



Tangent Mapper

User Manual

Rev 17



Check www.tangentwave.co.uk/support for updates.

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1 Overview

1.1 Tangent Mapper

The Tangent Mapper allows you to alter the control layouts (or maps) for applications which use the Managed API of the Tangent Hub to communicate with our control surfaces. The Tangent system can also be used with software that does not directly support our panels by creating control layouts that use fake keypress events to control software applications that define keyboard short-cuts. Both these types of mappings can be configured to automatically take control of the panels when you open an application and start working.

Multiple maps for each application can be created to reflect your different modes of working and each individual user of the system can create their own maps. The maps may also be exported, allowing you to import them into other systems which you may use. Mapping changes are instantly applied to the application map via the Hub so the user can try them out before choosing to save or discard them.

The Mapper allows you to select which running application has control of the panels and to configure which panels are to be connected to your system, including the element-Vs virtual surface app which is available in the iTunes [App Store](#) for the iPad and in the Google [Play Store](#) for Android tablets. More information about the element-Vs app can be found on the Tangent [website](#).

You don't need to have the Mapper running in order to make use of the panels or to switch between mapping layouts for different applications. If the system has the auto-select function enabled the panels will switch mappings according to the applications you are working with. The Mapper's main use is to create and change mapping layouts, and to configure the system's settings.

The new Ripple panels are now available with an option to emulate element-Tk panels if required (see section 2.8). This allows Ripples to be used out-of-the-box with any software that currently only supports Element panels. If emulation is not required the Ripple panel can be used as a normal individual panel.

1.2 Head-Up-Display Support

The latest version of the Tangent software includes a virtual Head-Up-Display (HUD) that is available for panels without a physical display, such as the Ripple. The HUD is shown on your monitor and can be used as a normal panel display, showing current panel mapping and system information. There are several settings available for the HUD in the panel configuration window (section 2.2.9). The HUD is currently only available on Mac and Windows platforms.

Please note that not all applications use the Managed interface to connect to the Tangent Hub. Please check our [website](#) to see if your application is supported. If your application does not support the Managed API then you cannot change the control surface layout.

1.3 Tangent Synapse

The Synapse utility can be used to test a Tangent Hub installation. It displays the state of software and hardware components and allows the panel configuration to be changed. If you are having problems connecting your panels to an application then run Synapse on its own to perform the first level of system testing. Please note that you must not have the Mapper and Synapse running at the same time as they share certain system resources.

1.4 Tangent Versions

The Versions utility is used by the Tangent Hub to occasionally check for new software releases from Tangent. The automatic checks can be disabled by a setting in the utility if not required. You can run Versions manually at any time to change the 'Automatically check for updates' setting. It is still possible to manually check for updates from within the Mapper application (see section 2.1.2).

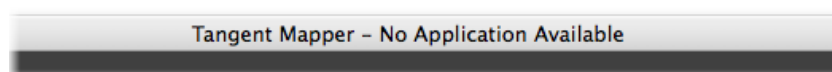
2 Getting Started With The Mapper

Before launching the Tangent Mapper please ensure that you have installed the Tangent Hub. Check www.tangentwave.co.uk/support to download the latest version. If the Hub is not installed correctly you will see a placeholder image in the Mapper and no further actions can be performed.



When you wish to edit maps for your chosen software application, the application must be running and connected to the Hub as mapping data is only loaded by the Hub when the application is being used. You can select which application is currently active using a menu in the Mapper (see section 2.3).

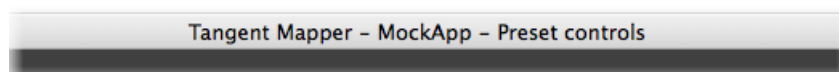
The title of the main window will tell you which application and map, if any, is active.



If there are no running applications the title will be 'No Application Available'. In this case you cannot change any mapping data but you can configure the panel connections that the applications may use. The current panel set-up will be shown in the main window as described in section 2.5.

When using the Mapper to configure the panel connections you must not run any applications that connect to the Hub as the panel set-up cannot be changed when they are in use.

If applications connect to the Hub using the Unmanaged API the control layout is fixed by the application and cannot be changed using the Mapper. When this type of application is active the contents of the main window will be disabled and the title will indicate this as follows:



When a Managed application is active and being mapped, the main window title will be in the following format:



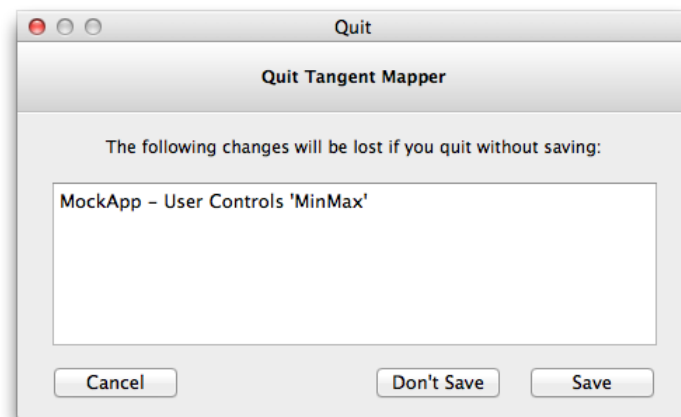
After the Tangent Mapper title, the application name is followed by a label that indicates if you are currently using the default control mapping (supplied by the application providers) or a user map (defined by you). If the map is user defined the name of the mapping is also shown. In both cases, if you have made any changes to the map which have not been saved the title will end with the '[Modified]' text.

The application that is activated in the Hub will be given control of the panels but multiple applications can be connected to the system at the same time. You may manually switch between multiple applications using a menu in the Mapper (see section 2.3) to give control of the panels to any connected software. The same menu allows you to opt for the system to automatically switch between applications, so the panel controls follow your active desktop window as you switch between software (this may not be available on all platforms).

Special keypress applications can be defined to work with software that does not directly support Tangent panels. These applications can be created along with new control maps (see section 2.2.1) so they automatically start and activate themselves when the associated software is running and has desktop focus.

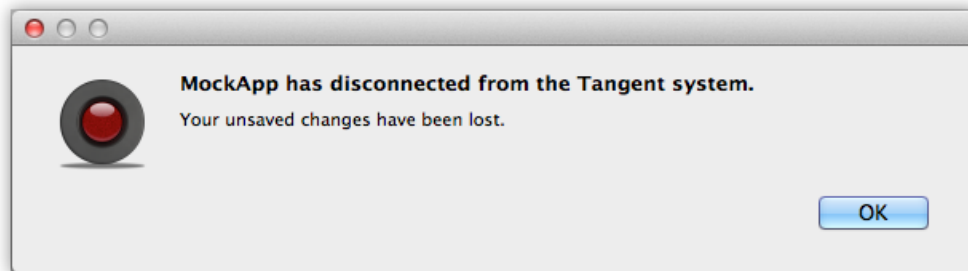
If the active application quits then the Mapper will switch to the next running application, if one is available.

If you quit the Mapper with unsaved changes you will be presented with a window listing the details of which application maps have been changed and need to be saved before quitting the Mapper to avoid losing data.



If you choose the 'Don't Save' option, the Mapper will discard all changes before quitting. If you opt to save the changes you may be asked to enter a name for any new maps that have been created in this session. This would be the case if you have modified the default control mapping or created a new control map to make your own personal panel layout.

If an application unexpectedly disconnects itself from the Tangent Hub and Mapper when there are unsaved changes, you will be informed about the disconnection by a message box. This does not affect any existing and already saved maps.



The message box will dismiss itself after a short delay and the Mapper will continue running.

2.1 Menu: “Tangent Mapper” (OS X) or “Help” (Linux & Windows)

This platform specific menu gives access to details about the Mapper application.

2.1.1 Menu: “About Tangent Mapper”

This opens a window showing some details about the version of the Tangent Mapper itself plus the version of the Tangent Hub to which it is connected. Note the installation version is always determined by the Tangent Hub software version.

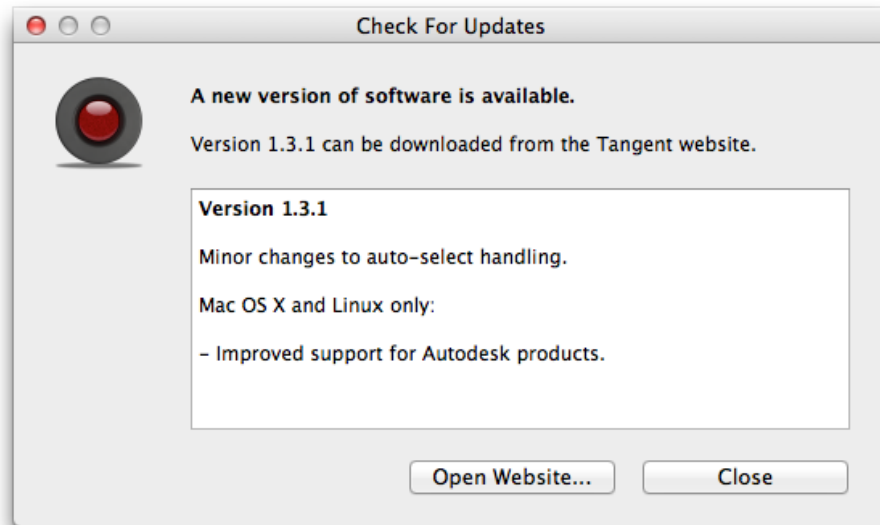


2.1.2 Menu: “Check for Updates...”

If your PC has an internet connection you can check for software updates at any time by selecting this menu entry in the Mapper. The application will connect to the Tangent server and compare your installed software version with the latest release. Note that the Tangent software packages are bundled together as a specific Tangent Hub version and this is what is compared.

The Hub may also automatically check for new releases of Tangent software using the Versions utility. You can disable this function if it is not required. See section 1.4 for more details.

If a new version is available the application will display this information with optional release notes. You can then choose to download the new software from the Tangent website. A button to open the appropriate page in your default browser is included at the bottom of the window.

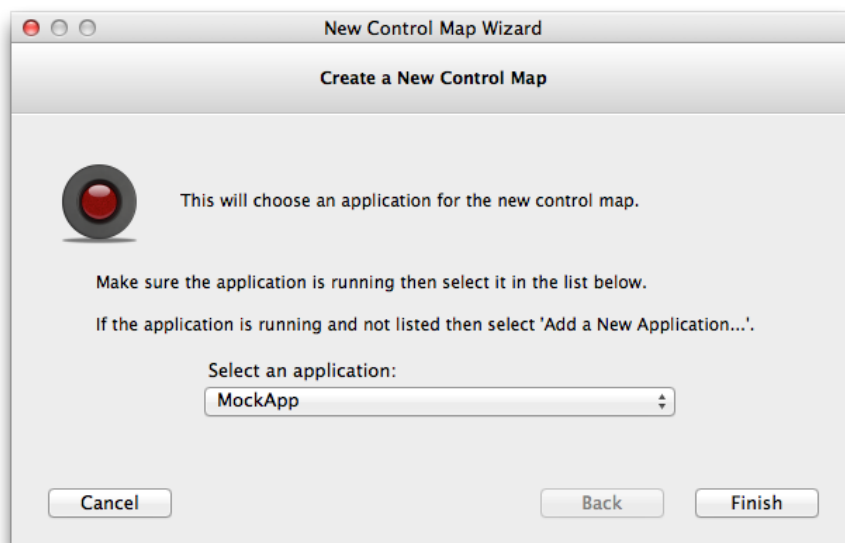


2.2 Menu: “File”

This menu contains the main tasks that allow you to configure the Tangent Hub system and control mappings.

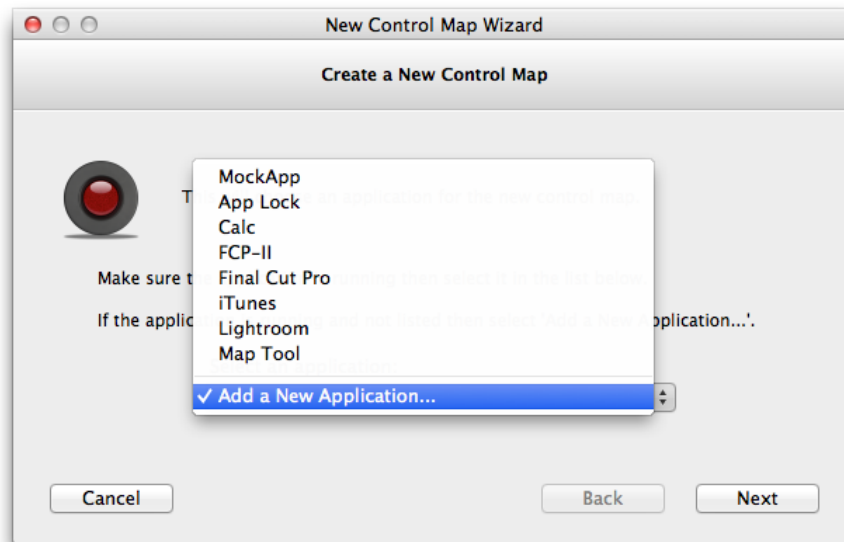
2.2.1 Menu: “New Control Map...”

You can create control maps from scratch with a new and empty map or based on an existing map as a modified copy of the original. This menu item is the starting point for creating a new and empty control map for any application. The first step is to choose an application for the new control map and to make sure it is running so it may connect to the panels. The new control map wizard window contains a pop-up list of all known and connected applications for you to make a selection, with the currently active application as the initial selection.



If you choose an existing application from the list then clicking on 'Finish' will create and load a new control map and return you to the main window where you can start to edit the controls as described in section 2.5.3.

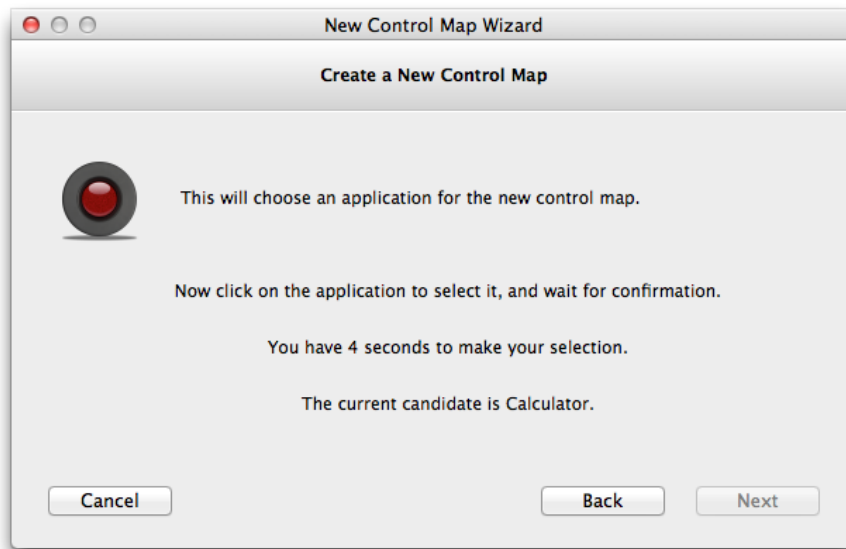
If your application is not listed when running then it does not directly support our panels. In this case you should select the 'Add a New Application...' option to create a keypress application to allow you to map keypress events to control the software using keyboard short-cuts.



The next step prompts you to select the running software from your desktop. The Tangent system can detect which software application has desktop focus and will choose this to use with the new control map. (This functionality may not be available on all platforms in which case the wizard will simply ask you to enter the name. If you enter a name that is already in use then the new control map will be added to the existing application and the wizard will confirm this with an additional message.)

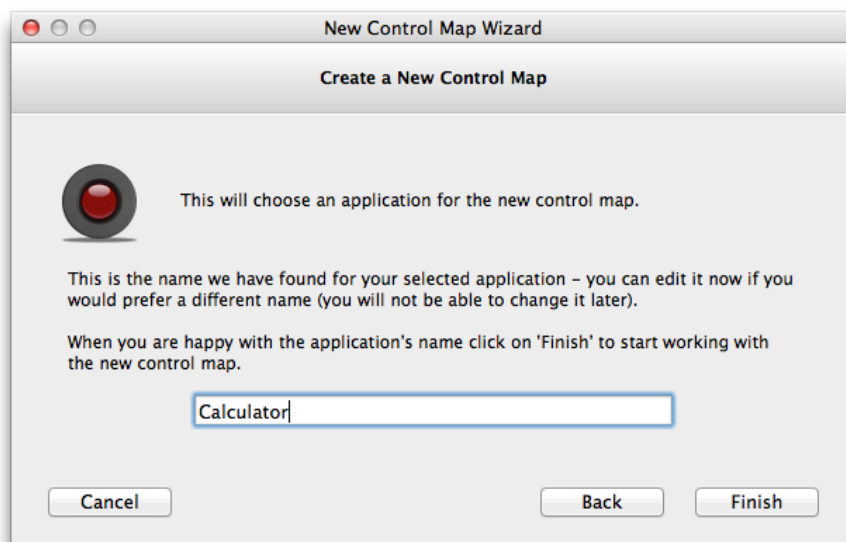


When ready to proceed, click on the 'Select From Desktop...' button. This will start a 10 second countdown to allow you to click on a window of the running software package to select for the new control map.

