Thank You.

Thank you for taking the chance on us. We are truly humbled to be a part of your smart home journey and know that out of the many companies out there, you trusted us to make your life simpler and we don't take that for granted. Our mission is to provide the best products, with the best customer support, at the best prices. Sure, every company says that... but we'd like to think we're different. Why? Well, because we have our own smart homes, with our own desires to make our life simpler through home automation. We wake up every day to lights turning on to different colors based on the weather, coffee automatically brewing before we leave for work, and the thermostat changing based on our schedules. We take our nerdiness seriously by engaging in online groups and design our products around community suggestions and needs. We don't pretend to be a multi-billion dollar corporation worried about shareholders and bottom line. We're ok with being the little guy. The underdog, looking out for the best interests of people like us... the everyday smart home enthusiast who is passionate about moving the industry forward and we wouldn't have it any other way. So again, from the bottom of our hearts, thank you for trusting us.

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Z-Wave SmartStart

This device supports Z-Wave's new SmartStart feature. Please do not throw out the card within the box that has your unique QR Code with your DSK (Device Specific Key). This QR Code can also be found on the back of the switch (metal plate) and box.

HUB Installation Instructions.

All HUB's are different, so why should your installation instructions be the same? Below you'll find a QR Code to specific instructions for your HUB (NOTE: If you don't see your HUB, please scan the, "Other" QR Code). As you can imagine, it's hard to keep written instructions up to date with all the HUB/App changes, so the most recent instructions will be on the site. However, if you're a manual guy/gal, we get it, please see Page 7 for more details! If ever you run into any issues, please reach out to us at: contact@inovelli.com.

SmartThings

inovelli.com/lzw31-sn/setup/#smartthings

Wink

inovelli.com/lzw31-sn/setup/#wink

Hubitat

inovelli.com/lzw31/setup/#hubitat

Other

inovelli.com/lzw31/setup/#other

About Z-Wave.

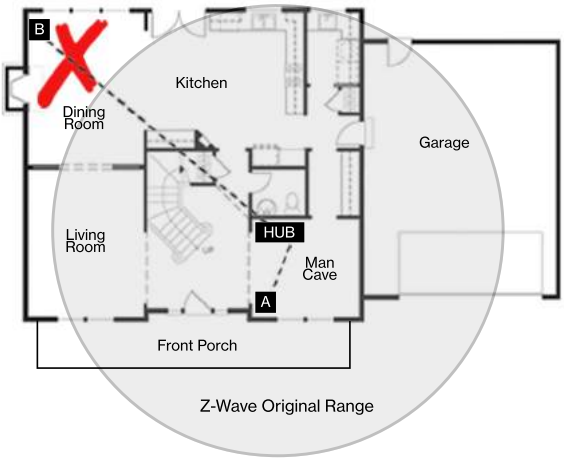
Z-Wave is an incredible technology. With it powering your home, you can choose from over 600 companies and 2100 products, all of which will work with each other. The more devices, the more stable the network. The purpose of this portion of the manual is to help you understand how Z-Wave works (in layman's terms) as well as help you organize an efficient Z-Wave network, setting you up for success in the long run. Afterall, we're assuming you'll want more than one smart home device!

Z-Wave Network | Usi++ng Devices That Repeat Signals.

As referenced in the intro, Z-Wave can be used with a few devices or it can be used to build a large network. Below you'll see two examples. In the first example, a user has a HUB which is looking for Z-Wave devices within its radius. Z-Wave devices outside this radius will not be found and need to either be moved within the radius or use a repeating device to reach it. The second example shows how a repeater can be used to reach a device outside of the initial radius. Keep this in mind when building your own network and make sure to use the range estimator below.

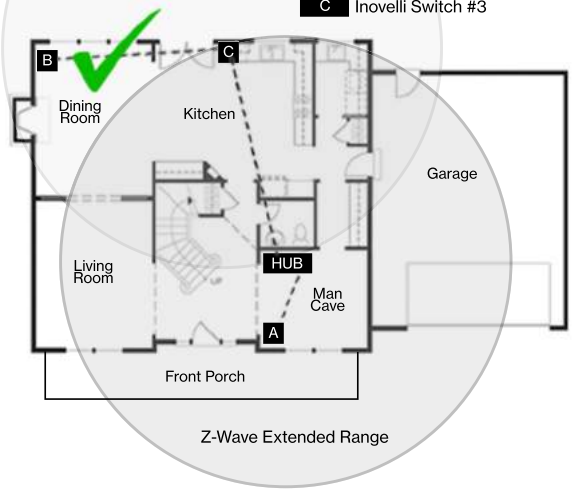
Example 1:
Switch B is out of range and will not work unless either the HUB is moved or a Z-Wave repeater is installed.

HUB Your Z-Wave Enabled HUB
A Inovelli Switch #1
B Inovelli Switch #2



Example 2:
Switch B is now in range because of Switch C which is acting as a Z-Wave signal repeater.

HUB Your Z-Wave Enabled HUB
A Inovelli Switch #1
B Inovelli Switch #2
C Inovelli Switch #3



NOTE: Z-Wave range will never be a perfect circle due to walls, furniture, etc. The above is for reference only, please use the, "Range Estimator" below and the Worksheet on Page 3 for a better idea of where to place your switch or whether or not your chosen location will be in range.

Z-Wave Range Estimator.

Please use the below information to determine the depreciation of the Z-Wave signal. Z-Wave devices should have a distance of approximately 100m (328ft) without any obstacles in the way. Using the below information, if a signal has to travel through an inner wall, it will lose approximately 40% of its signal. Therefore, 100m multiplied by (100% - 40%) = 60m (197ft). Do this for every wall, window, etc and you will have your approximation. There's a worksheet on Page 3 that will help. As always, this is just an estimate. Depending on the manufacturer's quality for your other Z-Wave products, your signal may vary.

