Project New Horizon (Dimmer)

PRD Kickoff Deck
02/01/21

inovelli®

Overview

One switch to rule the mass market

Project Overview

Currently our Z-Wave switches are the best in their market. ZigBee offers an opportunity to go after a 10x larger market with the same advanced, proprietary features.

Philips #1 problem is that they do not offer a hardwired smart switch and currently do not have ambitions to develop one. This is a huge request from people who have Hue smart bulbs and where we currently fill the gap with Z-Wave. We can do the same thing with ZigBee. Signify (Philips) sold over 6.2B Euros in 2019 and are the leader in smart bulbs in the US[1].

CHIP is underway in development and the companies involved do not have a wide selection around light switches. This is a huge gap in the market which we can exploit using ZigBee to start and then changing over the firmware once CHIP officially launches.

1.   https://www.statista.com/statistics/705981/annual-sales-of-philips-lighting-segment-of-the-philips-group/

Hardware Requirements

Installed in as many houses as possible

Look & Feel

The look and feel should be similar to our Z-Wave switches – which is distinct to our brand.
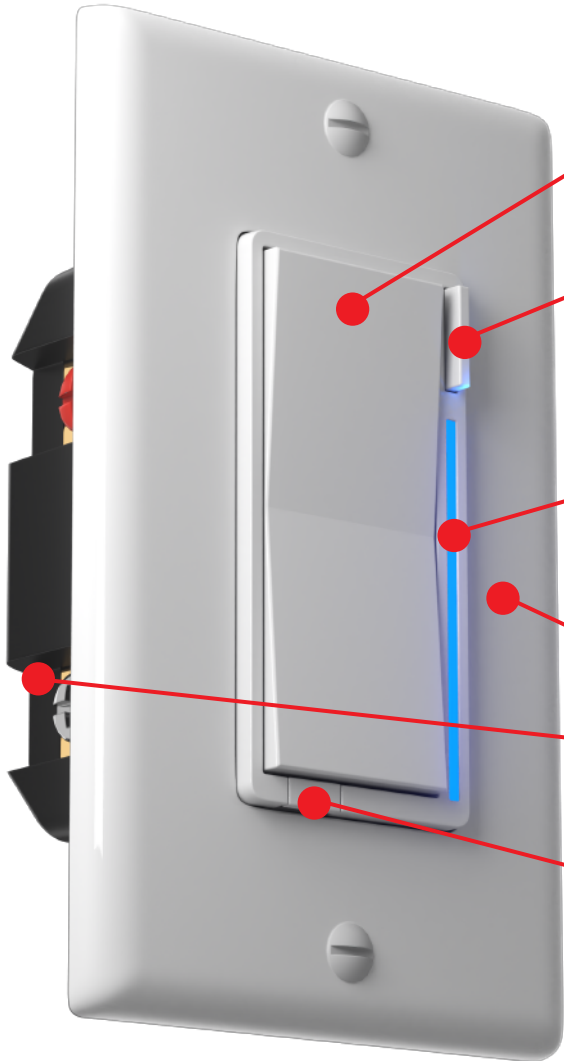
- **Responsive Paddle** - rests in a neutral state (tap up = on // tap down = off & hold up = dim up // hold down = dim down)

- **Configuration / Favorites Button** - button should be used for configuration of the switch as well as scene control.
  - Should be able to be held (for configuration)
  - Should be able to be tapped (for scene control)

- **RGB LED Bar** - should measure the % of how much the switch is dimmed
  - LEDs should be RGB (artificial white included)
  - LEDs should also be able to be dimmed

- **Paddle & Faceplate Color** - color should match Lutron Claro wall-plate white

- **Slim Design** - See appendix (Section A) -- depth of switch should be as slim as possible so that it can fit into metal boxes.

- **Air Gap**

- **No heat-sink tabs** (if possible – See Section A in Appendix)

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Features & Capabilities

These features allow us to be versatile in any installation setting and experience level and should take the intimidation away from installing a smart switch.

Features

- **ZigBee 3.0** - use the latest ZigBee chipset (should be the same one that will be used for CHIP and compatible with Philips Hue + Amazon Echo Plus)
- **3-Way / 4-Way Ready** – switch should auto-detect
  - Should work with an auxiliary switch (like GE's does)
  - Should work with an existing dumb switch
  - Should work with another smart switch (if wired to another smart switch, it should be able to detect this)
- **Power Monitoring** - switch should measure the power consumption
- **ZigBee Distance Estimator** - should be able to estimate the signal strength of the Z-Wave signal and notify via the LED bar (see Appendix - Section C)
- **Instant On** - when tapped 1x (and scenes aren't used), switch should turn the bulb on instantly (no delay)
  - Configurable delay in 100ms increments (see tech doc)
- **CFL & LED Compatibility** - minimum buzz and flickering
- **600W** - increase the wattage to 600 like GE's
- **Neutral & Non-Neutral Compatibility*** - Switch should be able to work with a neutral wire or without a neutral wire
  - Should auto-detect which setting it's in (neutral/non-neutral, aux/dumb) and if it can't, then there should be a manual override.
- **Auto-Detect Line/Load** (and if possible other terminals) – (Appx: Section B)
  - No matter how customer wires it, the switch should be able to detect what's wired/where.