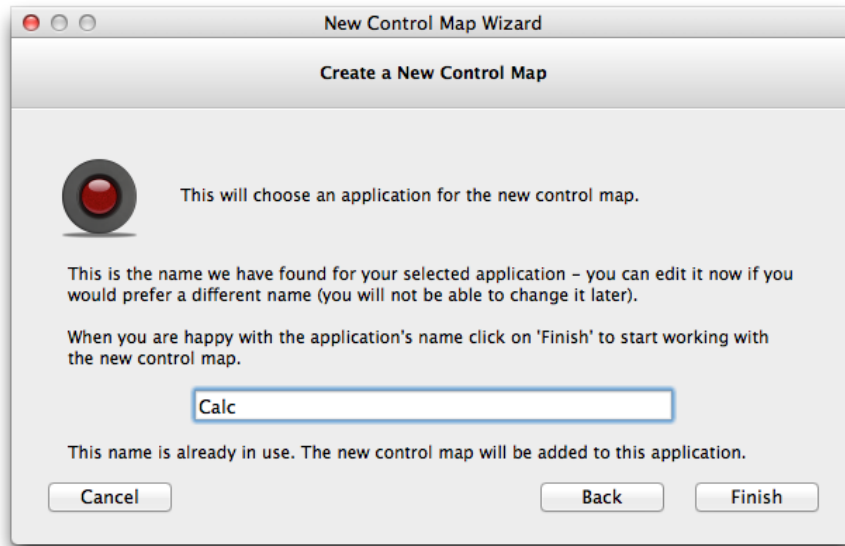


The system will detect changes of desktop focus and display the name of the current candidate software in the wizard window. Note that the displayed name is taken from the running process for the software and may differ slightly from the formal software application name. While you are selecting a window from your running software, the wizard window will remain visible during the countdown so you can see that you have correctly chosen the right candidate application.

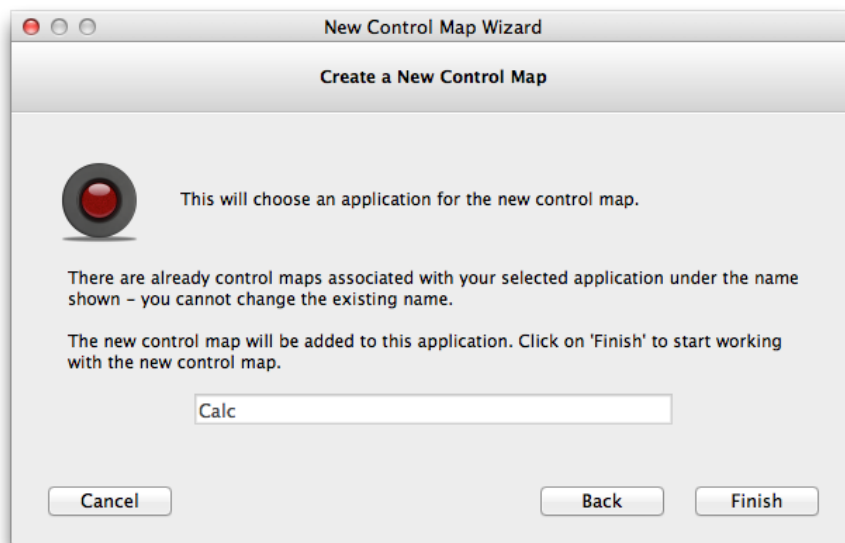
At the end of the countdown the wizard will show you the suggested name of the application under which the new control map will be stored. You may edit the name here - it cannot be changed later once the new control map has been created.



If you change the name to one that is already in use then the new control map will be added to the existing application and the wizard will confirm this with an additional message.

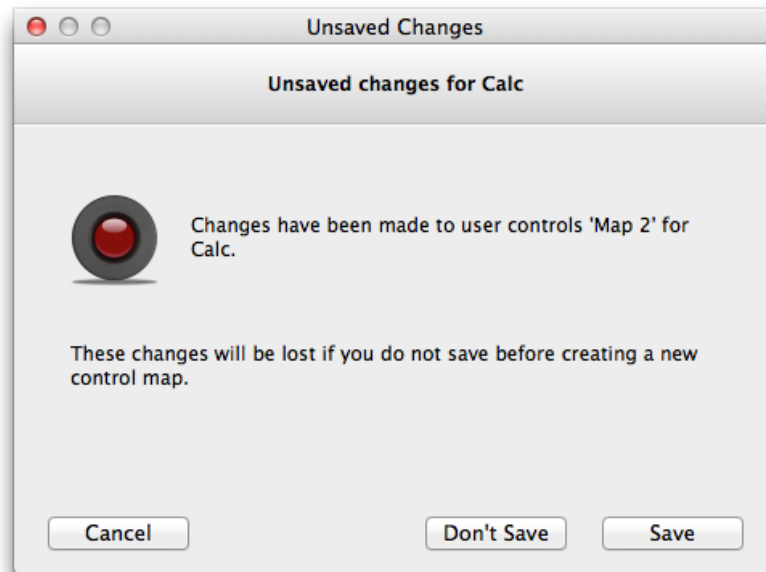


If the application you selected from the desktop is already associated with control maps its name will be displayed in the confirmation text box. In this case the name is already in use and so cannot be edited. The new control map will be added to this existing application.



In all cases, clicking on 'Finish' will create an empty control map ready for you to edit with your own control mapping.

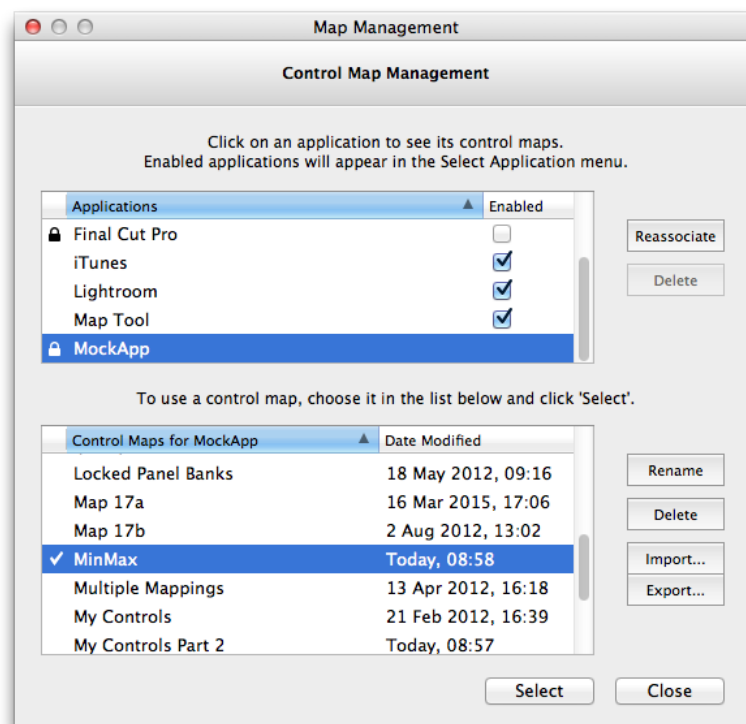
If the selected application has unsaved changes to its current control map you will be prompted to choose to save or ignore these before continuing.



When you exit the wizard the new and empty map will be loaded ready for use and the associated application will have control of the panels. Once you have created your own control layout for the panels you will need to save the mapping data - see 2.2.6 and 2.2.7. When you save new control maps for the first time you will need to enter a name for the mapping. This will then appear in the list of control maps available for the selected application and can be loaded at any time using the map management window – see 2.2.2.

2.2.2 Menu: “Manage Controls Maps...”

This menu allows access to administration tasks for control maps created in the Mapper.



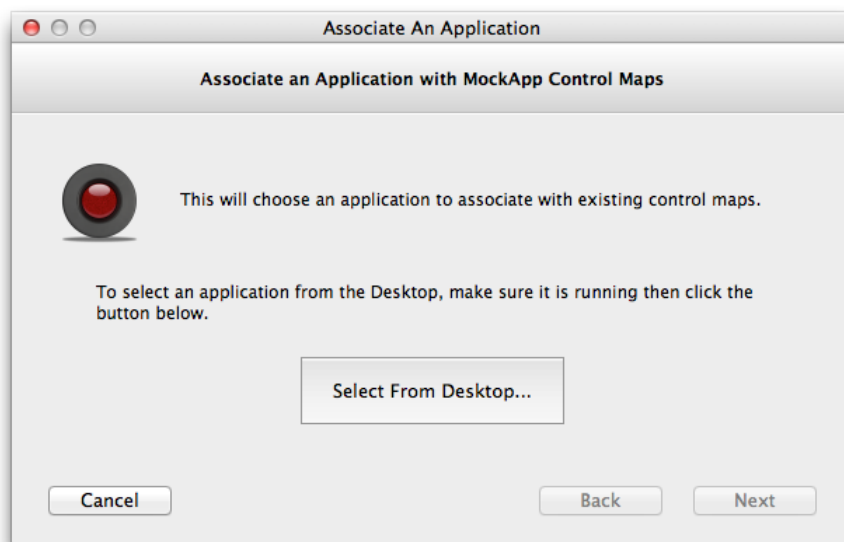
The top of the window has a table of all known and connected application on the system. Clicking on an application here displays all the control maps defined for that application in the table below. The actions that can be performed for the different items are shown by the buttons on the right hand side. The table contents may be sorted by clicking on the column headers.

The first column in the applications table may display a lock icon that identifies applications that can't be deleted. This is the case for keypress applications that are installed by Tangent or for running applications that have built-in support for the Tangent panels. If you delete an application all mapping data for that application is removed. Depending on the platform, the data files may be moved to the recycle bin or trash folder where available.

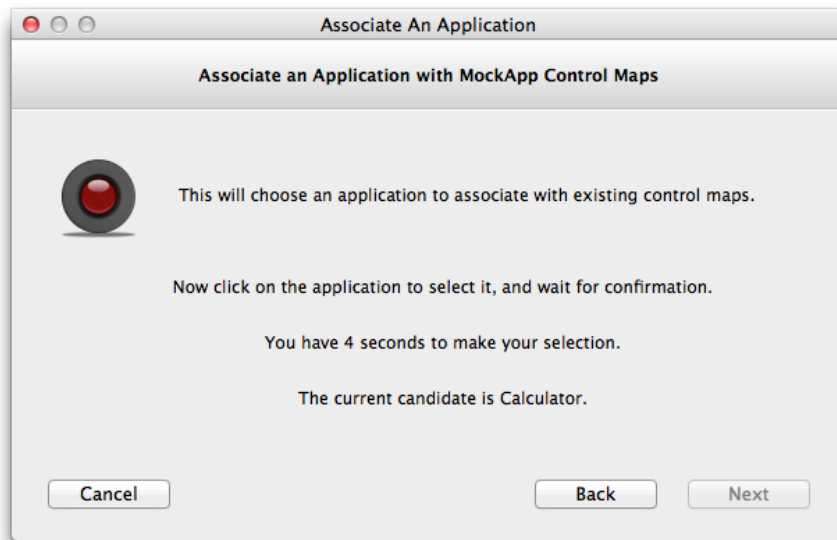
Keypress applications may be disabled if they are not relevant to the software you use on your system, this includes the definitions installed by Tangent. Applications that you have added yourself can always be deleted to permanently remove them. Only the enabled entries will appear in the 'Select Application' menu – see 2.3.

The 'Reassociate' button is used to configure the auto-select function (see 2.3) where the Hub will automatically attempt to select the panel controls for the software driving your active desktop window. The Hub monitors which software application has focus and will activate the controls that have been associated with that software. This setting is initially put in place whenever you create a new control map where you make the selection as part of the creation process (see 2.2.1). However, in some situations the association between running software and control maps may no longer be valid and so you may need to reassociate control maps stored under an application name with the running application software. This may be the case when an application has been updated with a new version that has a different release name. Note that auto-select may not be available on all platforms in which case the 'Reassociate' button will be disabled.

The process to associate a set of control maps to a running application is very similar to that performed when creating a new control map (see 2.2.1). The first step prompts you to select the running software from your desktop.

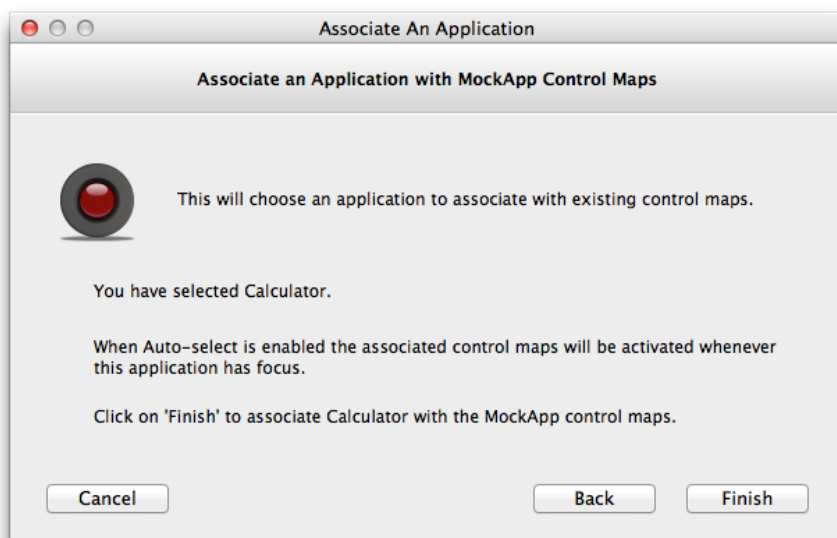


When ready to proceed, click on the 'Select From Desktop...' button. This will start a 10 second countdown to allow you to click on a window of the running software package to associate with the chosen control maps.

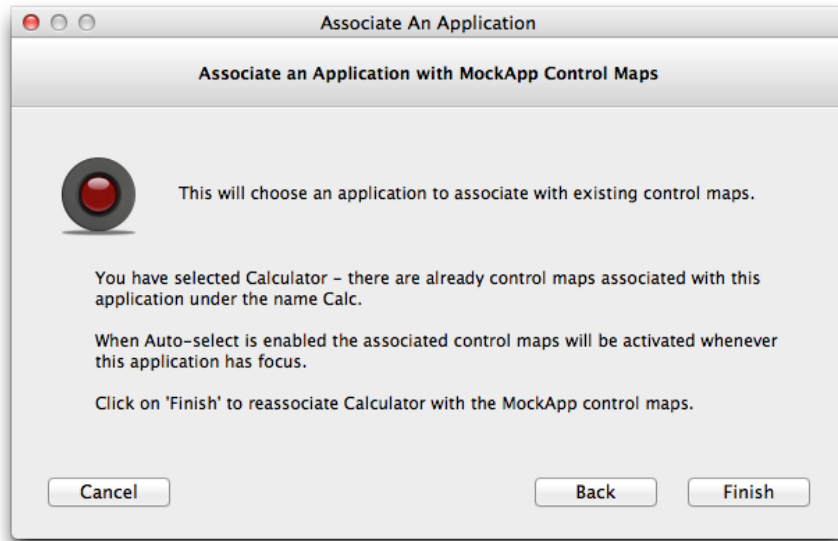


The system will detect changes of desktop focus and display the name of the current candidate software in the wizard window. Note that the displayed name is taken from the running process for the software and may differ slightly from the formal software application name. While you are selecting a window from your running software the wizard window will remain visible during the countdown so you can see that you have correctly chosen the right candidate application.

At the end of the countdown the resulting candidate software name will be shown for you to confirm this is the correct choice. Clicking on 'Finish' will then associate this running application with the selected set of control maps. When the Auto-select function is enabled the controls maps will be activated whenever the application has focus.

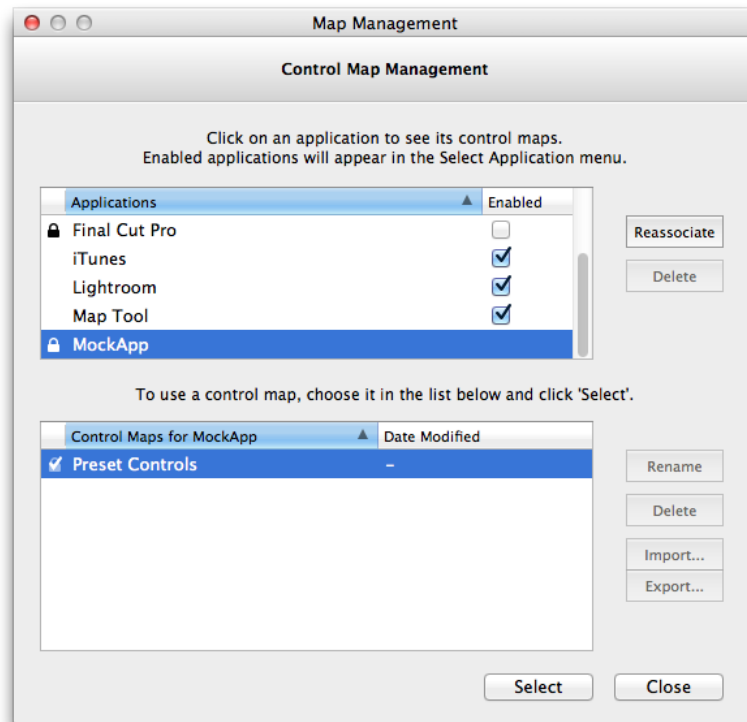


If your selected application is already associated with other control maps under a different name, the confirmation page will show you the name given to the other set of control maps.



You can choose to either cancel the process and leave the existing application association in place with the other control maps linked with the application, or finish the reassociation to link the selected application with the new set of control maps.

Selecting an application entry in the upper table will update the lower table with all the available control maps for that application. If the application is connected to the Tangent panels in the Unmanaged mode then the map table will have a single entry named 'Preset Controls' representing the fixed control layout that is defined by the software vendor and this cannot be changed.

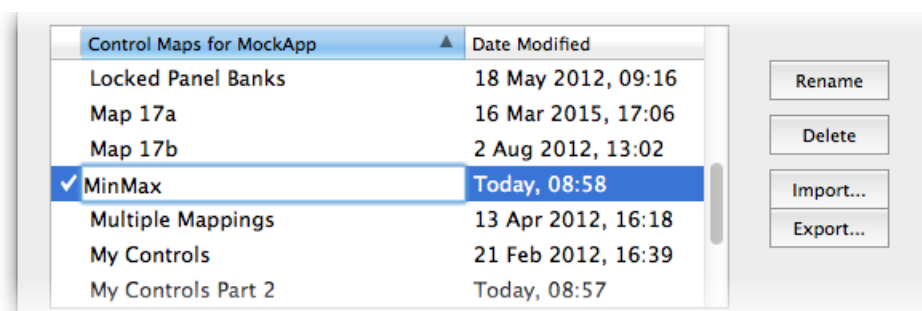


For all other application the control maps will always include a 'Default Controls' entry as the first row marked with a lock icon. This control map is supplied by the application as the factory default panel layout for users. You can make changes to these default controls and save as another mapping or start from scratch with a new and empty control map (see 2.2.1).

