Integrating HomeWorks Illumination and HomeWorks QS using the Driver Generator

1.0 Overview

This application note explores the ideal way to integrate a HomeWorks Illumination system with a HomeWorks QS system over the local network utilizing the HomeWorks Driver Generator tool to facilitate the creation of an importable keypad button press command set to be used within the HomeWorks QS programming software. The command set generated by the tool will allow for the two systems to control each other over the local area network.

Implementation of this integration will be beneficial when upgrading an Illumination system to QS. System upgrades to HomeWorks QS deliver value but, due to the size of the systems being upgraded, may occur in phases over time. As a result, both systems will be up and running concurrently for some period of time as the HomeWorks QS system is gradually assigned more of the total system responsibility in each phase of the upgrade.

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2.0 Hardware and Software Requirements

- Router/Switch for both systems to connect to
- HomeWorks Illumination Processor
- HomeWorks Illumination Software version 1.65 or newer
- HomeWorks QS Processor
- HomeWorks QS Software version 8.1 or newer

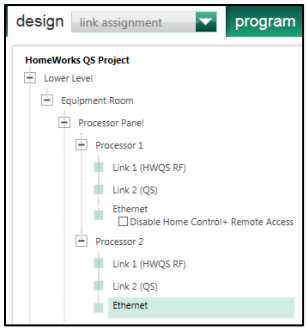
3.0 Configuring the HomeWorks QS System for Integration with HomeWorks Illumination

Go to **Design > Equipment** and add a Control 3rd Party device to an area of the area tree. Type in the IP address of the Illumination Processor and use port 23.

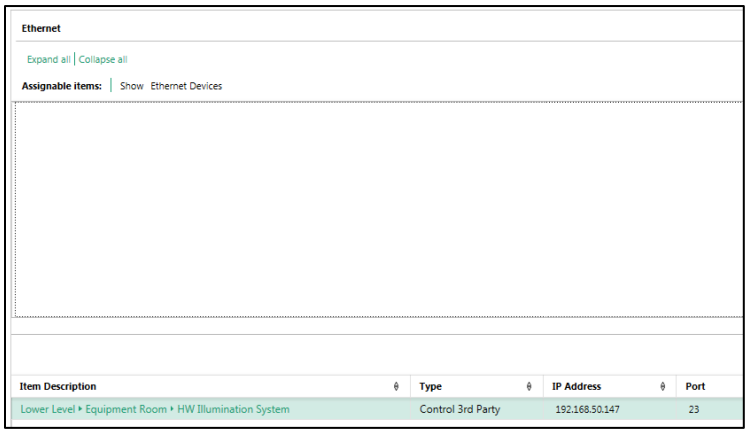
Important Note: The login credentials for the HomeWorks Illumination system will be generated as a separate command sent to the HomeWorks Illumination processor in a later step of this application note.

The Inter Message Delay field should be changed to 250ms. This is the amount of time that will pass before a command is sent.

Next, assign the Illumination Processor to the Ethernet connection of one of the HomeWorks QS processors by selecting ***Link Assignment*** from the ***Design*** tab drop down menu. Click on ***Ethernet*** under the Processor where the Illumination Processor is to be assigned.

