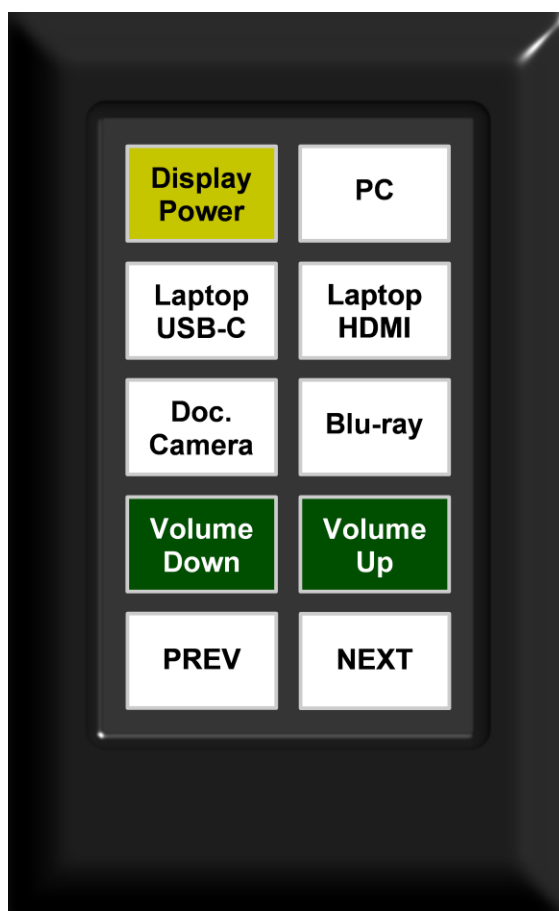


TekTouchPad

78034 Configuration Utility User Manual

TekTouchPad

3.5" Configurable Touchscreen Controller Configuration Utility



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Version: 78034_2020V2.0

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1. Introduction

In installations that utilize mechanical switch panels for A/V control, installers and users often run into difficulties in setting up these switch panels. These difficulties arise from having to physically change the switch labels, and having to interpret differing depths of functionality (ie. a button may have multiple functions based on the current mode). The TekTouchPad overcomes these difficulties by providing programmable buttons that can be paged via an LCD touch screen, so that each button has a discrete function, and no interpretation is needed. The TekTouchPad Configuration Utility provides a simplified means of defining and programming your TekTouchPad for each specific use. This manual will take you through the steps necessary to create a button page definition, and subsequent loading into the actual device for use. The quick start section gives a minimal process for defining a quick setup if no custom color aspects are required.

2. Operational Discussion

The TekTouchPad firmware consists of two modules: the bootloader, and the main code block, which governs graphics, processes, and communications. The bootloader and main code block are typically loaded at the final assembly site. Without a panel configuration loaded, the unit will generate a default panel configuration for operational verification prior to final setup.

When the unit is first powered up, it executes the bootloader code for approximately 10 seconds, as indicated by a LED flashing on the PCB at about half-second intervals. Once the time is expired, the unit progresses into the main code block for executing the LCD/Touch panel, reducing the LED blink rate to about 1 second. The screen will proceed to preload the configured pages prior to displaying the logo screen. This is shown by a progress indicator on the screen prior to logo display. If no logo is loaded into the configuration space, the unit will proceed directly to the first defined button page.

Moving to different defined pages is accomplished via the static paging buttons located at the bottom of the LCD screen. If no further pages are defined, no further action will occur from touching the paging button. Defined button serial commands are sent out through the serial communications channel at the defined operational communications settings (see **4. Command Editor**). An interactive protocol is also supported to allow for issuing touch pad commands via the serial port, and querying touch pad status information, see **Appendix E: Interactive Touch Pad Protocol**.

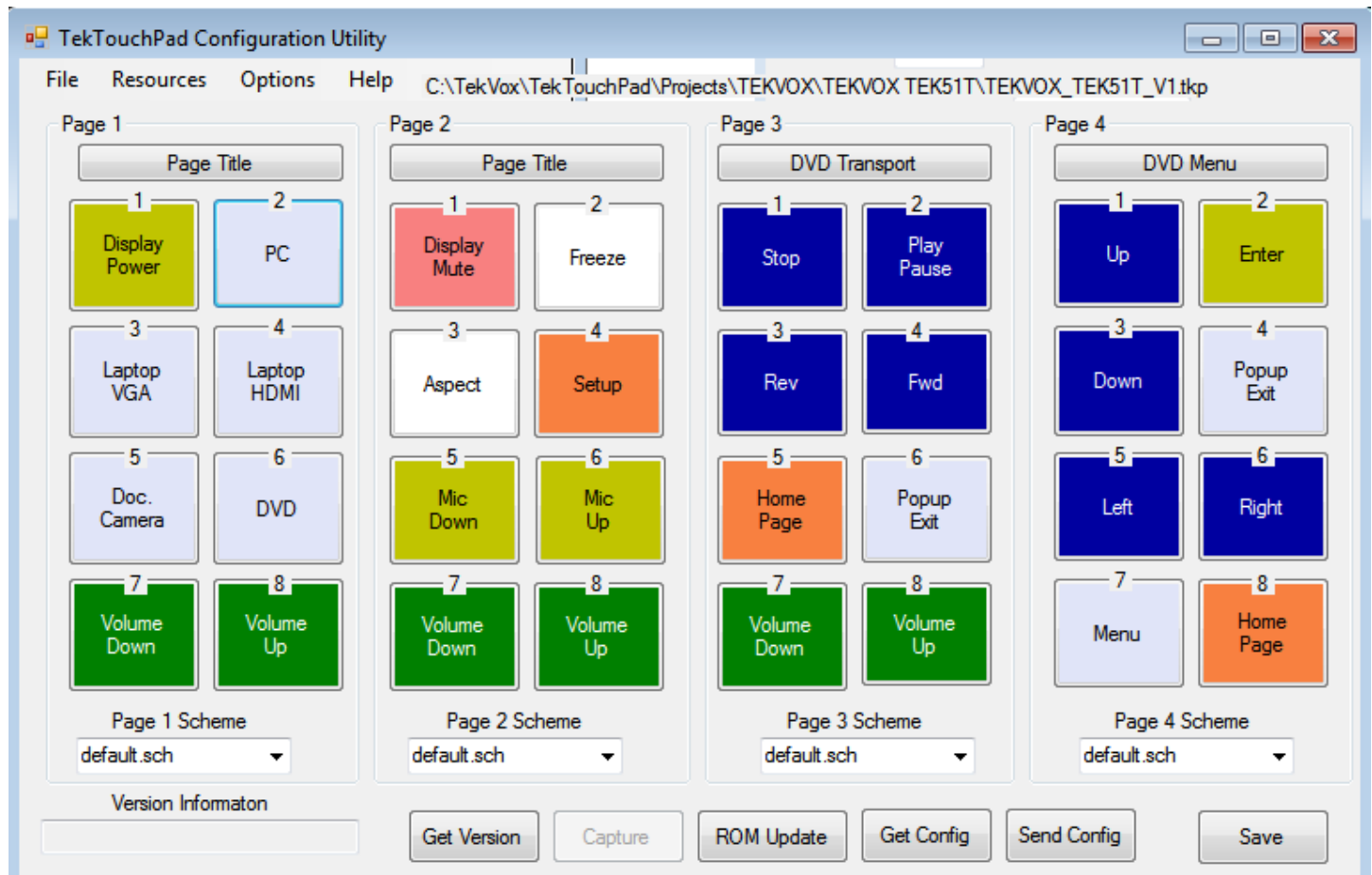
3. Main Window

The Main Window is the access point for the majority of the operations of the configuration utility. It is organized into 4 pages of 8 buttons, much like the actual TekTouchPad. This organization allows for viewing all the defined buttons on one screen, alleviating the need to tab to other pages. The definitions of resources and file operations are accessed via the "File" and "Resources" menus, while communications and global setup parameters are found in the "Options" menu. The "Help" function provides access to this document and links to further information.

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The “Page 1 ~ 4 Scheme” selections allow for the overall page appearance, specifically defining background color, static button, and default button color if not otherwise defined within the button. The default scheme is supplied with the software, and is defined in **Appendix G: default.sch**. This scheme should not be modified, and a new scheme created and selected if differing global scheme parameters are desired.



3.1 File Menu

- **New Project:** Reset all current configuration data to its default state and create a new, empty project
- **Open Project:** Open a saved TekTouchPad project file
- **Save Project as:** Save a defined TekTouchPad project file or creating a project clone
- **Open Driver Template:** Opens an .xml type file (see **Appendix F: XML Driver File Format Example**) defining serial command definitions to be utilized in the Serial Command dialog of the Command Editor (see **4. Command Editor**)
- **Import Project:** Allows for importing a .pkg project that has been previously exported
- **Export Project:** Saves the current project as a .pkg file that can be imported later

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3.2 Resources Menu

- **Color Schemes:** Modify or create new color scheme formats; Assigns a unique ID to the scheme and stores it away with a .sch extension
- **Bitmaps:** Import bitmaps into the system. Takes a .bmp file and tags it with a unique ID and adds a .tkb extension.
- **Fonts:** Import fonts into the system. Takes a .bin file and tags it with a unique ID and adds a .tkf extension.

3.3 Options Menu

- **Host Com Settings:** Change the current connection communications settings
- **Panel System Settings:** Change the global TekTouchPad system settings
- **Reset Touch Pad Config:** Reset a custom TekTouchPad button configuration to the internal default
- **Reset Touch Pad Splash:** Reset the defined splash screen to no splash screen
- **Reset Touch Pad:** Causes a TekTouchPad reset to occur
- **Status View:** Provides a report of built-in test results from the panel's self-test
- **Path Settings:** Sets the locations of various TekTouchPad files

3.4 Help Menu

- **Contents:** Opens the TekTouchPad Configuration Utility User Manual (this document)
- **About:** Displays the current version and copyright data

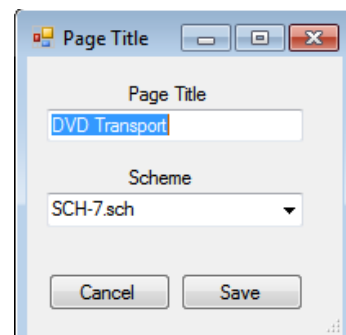
3.5 Button Context Menu

Right-clicking on one of the programmable buttons on the main panel creates a context menu:

- **Copy:** Copies all configuration data pertaining to the clicked button to the clipboard
- **Paste:** Pastes all configuration data contained in the clipboard to the selected button
Button configuration data saved in the clipboard may be pasted into other instances of the configuration utility.
- **Clear:** Resets the button to its default "Undefined" state (cleared buttons will not be shown once the TekTouchPad has been programmed)

3.6 Page Title

A page title can be added at the top of the screen. Adding a title will shrink the buttons and shift them down. Clicking on "Page Title" displays the Page Title dialog to enter the text and color scheme. The color scheme needs to be different from the background.

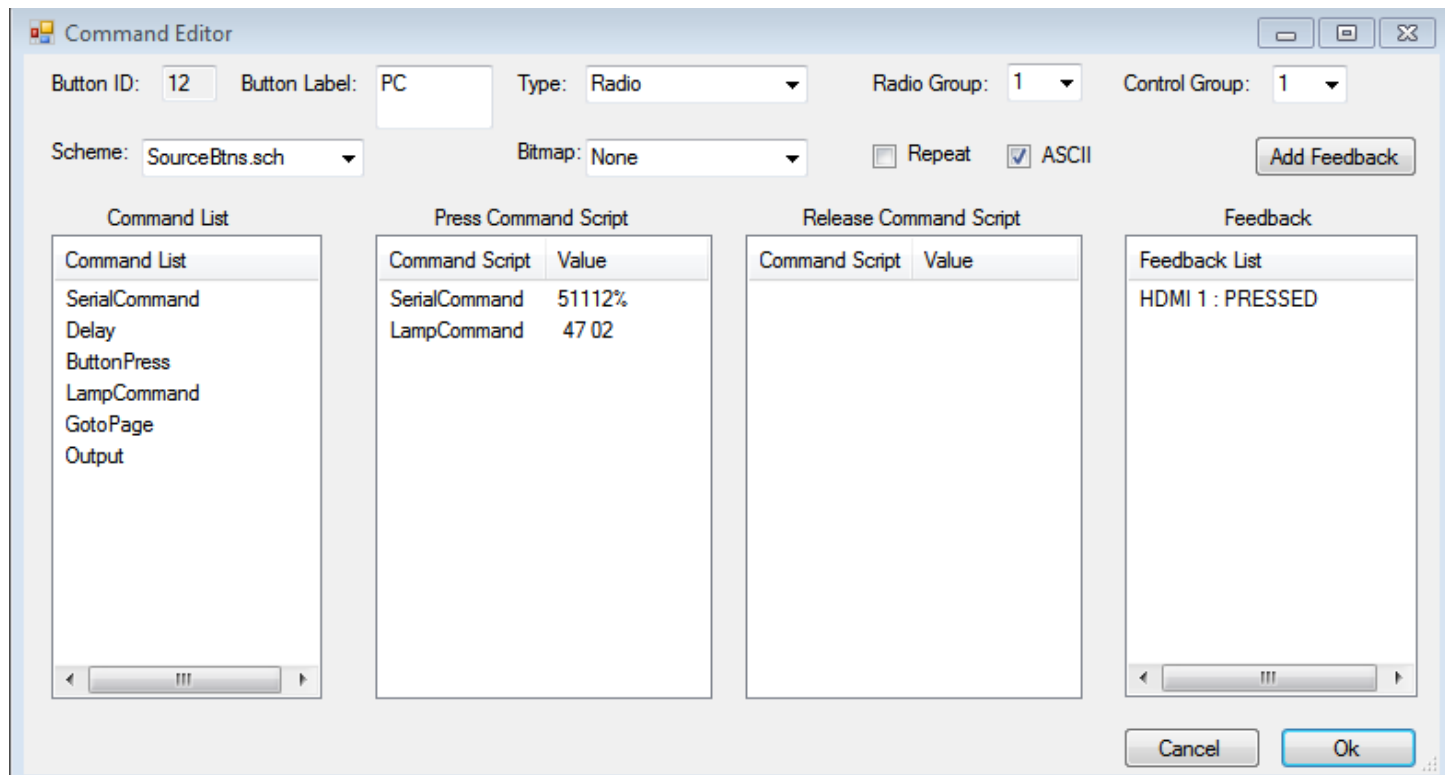


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4. Command Editor

Clicking on any configurable button on the main window will launch the Command Editor. The Command Editor is the main window for button definition, and includes many facets of button character and operation, described below.