The currently selected control map for each application is indicated by the tick icon and will be highlighted as the initial selection when the table contents are updated for each application. To make another control map active for a given application choose it in the table and click 'Select'. This will close the window, load the selected control map and activate the application, giving it control of the Tangent panels. Each application remembers the last control map that was used and this will be used each time an application is made active. If you want to revert to the factory defaults for any application select the 'Default Controls' entry.

The table contents can be sorted by map name or by the last modified date by clicking on the column headers. The default entry is excluded from sorting and will remain pinned at the top of the table.

You can rename all control maps except the locked 'Default Controls' entry by highlighting the appropriate entry in the table and clicking 'Rename'.



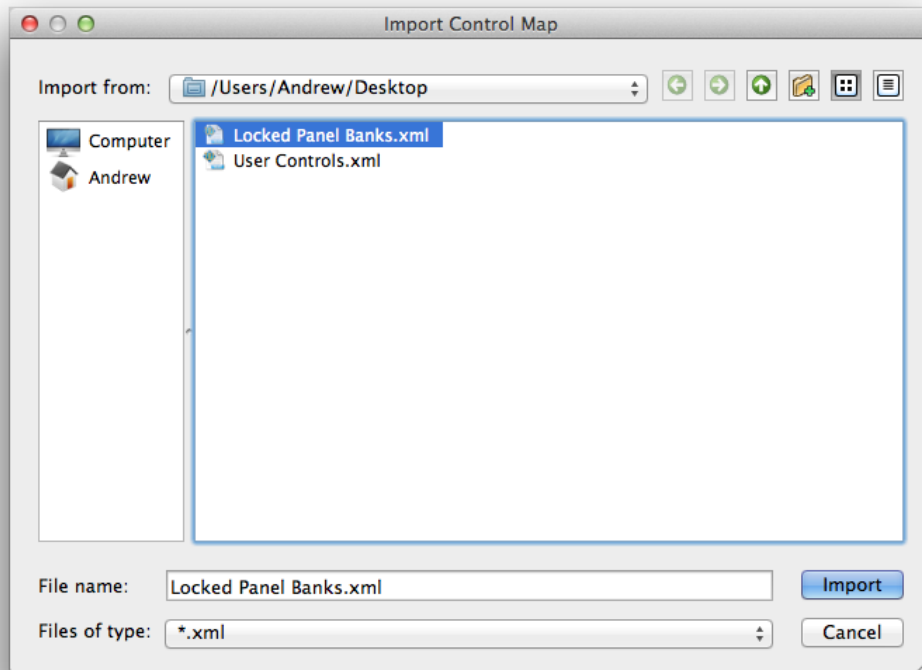
If you try to rename a map to a name that is already in use the Mapper will abort the action and revert to the original. Double-clicking a control map name in the table will also start a rename action as if you had clicked on the 'Rename' button.

All control maps except the default and preset maps (with the lock icon) can be deleted. This will remove the data file from the system and place it in the recycle bin or trash folder if one is available on the current platform. You can recover deleted maps from this location by importing the deleted map file. Deleting the currently selected control mapping will revert the application to the factory default map.

There are some restrictions on new control maps that have not yet been saved. These maps need to be saved under a given name in order for them to support the standard management functions such as rename, delete and export.

Control maps are saved as XML text files and can be copied in the same way as any file. You can copy map files between Tangent Hub systems using the 'Import...' and 'Export...' actions.

Choosing to import a map file will open a browser window to allow you to navigate to the folder that has the file to be added. The browser will only allow you to select XML files.



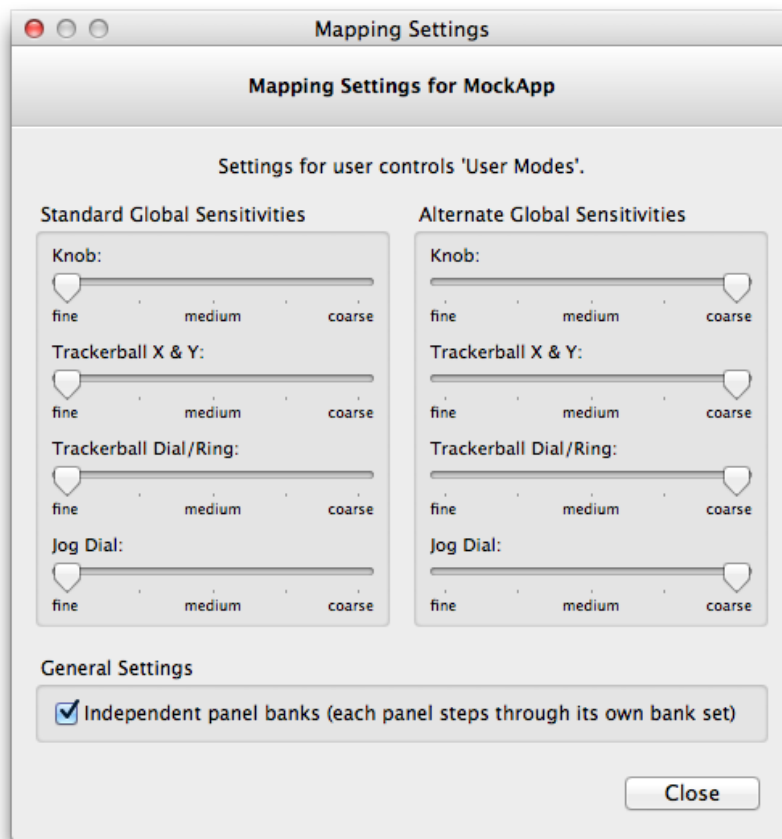
When the file is copied into the Tangent Hub system it will be given a unique name based on the original, if required, to prevent an accidental overwrite of any existing map that may have the same name. The imported map will then be highlighted in the control map table in the map management window.

To export a map file choose the appropriate entry in the control map table and click 'Export...'. This will open a browser window to navigate to the folder where you want the exported copy of the map file to be placed. This is also the best way to create back-up copies of your control maps.

2.2.3 Menu: “Control Map Settings...”

This shows top-level mapping settings that are stored per map. Any changes are applied straight away to the active application and map. If the application is connected to the Hub using the Unmanaged API with a fixed control mapping the settings menu is not available.

If the application is connected to the Hub using the Managed API the control map is fully configurable with many settings. The settings are saved along with the currently selected control map for the application.



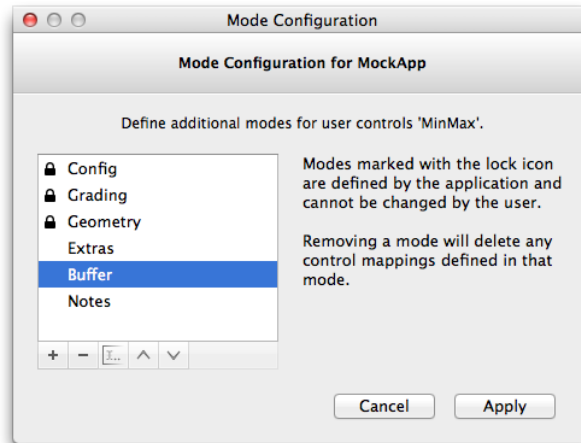
The global sensitivity values are defined here for four encoder types with separate settings for the standard and alternate mappings. Each knob, trackerball and jog dial has the option of using the appropriate global sensitivity setting or to use an override value for each individual control mapping. The values in the settings window will be used for mappings that have the 'Global' option checked in the control mapping window (see section 2.6).

The checkbox for 'Independent Panel Banks' defines how the application and Hub respond to commands that step through control banks. If the 'Independent Panel Banks' setting is checked, selecting the 'Next' or 'Previous' bank actions for any of the knob, button or trackerball banks will only affect the single panel that is firing the action with a button press. If the global setting is not checked then all panels are considered to be linked together and any 'Next' or 'Previous' bank actions will change banks across all panels with banks of that type.

It should be noted that the Mapper does not use the 'Independent Panel Banks' setting itself when the user is stepping through control banks inside the Mapper main window. This is so the contents of each bank can be configured individually as required.

2.2.4 Menu: “Edit Modes...”

This functionality allows users to define their own modes in addition to the ones defined by the application. User modes extend the number of mappings you can store across applications in the same way banks extend across panels.



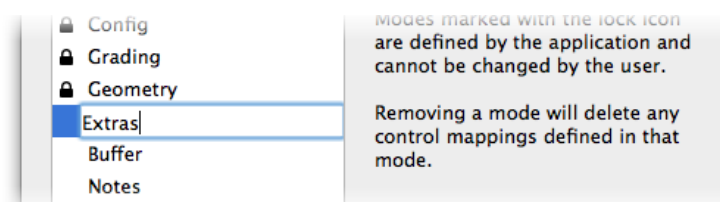
The mode configuration window lists the application modes in an ordered table. User defined modes are always added to the end of the modes that are defined by the application. The application modes cannot be changed by the user and are displayed with a lock icon to indicate their read-only state. The buttons under the mode table allow modes to be added, removed, renamed and reordered in the definitions list.

New modes are added in the table after the current highlight and will need to be named appropriately by the user. Mode names do not need to be unique and can be of any length.

Newly created modes may have some control mappings automatically added by the system to preserve the 'All Modes' status of existing mapping data. Any individual control mapping can be set to be applied across all modes using the appropriate mapping context setting (see section 2.6.2). When the system is adding new mode definitions to an application, it will scan all relevant existing control mappings for items that are listed as being applied across all modes. These controls will have new mappings inserted to the new modes to maintain this setting.

The only times a new mode will be completely empty are if there is initially only a single mode to begin with, or no control mappings are defined across all previously existing modes.

User modes can be removed or renamed by highlighting the required mode and clicking the appropriate action button. The locked application modes cannot be removed or renamed. Removing a mode will delete all control mappings contained in that mode definition. Double-clicking a user mode in the table will also start a rename action as if you had clicked on the action button.

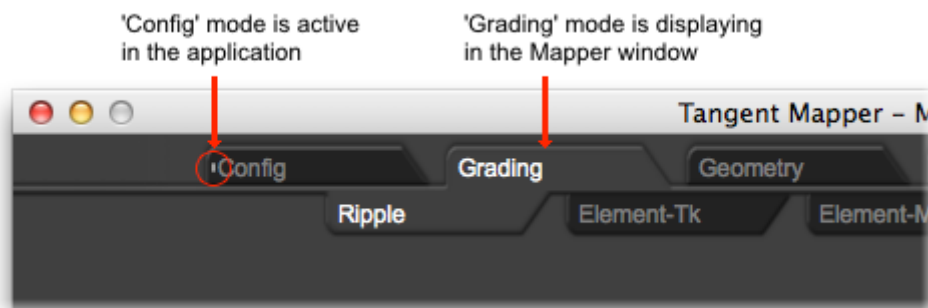


The order of the modes in the table defines the order in which they will be used by the associated application. This is relevant if you have controls mapped to the ‘Next Mode’ or ‘Previous Mode’ actions. The mode tabs in the main window are also displayed in the same order. The up and down arrow buttons under the mode table shift the highlighted mode in the indicated direction by one position with the restriction that you cannot mix application and user modes; the first user mode will always follow after the last application mode.

Once you have set the mode definitions in the table you can choose to cancel or apply your changes. If you choose to apply the mode configuration the system will update and the mode tabs in the main window will show the new modes in the defined order.

2.2.5 Menu: “Jump to Current Mode”

The currently active mode of the application that is controlling the panels is indicated in the Mapper main window with a small tag next to the mode name in the tab area at the top (see section 2.5.1). This may be different to the selected mode that is showing control mappings in the mapping area of the main window (see section 2.5.3).



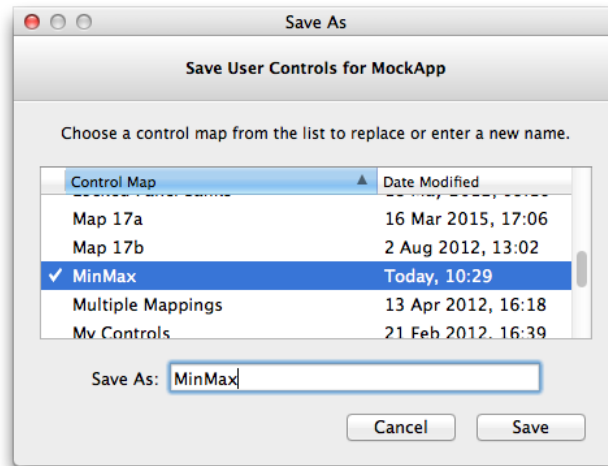
The Mapper allows you to edit mappings in any defined mode by clicking on a mode tab independently of the mode that the application is currently running in. For applications that define a large number of modes, it can be difficult to find the correct control mapping to edit. The menu item “Jump to Current Mode” will always switch the Mapper display to show control mappings across all panels for the currently active mode of the application. So if you want to change a particular control mapping, or to add new panel controls, it may be easier to navigate to the required mode in your application so the panels are showing the appropriate controls. You can then switch over to the Mapper and click on this menu item to get the Mapper display to show the same mode. In this way, the mapping data showing in the main window will correspond to the active controls on the panels for the current mode.

2.2.6 Menu: “Save”

This menu item is available when mapping changes have been made and not saved, including when a new control map has been created. Selecting it will save the current mapping data to the current map name. If the changes have been made to the application’s default controls, or the user has created a new control map, this menu item will open the save-as window instead to allow the user to enter a name for the new map to save out.

2.2.7 Menu: “Save As...”

This menu is always available as it is always possible to save the current mapping to a new map file at any time, regardless of whether or not any changes have been made. This is the simplest way to create a new map based on an existing map (including the default controls).

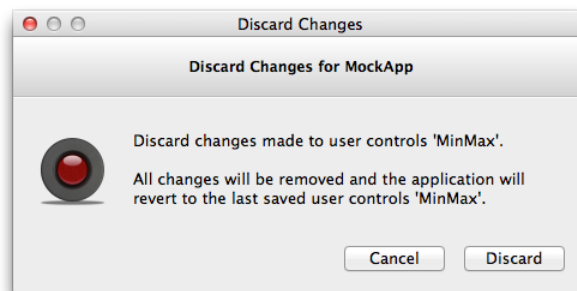


Opening the save-as window displays a table that lists all the user control maps that are defined for the currently active application. The table contents can be sorted by map name or by the last modified date by clicking on the column headers.

The text box will initially be filled with the current map name and the table will highlight the entry with the same name. If you are saving a map based on the default controls there is no initial selection. You can choose any map in the table to replace or enter a new name to save under. If you type a name into the text box that matches an existing map, that map will be highlighted in the table to indicate that you will be replacing the existing map.

2.2.8 Menu: “Discard Changes...”

This menu item is only available when mapping changes have been made but not saved. It allows all changes made since the last save to be thrown away, reverting to the last saved map.



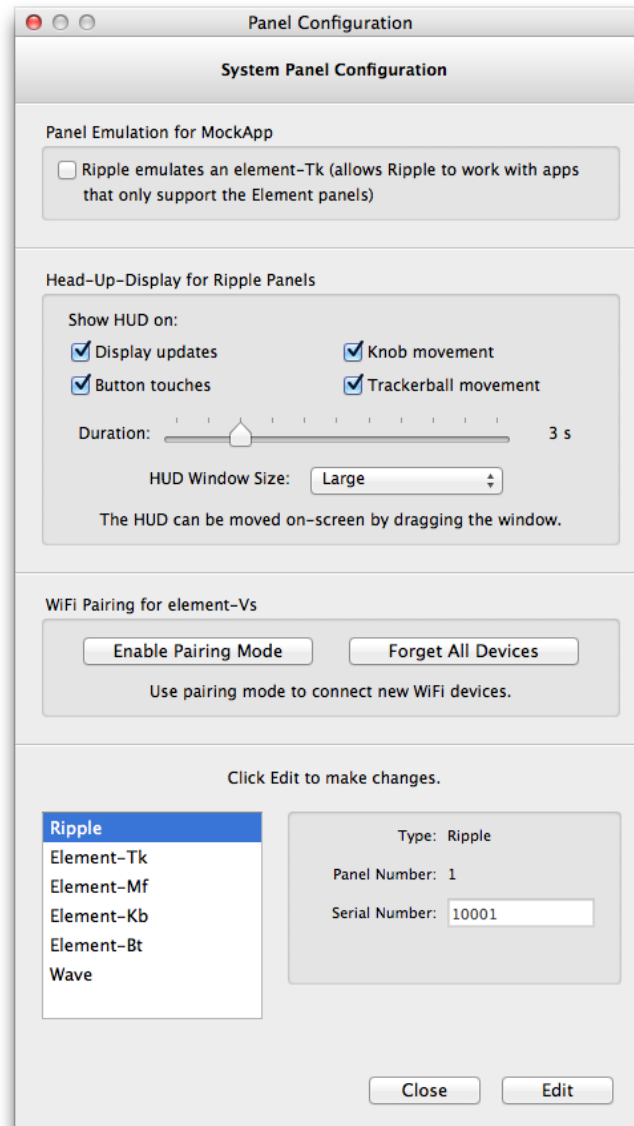
Confirming the discard action will reload the currently active map from file.

2.2.9 Menu: “Panel Configuration...”

This allows you to set up the panel configuration that will be connected to the host PC, including the element-Vs virtual surface app which is available in the iTunes [App Store](#) for the iPad and in the Google [Play Store](#) for Android tablets. This is also where you may select the option for the new Ripple panels to emulate element-Tk panels if required (see sections 2.5 and 2.8).

The latest version of the Tangent software includes a virtual Head-Up-Display (HUD) that is available for panels without a physical display. The HUD is shown on your monitor and can be used as a normal panel display, showing current panel mapping and system information. The HUD may not be available on all platforms in which case the associated settings will not be shown in the panel configuration window.

The window is split into several sections that are configured according to your platforms capabilities.