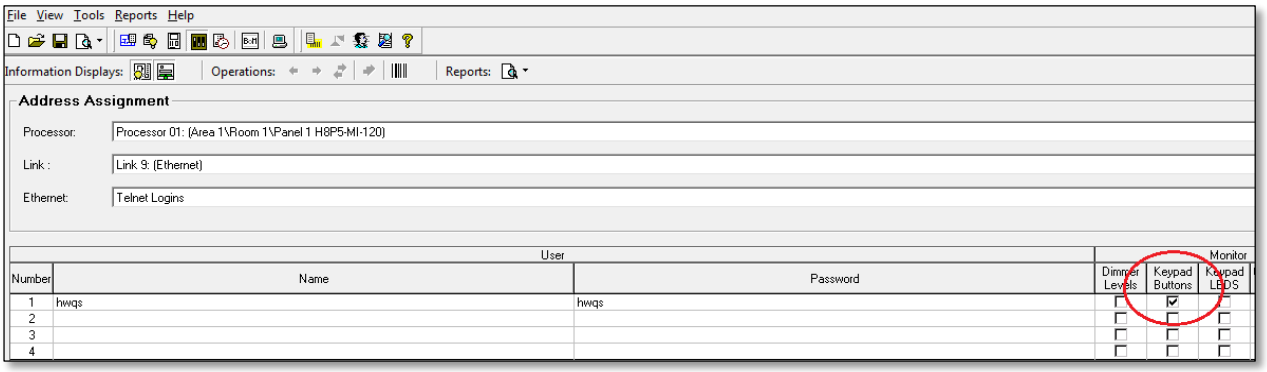


Check the box for the Illumination Processor that you would like to assign to an Ethernet Connection and it will appear in the list of assigned Ethernet Devices in the lower right-hand corner of the screen.



4.0 Configuring the HomeWorks Illumination System for Integration with HomeWorks QS

In the HomeWorks Illumination software, verify the processor connected to the network on the ***Panel Assignment Screen*** has an IP address on the same network as the HomeWorks QS processor. Go to the ***Address Assignment*** tab and then select Link 9. Enter a username and password that the HomeWorks QS system will use to log in to this processor. Ensure the option for Monitoring “Keypad Buttons” is checked.



Important Note: It is recommended to initially leave ***Bad Commands*** unchecked within the ***Suppress*** options. If you should experience communication delays, then proceed to check the box to suppress Bad Commands.

5.0 Using the HomeWorks Driver Generator Tool

HomeWorks QS Software 8.1 and newer can import a .csv file (typically opened and edited using Microsoft Excel). This process creates a driver allowing the HomeWorks QS system to receive and/or send commands to the HomeWorks Illumination system over the local network, which is the ideal method to integrate between the two systems. Below is a screenshot of the Driver Generator Tool and a breakdown of each of the components to help understand how the tool is used. The latest version of the tool can be found on the HomeWorks QS Resource Site (resi.lutron.com) and on myLutron (www.lutron.com).

1. **File Menu:**

   a. Open… Open existing drivers in the .csv format. Ensure the file is not open in another program before opening it in the tool.

   b. Save – Save the current changes into a .csv file the HomeWorks QS software can import (version 8.1 and newer).

   c. Help – Opens the latest version of this application note.

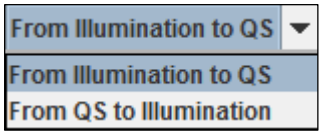
2. **Driver Name and Login Information:**

   a. Driver Set Name – name of the Command Set to be imported into the HomeWorks QS software

   b. Illumination Login - ***Username*** in Link 9 of the Illumination software on the ***Address Assignment*** tab.

   c. Illumination Password - ***Password*** in Link 9 of the Illumination software on the ***Address Assignment*** tab.

3. **Command Direction:**



Specifies the direction of the commands. Each Driver file can only be generated with a single direction. To create a Driver file with both directions, two files will be generated (one file for each direction) and then merged with each other using a spreadsheet program such as Excel by copying the commands from one file and pasting into the other file.

   a. From Illumination to QS – Select this option if an Illumination button press will control the HomeWorks QS System

   b. From QS to Illumination – Select this option if a HomeWorks QS button press will control the Illumination system

4. **Processor, Link, and Keypad Addresses:**

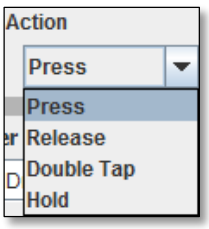
Specifies the Illumination keypad address being monitored, or sent for third party commands, and uses the format [Processor Address: Link Address: Keypad address]

a. Processor Address – Select a processor address from 1 to 16

b. Link Address – Select link 4, 5, 6, or 8:2 (for RF keypads)

c. Select a keypad address from 1 to 32

5. **Action:**



Specifies if the command string to monitor or send should be a Keypad Button Press, Release, Double Tap, or Hold

6. **Button Number:**

Selects which button number on the keypad to monitor or send. Pressing a button number will complete the command selection and will print the command string on the Keypad Button Display area. If a button is clicked for a Keypad Address and Action that has already been selected, it will simply highlight the already selected command string.

