



## Attention

This section serves as a notice of the immediate or potential dangers involved when working with the equipment described throughout this manual. Any person involved in installation, maintenance, or service of the equipment should first carefully examine the equipment and read the instructions contained in this manual to ensure that personal and/or equipment injury is avoided.

The following safety messages appear throughout this manual to alert of immediate or potential danger to life as well as property.



**Note** : Indicates an important note.



**Tip** : Indicates a helpful tip or trick.



**Safety Reminder** : Applicable safety instructions will be included with this symbol.



**DANGER** : Indicates an immediately hazardous situation which ,if not avoided, will result in serious injury or death.



**WARNING** : Indicates a potentially hazardous situation which ,if not avoided, may result in serious injury or death.



**CAUTION** : Indicates a potentially hazardous situation which ,if not avoided, may result in minor or moderate injury.

## Disclaimer

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designated to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Instructions contained in this user's guide should be performed only by qualified persons in accordance with local and national codes. Blue Ridge Technologies International, LLC and its affiliates assume no responsibility for any consequences related to the improper use of this manual.

## Table of Contents

USB-TK Components Overview	4	Group Assignments	
Document Overview	5	Naming Groups	21
		Inputs	22
Installation		Outputs	23
Software Installation LPPK	6	Additional Features	
Register and Unlock LPPK	6	Serial On Priority	24
Connecting the USB Technicians Cable	7	Serial On Priority Flash Warning (Flash Before Off)	24
Connecting LPPK to Multiple Controllers Over Network	8	Maintained Input Priority	24
Configuring a Database Online or Offline	8	Assigning Groups to Super Groups	25
		Special Options	26
Getting Started		Setting LMB Controller Address	27
Creating a Controller Configuration Database	9	Write Database to Controller	28
LPPK Main Screen	10	Read Controller Database	28
Opening a File	11	Print Controller Database	28
Saving a File	11		
		Diagnostics	
Inputs		Communication and Device Status	29
Number of Inputs	12	View Current Input States	30
Naming Inputs for .lpx File	12	View/Modify Current Output States	31
Types	13	Check Bad Relays/Circuits	32
Assigning Input Types	14		
Polarity	15	Troubleshooting the Controller	33
Timers Durations	16	Worksheets	34
Assign a Timer to an Input	16		
Flash Warning (Flash Before Off)	17		
On-time After Flash	18		
Flash Off-time	18	AppLoader	
		Overview and Installation	37
Outputs		Connection	38
Number of Outputs	19	Downloading	39
Refresh Period	20	Formatting	41
Energize Duration	20		
		Visit <a href="http://www.BRTint.com/tandc.html">www.BRTint.com/tandc.html</a> for Terms and Conditions of Sale	

## USB-TK Components Overview

The USB Tech Kit (USB-TK) includes the following items :

1 - USB Cable for RS-485 / Access Port 18" Length (Figure 1)

1 - USB Thumb Drive with Software & Files (Figure 2)

- LPPK Files
- LPPK Install
- LPPK User Guide
- LPPK Product Codes
- LPPK Unlock
- LPX Files
- AppLoader
- Clipping Files
- BACnet Integration Guide
- Utilities
- USB Drivers
- RealTerm



(Figure 2)



(Figure 1)

## Document Overview

This document provides instructions for configuration of the following Blue Ridge Technologies Lx5 Controller products :

BR Series Relay Panel  
BR Series Retrofit-Kit  
BR Series Retrofit Interiors

Also applies to legacy products :

L2500, L2600, and L3500  
LP3500  
Qwik-Kit Pro

The LX5 controller has many features encompassed by software and hardware elements.

This User Guide details the relationship of inputs and outputs through Groups in the LPPK software. Each software feature is discussed as it appears on the LPPK screens.

The LX5 Hardware User Guide focuses on the hardware features of the controller. In the guide components and related explanations are arranged by function. The configuration of related elements is also discussed.

For physical installation of Relay Panels, Retrofit Kits, and Retrofit Interiors refer to the appropriate Mounting Instructions.

For network point descriptions and integration to a Building Automation System (BAS), refer to the Lx5 BACnet Integration Guide.

## Installation : Software Installation LPPK

Before starting use Windows un-install utility to remove any previous versions of LPPK software. After the un-install process has been performed, check for remaining files in C:\Program Files\LUMISYS and delete manually if needed.

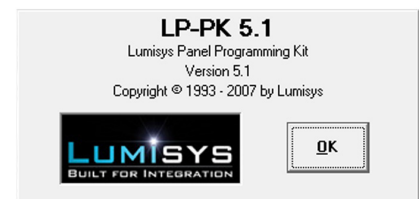
1. After un-installing any previous versions of LPPK, insert the USB-TK Thumb Drive into an open slot on your PC
2. The USB-TK Thumb Drive is configured to auto-run and display the Main Menu screen (Figure 3)
3. From the Main Menu screen, click on the LPPK button to view the LPPK Menu choices
4. From the LPPK Menu, click on LPPK Install to launch the installation process
5. At the end of the installation process, launch LPPK from your computer Desktop or Start Menu
6. After you launch LPPK, the splash screen appears (Figure 4)
7. Click OK on the splash screen
8. After clicking OK, the Software Registration dialog box will appear (Figure 5)

## Installation : Register and Unlock LPPK

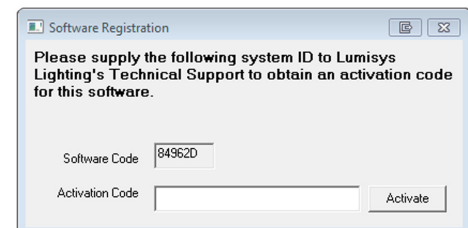
1. Go to [http://www.BRTint.com/Tech\\_LPPK.html](http://www.BRTint.com/Tech_LPPK.html)
2. Enter the requested information click Submit Now
3. After clicking Submit Now, you will need to select the version of LPPK (5.0 or 5.1)
4. After selecting the appropriate version the Lumisys LPPK Key Generator screen will open (Figure 6)
5. Copy the "Software Code" from the LPPK Software Registration screen
6. Paste that value in the Key Generator field entitled "Customer Software Code"
7. Then, click on the Generate Key button
8. A numeric value will appear in the "Liberation Key" field
9. Copy the "Liberation Key" value
10. Paste the "Liberation Key" value into the LPPK Software Registration field entitled "Activation Code"
11. Then, click on the Activate button
12. The Product Activation screen will appear (Figure 7)
13. Click the OK button to complete the process



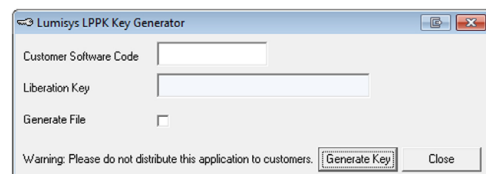
(Figure 3)



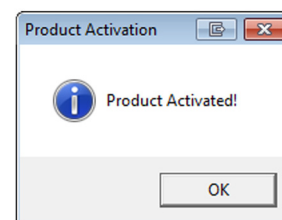
(Figure 4)



(Figure 5)



(Figure 6)

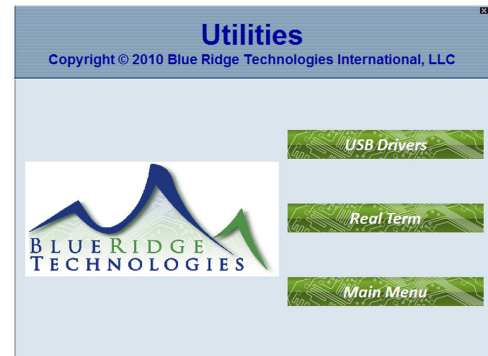


(Figure 7)

## Installation : Connecting the USB Technicians Cable

### PC Connection

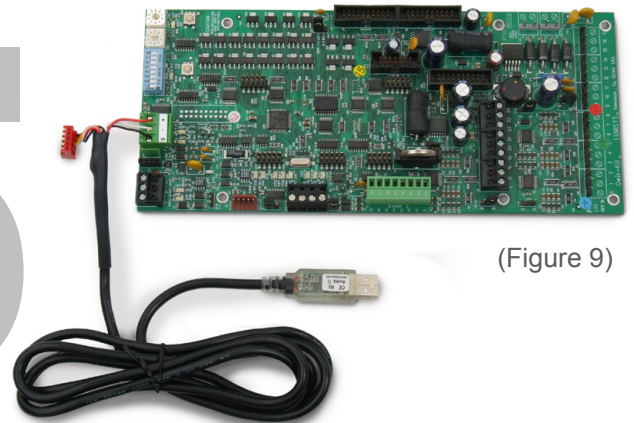
1. Insert the USB end of the Technicians Cable into an available USB port on your PC.
2. Insert the USB-TK Thumb Drive into another available USB port on your PC.
3. The USB-TK Thumb Drive is configured to auto-run and display the Main Menu screen (Figure 3)
4. From the Main Menu screen, click on the Utilities button to view the Utilities Menu (Figure 8)
5. From the Utilities Menu, click on USB Drivers to open Windows Explorer
6. From Windows Explorer, double-click on the file CDM20600
7. After double-clicking on CDM20600, the USB driver install process will begin.
8. At the end of the installation process, the USB Technicians Cable is ready to be connected to a controller.



(Figure 8)

### Lx5 Controller Connection

1. To ensure proper communication with LPPK ensure that only dip switch 4 is in the "On" position (switch 7 or 8 may also be ON for addressing). To activate changes to switch settings the controller must be power cycled.\*
2. Remove the EIA-485 terminal block to reveal EIA-485 port.
3. Connect the LPPK cable to the EIA-485 port on the controller. (Figure 9)
4. On the Connect screen, select the Comm Port of the PC connected to the controller. (Figure 10)
5. Enter address of controller and select "Read This Address". LPPK will try to establish communication with this controller. If communication is established the controller address and its software version will be displayed. Or select "Scan Address" if you don't know the Controller address.\*
6. Click on OK to connect to the controller and select OK when prompted to read controller database.
7. If communication is not established, verify you have the correct address and communication port selected.



(Figure 9)



(Figure 10)

\* Refer to Lx5 Hardware Users Guide for additional dip switch setting and controller addressing instructions.

## Installation : Connecting LPPK to Multiple Controllers Over Network

1. On the Connect screen, select the Comm Port of the PC connected to the controller.
2. Enter the address of the controller and select "Read This Address" or select "Scan Addresses". LPPK will try to establish communication with this lighting control panel or scan addresses 1-255 and list all controllers on this network.
3. Make sure the address of the controller is in the "Program for address" box and then click OK to connect to the controller. Click OK when prompted to read the controller database.
4. If communication is not established, verify you have selected the correct communication port.



(Figure 11)

## Installation : Configuring a Database Online or Offline

A database can be configured while connected to the controller or offline. To configure a database while connected to a controller follow the instructions to connect to a controller listed above.

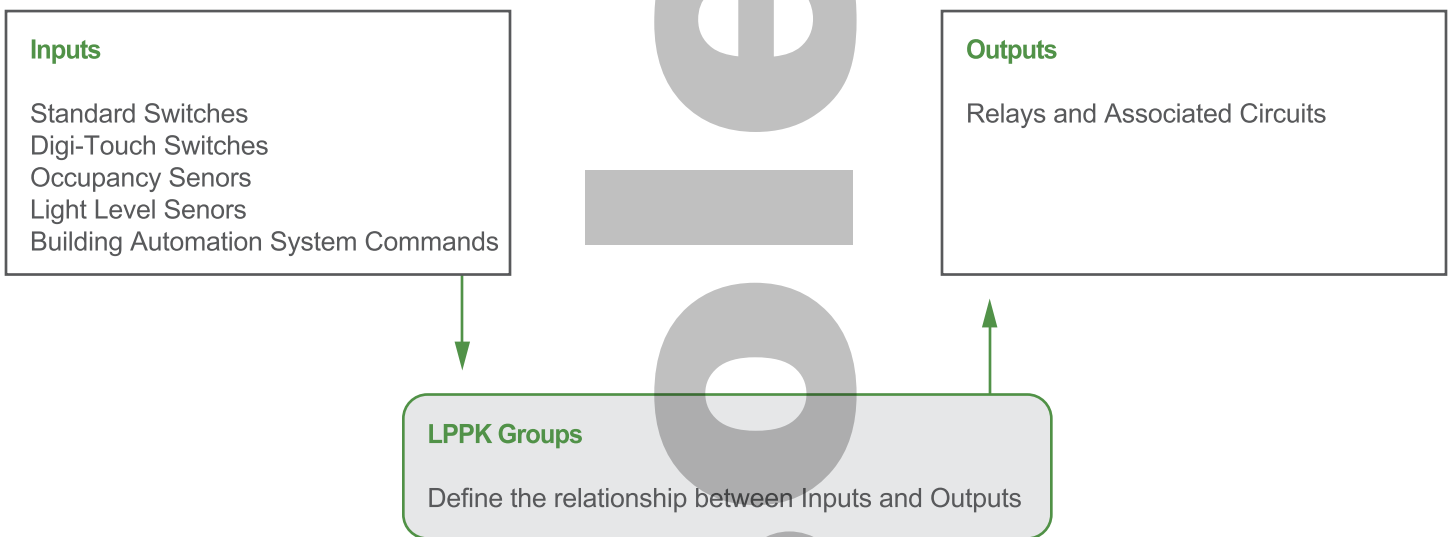
1. To configure a database offline select "Offline" as the Communication Port during start-up. (Figure 11)
2. Select the desired controller address in the box labeled "Program for Address". Then select the type and software version to be programmed in the box labeled "Program for product".
3. Select OK.
4. The LPPK main screen will be displayed.



