DOMO SAPIENS

DOMOSAPIENS KEYPAD PAGES DRIVER

This driver manages up to 7 'Virtual Pages' (A to G) of keypad buttons for a single keypad, plus an optional Menu page. This is easily managed by the user, and it allows a lot more power and flexibility in defining the usage of keypad buttons.

Specifically, the following functions are available:

- Ability to have up to 7 'virtual' pages for each keypad, thus significantly expanding the number of buttons available.
- An optional Menu page is also available for easier navigation
- Pages can be selected by the user (navigation) or via Programming and Actions
- Keypad LEDs are managed automatically based on the Page selected, Color properties and the state of connected devices
- The keypad may automatically revert to the Menu page or to the predefined default page after a selectable timeout
- All keypad button actions and 'clients' are supported
- *(*NEW*)* Slave keypads may be controlled by a master keypad so that they are synchronized
- Special normally hidden pages may be activated easily, such as Guests, Party or Support.
- An Up/Down Tracking facility is available to have the Up and Down buttons track to the last button pressed with optional LED feedback
- When Tracking, an optional 8th button is available via simultaneously pressing the Up and Down buttons (Domosapiens exclusive)
- A Special Double Tap facility is available to simplify Single Tap/Double Tap processing
- *(*NEW*)* A Night Mode (activated by programming) allows the keypad to be dark until a key is pressed.
- *(*NEW*)* The keypad's Backlight may be managed by the driver and optionally used to indicate which page is currently active.
- Page names may be specified for easier reference in Connections, Programming and Actions
- An additional passthrough (ALL) Connection is always available, regardless of the Page selected
- Supports the Domosapiens Keypad Load Simulator driver for simpler programming.

INSTRUCTIONS

- Use the free trial period or activate the driver at any time by assigning to this project the license you purchased from the DriverCentral website (requires the DriverCentral cloud driver). You may use multiple copies of this driver in your project, in fact as many as you have physical keypads. **IMPORTANT NOTE**: a license for this driver allows you to also install the Domosapiens Keypad Load Simulator driver for free in the same project.

- Determine how your Pages will be used, if a Menu page is desirable and how navigation will be performed by the user. It is important to avoid having different schemes throughout a house, as this would likely be confusing for the users. For example, you could use Page A for frequently used lights and other pages for less frequently used lights or for other purposes (such as blind/shade or

audio control, for example). Select the most appropriate color schemes as well as navigation: the default of double tapping on the Up/Down buttons is easily remembered and still leaves the most flexibility for button assignment. See the section **NAVIGATION AND COLORS** below.

- This driver must 'sit' between the real keypad driver and its clients. When you specify the Select Control4 Keypad property, the keypad is disconnected from its previous clients and automatically connected to this driver (all configured buttons).

- Then, connect the previous clients (and any others) to this driver's appropriate passthrough bindings. In the case of a **Keypad Dimmer, make sure** all the Button Behaviors in its device driver are set to 'Keypad' or, in the case of Up/Down buttons, to 'Regular Button'. Note that the DIRECT/BASIC PASSTHROUGH UNDER ANY PAGE connections only mirror the three basic keypad button commands received (DO_PUSH, DO_CLICK and DO_RELEASE) and nothing else. Another driver bound to one of these connections will behave as if connected directly to the keypad itself.

   IMPORTANT: as the connection is made to the selected keypad, bindings are dynamically generated by this driver. If you make changes to the 'real Keypad Buttons' connections and/or make changes to some properties such as **Special Functions**, redundant bindings are NOT DELETED IMMEDIATELY in case you change your mind, but an Action is available should you want to delete redundant (unused) bindings immediately anyway. You may need to refresh the driver's Connections to see the changes in the Passthrough and Single/Double Tap or Up/Down Tracking bindings. A property is available to disable this automatic deletion of bindings, but remember to use the Action, as inappropriate/unused bindings may appear until deleted and cause confusion.

