Map** drop-down menu, select **New Stereo Map**. This will add a new **Stereo Map** tab to ArcGIS Pro's main menu.
2. Click the **Stereo Map** tab, then select **Z Sensitivity** in the **Cursor** category. This will open the **Z Sensitivity** dialog box.
3. Check the radio button below **Default** to enable custom height increment settings.

4. To have the Z values adjust in increments of 30cm, enter a value of 0.3 in the box to the left of **Meters**.



5. Click **Apply** to accept the changes and close **Z Sensitivity** dialog box. As you rotate the Stealth S4 thumbwheel you will notice that the Z value in the coordinate tray (at the bottom of the Stereo window), changes in increments of 30cm.

Commands Supported

A list of the commands that can be presently mapped to the Stealth mouse buttons can be seen in the table below.

None	Split	Next
Undo	Reshape	Auto Load
Redo	AutoComplete Polygons Tool	Invert
Snapping	Square and Finish	Overview
Rectangle	Save	Magnifier
Fixed Zoom Out	Midpoint	
Fixed Zoom In	Endpoint	
Previous Extent	Vertex	
Next Extent	Edge	
Create	Add Vertex	
Modify	Delete Vertex	
Edit Vertices	Zoom to Model	
Move	Model Selector	
Finish	Previous	
Cancel		

An expanded list of commands to be supported in ArcGIS Pro 3.2 final can be seen below. Please let us know if there commands not listed below that you would like to see added.

Programmable Commands		
Navigation	**Stereo Model**	**Stereo Mapping**
Zoom to Full Extent	Open Stereo Model Selector	Snap to surface
Zoom In	Enable Auto Load Model	Enable Terrain Following
Zoom Out	Next Model	Toggle Fixed Cursor Mode
Zoom to Selected	Previous Model	Adjust X Parallax
Previous Extent	Undo (loaded) Stereo Model	Adjust Y Parallax
Next Extent	Redo (removed) Stereo Model	Change selected vertex height
Roam/Pan		Accelerate Change in Z
		Decelerate Change in Z
Stereo Display	**Editing**	**Snapping**
Display Left Stereo Image Only	Open Modify Features pane	Toggle Snapping
Display Right Stereo Image Only	Open Create Features pane	
Default Stereo Image Only	Activate Select Tool	
Invert Stereo	Clear Selection	
Zoom to Stereo Model	Cut Polygon	
	Square and Finish	
Cursor	Finish Editing	
Cycle through Cursor Type	Cancel Edit	
X Dot	Move feature	
X Only	Undo Edit	
Cross Dot	Redo Edit	
Cross Only	Split	
Box Dot	Merge	
Circle Dot	Add vertex	
Dot	delete vertex	
	Edit Vertices	
	Rotate feature	
	Save	
	Discard	
	Reshape	

Softmouse 3D

Softmouse 3D is an ergonomic 3D input device designed specifically for use in topographic mapping applications. The Softmouse device is equipped with 10 buttons and a high precision, horizontal thumbwheel to support accurate height definition. The 10 buttons can be programmed to store up to 20 commands which simplifies the editing workflow by enabling users to map commonly used editing commands to the Softmouse device. It also minimizes interruptions to the feature compilation process by lessening the need to access desired commands from ArcGIS Pro's main menu.