The Illumination system will allow each keypad on the back end to have 24 operable buttons. Even if the keypad physically has only 6 buttons with a raise and lower and 2 CCIs on the back, the keypad has 24 operable buttons that can be controlled over the network. To view and program these 24 buttons in the Illumination software, go to the ***Program*** tab, and on the ***Current View*** drop down menu, select ***24 Button Keypad***.

The Lower button on Illumination keypads is typically button 23, and the Raise button is typically button 24. The CCI buttons are typically buttons 19 and 20.

7. **Keypad Button Display:**

Displays the command strings after the button number has been selected and will scroll down automatically if there are more command strings that the area can display. Specific command strings can be highlighted in this area.

8. **Remove Highlighted:**

Removes the Highlighted Command String.

9. **Generate Driver Button:**

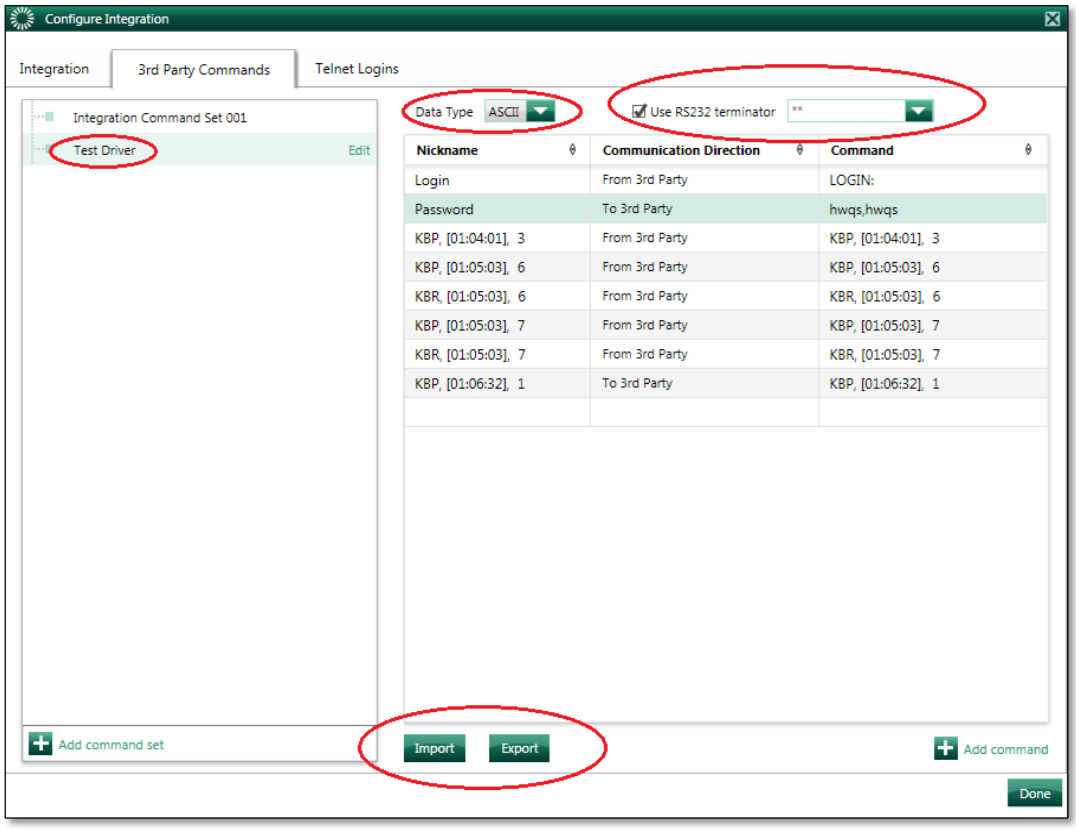
Saves the Command Strings into a .csv file for the HomeWorks QS Software to Import (version 8.1 and newer).