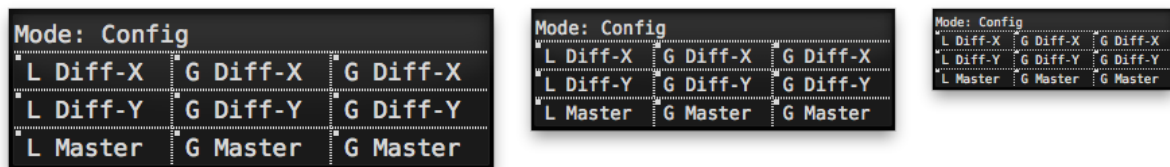


The top section allows you to set the Ripple to element-Tk emulation option for the current application. This allows Ripples to be used out-of-the-box with any software that currently only supports Element panels. If emulation is not required the Ripple panel can be used as a normal individual panel. This setting is available on a per-application basis, so this section may be disabled if the panel configuration window is opened with no active application. If emulation is active, the Ripple panel will appear to the application as if it was a standard element-Tk and use any control mappings set on the element-Tk. If not active, the panel appears as a standard Ripple panel with its own set of control mappings.

If the virtual Head-Up-Display is available on your platform, the next window section shows the settings that can be applied to the HUD for panels that don't have a physical display. The HUD is shown on your monitor whenever one of the enabled trigger events occurs. The trigger types include panel control touches, such as a button press or knob movement, and also for any HUD updates where the display content has been changed. Note - there is also a 'Show HUD' action that cannot be ignored by the system that is available to be mapped to any button on a panel with HUD support.

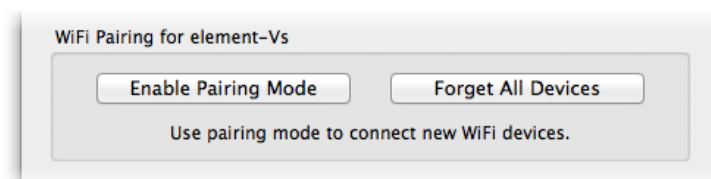
To avoid cluttering your desktop, the HUD can be set to be displayed for a set duration of between 1s and 10s when a trigger event is detected. Alternatively, if you move the duration slider all the way to the maximum, the HUD will be on-screen permanently whenever a HUD-enabled panel is connected to your system (currently only the Ripple panel supports the HUD).

There are three predefined HUD window sizes to choose from to allow for various screen resolutions so you can select one that best fits your display. The on-screen position of the HUD can be changed by simply dragging the window around when it is visible.



The next section of the panel configuration window allows you to pair the Hub with element-Vs clients connecting via the WiFi network. The Tangent Hub system supports virtual control surfaces that can be used alongside, or in place of, the physical panels. The element-Vs app allows you to use an iPad or Android tablet to control software in exactly the same way as you would with the Element series of panels. The app connects to the Hub using the WiFi network and must be paired to allow connections. An installed instance of the app may be paired with multiple Hubs, and any given Hub may be paired with multiple apps. More information can be found on the Tangent [website](#) and the app is available as both a free time-limited and paid-for full version in the iTunes [App Store](#) and the Google [Play Store](#).

To use the element-Vs app with a Hub system you need to pair the two together. This only has to be done once for each installation of the app. If you uninstall the app or specifically choose to forget all pairings on the Hub you will need to repeat the process.

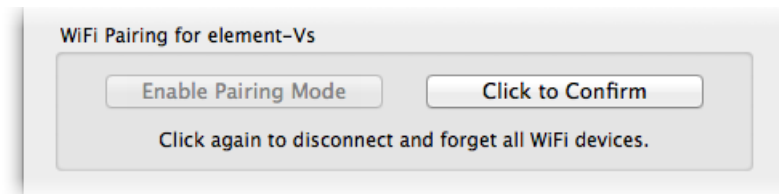


Enabling pairing mode will allow new apps to discover the Hub system on the WiFi network by scanning for available hosts. The app user can then select the Hub from a list of available connections to complete the pairing process (see the element-Vs manual for details).



You can stop pairing mode by clicking on the same button again as it toggles the state of the mode. If the panel configuration window is closed, or the Mapper application is quit, pairing mode is automatically disabled to prevent unwanted connections.

The pairing system can be reset to stop all WiFi activity by clicking on the 'Forget All Devices' button. The button must be clicked twice to confirm the delete action as it cannot be undone. If you do not click again the system will time-out and return to the initial state.



This will stop the pairing mode if enabled, disconnect any currently paired and connected WiFi devices and delete all pairing information held by the Hub. No more connections will be possible until new devices are paired.

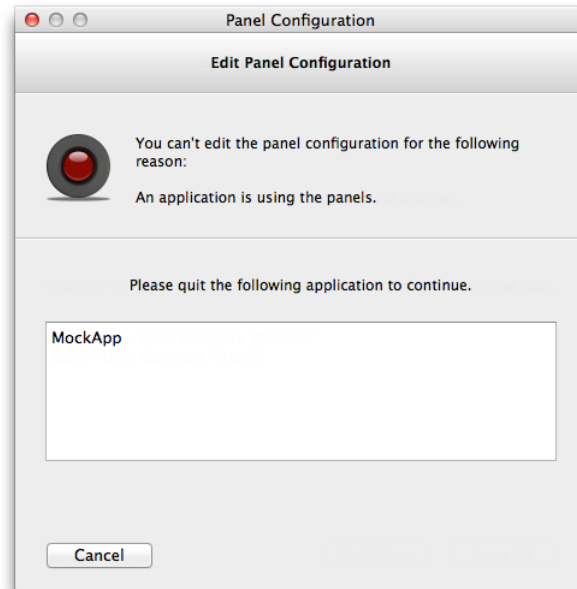
The bottom section is for setting the wired panel configuration for your system. By default, most systems will have the standard panels configured for use. If you will be using other panels, i.e. more than one element-Bt panel or any CP200 panels then you must change the panel configuration to suit your requirements. The panel configuration can only be changed when no applications are actively using the panels. To modify the panel set-up click on the 'Edit' button. The Mapper will then verify it is safe to change the configuration and guide you through saving any mapping changes and quitting applications as required in order to be able to change the panel set-up.

The first step allows you to save any mapping changes that you may have made but not yet saved. If any applications have been changed but not saved they will be presented in a list. If there are no changes to be saved the verification process will skip this step.

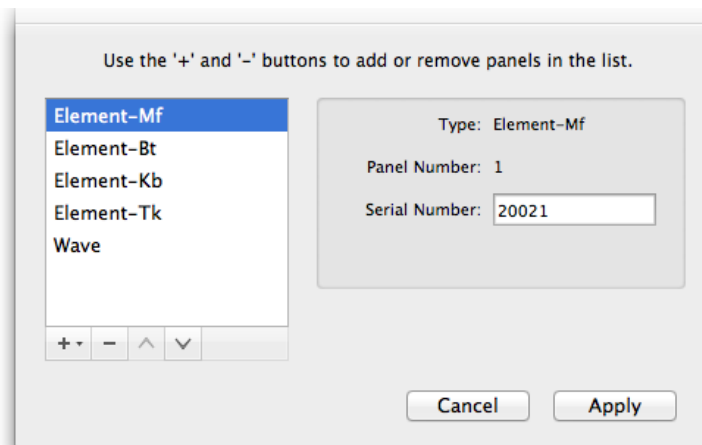


You can choose to save the changes or discard them before continuing. If you choose to save you may be required to enter a name for any maps that are being saved for the first time, such as modified factory defaults or new control maps.

Once all unsaved changes are handled as required, or there are none to begin with, the next step is to make sure no applications are using the panels. The Hub can automatically shut down all keypress applications but all software applications that have built-in support for the panels need to be quit by the user. If there are no applications that need user intervention the verification process will skip this step.



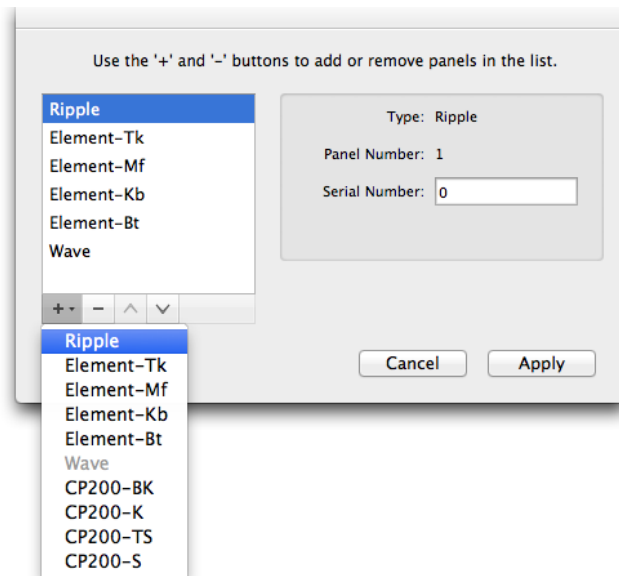
When the Mapper has verified that all requirements have been met you will be presented with an editable list of panel selections that represent the number and type of panels you want to connect.



The panel configuration window contains a table of panel entries on the left. The contents of the table are changed using the button controls under the bottom edge of the table area. The buttons allow panel entries to be added, removed and re-ordered as required.

Multiple panels of the same type may be added and mixed with any other panel types. The only exception to this is that only one Wave panel may be configured at any time. Not all panel types are compatible with all applications as the suppliers of the software application may have a preferred and recommended panel set-up. Please check with your application supplier.

To add a new panel to the configuration click on the '+' button below the table to bring up a menu which contains all the supported panel types. Selecting one of these menu items will insert a new panel into the table after the currently highlighted entry.



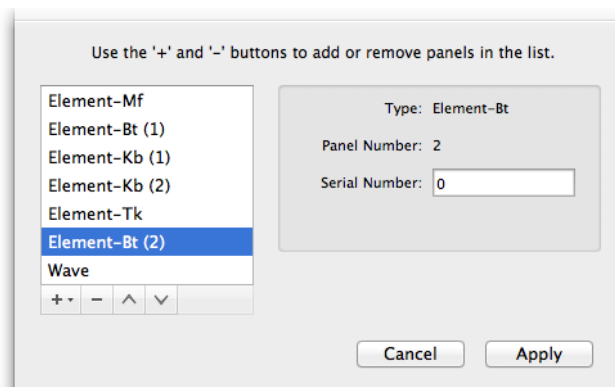
To remove a panel from the list simply select it in the table and click on the '-' button to delete the entry.

Panel entries may be re-ordered in the table using the up and down arrow buttons that will shift the position of the selected entry one position in the required direction. The panel tabs in the main window are displayed in the same order. The panel order does not affect the panel data connections in any way; it is included as an aid to allow you to order the panels as they appear on your desk layout.

You can select any panel entry by clicking on it to display the details in the area to the right. These details will vary for each panel type, with some being required and others optional.

All panel types except the single permitted Wave are assigned a panel number by the system when first configured. Once a panel number has been set it will not change to preserve the unique identifying combination of panel type and number in the panel configuration.

If there is more than one of any given panel type the panel numbers will be shown along with the relevant panel type to uniquely identify each one.



For Element and Ripple panels the user may insert an optional serial number. If this field is left empty, the Hub will automatically complete the value with serial number information read from the panel hardware when it is first connected.

The serial number values only need to be manually entered when there are multiple instances of the same Element panel type and you wish to uniquely link a panel number to a physical panel using the serial number, i.e. element-Bt panel number 1 is to map to the panel with serial number 30041 and element-Bt panel number 2 is to map to the panel with serial number 30049.

CP200 panels require the hardware ID for each panel to be entered. If the CP200 panels are to be assigned fixed IP addresses the 'Use DHCP' checkbox must be clear and each CP200 panel must be given a valid address. Alternatively, if the CP200 panels are to use the network's DHCP service the checkbox should be ticked and any manually entered IP address details will be ignored.

Use the '+' and '-' buttons to add or remove panels in the list.

CP200-K
Element-Mf
Element-Bt
Element-Tk
Wave

Type: CP200-K
Panel Number: 1
ID: 12
IP Address: 0.0.0.0

☒ Use DHCP (CP200 series only, requires a panel reboot if changed)

Cancel Apply

If any setting is found to be invalid then error messages will be displayed in the panel configuration window and you will not be able to apply the configuration until the issues have been resolved. You may choose to cancel the process at any time.

Use the '+' and '-' buttons to add or remove panels in the list.

CP200-K
Element-Mf
Element-Bt
Element-Tk
Wave

Type: CP200-K
Panel Number: 1
ID: 0
IP Address: 0.0.0.0

☐ Use DHCP (CP200 series only, requires a panel reboot if changed)

CP200 IDs must be defined and unique.
CP200 IP addresses must be valid.

Cancel Apply

When valid panel configuration settings have been entered you may apply them to the system. On returning to the main window the panel tabs will have updated to the new configuration.

The current version of the Tangent Hub does not allow an empty panel configuration. If you delete all panel entries then the system will generate a default panel set automatically when the next application connects to the Hub.

2.3 Menu: “Select Application”

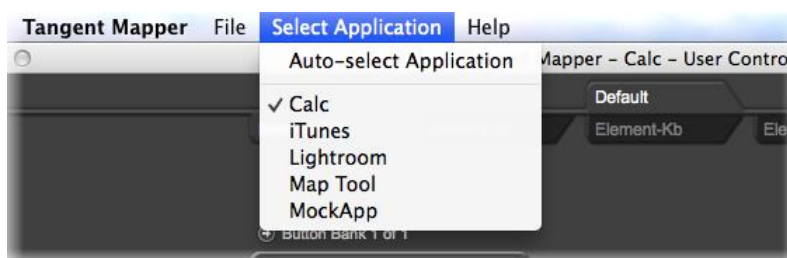
This menu lists keypress applications as well as other applications that have built-in support for the panels that are currently running. You can choose to manually switch the control of the Tangent panels between these applications by selecting the appropriate menu entry. By choosing the ‘Auto-select Application’ item you can allow the Hub to automatically select the application of your active desktop window. This will change the controls on the panels to match your current application as you switch between software (this may not be available on all platforms).

If you want to give control of the panel to a specific application and control map you can also make use of the control map management window where you can switch application and control map in one step (see 2.2.2).

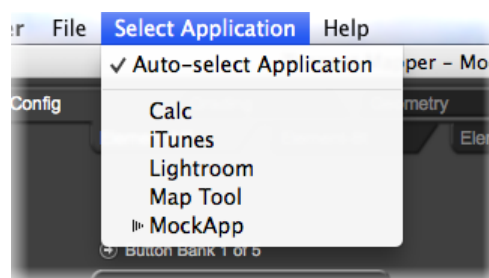
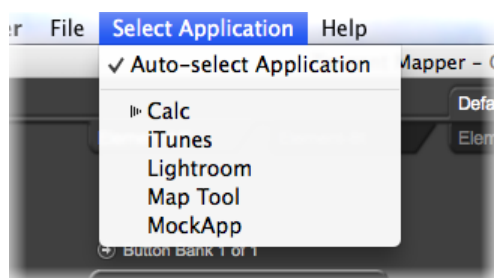
Keypress applications can be defined to work with software packages that do not directly support Tangent control surfaces. A starting set of applications may be included with each installation and these can be added to by the user. These applications may be created when you choose to add a new application control map – see 2.2.1.

If any applications have unsaved changes made to the control mappings the menu entries will end with the '[Modified]' text in the same way as the main window title.

Using manual selection, the active application is shown with a check mark next to its entry. This application will remain active until it is quit or you select another.



When the automatic selection function is enabled, you will see the check mark next to the ‘Auto-select Application’ menu entry and an arrow icon will indicate which application in the menu is currently active. The arrow will move as the active application changes when you switch between applications on your desktop.



You can still manually select any application in the menu even with auto-select enabled. The panel controls will switch to your selected application until you move desktop focus away from the Mapper. Subsequently switching to another application on your desktop will then change the active panel control mapping as usual.

To stop the panel controls following your active desktop window you simply toggle the 'Auto-select Application' menu item to switch off the automatic activation. This puts the system back into the manual selection mode. The currently active application will stay selected but will now be indicated by the check mark in place of the arrow icon. This application will retain use of the control panels until it is quit or you select another.

The auto-select function is self-configuring when you create new control maps (see 2.2.1) and should be able to work out-of-the-box for most applications. However, if you find a software application that doesn't take control of the panels when 'Auto-select Application' is enabled and the application window has the desktop focus, you can correct the system by using the 'Reassociate' function in the Manage Control Maps window (see 2.2.2). Alternatively, contact Tangent and we can configure the system to make the function available for you.

2.3.1 Keypress Applications

Keypress applications allow you to use Tangent panels to control any software package that defines keyboard short-cuts, even if the software does not directly support Tangent products. You can create control maps in the same way as any other application, using modes and banks of controls, and have these mappings appear on the Tangent panels when you run the target software package.

A keypress application is an item that is created for you to connect to the Tangent system on behalf of the software. You can then use it to manage your control maps as usual. The mapped controls should make extensive use of the 'Fake Keypress' action to send key sequences to a software window when buttons are pressed on the panels, and the 'Fake Keypress' parameter to send key sequences when knobs or trackerballs are moved (see section 2.6.9).

Note that a keypress application is not the same as the 'Fake Keypress' action or parameter items that are used to map individual controls. The action and parameter mappings can be used by any application and are not limited to the special keypress applications.

A set of keypress applications with default control maps may be included in the installer package for the most widely used software. These can be changed to suit your own preferences or disabled if they are not relevant to your system. You can also create new keypress applications to control any other software packages that you would like to use with the Tangent control panels, as long as the software can be driven with keyboard controls. You can define any number of keypress applications and control maps to support your own software requirements.

Defined and enabled keypress applications are always available in the 'Select Application' menu. Switching between keypress applications and applications with built-in panel support is completely transparent to the user and the appropriate control maps will appear on the panels as you move between software packages, in both auto-select and manual modes.

Quitting an application with built-in support for Tangent panels will remove the associated controls from the control surfaces. Similarly, if you have auto-select enabled on your system, keypress applications will also automatically close themselves down when you quit the associated software.