Capabilities

- **Tap + Hold** - switch should be able to be tapped (on/off) or held (dim)
- **LED Compatibility** - should allow for easy dimming with LED's

Firmware Requirements

Used by all levels of experience

Firmware Requirements

Here's where Inovelli shines and what sets us apart from the competition. It's important we nail this.

Features

- ZigBee Scene Control (if there is one – would be nice to be able to set scenes directly with Hue)
- RGBW Bar Config - bar should be able to change colors and dimmed to the customer's favorite level
- Auto Timer - switch should have a timer that shuts the switch off after a certain amount of time
- Easy Config - switch should be able to be configured via the config / favorite button.
  - There should be infinite customization via parameters in the firmware, but also set customizations for HUB's that do not allow parameter changes (ie: Wink)
- Internal Relay Disable - internal relay should be able to be disabled locally and via ZigBee
- Minimum dim level / Maximum dim level
- Ramp rate configuration - ability to change how fast/slow light turns on
- Ramp rate & instant on/off separated
- Default Dim Level - ability to set the default dim level
- OTA Ready - ability to update firmware via OTA
- Associations? Can ZigBee switches be associated (are Hue remotes associated with their bulbs?)
- Smart Bulb Mode from our Z-Wave Switches
- Pair in different security levels?

Other Info
Certification & What's in the Box

Other Requirements

Customers expect these to have the following certifications and inserts.

Certifications

- ZigBee (Required)
- UL (Required)
- FCC (US) / IC (Canadian) – (Required)
- Friends of Hue (Optional)
- Works w/Alexa (Optional)

What's in the Box

- Instruction Manual (color)
- Wiring Insert
- Rewards Program Insert
- Warning sticker on side of switch
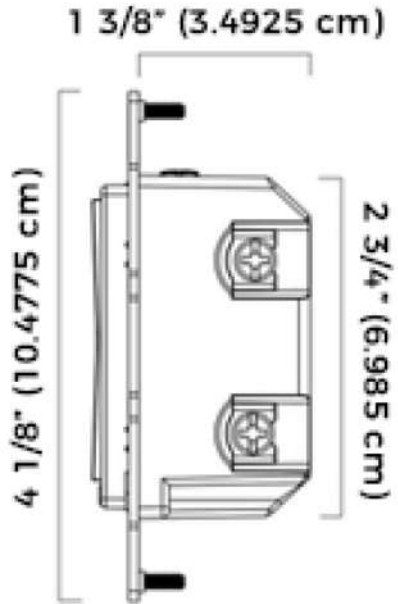- Faceplate & screws (white – matches Lutron Claro)
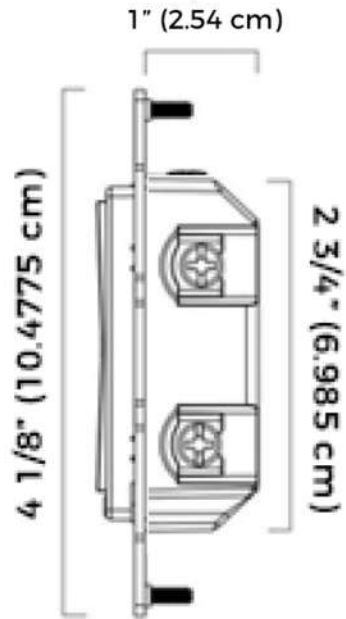- Switch + Paddle

Appendix

Section A – Slim Design & No Heat Sink Tabs

Smart switches are extremely thick and sometimes hard to fit into US gang-boxes, especially older gang-boxes that are metal.

Current Depth

1 3/8" (3.4925 cm)

4 1/8" (10.4775 cm)

2 3/4" (6.985 cm)

Ideal Depth

1" (2.54 cm)

4 1/8" (10.4775 cm)

2 3/4" (6.985 cm)

QUICKFIT™

20% smaller housing

No break-off tabs to remove

NOTE: Above screenshot taken from GE's new switches

Section B – Auto Detect Line/Load (and others possibly)

Wiring is hard for the DIY customer – having the switch auto-detect which wire was plugged in would be incredibly helpful.