4.1 Button ID

This is the ID defined to the button, and indicates the page and button number of the specific button. This value is assigned by the system and cannot be changed.

4.2 Button Label

In order to enable a button for display, it must have a name other than "Undefined". The Button Label is what will appear on the touch screen button once configured. This label may contain up to two lines of data of varying lengths depending on font size. If the lengths are too long, the characters will be truncated on the actual button. To disable the button, return its Button Label value to "Undefined," or right-click and select "Clear". To have no text appear on a button, as in the case of a bitmap button, simply clear the field. Use [Ctrl] + [Enter] to create a second line.

4.3 Type

The type of a button defines the button's operational mode and can be Toggle, Radio, or Momentary.

- **Toggle:** Button will toggle on and off with subsequent pushes
- **Radio:** Button usually belongs to a group of buttons, and when it is pressed, all other buttons of the same group are released

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- **Momentary:** Button is only active while it is pressed, and releases automatically after the touch is removed

4.4 Radio Group

The Radio Group defines the group number associated with a Radio type button, and identifies which buttons belong to the same mutually exclusive group. All other Radio-type buttons default to a 0 group number.

4.5 Scheme

The Scheme of the button defines the button's appearance, including normal & selected coloring and font information. Schemes are defined through the Resources/Color Schemes menu option of the main window. The particular defined scheme is then selected for this button through the Command Editor. Setting schemes creates .sch files that are kept in the project directory. These files can be copied to other project directories to be used.

4.6 Bitmap

The Bitmap selection is used to select a bitmap for the face of a button. This bitmap will not change when the button is selected or deselected, so it is suggested that the scheme edge colors be significantly different between selected and normal so that a pressed condition is easily identifiable.

Bitmaps are added to the system through the Resources/Bitmaps menu option of the main window (see **8. Adding Bitmaps**). The particular defined bitmap is then selected for this button through this window item. The source bitmaps should be defined as 95 x 60 24-bit .bmp files prior to import. To avoid having the button label overlay the bitmap during operation, clear all text in the button label entry field.

4.7 Control Group

The Control Group defines a set of mutually exclusive buttons as a collection of controls to be reset by a single command. This is independent of the Radio Group number, and defines a "block" of buttons which may span several pages. It is possible to overlap Control Groups and Radio Groups.

4.8 Repeat

The Repeat checkbox inserts the commands for repeating a sequence of commands in the Press Command Script. Checking this box generates another dialog for entering the time interval, in 10ms increments, between repetitions. The commands following the Repeat instruction are repeated at the specified rate.

4.9 ASCII

The ASCII checkbox allows commands to be displayed in ASCII format. Un-checking this box defaults to a Hexadecimal format.

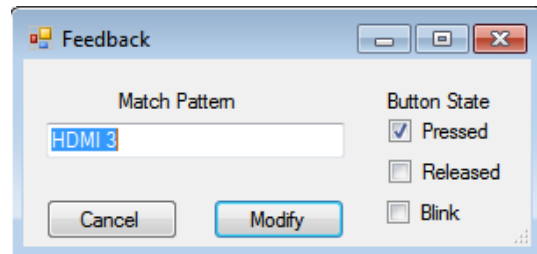
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4.10 Add Feedback

The “Add Feedback” button presents another dialog for creating feedback strings to compare against, and perform the selection action. These actions are:

- **Pressed:** Button assumes a pressed state without executing assigned commands
- **Released:** Button releases without executing assigned commands
- **Blinking:** Button goes into a blinking state until another command is received or executed.



This function is primarily used to reflect actions taken directly on external devices by users, and provide appropriate feedback as to the current state of the controlled device. As an example, if the match pattern were set to “HDMI 3” and action set to “Pressed”, the touch pad will listen on the communications line for a serial string containing “HDMI 3”. If detected, the touch pad would then set the button associated with that feedback pattern in a pressed state.

Each defined feedback string-command pair is inserted into the Feedback List of the Command Editor window. Right clicking in the Feedback List area of the Command Editor window also provides a context menu for feedback commands. The menu items are:

- **Add:** Add feedback commands into the Feedback List
- **Edit:** Edit previously-defined feedback commands in the Feedback List
- **Delete:** Delete the selected feedback command in the Feedback List

Double clicking on any feedback command in the Feedback List opens a dialog for editing the selected feedback item.

4.11 Command List

This list contains the commands which may be associated with a button press or a button release:

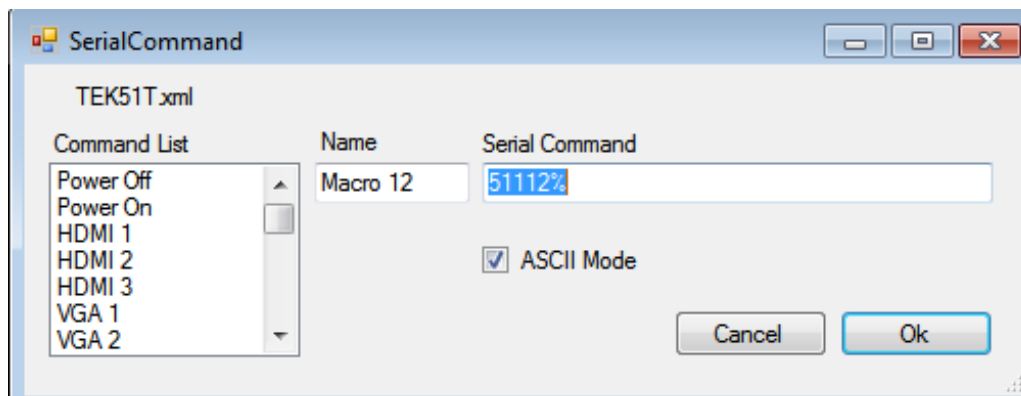
- Serial Command
- Delay
- Button Press
- Lamp Command
- Goto Page
- Output

These commands may be inserted into the press or release command script windows by either dragging and dropping them into their respective lists, or by double-clicking on them with the left or right mouse buttons. Double-clicking with the left mouse will insert the command into the Press script list, while double-clicking with the right mouse will insert the command into the Release script list. Each of these commands will be discussed in further detail below.

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4.11.1 Serial Command



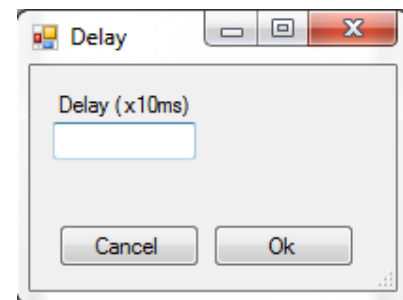
Serial Command assigns the serial transmit string to a button press or release. Once the command is selected by either double-clicking or drag and drop, the Serial Command dialog is displayed. The data may be entered by either typing characters directly into the Serial Command field, or by double-clicking on an item in the Command List.

To use the command list, you must first select the Open Driver Template from the File menu option. Data is entered in ASCII character format, or hex format by preceding the hex values by a backslash (e.g. \0D). Carriage return and/or line feed may be indicated by “\r” and “\n” as well. To apply the entered data to the respective button command, click “OK” to return to the Command Editor dialog.

Once a command is selected, the Name of the command will be displayed. This name is also displayed on the Command Editor dialog after selecting the command and hovering over the command.

4.11.2 Delay

The Delay command causes a delay of $n * 10\text{ms}$ to occur whenever executed in the script list. Once the command is set either by double-clicking or drag and drop, another dialog pops up, allowing for the entry of the delay parameter. To apply the delay to the list, click “OK” to return to the Command Editor dialog.

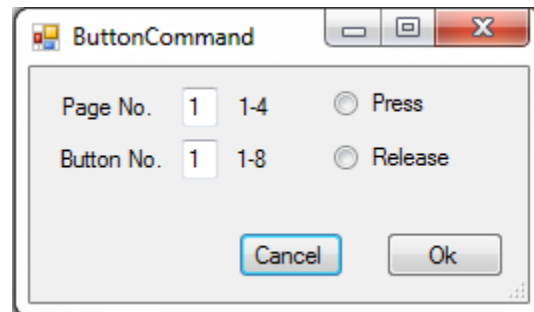


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4.11.3 Button Press

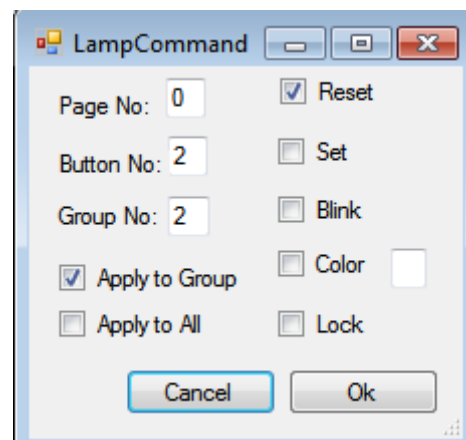
The Button Command allows for defining a button press or button release of any defined button. Once the command is set either by double-clicking or drag and drop, another dialog pops up, allowing for the entry of the button command parameters. The Page No. defines on which page the button resides, and the Button No. defines which button on that page to press or release. The Press or Release selections define the action to take on the identified button. To apply the command to the list, click "OK" to return to the Command Editor dialog.



4.11.4 Lamp Command

The Lamp Command allows for defining the visual aspect changes of a button when pressed or released. Once the command is set either by double-clicking or drag and drop, another dialog pops up allowing for the entry of mutually exclusive lamp command parameters:

- Reset
- Set
- Blink
- Color
- Lock



4.11.4.1 Reset

The Reset option restores the button to its originally-created color scheme for the off state. Another feature of the Reset option is to allow for resetting a Control Group by selecting the "Apply to Group" option.

4.11.4.2 Set

The Set option selects the on state of a button.

4.11.4.3 Blink

Blink causes a button to flash at 1 second intervals between its on and off states.

4.11.4.4 Color

The Color option allows for setting the button face to a user selectable color.

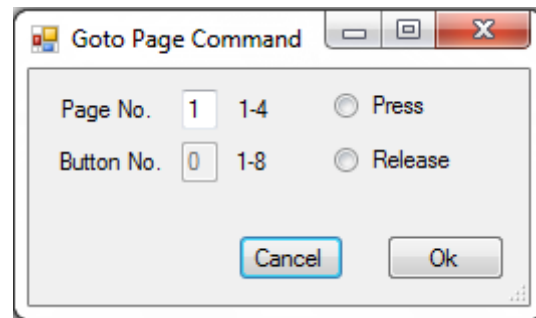
All commands have the "Apply to All" option, which will apply the action to all defined buttons. To save the Lamp Command to the list, click "OK" to return to the Command Editor dialog.

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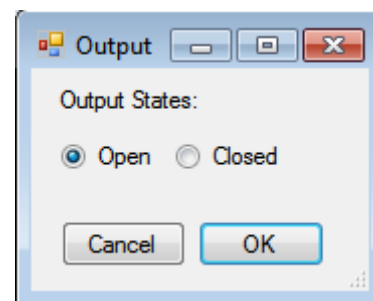
4.11.5 Goto Page

The Goto Page command provides a method of switching display pages programmatically. Once the command is set either by double-clicking or drag and drop, another dialog pops up, allowing for the entry of the command parameters. The Page No. defines to which page to switch while the Press or Release options determine which phase of the button action to execute the page switch on. To save the Goto Command to the list, click "OK" to return to the Command Editor dialog.



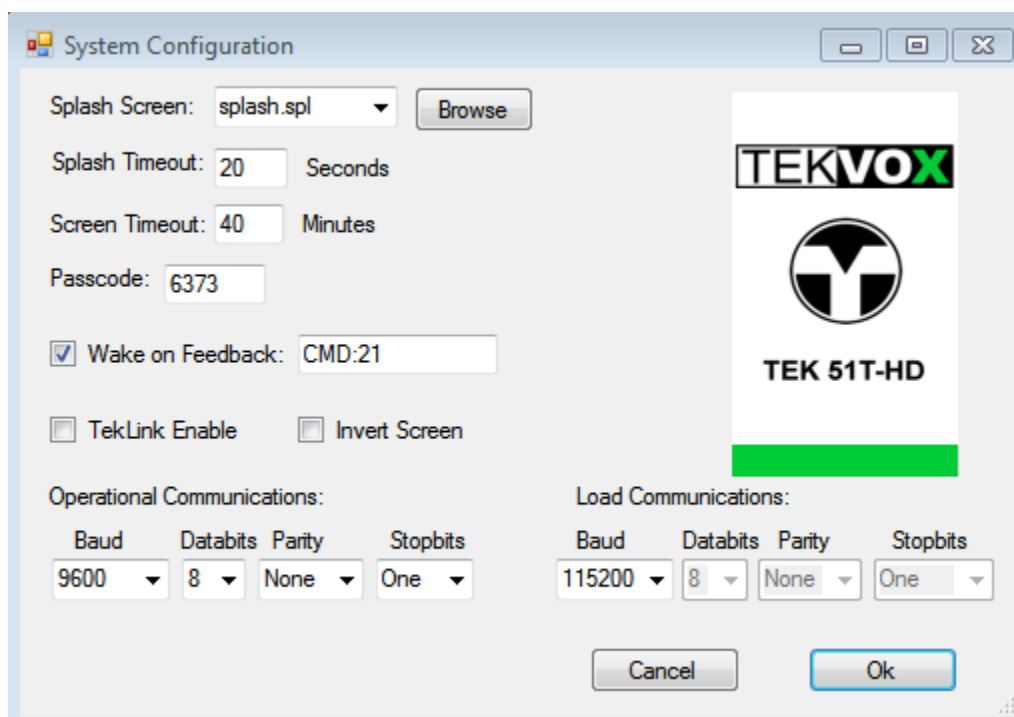
4.11.6 Output

The TekTouchPad's logic output can be used to control a relay or other device. The output can be set to Open or Closed. To create a pulse, place the Closed status in the Press side and the Open status in the release.