6.0 Importing and Configuring the Driver

Go to ***Tools > Configure Integration > 3rd Party Commands*** within the HomeWorks QS software.

Click on ***Import*** and select the .csv driver file created by the tool. After importing the .csv file, it will be added to the left hand column which is a list of the available drivers within the database. Select the driver by clicking the Driver Set Name. The commands will display on the right-hand side of the Configure Integration window. Any changes made to the driver in the HomeWorks QS software can be exported and saved as a .csv file for future use.

Ensure that the ***Data Type*** reads ***ASCII*** and the ***RS232 Terminator*** box ***is checked***. Use the option for both <CR> and <LF> as the terminators.

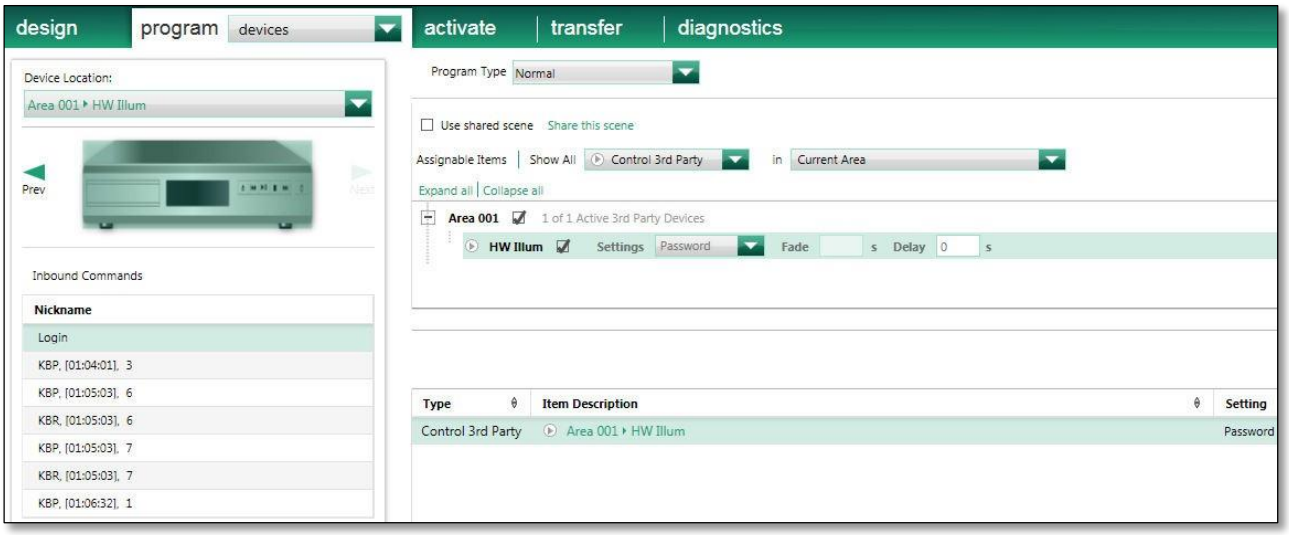


Login and Password commands will appear above the keypad command strings. These commands are automatically included when the HW Driver Generator saves the driver. The Password Command will be populated with the username and password typed into the Generator.