2.4 Menu: “Help”

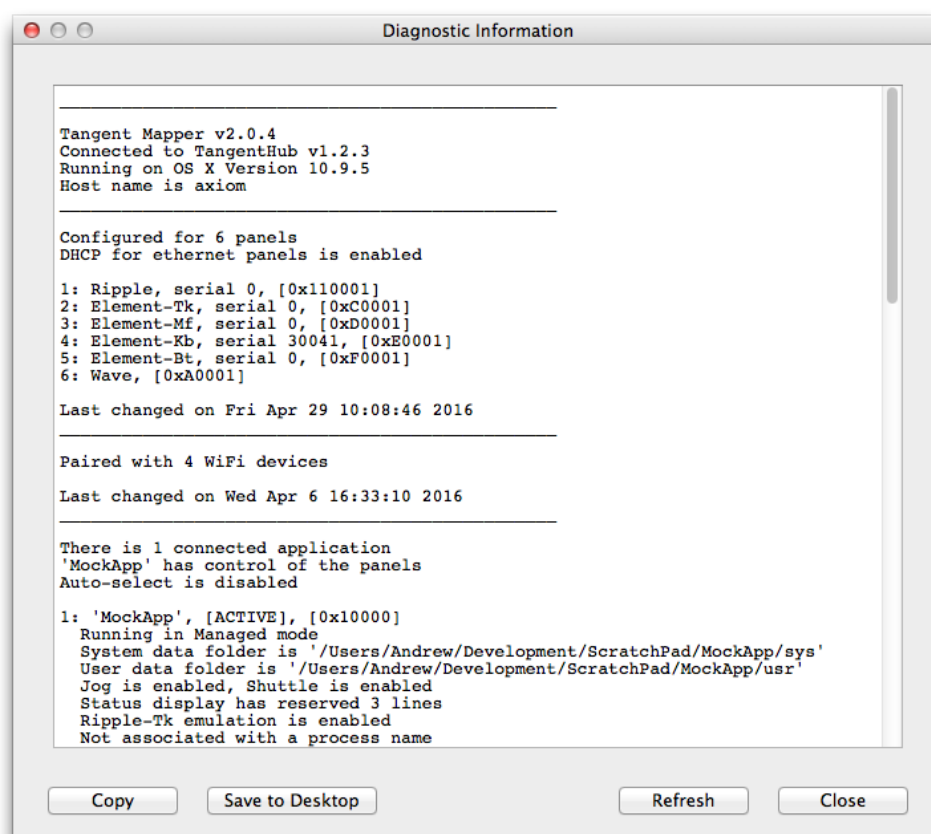
This menu provides access to system diagnostic information and user documentation.

2.4.1 Menu: “User Manual”

This item will open this manual for the Mapper application in the PDF viewer native to your platform.

2.4.2 Menu: “Show Diagnostic Info”

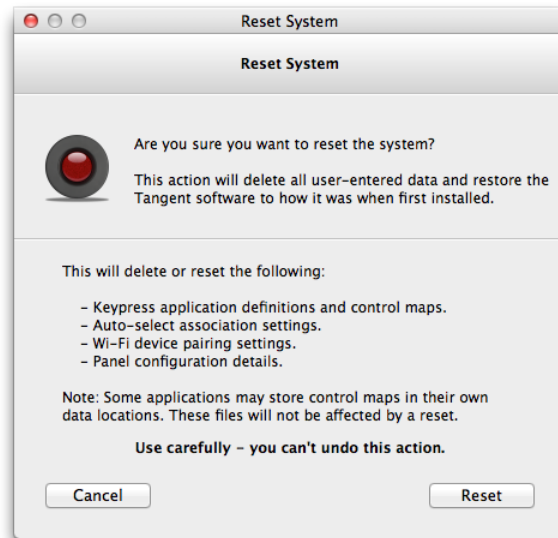
The ‘Show Diagnostic Info’ menu entry will open a window showing useful details of the running system in summary text form.



You may be asked to supply the contents of this window to Tangent to diagnose any issues you may be having with your system. Clicking ‘Copy’ will store the displayed text on the system clipboard as a useful way to transfer the data by pasting the contents into another document or email on the same PC. Alternatively, the data can be saved to your desktop as a text file with a timestamped name in the form ‘TangentDiagnostics-2016-03-09T114512.txt’.

2.4.3 Menu: “Reset System...”

It is sometimes useful to be able to restore a system to a known starting state. Uninstalling software doesn’t always remove all user data – standard practice is usually to retain user-based data between installs to avoid data loss. The ‘Reset System...’ option provides a way to delete all user-entered data, as far as possible, and restore the system to the state immediately after the initial installation.



As this is a one-way and destructive action we recommend that you only use this option when directly asked to by the Tangent support team. The confirmation window repeats this warning as a reset can't be undone – so please use this carefully. Any data and files deleted by a reset are permanently removed from your system and cannot be recovered afterwards.

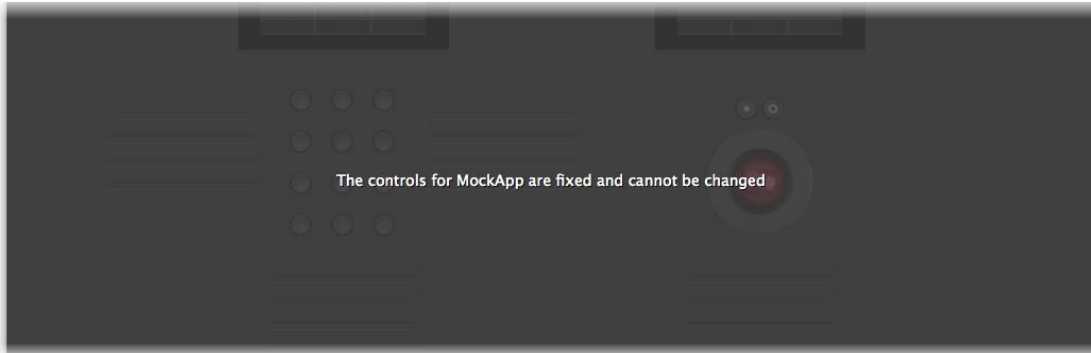
2.5 Main Window

The Main Window of the Tangent Mapper consists of three main sections: the mode tabs, the panel tabs and the mapping area.

For active applications that connect to the Hub using the Managed API the window displays the layout of the mappings for the panel controls for each mode in the application.

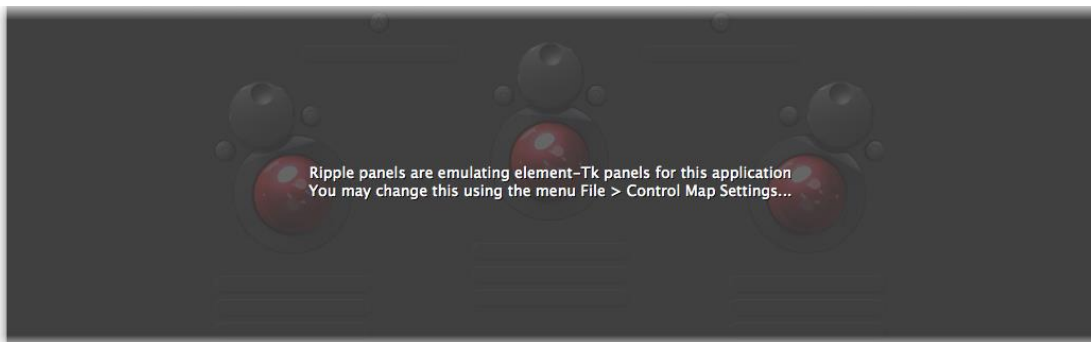


If the currently active application is connected to the Hub using the Unmanaged API, the control layout is fixed and cannot be changed.



In this situation the mapping area will show all panel controls greyed out with a text message centred in the area to show that no mapping changes are possible in the Mapper for this application.

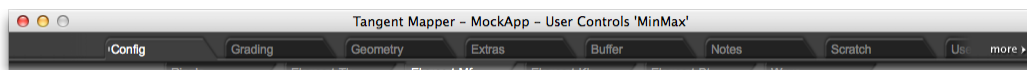
If panel emulation is being used (see section 2.8), the main window view for the panel that is to be used as another panel will be greyed out and a text message will be shown to indicate emulation is active.



In this situation these controls will use the mappings for the emulated panel and so cannot be changed here.

2.5.1 Mode Tabs

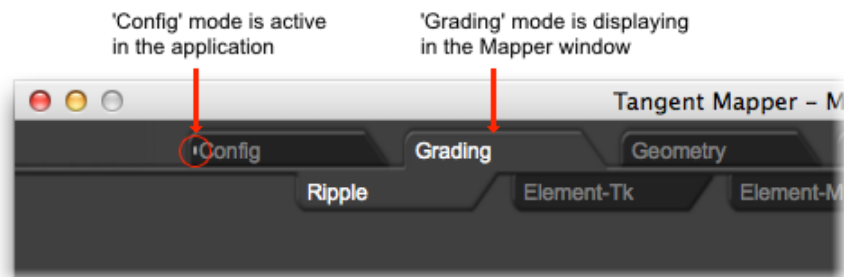
The mode tabs are ordered as defined in the mode configuration window as discussed in section 2.2.4.



The tabs are scrollable if more tabs than can fit in one screen width are defined in the current application. The currently selected mode tab will always be scrolled back into view when left idle for a certain time if it has been scrolled off-screen.

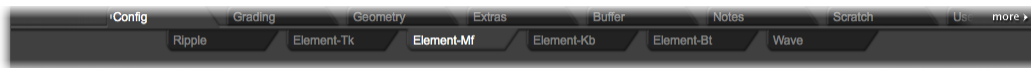
Clicking on a mode tab area will select that mode locally in the Mapper and the display will update to show the panel mappings defined for that mode. This is not the same as the active mode in the application and Hub which is driven by the application itself and is separate from the editing that can be done in the Mapper.

The currently active mode of the application that is controlling the panels is indicated with a small tag next to the mode name. This may be different to the currently selected mode that is showing control mappings in the mapping area.



2.5.2 Panel Tabs

The panel tabs are ordered as defined in the panel configuration window as discussed in section 2.2.9.



If there is more than one of any given panel type the panel numbers will be shown in the relevant panel tabs to uniquely identify each one.

The tabs are scrollable if more tabs than can fit in one screen width are defined in the current application. The currently selected panel tab will always be scrolled back into view when left idle for a certain time if it has been scrolled off-screen.

Clicking on a panel tab area will select that panel in the Mapper, displaying the controls and their mappings as defined in the current Mapper mode. Any click on a panel tab that causes the display to switch to a different panel will automatically close the control mapping window (see section 2.6).

2.5.3 Mapping Area

This area displays the mapping overview for the currently selected panel in the current Mapper mode for the active application. It allows you to make quick and simple changes to control mappings. Any changes you make to mapping data here will only affect a single mapping for a single control in the current bank, mode and standard/alternate state.

2.5.4 Standard/Alternate Mapping Button

The button at the bottom of the mapping area indicates the nature of the mappings that are being displayed in the main window. Every control can have two basic assigned mappings: a standard mapping and an alternate mapping.

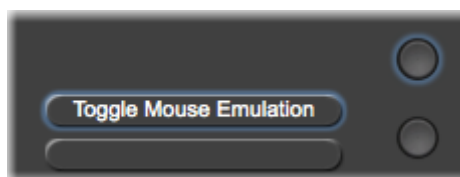


Clicking on this button toggles the display between the two sets of mapping data for the current panel and mode. This toggling does not drive the ALT status of the actual panels connected to the application and Hub as this is separate to the editing performed in the Mapper.

2.5.5 Panel Controls

All panel controls in the mapping area interact with the user in the same way and support the same kind of mappings. However, trackerball controls can be treated as if they are a single composite item or they can be thought of as three individual controls that represent the X, Y and Z axes which are the trackerball, and dial or ring. The Tangent Mapper supports both approaches as discussed in section 2.7.

Moving the cursor over a panel control or mapping label will show a soft highlight around both of the linked areas to indicate the control and what it is mapped to.



If the control is mapped, the label area will show the name of the item mapped to the control, otherwise it will be blank.

If the cursor is over the main area of a trackerball control, the entire control will be given the soft highlight. Moving the cursor over the individual mapping labels for the dial or ring control or trackerball X & Y (below the main area) will apply the soft highlight just to the individual label and display an axis hint in the main control area.



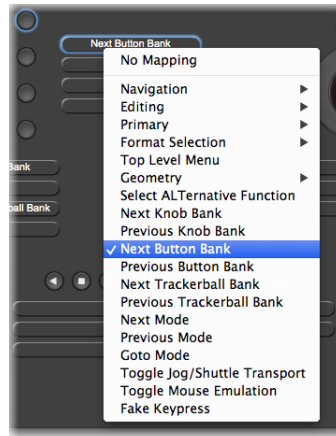
Left-clicking on any control or associated label will open the control mapping window (see section 2.6) to show both the standard and alternate mappings with extended details for that control which will now have a permanent bright highlight surrounding it.

Left-clicking in the main area of a trackerball control will display the mapping information for the combined trackerball control.

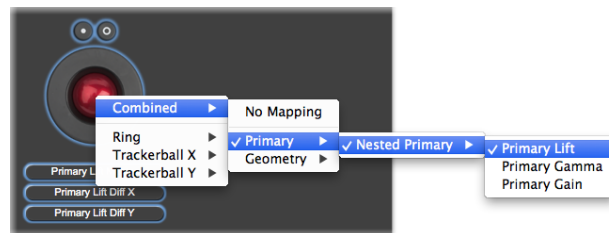
Left-clicking on an individual mapping label under the trackerball control area will display the mapping information for that individual control axis. The mapping labels below the main trackerball control areas identify the mappings for the dial or ring control, and trackerball X & Y from top to bottom. If an individual control of a trackerball is mapped the parameter name is displayed in the associated label beneath the main control. If an individual trackerball control has no mapping the label areas will be blank.

Each panel control can be mapped to one of the parameters, menus or actions that are defined by the current application. The type of each control restricts the type of item that can be mapped: buttons can be mapped to menus or actions; knobs can be mapped to parameters or menus; trackballs can be mapped to predefined parameter combinations or to individual parameters, or to any mixture of the two with no restrictions.

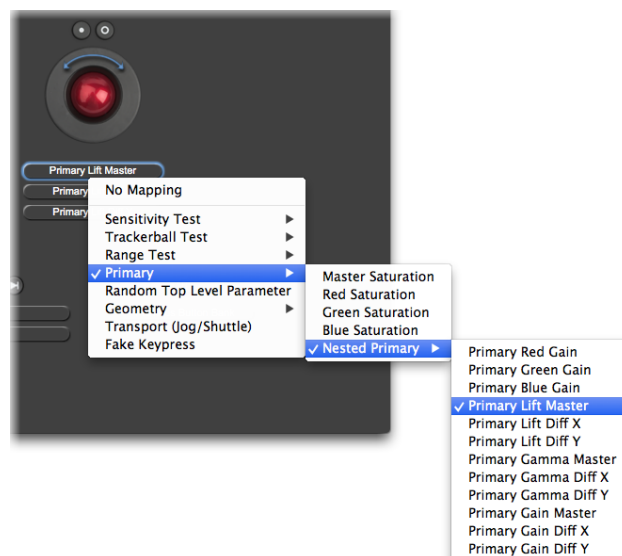
A right-click on any panel control or label will display a pop-up menu of groups of parameters, menus and actions, filtered to only show items that are valid for mapping to that control. The first entry in the pop-up menu is always the special case 'No Mapping' item.



If the control is a trackball the pop-up will contain mapping options for the combined trackball.



A right-click on a mapping label under a trackball control area will show the pop-up mapping menu for that individual control axis of the trackball.



Any existing mapping for the control in the current mode and standard / alternate state will be indicated with a tick mark. If the item is hidden in a sub-group, the path to the item will be marked with a series of tick marks down to the mapping item itself.

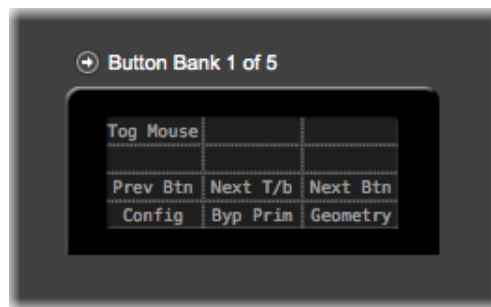
To remove an existing mapping, select the 'No Mapping' item in the pop-up menu for the required control.

Choosing an item from the pop-up menu in the mapping area will apply that as the mapping for the control only for the current Mapper mode and standard / alternate state. To apply a wider ranging mapping with more details you need to use the control mapping window (see section 2.6). This window will always be displayed when you choose an item from the pop-up menu to show the current mapping details. When a mapping item has been applied to a control the associated label area will show the name of the mapped item.

If the mapping window is open, a right-click on any control or associated label to show the pop-up menu will also shift the focus of the mapping window to that control.

2.5.6 Bank Selectors

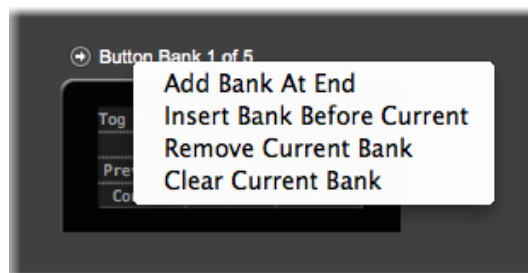
Where controls are in a control bank (generally those controls with an associated display) there are special bank selectors in the mapping area of the main window to allow you to edit the bank contents.



The selectors show the bank type associated with the controls as well as the currently displayed bank number and the overall count of defined bank entries. In the above example the selector is for a button bank and we are showing the first of five defined sets of control mappings for the panel buttons.

Left-clicking on a bank selector will select the next available bank in that panel for the control set. Note this does not cycle through banks in the same way as the application and Hub when independent panel banks are disabled in the map settings. In the Mapper, banks are always independent across all panels to allow the user to define the number and contents of banks as required. You then select how they are cycled through in the Hub using the independent panel banks settings in the mapping settings (see section 2.2.3).

Right-clicking on a bank selector shows a pop-up menu that allows you to modify the bank contents.