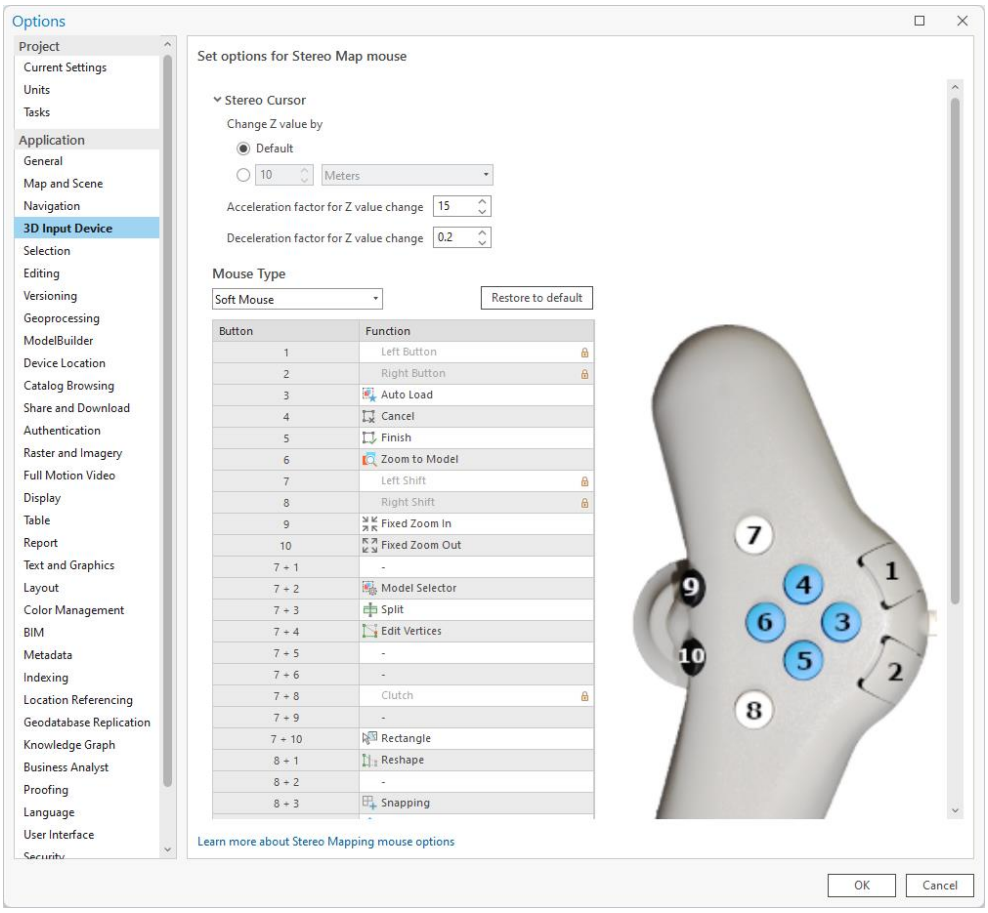
In ArcGIS Pro, the Softmouse can be used as both a system mouse and a stereoscopic input device. Unlike your regular system mouse, the Softmouse mouse will not work outside the ArcGIS Pro environment.

Softmouse 3D Setup

To start working with the Softmouse in ArcGIS Pro, plug the device into a USB port on your computer. Once connected, use the following as a guide to configure the Softmouse 3D device for use in ArcGIS Pro.

Softmouse 3D Configuration Steps

1. Prior to opening ArcGIS Pro, plug the device into the USB port.
2. Open an existing Pro project or create a new one.
3. Once Pro is open, on the main menu, select **Project** then **Options**. This will open the **Options** window.
4. Within the **Application** section on the left, select **3D Input Device**. This will expose the **Set options for Stereo Map mouse** window.



5. From the Mouse Type drop-down list, select **Softmouse.**
6. The **Button/Function** user interface (UI) exposes some default button mappings but also enables you to map your preferred commands to the mouse buttons.

   Note: Buttons with associated functions that are grayed out and has a lock icon next to it, are not customizable. Those includes button 1 (left button), 2 (right button), 7 (left shift), 8 (right shift) and buttons 1 and 8, simultaneously clicked to enable **Clutch** functionality. Clutch enables the moving of the mouse without changing its X,Y, and Z position on the screen.