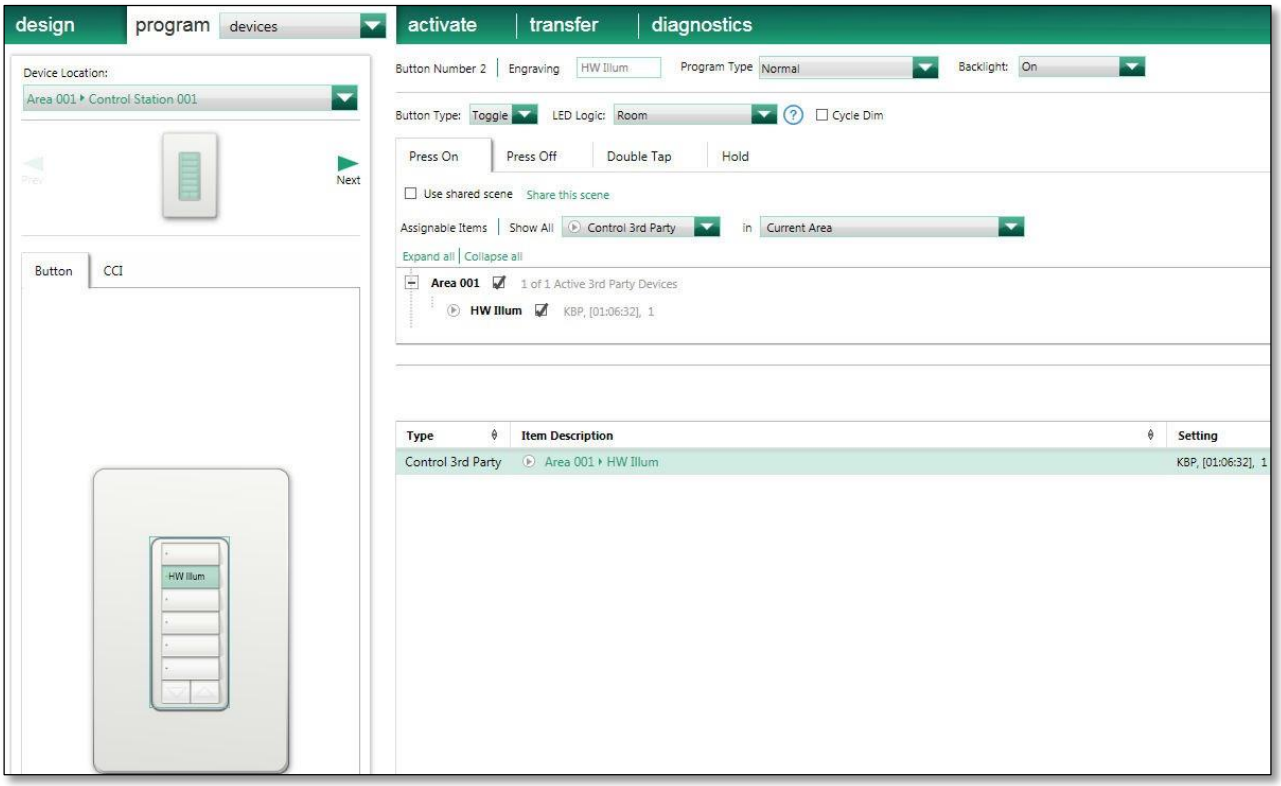
The two systems will communicate over the network. HomeWorks Illumination will send the “LOGIN:” string and the HomeWorks QS processor will be monitoring to see this command.

Programming is required to send out the login and password to the Illumination system. Go to ***Program > Devices*** and select the 3rd party controller from the Device Location drop down menu. On the command with **Login** as the nickname, program it to send the **Password** 3rd party command. When the HomeWorks QS system receives the Login request, the HomeWorks QS processor will send the username and password fields of the driver to the Illumination system in order for it to establish a connection.

Once the Login command is programmed, program the remaining ***Inbound Commands*** similarly by selecting each of the inbound command nicknames and assigning the necessary assignable items. These inbound commands will act like button presses to the HomeWorks QS processor which is monitoring for communication from the Illumination system. These commands will act as Single Action buttons and can have normal or conditional programming on them.

