

SmartDisplay Keypad

Revision B



All Rights Reserved Worldwide

NKK Switches makes no warranty for the use of these products and assumes no responsibility for any errors, which may appear in this document, nor does it make a commitment to update the information contained herein. SmartDisplay is trademark of NKK Switches.

Table of Contents

1.SmartDisplay Keypad Introduction	3
2.General Features	4
3.Application Ideas	5
4.Electrical Specifications.....	5
5.Operational Overview	5
6.Software Overview	6
7.Technical Drawing.....	23
8.Warranty	24

1. SmartDisplay Keypad Introduction

SmartDisplay is a software programmable switch. This allows many functions with a set number of switches. Adding/removing/changing functionality can be done with just a software update and no hardware configuration changes. The SmartDisplay Keypad has 24 LCD switches. Each switch has a 36x24 pixel display with RGB color backlighting.

The SmartDisplay Keypad connects to a PC via USB and is identified as an USB keyboard. Any keyboard functionality can be emulated using the keypad. Each keypad switch can be programmed with a pre-determined set of keystrokes (macros). The keypad will then execute those keystrokes when the button is pressed. This allows for easy automation of groups of keyboard functions. Once the settings are downloaded to the device, the keypad can be moved between computers and still retain its functionality.

NKK can supply subsystems with any configuration, number, and type of SmartDisplays with USB and Ethernet communication. Custom firmware behavior is also available. Please contact engineering@nkkswitches.com with your requirements.



The SmartDisplay Keypad is ideal for use in applications with multiple, complex functions which would ordinarily require many dedicated switches and complex training. The dynamic nature of the system allows for instantaneous transitions from generalized lists of categories down to function specific actions. This reduces the need for complicated controls and shortens the time for training by only displaying relevant options and commands.

2. General Features

The SmartDisplay Keypad is a 24 programable display-on-pushbutton system. It comes with the following features:

Features:

- USB setup. USB Keyboard operation
- Power Specs: 120-240VAC, Max 5 Watts. (with included +5VDC power cord).
- The unit comes with a 6-foot USB 2.0 A to Mini-B cable (IS-USB1).
- On-board memory for 576 images (24 pages of 24 images)
- 8 levels of brightness, perfect for any environment
- Stand-alone operation
- Firmware field upgradable via USB.
- Windows based software is available for device setup
- 5.91" x 7.87" x 2.87"
- Splash-proof available
- Perfect for photo editing, video editing, point of sale, or even gaming!

3. Application Ideas

The keypad is ideal for multiple applications:

- Store photo/video editing macros and shortcuts
- Create gaming hotkeys to streamline MMO and AFK actions
- Automate most common point of sale functions for easy access
- Limit public users to specific set of actions
- Save CAD design shortcuts

4. Electrical Specifications

Power Specs: 120-240VAC, Max 5 Watts.

5. Operational Overview

The SmartDisplay Keypad can have up to 24 pages of 24 keys each. Upon power up, the keypad loads the first page and displays every image and backlight on the appropriate key for the page. If nothing was saved previously, the keypad will remain blank.

Each page is limited to a certain number of macros. The total number of macros can be distributed across the 24 keys of the page as the user wishes. There are 4 macro types:

1. Text – Add plain text up (to 250 characters)
2. Hotkey – Add keypress and special characters (CTRL, ATL, arrow keys, etc.) (up to 4 presses)
3. Time – Delay a specific number of milliseconds between the previous macro and the next
4. Page – Change all keys to the specific page number

The number of macros per key is only limited by the maximum number of macros per page. The commands can be ordered however the user wishes.

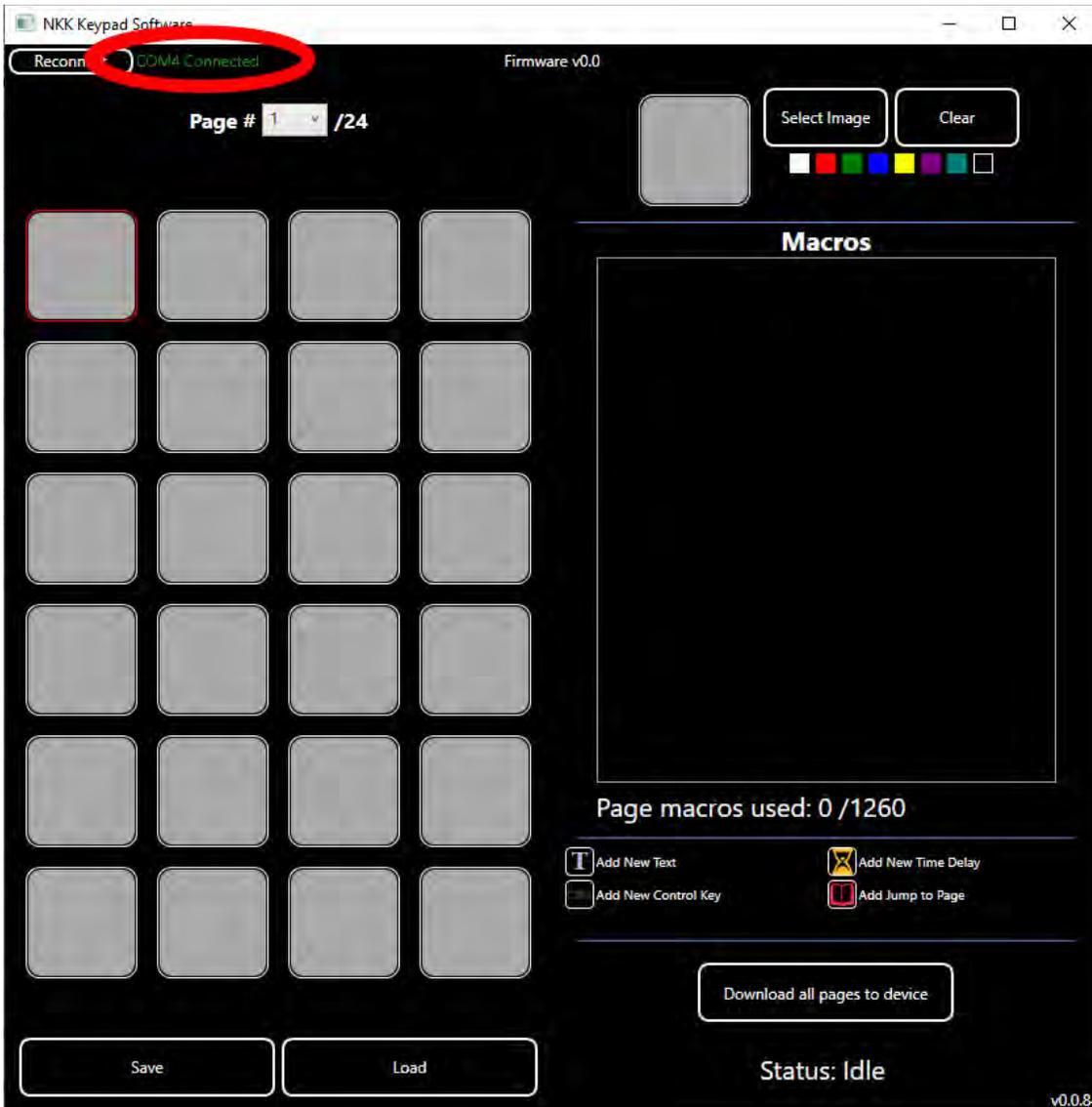
Images can be created in any graphics software, such as Microsoft Paint. All images must be 36x24 size, saved as a monochrome bitmap (.bmp) file. The keypad supports 24 pages of 24 keys, and one image per key, so 576 images. Software is provided to convert larger images to the proper format, but editing will still be needed.

A backlight color can be selected for each key. The keypad supports one color for every key.