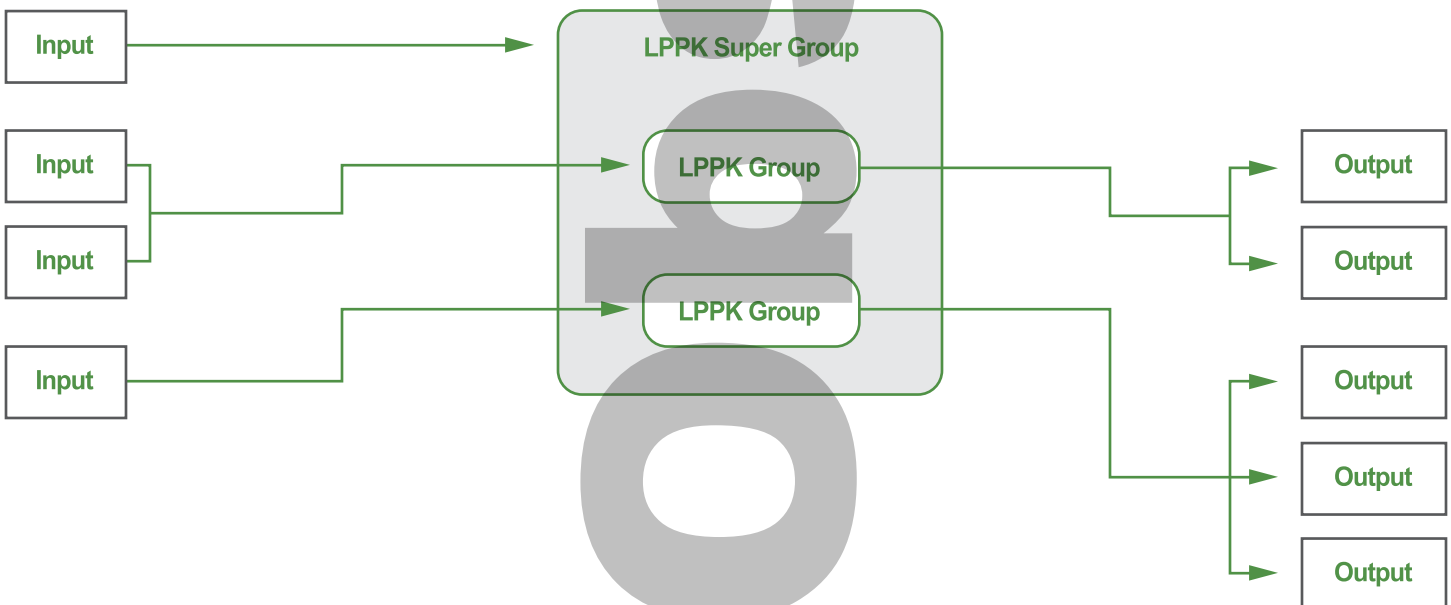
## Getting Started : Creating a Controller Configuration Database

### Overall Concept

The essential function of the LPPK software is to assign inputs to outputs utilizing a grouping method. Inputs (switches, occupancy sensors, light level sensors, etc) are configured with various settings. The input and settings are assigned control of a group. Each group contains outputs (relays and related lighting circuits). Therefore input commands and configurations are applied to outputs through groups.

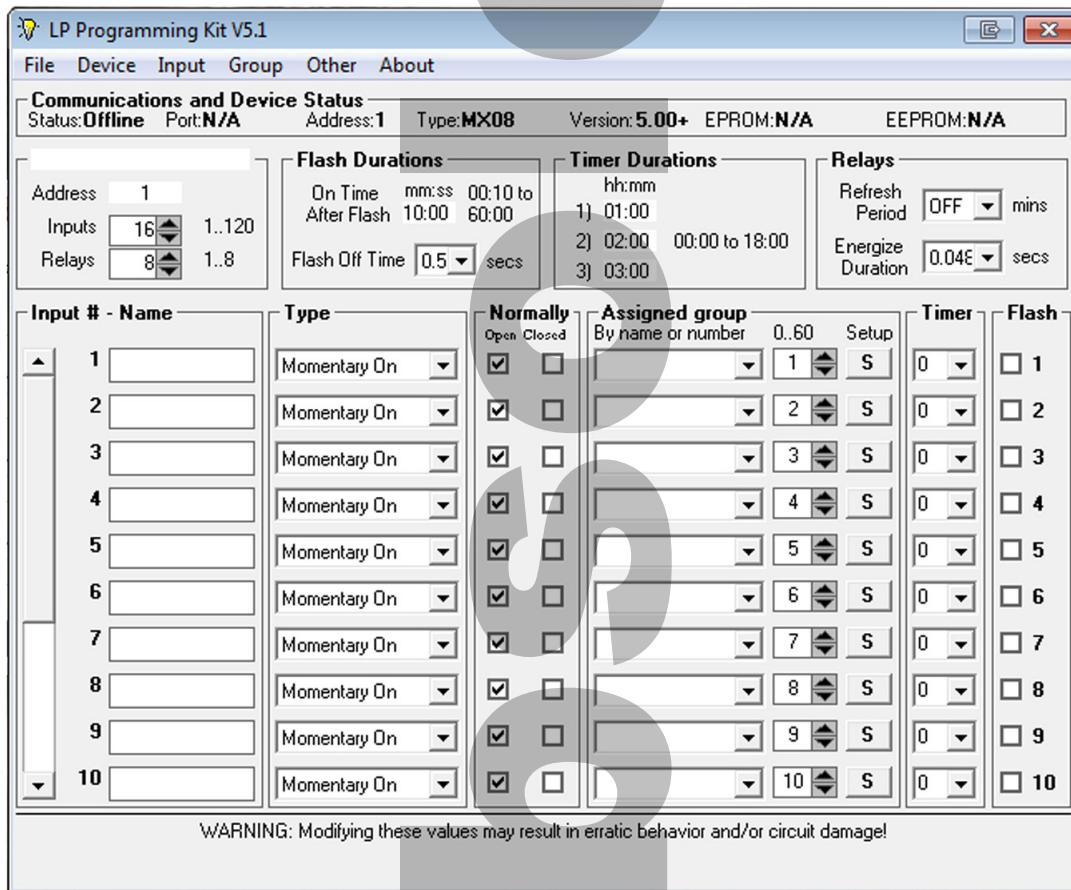


### Concept in Practice



## Getting Started : LPPK Main Screen

Developing a Controller Configuration Database with LPPK (assigning inputs to outputs through groups) begins on the Main Screen. All functions and features are accessible from this window. (Figure 12)



(Figure 12)



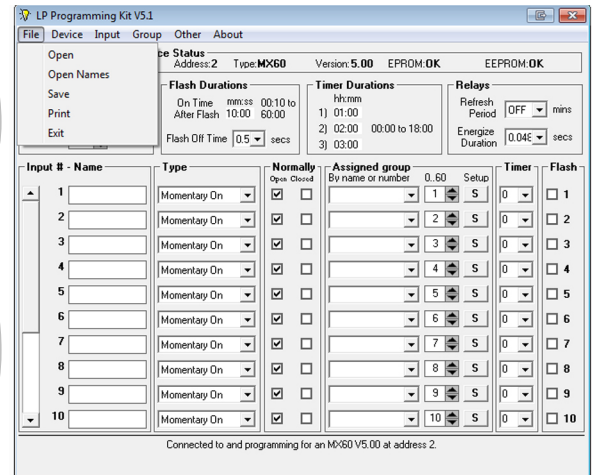
Helpful navigation labels appear at the bottom of the Main Screen as your cursor passes over features.

## Getting Started : Opening a File

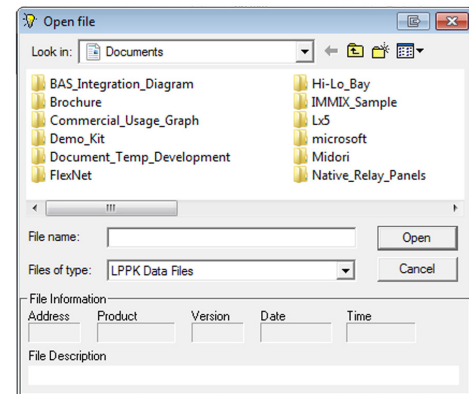
1. Select Tool Bar File > Open or Open Names. (Figure 13)
2. File > Open provides the capability to open a saved .lpx file. The suffix .lpx is used for all Blue Ridge Controller files. (Figure 14)
3. File > Open Names reads only .lpx name data and displays it on the screen.
4. Select the File you want to open.
5. Press "Open" to open the file.

## Getting Started : Saving a File

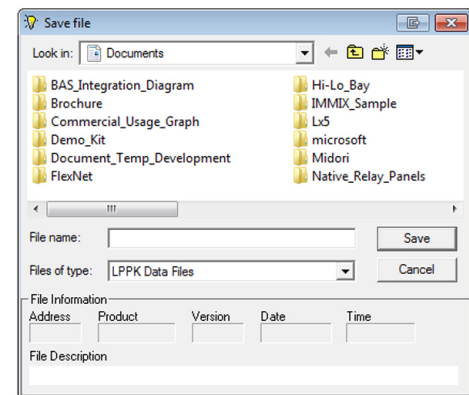
1. Select Tool Bar File > Save.
2. File > Save provides the capability to save the current information as an .lpx file. The name can be up to eight characters in length. (Figure 15)
3. "File Description" provides the capability to describe the file's content such as "North Wing Electrical Closet" or "Fifth Floor Lighting", etc.
4. Press "Save" to save the file.



(Figure 13)



(Figure 14)



(Figure 15)

## Inputs : Number of Inputs

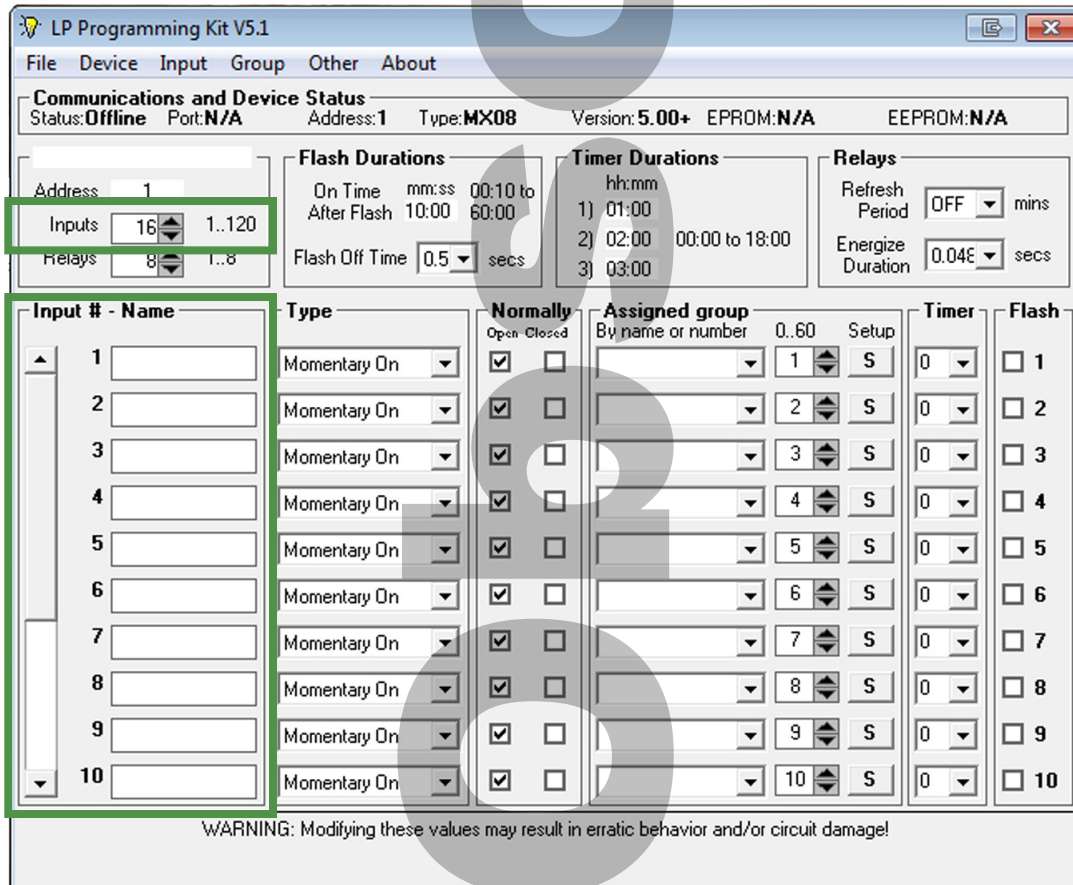
The number of inputs represents the number of switches, occupancy sensors, etc. connected to the lighting controller.

1. Select the number of inputs that will be utilized by typing in a number between 1 and 120 in the box labeled "Inputs". (Figure 16)
2. Select Tool Bar File > Save to save data to .lpx file
3. Select Tool Bar Device > Write, to save data to the controller memory.

## Inputs : Naming Inputs for .lpx File

Each input can have a name in addition to a number. Input names are only saved to a disk as .lpx file. All other panel configuration data is saved to both the disk and the panel's processor.