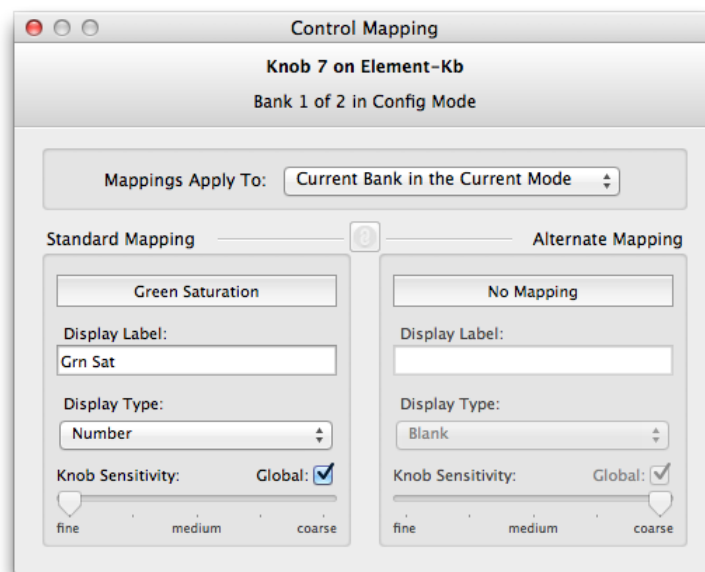
You may add, remove or clear banks of control mappings. Removing or clearing banks will affect both the standard and alternate mappings for all the controls in that bank. There is always at least one bank defined for each control.

A newly created bank may have some control mappings automatically added by the system to preserve the 'All Banks' status of existing mapping data. Any individual control mapping can be set to be applied across all banks using the appropriate mapping context setting (see section 2.6.2). When the system is adding a new bank to an application, it will scan all relevant existing control mappings for items that are listed as being applied across all banks. These controls will have new mappings inserted to the new bank to maintain this setting.

The only times a new bank will be completely empty are if there is initially only a single bank to begin with, or no control mappings are defined across all previously existing banks.

2.6 Control Mapping Window

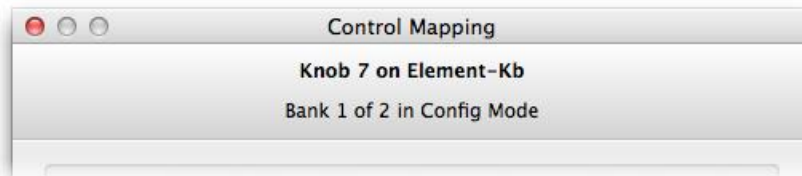
The control mapping window is opened when you left-click on any control or associated label in the mapping area of the main window, or choose any item from the pop-up menu on any control. If it is already open when you right-click on any control in the mapping area the contents will be updated. It is used to add more specific details to control mappings and allows you to apply mappings to multiple controls at once.



The control that is currently associated with the displayed mapping data is always highlighted in the main window. Closing the control mapping window will remove the highlight. Also any click on a panel tab in the main window that causes the display to switch to a different panel will automatically close the control mapping window, as the control that was driving the display of the mapping data will no longer be visible.

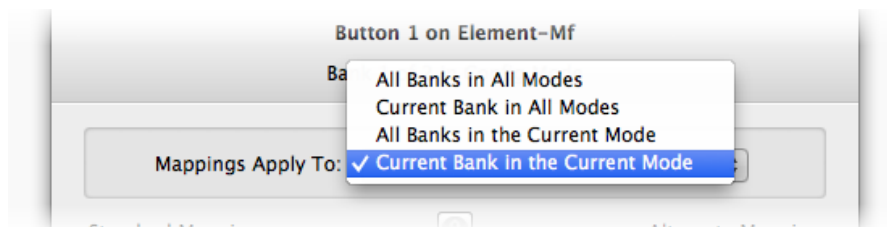
2.6.1 Control Information

The top of the window shows the control name and which panel it is on, along with the current bank information (if relevant) and the current mode name.



2.6.2 Mapping Context

The next area in the control mapping window tells you the context of the mapping data, that is, how widely the standard and alternate mappings are applied in the application map. The mapping context allows you to apply the same mappings across different combinations of banks and modes rather than having to set them one at a time.



The context options presented in the pop-up menu vary according to the available control and mapping data to make it easier for you to select the appropriate way to apply your mappings.

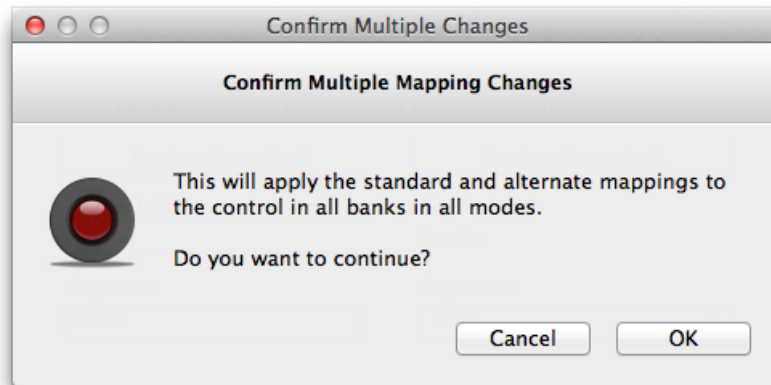
If the highlighted control is not banked (generally controls without a display) then you can choose to apply the mapping and all subsequent changes to just the 'Current Mode' or across 'All Modes'. The 'All Modes' option will only be available when more than one mode is defined in the application.

If the control is banked you can choose between 'Current Bank in the Current Mode', 'All Banks in the Current Mode', 'Current Bank in All Modes' or 'All Banks in All Modes'. The 'All Modes' and 'All Banks' variations will only be available when more than one mode or bank is defined, respectively.

When the control mapping window is updated by clicking on a control in the main window, the most appropriate mapping context will be derived from the current mapping data and the most specific context setting will be chosen for the initial value in the menu.

Any changes you make to the mapping data using the control mapping window will be applied in the displayed context which may affect multiple control mappings. You should ensure the correct context is selected before making changes to the mappings to make sure you are changing only the mappings you mean to be modified.

Promoting the mapping context, i.e. selecting a wider context such as changing from 'Current Mode' to 'All Modes', may bring up a window to confirm that you want to change multiple mappings as these cannot be undone once applied.



Confirmations like this are required for any action that changes the way the control mapping window applies mapping data for more than one control. The message in the confirmation window will explain what will be changed if you accept the action by clicking 'OK'. Cancelling the action will return to the previous mapping context and no mappings will be modified.

Special consideration should be given to the 'Current Bank in All Modes' option as there can be different numbers of banks in each mode. If you choose to apply this option with varying number of banks, the system will insert empty banks where needed to bring all modes up to the required number. For example, if you apply the 'Current Bank in All Modes' setting to a control in button bank 4 in mode A, but mode B currently only has two defined banks, the system will create two new banks in mode B before applying the mapping data. Mode B will therefore now have the required number of banks of button control mappings, with bank 3 being empty and bank 4 containing the expected control mapping data.

An 'All Banks' selection really means all existing banks, whereas a 'Current Bank' selection refers to a specific bank number which can mean new banks being created to honour this state.

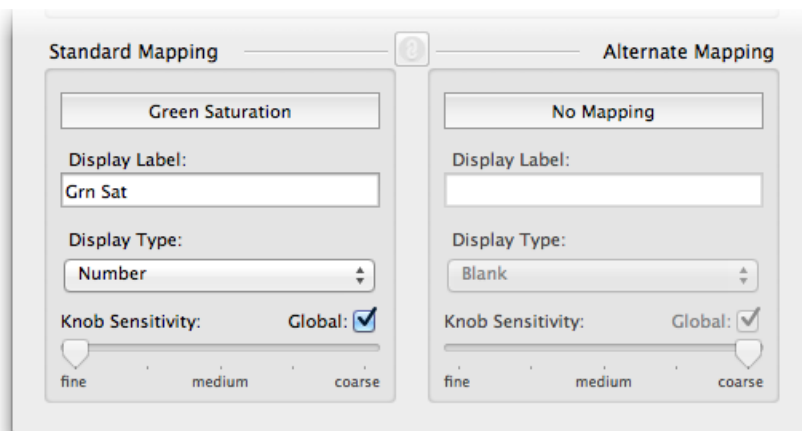
Demoting the mapping context, i.e. changing from 'All Banks in All Modes' to 'All Banks in the Current Mode' does not directly change any mapping data, but will restrict the context of any changes you subsequently make to that control's mappings. As such there is no need for the context switch to be confirmed.

If you want to set some panel controls so they always have the same mappings across all modes, make sure there are at least two defined modes and then select the appropriate 'All Modes' mapping context for each control. Any new modes added from this point on will always have the same mappings automatically applied to the same controls (both standard and alternate) to preserve this setting.

The same applies to banks. Once you have created more than one bank and selected an 'All Banks' mapping context, all new banks for the same control will be created with the same mappings automatically applied (both standard and alternate) to preserve this setting.

2.6.3 Standard and Alternate Mappings

The main window can be used to apply basic control mappings, but the finer details of the mappings are set in the control mapping window that shows the standard and alternate mappings side by side.



The details of the mappings can vary depending on what control is being mapped which may be a banked or non-banked button, knob, combined trackerball or individual trackerball axis control. The details also change slightly depending on what action, menu or parameter is selected for the mapping target as some require more settings than others.

2.6.4 Linked Mappings

Every control has a standard mapping and an alternate mapping that can be treated as separate items. However, it is likely that the standard/alternate relationship is more tightly coupled. For example, you may have a parameter mapped to a knob with a coarse sensitivity in the standard mapping and with a fine sensitivity in the alternate mapping so you can easily switch between the two sensitivity levels. To help you easily create mappings like this you can link the standard mapping to the alternate mapping.

When this function is active any changes made to the standard mapping are copied to the alternate mapping. Note that the linked copy will follow the current mapping context, so if you have selected the 'All Banks in All Modes' context for the mapping any changes will be reflected to both mappings for the control across every bank and mode in the application.

When the control mapping window is updated by clicking on a control in the main window, the initial mapping link state will be derived from the current mapping data. If the standard and alternate mappings are identical the link is active; however, if both mappings are empty the link is inactive. This is to avoid the possibly unexpected copying of the very first mapping set on a blank control.

You can explicitly change the link state by clicking the button between the mapping areas to toggle the state. An inactive link state is shown with the greyed out chain link.



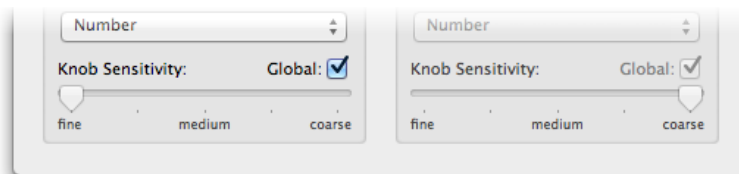
An active link state is shown with the highlighted chain link.



When the mapping link is active, the alternate mapping area is disabled / greyed out as the data values follow the standard mapping. To enable the mapping area controls simply toggle the link state.

As activating the link may affect multiple mappings this action may be confirmed before the changes are applied. Deactivating the link by toggling the link icon does not directly change mapping data, but will affect the way any subsequent changes will be applied.

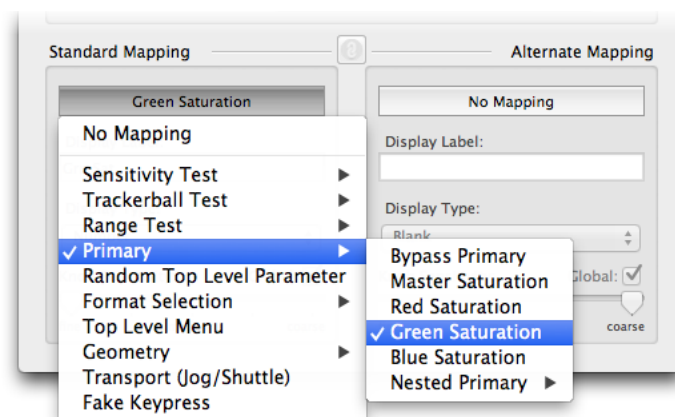
If a linked control mapping is for a parameter with associated sensitivity values and the 'Global' sensitivity option is selected, the standard and alternate mappings will use their separate global sensitivity values as defined in the settings. The actual values will be shown on the appropriate sensitivity sliders in the control mapping window.



The global sensitivity state is shared between the two linked mappings but the actual sensitivity values may differ. See section 2.6.11 for more information on sensitivity options.

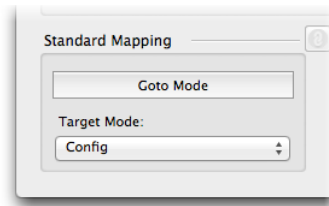
2.6.5 Mapping Button and Pop-Up Menu

The mapping button displays the name of the current item that is mapped to the control. Clicking on the button shows the same mapping pop-up menu that is displayed when right-clicking on the control in the mapping area of the main window.



2.6.6 Goto Mode Options

If a button is mapped to the 'Goto Mode' action you need to specify which mode the action selects when fired.



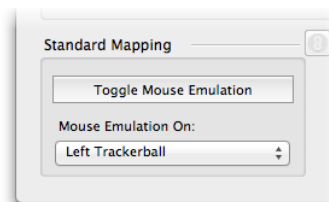
The drop-down menu will list all currently defined mode names for you to select one as the target of the action.

If the button has an associated display, changing the target mode will automatically update the label text with the name of the selected mode.

2.6.7 Mouse Emulation Options

Mouse emulation is implemented as an action that toggles mouse behavior on one of the panel trackerballs. When active, the selected trackerball will control the system cursor, replacing any normal control mappings that have been applied to the trackerball controls. When the emulation is switched off the normal control mappings will be restored.

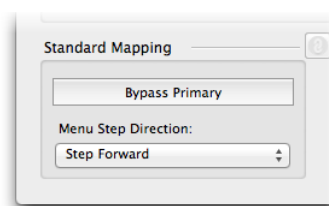
Mapping the 'Toggle Mouse Emulation' action requires the user to specify which trackerball on the panel of the mapped control is to be used for to drive the mouse emulation. The action is only available on panels that have one or more trackerballs.



Note that mouse emulation is automatically removed when you switch between applications, either by manually selecting another application in the Mapper menu (see section 2.3) or using the auto-select function. This is necessary as the trackerball panel that is controlling the mouse will have a completely different set of control mappings in the new active application.

2.6.8 Menu Options

If a menu is mapped to a button you need to specify the step direction to go when clicked. Note this is not needed when a menu is mapped to a knob as the control has implicit step directions chosen by turning the knob.

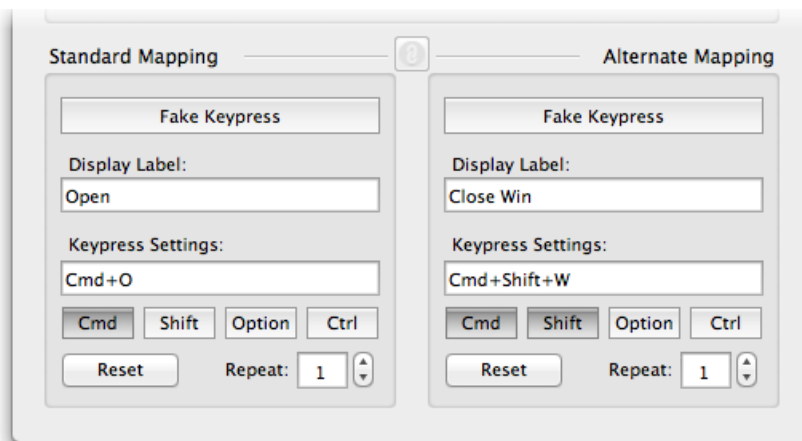


As knobs always have an associated sensitivity for each control, this is applied to menu mappings in a way that defines how many menu value step changes are generated for a full turn of the control. With a fine sensitivity setting the control will generate a small number of value changes per turn. With a coarse sensitivity setting the control will generate many more value changes per turn. (See section 2.6.11 for more details about the sensitivity options).

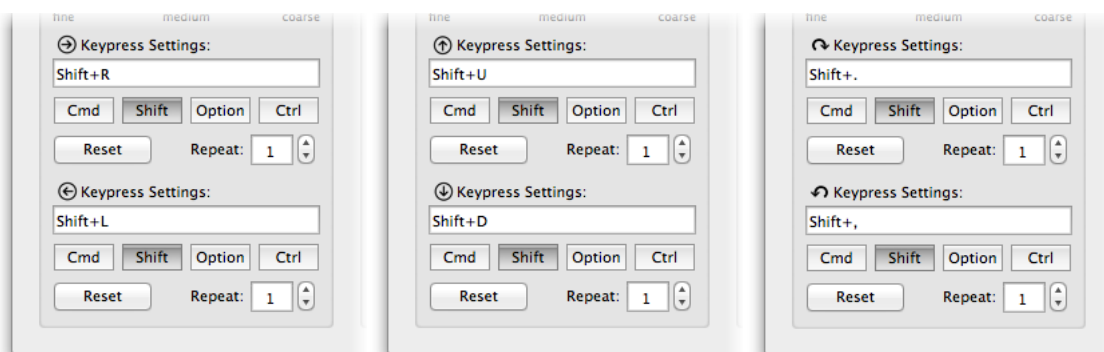
2.6.9 Fake Keypress Options

The Tangent Hub can control software packages by sending keypress events to the desktop windows when triggered by control panel button actions or by knob or trackerball parameter changes. Button actions are the simpler mapping as there is only one key that needs to be defined for the press event. Encoder parameters mappings require two sets of keypress settings to allow for the two possible directions of movement for knobs and trackerballs which can be mapped individually.

Mapping the 'Fake Keypress' action to a button will display the settings to support this functionality.



Mapping the 'Fake Keypress' parameter to a knob or trackerball X, Y, dial or ring will display the extra settings to support the two directional options, with the labelling of each data set changed to match the control in question: right/left icons for horizontal trackerball mappings; up/down icons for vertical trackerball mappings; clockwise/anti-clockwise icons for knob or trackerball dial or ring rotation.