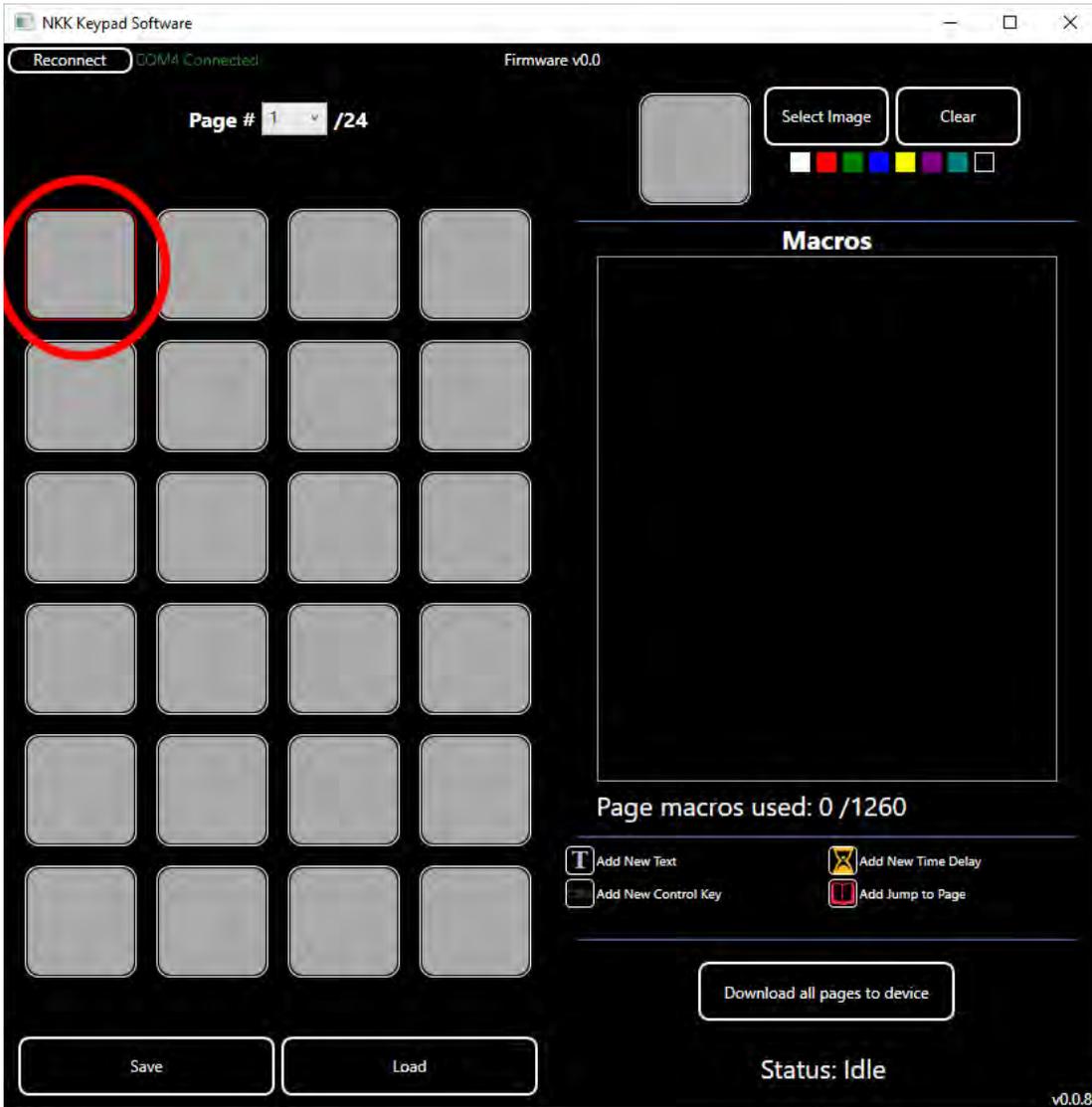
Pressing a key will start sending the macros over USB in the order the user defined them. If the macros are application specific, the user must take care that the correct application is in focus or undesirable behavior may occur. **NKK Switches is not liable for any damage cause by using the keypad.**

6. Software Overview

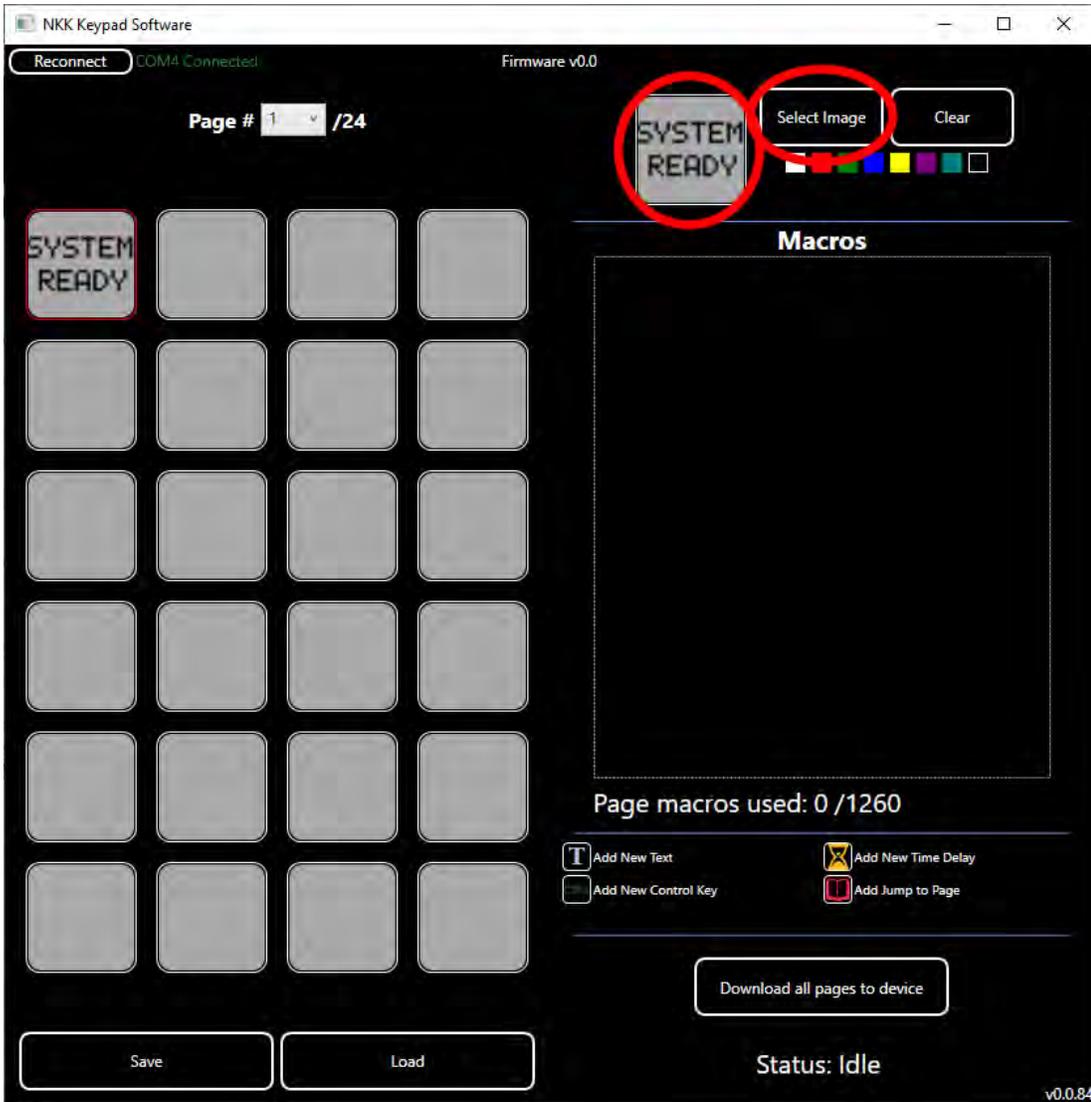
The NKK Keypad Software allows the user to easily customize every key's look and function. Configurations can be saved/loaded from disk. **The NKK Keypad Software is Windows only.** Running the software will auto-connect to the keypad.