1. To automatically name the inputs as Input 1, Input 2, etc. select Tool Bar Input > Create Default Names for All > As Input N.
2. To automatically name the inputs with the name of the group it controls select Tool Bar Input > Create Default Name for All > Copy Name From Assigned Group.
3. To individually assign a name to an input type in the desired name of each input in the box labeled "Name". (Figure 16)
4. Repeat for each input.
5. Select Tool Bar File > Save to save data to .lpx file. Input names are never saved to the controller memory.



**LP Programming Kit V5.1**

File Device Input Group Other About

**Communications and Device Status**  
 Status: Offline Port: N/A Address: 1 Type: MX08 Version: 5.00+ EPROM: N/A EEPROM: N/A

Address: 1

Inputs: 16 (range 1..120)

Relays: 8 (range 1..8)

**Flash Durations**  
 On Time mm:ss 00:10 to  
 After Flash 10:00 60:00  
 Flash Off Time 0.5 secs

**Timer Durations**  
 hh:mm  
 1) 01:00  
 2) 02:00 00:00 to 18:00  
 3) 03:00

**Relays**  
 Refresh Period OFF mins  
 Energize Duration 0.04E secs

Input # - Name	Type	Normally Open Closed	Assigned group	Timer	Flash
1	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	1	0	<input type="checkbox"/>
2	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	2	0	<input type="checkbox"/>
3	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	3	0	<input type="checkbox"/>
4	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	4	0	<input type="checkbox"/>
5	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	5	0	<input type="checkbox"/>
6	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	6	0	<input type="checkbox"/>
7	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	7	0	<input type="checkbox"/>
8	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	8	0	<input type="checkbox"/>
9	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	9	0	<input type="checkbox"/>
10	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	10	0	<input type="checkbox"/>

WARNING: Modifying these values may result in erratic behavior and/or circuit damage!

(Figure 16)

## Inputs : Types

Maintained inputs require the input be maintained to activate the output.

Momentary On inputs require a momentary closure to activate the output. It also requires a separate input be assigned as a Momentary Off input to deactivate the output.

Momentary Off inputs require a momentary closure to deactivate an output. It also requires a separate input be assigned as a Momentary On input to activate the output.

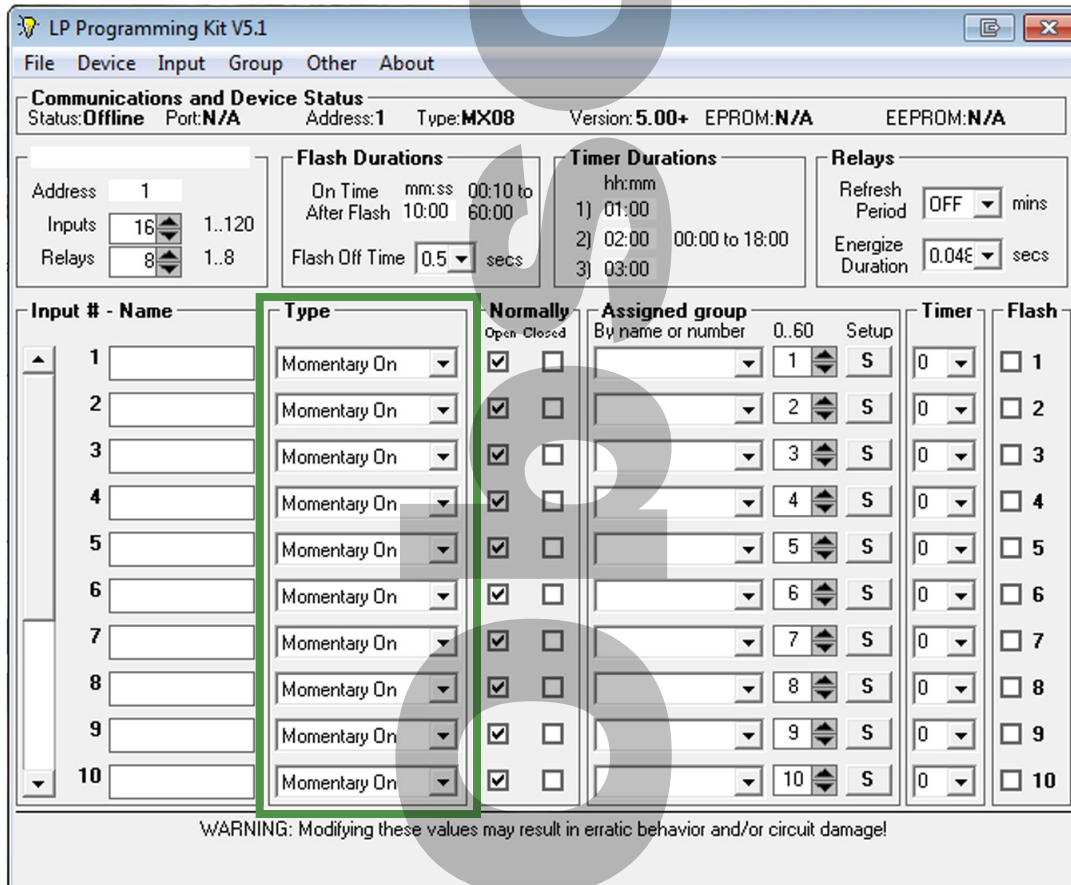
Momentary On/Off inputs require a momentary closure to toggle the state of the output. This type of input requires only one input to perform both ON and OFF control of an output. It also requires the input device to be in a location where the lights are within visual contact.

Linked On inputs are designed for multi-level lighting control applications that require timers for automatic shutoff of lighting. A typical application is 1/3, 2/3 and 3/3 lighting levels in a conference room. One input is assigned to the 1/3 level output and a second input is assigned to the 2/3 level output. Typically, two additional inputs are assigned as Momentary Off inputs for the 1/3 and 2/3 outputs. Activating the 1/3 light level switch will turn on the respective output and begin its timer. Once the timer has expired the 1/3 light level output will flash to warn the occupants that the lights are about to turn off. Once the lights flash the two switches, 1/3 and 2/3, are linked as one so either switch can be activated to reinitialize the timer for the 1/3 lighting level. Immediately after either switch is activated the switches are automatically un-linked and return to their independent state until another flash warning occurs. Without this feature a user may accidentally activate the wrong level switch causing frustration for the user.

State Change inputs are designed for use with maintained 3-way switches in retrofit applications. A change of state will toggle the state of the associated output.

## Inputs : Assigning Input Types

1. To automatically assign all inputs to the same type select Tool Bar Input > Set All As Type > Select the desired type. All inputs will be assigned this type.
2. To individually assign input types select the input type in the box directly next to the input number in the column labeled "Type". (Figure 17)
3. Repeat for each input.
4. Select Tool Bar File > Save to save data to .lpx file
5. Select Tool Bar Device > Write, to save data to the controller memory.

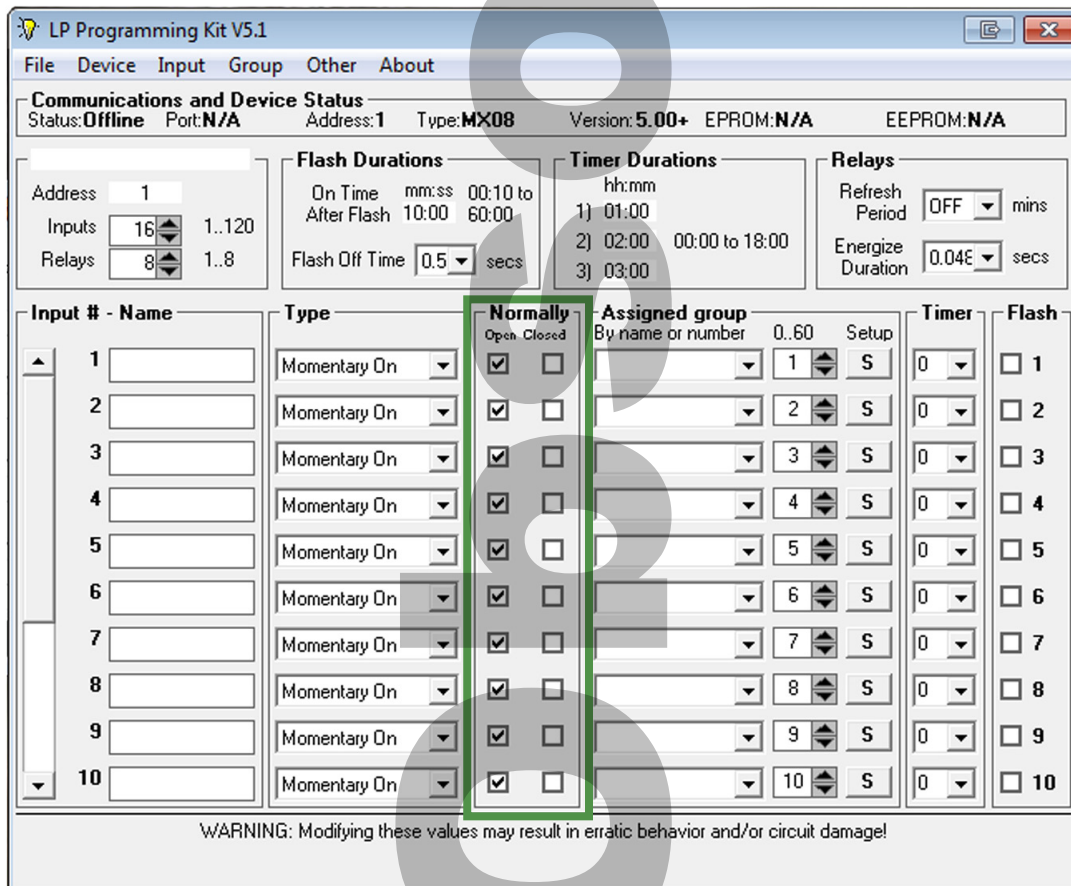


(Figure 17)

## Inputs : Polarity

Each input can be assigned a normally open or normally closed polarity. This allows LPPK to properly read input commands with varied switch and controller polarity.\*

1. To automatically assign all inputs to the same polarity select Tool Bar Input > Set Polarity For All To > Select the Desired Type.
2. To individually set polarity utilize the column entitled "Normally". (Figure 18)
3. Select Tool Bar File > Save to save data to .lpx file
4. Select Tool Bar Device > Write, to save data to the controller memory.



(Figure 18)

\* Refer to the USBTK Tech Note and Lx5 Hardware User Guide for additional information.

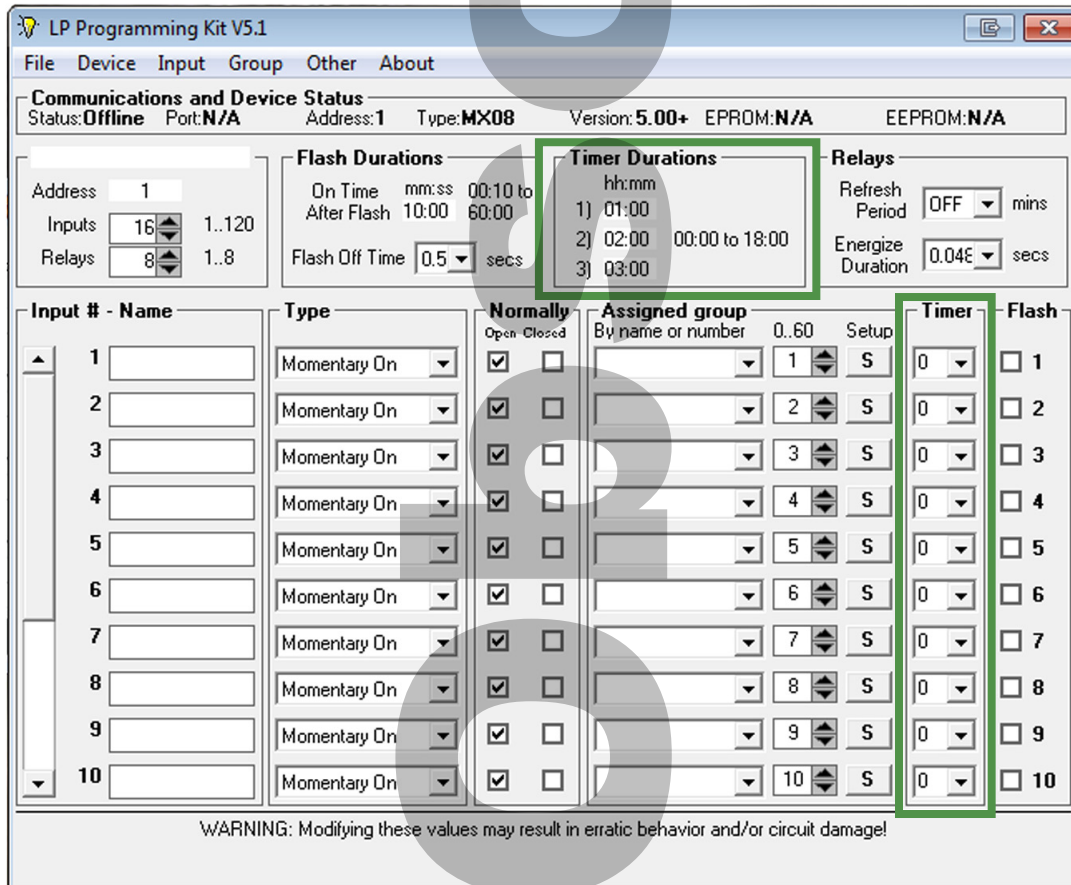
## Inputs : Timers Durations

An input's timer represents the amount of time the assigned group will remain ON after the input is activated. (1 minute to 18 hours)

1. Type in the duration of the timer in the boxes labeled "Timer Durations 1, 2 and 3". The first two places are for hours and the second two places for minutes. (Figure 19)
2. Select Tool Bar File > Save to save data to .lpx file
3. Select Tool Bar Device > Write, to save data to the controller memory.