Material	Thickness	Signal Depreciation
Aerated Concrete Stone	< 30cm // 11.8"	20 %
Aluminum Coating	< 1mm // 0.04"	100 %
Ceiling	< 30cm // 11.8"	70 %
Furniture (non-wood)	< 30cm // 11.8"	40-60%
Glass (w/out metal coating)	< 5cm // 2.0"	10 %
Inner Wall	< 30cm // 11.8"	40 %
Iron Reinforced Concrete	< 30cm // 11.8"	30-90 %

Material	Thickness	Signal Depreciation
Metal Grid	< 1mm // 0.04"	90 %
Outer Wall	< 30cm // 11.8"	60 %
Plaster	< 10cm // 3.9"	10 %
Pumice	< 30cm // 11.8"	10 %
Red Brick	< 30cm // 11.8"	35 %
Stone	< 30cm // 11.8"	30 %
Wood	< 30cm // 11.8"	40-60 %

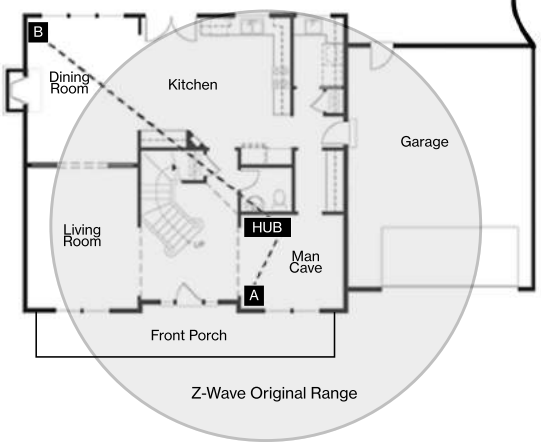
Z-Wave Range Worksheet.

Feel free to use the below worksheet to give an estimate on where you can put your Z-Wave Switch relative to your HUB (or other Z-Wave repeater). Below is an example of how to use the sheet, using, “Example 1” from Page 2.

Example #1 -- Original Z-Wave Range

Based on the example chart to the right, you can see that, “Switch B” is out of range as the signal would only reach to about the dining room.

HUB Your Z-Wave Enabled HUB
A Inovelli Switch #1
B Inovelli Switch #2



Starting Distance	Obstacle	Signal Depreciation	Ending Distance
100m // 328ft	Inner Wall	40%	60m // 197ft
60m // 197ft	Inner Wall	40%	36m // 118ft
36m // 118ft	Wood Stairs	60%	14m // 47ft
14m // 47ft	Inner Wall	40%	9m // 28ft
9m // 28ft	Wood Cabinet	50%	5m // 15ft
5m // 15ft	Wood Table & Chairs	60%	2m // 7ft

For the starting Distance, use 100m. Then look directly from your HUB to wherever you’d like to put the outlet and see what obstacles are in the way. Then list those obstacles on the worksheet below (using the charts from Page 2).

Starting Distance	Obstacle	Signal Depreciation	Ending Distance

Best Practices for Pairing your NZW31 - Dimming Switch

Now that you’ve read how to calculate the Z-Wave range and have determined the best location to put your switch, it’s important to understand some best practices of how to pair this device. Below are a few things to keep in mind when you start your individualized pairing instructions (Pages 6-7).

Auto-Inclusion (ie: Network Wide Inclusion)

This switch is equipped with Auto-Inclusion. What that means is that as soon as you flip the power back on after installation, it will initiate its pairing/inclusion process and start sending signals to the HUB that it wants to be paired/included to. You will have 60 seconds to start the inclusion process on your phone/computer before it times out. So, we suggest you start the inclusion process first, and when your HUB is actively looking for the signal, then turn the power back on. We will indicate this in your step by step instructions with a ⚡ icon, indicating you should turn your power back on. We realize this is not a lot of time so we’ve provided a backup solution as well (tap the Config Button (A) 3x).

Calculate the Maximum Distance From the Worksheet Above and Place Well Within That Distance

Please use the worksheet above to calculate your maximum distance. This will save us both the headache of offline devices. Remember to add all objects that could potentially be in the way and it’s our recommendation to be conservative with the distance numbers.

Run a Z-Wave Refresh After Successfully Pairing/Including (Optional)

When you have successfully paired/included your device, it’s important to run a “Z-Wave Refresh” on your network. In summary, your HUB/Gateway assigns a NodeID to every single Z-Wave device and catalogs those NodeID’s into a table to access later when it’s sending/receiving information from each. It catalogs where each NodeID is and what neighbors it has around it so that the trasmission signals are efficient. Running a, “Z-Wave Refresh” will tell the HUB to re-catalog the various devices (NodeID’s) and update where each device is to, again, optimize the transmission path. The reason why this is optional is because your HUB/Gateway should automatically run a refresh when the device is added, but we’re recommending it just in case it doesn’t.

Wiring Instructions - A Few Quick Reminders

A quick note before we give out the wiring schematics. **Please do not try installing this device if you are unsure of how electrical circuits operate within your home**. As exciting as it is to have a smart switch installed, it can be dangerous and even life-threatening if you do not install this correctly. Please consult a qualified electrician if necessary as **we are unable to give wiring advice outside of schematics**.

CAUTION - PLEASE READ!

This device (NZW31-SN) is intended for installation in accordance with the National Electric Code and local regulations in the United States, or the Canadian Electrical Code and local regulations in Canada. If you are unsure or uncomfortable about performing this installation consult a qualified electrician.

CONTROLLING APPLIANCES & MOTORS

These dimming switches are NOT meant to control appliances. Please only use these for controlling lights.

In addition, please DO NOT USE TO CONTROL FANS as it will ruin your fan's motor. These switches are not built to control a fan or any motor.

OTHER WARNINGS

Risk of Fire
Risk of Electrical Shock
Risk of Burns

MEDICAL EQUIPMENT

Please DO NOT use this switch to control Medical or Life Support equipment. Z-Wave devices should never be used to control the On/Off status of Medical and/or Life Support equipment.

WARNING - SHOCK HAZARD

TURN OFF THE POWER to the circuit for the switch and lighting fixture at the service panel (circuit breaker) prior to installation.

All wiring connections must be made with the **POWER OFF** to avoid personal injury and/or damage to the switch.

USING MULTIPLE SWITCHES

The metal plates surrounding the switch assembly are a heat sink. The maximum load rating (600W) is applicable when installed in a single gangbox with all six (6) tabs still in tact (See numbers 1-6 on Figure 1.1). To install multiple switches in a gangbox please remove the tabs on the outside. This can be done by removing either the left and/or right sides by using needle-nose pliers (clamp onto the tabs and wiggle back and forth until the tabs break off).

Please see, "Max Wattage Key" for max wattage based on removing the tabs.

MAX WATTAGE KEY

This switch is designed for use only with permanently installed fixtures.