- To simplify installation tasks, you may set up one instance of this driver with all the appropriate properties. Then, using the Action 'Apply Properties To', you may force the copy of this instance's key properties to other instances of this driver. Alternatively, you may use the Action 'Obtain Properties From' to cause this instance of the driver to 'borrow' all key properties from another instance of the driver. An Action is also available to reset Properties to their default values.

- You may install one instance of the Domosapiens Keypad Load Simulator driver for each Page x Passthrough connection where you wish to simplify programming. You would then not need to check for the button number in your programming. Other functions provided by the Keypad Load Simulator (such as State based on contacts) may also be useful.

NAVIGATION AND COLORS

Since this driver simulates several 'virtual' pages of keypad buttons, it is important for the user to be able to navigate the keypad from one page to another <u>and</u> to know which page the keypad is currently displaying. This may not be obvious as the button LEDs on a page will likely show the state of their connected devices or Lighting Scenes, for example. This driver tries to make this easier as described below.

Here is an <u>example</u> of how you could use pages:

- Menu Page: optional; if used, you likely want the timeout as well
- Page A: Advanced Lighting Scenes typically used in this room (tracking would be recommended)
- Page B: buttons controlling specific lighting loads (tracking would be recommended)
- Page C: buttons controlling specific Blinds/Shades with Up/Down and Stop (8th Virtual button)
- Page D: control of audio/video, possibly via the Room Control driver

- Page E (probably hidden): simple light operations for GUESTS

The first navigation approach uses a Menu page. The idea is that buttons on the Menu page take the user directly to the corresponding Page (button 1 goes to Page A, button 2 to Page B, etc). Once on a given page, the user may press buttons to control devices and after a period of inactivity, the driver may optionally be instructed to go back to displaying the Menu page. Otherwise, the user may press the 'Backward' sequence (the default is to Double Tap the Up button) to go back to the Menu page. In this configuration the 'Backward' sequence always displays the Menu page. The 'Forward' sequence (the default is to Double Tap the Down button) simply goes to the next Page, stopping on the last Page. In a 3-Page with Menu scenario, the 'Backward' sequence will always show the Menu page and the 'Forward' sequence will show: Page A, Page B, Page C.

The second navigation approach does not have a Menu page. The 'Backward' and 'Forward' sequences go through the Pages in sequence: 'Forward' shows Page A, then Page B, then Page C, etc. 'Backward goes in the opposite direction. If the 'rollover' option is selected, 'Forward' will show the Pages in ascending sequence and then restart the sequence with Page A. Similarly, 'Backward' will show the Pages in descending order and restart the sequence with the highest Page. It is recommended that you review (and demo) the various approaches with the user and select the most convenient to use.

The other important element when using multiple pages is to show the user as intuitively as possible which page is currently being displayed. Button LEDs may be used for that purpose by showing a Page Indicator color when the corresponding device is 'OFF'. You may have the 'Green' page for frequently used lights, the 'Blue' page for other lights, the 'Yellow' page for Blinds/Shades, etc.

(*NEW*) If you have several related keypads (in the same room, for example), you may want to synchronize them. Simply define them in the same Group and have one of them (or several, if you wish) control the others. In this case, any navigation (among pages) you do on a controlling keypad will be automatically replicated on the other keypads in the same Group. All will then display the same page. In one use case, a client had two keypads in a 2-gang configuration. The first keypad always stays on the Menu page (the controlling keypad) and is used to select the room the second keypad (the slave keypad) will control. The slave keypad then has one page per room and each button controls a standardized function in its room (a day scene or night scene, or sconces, reading lights, etc.). **IMPORTANT NOTE:** specify 'No timeout' for the controlled keypads to prevent them from getting out of sync.