The basic settings are the same for both the button and encoders control mappings. The only difference for the parameter data is that the repeat count is shared between the two different directions to balance the generated key events. There are individual repeat count

entry boxes for both data sets in the control mapping window for convenience but they will always show the same value for active mappings.

As encoders always have an associated sensitivity for each control, this is applied to the 'Fake Keypress' parameter in a way that defines how many key events are generated for a full turn of the control. With a fine sensitivity setting the control will generate a small number of individual keypress events per turn, with each individual event applying the defined repeat count. With a coarse sensitivity setting the control will generate many more keypress events per turn, again with each event applying the repeat count to itself. (See section 2.6.11 or more details about the sensitivity options).

The keypress settings are centered upon the base key sequence that is to be injected to the desktop and so this must be entered first. The key with any required modifiers can be entered in one step by clicking in the edit box below the 'Keypress Settings' label and then typing the key sequence. The edit box will accept key sequences for as long as it has the keyboard focus.



The combined key sequence will be displayed in the edit box as the set of key names that were pressed once the base key has been entered. (In the above example this would be when the 'S' key is pressed). The modifier keys that were used are also shown in the set of labeled buttons below the edit box. Each active modifier will result in the relevant button being shown in the 'on' state. You can manually toggle the modifier states by clicking on the control buttons to apply or remove each modifier. Any changes you make will be reflected in the edit box contents. Note that the modifier key names vary between platforms.

It may be the case that you cannot enter the keypress sequence that you want as it is an active keyboard short-cut. For example, in the OS X version of the Mapper the sequence 'Cmd+Shift+S' will always open the save-as window in the Mapper itself. As such you cannot directly enter this sequence into the keypress settings edit box as the system will intercept the key events to trigger the menu based short-cut. To get around this you first enter the unmodified base key on its own, and then apply the required modifiers using the toggle buttons until you get the desired key sequence displayed in the edit box.

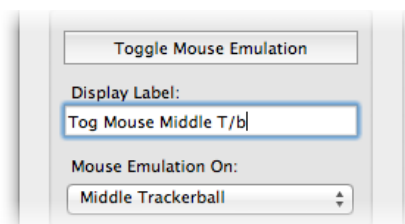
You can apply a repeat count to each keypress mapping which will send in that number of press / release events for the base key. The repeat only applies to the base key while the relevant modifiers are effectively held down during the process. (Keypress mappings for knobs and trackerballs combine the repeat count with the encoder sensitivity setting to generate multiple events as discussed earlier in this section).

You can clear the keypress settings by clicking on the 'Reset' button at the bottom of the window. Note that you can't remove the contents of the edit box in any other way as the 'Delete' and 'Backspace' keys will be interpreted as part of a key sequence.

The use of the 'Fake Keypress' action and parameter for control mappings is not limited just to the special keypress applications (see section 2.3.1). They are available for all applications to use in button, knob, trackerball X, Y, ring or dial control mappings.

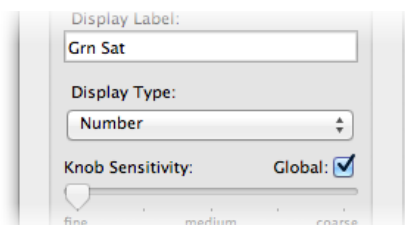
2.6.10 Banked Display Options

If a banked control with a display is being mapped, the user has the option of setting the exact text that will be shown on the panel display associated with the control.



The default display label is taken from the mapped menu, action or parameter and is chosen to be appropriate for the display size of the target panel. If the 'Goto Mode' action is being mapped the default label will include the name of the target mode that will be selected when the action is fired. It is not possible to apply a blank label as an empty display label will be replaced with the default.

If a banked knob or trackerball encoder is being mapped to a parameter you also have the option of selecting how to show the current value of the parameter on the panel display.



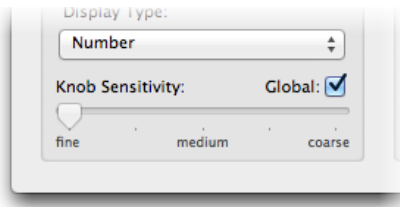
You may choose to show a numerical value, a bar graph or a percentage. The field sizes of numerical displays are automatically adjusted to suit the range and step size of the parameter mapping target. If you don't wish to have the current value shown on the panel set the 'Blank' display option (this is the default).

If the panel hardware doesn't support the display of the mapping label and value at the same time, i.e. on the Element panel range, any change of value will trigger the value display on the panel replacing the normal label for a preset time. When no more value changes are detected the panel will revert to showing the label again after a short delay. This does not apply if the 'Blank' display option is selected.

The same display options are also available for panels with no hardware display that instead support the virtual Head-Up-Display (see section 1.2). The HUD is shown on your monitor and can be used as a normal panel display, showing current panel mapping and system information. See section 2.2.9 for information about how to set up the HUD (may not be available on all platforms).

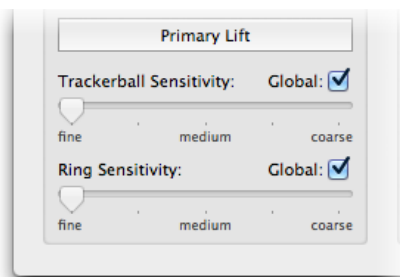
2.6.11 Sensitivity Options

If a knob or trackerball is being mapped you can select one or more sensitivities to apply to that control specifically for that mapping, overriding the global defaults. The sensitivity processing allows for variations across panel hardware to ensure the feel of the knob controls remains as consistent as possible for all hardware configurations.



If you opt to use a global sensitivity (with the 'Global' checkbox ticked) the mapping will use the global setting that is appropriate for that control type and the associated value slider in the control mapping window will be disabled / greyed out.

The global sensitivities are divided into main four types to allow fine tuning that is fit for purpose, as the global sensitivity for a jog dial would not necessarily be correct for the encoders used in a trackerball. There are two sensitivity values for a trackerball: one is shared by the X and Y axes of the trackerball and the other is used for the dial or ring as appropriate.



The type of sensitivity that the mapping will use is shown in the label above the slider in the control mapping window. The resulting sensitivity value will always be shown on the relevant slider, which may be the current global value if the 'Global' checkbox is ticked. The global values can be changed in the settings window (see section 2.2.3).

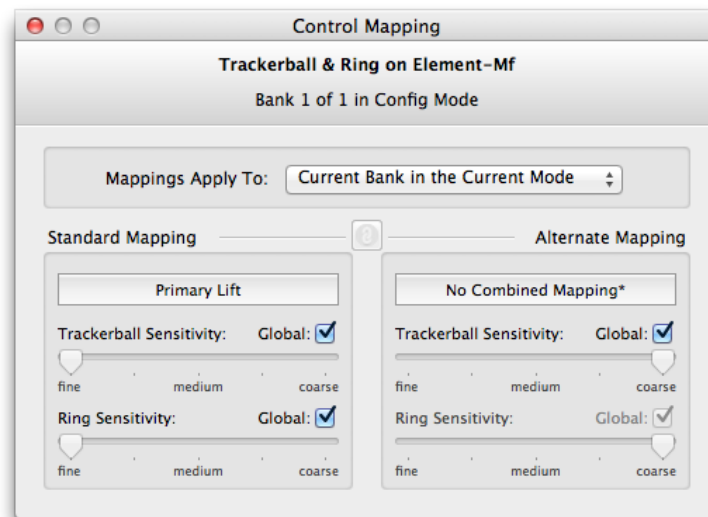
If a knob, trackerball X, Y ring or dial control is mapped to the 'Fake Keypress' parameter the sensitivity defines the number of keypress events that the control may generate per full turn. With a fine sensitivity setting the control will generate a small number of individual keypress events per turn. With a coarse sensitivity setting the control will generate many more keypress events per turn. See section 2.6.9 for more information about keypress options (in particular how the sensitivity is combined with the associated repeat count for keypress events).

If a knob control is mapped to any menu, the sensitivity defines the number of menu value step change events generated by the control per full turn. Fine sensitivity mappings will step through menu values slowly for each turn of the control, and coarse sensitivity mappings will step through the values much more quickly for each turn of the knob.

2.7 Trackerball Controls and Mappings

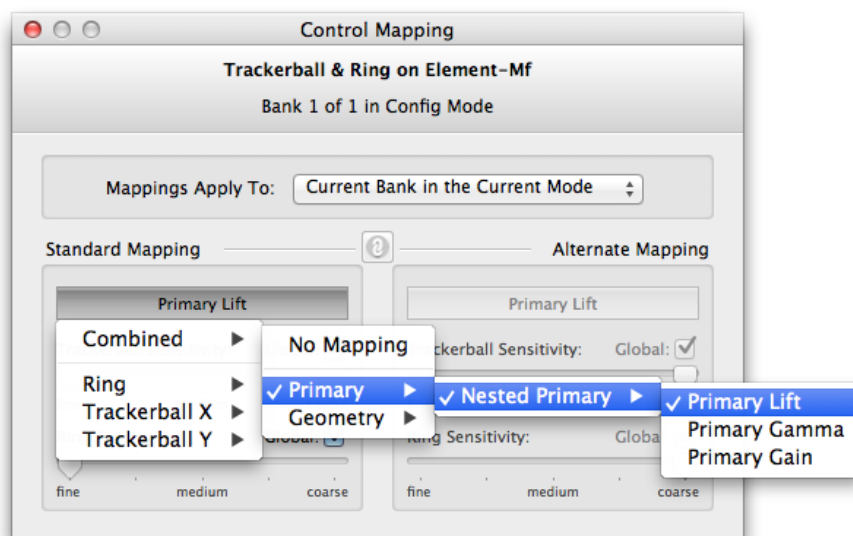
Trackerball controls can be treated as if they are a single combined item or they can be thought of as three individual controls that represent the X, Y and Z axes which are the trackerball, and dial or ring.

If the control mapping window is opened by left-clicking in the main area of a trackerball control the window will show combined mapping data that allows the trackerball controls to be mapped as a single item.

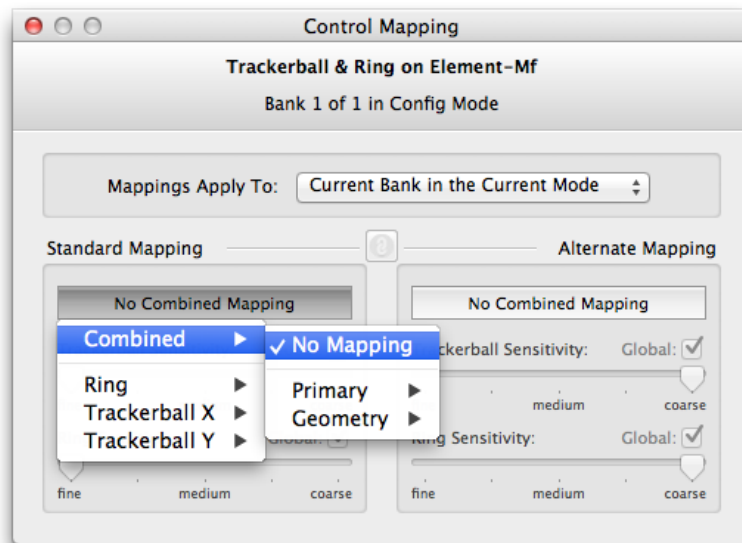


Parameters can be grouped together by the application providers to support this approach, i.e. the 'Primary Lift' combination consists of the individual 'Primary Lift Diff X', 'Primary Lift Diff Y' and the 'Primary Lift Master' which would be applied to the trackerball X, Y and dial or ring individual controls respectively.

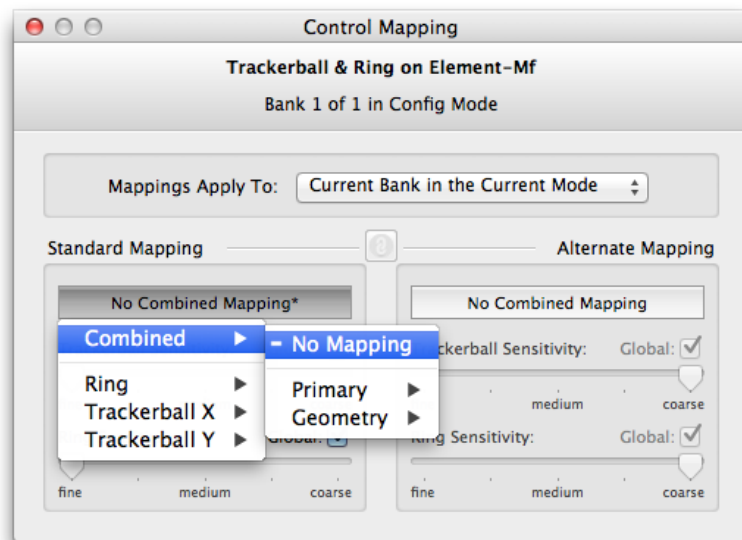
The mapping button pop-up menu will show the combined mapping setting if possible, as well as allowing access to the mappings that are applied to the individual controls in the trackerball.



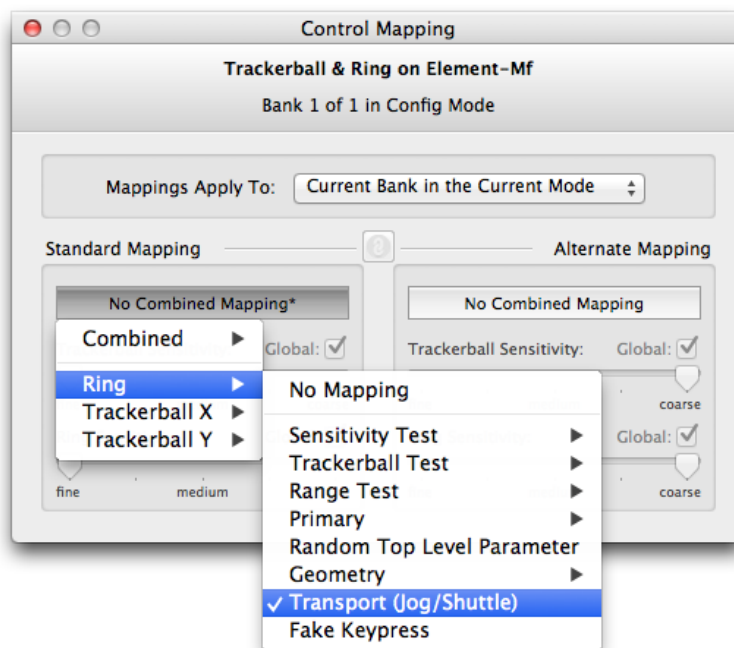
If the mappings of the individual controls in the trackerball don't match any predefined combination then mapping button will display the special case 'No Combined Mapping' text.



However, if any individual controls in the trackerball have a mapping to some other parameter the text will have a trailing '*' character to show the user that there may not be a combined mapping, but some mappings are contained inside the trackerball combined control. The menu tree will show the mixed state icon next to the 'No Mapping' entry in the 'Combined' branch.

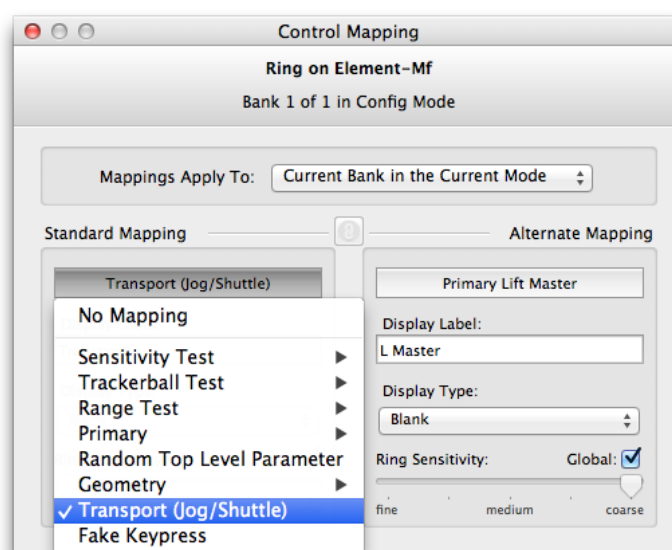


In this case you can use the individual 'Dial' or 'Ring', 'Trackerball X' and 'Trackerball Y' menus to determine which individual controls are mapped to which parameters.



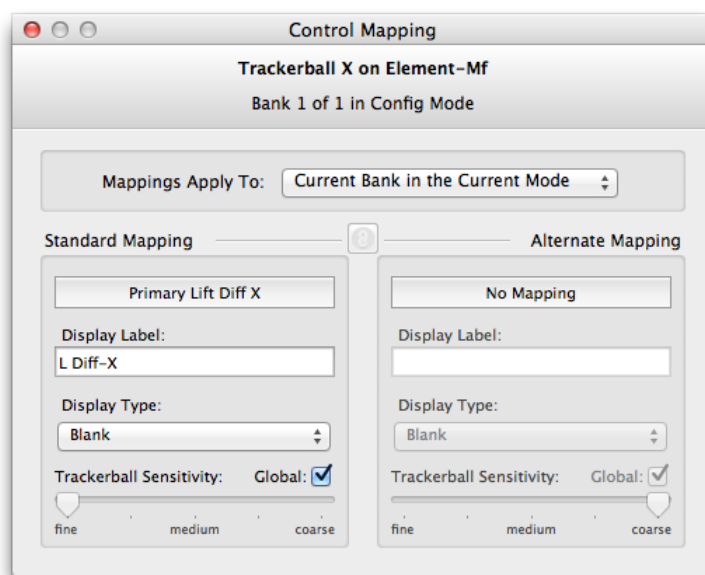
The labels below the main trackerball areas in the main window identify the mappings for the dial or ring control, and trackerball X & Y from top to bottom. If an individual control of a trackerball is mapped, the parameter name is displayed in the associated label beneath the main control. If an individual trackerball control has no mapping the label areas will be blank.