NOTE: Above screenshot taken from GE's new switches
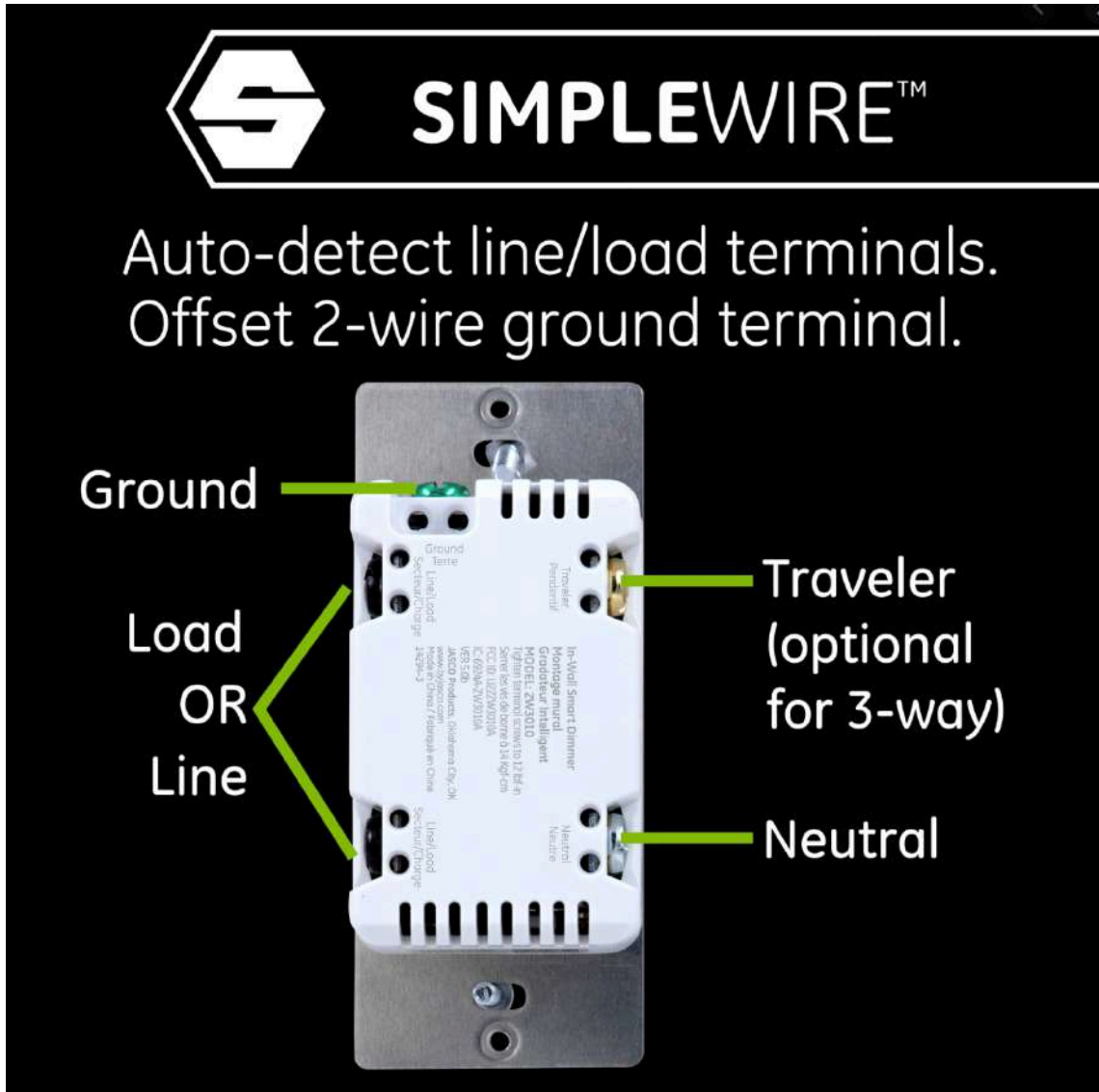
GE's (Jasco) new switch can auto detect the Line and Load so the customer does not have to use a multi-meter to detect 120V.

https://byjasco.com/products/ge-enbrighten-z-wave-plus-wall-smart-dimmer-quickfit-and-simplewire

Section C – Multi-Switch Setup

Oftentimes people will want various setups for their 3-Way (multi-switch) setups. Solving for all three is mandatory.

SMART & AUX SWITCH

Similar to GE's setup, where there is a smart switch (ie: GE #12722) and an aux switch (ie: GE #12723).

SMART & DUMB SWITCH

User can use a smart switch (Inovelli) and an existing, "dumb" switch such as this: https://www.lowes.com/pd/Eaton-15-Amp-3-Way-White-Rocker-Light-Switch/1000050595

SMART & SMART SWITCH

User should be able to use two Inovelli switches together (either On/Off or Dimmer) and the switch will detect this.

Section D – ZigBee Signal Indicator

Switches should indicate the ZigBee distance to let customers know if their switch is within range. If the switch LED turns green, it means that it's within range, if yellow = weak range, if red = not in range.

RED
Not in Range
of ZigBee
Signal

YELLOW
Poor Range
of ZigBee
Signal

GREEN
Within Range
of ZigBee
Signal

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