If you are installing multiple smart switches in a gangbox, you will have to remove the heat sink tabs (#'s 1-6 shown in Figure 1.1). Doing so will reduce the maximum wattage available for your switch to control.

To determine this new maximum wattage please use the following key:

Tabs 1-6 NOT REMOVED = 600W
Tabs 1-3 REMOVED = 500W
Tabs 4-6 REMOVED = 500W
Tabs 1-6 REMOVED = 400W

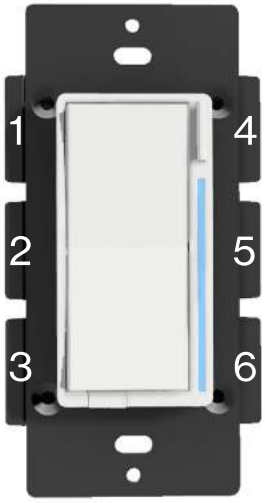


Figure 1.1

PLEASE NOTE: As of 05/25/19, we are unable to provide electrical and/or wiring advice outside of our schematics. If you are unable to read a schematic or are not familiar with wiring, we suggest hiring an electrician. We apologize for any inconvenience.

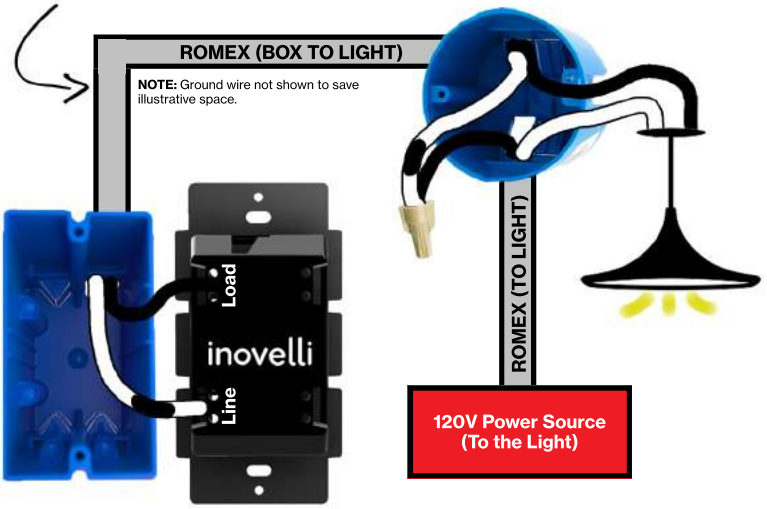
Wiring Instructions: Non-Neutral Installation (Quick Notes)

Please only use this if you do not have a neutral wire (usually white) in your house. If you do have a neutral wire, please move to page 6 as there are limitations when installing this switch without a neutral wire. These limitations include:

- You will need to install a bypass (sold separately) if you want to use bulbs under 25W
- You cannot use this switch in a 3-Way or any other multi-switch setting with a, “dumb” (existing) switch (please use an aux switch or another Inovelli smart switch and see the site for installation instructions -- smart switch must be able to have the relay disabled). Please reach out for further explanation.
- You will not be able to use the Energy Monitoring feature

Option 1: Single-Pole Installation (No-Bypass)

No bypass is required if you are using a bulb that is over 25W. PLEASE NOTE: Most LED bulbs are only 8-12W, so you will need to either have multiple bulbs or install a bypass (sold separately) as shown in the, “Bypass Required” section.

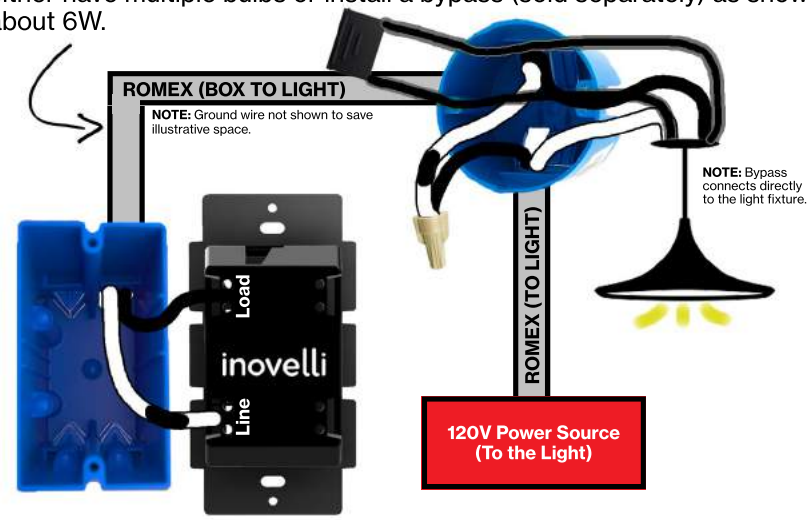


PRO-TIPS
(Please see WIRING KEY in Option 2 if necessary)

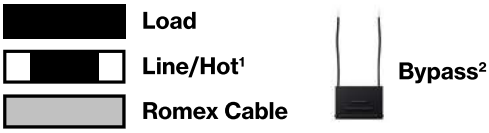
- Remember to turn off the power prior to installation and ensure all connections are made prior to turning the power back on. No need to be a hero!
- The Line wire is Hot. Please use a multimeter to locate it.
- Please remember to Ground all connections.
- Remember to start the inclusion process prior to flipping the power back on (see specific HUB instructions for more info).
- Use Wire-strippers to cut 1” for Screw Installation and 5/8” for Terminal Installation
- DO NOT unscrew the screw completely. It will ruin the switch. Remember clockwise = tight, counter-clockwise = loosen

Option 2: Single-Pole Installation (Bypass Required)

A bypass is required if you are using a bulb that is under 25W. PLEASE NOTE: Most LED bulbs are only 8-12W, so you will need to either have multiple bulbs or install a bypass (sold separately) as shown below. The bypass can get the required wattage down to about 6W.