## Inputs : Assign a Timer to an Input

1. To automatically assign all inputs to the same timer select Tool Bar Input > Set All For Timer > Select the Desired Timer.
2. To individually set timers, enter timer duration between 1 and 3 in the box labeled "Timer" or scroll down to the desired timer. Entering "0" will deactivate the timer feature. (Figure 19)
3. Repeat for each input.
4. Select Tool Bar File > Save to save data to .lpx file
5. Select Tool Bar Device > Write, to save data to the controller memory.



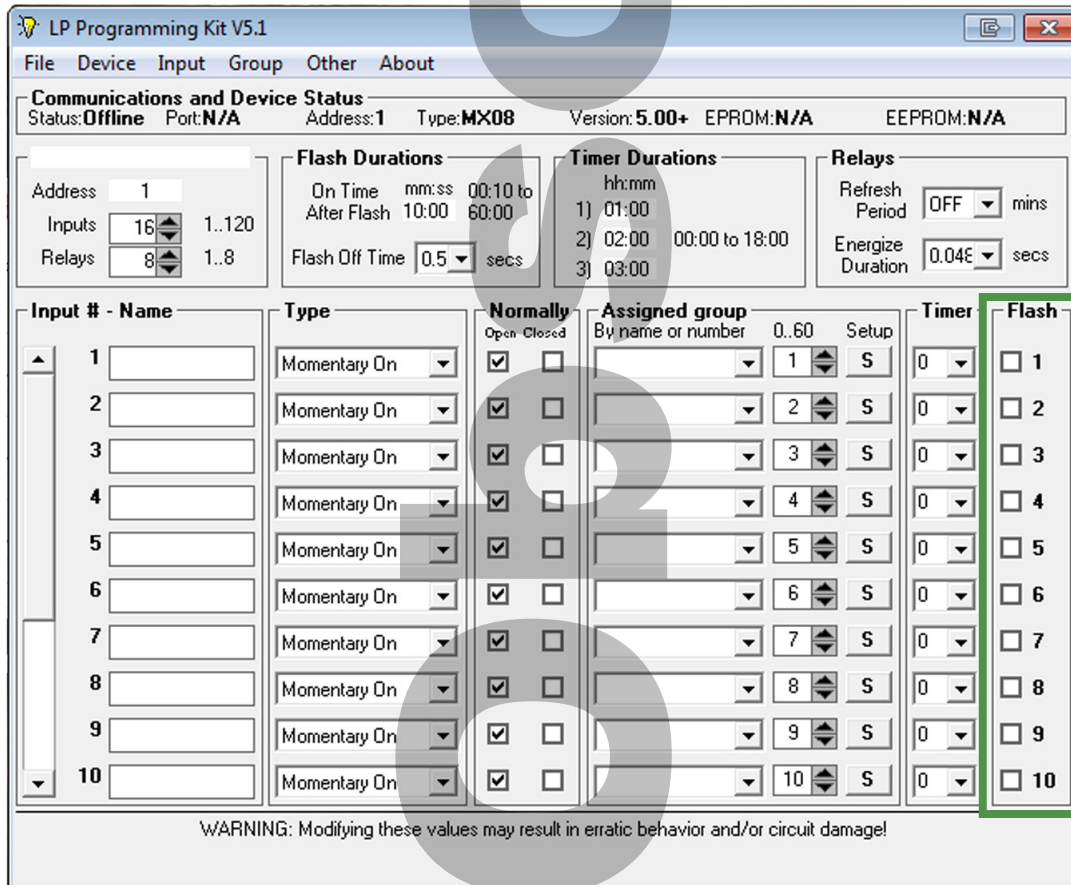
(Figure 19)



## Inputs : Flash Warning (Flash Before Off)

Applying this setting to an input will schedule a momentary flash of the assigned output to warn of the timer's imminent expiration and lighting shutoff.

1. To automatically assign all inputs the ability to "Flash" or "No Flash", select Tool Bar Input > Set All For > Flash or No Flash. All inputs will be assigned this selection.
2. To individually set Flash, click on the box labeled "Flash" to enable the flash warning feature. The input number is located to the right of the box. (Figure 20)
3. To deactivate the flash warning uncheck the box.
4. Repeat for all inputs.
5. Select Tool Bar File > Save to save data to .lpx file
6. Select Tool Bar Device > Write, to save data to the controller memory.



(Figure 20)

### Inputs : On-time After Flash

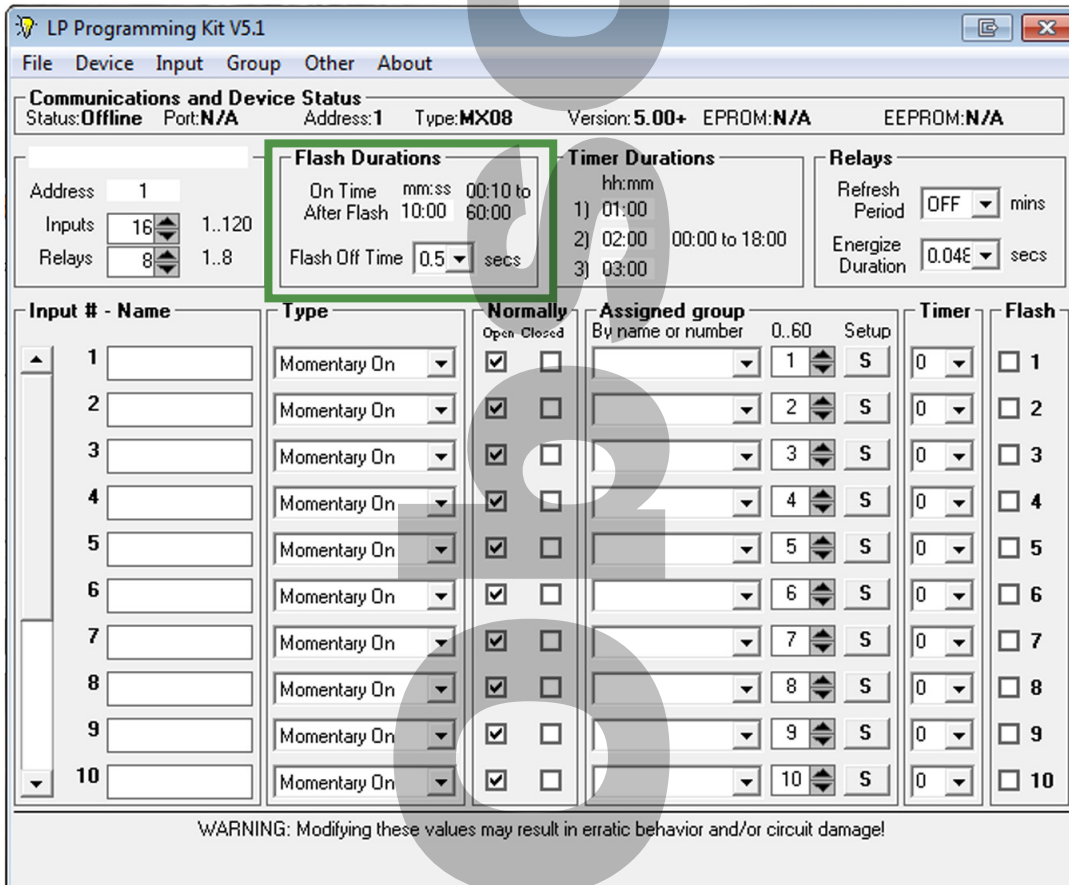
This is the length of time the input's assigned group remains ON after the flash warning occurs. (10 seconds to 60 minutes)

1. In the area labeled "Flash Durations" there is a box labeled "On-Time After Flash". (Figure 21)
2. Set the length of time (minutes and seconds).
3. Select Tool Bar File > Save to save data to .lpx file
4. Select Tool Bar Device > Write, to save data to the controller memory.

### Inputs : Flash Off-time

This is the length of time the input's assigned group switches OFF creating the flash warning. (factory set for .5 seconds)

1. In the area labeled "Flash Durations" there is a drop down box labeled "Flash Off Time".
2. Select Tool Bar File > Save to save data to .lpx file
3. Select Tool Bar Device > Write, to save data to the controller memory.

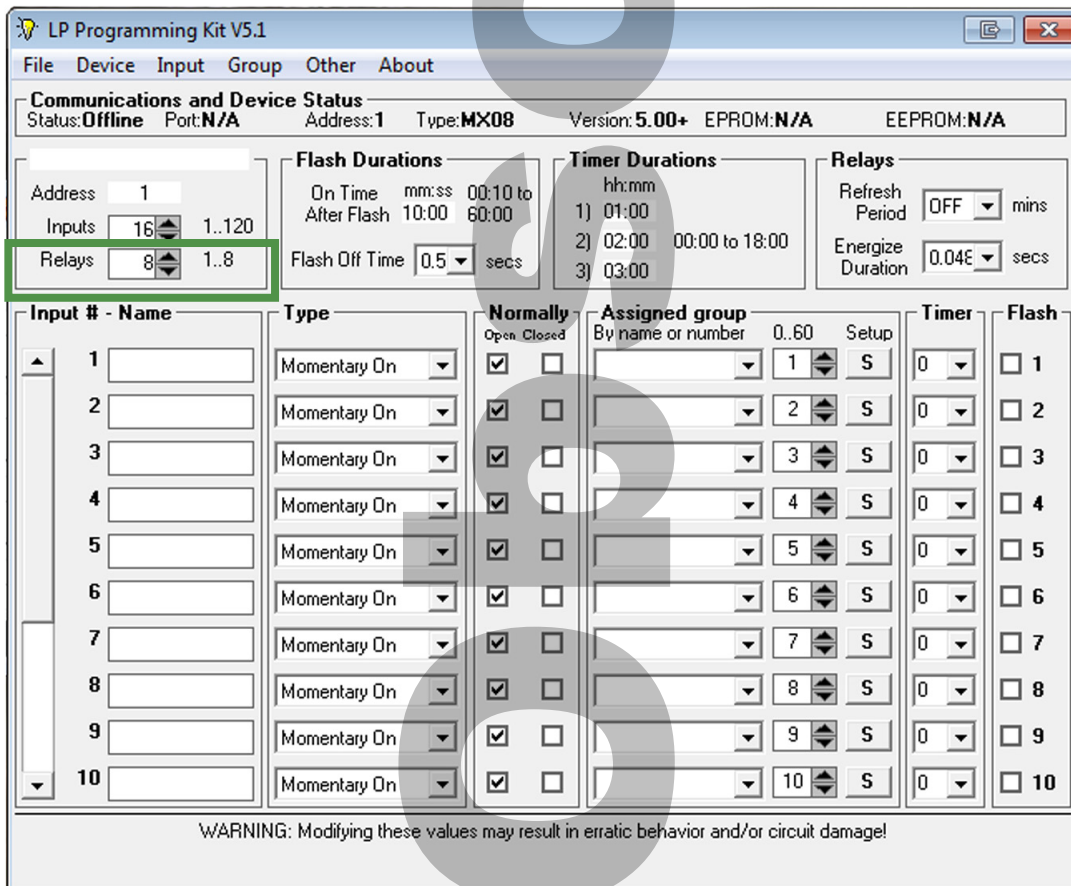


(Figure 21)

## Outputs : Number of Outputs

This is the number of relays incorporated.

1. Select the number of outputs that will be utilized by typing in a number between 1 and 60 in the field labeled “Relays”. (Figure 22)
2. Select Tool Bar File > Save to save data to .lpx file
3. Select Tool Bar Device > Write to save data to the controller memory.



(Figure 22)

## Outputs : Refresh Period

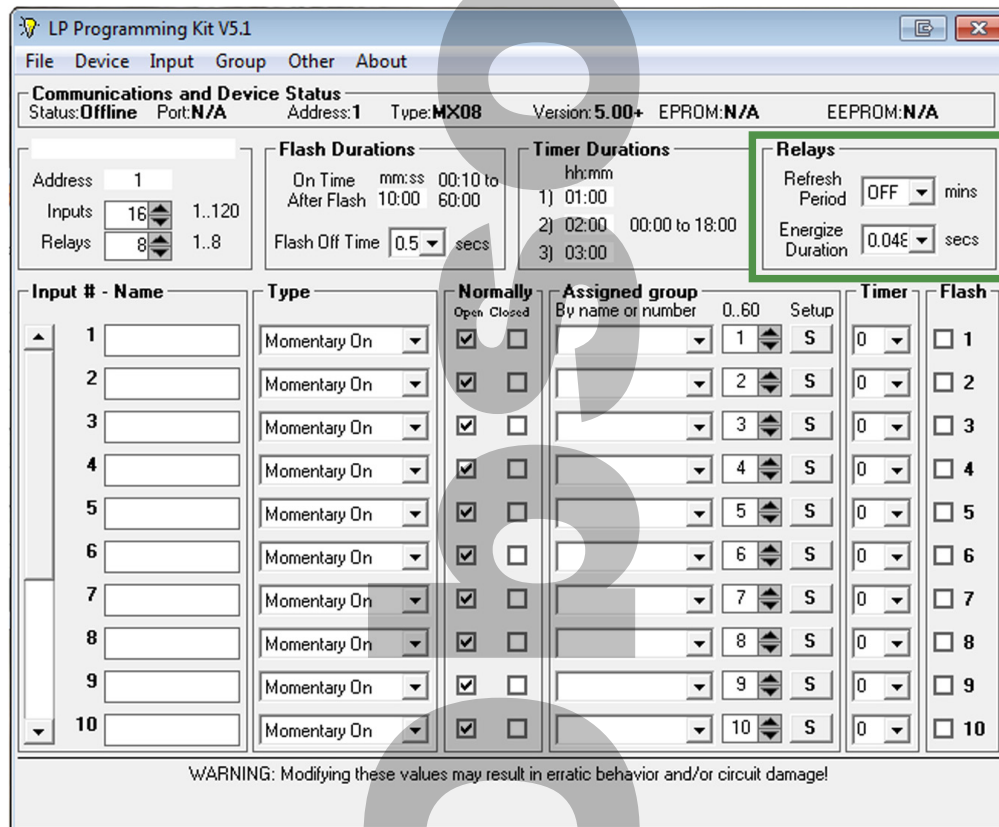
Refresh is a pulsing function intended to extend operation of worn-out relays.<sup>1</sup>

1. In the area labeled “Relays” there is a drop down box entitled “Refresh Period.” (Figure 23)
2. To set an output refresh rate select a time between 3-30 minutes from the drop down box.
3. To deactivate this feature select OFF from the drop down box.
4. Select Tool Bar File > Save to save data to .lpx file
5. Select Tool Bar Device > Write, to save data to the controller memory.