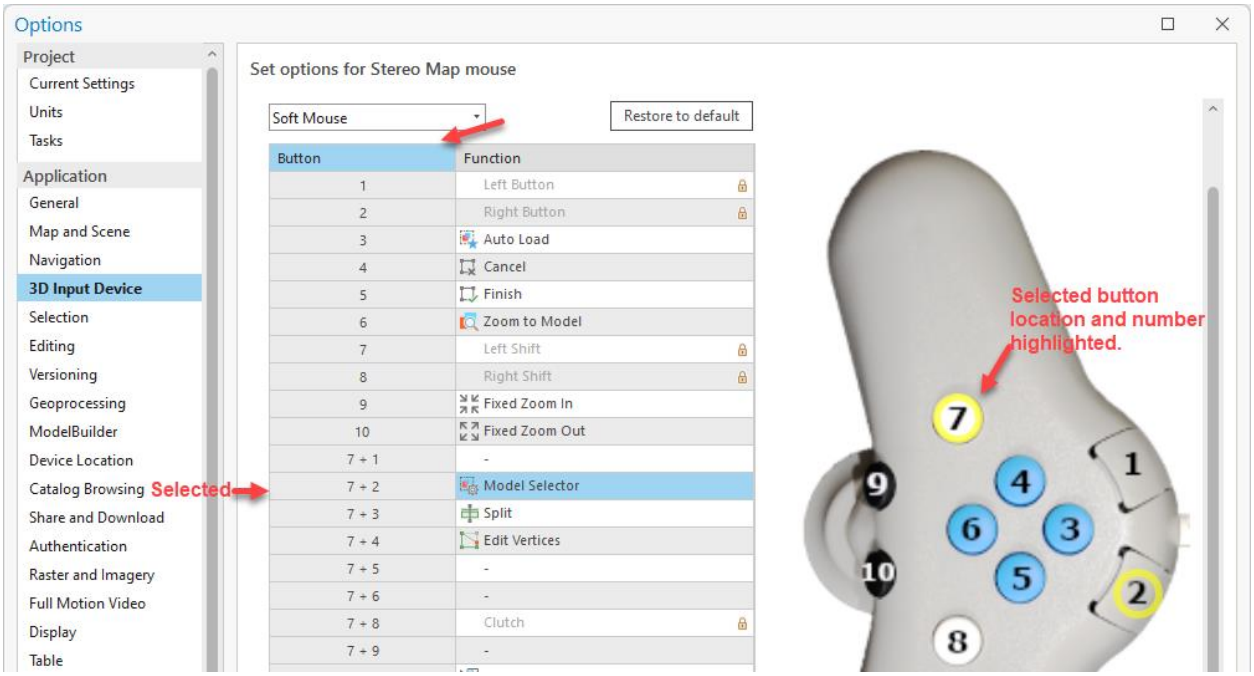
Mapping Mouse Buttons

Various editing and Stereo mapping functionalities can be mapped to the Softmouse buttons to enhance stereo mapping efficiencies. The Softmouse 3D device is equipped with 10 buttons and a horizontal thumbwheel and can accommodate up to 20 programmable/mappable functions. A list of commands that can be mapped to the mouse buttons can be seen in the **Commands Supported** section.

To map supported functions to a mouse button, do the following:

1. In the **Button** column, click on a specific button or button combination number that you would like to map a function to. This will:
   a. Highlight the function associated with the mouse button

b. Highlight in yellow, on the Softmouse 3D graphic, the button number selected. This also gives an indication of the location of the selected button on the Softmouse 3D device.



2. Click the highlighted row that aligns with the button number selected, to expose a drop-down list of supported functions.
3. Select from the drop-down list, the function you would like assigned to the associated buttons.
4. Repeat the above steps to map other functions to the Softmouse 3D buttons.
5. Once you have completed mapping functions to buttons, click **OK** at the bottom of the window to accept all changes.
6. To return to the default button mappings, click the **Restore to Default** button.

The table below provides a brief description of the Softmouse 3D non-programmable (grayed out) function keys.

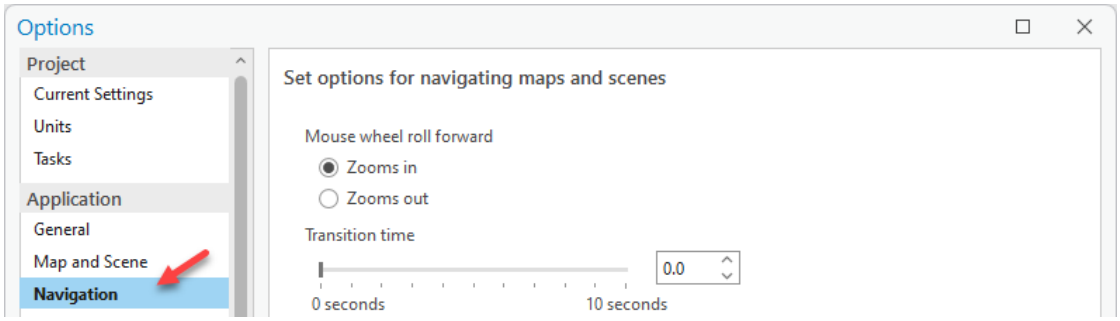
Softmouse 3D – Non-Programmable Button Legend