WIRING KEY
(Please see PRO-TIPS in Option 1 if necessary)



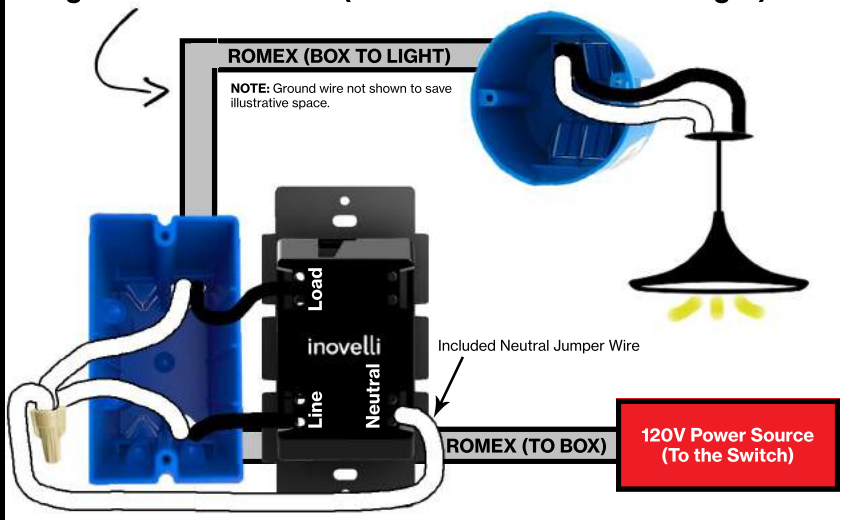
1. Line may also be black. Sometimes it’s designated with a black piece of wiring tape, but sometimes it’s not. **Please purchase a multi-meter to check for your safety.**
2. The bypass shown is from Aeotec. We’ve tested this version and it works great. We will also be releasing our own (hopefully prior to the launch of this product) but if it’s not out in time, we highly recommend Aeotec’s version, which can be found here: https://aeotec.com/z-wave-low-voltage-dimmer (or on Amazon)

Wiring Instructions: Neutral Installation (Quick Notes)

Please use this if you have a neutral wire (usually white) in your house. If you do have a neutral wire, please move to page 5. Here are some quick notes to read prior to installing your switch:

- If you do not see your wiring diagram here, please check online as we will constantly update and add schematics to our site and plan to have a forum where you can help each other. Again, we can no longer provide specific wiring or electrical help.
- If wiring a 3-Way or other multi-switch setup and want to keep your existing switch, in most cases you can leave your existing wiring the same. Just make sure to put your smart switch in the gang-box that has the line in it.
- If you have a wiring situation that you've successfully gotten to work, we'd love to hear about it to help others!

Single-Pole Installation (One Switch Controls the Light)



WIRING KEY & PRO TIPS
(Please see additional PRO-TIPS on Page 5 if necessary)

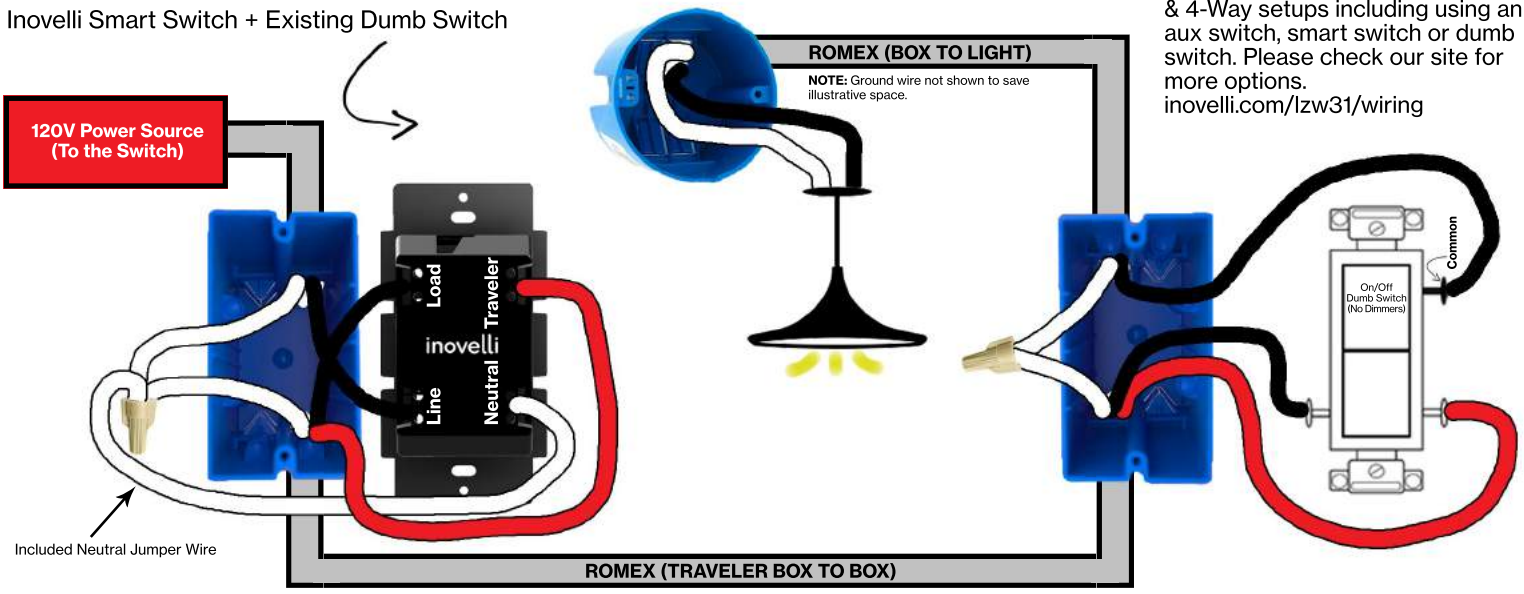
- **Load**
- **Line/Hot**
- **Neutral**
- **Traveler** Shown in 3-Way Below
- **Romex Cable**

- Remember to turn off the power prior to installation and ensure all connections are made prior to turning the power back on. No need to be a hero!
- The Line wire is Hot. Please use a multimeter to locate it.
- Please remember to Ground all connections.
- Remember to start the inclusion process prior to flipping the power back on (see specific HUB instructions for more info).

3-Way Installation (Two Switches Control the Light)

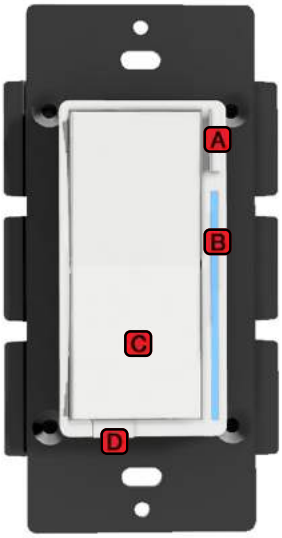
Inovelli Smart Switch + Existing Dumb Switch

NOTE: There are many different 3 & 4-Way setups including using an aux switch, smart switch or dumb switch. Please check our site for more options. inovelli.com/lzw31/wiring



Getting to Know Your LZW31 Switch.