(*NEW*) A night mode is available via programming commands and Actions. When in Night Mode, the connected keypad button LEDs will be turned Off (black). Optionally, the backlighting may also be turned Off or to a darker Off color. If the user wishes to see the current status of the LEDs, simply press one of the connected buttons and the LEDs (and backlighting) will come on, and the buttons will become active for the duration specified in the Property 'Night Status Duration in Seconds'. For Night Mode to be effective (all LEDs turned Off), all keypad buttons must be connected to this driver, and then to other devices as required via the passthrough connections. **NOTE**: when exiting Night Mode, the driver is permissive and will allow the user to 'smash' the keypad in the dark, possibly hitting several buttons at the same time.

This level of flexibility should allow you to find the best sequence for your users. You may experiment by setting properties and selecting a specific page with the Action to 'Set Current Page'.

PROPERTIES

- **Cloud Status** displays the status of the DriverCentral license or trial.

- **Automatic Updates** may be set to yes to allow for DriverCentral updates.

- **Driver Version** displays the version of this driver.

- **Debug Mode** turns Debug Mode Off or On (with output to the Lua Output window).

- **Debug Duration in Minutes** sets the duration of Debug On.

- **Driver Information** displays various status messages about the driver.

- **Select Control4 Keypad** allows you to specify which Control4 keypad this driver will interface with. All connections with the real keypad are managed automatically. Before you specify this, make sure the physical keypad layout is properly defined in Composer.

- *(*NEW*)* **Number of Pages** is the main property which determines how the driver will operate. You use it to specify the number of pages, as well as the operating mode and the default page. The number of pages is a number from 1 to 7, the operating mode is one of 'N' (default if omitted), 'M', 'C', 'S' or 'R' (see below). The default page ('A' if omitted) is a letter used to indicate which page the driver will revert to when the Timeout expires. This is applicable only for modes 'N' and 'S', as the other modes always revert to the Menu page when the Timeout expires. The default value for this property is '3M' which means 3 pages plus a Menu page. See the previous section on **NAVIGATION AND COLORS**. The valid values for operating mode are:

  - **N** (or omitted) for '**N**o menu'. Pressing the Forward button stops at the highest page and Backward stops at the lowest page. If specified, the Timeout reverts to the default page specified after the letter N (example: 4NB – 4 pages, No menu, default page is B).

  - **M** for '**M**enu'. If specified, the Timeout always reverts to the Menu page.

  - **C** for '**C**ontrol and menu). If specified, the Timeout always reverts to the Menu page.

  - **S** for (control but **S**tay on menu page). If specified, the Timeout reverts to sending the default page specified after the letter S (example: 4NB – 4 pages, No menu, default page is B) to the slave drivers in the same group as this driver. Also see the property 'Menu Page Last Selected Button' for this mode. It is advisable to set the slave keypads with no Timeout and to let this master keypad manage the timeout (if desired) for all.

  - **R** for (no menu but **R**ollover). Pressing the Backward/Forward buttons will rollover to the first or last page. If specified, the Timeout reverts to the default page specified after the letter R (example: 4RA – 4 pages, no menu but Rollover, default page is A, but it could be omitted as it is the default: 4R).

- **Page Navigation** specifies which key sequences will be used to move the driver Backward or Forward among the various pages. The recommended setup is to use the Up/Down buttons in the bottom slot of the Control4 keypad and to specify Double Tap for navigation. If an Up/Down button combination is not used in the bottom slot, you may use **1 Slot High** buttons 5 and 6 instead for navigation. When specified, button 6 MUST be **1 Slot High** and when specified, button 5 MUST also be **1 Slot High**. See the previous section on **NAVIGATION AND COLORS**.

- Recommended **Choice 1** (if you have the Up/Down pair):

  "Double Tap on Up (to Menu or Backward) or Down (Forward)"

- Recommended **Choice 2** (if you do not have the Up/Down pair, but 1 Slot buttons 5 and 6:

  "Double Tap on button 5 (to Menu or Backward) or button 6 (Forward)"

- Recommended **Choice 3** (if you don't have the Up/Down pair, but 1 Slot button 6:

  "Double Tap on button 6 (to Menu or Backward only)"

(*NEW*) You may disable Page Navigation from the keypad so that only the Menu page or programming may be used for switching pages. To use the Menu, the driver must be able to display the Menu: it must be selected in the Number of Pages property and a Timeout to Menu must be specified, otherwise the Menu would never be displayed.