Button	Function	Explanation
1	Left Button	Similar to a function key, the **Shift** key works in combination with other keys to expand mouse button mapping capacity
2	Right Button	Similar to a function key, the **Shift** key works in combination with other keys to expand mouse button mapping capacity
7	Left Shift	Mimics left-click functionality on the system mouse
8	Right Shift	Mimics right-click functionality on the system mouse
7 + 8	Clutch	Clutch enables the moving of the mouse without changing its X,Y, and Z position on the screen.

Invert Mouse Wheel Scrolling

To invert the scroll direction of the regular system mouse, Softmouse mouse, please do the following:

1. Open ArcGIS Pro, if not already open. If already open, click **Project, Options** then continue with step 3.
2. Select **Settings** (on the left), then click **Options**. This will open ArcGIS Pro's **Options** window.
3. Under Application section (on the left), select **Navigation**.

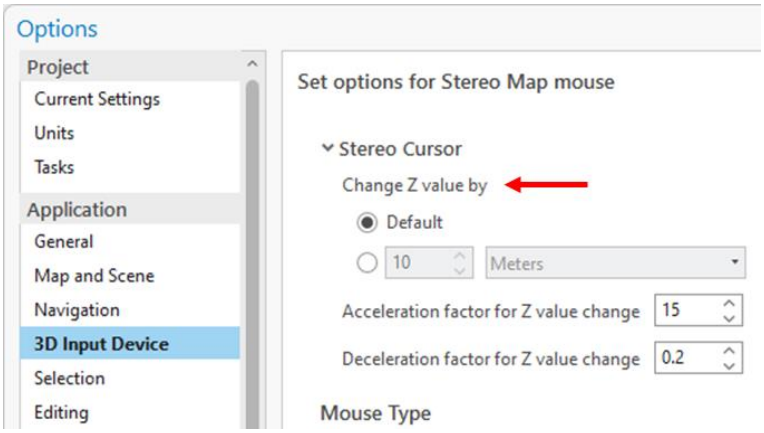


4. On the right side of the window, under **Mouse wheel roll forward**, click the unchecked radio button then click **OK** at the bottom of the window to accept the changes.
5. Click the back arrow to return to ArcGIS Pro's home page.

6. Open or create a project to continue.

Adjust Z Rate of Change

The thumbwheel on the Softmouse enables accurate height adjustments in the stereo window. Height increment changes are controlled by the **Change Z Value By** option in the **Stereo Cursor** section found at the top of the **Set options for Stereo Map mouse** window.