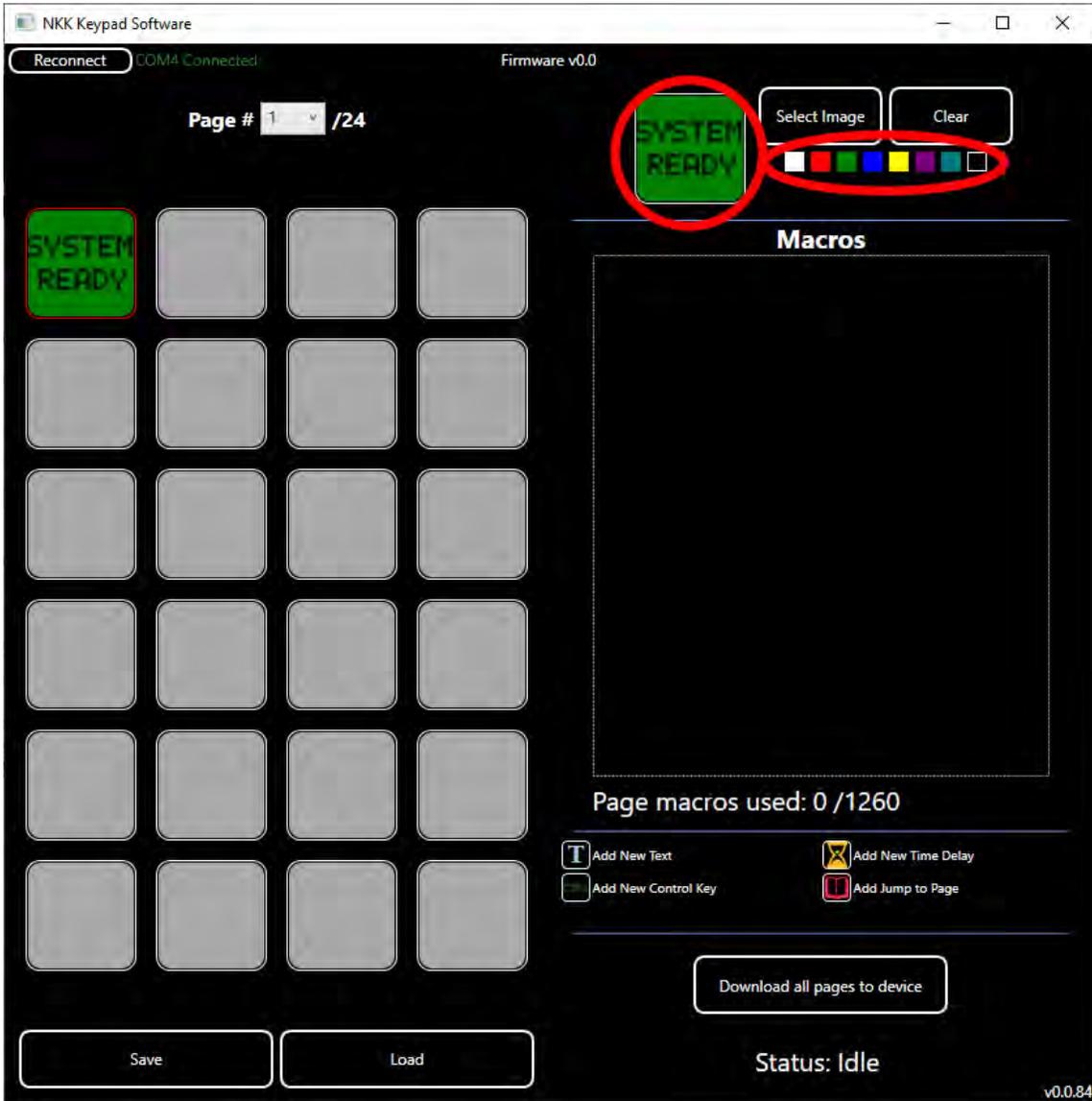
On the left is the key grid array. On the right is the key configuration panel. Clicking on each key in the grid array will change what key is being configured on the right.



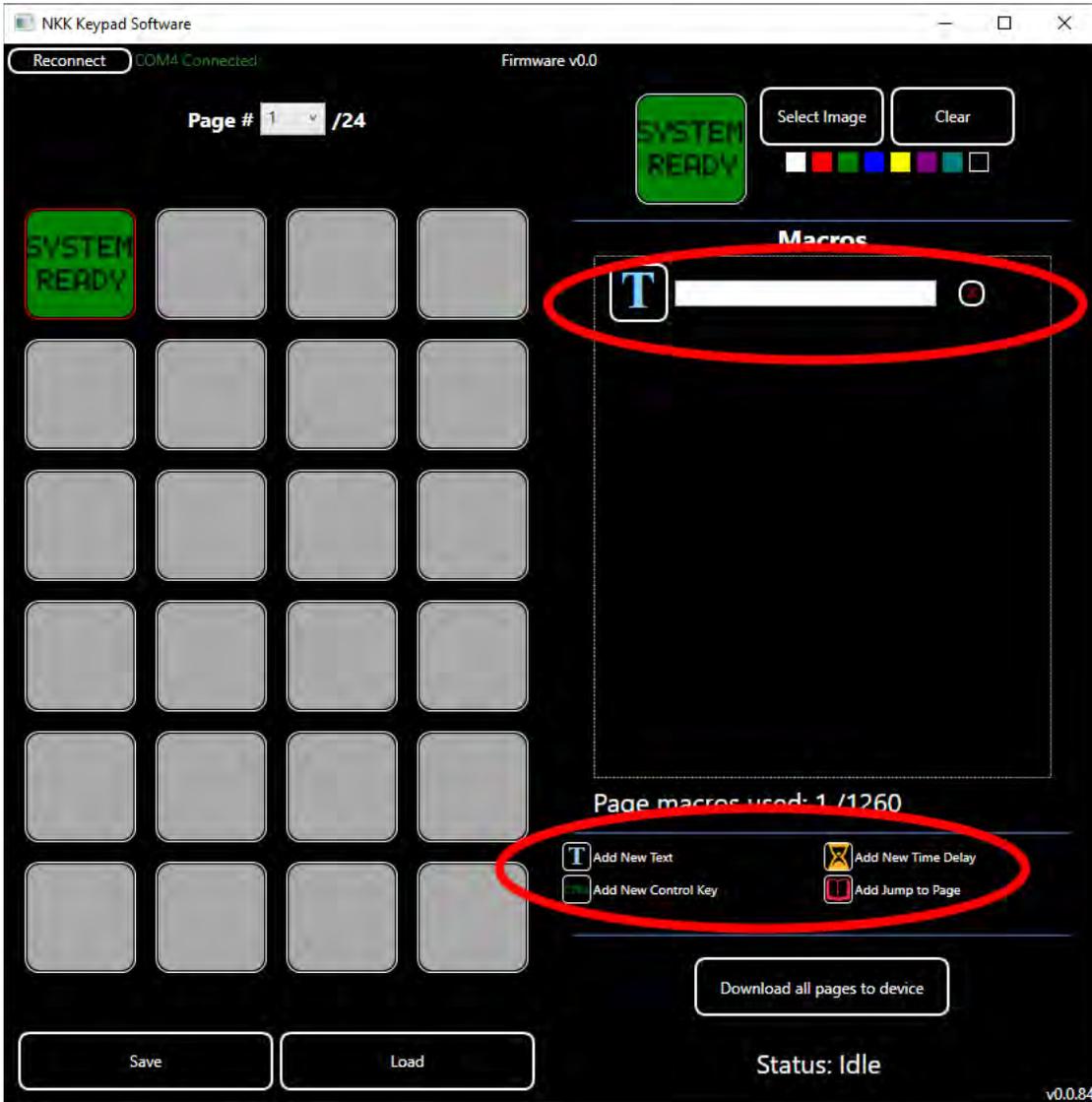
Clicking the select image button will open a dialog. You must select a 36x24 image that is in .bmp format and saved as monochrome. You can create your own images in graphics software such as Microsoft paint, or use a conversion utility found on the NKK website. After selecting a correctly formatted image, it will appear in the box.



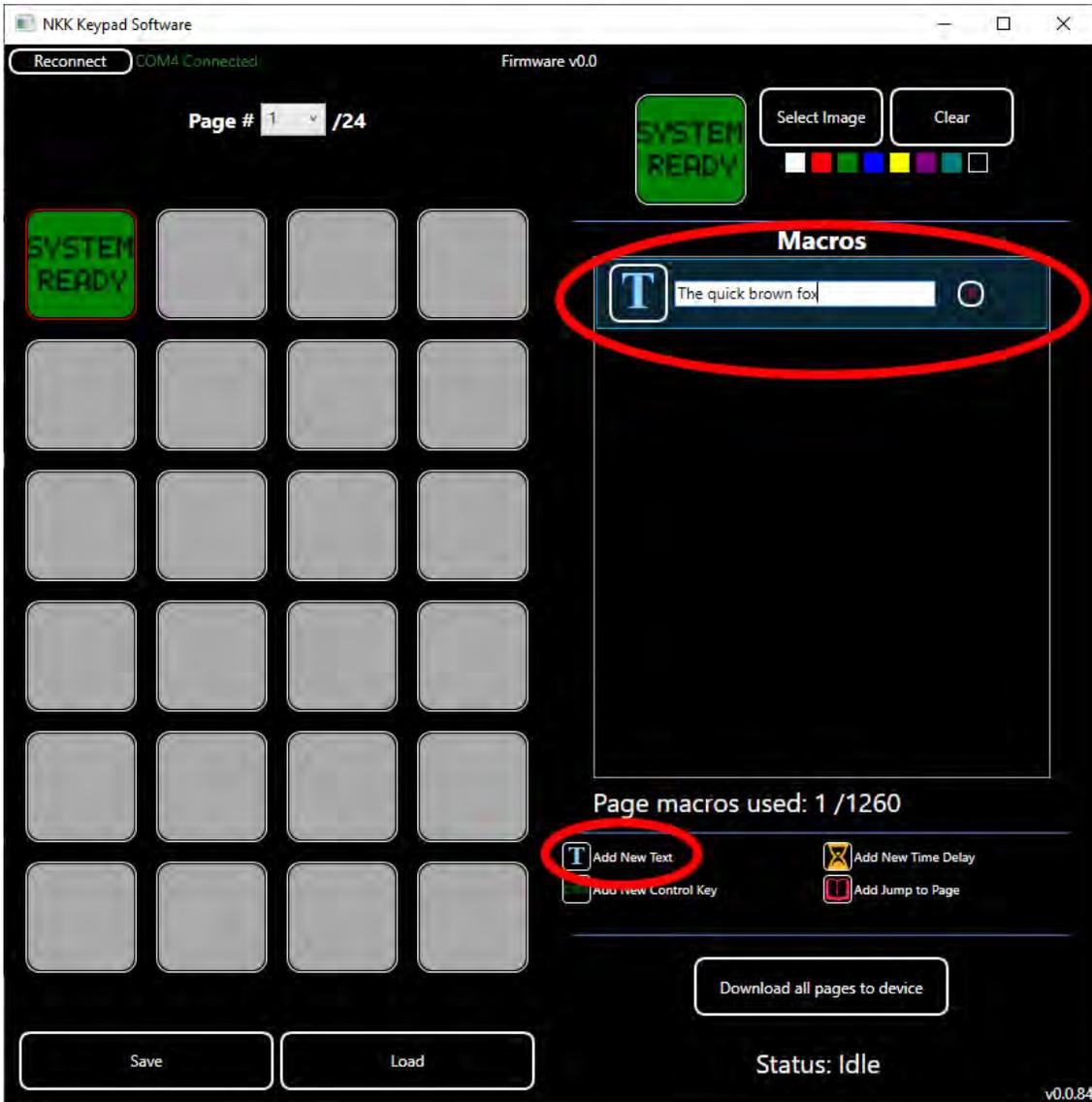
Clicking one of the colors will set the backlight color for the selected key. A gray background indicates there is no backlight. After selection, the background color of the key will change to the selected color.