Now that you've wired up your switch, it's time to understand the basics of your new smart switch. For more advanced configurations, please see Pages 9-10.



A. Config Button: This button is used to enter the configuration menu on your switch. When you hold it down for 10-15 seconds, the LED Bar (B) will light up Yellow to indicate you're in config mode. Then follow the config menu on Page 10 to configure your switch to the way you'd like.

B. RGB LED Notification Bar: This LED bar serves as a visual display for the dimness level of your lights and can be changed to the color of your choosing (more on that on pages 9-10). Finally, the bar can be used to test Z-Wave Signal by holding the Config Button (A) for 5-10 seconds (Red = Not in Range, Green = In Range).

C. Responsive Paddle: The paddle works similar to a standard dimmer switch in that when you hold either up/down, the light switch will dim the lights to the level you'd prefer. However, when you tap the switch up, it will turn the light on to the last dim level and when you tap the switch down, it will shut the light off.

D. Air Gap Switch: This will cut power to the load your switch is wired to (ie: light bulb).

Including (Pairing) Your Switch: General Instructions

Remember: **DO NOT** turn on power until you see this icon ⚡

Below are the general instructions on how to include (pair) the switch. For HUB specific instructions, please scan one of the QR Codes on Page 1 or visit the URL underneath each QR Code for more information. However, if you know how to put your HUB or Gateway in inclusion mode, you can follow the instructions below to get started.

IMPORTANT: If you are having issues pairing/including your device, please ensure your switch is within range of your HUB (pages 2-3) or by checking the Z-Wave signal by holding down the Config Button (A) for five (5) seconds (more info below in the, "Z-Wave Range Check" section). If you're within range and the LED Bar (B) is GREEN when you check the range, then you will have to run an Exclusion. Put your HUB in Exclusion mode and press the Config Button (A) 3x until your HUB says the device is excluded. You may then add (include) the switch per the instructions below.

Steps 1: Gather Your Materials, Find an Appropriate Location, and Install Your Switch

Materials Needed: Gangbox with Neutral, Line & Load Wires, Cell Phone/Tablet/Computer, and a Z-Wave enabled HUB/Gateway.

- Locate an area to install your switch within the recommended distance (Pages 2-3) from your HUB/Gateway.
- Walls, furniture, and other obstructions may degrade the communication between the Switch and your HUB/Gateway, so please keep this in mind when selecting a location.
- Follow the recommended wiring instructions on page 5 -- **REMEMBER: TURN OFF ELECTRICITY BEFORE INSTALLATION!**

Step 2: Adding (Including) to the Network & Finishing the Setup Process

Now that the switch is physically installed, let's start the inclusion (pairing) process.

- Start the Inclusion process on your HUB/Gateway.
- Turn the power back on ⚡ and auto-inclusion will activate. You will have 60 seconds before it times out. If it does time out, the backup method to pair/include the device is to press the Config Button (A) 3 times in 30 seconds.
- **Z-Wave Range Check:** Easily check whether or not your switch is within range by holding the Config Button (A) for 5-10 seconds. The LED bar will indicate: **RED** = Not in Range, or **GREEN** = Within Range (Good Signal).

Including (Pairing) Your Switch: SmartThings Instructions

Remember: **DO NOT** turn on power until you see this icon ⚡

Below are the general instructions on how to include (pair) the switch for Samsung SmartThings users.

PLEASE READ: As of the date this manual was written (May 27th, 2019), the switch has not been WWST (Works With SmartThings Certified). However, by the launch date of our product, we do anticipate it will be WWST Certified. The reason we're stating this is because if you receive this product prior to the certification, you will need to use the SmartThings Classic App and also install a Device Handler for you to experience all the bells and whistles. If you use the Samsung Connect App or do not install a Device Handler with the SmartThings Classic App, the remote functionality will only be on/off and dim. You'll still be able to configure the switch as shown on Pages 9-10, but there will be no scene control, notifications or power monitoring).

IMPORTANT: If you are having issues pairing/including your device, please ensure your switch is within range of your HUB (pages 2-3) or by checking the Z-Wave signal by holding down the Config Button (A) for five (5) seconds (more info below in the, "Z-Wave Range Check" section). If you're within range and the LED Bar (B) is GREEN when you check the range, then you will have to run an Exclusion. For Exclusion mode, click, "Menu", then "Hub is Online", then, "Z-Wave Utilities", and finally, "General Device Exclusion". Then press the Config Button (A) 3x until your HUB says the device is excluded. You may then add (include) the switch.

Steps 1: Gather Your Materials, Find an Appropriate Location, and Install Your Switch
Materials Needed: Gangbox with Neutral, Line & Load Wires, Cell Phone/Tablet/Computer, and a Z-Wave enabled HUB/Gateway.

- Locate an area to install your switch within the recommended distance (Pages 2-3) from your HUB/Gateway.
- Walls, furniture, and other obstructions may degrade the communication between the Switch and your HUB/Gateway, so please keep this in mind when selecting a location.
- Follow the recommended wiring instructions on page 5 -- **REMEMBER: TURN OFF ELECTRICITY BEFORE INSTALLATION!**

Step 2: Adding (Including) to the Network & Finishing the Setup Process (Using the SmartThings Classic App)
Now that the switch is physically installed, let's start the inclusion (pairing) process. Please make sure you are using the, "SmartThings Classic" app. If you'd like to use the Samsung Connect App, please check the WWST URL to see if Inovelli is listed: https://www.smartthings.com/products. If it's not, you will have to use the Classic app with a Device Handler.

- Open up your SmartThings Classic app and click on the, "My Home" tab followed by the, "Things" tab
- Scroll to the bottom and click on, "Add a Thing" or click on the (+) at the top right of the screen
- Turn the power back on ⚡ and auto-inclusion will activate. You will have 30 seconds before it times out. If it does time out, the backup method to pair/include the device is to press the UP (A) button 6 times within 2 seconds.
- You should now see that your device is detected (it should say, "Dimming Switch")
- After your device is detected, press, "Save" (or if you'd like to rename your device, please do so and click, "Save")
- Once you click, "Save" a pop-up will appear asking you to, "Confirm Paired Devices" -- Click, "OK"
- Now, you should be back at the, "My Home" screen and you should be able to see your switch!
- **Z-Wave Range Check:** Easily check whether or not your switch is within range by holding the Config Button (A) for 5-10 seconds. The LED bar will indicate: **RED** = Not in Range, or **GREEN** = Within Range (Good Signal).