- *(*NEW*)* **Timeout to Menu or Default Page** specifies if the driver will revert to the Menu page or, in its absence, to the default page specified in the Number of Pages property (Page A if not specified) after a given timeout period. This feature is optional but recommended.

- **Tracking Behavior** is used when the Tracking Special Function is specified and determines how tracking changes are handled.   In the regular Control4 Keypad Dimmer driver, pressing a button (1-5) causes a tracking change AND its connected device to be activated (Push/Click). This is sometimes undesirable as you may want a button press to ONLY cause a tracking change so that Up and Down may be associated with it without triggering the device. This property provides such an option. The first press of a button which causes a tracking change is not sent to the device and only the tracking change is recorded. The next presses of the same button do activate the connected device, however.

- **Tracking after Page Change** is used when the Tracking Special Function is specified and determines the initial state of tracking when moving to a new page. Tracking may be undefined (until a button is pressed on the new page) or set to the top button (1) or restored to the last tracked button when this page was last displayed.

- **Tracking LED Feedback** is used when the Tracking Special Function is specified and allows you to specify if feedback will be provided for the tracked ('active') keypad button 1-5. This may be helpful for the user. Several options are offered.

- *(*NEW*)* **Night Visibility Duration** allows you to specify for how long a keypad in Night Mode (set via a programming command) will 'wake up' to allow the user to see the current status of LEDs and to optionally use some keys. A keypad is 'woken up' by pressing any key while in Night Mode. At the end of this duration, they keypad returns to Night Mode with all LEDs Off.

- *(*NEW*)* **Disable ANY PAGE Passthroughs from Menu Page** allows you to mask button presses while the keypad is on the Menu page. This may be desirable under some scenarios.

- **Special Functions** allows you to activate one of two special functions. Both cause additional bindings (Connections) to be provided.

The Special Single Tap/Double Tap facility creates a set of bindings for each button/Page combinations in addition to the normal Passthrough Connection. The logic for these bindings is as follows: if the user double taps the button during the Double Tap time interval (defaults to 1500 msecs), the 'Double Tap' binding will receive a Push/Click combination and can thus activate a connected light or an Advanced Lighting Scene. If the user only single taps the button, the driver will still wait for the Double Tap interval duration but will then send a Push/Click combination to the 'Single Tap' binding instead. This way, the Single Tap will not be exercised if the user actually does a Double Tap. The downside, of course, if that there is a small delay before a Single Tap actually produces a result. In all cases, the normal Passthrough bindings receive a direct passthrough of all keypad button actions (Push, Click and/or Release).

IMPORTANT NOTE: when using Single Tap and Double Tap connections, do not connect the same device to the regular Passthrough connections, as this will cause undesirable behavior.

The other Special Function allows the Up and Down buttons to track to the most recently pressed button. This is similar to the 'Track Last Button' found in the regular Control4 Keypad Dimmer driver. When selecting this function, you may also specify the LED feedback given to the user (see below). This driver also optionally supports a special case of Up/Down where the user presses BOTH the Up and Down buttons simultaneously. This effectively supplies a third connection which, for Blind/Shades for example, could provide a Stop function in addition to Up and Down.

- **Auto Delete of Unused Bindings** specifies the delay before unused bindings are deleted. Having such a delay allows you to correct a mistake or change your mind before already-connected bindings are deleted permanently. Such deletions may follow a disconnection from a Real Keypad Button or changes in the Number of Pages and Special Functions properties. You may also completely disable the automatic deletion but be aware that the Connections tab could then show bindings which are no longer valid nor active and likely cause confusion.