5. System Configuration

System Configuration is accessed via "Panel System Settings" under "Options" at the top of the main window. These settings are used to configure the TekTouchPad startup operations.



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5.1 Splash Screen

The Splash or Logo Screen setting allows for selection of a bitmap file to use as the Splash or Logo screen. This bitmap should be in a 240 x 400, 24-bit pixel format with no Antialiasing on Text to display properly. If "None" is selected, no Splash or Logo screen will be displayed during the startup process. Use the Browse button to locate the bitmap file if it has not been previously imported as described in **3.2 Resources Menu**.

5.2 Splash Timeout

The Splash Screen or Logo Timeout value describes the amount of time in seconds that the Splash or Logo screen is displayed prior to display of the button panel. This value may be any whole number of seconds.

5.3 Screen Timeout

The Screen Timeout defines the amount of time of non-use prior to placing the display into a sleep mode. This feature is supplied in order to prevent "burn-in" of images onto the LCD screen. This value is delineated in whole minutes, and defaults to 5 although a more typical value would be around 30 minutes.

5.4 Passcode

The Passcode value is a four digit number that defines a unique passcode for this device, and is typically used for qualifying command or load access to the unit.

5.5 TekLink Enable

Enables RS-485 serial control

5.6 Invert Screen

When the TekTouchPad is mounted on a wall, its viewing angle is inverted, which can cause colors to be washed out from normal viewing angles. To solve this issue, the TekTouchPad can be mounted upside down, in which case it is necessary to select Invert Screen to correct the orientation.

5.7 Operational Communications

The Operational Communications settings define the communications configuration for the TekTouchPad to control the external device. Any configuration may be defined from these entries, and programmed to take effect at the next TekTouchPad start up. When the baud rate is changed from 9600, it is necessary to change the baud in the Host Com Settings as well (see **6. Host Com Settings**) the next time you connect to the TekTouchPad. To avoid confusion, leave a note with the TekTouchPad to remind the next user that it is set to a different baud rate.

Typical Operational Communications Settings:

- **Baud:** 9600
- **Data bits:** 8
- **Parity:** None

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- **Stop bits:** One

5.8 Load Communications

The Load Communications settings define the communications configuration for loading updates and configurations into the TekTouchPad.

In order to decrease loading times for the unit, this is typically set to:

- **Baud:** 115200
- **Data bits:** 8
- **Parity:** None
- **Stop bits:** One

6. Host Com Settings

The Host Com Settings window provides a means of manually setting the operational and load serial port rates. Loading bitmaps and ROM updates into the touch pad can take a long time if the unit is set for the operational rate of 9600 baud. The load rate, which is usually much faster, provides a means of loading updates and configurations quickly, and then returning the unit to the operational rate.

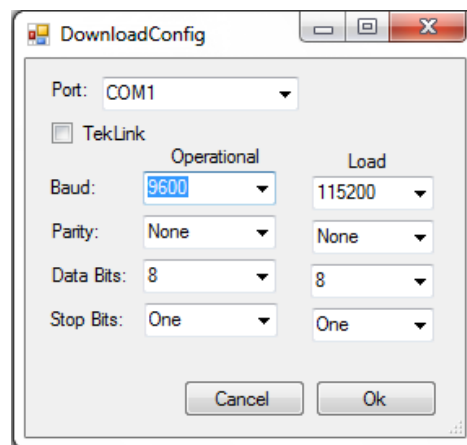
6.1 Default Settings

Operational:

- **Baud:** 9600
- **Parity:** None
- **Data Bits:** 8
- **Stop Bits:** One

Load:

- **Baud:** 115,200
- **Parity:** None
- **Data Bits:** 8
- **Stop Bits:** One



The load rate is transmitted to the touch pad at operational speed prior to transitioning to load parameters. If the load fails, the touch pad will automatically transition back to the operational rate after 15 seconds.

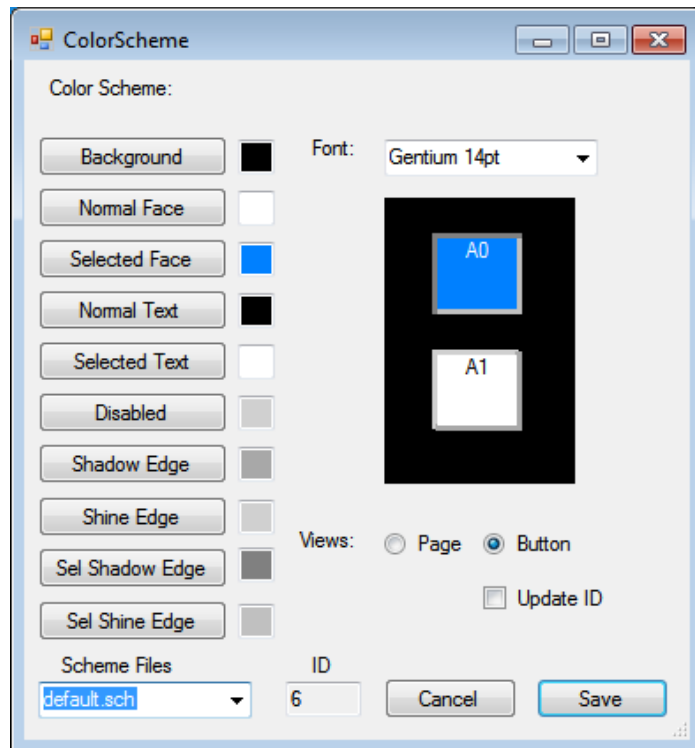
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7. Creating Schemes

Creating color schemes is one of the powerful features of the TekTouchPad and is accessed “Resources”, then “Color Schemes”. The default scheme loaded as shown gives a starting place for new scheme creation. A Scheme can be edited and saved to a new file name. Any Scheme file within the project directory will automatically load into the project. Any other existent scheme may be loaded using the “Scheme File” selection at the bottom of the dialog.

The scheme creation dialog allows for two views, the button view (default) and the panel view. The button view displays what the button would look like in both its pressed and released states. The panel view displays what a complete panel of 8 buttons would look like displayed on the TekTouchPad. When a scheme element is selected for editing, a color dialog appears allowing for selection of a color or definition of a custom color.



Each of the scheme elements is described below:

Note: The TekTouchPad utilizes 16 bit RGB 565 color definition, and translates between the 24-bit and 16-bit orientation. This may result in the actual displayed color being off from the originally selected color. It is best to test the created colors on a single button of the actual unit prior to full panel definitions.

- **Background:** Defines the background color of the button page. Each button page may have a different color if so desired. The background color is only used for page schemes selected from the main window.
- **Normal Face:** Defines the button face color in an off state (released)
- **Selected Face:** Defines the button face color in an on state (pressed)
- **Normal Text:** Defines the text color used in an off state (released)
- **Selected Text:** Defines the text color used in an on state (pressed)
- **Disabled:** Defines the color used for a disabled button
- **Shadow Edge:** Defines the color used for a shadowed edge in an off state (released). This edge is usually the bottom edge of a released button, and is a darker shade of the shine edge color.

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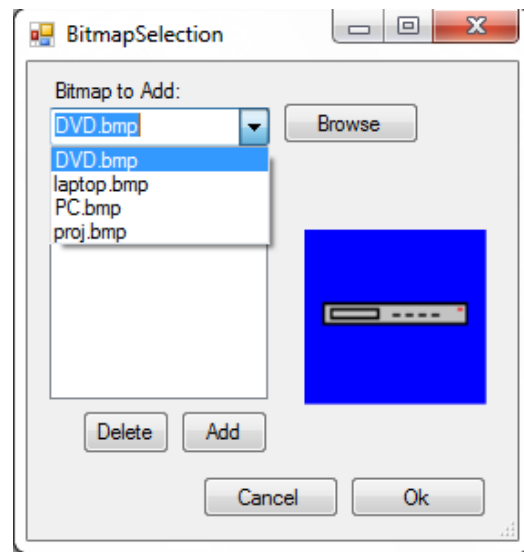
- **Shine Edge:** Defines the color used for a shining edge in an off state (released). This edge is usually the top edge of a released button, and is a lighter shade of the shadow edge color.
- **Set Shadow Edge:** Defines the color used for a shadowed edge in an on state (pressed). This edge is typically the top edge of a pressed button, and is a darker shade of the shine edge color. This color may be the same as the Shine Edge color in non-bitmap type buttons.
- **Set Shine Edge:** Defines the color used for a shining edge in an on state (pressed). This edge is typically the bottom edge of a selected button, and is a lighter shade of the shadow edge color. This color may be the same as the Shadow Edge color in non-bitmap type buttons.

Once all the desired colors have been selected, the defined scheme may be saved by clicking the “Save” button and entering a new file name, or saving into an existing file name. When a scheme is saved, it is allocated a unique ID number attached to the name. This allows for differentiation of multiple schemes with the same name. The “Update ID” button is an advanced option, and is used for correcting schemes with duplicated IDs (see **Appendix H: Troubleshooting Guide**).

8. Adding Bitmaps

The Bitmap Selection dialog is accessed via “Resources”, then “Bitmaps”. This launches a dialog for importing existing bitmaps for use in the TekTouchPad system. If the bitmap desired is located in the ProgramData/TEKVOX/TekTouchPad/Bitmaps directory, it will show up in the selection list for import. Bitmaps outside of the program data directory may be selected by using the “Browse” button to select them.

Bitmaps are imported by selecting a bitmap in the selection list, and clicking “Add”. This action will assign a unique ID number to the bitmap file name, allowing for multiple versions of the same bitmap.



Any imported bitmaps may be removed by selecting an imported bitmap in the lower list and clicking “Delete”. Once a bitmap is selected, it is displayed in a side window as shown. Selecting an imported bitmap will also display it in the side window. Bitmaps for buttons may be created through any paint program and should have a 95 x 60, 24-bit color .bmp format.

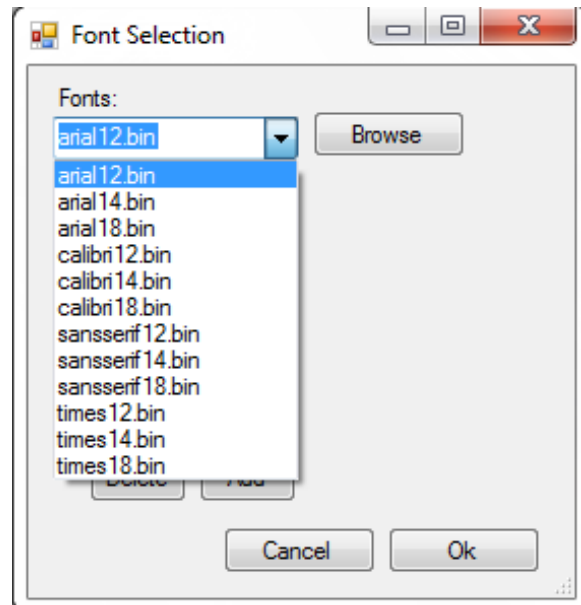
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9. Adding Fonts

The Font Selection dialog is accessed via “Resources”, then “Fonts”. This launches a dialog for importing existing fonts for use in the TekTouchPad system. If the font desired is located in the ProgramData/TEKVOX/TekTouchPad/ Fonts directory, it will show up in the selection list for import. Fonts outside of the program data directory may be selected by using the “Browse” button. Fonts are imported by selecting the desired font in the upper list, and clicking “Add”. This action will assign a unique ID number to the font file name, allowing for multiple versions of the same font.

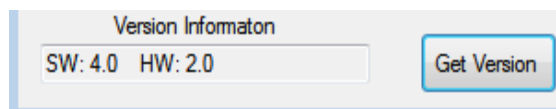
Any imported fonts may be removed by selecting a font from the list and clicking “Delete”. Refer to **Appendix D: Importing Fonts** for the list of system supplied fonts, and for ways to import additional fonts.



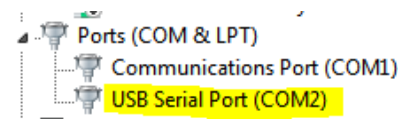
10. Updating the Firmware

Occasionally, the main firmware of the unit will need to be upgraded. Before starting the process, get the latest firmware by selecting “Get Updates” in the Option menu. You must have an internet connection.

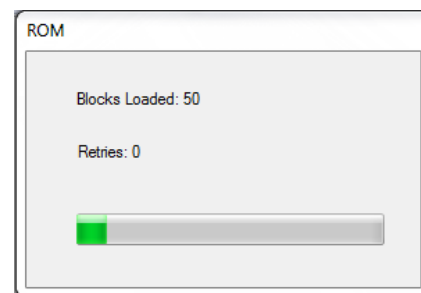
Before sending the new firmware, it is best to verify that the serial port settings and wire connections are correct; an easy way to do this is to query the ROM version by pressing the “Get Version” button. If the ROM version is not returned and the Time Out message is displayed, double-check the Com Port and physical connections. From a PC, the RS-232 cable requires a Null Modem Female-to-Female cable. Before proceeding, ensure that the ROM is up-to-date by pressing “ROM Update”.



When using a USB-to-serial cable, it is necessary to determine the correct Com port. This can be found in Device Manager under “Ports (COM & LPT)”.