## Outputs : Energize Duration

This setting regulates the length of time between the ON/OFF Refresh pulse.

1. In the area labeled “Relays” there is a drop down box labeled “Energize Duration”.
2. The output energize duration is factory set for 0.072 seconds. (There should be no need to change this value.)
3. Select Tool Bar File > Save to save data to .lpx file
4. Select Tool Bar Device > Write, to save data to the controller memory.



LP Programming Kit V5.1

File Device Input Group Other About

Communications and Device Status  
Status: Offline Port: N/A Address: 1 Type: MX08 Version: 5.00+ EPROM: N/A EEPROM: N/A

Address: 1  
Inputs: 16 (1..120)  
Relays: 8 (1..8)

Flash Durations  
On Time mm:ss 00:10 to 60:00  
After Flash 10:00 60:00  
Flash Off Time 0.5 secs

Timer Durations  
hh:mm  
1) 01:00  
2) 02:00 00:00 to 18:00  
3) 03:00

Relays  
Refresh Period OFF mins  
Energize Duration 0.04E secs

Input #	Name	Type	Normally Open	Normally Closed	Assigned group	Timer	Flash
1		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	S	<input type="checkbox"/>
2		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	S	<input type="checkbox"/>
3		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3	S	<input type="checkbox"/>
4		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4	S	<input type="checkbox"/>
5		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5	S	<input type="checkbox"/>
6		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6	S	<input type="checkbox"/>
7		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7	S	<input type="checkbox"/>
8		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8	S	<input type="checkbox"/>
9		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	9	S	<input type="checkbox"/>
10		Momentary On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10	S	<input type="checkbox"/>

WARNING: Modifying these values may result in erratic behavior and/or circuit damage!

(Figure 23)

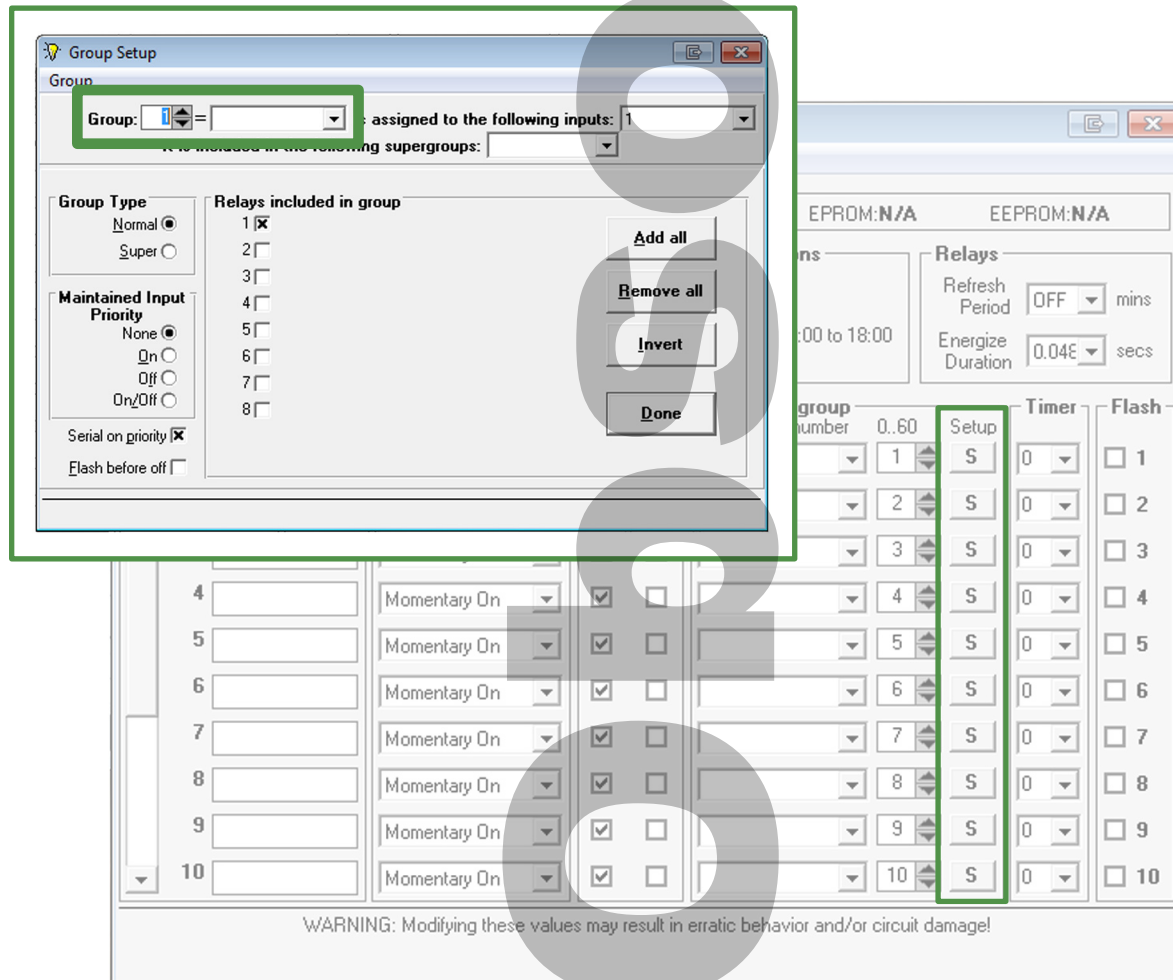


<sup>1</sup> To prevent damage to equipment, limit Refresh usage to Qwik / Retrofit Kits 3 or 5 .

## Group Assignments : Naming Groups

Naming groups is the first step to establishing the relationship between inputs and outputs in the LPPK Controller Configuration Database. Naming may be used to organize the groups according to application such as “1st Floor Conference Room”.

1. Under the column heading labeled “Assigned Group” select “Setup”. This can also be accomplished by selecting Tool Bar Group > Setup.
2. The Group Setup screen should appear. (Figure 24)
3. Select the desired Group between 1-60, to be named.
4. In the box next to the Group number type up to 15 characters to name the output.
5. Repeat for each group.
6. Select Tool Bar File > Save to save data to .lpx file
7. Select Tool Bar Device > Write, to save data to the controller memory.

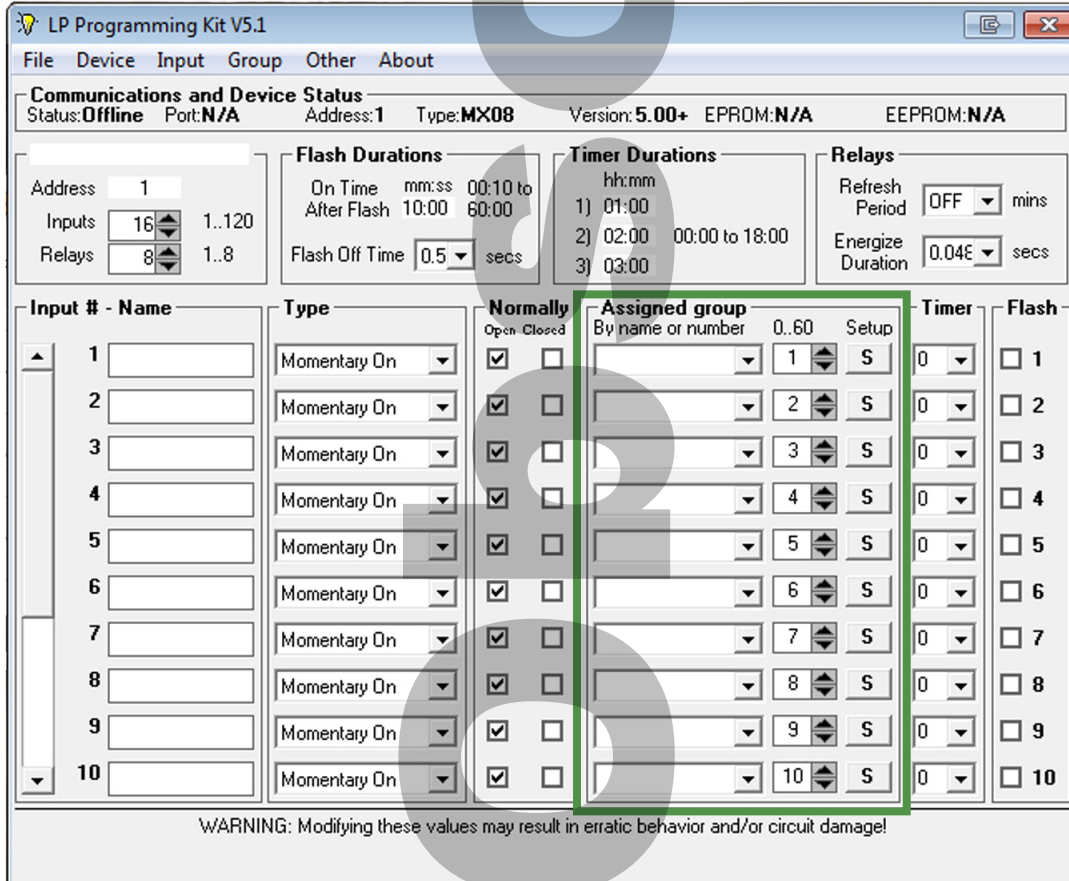


(Figure 24)

## Group Assignments : Inputs

The input and its configurations are then assigned to a group. For example, inputs (switches) in the conference room are assigned to the group entitled “1st Floor Conference Room”.

1. Under the column labeled “Assigned Group” select the name of the group the input will be controlling. If you do not know the Group Name then type in or select the group number between 1 and 60 under the column labeled “0..60”. (Figure 25)
2. Repeat for all inputs.
3. Select Tool Bar File > Save to save data to .lpx file
4. Select Tool Bar Device > Write, to save data to the controller memory.



The screenshot shows the LP Programming Kit V5.1 software interface. The main window displays various configuration options for the device. A green box highlights the 'Assigned group' column in the input configuration table, which is used to assign specific inputs to a group.

**Communications and Device Status**  
 Status: Offline Port: N/A Address: 1 Type: MX08 Version: 5.00+ EPROM: N/A EEPROM: N/A

**Flash Durations**  
 On Time mm:ss 00:10 to  
 After Flash 10:00 60:00  
 Flash Off Time 0.5 secs

**Timer Durations**  
 hh:mm  
 1) 01:00 00:00 to 18:00  
 2) 02:00  
 3) 03:00

**Relays**  
 Refresh Period OFF mins  
 Energize Duration 0.04E secs

Input # - Name	Type	Normally Open Closed	Assigned group	Timer	Flash
1	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	0..60	0	<input type="checkbox"/> 1
2	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	1	0	<input type="checkbox"/> 2
3	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	2	0	<input type="checkbox"/> 3
4	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	3	0	<input type="checkbox"/> 4
5	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	4	0	<input type="checkbox"/> 5
6	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	5	0	<input type="checkbox"/> 6
7	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	6	0	<input type="checkbox"/> 7
8	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	7	0	<input type="checkbox"/> 8
9	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	8	0	<input type="checkbox"/> 9
10	Momentary On	<input checked="" type="checkbox"/> <input type="checkbox"/>	9	0	<input type="checkbox"/> 10