- **Double Tap Interval in msecs** (available when Special Double Tap is selected) determines the window during which the driver will wait for a possible Double Tap. The default value (1500 msecs) is recommended and should be appropriate for most cases, but the Action 'Set Button Timings' is available to fine tune this value (usually downward).

- **This Keypad Part of Group** is used to assign a Group number or None (0) to this instance of the driver. When a driver 'broadcasts' 'SET_PAGE' programming commands to peer instances of itself, it may specify which Group (or All Groups) is to receive the command. This instance will accept only commands destined to its Group (or to All groups) unless this property is set to 0 (ignore everything broadcast).

  (*NEW*) Similarly, when you specify 'C' (Control) or 'S' (Control and Stay on Menu) in the Number of Pages property, any page selection/navigation you do on this keypad is immediately sent to other keypads belonging to the same Group (which must be non-zero). View these other keypads as Slave keypads.

- **Current Page** displays the currently selected Page with its name, if available, or 'NONE', along with the current intensity scaling (set via a programming Command or an Action).

- **Menu Page LED Color** displays the LED color(s) for the Menu page (if used). The default of 'Page Indicator Colors' should be considered, since it uses the Page A Indicator Color for the first button, the Page B Indicator Color for the second button and so on. Pressing a button takes you directly to the corresponding Page. You may use another single color for the Menu page (to be even more obvious to the user) but pressing a button on the Menu page still takes you directly to the corresponding Page. Selecting 'Custom Color' causes a color selection property to appear for additional choices.

- *(*NEW*)* **Menu Page Last Selected Button** (available with operating mode 'S') specifies how the user will be notified of which page has most recently been sent to the slave drivers (in the same group as this driver). The default approach is to have the most recently sent button at a brighter level but this property offers additional options.

- *(*NEW*)* **Page Indication on Regular Pages** specifies how the user will be notified of which page is displayed. The recommended approach is to have all OFF/unused buttons display the Page Indicator Color for the specific page. This property offers additional options, including the ability to have a dimmer color for buttons which are unused (no device connected to one of their bindings). If the driver determines that it is not possible to display the Page Indicator Color (when all the devices are ON, for example), it will flash the Page Indicator Color when the current page is first displayed. If you select to use Backlight as Page Indicator, make sure you select a Backlight ON Color and optionally a Backlight Night Color.

- **Default ON Color when Native is N/A** is used to specify the ON color to be used when 'Native' has been specified for a page ON Color but the device is not supplying its Native ON Color.

- *(*NEW*)* **Backlight ON Color** is used to specify the normal Backlight color displayed when the Menu page is active as well as on regular pages when the Page Indication property does not specify to set the Backlight color. You have the option to avoid altering the Backlight color currently set in the keypad itself (this is the default value). If you wish to use Backlight at all, remember to set the Ambient Light Profiles accordingly in the keypad itself.

- *(*NEW*)* **Backlight Night Color** is used to specify the Backlight color displayed when the Night Mode is activated (by programming). Set to Black if you wish the keypad to be fully turned Off.

- **Page x Name** allows you to specify an optional name for this page. This name is displayed among the control bindings in Connections and in appropriate Actions and Programming commands. To hide a page, simply enclose its name within square brackets such as [SUPPORT] or [GUESTS]. Hidden pages may be activated via programming or Action, but they are skipped over by Navigation.

- **Page x Indicator Color** assigns a specific color to each Page. This is used during navigation as the OFF color for LEDs on the specific Page, *(*NEW*)* based on the Page Indication on Regular Pages property (above). This is also used on the Menu page, according to the Menu Page Color property. Selecting 'Custom Color' causes a color selection property to appear for additional choices.

- **Page x LED ON Color** specifies the 'ON' color to be used if the connected device reports an ON state. Usually, devices also have a preferred 'ON' color which they provide automatically and this is accessed as the 'Native Color'. When using 'Special Double Tap', the 'ON' state and, if specified, the Native color are obtained first from the Single Tap device (if present), or next, from the Double Tap device (if present) or lastly from the Page x Passthrough device (if present). Otherwise, they

are obtained from the Page x Passthrough device (if present) *(*NEW*)* or, as a last resort, from the ANY PAGE Passthrough device (if present). A color other than the Native color may be specified and selecting 'Custom Color' causes a color selection property to appear for additional choices.