To load new firmware, click the “ROM Update” button located on the bottom of the main panel. A load progress dialog will appear giving the number of blocks loaded. Typically, 400 blocks are required for a full ROM update. Once the load is completed, the progress window disappears, and the TekTouchPad resets.

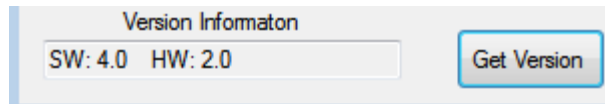


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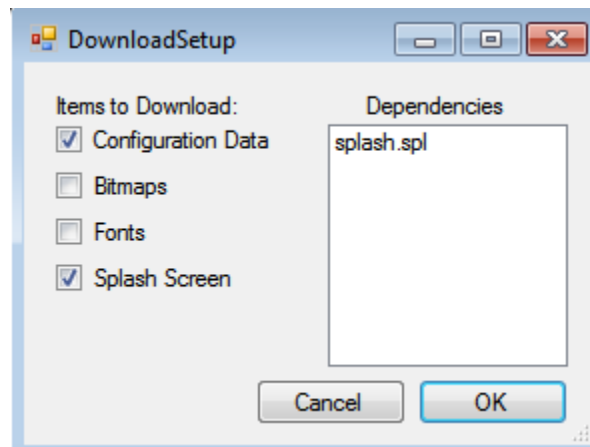
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11. Downloading the Configuration

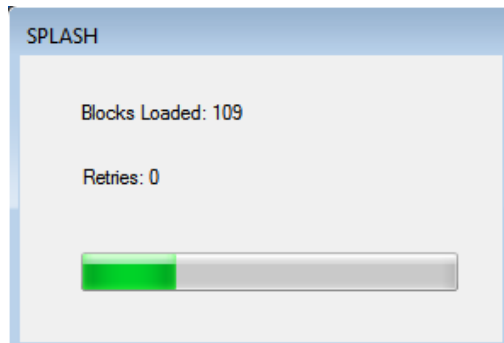
Once all the schemes, bitmaps, fonts, and button definitions have been completed, the project can then be sent to the TekTouchPad. Before sending the project, it is best to verify that the serial port settings and wire connections are correct; an easy way to do this is to query the ROM version by pressing the “Get Version” button. If the ROM version is not returned and the Time Out message is displayed, double-check the Com Port and physical connections. From a PC, the RS-232 cable requires a Null Modem Female-to-Female cable. Before proceeding, ensure that the ROM is up-to-date by pressing “ROM Update”.



To load the project into the TekTouchPad, click on the “Send Config” button on the lower main screen. If the communications settings are correct, the “DownloadSetup” dialog is displayed. This dialog allows for the selection of the items you need to send to the TekTouchPad. By default, the Configuration Data and Splash Screen (Logo page) are selected. These are the only two items needed unless you are adding bitmaps and fonts. If the splash screen is already loaded, the Splash Screen selection can be deselected, which speeds up the loading process. A warning dialog will then come up prior to changing the TekTouchPad configuration. Click “OK” to start the download.



While loading, the load process popup is displayed showing the blocks sent to the TekTouchPad.

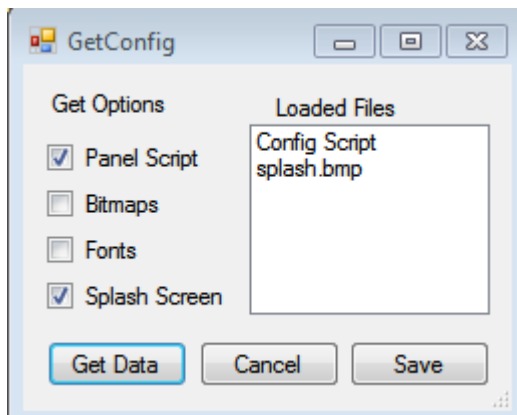


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12. Uploading the Configuration

On occasion, it becomes necessary to recover project files from the TekTouchPad. This can be done using the “Get Config” feature. Clicking this button displays a file location dialog for creating the folder in which to place the retrieved files. Another “GetConfig” dialog is displayed, prompting the user for the type of data items to retrieve.



Once the desired items are selected, click the “Get Data” button to retrieve each of the selected types of data, listing them in the “Loaded Files” area and saving them to the program data directory. Any files uploaded which are duplicates of existing files, such as bitmap files, are appended with a character A-Z until the conflict is resolved. This same process is followed for the Font and Splash/Logo files. Pressing the “Save” button creates a new project with the retrieved configuration script.

Note: The Splash Screen is not loaded into the new project and will need to be manually loaded by selecting it from the “Panel System Settings” in the Option menu. A warning message is displayed about not finding the Splash Screen.

Note: The color schemes will not be listed by their original name but listed by a number.

13. Touch Calibration

The touch screen is pre-calibrated by TEKVOX prior to shipping. However, it may become necessary to recalibrate the touch module if touch accuracy has become degraded or the unit is loaded with an inverted project. This is accomplished by resetting the unit while keeping a constant touch pressure on the screen, forcing the unit into calibration mode. Follow the screen instructions for completing the calibration process.

Note: It is preferable to perform the calibration with a stylus smaller than the calibration points to achieve the best accuracy.

Note: To reset the unit, toggle power to the system, or if that is impractical, send the “~~R” command to the unit via serial port to initiate a reset command (see **Appendix E: Interactive Touch Pad Protocol**).

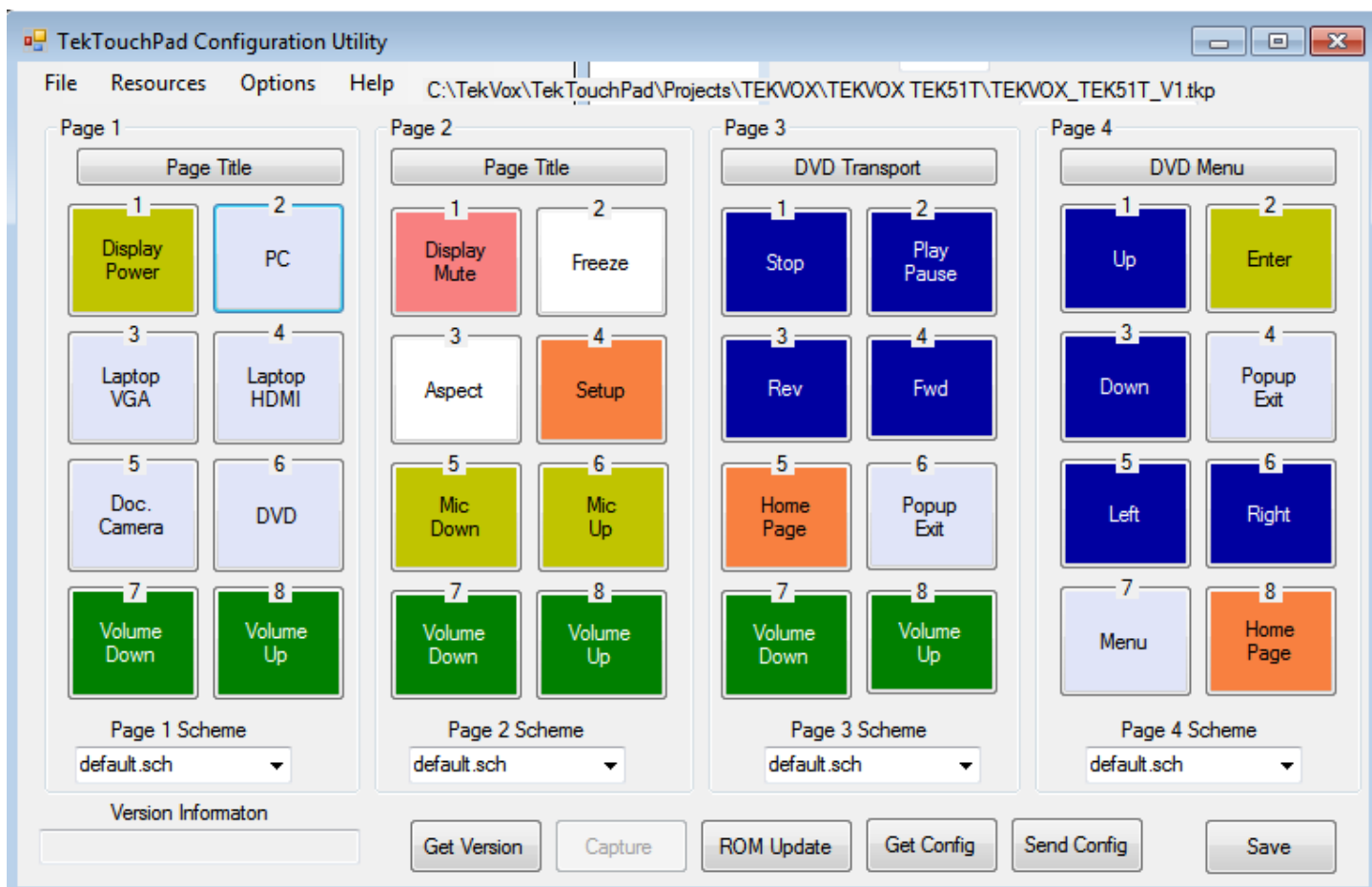
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14. Button Configuration Strategies

When building a new screen layout, there are some strategies that can be taken to help with button page creation. The first step is to draw out what buttons are needed. Second, work on button groupings, as some buttons are dependent on the operation of others. Third, identify what the button operational characteristics are; toggle, momentary, or radio type grouped buttons.

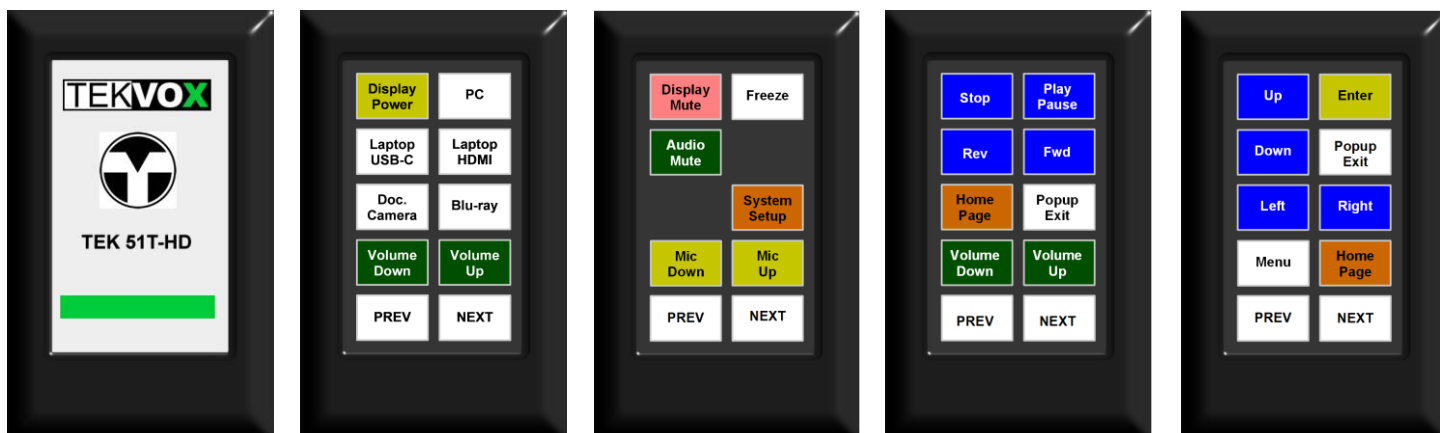
After identifying the button groupings, it should be decided how the largest button group should be oriented. Will the largest grouping fit on one page? Or will it spread across several pages, occupying specific rows? Common commands may be repeated on one row of each page for availability (e.g. volume control). Other approaches may confine specific functionality on each page (i.e. source selection on one page, control commands on the second page, and lighting controls on the third page).



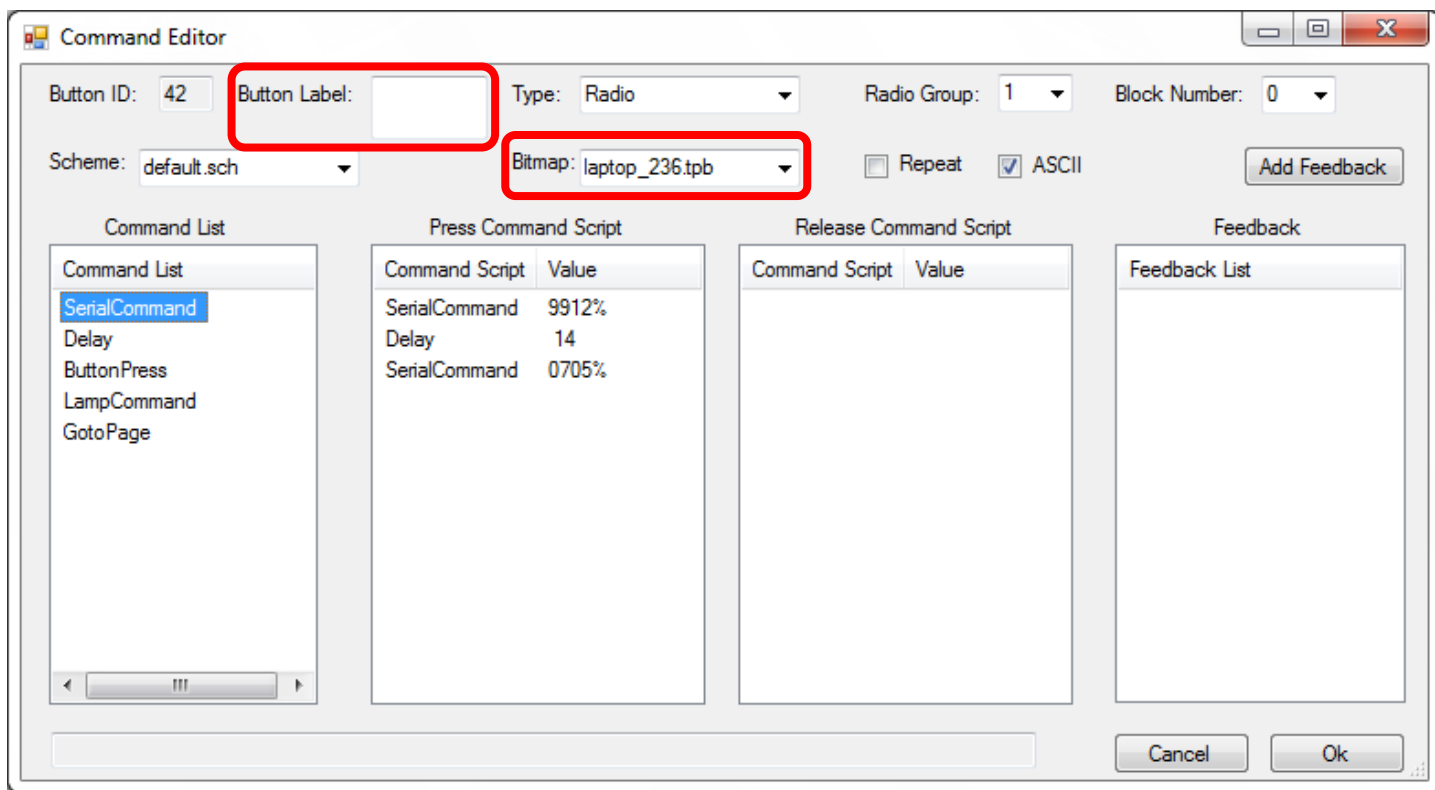
The Scheme definitions for each button or group of buttons should be configured so that the contrast between the face color and the text color is as high as possible for the sake of legibility. This may require different text colors for selected and non-selected buttons to improve readability across button states.