Device Handler Installation (Abbreviated):
Below is a shortened way to install the device handler. For more in depth instructions, please visit the URL in the footer.

- Log into your IDE Account (https://graph.api.smartthings.com/) -- it's the same login/password as your mobile app
- Click on, "My Locations" and then select your location
  Next, click on, "My Device Handlers" and press the, "Create New Device Handler" button
- Now, open a new tab in your browser and go to: github.com/InovelliUSA/SmartThingsInovelli/tree/master/devicetypes/inovelliusa and find the device handler for, "LZW31" and once you see the option for, "Raw", click on that button and copy the code*
- Next, go back to IDE and click on the, "From Code" tab and paste the code from GitHub
- Next, click, "Create", then, "Publish" and finally, "For Me" to finish the installation
- Finally, to activate the handler on your switch, go to, "My Devices" in IDE and find your Inovelli switch
- Click on the switch, scroll to the bottom and click, "Edit" -- then find, "Type" and then select the new device handler from the drop down and then click, "Update"
- Now, when you open up the switch menu in the app, you should see the Inovelli logo and a ton of cool config options

Switch Configuration Settings

There are a couple of ways to configure your switch. The first is via the switch itself, while the second is via your HUB or Gateway. On this page, we'll show you which parameters can be changed via the switch and how to change them while on Page 10, we'll define all of the parameters and list the Z-Wave command classes for reference. Let's begin!

Parameter #	# of Times to Press the Config Button	About	Description
1	1	Dimming Speed	How fast or slow the light turns on (ramp rate)
5	2	Minimum Dim Level	Minimum level the light switch will dim to
6	3	Maximum Dim Level	Maximum level the light switch will dim to
7	4	Invert Switch	Inverts the switch (Tap Down = On, Tap Up = Off)
9	5	Default Level (Local)	Disables the Internal Relay Locally (at the switch)
10	6	Default Level (Z-Wave)	Disables the Internal Relay Remotely (via the App)
11	7	Power On State	When power is restored, the switch reverts to either On, Off, or Last Level
13	8	LED Indicator Color	This will set the default color of the LED Bar
14	9	LED Indicator Intensity	This will set the intensity of the LED bar (ie: how bright it is)
15	10	LED Indicator Intensity (When Off)	This is the intensity when the switch is off

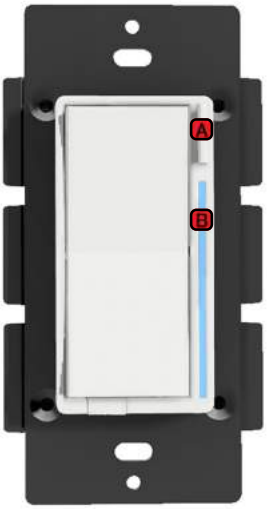
Figure 1.2 - Parameters that can be changed from the switch

NOTE: Below is the logic behind how to configure the above parameters (Figure 1.2) from the switch itself. Due to space constraints of this manual, we'll show you how to configure some of the more popular parameters. For more details, please visit our website which will have written and video tutorials for each parameter listed in Figure 1.2.

Configuration Logic

Once you master the logic behind how the configuration works, any of the parameters in Figure 1.2 can be changed.

- To enter configuration mode, hold down the config button (A) for 10-15 seconds and the LED Bar (B) will light up YELLOW
- From here, refer to Figure 1.2 to see what parameter you'd like to change and tap the config button that many times (look at the, "About" column to find the parameter you'd like to change and then go one column to the left -- highlighted in red -- to see how many times you need to press the Config Button (A). For example: If you want to change the Maximum Dim Level, press the config button (A) 3x or if you want to change the, "Power On State", press the Config Button (A) 7x and so on).
- Once your parameter has been selected, the LED Bar (B) will blink YELLOW to confirm -- now press up or down on the paddle to adjust the parameter settings (Figure 1.3 - highlighted in red) to your liking.
- Finally, once you've settled on a customization you like, it's time to save your configuration settings. To do this, hold the config button (A) again for 10 seconds and the LED Bar (B) will then blink to confirm.



Specific Example

Using the logic above, let's change the, "Minimum Dim Level" to 12% (switch never dims below 12%).

- Hold the Config Button (A) for 10 seconds to enter config mode (LED Bar will light up YELLOW)
- Looking at Figure 1.2, you'll notice that to edit, "Minimum Dim Level", you need to tap the config button 2x
- After tapping the Config Button (A) 2x, the LED Bar (B) will blink twice (See NOTE) to confirm
- Figure 1.3 (Page 10) shows that the Minimum Dim Level has a range of 1-45%. Each tap of the switch = 1 unit of measurement (in this case %), so you'd tap UP 12x on the paddle to reach 12%.
- As you are moving up to reach your desired %, the LED bar will also move up to give you an approximation of where you're setting the parameter to.
- Now, we'll save this configuration by holding down on the Config Button (A) for 10-15 seconds (LED Bar (B) will blink to confirm and save).

NOTE: To easily understand what parameter you're editing, the LED Bar will slow blink (ie: if you release your finger from the paddle and you're on parameter 6, the switch will blink 6x to show you).

Slow blinks = multiples of 10 / Fast blinks = single digits
Example: 34 = 3 slow blinks followed by 4 fast blinks

Switch Parameters

Below you'll find the various parameters associated with your switch. There are a ton of options for customization and as you can imagine, it's hard to write out all the possibilities in a manual. Please use this as a guide, but also feel free to check out our site where we'll give some specific examples using each parameter.