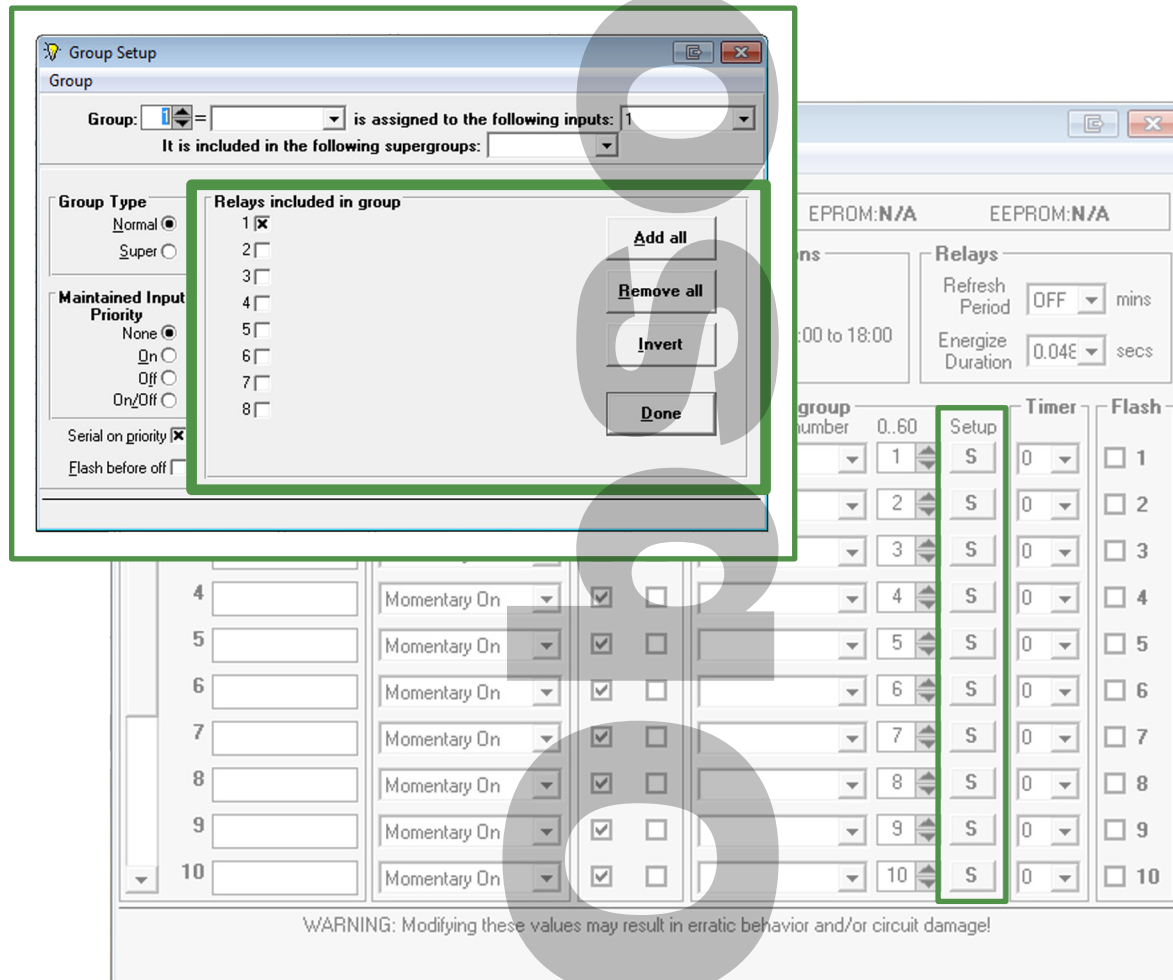
WARNING: Modifying these values may result in erratic behavior and/or circuit damage!

(Figure 25)

## Group Assignments : Outputs

The outputs are then included in the appropriate group. For example, outputs (relays and lighting circuits) in the conference room are included in the group entitled "1st Floor Conference Room". This completes configuration of the relationship allowing the input control of all the outputs contained in the group.

1. Under the column heading labeled "Assigned Group" select "Setup". This can also be accomplished by selecting Tool Bar Group > Setup from the toolbar.
2. The Group Setup screen should appear. (Figure 26)
3. Select the desired Group between 1-60, to be created or modified.
4. Once the Group number is selected, click on the box associated to the output / relay number to be added to the group. Select each respective box until all the desired outputs/relays are assigned to this group. There are buttons to the left labeled "Add All" to add all relays to the group, "Remove All" to delete all from the group and "Invert" to select the outputs that are not checked.
5. Repeat for each group.
6. Select Tool Bar File > Save to save data to .lpx file
7. Select Tool Bar Device > Write, to save data to the controller memory.



(Figure 26)

## Additional Features : Serial On Priority

This setting allows BAS ON commands priority over input OFF commands.

1. Under the column heading labeled “Assigned Group” select “Setup”. This can also be accomplished by selecting Tool Bar Group > Setup.
2. The “Group Setup” screen should appear. (Figure 27)
3. To activate this feature click on the box in the lower left hand corner of the screen labeled “Serial On Priority”. An “X” will appear in this box to indicate the feature is selected.
4. Select Tool Bar File > Save to save data to .lpx file
5. Select Tool Bar Device > Write, to save data to the controller memory.

## Additional Features : Serial On Priority Flash Warning (Flash Before Off)

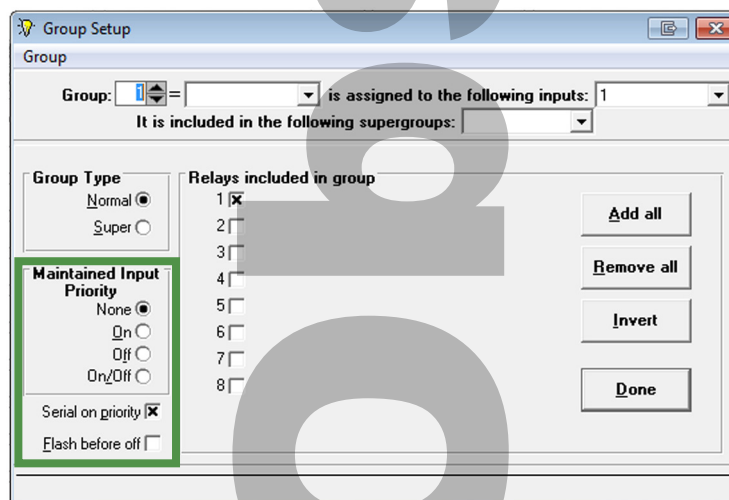
This setting incorporates a flash warning for BAS OFF commands.

1. To activate this feature click on the box in the lower left hand corner of the screen labeled “Flash before off”. An “X” will appear in this box to indicate the feature is selected.
2. Select File > Save to save data to .lpx file
3. Select Device > Write, to save data to the controller memory.

## Additional Features : Maintained Input Priority

This setting is typically utilized for fire alarm, security, or emergency transfer switch (ETS) override operations.\*

1. In the box titled “Maintained Input Priority” select either None, On, Off, or On/Off.
2. Select Tool Bar File > Save to save data to .lpx file
3. Select Tool Bar Device > Write, to save data to the controller memory.



(Figure 27)

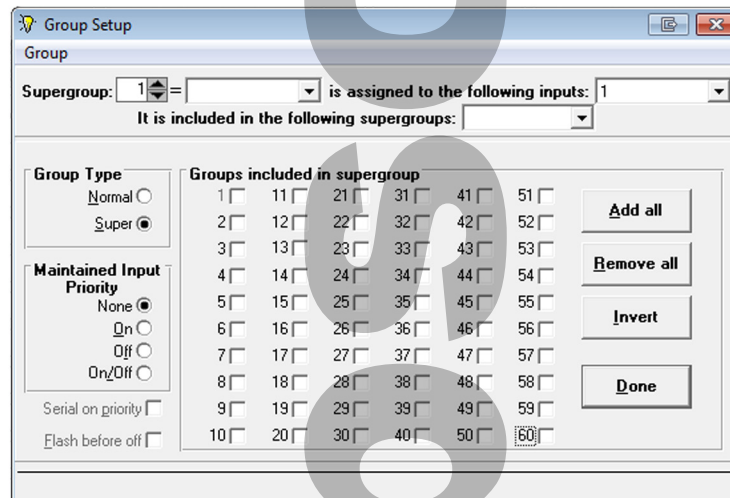
\* Refer to USBTK Tech Note for additional information.



## Additional Features : Assigning Groups to Super Groups

Super Groups allow application of an input's group settings to multiple groups.

1. Under the column heading labeled "Assigned Group" select "Setup". This can also be accomplished by selecting Tool Bar Group > Setup from the toolbar.
2. Select the desired Group number between 1-60, to be created or modified.
3. Once the Group number is selected, click on the circle in the "Group Type" area labeled "Super". The numbers next to the boxes represent the groups included in the Super group. The group that matches the Super group number will be grayed out because it cannot be assigned to the Super group. (Figure 28)
4. Select the desired groups to be included in the Super Group by clicking the respective box.
5. Repeat until desired Super Groups are defined.
6. Select Tool Bar File > Save to save data to .lpx file
7. Select Tool Bar Device > Write, to save data to the controller memory.



(Figure 28)

## Additional Features : Special Options

Option 1 : N/A

Option 2 : N/A

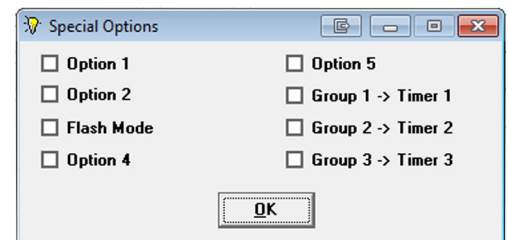
Option 3 : When checked, this option changes all inputs types that were “Momentary On/Off” to operate as “Momentary On/Off/On” - when flash warning is enabled.

Option 4 : Future Use

Option 5 : Future Use

Group 1 > Timer 1, Group 2 > Timer 2, Group 3 > Timer 3 : This option provides the capability to override all timer dependant switches in a panel. Examples are classrooms or offices that need a switch without a timer during the day and utilize the timer after hours.<sup>1\*</sup>

1. Select Tool Bar Other > Special Options
2. Special Options Screen will appear (Figure 29)
3. Choose desired options
4. Select Tool Bar File > Save to save data to .lpx file
5. Select Tool Bar Device > Write, to save data to the controller memory.



(Figure 29)



<sup>1</sup> Be sure groups 1, 2, and 3 do not have relays assigned if these options are selected.

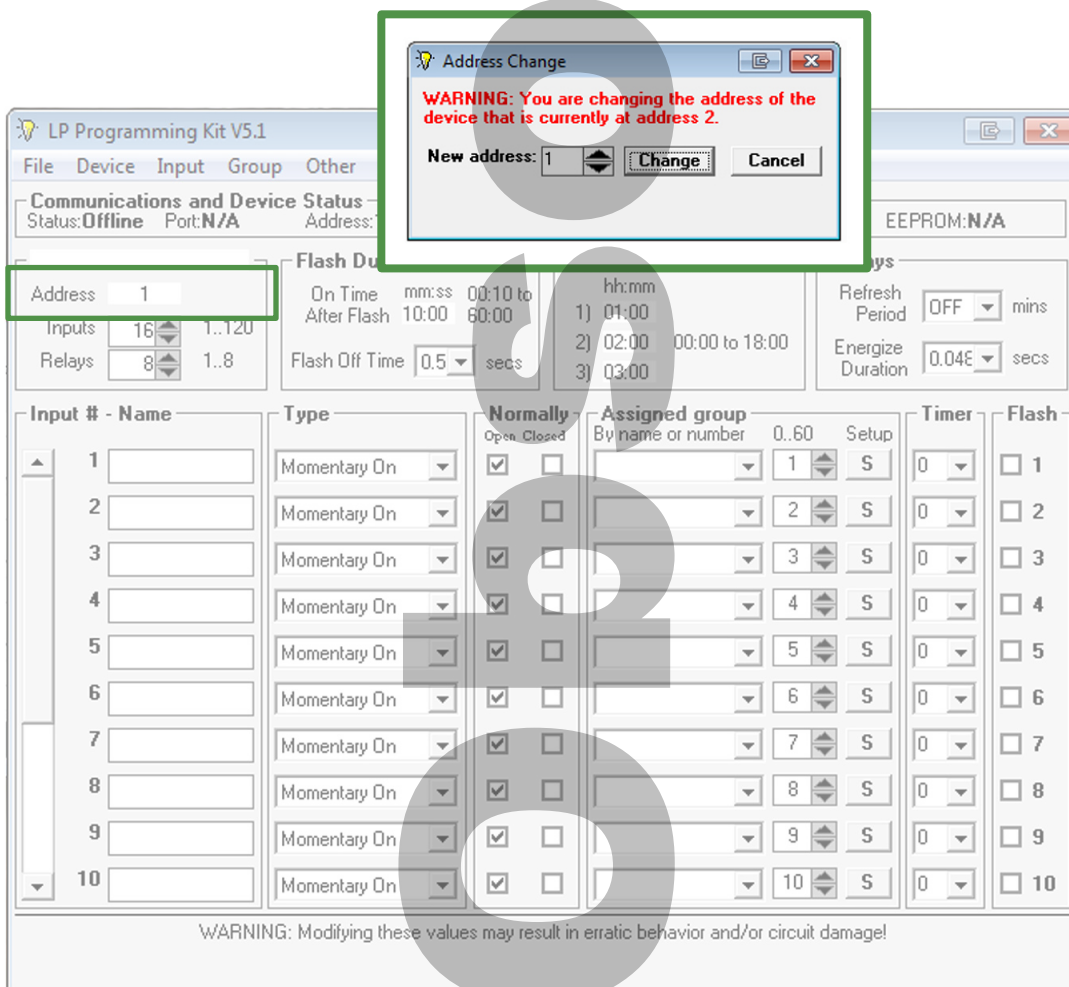
BAS Command	Switch Timer State	On Switch is Activated
Panel X, Group 1 On	All switches in Panel X with Timer 1 will respond as if there is no timer	Lights will stay on until command off
Panel X, Group 1 Off	All switches in Panel X with Timer 1 will now respond to Timer 1	Lights will stay on for duration of Timer 1 then turn off
Panel X, Group 2 On	All switches in Panel X with Timer 2 will respond as if there is no timer	Lights will stay on until command off
Panel X, Group 2 Off	All switches in Panel X with Timer 2 will now respond to Timer 2	Lights will stay on for duration of Timer 2 then turn off
Panel X, Group 3 On	All switches in Panel X with Timer 3 will respond as if there is no timer	Lights will stay on until command off
Panel X, Group 3 Off	All switches in Panel X with Timer 3 will now respond to Timer 3	Lights will stay on for duration of Timer 3 then turn off

\* Refer to USBTK Tech Note for additional information.