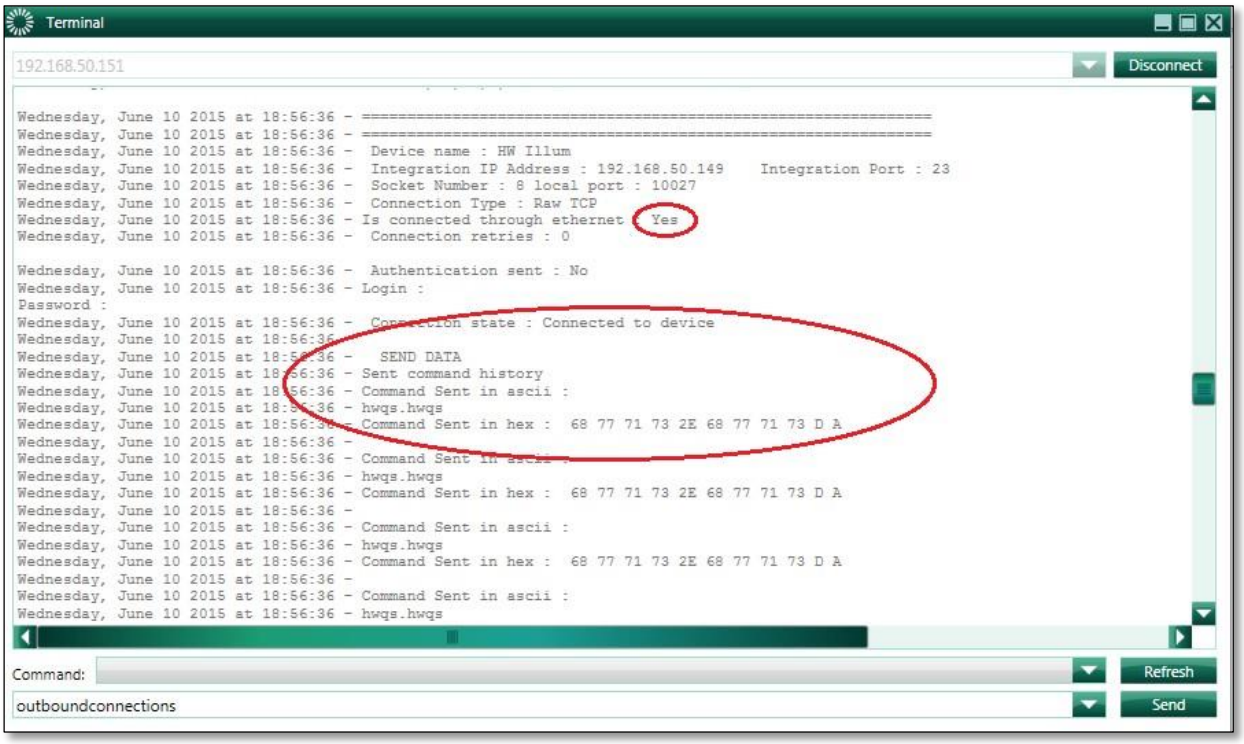


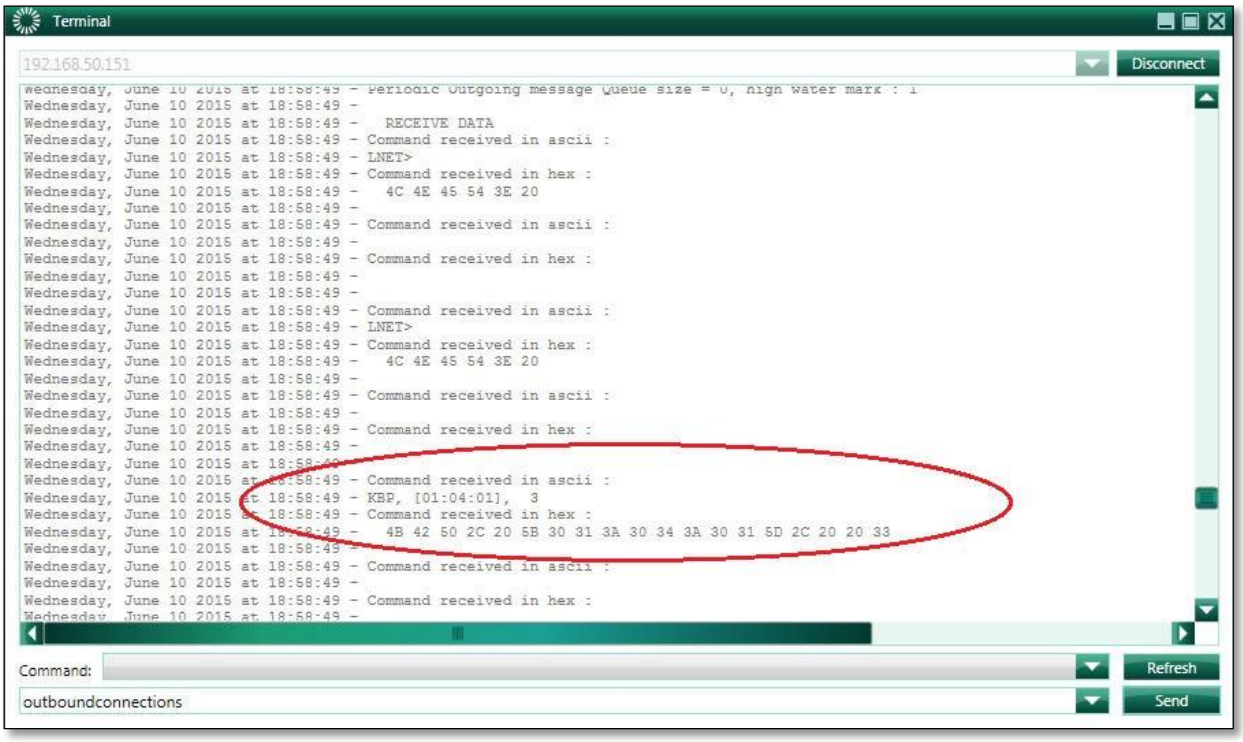
If the command direction is from HomeWorks QS to Illumination, program keypad button presses to send the commands to the HomeWorks Illumination system. Go to any keypad button or other trigger (timeclock, CCI, etc.), and select the “Control 3rd Party” Assignable Item option to locate and assign a command.



7.0 Troubleshooting

The best way to troubleshoot the third party connection is through the HomeWorks QS software using ***Terminal,*** in the ***Tools*** menu. Open a Terminal session to the processor where the HomeWorks Illumination processor is link assigned. Once connected to this processor, send the command "outboundconnections" which confirms if both systems are connected via Ethernet (will say "Yes" or "No") and displays the previous 10 commands sent and received from the connection.




Terminal
192.168.50.151
Disconnect
Wednesday, June 10 2015 at 18:58:49 - Periodic Outgoing message Queue size = 0, high water mark : 1
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - RECEIVE DATA
Wednesday, June 10 2015 at 18:58:49 - Command received in ascii :
Wednesday, June 10 2015 at 18:58:49 - LNET>
Wednesday, June 10 2015 at 18:58:49 - Command received in hex :
Wednesday, June 10 2015 at 18:58:49 - 4C 4E 45 54 3E 20
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in ascii :
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in hex :
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in ascii :
Wednesday, June 10 2015 at 18:58:49 - LNET>
Wednesday, June 10 2015 at 18:58:49 - Command received in hex :
Wednesday, June 10 2015 at 18:58:49 - 4C 4E 45 54 3E 20
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in ascii :
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in hex :
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in ascii :
Wednesday, June 10 2015 at 18:58:49 - KBP, [01:04:01], 3
Wednesday, June 10 2015 at 18:58:49 - Command received in hex :
Wednesday, June 10 2015 at 18:58:49 - 4B 42 50 2C 20 5B 30 31 3A 30 34 3A 30 31 5D 2C 20 20 33
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in ascii :
Wednesday, June 10 2015 at 18:58:49 -
Wednesday, June 10 2015 at 18:58:49 - Command received in hex :
Wednesday, June 10 2015 at 18:58:49 -
Command:
Refresh
outboundconnections
Send