Parameter #	Change at the switch?	About	Description	Range	Default	Size (Bytes)
1	Yes	Dimming Speed	How fast or slow the light turns on when you hold the switch (ie: dimming from 10-20%, 80-60%, etc) 0 = Instant On, 1 = 1 second, 100 = 100 seconds NOTE IF USING A DUMB SWITCH: This parameter will not work when pressing the dumb switch manually.	0-100s	3s	1
2	No	Dimming Speed (Z-Wave)	How fast or slow the light turns dim when you adjust the switch remotely (ie: dimming from 10-20%, 80-60%, etc) 0 = Instant On, 1 = 1 second, 100 = 100 seconds, 101 = Keep in sync with Parameter 1	0-101	101	1
3	No	Ramp Rate	How fast or slow the light turns on when you press the switch 1x to bring from On to Off or Off to On 0 = Instant On, 1 = 1 second, 100 = 100 seconds, 101 = Keep in sync with Parameter 1	0-101	101	1
4	No	Ramp Rate (Z-Wave)	How fast or slow the light turns on when you bring your switch from On to Off or Off to On remotely 0 = Instant On, 1 = 1 second, 100 = 100 seconds, 101 = Keep in sync with Parameter 1	0-101	101	1
5	Yes	Minimum Dim Level	Minimum level the light switch will dim to (great for fixing flickering bulbs) 1= 1%, 2 = 2%, 45 = 45%	1-45%	1%	1
6	Yes	Maximum Dim Level	Maximum level the light switch will dim to 55= 55%, 56 = 56%, 100 = 100%	55-100%	100%	1
7	Yes	Invert Switch	Inverts the switch (Tap Down = On, Tap Up = Off) 0 = Disabled, 1 = Enabled	0-1	0 (Disabled)	1
8	No	Auto Off Timer	Automatically turns the switch off after x amount of seconds 0 = Disabled, 1 = 1 second, 32767 = 32767 seconds	0-32767s	0 (Off)	2
9	Yes	Default Level (Local)	Default dim level for the switch when pressed locally (at the switch) 0 = Switch will return to level it was prior to being off, 1 = 1%, 100 = 100%	0-100%	0 (Previous)	1
10	Yes	Default Level (Z-Wave)	Default dim level for the switch when powered on via a Z-Wave command 0 = Switch will return to level it was prior to being off, 1 = 1%, 100 = 100%	0-100%	0 (Previous)	1
11	Yes	Power On State	When power is restored, the switch reverts to either On, Off, or Last Level 0 = Off, 1-100 = Specific % On, 101 = Returns to Level before Power Outage	0-101	0 (Off)	1
12	No	Association Behavior	When should the switch send commands to associated devices: 01 = Local, 02 = 3-Way, 03 = 3-Way & Local, 04 = Z-Wave HUB, 05 = Z-Wave HUB & Local 06 = Z-Wave HUB & 3-Way, 07 = Z-Wave HUB & Local & 3-Way, 08 = Timer, 09 = Timer & Local 10 = Timer & 3-Way, 11 = Timer & 3-Way & Local, 12 = Timer & Z-Wave HUB 13 = Timer & Z-Wave HUB & Local, 14 = Timer & Z-Wave HUB & 3-Way, 15 = All	0-15	15	1
13	Yes	LED Indicator Color	This will set the default color of the LED Bar Calculated by using a hue color circle (Value / 255 * 360). See website for more info.	0-255	170 (Blue)	1
14	Yes	LED Indicator Intensity	This will set the intensity of the LED bar (ie: how bright it is) 0 = Off, 1 = Low, 5 = Medium, 10 = High	0-10	5	1
15	Yes	LED Indicator Intensity (When Off)	This is the intensity of the LED bar when the switch is off 0 = Off, 1 = Low, 5 = Medium, 10 = High	0-10	1	1
16	No	LED Strip Effect	This will allow you to add some sweet effects to your LED bar (ie: pulse, chace, solid, etc) Byte 1 = Choose Color, Byte 2 = Choose Brightness Level, Byte 3 = Choose Effect, Byte 4 = Duration * Please see website for further instructions on how to set this up	Varies by Byte*	0	4
17	No	Timeout for LED Notifications	Changes the amount of time the RGB Bar shows the Dim level if the LED Bar has been disabled 0 = Always off, 1 = 1 second after level is adjusted, 10 = 10 seconds after level is adjusted	0-10s	3	1

Figure 1.3 - Switch Parameters & Default Settings

Switch Cheat Codes

Below is a chart that will help you understand what your switch is doing so you don't get lost in a sea of RGB colors and LED strobes.

About	Description	Config Button		LED Effect	LED Color	Duration
		Press or Hold	*# of Times or Seconds*			
Clear Notifications	This will clear the RGB Bar of any notifications	Press	2x	N/A	N/A	N/A
Inclusion / Exclusion	Auto-Inclusion (60 Sec Timeout) or 3x Tap of Config Button (30 Sec Timeout)	Press	3x	Chase	Default (Blue)	See Desc.
Disable Internal Relay (Local Protection)	Disables the internal relay (good for using with smart bulbs)	Press	8x	Fast Blink	Red	3x Blink
Enable Internal Relay (Local Protection)	Enables the internal relay	Press	8x	Fast Blink	Green	3x Blink
Z-Wave Signal Test	Tests the signal strength of your Z-Wave switch	Hold	5-10s	Solid	Green	N/A
Parameter Configuration	Change the parameters from the switch itself	Hold	10-15s	Solid	Yellow	N/A
Factory Reset	Factory resets the switch	Hold	20s	Solid	Red	3x Blink

Z-Wave Command Classes

5E - COMMAND_CLASS_ZWAVEPLUS_INFO
26 - COMMAND_CLASS_DIMMER SWITCH_MULTILEVEL
70 - COMMAND_CLASS_CONFIGURATION
85 - COMMAND_CLASS_ASSOCIATION
59 - COMMAND_CLASS_ASSOCIATION_GRP_INFO
55 - COMMAND_CLASS_TRANSPORT_SERVICE
86 - COMMAND_CLASS_VERSION
72 - COMMAND_CLASS_MANUFACTURER_SPECIFIC
5A - COMMAND_CLASS_DEVICE_RESET_LOCALLY
73 - COMMAND_CLASS_POWERLEVEL
98 - COMMAND_CLASS_SECURITY
9F - COMMAND_CLASS_SECURITY_2
6C - COMMAND_CLASS_SUPERVISION
75 - COMMAND_CLASS_PROTECTION
22 - COMMAND_CLASS_APPLICATION_STATUS
7A - COMMAND_CLASS_FIRMWARE_UPDATE_MD

Z-Wave Association Groups

Grouping Identifier	Max Nodes	Send Commands
Group 1	0x05	1. basic report
		2. multilevel report
		3. application status
		4. Device Reset Locally.
Group2	0x05	Basic set
Group3	0x05	Switch Multilevel Set
Group4	0x05	Switch Multilevel Set

This is so that group 3 can be used to keep the "master" switch it sync with the "slave" switches. Group 4 is so that an accessory switch can control multiple bulbs / dimmers with level change.