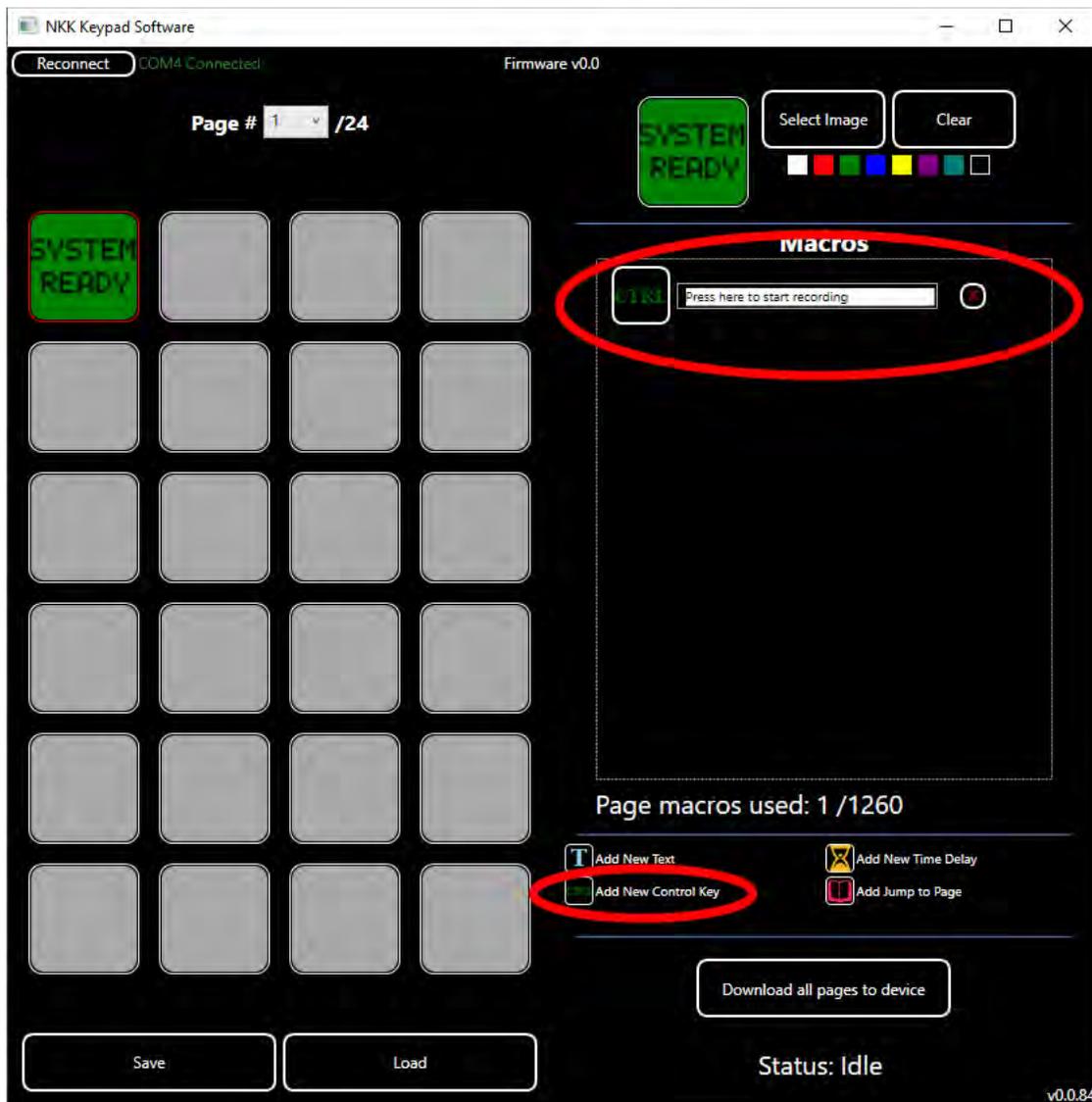
There are 4 types of macros: Text, Control Key, Time Delay, and Jump to Page. Click on the buttons will add that macro into the current key's functions. Clicking the 'x' next to the macro will remove the macro from the function list.



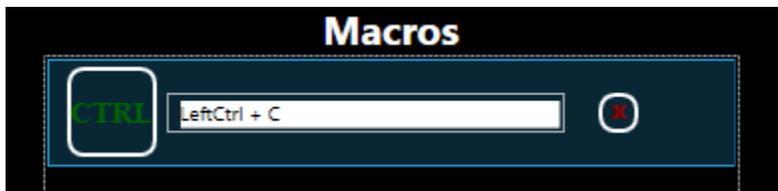
The text macro allows the user to enter up to 250 characters. When the key is pressed, the characters entered will be output to the computer as if the user had typed out those characters. This can automate commonly typed phrases. Note that tab, return, and function keys are not supported in this field.



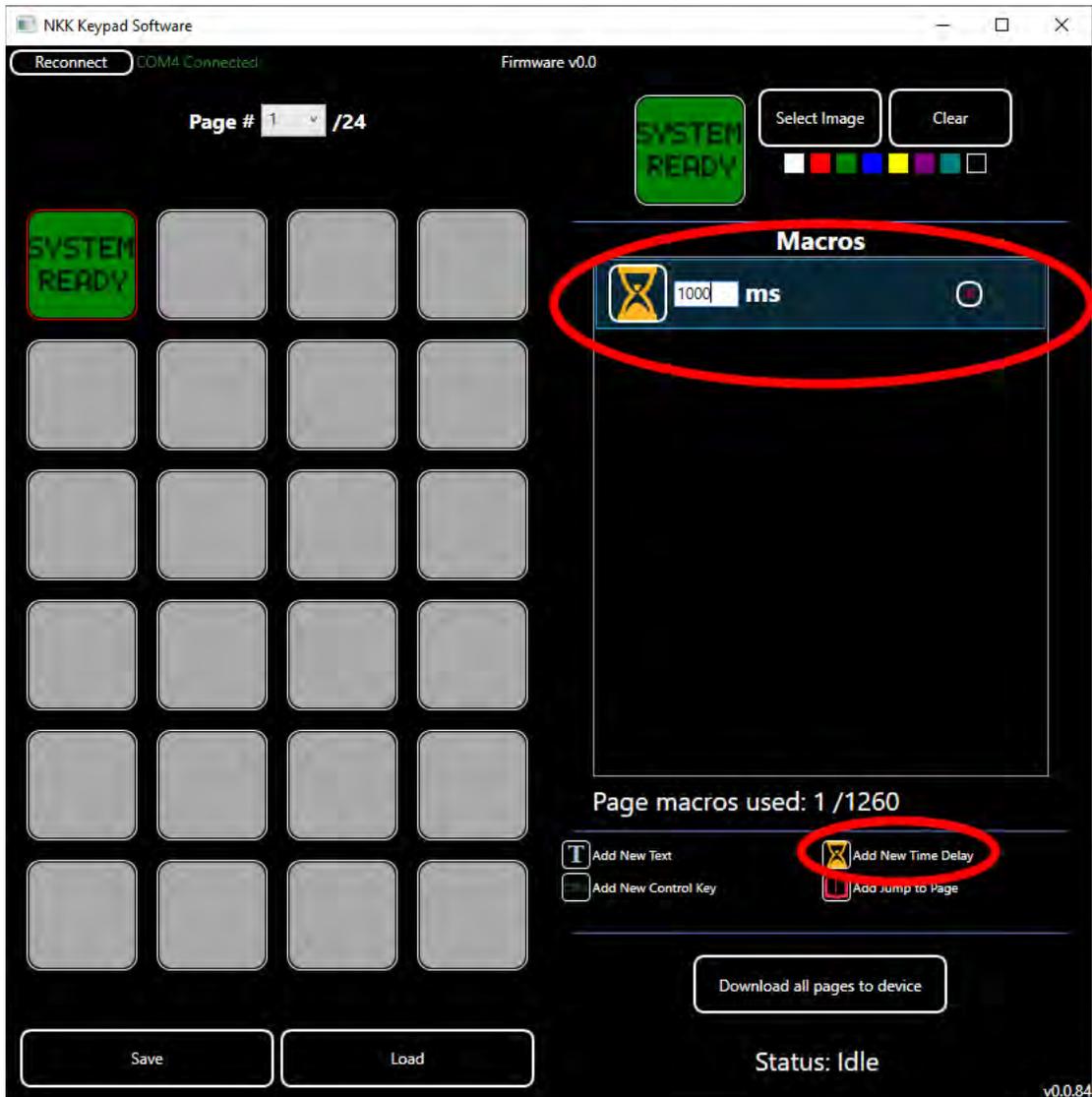
The Control Key macro allows the user to enter up to 4 keys to send to the PC. This includes function keys (CTRL, ALT, shift, etc.), arrow keys, and enter/tab/backspace.