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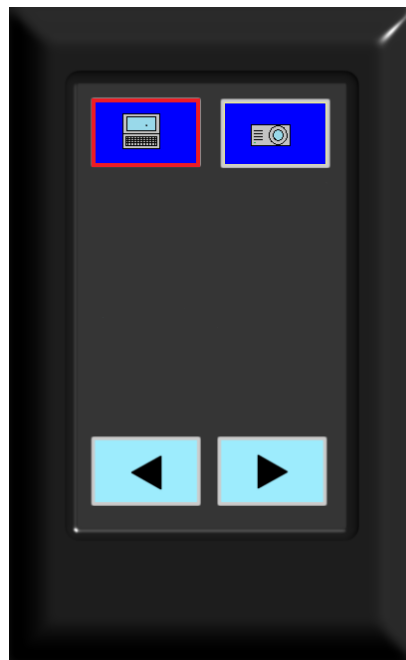
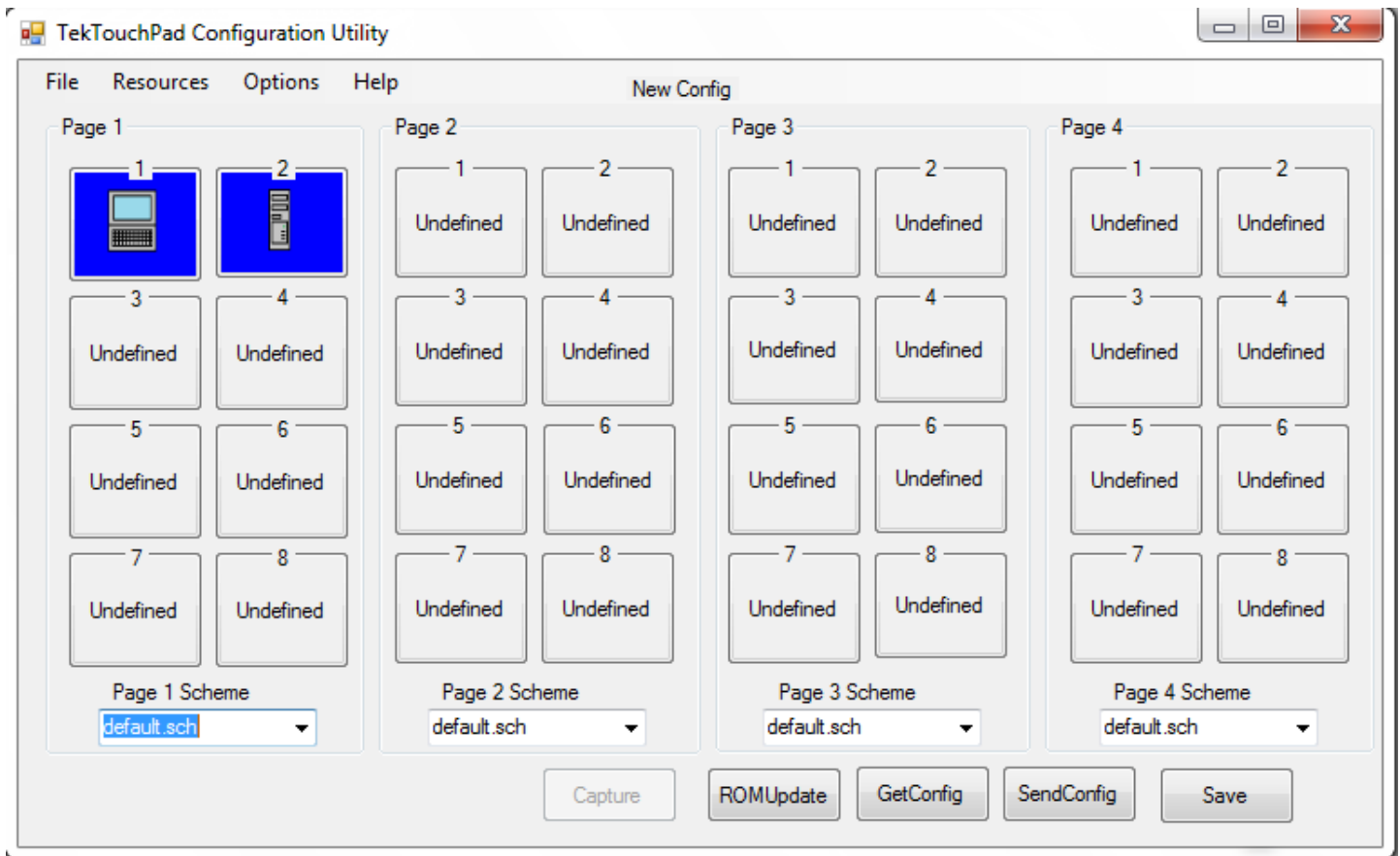


Using bitmaps for button images takes a slightly different approach. After saving the desired bitmaps using the “Adding Bitmaps” function, double-click on the button to enter the Command Editor. Select the bitmap from the bitmap selection box on the Command Editor dialog. Remove any text from the Button Label entry (as shown below) in order to prevent overwriting the bitmap. Once the rest of the button functionality is defined, click “OK” to return to the main screen, which should now hold the new bitmap button image. Remember to choose schemes with border edges that will differentiate between pressed and non-pressed, as bitmaps will remain constant between the two states.



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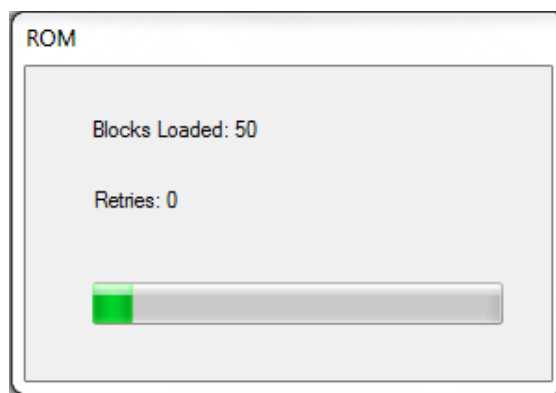
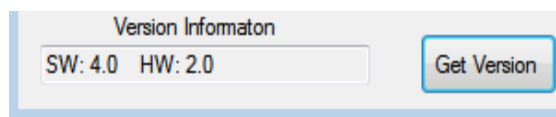
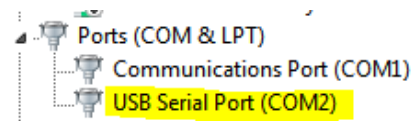
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15. Quick-Start Guide

The following is a simple procedure for getting started with the TekTouchPad.

15.1 Updating Firmware

1. Before starting the process, get the latest firmware by selecting “Get Updates” in the Option menu. This requires an internet connection.
2. When using a USB to serial, it is necessary to determine the correct Com port. This can be found in Device Manager under “Ports (COM & LPT)”.
3. Open the “Host Com Settings” in the Option menu and select the correct COM port
4. Verify the connection by pressing the “Get Version” button. If the ROM version is not returned and the Time Out message is displayed, double-check the Com Port and physical connections. From a PC, the RS-232 cable requires a Null Modem Female-to-Female cable.
5. To load new firmware, click on the “ROM Update” button located on the bottom of the main panel. A load progress dialog will appear, giving the number of blocks loaded. Typically, 400 blocks are required for a full ROM update. Once the load is completed, the progress window disappears, and the TekTouchPad resets.

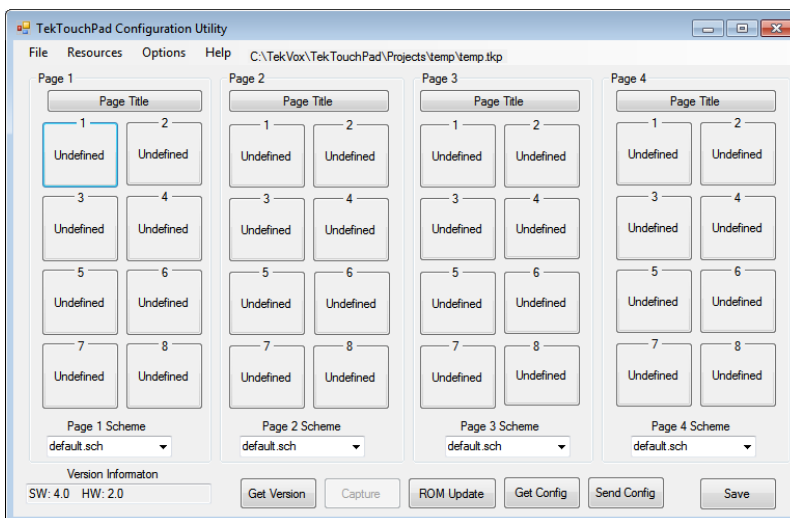


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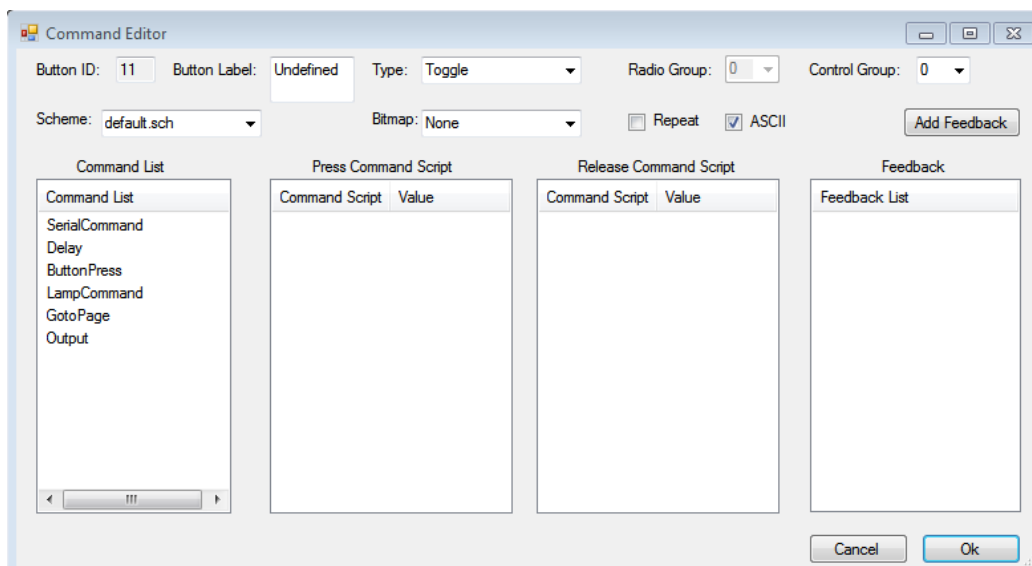
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15.2 Creating & Loading a TekTouchPad Configuration

1. Connect the TekTouchPad to a power source and host computer via the supplied interface cable and a Female to Female null adaptor.
2. Launch the TekTouchPad Configuration utility from the desktop icon. The startup screen should appear as shown below, with the default color scheme loaded for each of the four button pages.
3. From the Option menu select “Get Updates”.
4. From the File Menu select “Open Driver Template” and select the device you are working with. For this demonstration, we will select TEK51T.xml.



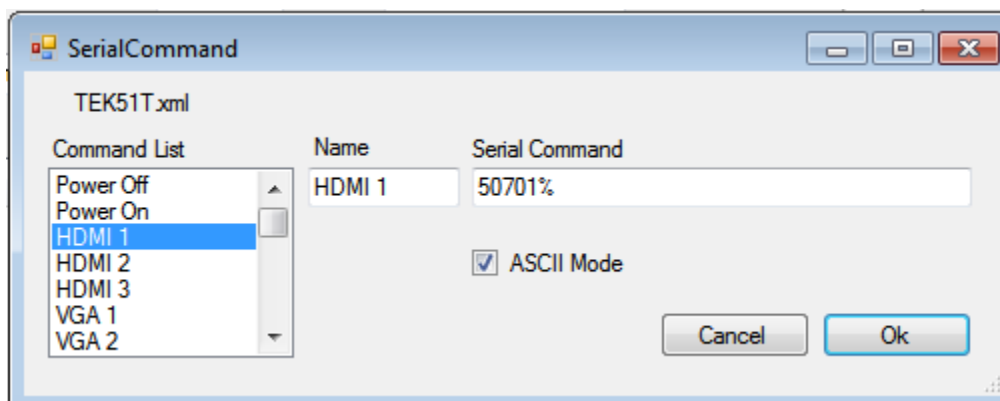
5. Click on the menu option “File” and then “New Project”. Enter a name for the test project and click “OK”.
6. Click on button 1 of page 1. A window should appear as shown as below, with the default scheme loaded, and the current button label set to “undefined”.