You can left-click on the labels to display the mapping details for that individual control. The control mapping window will then contain the settings that apply to that specific axis control. In this case, clicking on the mapping button will show the pop-up mapping menu for that axis only.



When an individual control for a banked trackerball with a display is highlighted with its mapping data showing in the control mapping window, the user has access to the bank

display settings for each axis control as if it was a normal knob. A custom display label can be set for each of the trackerball axes as well as any required value display type in the same way as standard banked knobs.



2.8 Panel Emulation Options

The new Ripple panels are now available with an option to emulate element-Tk panels if required. This allows Ripples to be used out-of-the-box with any software that currently only supports Element panels. If emulation is not required the Ripple panel can be used as a normal individual panel. Panel emulation is available for both managed and unmanaged applications.

The option is selected via the panel configuration menu (see section 2.2.9) and is set per application. If emulation is active, the Ripple panel will appear to the application as if it was a standard element-Tk and use any control mappings set on the element-Tk. If not active, the panel appears as a standard Ripple panel with its own set of control mappings.

There is a default setting for the Ripple to element-Tk emulation for each application that is derived from the current mapping set-up for that particular application. The user can override the default setting at any time and choose to either have the Ripple appear as an element-Tk, or as a standard Ripple panel. Any user selection will remain in place and takes priority over any system supplied default.

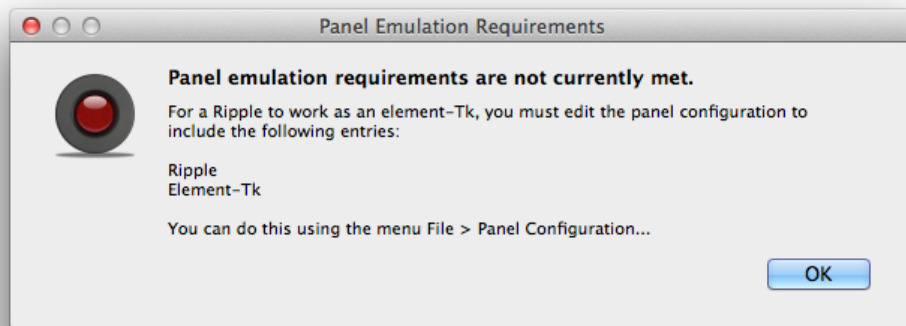
You may want to use Ripple to element-Tk emulation for software that doesn't yet support the new Ripple panels but does have default mappings in place for element-Tk panels. Additionally, if you do on-set work you can enable emulation to work using the smaller Ripple panel rather than travelling with the element-Tk.

Panel emulation works alongside the virtual control surface app element-Vs (see section 1.1) and you can swap between software applications (see section 2.3) with different emulation settings and the Ripple panel will behave according to the setting for the active app.

Emulation also works alongside the virtual Head-Up-Display that the Ripple supports in place of a hardware display (see section 1.2). Whatever is mapped to the Ripple panel, either as itself or as an element-Tk will be shown on the HUD. See section 2.2.9 for more information on how to configure the HUD.

For panel emulation to work, your system must be configured with at least one instance of each panel type that is involved with the emulation. For example, if you enable the Ripple to element-Tk emulation, your panel configuration (as discussed in section 2.2.9) must contain a Ripple panel and an element-Tk panel. The Tangent software will configure itself on a new installation to make sure this is done for you, but in some circumstances it might not be possible for the panel configuration to be automatically updated. In these situations you will have to open the panel configuration window and follow the instructions to edit the panel list accordingly.

If you enable panel emulation and your system is not currently configured to support it, you will be shown a pop-up message that will describe what you need to change to make emulation possible.



The test for panel emulation requirements is only performed when the emulation setting is toggled to the active state in the settings window. If your system doesn't seem to be working correctly with emulation switched on, open the settings and toggle the setting checkbox off then on again to see if this triggers the warning as shown above.

When emulation is switched on for a given panel type, the main window view for that panel will be greyed out and a text message will be shown to indicate emulation is active (see section 2.5). For example, with Ripple to element-Tk emulation, the Ripple panel views will not allow mapping changes, as the Ripple will share the current mappings as shown in the element-Tk panel view. If panel emulation is subsequently switched off, the Ripple panel view will be restored with the Ripple control mappings.

3 Troubleshooting With Synapse

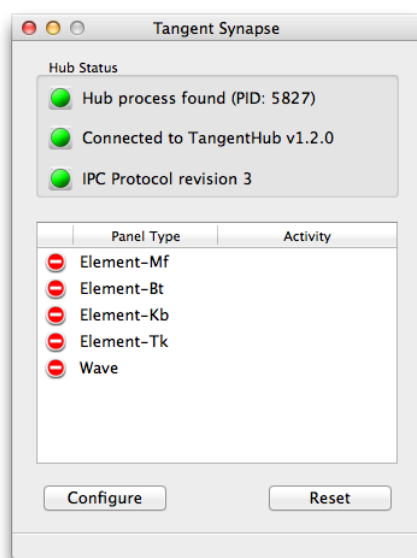
The Synapse application can be used to test a Tangent Hub installation. It displays the state of software and hardware components and allows the panel configuration to be changed in the same way as with the Mapper.

The application is supported on all platforms and is included in the Tangent Hub installer packages:

- On Windows platforms a shortcut to the application can be found under the Start menu entry for Tangent software.
- On Apple Macs running OS X the application is located in the Tangent folder inside the standard Applications folder on the system disk.
- On supported Linux machines the Synapse application can be found in the '/opt/Tangent/bin' directory.

It isn't possible to have the Mapper and Synapse applications running at the same time as they share certain system resources. If you want to use Synapse to test your system, please make sure you have quit the Mapper.

On starting Synapse, the main window opens showing the current state of the Tangent Hub service:



The window has four main areas:

- The status box at the top of the window displays up-to-date information about the Hub service running on the host platform.
- The panel activity table shows a list of the currently configured Tangent panels that may be connected to the host machine and displays real-time activity of the hardware controls across all connected panels.
- The button area allows the user to change the current panel configuration and also allows the Synapse connections to be restarted to re-test the system.
- The bottom of the window contains a status text area that is used to give feedback to the user.

3.1 Hub Status

The three coloured indicators in the status area report the state and version of any installed Tangent Hub software packages. When the system is operating correctly the indicators will display green icons. If Synapse is able to connect to the Hub but with errors then the associated icon will be amber. A red icon shows that some part of the hub system is not available or has failed.

When running, Synapse scans the processes running on the host machine and tries to find the Tangent Hub background task. If the Hub is running then the process ID is displayed and the indicator will be green. If the indicator stays at red then the service is not running and will not be able to connect to any Tangent panels.

The second indicator reports the status of the Tangent Hub software and will display the reported software version that is currently installed on the host.

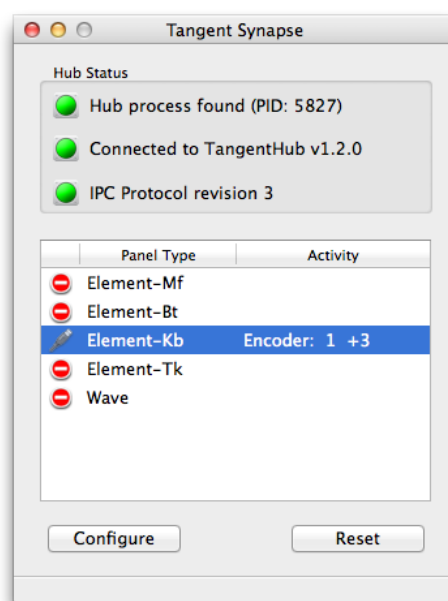
The third indicator displays the revision of the IPC protocol which is being used to communicate with the Hub.

On a working system you should see three green lights with valid information for the process ID, Tangent Hub version and IPC protocol revision. If any one of these entries is amber or red then there is a low-level problem with the host platform installation that will need to be fixed before the Hub service can be used.

3.2 Panel Activity Table

If there are three green lights then you can check the connectivity of configured panel hardware using the panel activity table. Each row of the table represents a panel that may be connected to the host machine and displays the last control activity that was received from each panel.

When a panel is detected by the Hub the red stop icon will be replaced by an icon that indicates the connection type of each panel, e.g. all Element panels connect via USB and will display a USB icon in the table when connected. When the test application is running any connected panels should also show the text 'Synapse' on all their displays.



Recent control activity for connected panels is shown in the panel table. When a knob or trackerball is moved, or a button is pressed or released, the activity is logged in the table in the row for the panel. The row will be highlighted and scrolled into view to show that some activity has been detected. The same activity text will be mirrored to the panel hardware displays where available. This is the preferred way to test the end-to-end operation of a Tangent Hub installation.

The panel table is also updated by panel connection and disconnection events and will always show connected panels with the appropriate connection icon. Note that the connection status takes into account virtual connections that are required to support the element-Vs app (see section 1.1) and panel emulation options (see section 2.8). If either of these are being used, the table may show connected and active panels without the panel hardware being physically present.

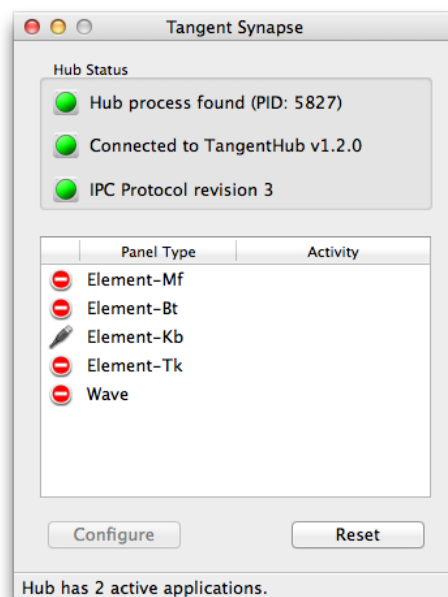
3.3 Reset

The 'Reset' button at the bottom of the window is a convenient way to manually restart the testing procedures that Synapse applies to the system.

3.4 Panel Configuration

Synapse allows you to configure which panels the Tangent Hub is expecting to find. (This function is also available in the Mapper application). By default, most systems will have the standard panels shown below configured for use. If you will be using other panels e.g. more than one element-Bt panel or a CP200 panel then click the 'Configure' button to make changes.

It is only possible to change the panel configuration when the panels are idle and no applications are connected to the Tangent Hub.



If Synapse detects other applications are also connected to the Hub then it will report this fact in the status text area at the bottom of the window and will disable (grey out) the 'Configure' button. In order to make the Configure function available you must quit all applications that connect to the Tangent Hub.

Clicking the 'Configure' button opens up a window which allows you to select the number and type of panels that may be connected to the host platform. Multiple panels of the same type may be added and mixed with any other panel types. The only exception to this is that only one Wave panel may be configured at any time.

The panel configuration is much the same as that used by the Mapper application as described in detail in section 2.2.9, with the exception that WiFi pairing is not supported in Synapse.

When valid panel configuration details have been completed you can choose to either cancel the changes or to apply them to the system. This will return to the main window which will update to show any changes that have been made and will briefly display a confirmation message in the status text area at the bottom of the window.

The current version of the Tangent Hub does not allow an empty panel configuration. If you delete all panel entries then the system will generate a default panel set automatically if the empty configuration is applied.

Not all panel types are compatible with all applications as the suppliers of the software application may have a preferred and recommended panel set-up.

4 Uninstalling the Tangent Software

If you wish to remove the Tangent software from your system simply follow the instructions in the section appropriate for your platform. Uninstalling the software does not remove any user data. (A reset function is available in the Mapper to delete user-entered data – see section 2.4.3 for more details.)

4.1 Mac OS X

Hub Version 1.0.0

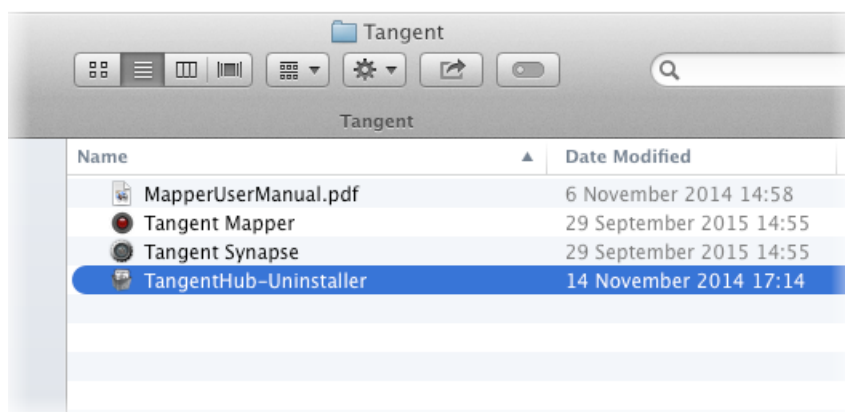
Navigate to the **/opt/Tangent/bin** folder

Hub Version 1.0.1 onwards

Navigate to the **/Library/Application Support/Tangent/Hub** folder

Hub Version 1.0.4 onwards

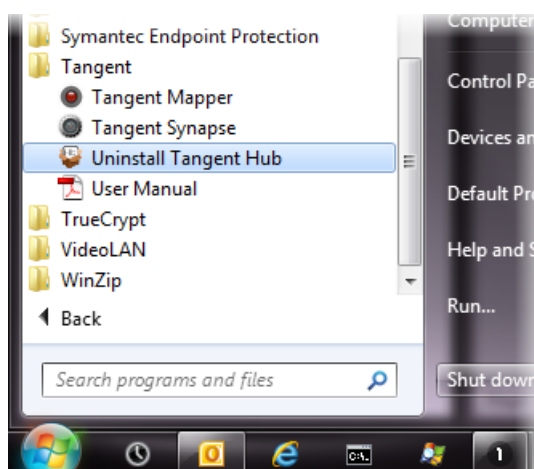
Navigate to the **/Applications/Tangent** folder



Double-click the **TangentHub-Uninstaller** (administrator account required).

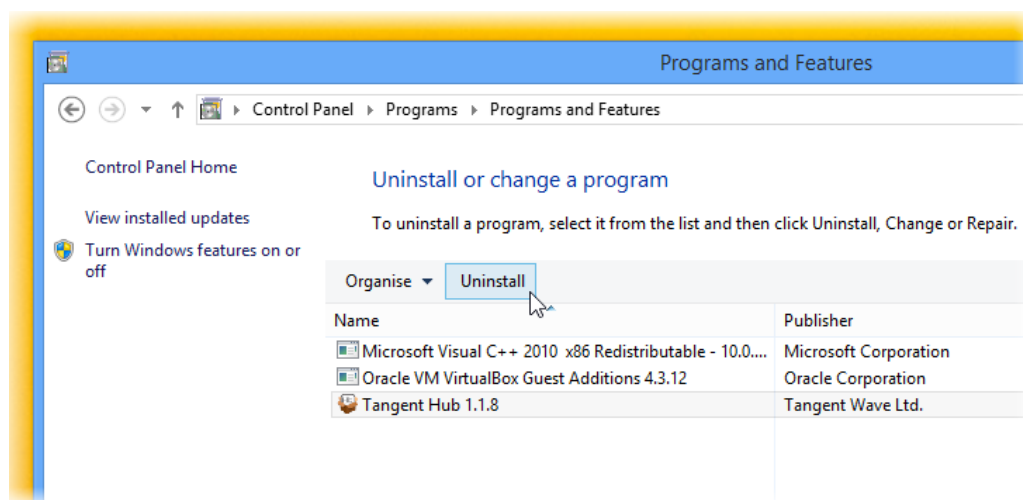
4.2 Microsoft Windows

For Windows XP and Windows 7, open the Start Menu and navigate to the folder in which you installed the Hub.



Choose **Uninstall Tangent Hub** and follow the instructions.

For Windows 8, open the Control Panel from the Settings menu and choose the 'Programs: Uninstall a program' option.



Select the **Tangent Hub** entry, then click on Uninstall and follow the instructions.

4.3 Linux

Open a Terminal window and run the following (sudo account password required):

```
sudo rpm -e TangentHub
```

You should see confirmation of the removal (the exact format of the text may vary between Linux distributions):

```
stopping tangenthub
stopping tangenthub service: [ OK ]
tangenthub          0:off 1:off 2:off 3:off 4:off 5:off 6:off
```

Note: On some older systems an attempt to remove a package can produce a segmentation error during the install cycle. This is indicated by the removal command aborting with a killed process. This does not indicate a fault with the package, the problem is caused by a bug in the OS runtime libraries. This can be avoided by running the installation command with the `--ignoresize` option. When the removal is successful you will see the confirmation as detailed above.

5 Document History

Revision 1:

Initial draft.

Revision 2:

Document updated for latest alpha release 0.2.5.

Revision 3:

Renamed document. Updated for latest beta release 0.8.0. Added Synapse section. Added uninstall section.

Revision 4:

Updated for new beta release 0.8.2 with application switching and check for updates.

Revision 5:

Updated for new beta release 0.8.3 with automatic application switching.

Revision 6:

Updated with sections for new keypress applications and fake keypress action settings as available in beta release 0.8.8.

Revision 7:

Added details on how Unmanaged applications are displayed in beta release 0.8.9.

Revision 8:

Release 0.9.2 with target software selection and editing. Support for pairing element-Vs tablet apps.

Revision 9:

Updated for version 1.0.0 with details of Android element-Vs app availability.

Revision 10:

Updated with new fake keypress parameter settings and improved Control Mapping Window behavior in version 1.0.1 release.

Revision 11:

Updated for version 2.0.0 with improved UI and menus. New support for system reset and diagnostic information.

Revision 12:

Updated for version 2.0.2 with improved support for all-bank and all-mode mappings changes.

Revision 13:

Added details for the new Ripple panel, including an option for Ripples to emulate element-Tk panels in version 2.0.3.

Revision 14:

Updated for the public release of software that supports Ripple panels including element-Tk emulation in version 2.0.4.

Revision 15:

Updated for the new Head-Up-Display settings available in the panel configuration window in version 2.1.0. Mapper now indicates current application mode.

Revision 16:

Updated for changes to HUD and panel displays, and for interaction improvements in the Mapper for version 2.1.2.

Revision 17:

Minor updates for new release.