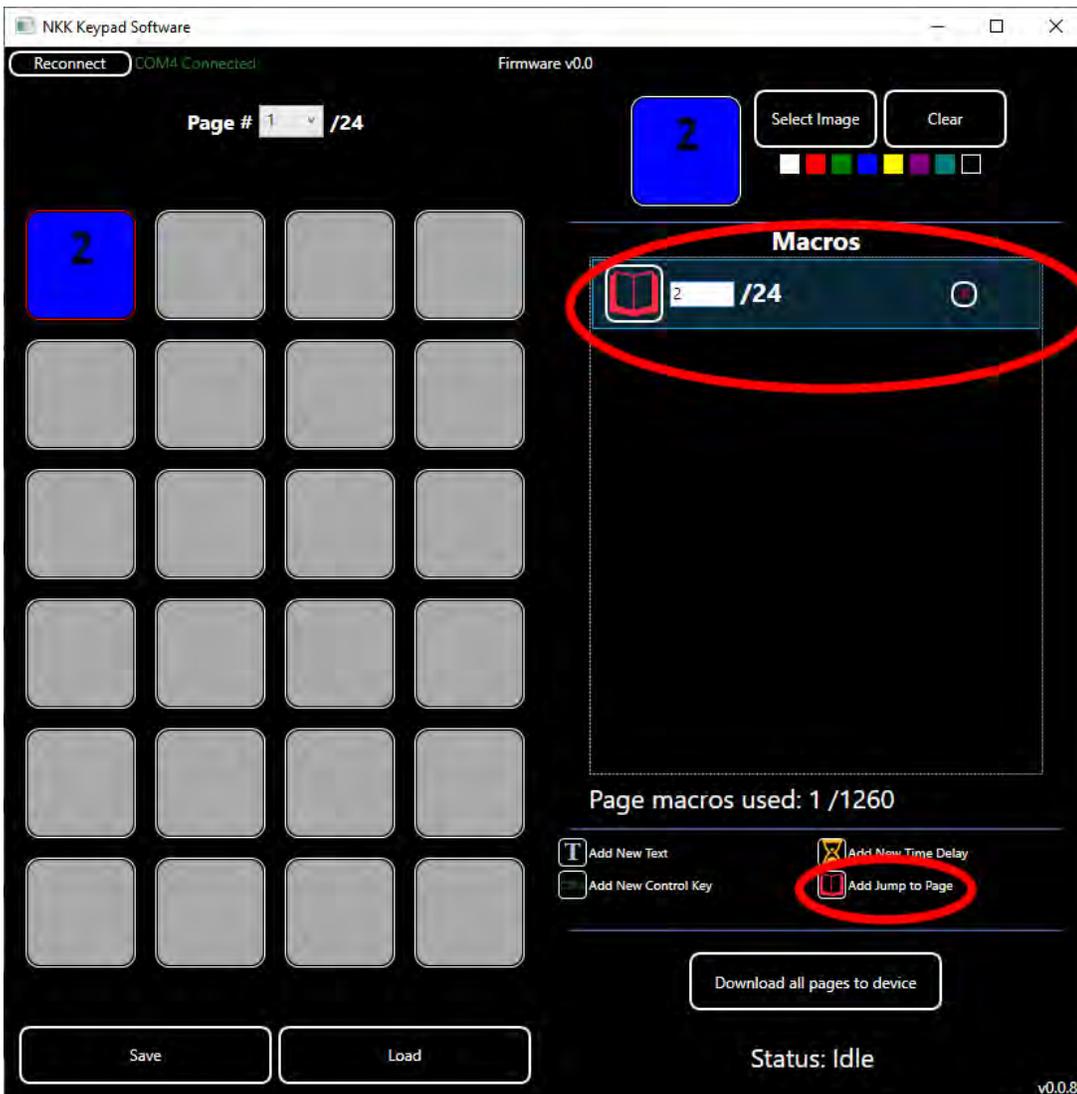
After selecting a control key macro, the user must click the text that says “Press here to start recording”. The box will turn red, and the user can start pressing their desired keys. To stop recording, the user must click the box again. If the user presses 4 keys the macro will automatically stop recording. The user does not need to hold down keys when recording the macro (i.e. if wanting to record CTRL + C, the user can just press and release the CTRL key, then press and release the C key).



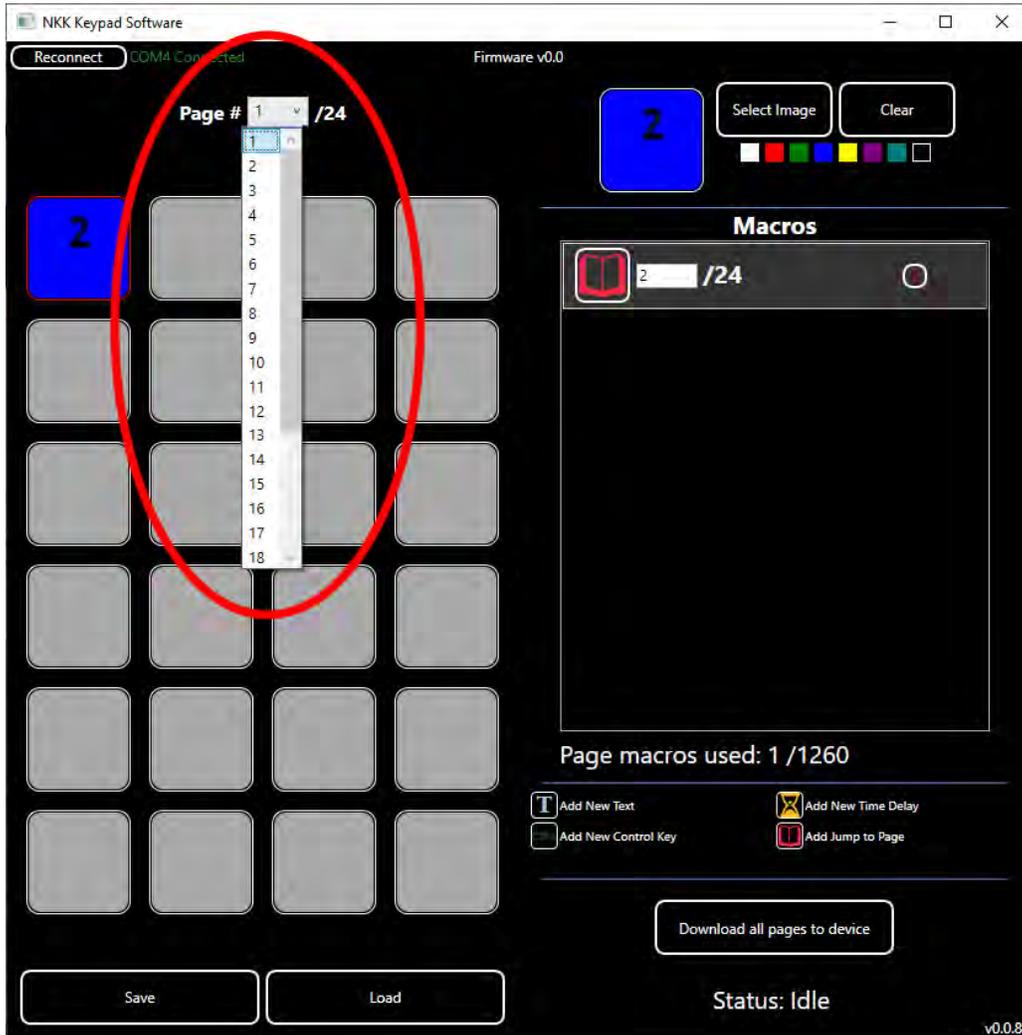
The Time Delay macro allows the user to put a specified delay (in milliseconds) between other macro commands. This is useful if an operation (or computer) is slow and subsequent commands need to wait.