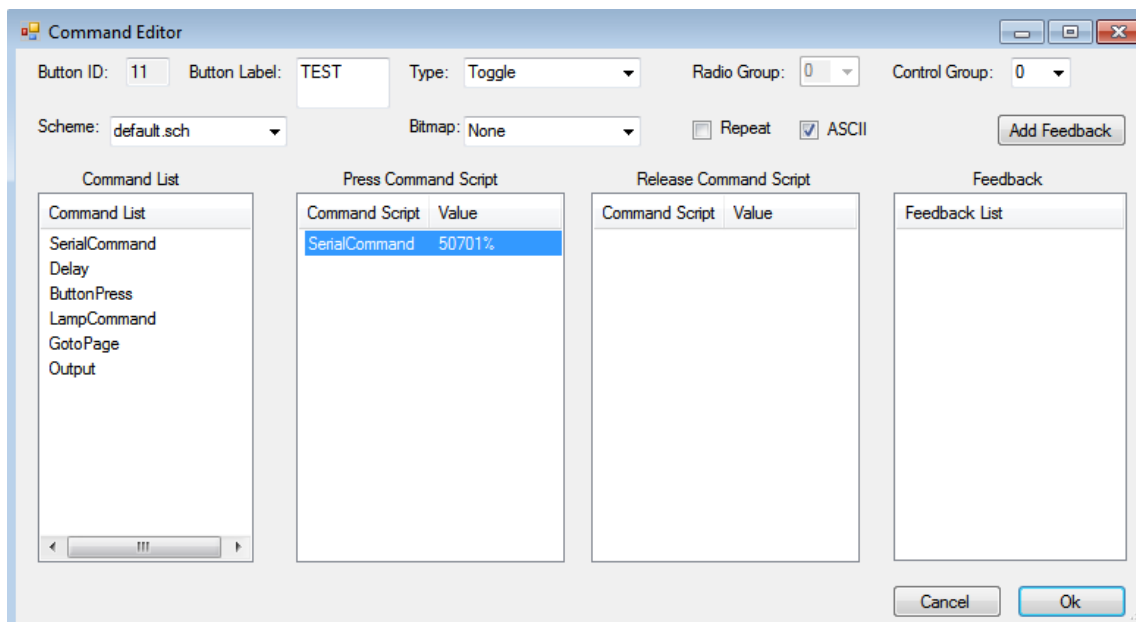
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- Click the "Button Label" box, and replace "undefined" with the desired label nomenclature; in this case, "TEST". Typically, with the default font, you may enter up to 9 characters per line. Use the carriage return to enter a second line if desired.
- Double click on the "Serial Command" option located in the left window. A new window will appear allowing for ASCII command data entry. Select the command you want the button to send when pressed. You can also enter your own commands.



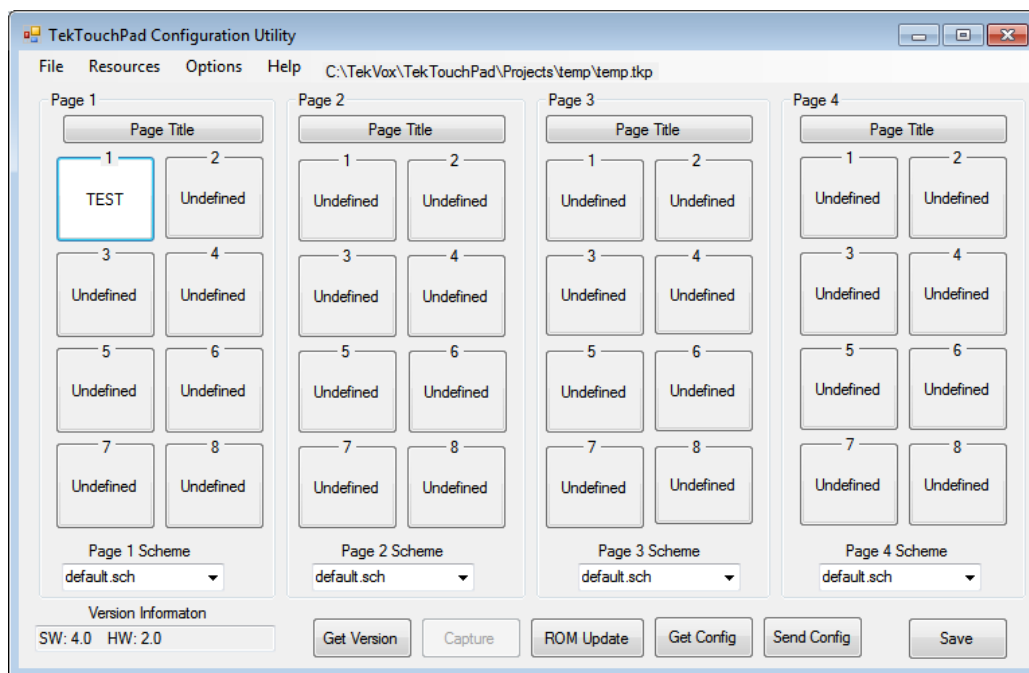
Note: The "\0D" or "\r" is the nomenclature for inserting a carriage return, while "\0A" or "\n" would be used for a line feed.



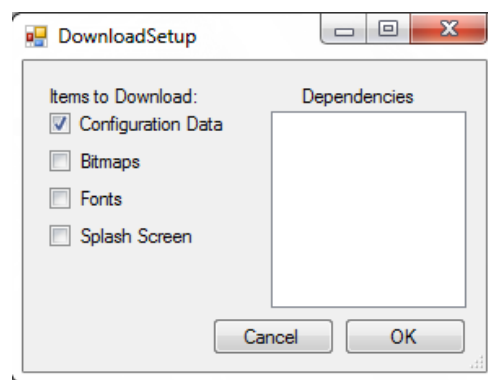
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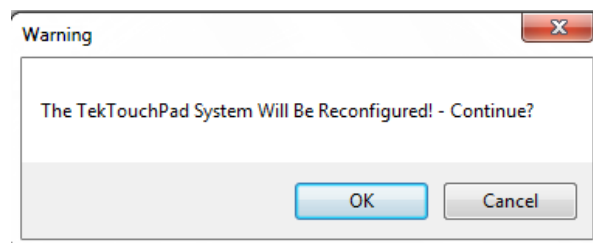
9. Click “OK” on the “Command Editor” window to apply the settings and return you to the main screen. Your new button label should now appear on the selected button as shown.



10. Now click the “SendConfig” button to send the defined data to the TekTouchPad. Another window will appear, listing the dependencies required for this configuration. There should not be any listings since we are not defining any custom bitmaps or fonts.

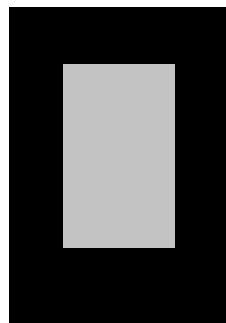
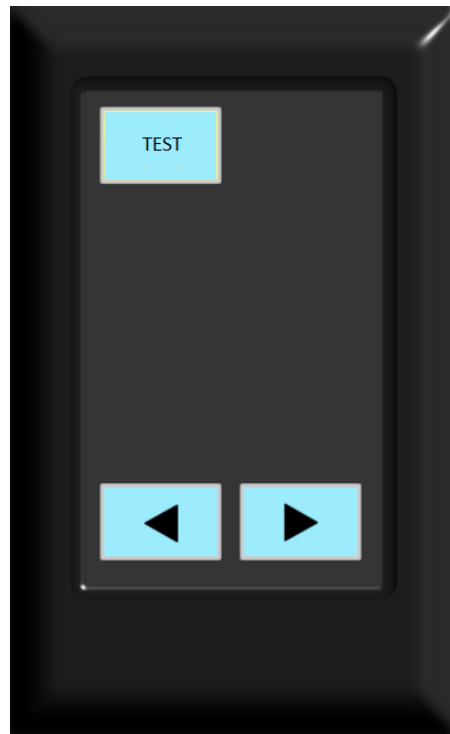


11. Make sure only “Configuration Data” is selected, and then click the “OK” button. Click “OK” again on the warning, and the unit should load very quickly. Once loaded, the unit will reset, and the configuration just defined should appear with only one button enabled as shown.

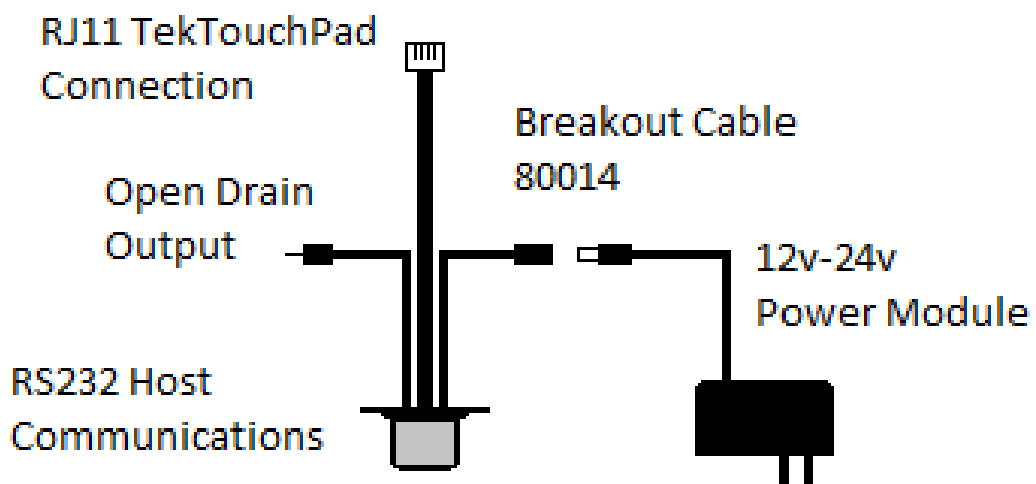


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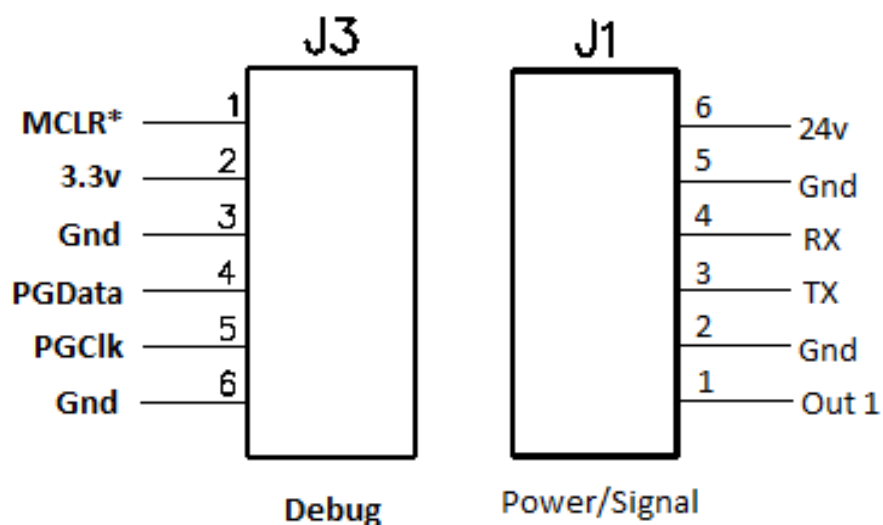
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Appendix A: TekTouchPad Specifications

Model	TekTouchPad (78034)
LCD	a-Si coloc TFT LCD, Normally white type
Screen Size	3.0 inch WQVGA
Display Format	240*RGB*400 Stripe type
Backlight	White LED
Viewing Direction	12 O'clock
Viewing Area	1.5" (38mm) x 2" (51mm)
Voltage Range	DC 12 ~ 24 V
Temperature	32 ~ 140°F (0 ~ 60°C)
Humidity	0 ~ 95% RH
Product Dimensions	2.77" (70mm) x 4.28" (109mm) x 0.73" (18.5mm)
Product Weight	Device: 0.2 lbs. (91g) Package: 1 lbs. (454g)

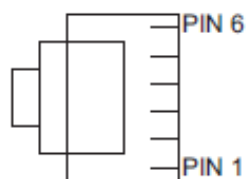
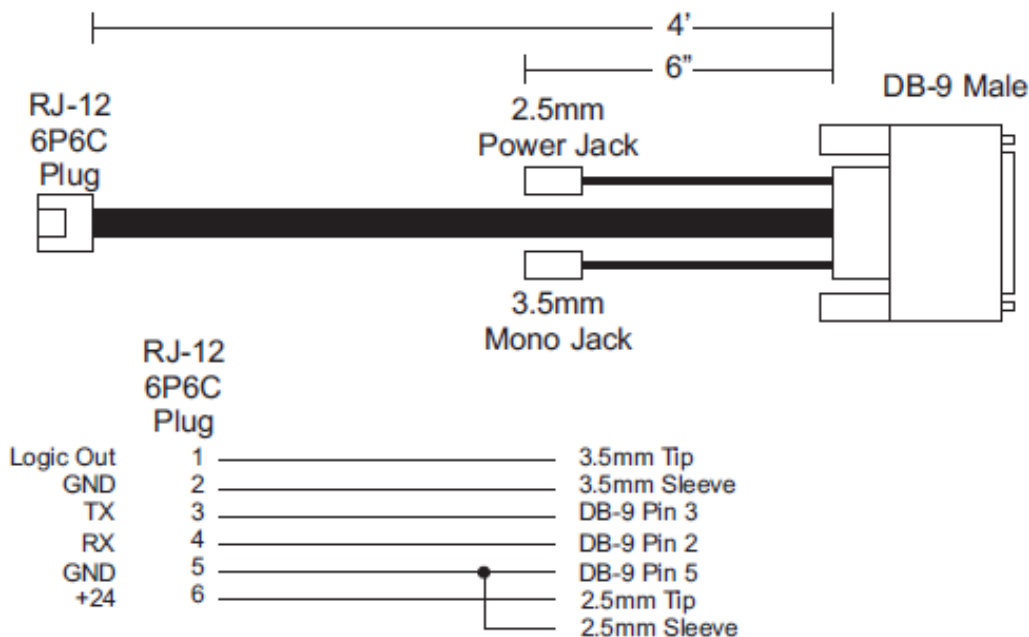
Appendix B: Pin Definitions