Resetting Your Device

You may hold the Config Button (A) for 20 seconds or use a certified controller to remove the device from your network to factory default. Only use this procedure in the event that the network primary controller is missing or otherwise inoperable.

Group 1: Lifeline -- Members of this group will receive unsolicited messages related to the status of the switch.

Group 2: Basic Set -- Description: Sends start and stop level change to associated devices.
(1. Single press UP button sends BasicSet (0xFF) and 2. Single press Down sends BasicSet (0x00)

Group 3: Switch Multilevel Set -- Sends dim/brighten commands to associated devices when switch is pressed.
(1. Hold & Release Up button sends SwitchMultiLevelSet which keeps associated devices in sync with this device and 2. Hold & Release Down button sends SwitchMultiLevelSet which keeps associated devices in sync with this device and 3. Single press Up button sends SwitchMultiLevelSet(0xFF) and 4. Single press Down button sends SwitchMultiLevelSet(0x00)

Group 4: Switch Multilevel Set -- Sends start and stop level change to associated devices.
(1. Hold Up button sends SWITCH_MULTILEVEL_START_LEVEL_CHANGE (Dim Up) and 2. Release Up button sends SWITCH_MULTILEVEL_STOP_LEVEL_CHANGE and 3: Hold Down button sends SWITCH_MULTILEVEL_START_LEVEL_CHANGE (Dim Down) and 4: Release Down button sends SWITCH_MULTILEVEL_STOP_LEVEL_CHANGE)

Federal Communications Commission (FCC) Statement

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna, increase the separation between the equipment and receiver, connect the equipment into an outlet on a circuit different from that to which the receiver is connected or consult the dealer or an experienced radio/TV technician for help. This equipment should be installed and operated with minimum distance 8in (20cm) between the radiator and your body.

IC Caution: This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

DECLARATION DE CONFORMITE D'INDUSTRIE CANADA: Ce périphérique a été testé et reconnu conforme aux limites spécifiées dans RSS-210. Son utilisation est soumise aux deux conditions suivantes: (1) il ne doit pas provoquer d'interférences gênantes et (2) il doit tolérer les interférences re.ues, notamment cellessusceptibles d'en perturber le fonctionnement.

Warranty and Specifications

Warranty: Inovelli will replace any defective unit for the lifetime of the unit, pending the unit was used in the manner it was intended to. Please email us at: contact@inovelli.com or visit us at www.inovelli.com/warranty for full details.

Specifications for Model # LZW31:
Power: 120V AC, 60Hz, Signal (Frequency): 908.42 MHz, Operating Temperature Range: 32-104° F (0-40° C)
Maximum Load: 600W Incandescent or 300W CFL/LED for (1-Gang)
Range: Up to 100 meters line of sight between the Wireless Controller (HUB) and the closest Z-Wave Module
For indoor use. Specifications subject to change without notice due to continuing product improvement.
Approval: UL Listed / FCC / IC / Z-Wave Plus Certified

Project Knight Flank

You may have noticed our signatures and project name on the inside of the box and wondered, “what is that all about?”. Well, great question! All of our products have a project name associated with them that means something to us and speaks directly to the device itself. It’s personality if you will. In addition to the project name, our signatures indicate that we’ve all signed off on the project. We believe in the project and worked hard, along with you, to bring it to life.

Project, “Knight Flank”, aside from having a cool name, is actually a pretty sweet project. The name comes from chess, where the Knight is more of a supplemental piece. It hangs out on the board while the Bishops, Castles and Queen make their moves and works in tangent with them to ultimately put the opposing King in check. These switches are very similar in that they are supplemental to your home’s smart home strategy. They work in tangent with many other smart home products, many HUB’s, and together with our other devices, they flank the competition and put them in check to bring you an incredible smart home.

There’s a reason we can say this and it’s because our products are built by not only us, but by you. These are community built products in which 100’s, if not 1000’s of people outside of Inovelli have contributed to.

So, thank you for not only your support, but for helping us put out the next generation of smart switches.

Eric H.
Founder / CEO

While every project has a sentimental value to me, project, “Knight Flank” holds a special spot in my heart as it speaks to the very core of what Inovelli is. I started this company back in 2016 with the goal of putting out the best products, at the best value, with the best customer support. “Knight Flank” was created to offer a low cost product with literally the best firmware and hardware available. The best part is this was created for not only the budget shopper, but it can be fully customized by anyone who has a Z-Wave HUB, which is a huge innovation for Z-Wave.

Eric M.
CTO

Building on what Eric H. said, I like the fact that this product allows everyone to customize their switch regardless of what HUB they use. In the past, our biggest issue was that our firmware was amazing, but the HUB it was connected to may be limited. In other words, our switches were only as smart as the HUB or Gateway they were paired to. Having the ability to customize from the switch itself is truly a game-changer and I’m incredibly proud of the team for pulling this off.

Micah
CFO

Being the CFO, I’m all about getting the best value for what I invest in, without breaking the bank. Project, “Knight Flank” is literally just that. The switch itself is power-packed with the most customizable firmware in the market, hardware that can be installed in almost any setting, all for around $5-10 less than the leading brand. I signed off on this project because we found a way to make this affordable for the average smart home owner, but also made the switch truly innovative and worthy of our Inovelli brand name.

Nathan
CSO

One of my favorite things about project, “Knight Flank” was that we didn’t sacrifice quality and features to get the price down. There’s literally nothing like this in the market and we’re incredibly proud of this. Working with the smart home community on Facebook as well as customer feedback, we put together a truly remarkable switch that we can all feel great about.

Kyle
Director of
Cust. Service

Like our Red Series switches, this switch means a lot to me. I felt a strong connection to this switch in that I remember being in Eric’s office talking to him about features that customers are requesting and him putting a large sticky note on the wall and taking notes. One of the main things we kept hitting on was that people wanted customization (ramp rate, minimum dim level, etc) and there had to be a way to give it to them, even if their HUB’s didn’t support it. Six months later, here we are, launching a switch that we literally dreamed up, along with customers. It’s a pretty cool feeling watching this come to life.