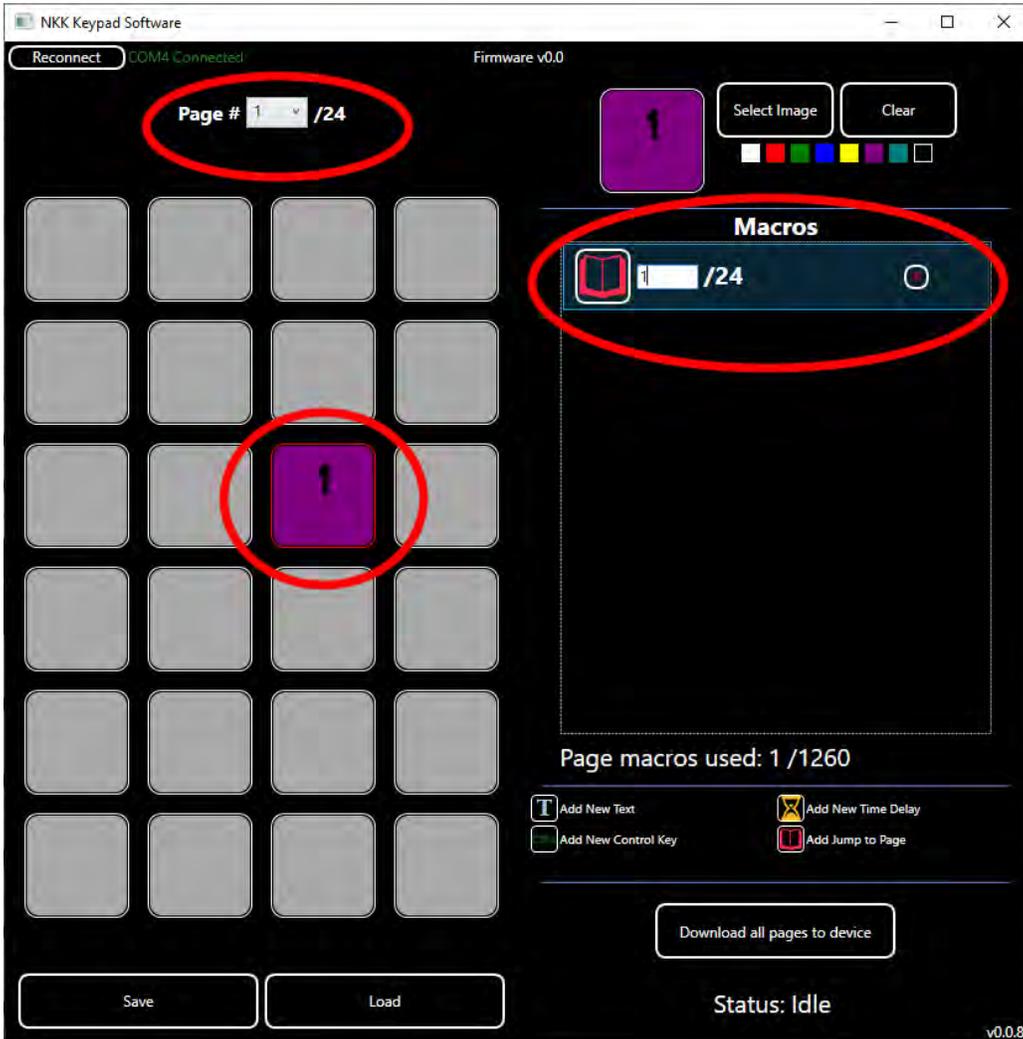
The Jump to Page macro allows the user to create menus of functions. This macro will change the function of every key to the function on the page specified. This is useful if you want to create a menu-style interface, and allows up to 24 pages of functions. For instance, on page 1 (top level) there could be sub-menus for Word, Excel, etc. When the word key is pressed, every key would change to the different word functions the user specified. **It is up to the user to provide page functions to return to the home menu**, for maximum flexibility.



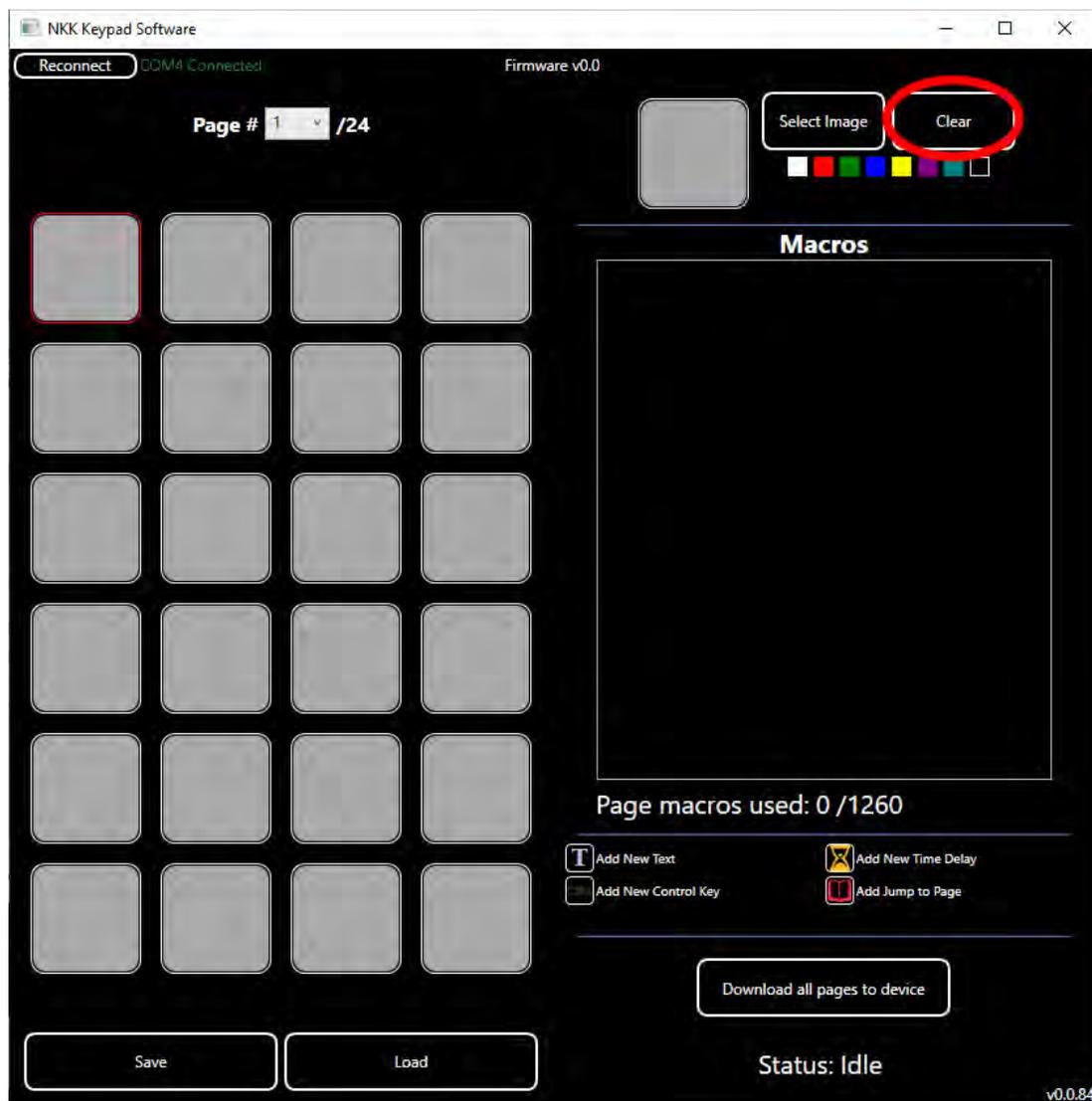
Selecting the page drop down will allow the user to select different pages of functions. Selecting a new page will change all the keys to the functions on that page. **The user must provide a jump to page to either go back to the main menu or continue to sub-menus.**