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2. Click the **Stereo Map** tab, then select **Z Sensitivity** in the **Cursor** category. This will open the **Z Sensitivity** dialog box.
3. Check the radio button below **Default** to enable custom height increment settings.
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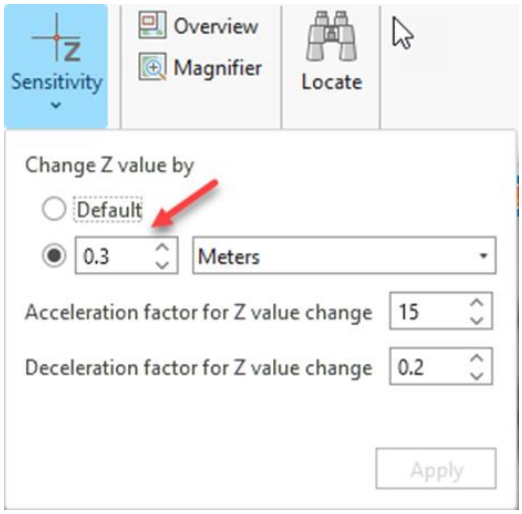
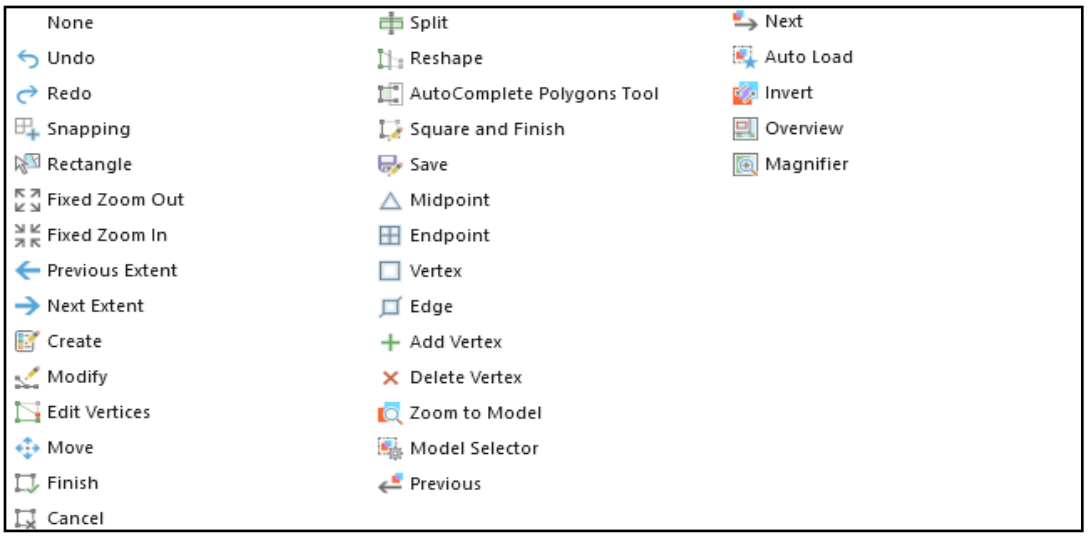


5. Click **Apply** to accept the changes and close **Z Sensitivity** dialog box. As you rotate the Softmouse 3D thumbwheel you will notice that the Z value in the coordinate tray (at the bottom of the Stereo window), changes in increments of 30cm.

Commands Supported

A list of the commands that can be presently mapped to the Softmouse 3D device buttons can be seen in the table below.



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Zoom In	Enable Auto Load Model	Enable Terrain Following
Zoom Out	Next Model	Toggle Fixed Cursor Mode
Zoom to Selected	Previous Model	Adjust X Parallax
Previous Extent	Undo (loaded) Stereo Model	Adjust Y Parallax
Next Extent	Redo (removed) Stereo Model	Change selected vertex height
Roam/Pan		Accelerate Change in Z
		Decelerate Change in Z
Stereo Display	**Editing**	**Snapping**
Display Left Stereo Image Only	Open Modify Features pane	Toggle Snapping
Display Right Stereo Image Only	Open Create Features pane	
Default Stereo Image Only	Activate Select Tool	
Invert Stereo	Clear Selection	

Zoom to Stereo Model	Cut Polygon	
	Square and Finish	
Cursor	Finish Editing	
Cycle through Cursor Type	Cancel Edit	
X Dot	Move feature	
X Only	Undo Edit	
Cross Dot	Redo Edit	
Cross Only	Split	
Box Dot	Merge	
Circle Dot	Add vertex	
Dot	delete vertex	
	Edit Vertices	
	Rotate feature	
	Save	
	Discard	
	Reshape	

Other Information

- If working with multiple instances of ArcGIS Pro open, the Stealth or Softmouse device will be active only in the first instance opened. This is by design.

Known Issues

Below are some known issues in this alpha version that will be addressed in ArcGIS Pro 3.2 final.

1. A few mouse buttons do not have default functions mapped in the **Set options for Stereo Map mouse** window. You may manually assign functions to these buttons using the process described in **Mapping Mouse Button** section above.
2. The Stealth or Softmouse 3D device will not be recognized by the application if connected after opening ArcGIS Pro. To resolve this issue, close and reopen ArcGIS Pro.
3. While using the Stealth or Softmouse 3D in ArcGIS Pro, if the device is disconnected and reconnected via the USB port, it will no longer be recognized by the system. With the device connected to the system, close and reopen ArcGIS Pro to resolve this issue.