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Appendix C: Breakout Cable



TEKVOX
TekTouchPad
Breakout Cable
80014

Appendix D: Importing Fonts

The supplied TekTouchPad system includes basic fonts to use in button labeling including:

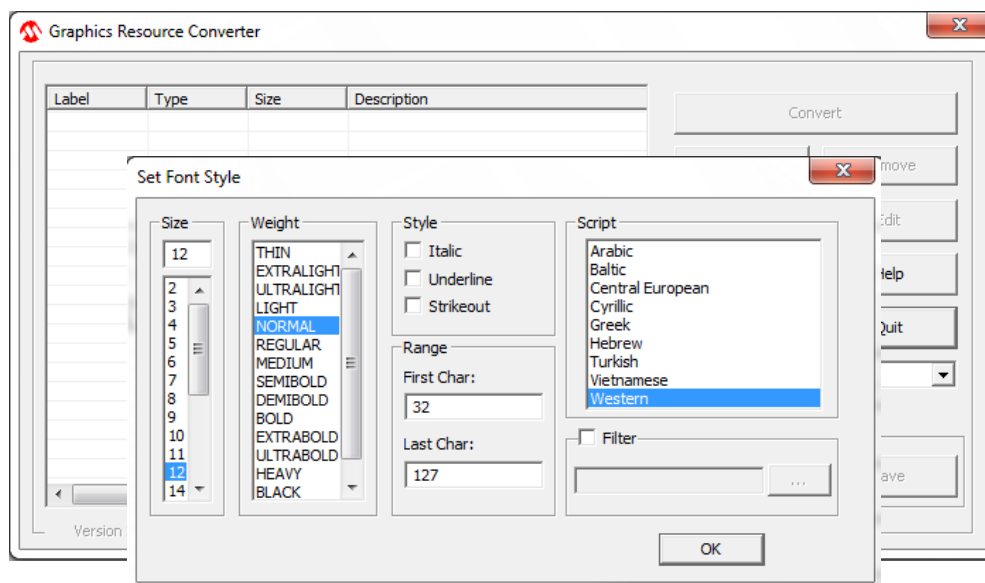
- Internally (included in firmware) supplied fonts:
- Generic Small Font 9pt
- Generic Medium Font 12pt
- Generic Large Font 24pt
- Gentium 14pt
- Externally (included in install directory) supplied fonts:
- Arial 12pt
- Arial 14pt
- Arial 18pt

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- Calibri 12pt
- Calibri 14pt
- Calibri 18pt
- Sans Serif 12pt
- Sans Serif 14pt
- Sans Serif 18pt
- Times New Roman 12pt
- Times New Roman 14pt
- Times New Roman 18pt

Occasionally, there is a need to add to the basic library of fonts. In order to accomplish this, an external utility, the Graphics Resource Converter, provided by Microchip, will be required. Launch the converter application and click on the “Add Fonts” button.



From the file selection window, navigate to the C:\Windows\Fonts directory, and choose from the available fonts. Once a true type font is selected, another window appears, allowing selection of font size and other attributes. Make the appropriate selections and click “OK”. This will return to the main screen from which you now click on the “Convert” button. This will ask for a file name and type. Navigate to the “ProgramData\TEKVOX\TekTouchPad\Fonts” directory, select “Binary (*.bin)” from the “Save as Type” options, and type in an appropriate name for the converted font. Finally, click “Save” to complete the conversion. A “Converted Successfully” message should appear confirming the operation. The converted font should now be available for import into the system via “Resources/Fonts” menu options, see **9. Adding Fonts**.

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Appendix E: Interactive Touch Pad Protocol

General Commands

Command	Description	Feedback
~~V<CR>	Gives the Version of the firmware and hardware s.s : firmware version h.h : hardware version	V s.s,h.h <CR><LF>
~~Gt	Get data; t = Type of data t = C : Get configuration data t = B : Get bitmap data t = F : Get font data t = S : Get logo data	<SOH, Length MSB, Length LSB, Data, EOT> Host responds with ACK when ready for next block until <Length> data received or time out. Current time out value : 15 seconds. Block size : 512 bytes of data. <DLE> is used for transferring raw data not intended to be interpreted as SOH or EOT. SOH = 0x01, EOT = 0x04, DLE = 0x10, ACK = 0x06, NAK = 0x15
~~R	Reset TekTouchPad	
~~?	Ping TekTouchPad	OK<CR><LF>
~~<n	Change loader baud rate n = 0 : 9600 n = 1 : 19200 n = 2 : 38400 n = 3 : 56800 n = 4 : 115200	
~~S	Get the results of the self-test	
~~W	Wake unit (if in sleep mode)	

Button Commands

Command	Description	Feedback
~~BPpb	Press button pb p = Page number (1 ~ 4) b = Button number (1 ~ 8)	

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Command	Description	Feedback
~~PR pb	Release button pb p = Page number (1 ~ 4) b = Button number (1 ~ 8)	
~~BS pb	Returns state of button pb p = Page number (1 ~ 4 / A (All buttons)) b = Button number (1 ~ 8) s = Button state (1: Pressed, 0: Released)	BpbSs

Lamp Commands

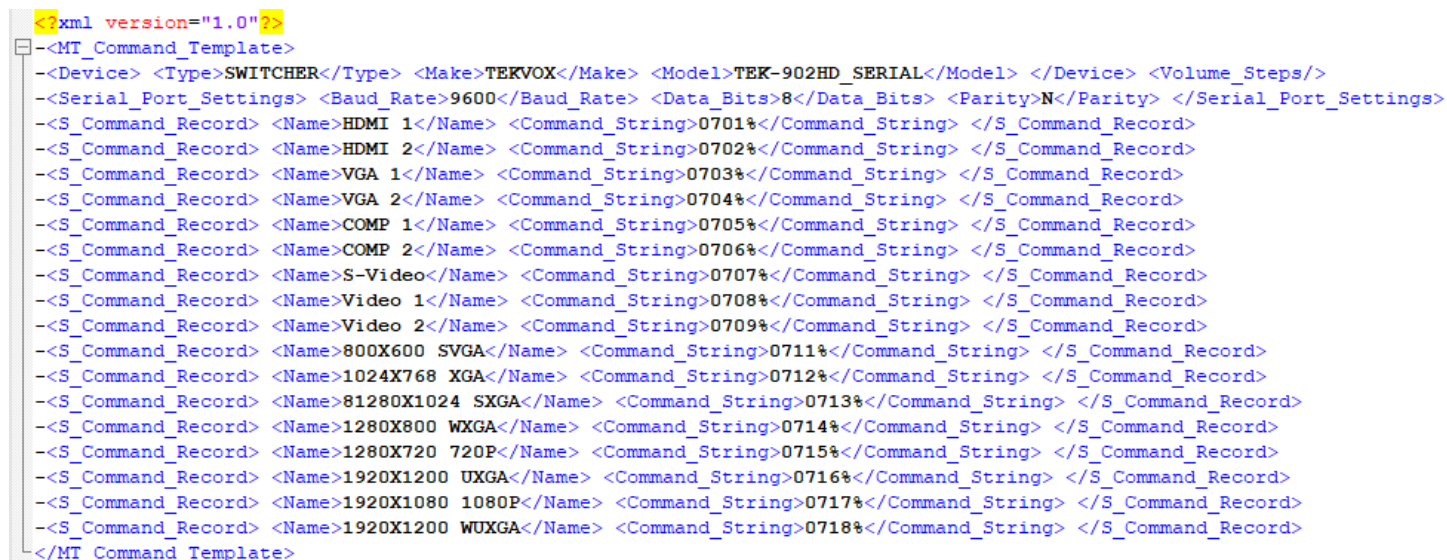
Command	Description	Feedback
~~LG g	Causes all buttons of Group g to be: Released Blink disabled Colors reset to their default state	
~~LG pb	p = Page number (1 ~ 4 / A (All buttons)) b = Button number (1 ~ 8) Causes button pb to be: Released Blink disabled Colors reset to their default state	

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Appendix F: XML Driver File Format Example

```
<?xml version="1.0"?>
-<MT_Command_Template>
-<Device> <Type>SWITCHER</Type> <Make>TEKVOX</Make> <Model>TEK-902HD_SERIAL</Model> </Device> <Volume_Steps/>
-<Serial_Port_Settings> <Baud_Rate>9600</Baud_Rate> <Data_Bits>8</Data_Bits> <Parity>N</Parity> </Serial_Port_Settings>
-<S_Command_Record> <Name>HDMI 1</Name> <Command_String>0701%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>HDMI 2</Name> <Command_String>0702%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>VGA 1</Name> <Command_String>0703%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>VGA 2</Name> <Command_String>0704%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>COMP 1</Name> <Command_String>0705%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>COMP 2</Name> <Command_String>0706%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>S-Video</Name> <Command_String>0707%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>Video 1</Name> <Command_String>0708%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>Video 2</Name> <Command_String>0709%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>800X600 SVGA</Name> <Command_String>0711%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1024X768 XGA</Name> <Command_String>0712%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>81280X1024 SXGA</Name> <Command_String>0713%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1280X800 WXGA</Name> <Command_String>0714%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1280X720 720P</Name> <Command_String>0715%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1920X1200 UXGA</Name> <Command_String>0716%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1920X1080 1080P</Name> <Command_String>0717%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1920X1200 WUXGA</Name> <Command_String>0718%</Command_String> </S_Command_Record>
</MT_Command_Template>
```



```
<?xml version="1.0"?>
-<MT_Command_Template>
-<Device> <Type>SWITCHER</Type> <Make>TEKVOX</Make> <Model>TEK-902HD_SERIAL</Model> </Device> <Volume_Steps/>
-<Serial_Port_Settings> <Baud_Rate>9600</Baud_Rate> <Data_Bits>8</Data_Bits> <Parity>N</Parity> </Serial_Port_Settings>
-<S_Command_Record> <Name>HDMI 1</Name> <Command_String>0701%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>HDMI 2</Name> <Command_String>0702%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>VGA 1</Name> <Command_String>0703%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>VGA 2</Name> <Command_String>0704%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>COMP 1</Name> <Command_String>0705%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>COMP 2</Name> <Command_String>0706%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>S-Video</Name> <Command_String>0707%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>Video 1</Name> <Command_String>0708%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>Video 2</Name> <Command_String>0709%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>800X600 SVGA</Name> <Command_String>0711%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1024X768 XGA</Name> <Command_String>0712%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>81280X1024 SXGA</Name> <Command_String>0713%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1280X800 WXGA</Name> <Command_String>0714%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1280X720 720P</Name> <Command_String>0715%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1920X1200 UXGA</Name> <Command_String>0716%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1920X1080 1080P</Name> <Command_String>0717%</Command_String> </S_Command_Record>
-<S_Command_Record> <Name>1920X1200 WUXGA</Name> <Command_String>0718%</Command_String> </S_Command_Record>
</MT_Command_Template>
```

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Appendix G: default.sch

Font: Gentium 14pt

Background Color – RGB(0,0,0)

Normal Face Color – RGB(255,255,255)

Selected Face Color – RGB(0,128,248)

Normal Text Color – RGB(0,0,0)

Selected Text Color – RGB(0,0,0)

Disabled Color – RGB(208,208,208)

Shadow Edge Color – RGB(168,168,168)

Shine Edge Color – RGB(208,208,208)

Selected Shadow Edge Color – RGB(128,128,128)

Selected Shine Edge Color – RGB(192,192,192)

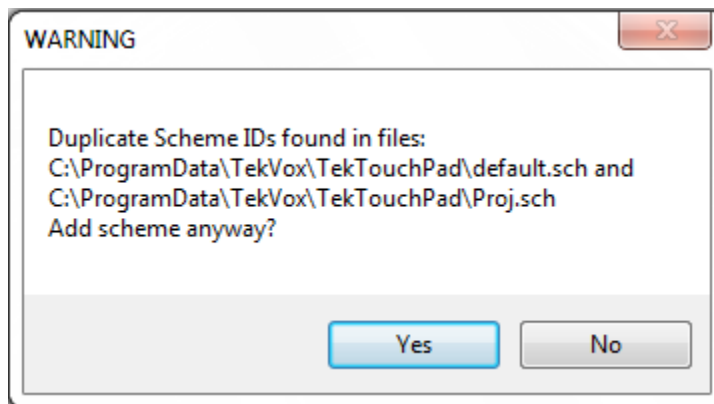
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Appendix H: Troubleshooting Guide

Program Startup Errors

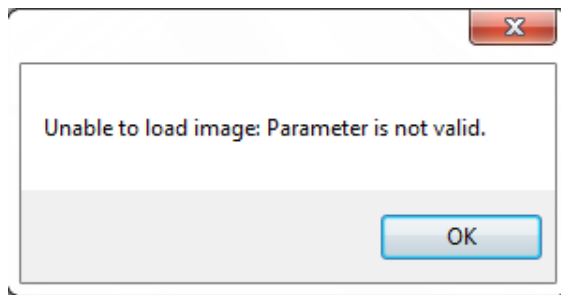
Occasionally when schemes or bitmaps are copied into the program data directory, ID collisions may occur, and a warning such as the one below may appear.