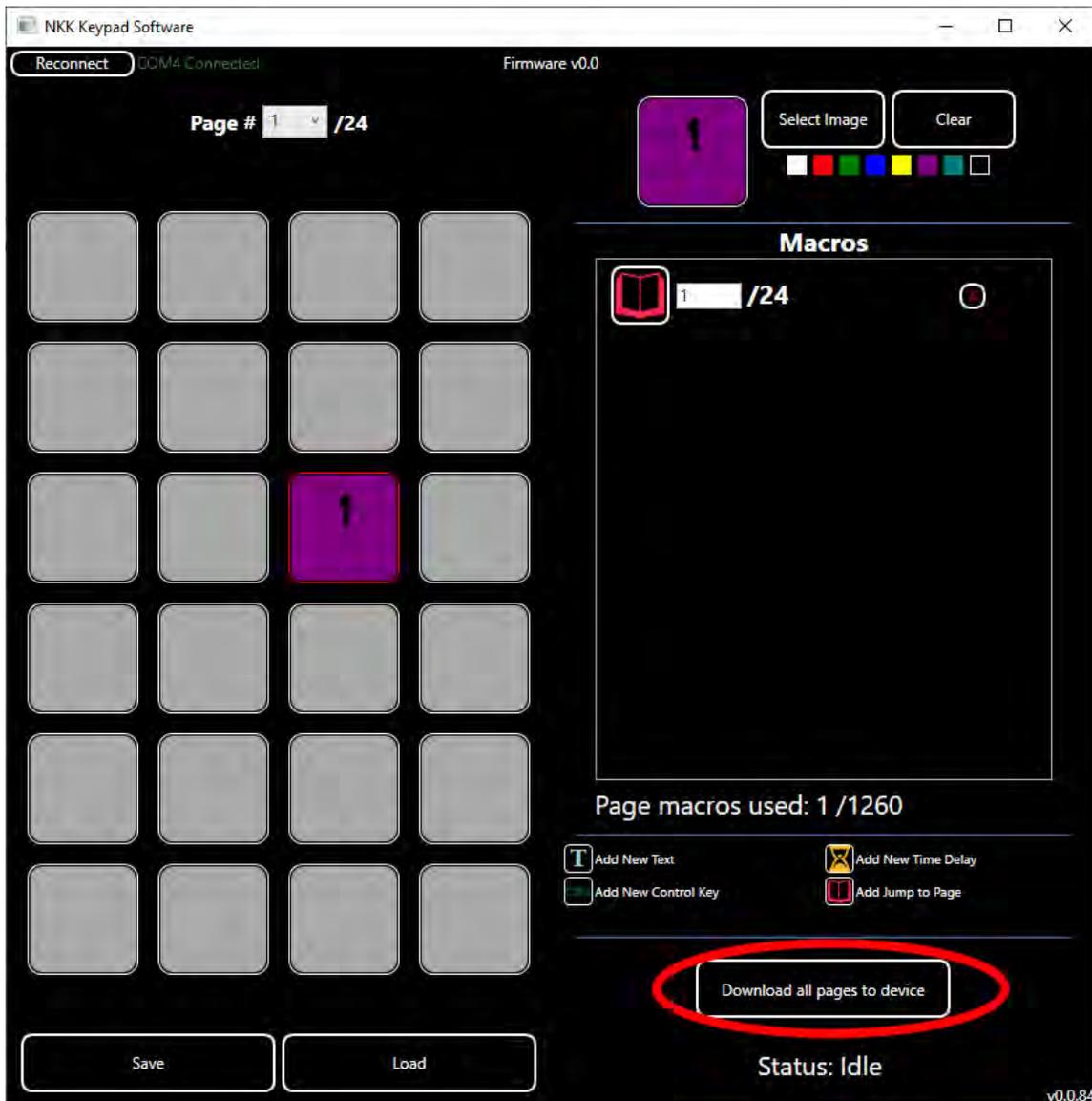
After the new page is selected, the keys are ready for configuration. **The user must always provide a jump to page macro when doing sub-menus**, or the keypad operator will get stuck in a sub-menu and have no way to return.



Clicking the “Clear” button will remove the image, backlight, and all macros from the currently selected key.



After all keys have been configured, click the “Download all pages to device” button. This will save the current configuration to the hardware.



The status field will change to “Erasing”. When erasing is complete, it will change to the percent complete of the data transfer.

Status: Erasing...

Status: Sending 0%

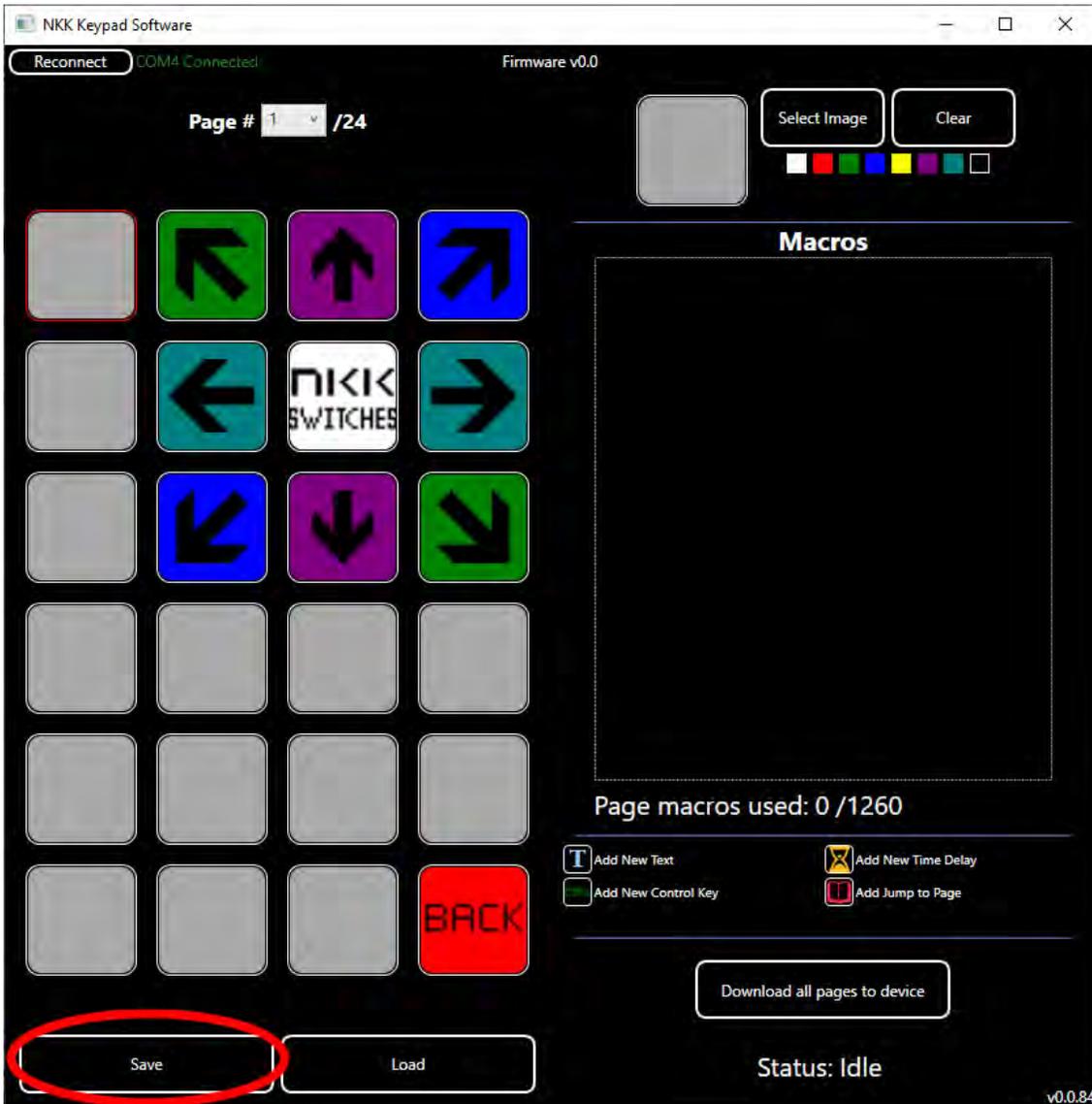
When the data transfer is complete, the status will say “Complete”. If there was an error, the status will say “Timeout”.