## Additional Features : Setting LMB Controller Address

This feature allows you to remotely alter the controller's address. (Legacy Feature - Only available on LMB)

1. Connect to LMB Controller.
2. Double click on the address box. The "Address Change" screen will appear. (Figure 30)
3. Enter the new address and click 'Change'.

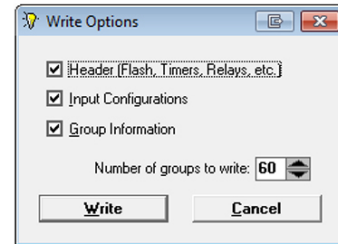


(Figure 30)

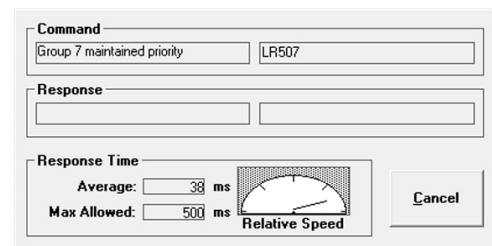
## Additional Features : Write Database to Controller

This allows writing a database (in part or whole) from your PC to the controller.

1. Select Tool Bar Device > Write
2. Select Header if header information is to be written to a selected controller. Header information includes all the global controller data such as “inputs”, “relays”, “on-time after flash”, “flash off time”, “switch timer durations”, “relay refresh rate” and “relay energize duration”. (Figure 31)
3. Select Input Configuration if input configurations are to be written to a selected controller. Input Configurations includes “input names/numbers”, “types”, “timers”, “flash”, and “input polarity”.
4. Select Group Information if group information is to be written to a selected controller. Group information includes all group information listed in the “Group Setup” screen.
5. Select the number of groups to be written to a selected controller. (This information takes the longest time to write.)
6. Select “Write” to begin writing to controller.



(Figure 31)



(Figure 32)

## Additional Features : Read Controller Database

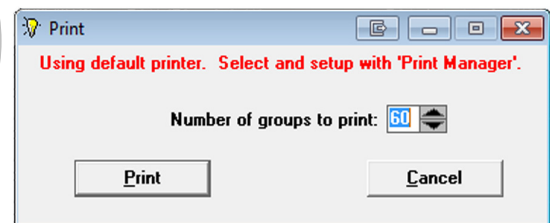
This allows reading an existing database from the controller.

1. Select Device > Read

## Additional Features : Print Controller Database

We recommend you print a copy of the controller data for your files.

1. Select Tool Bar File > Print
2. Select the desired number of groups between 1 and 60. (Figure 33)
3. Select “Print” to print desired groups.
4. Select “Cancel” to cancel print selection and return to the “Main Screen”.



(Figure 33)



As information is being written or read a screen appears to display the process. (Figure 32)

The box to the left of entitled “Command” and to the left entitled “Response”, displays the information being communicated. The box to the right displays the actual protocol commands.  
The “Response Time” with “Relative Speed” indicator will reflect system communication speed.

## Diagnostics : Communication and Device Status

### Status

The Status box displays either online or offline programming. If online is displayed then your computer is currently connected to a controller. (Figure 34)

### Port

The computer USB port will be displayed in this box if you have selected online programming. Port is not applicable with offline programming.

### Address

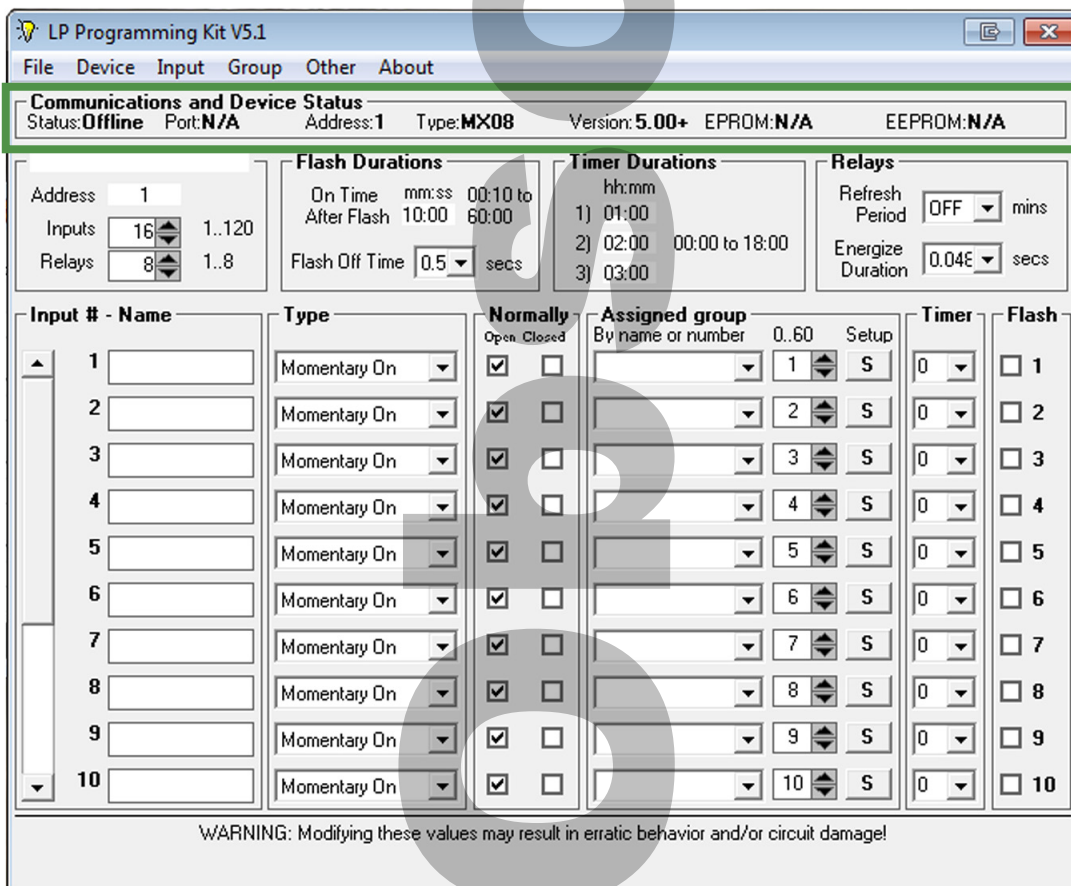
The address is the address of the controller you selected in online or offline setup.

### EPROM

This displays the status (OK or Error) of the controllers EPROM which contains the controller's software. This is not applicable for offline programming and newer controllers.

### EEPROM

This displays the status (OK or Error) of the controller's non-volatile EEPROM which contains the controller database. This is not applicable for offline programming.



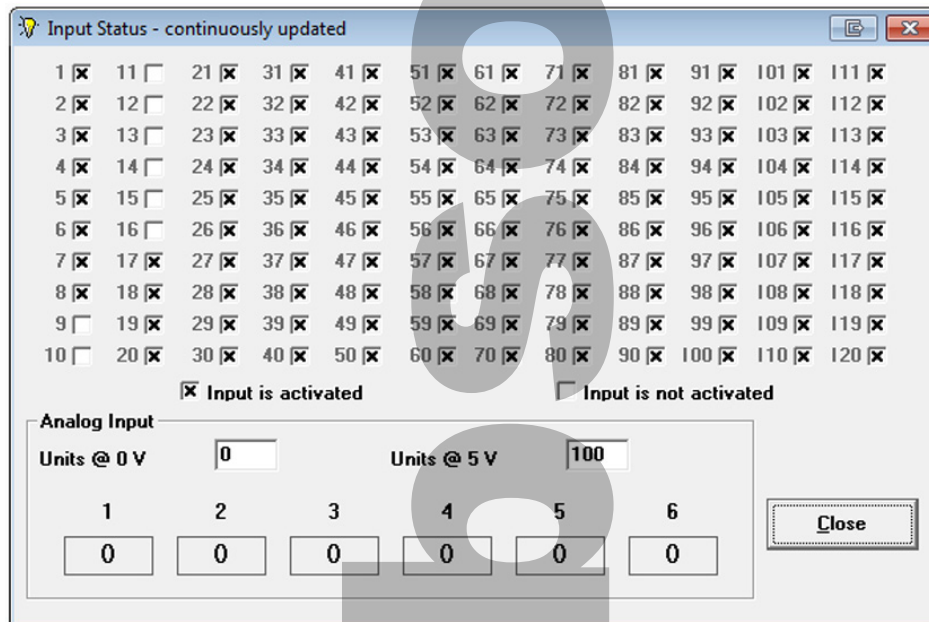
(Figure 34)

## Diagnostics : View Current Input States

1. Select Tool Bar Group > View > Modify Current States.
2. An Input Status screen will appear and continuously display input status for each input configured in the database. (Figure 35)

The boxes and numbers represent the input numbers. An “X” in the box indicates the input is activated. Momentary inputs will only display the “X” for the duration of the momentary closure.

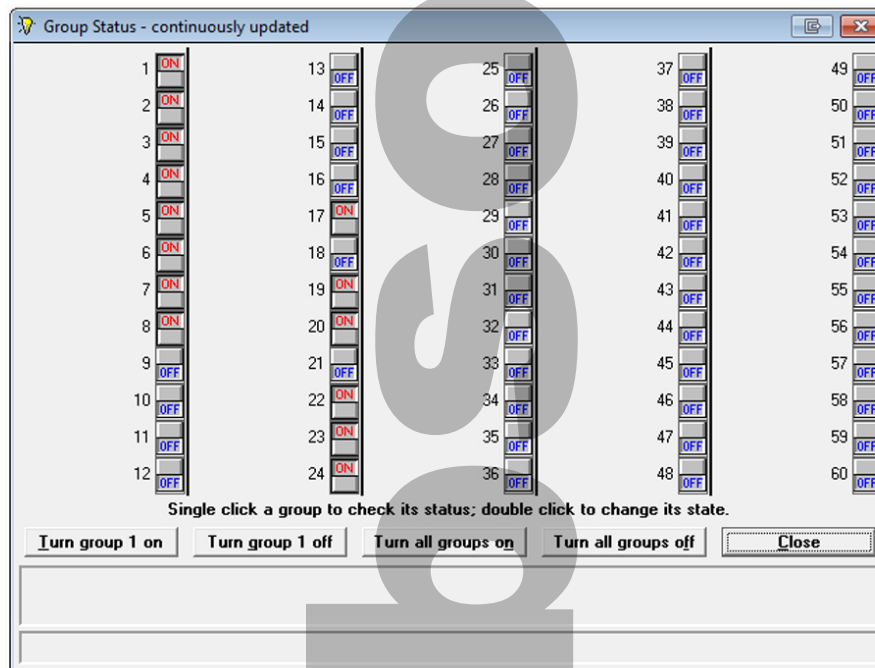
The area labeled “Analog Input” allows you to select a value range from 0-255 with which LPPK will display a value in proportion to 0-5VDC analog input signal. Controllers use six inputs. (LMB controllers have five inputs)



(Figure 35)

## Diagnostics : View/Modify Current Output States

1. Select Tool Bar Group > View/Modify Current States.
2. A Group Status screen will appear and continuously display the output status for each output configured in the database. (Figure 36)
3. To check the status of a Group, right-click once with the cursor on the desired Group status display. Text boxes at the bottom of the screen will display status information and the current status of the group including what caused the group to be in its current state.
4. To manually change the state of a Group, right-click twice on the Group status display. The State of the group will change.



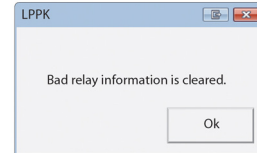
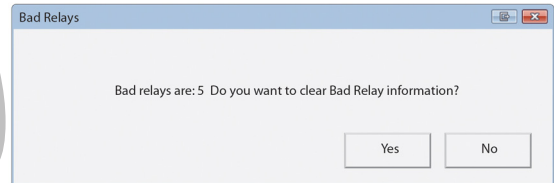
(Figure 36)

## Diagnostics : Check Bad Relays/Circuits

This feature provides the capability to display the relays which are not in the correct state. Relays must be physically capable of providing feedback via auxiliary contact.

1. Select Tool Bar Other > Check For Bad Relays.
2. LPPK will determine which relays are not in the correct state and will list them in a dialog screen. (Figure 37)

These relays may be malfunctioning and need replacing. Resetting the relays will be required to clear this screen. If you do not reset the bad relays then the same relay numbers will be displayed the next time you check bad relays. Be sure to reset the bad relays by selecting "YES". If you want to keep the Bad Relay listing the next time you select this screen then select "NO".



(Figure 37)



## Troubleshooting the Controller

Be sure to check the Blue Ridge website <[www.BRTint.com](http://www.BRTint.com)> for latest troubleshooting support.

## Outputs Will Not Turn On

Verify power is connected to the controller. There should be LEDs illuminated.

Verify there is at least 24 VAC present to the secondary of the transformer supplying power to the controller. Use a voltmeter to check the power.

Check to see if Maintained input priority for the group that is not responding to control commands is not set to Maintained Off Priority or Maintained On/Off Priority.

Verify that the output ribbon cable connector is properly seated.

Press the OVER push button to see if all the relays will turn on. If so, then the output portion of the controller is operating properly.\*

Verify that the connector to output (relay or Circuit breaker) is properly seated.

Use LPPK to verify that the controller sees the inputs change state. Use an alligator clip or shorting wire to test.