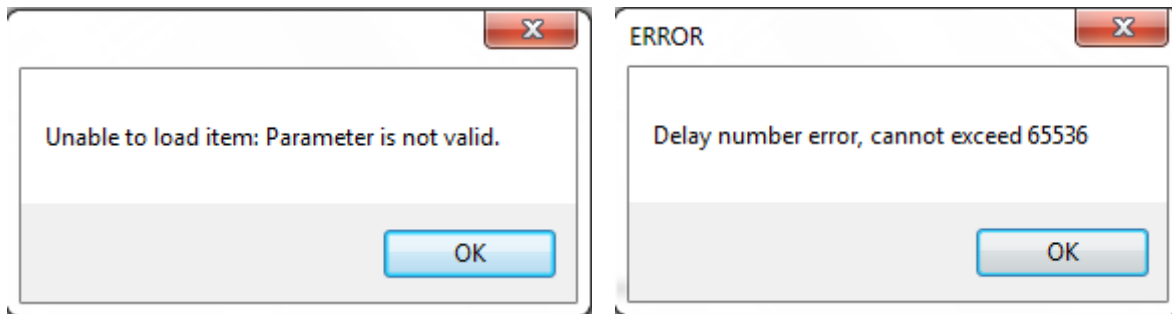
If both schemes are utilized, then say yes to keep the duplication. To correct the problem, decide which scheme is less used and edit that scheme. After loading the scheme into the editor, save it again, and when asked to update the ID, say yes. The projects that use this scheme will need to be updated to use this new ID scheme, or else they will use the other duplicate ID scheme.

Resources – Bitmap Errors

When selecting a bitmap from the "Bitmap to Add" list the error occurs:



Or when selecting a bitmap from the "Browse" list the error occurs:



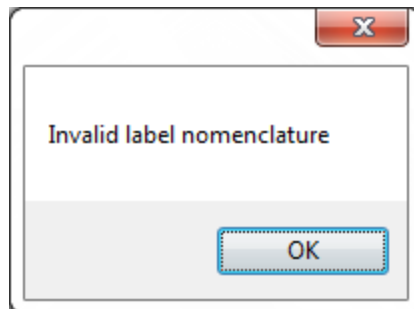
This indicates a bad .bmp format, and the file should be replaced.

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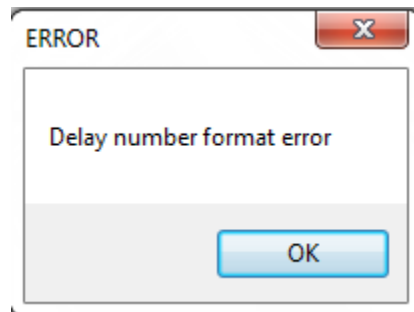
Command Editor Errors

When clicking "OK" on Command Editor:

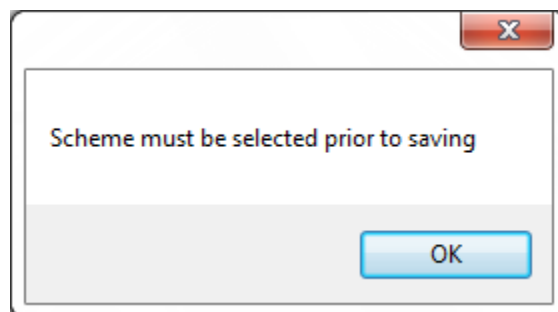


This error indicates that a special hex character was added to a label, but was an invalid hex character eg. `"/oD"` instead of `"\0D"`.

When clicking "OK" on the Delay subcommand dialog:



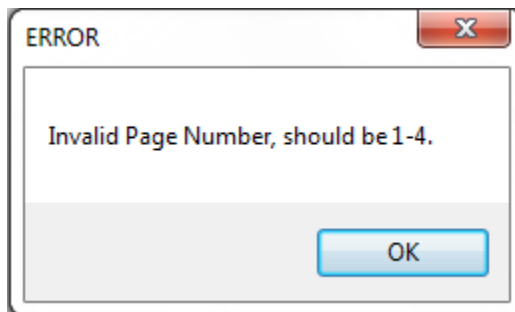
This indicates that an invalid number, or too large a number, was entered for the delay value.



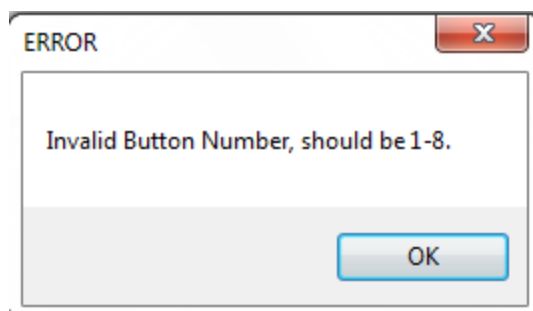
This error indicates that a scheme for the button was not selected. Select "default" if no particular scheme is desired.

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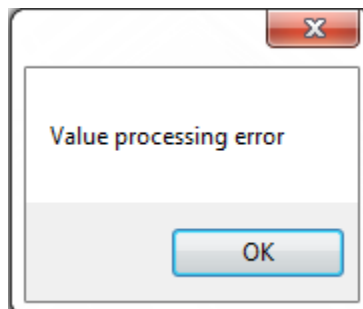


This error occurs when a page number entered falls beyond the defined page numbers 1-4. Correct the number to within the possible range.



This error occurs when the button number entered falls out of the defined button range 1-8. Enter a valid button number within the possible range.

System Configuration Errors



This error indicates that an invalid number was entered into the timeout or passcode boxes.

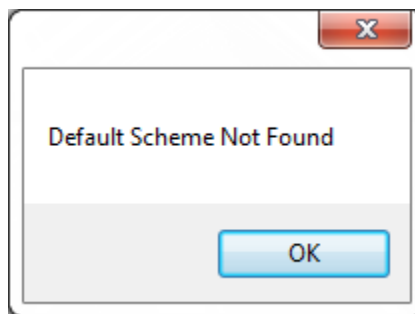
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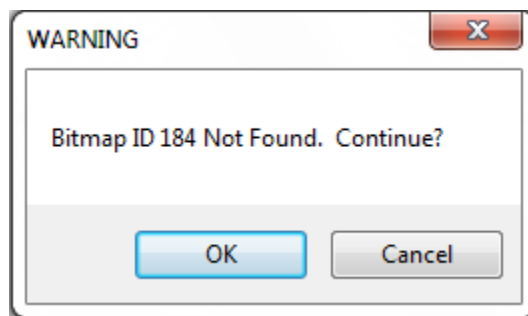


The splash or logo screen should be imported into the system using the System Configuration “Browse” button. If the file is directly copied into the program data directory without a unique ID assignment, this error occurs. Delete the file from the program data directory and import it using the “Browse” button.

SendConfig Errors



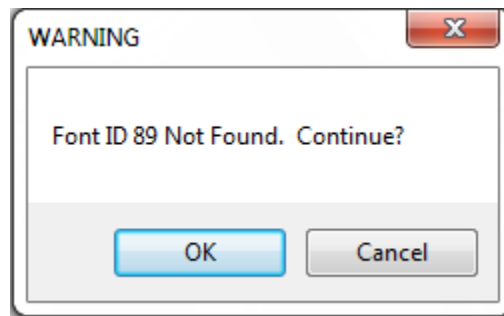
This error indicates that the default.sch file expected is not present in the system. Usually, this means that the ID assigned to this scheme differs from the default used in a project. The best way to fix this is to find the original project default scheme, rename it, and reassign this new scheme to the occurrences of the default in the project.



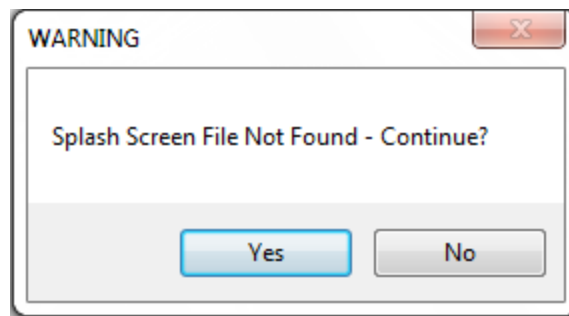
This error indicates that a specific bitmap selected for a project is no longer available. Find the appropriate bitmap, re-import it if necessary, and then re-assign it to the specific button(s) as required.

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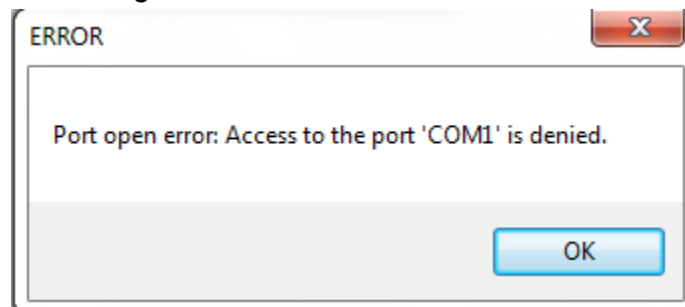
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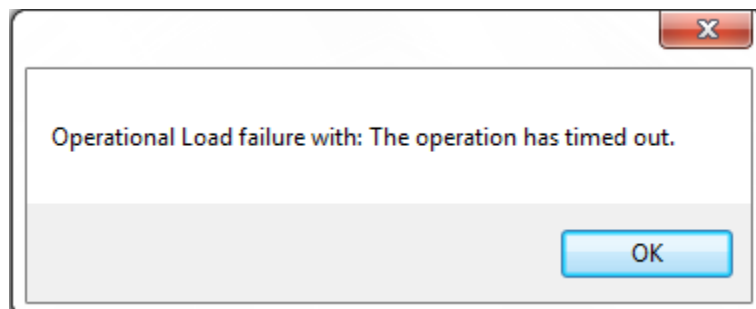
This error indicates that a specific font selected for a project is no longer available. Find the appropriate font, re-import it, if necessary, and then re-assign it to the specific scheme(s) as required.



This error indicates that the expected splash/logo file was not found. Re-import the file and re-assign it to the project using System Configuration.



This error indicates that the requested port is already in use by some other application. Select another port utilizing the Host Com Settings menu.

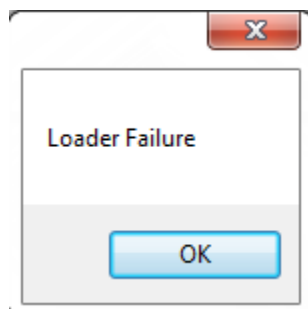


This error indicates that the system was not able to communicate with the unit. Check cabling and Host Com Settings to make sure the operational rates are set correctly.

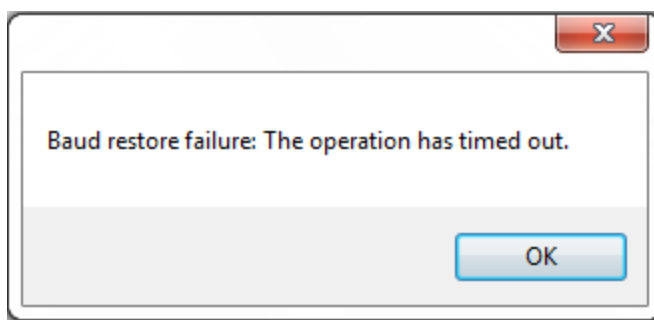
Note: This is an operational rate failure, and has nothing to do with load rates.

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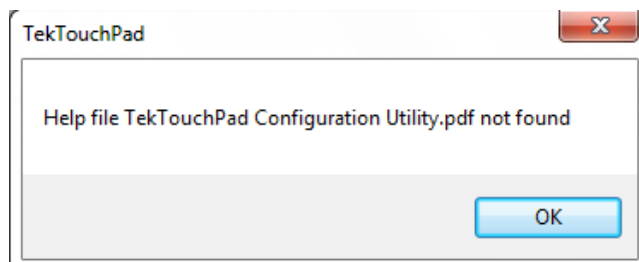


This error indicates that the operational rate negotiations passed, but the load rate transactions failed. This is usually caused by a load rate com settings mismatch. Make sure the Loader settings in the Host Com Settings are set to 115200 baud, no parity, 8 data bits, and 1 stop bit.

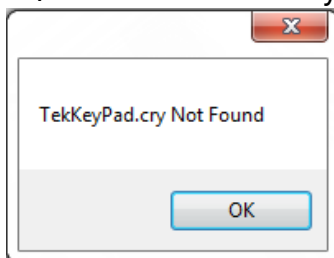


This error indicates that the attempt to take the TekTouchPad back to operational settings from load settings failed. The TekTouchPad will automatically reset these values back to operational settings within 10 seconds of load stall, so simply waiting during this period will allow for restarting this process.

Help – Contents Errors



This error indicates that the help pdf file was not located. This file should reside in the C:\ProgramData\TEKVOX\TekTouchPad\Documents directory. If not there, try re-installing software.



The firmware file was not found in the C:\ProgramData\TEKVOX\TekTouchPad directory. Try re-downloading drivers.

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Some Additional Errors

Error: Could not read file from disk.

This error is usually caused by permissions-not-granted to user. Check user permissions on the ProgramData/TEKVOX/TekTouchPad directory.

Improper operational response from unit:

This error is caused by a handshaking problem between the host and the TekTouchPad. Make sure the COM settings are correct that the cabling is connected properly. If trying to load from operational code, try to load from bootloader code as described in the ROM Update section.

Upload failure with:

This error is caused by a non-response from the TekTouchPad when transitioning to the load rate. Make sure the load rate is correct in the Host COM Settings.