Status: Complete

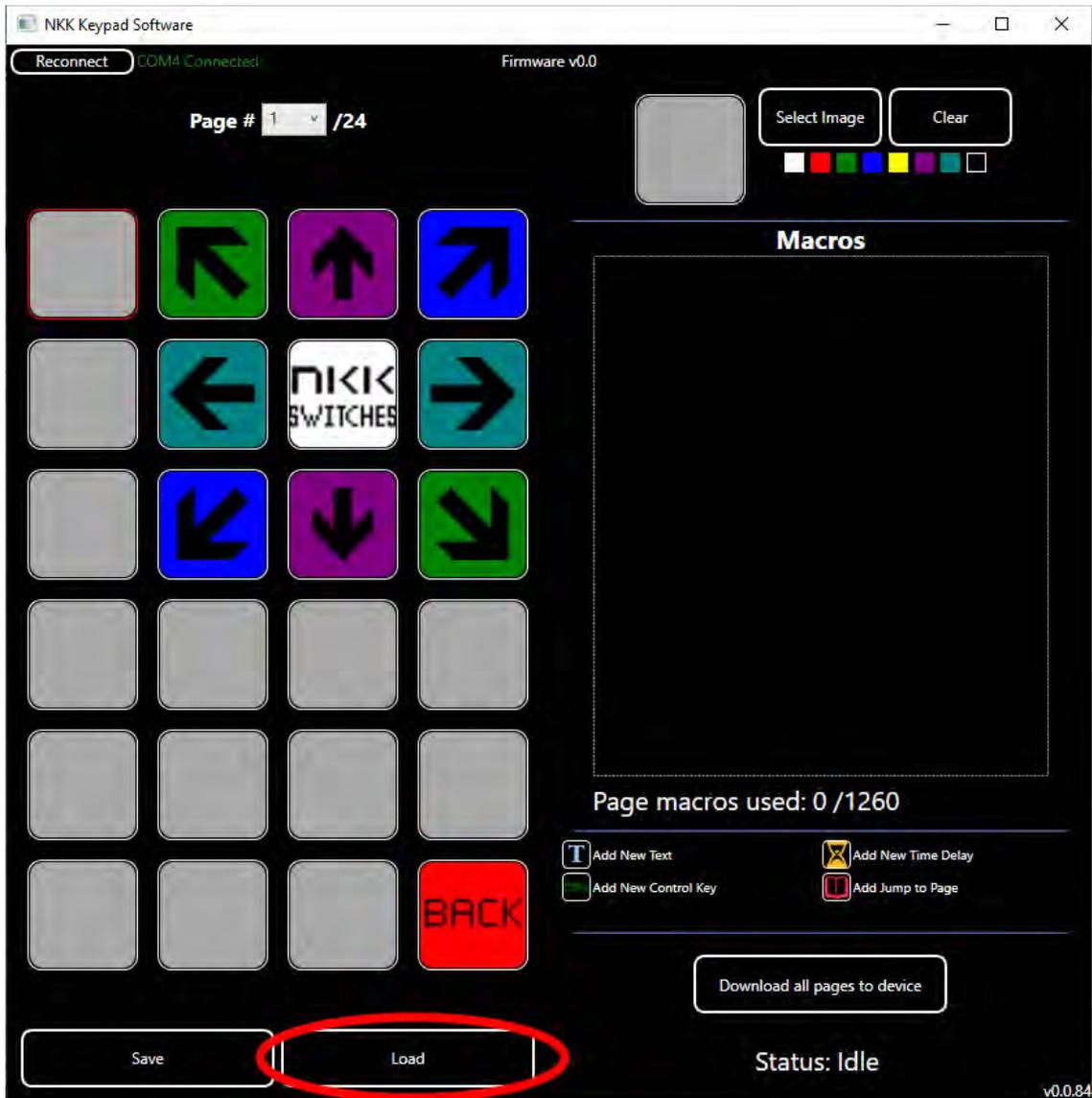
Status: Timeout

After the data transfer is complete, the NKK Keypad is ready for operation. The NKK Keypad saves all data in flash memory, so the device can be moved to another location and retain all functionality.

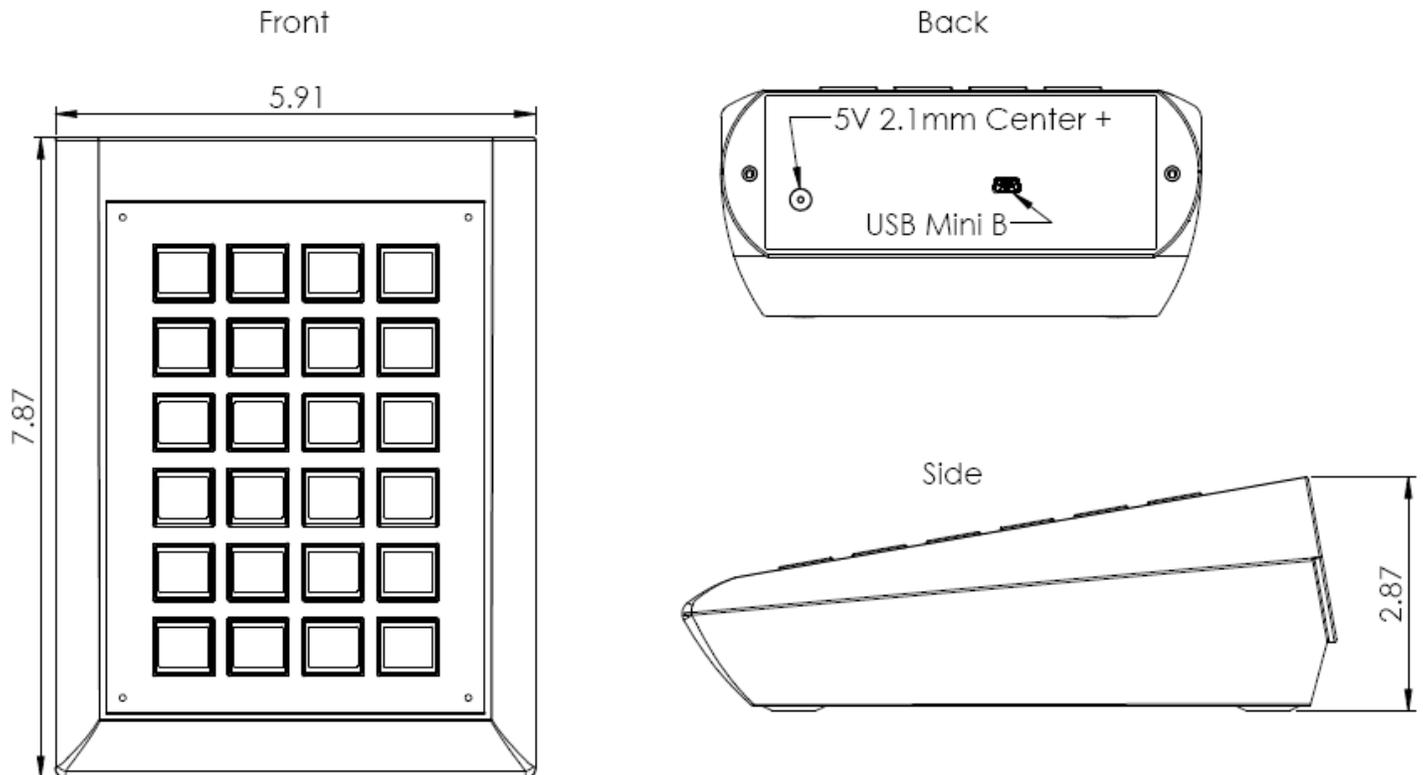
The current configuration can be saved to disk if the user wishes to have several different profiles. Click the “Save” button under the key grid and save the configuration file.



To load a previously saved configuration, click the “Load” button under the key grid and select the configuration file.



7. Technical Drawing



8. Warranty

NKK SWITCHES LIMITED WARRANTY AND LIMITATION OF LIABILITY

The following limits our liability. Please read.

NKK Switches hereby warrants this product against any and all manufacturing defects for a period of one year from the date of sale of this product to the original end user. NKK Switches' liability in the event of such defect is limited to repair or replacement of the defective products. NKK Switches disclaims any liability or warranty obligation with respect to any product that is misused, damaged by any user, or not used in conformity with all applicable product specifications.

NKK SWITCHES HEREBY DISCLAIMS ANY WARRANTY, EXPRESS OR IMPLIED, OTHER THAN THAT CONTAINED HEREIN. NKK SWITCHES EXPRESSLY DISCLAIMS THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND SHALL HAVE NO LIABILITY BASED ON OR ARISING FROM ANY CLAIM OF SUCH WARRANTY.

NKK Switches shall have no liability to any person for any incidental, consequential, special, punitive, or other damages of any kind whatsoever relating to any use of this product.

USE OF THIS PRODUCT IN CONNECTION WITH ANY LIFE CRITICAL APPLICATION IS NOT RECOMMENDED.