- **Page x 8th Virtual Button Available** activates the 8th Virtual button on a given page (pressing Up and Down simultaneously). Having the Virtual button may be useful in specific applications (example: for blinds/shades, you could use the Up and Down buttons for specific Up and Down movements and the 8th button (pressing both Up and Down simultaneously) for Stop). The downside is Press and hold for Up and Down are not available with the 8th Virtual Button active. Such Press and hold are useful for lighting, for example. Therefore, this function may be selected specifically for each page, as appropriate.

ACTIONS AND PROGRAMMING

Several Actions are available to be used mostly during Setup and Testing. **'Validate Setup'** will examine your current properties and connections and will summarize your setup and highlight any issues. You may also borrow properties from another instance of the driver or force this instance's properties onto other instances of the driver.

Programming commands are available to select a specific Page to be displayed, to simulate Keypad button presses, to set the LED state of a specific binding and to set/reset the last tracked button for each page. The 'Set Current Page' command may be used to activate 'hidden' pages and optionally deactivate Navigation and/or Tracking. See the section on **ENABLING A SPECIAL MODE THROUGHOUT THE HOUSE** below.

Events offer a compromise between hundreds of events (each page, each button, each event) and a more limited approach. Most events should be used together with the 'EVENT_BUTTON' numeric variable. Events are also available when the current Page is changed.

ENABLING A SPECIAL MODE THROUGHOUT THE HOUSE

While day-to-day keypad operations, even relatively complex setups, would be easily remembered by the home occupants, you may want to provide a very simple and basic (and possibly user-proof) keypad layout in special situations. Similarly, you may wish to have a special Technical or Support layout for your technicians working in the house. This is accomplished with the following steps:

- For each keypad requiring this, define a page (could be page 4 or 5, for example) which would perform easy operations for users or complex operations for your technicians. Such a page would normally be 'hidden' by enclosing its name in square brackets in the **Page x Name** property: [GUESTS] or [SUPPORT], for example.

- You activate such a page on the keypad with the programming Command or the Action 'Set Current Page'. You would also typically disable Navigation to prevent moving away from the page. Disabling Tracking may also be indicated for Guests.

- You may also cause other keypads belonging to a given group (or all keypads, for that matter) to do the same with the programming command or Action 'Broadcast Set Page'. Similarly disable Navigation. In this case, the command uses the Page Name and it is not necessary for the [GUESTS] page, for example, to be the third page on each keypad, as long as it is named [GUESTS] OR GUESTS

(visible). This way, you only need to concentrate your programming on one Keypad Pages driver which then broadcasts to the other instances of this driver.

- A special mode is ended by the 'Set Current Page' programming Command or Action to set the current page to the Menu page or Page A with Normal Navigation. And doing the same to other keypads with the Broadcast command or Action 'Broadcast Set Page'.

SUPPORT

For support on this driver please go to https://help.drivercentral.io/. Give a detailed description of the problem and also include the version number of the driver and the version of Control4 OS that you are using.

AUTO UPDATE

This driver is updated with fixes and new features from time to time. To ensure your project uses the latest version, set the Automatic Updates property of the driver to On.

CHANGELOG

10.0.0   October 3, 2022   Initial Release
10.1.0   November 9, 2022   Total pages may be 7, new Number of Pages property, issue fixed with Custom Colors
10.2.0   March 19, 2023   Additional information sent to Keypad Load Simulator driver, minor issues fixed
11.0.0   July 8, 2023   Several improvements in Navigation, Page Indication and ability to control other keypads, added Night Mode and Backlight management
11.0.1   January 5, 2024   Minor issues fixed