## Controller not communicating or Communication LED TX / RX Not Blinking

Verify the LPPK cable or network cable is connected correctly.

If you are using LPPK verify that the correct communication port is selected.

Verify the controller is addressed properly.

Ensure that only dip switch 4 is in the "On" position (switch 7 or 8 may also be ON for addressing). To activate changes to switch settings the controller must be power cycled.

\* Refer to Lx5 Hardware User Guide for explanation of controller hardware.

## Worksheets : Switch Input Programming

### Panel Summary

Panel Location	Blue Ridge part #	Installed Relays

Panel Address	Flash Duration		Timers Durations (hh:mm/00:00-18:00)	Relays	
	On Time After Flash (mm:ss)	Flash Off Time (0.5-2.0)		Refresh Rate (Off or 3-30 mins)	Energize Durations (0.024-1.560)
Inputs (1-120)			1)		
Relays (1-60)	Used		2)		
	Spare		3)		

### Switch Input Programming

Panel Name:  Panel Location:

Input	Input Name	Switch Type	Switch Information			Timer # 0, 1, 2, or 3	Flash
			Normally Open	Normally Closed	Assigned group Name or Number (1-60)		
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

**Worksheets : Group Programming**

Group Programming

Panel Name: \_\_\_\_\_ Panel Location: \_\_\_\_\_

Group #	Group Name	Group Information				Serial Override
		Type Normal or Super	Maintain Switch Priority None, On, Off or On/Off	Relays in Group	Flash Warning	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

Worksheets : Group Programming

Group Programming

Panel Name: \_\_\_\_\_ Panel Location: \_\_\_\_\_

Group #	Group Name	Group Information				Serial Override
		Type Normal or Super	Maintain Switch Priority None, On, Off or On/Off	Relays in Group	Flash Warning	
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						

## AppLoader : Overview and Installation

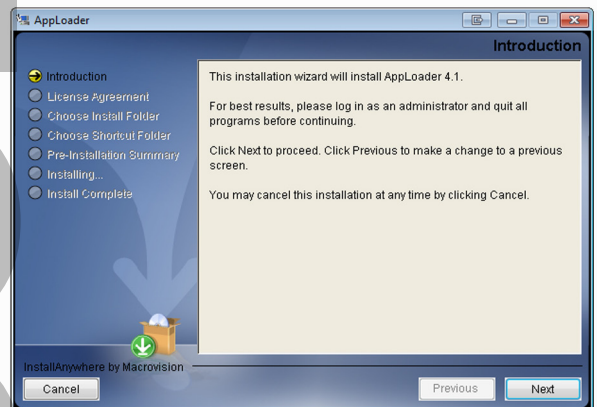
AppLoader software allows field service personnel to restore or update Lx5 firmware utilizing the USB Tech Kit cable.

AppLoader performs two functions. First the software downloads firmware to the controller in the form of Clipping (extension .clipping) files. Second AppLoader displays Modstat consisting of diagnostic firmware and operational data.

1. The USB-TK Thumb Drive is configured to auto-run and display the Main Menu screen. (previously shown in Figure 1)
2. From the Main Menu screen, click on the AppLoader button to view the AppLoader Menu choices. (Figure 38)
3. From the AppLoader Menu, click on AppLoader Install to launch the installation process. (Figure 39)
4. At the end of the installation process select Done to complete the installation.



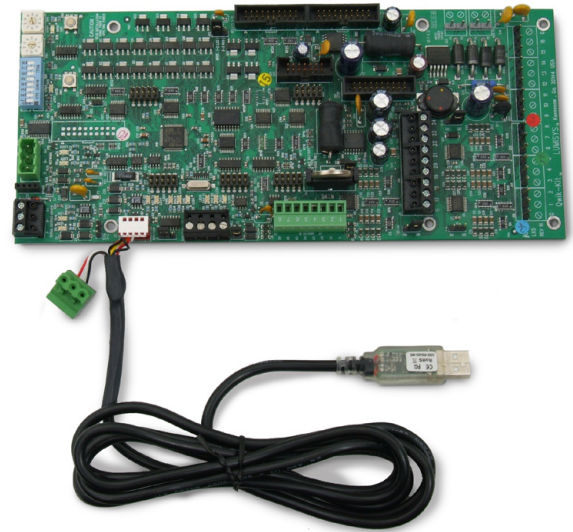
(Figure 38)



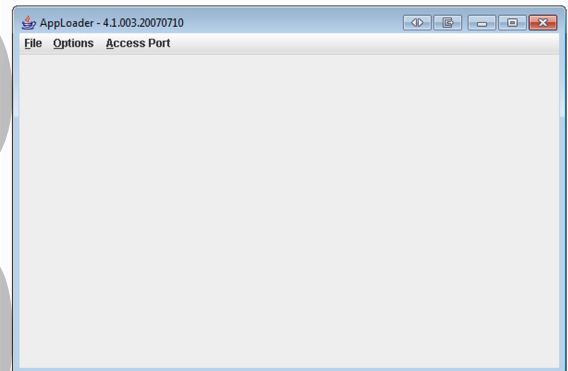
(Figure 39)

## AppLoader : Connection

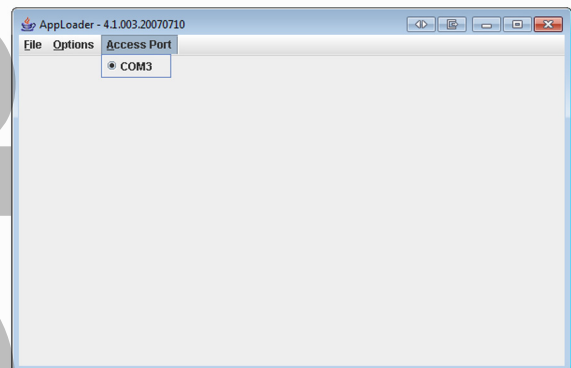
1. Insert the USB end of the Technicians Cable into an available USB port on your PC.<sup>1</sup>
2. Connect the cable to the Lx5 controller with the red 5 pin socket. (Figure 40)
3. Launch AppLoader from your computer Desktop or Start Menu. The AppLoader main screen will appear. (Figure 41)
4. Select Tool Bar Access Port > Choose the Com Port to which the Technicians Cable is connected. (Figure 42)



(Figure 40)



(Figure 41)



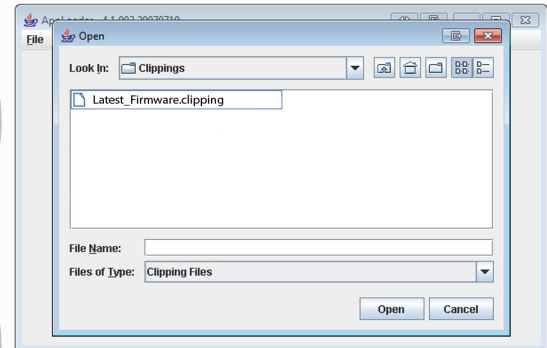
(Figure 42)



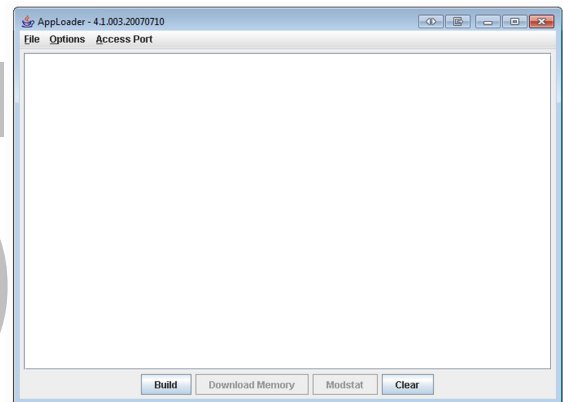
<sup>1</sup> Drivers must be installed to operate the Technicians Cable. Refer to Page 7 for driver installation instructions.

## AppLoader : Downloading

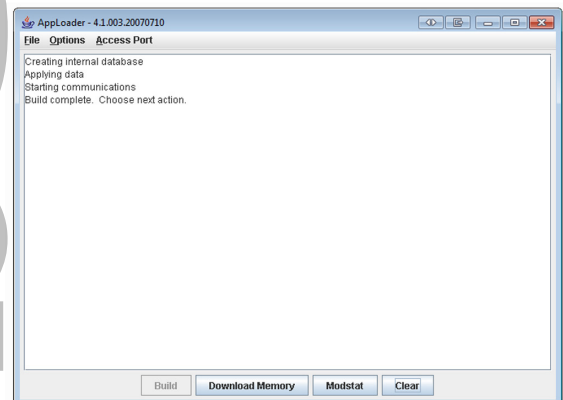
1. Select Tool Bar File > Open
2. Navigate to Removable Disk (X) (USB-TK Thumb Drive) > AppLoader > Clippings > Select the Clipping file you wish to download. (Figure 43) (Contact Blue Ridge Technical Support for the latest Clipping files)
3. Once the Clipping file opens, select Build (Figure 44)<sup>1</sup>
4. AppLoader will then construct the file and display the message "Build complete. Choose next action." (Figure 45)
5. Select Modstat to confirm communication is established.<sup>2</sup>
6. Modstat will display the controller's current firmware and related data.



(Figure 43)



(Figure 44)



(Figure 45)



<sup>1</sup> If the Build button does not become selectable, resize the AppLoader Window.

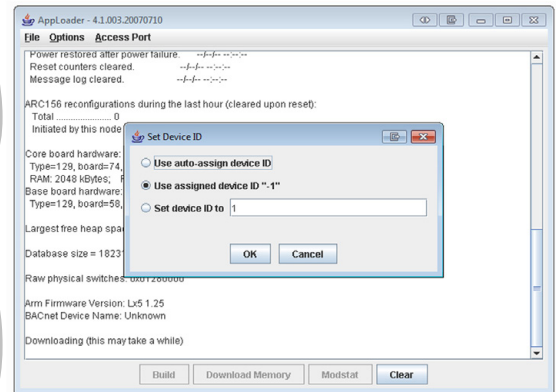
<sup>2</sup> If Modstat is not selectable confirm the proper Com Port is selected.

## AppLoader : Downloading

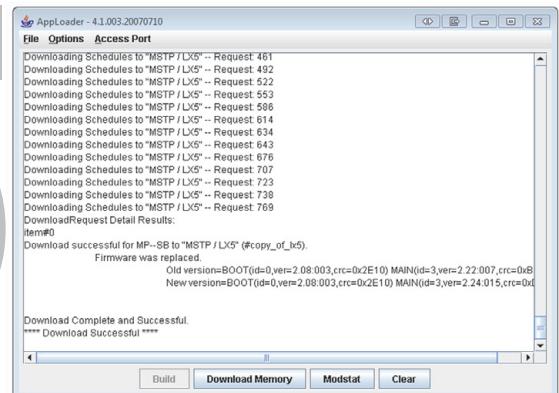
1. Select Tool Bar File > Open
2. Navigate to Removable Disk (X) (USB-TK Thumb Drive) > AppLoader > Clippings > Select the Clipping file you wish to download. (Figure 43) (Contact Blue Ridge Technical Support for the latest Clipping files)
3. Once the Clipping file opens, select Build (Figure 44)\*
4. AppLoader will then construct the file and display the message "Build complete. Choose next action." (Figure 45)
5. Select Modstat to confirm communication is established.\*\*
6. Modstat will display the controller's current firmware and related data.

## AppLoader : Downloading (Continued)

7. Then select Download Memory.
8. The Set Device ID window will appear. "Use auto-assign device ID" creates an ID based on the controller's configuration. "Use assigned device ID" employs the controllers current ID. "Set device ID to (X)" allows manual assignment of the ID. Select desired device ID setting and select OK. (Figure 46)
9. AppLoader will begin loading new Clipping file to controller. (Download may take 10-20 minutes)
10. When the download is accomplished "Download Complete and Successful" will display. (Figure 47) (If the download fails first repeat steps 5-8. If failures continue refer to Page 41 and contact Blue Ridge Technical Support)
11. Close AppLoader.



(Figure 46)



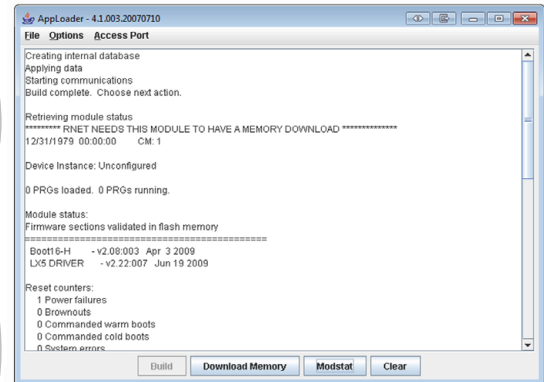
(Figure 47)



## AppLoader : Formatting

Formatting the controller may be necessary to successfully download new firmware. Contact Blue Ridge Technical Support before formatting any controller.

1. Disconnect the controller's power.
2. Disconnect the USB Technicians Cable.
3. Set both the controller's rotary switches to (0).\*
4. Install a jumper on the Format (FMT) pins.
5. Apply power to the controller. Confirm the red Error LED is blinking (this indicates the controller is formatted).
6. Disconnect the controller's power.
7. Reset both the controller's rotary switches to original position.
8. Uninstall the jumper from the Format (FMT) pins.
9. Apply power to the controller.
10. Connect the USB Technicians Cable.
11. Perform a Modstat to confirm formatting. The Device Instance will display "Unconfigured". (Figure 48)



(Figure 48)

\* Refer to Lx5 Hardware User Guide for location of controller hardware.