



Project Zephyr

PRD Kickoff Deck
06/25/21

inovelli®

Project Overview

80MM households in the US have at least one ceiling fan¹. For us to compete in the Matter/Mass Market space, we need to offer a dedicated ceiling fan light switch as not only will it provide these customers with an option to control their ceiling fan(s), but the design will be cohesive with our current switch offering so they won't have to mix/match manufacturers and designs.

1. <https://www.nrdc.org/sites/default/files/ceiling-fan-standards-fs.pdf>

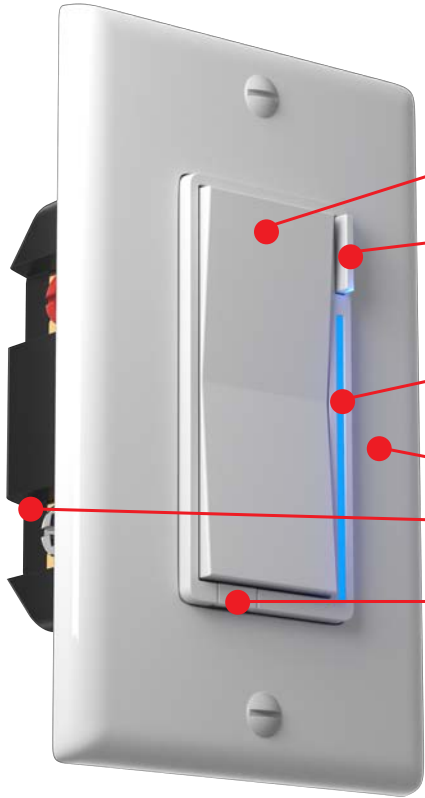
A close-up, angled view of a grey, rectangular switch. The switch has a recessed rectangular area in the center. A thin, vertical blue light strip is visible within this recessed area, extending from the top to the bottom. The switch is mounted on a grey panel, with two circular screws visible at the top and bottom edges. The background is black.

Hardware Requirements

Very similar to our 2-1 Switch

Look & Feel

The look and feel should be like our ZigBee/Matter 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**

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 Matter 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
- **2.5A** - Match GE's specifications for fan load
- **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)
- **Fan Speed + On/Off** - Switch should be like our 2-1 switch where it can be set to change speeds (ie: dim), turn on/off or be set to be a simple on/off switch (ie: no fan control)

A close-up, angled view of a grey, rectangular device. The device has a recessed rectangular area in the center, and a bright blue light strip is visible within this area. There are two circular indentations on the top and bottom edges of the device. The background is black.

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 fan level / Maximum fan level
- Ramp rate configuration - ability to change how fast/slow fan turns on
- Ramp rate & instant on/off separated
- Default Fan Level - ability to set the default fan 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 (maybe a smart fan mode?)
- 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

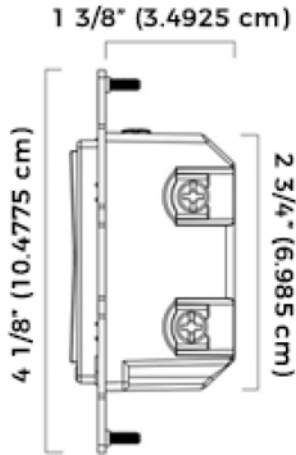


Appendix

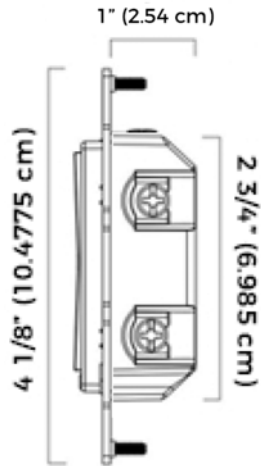
Section A – Slim Design & No Heat Sink Tabs

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

Current Depth



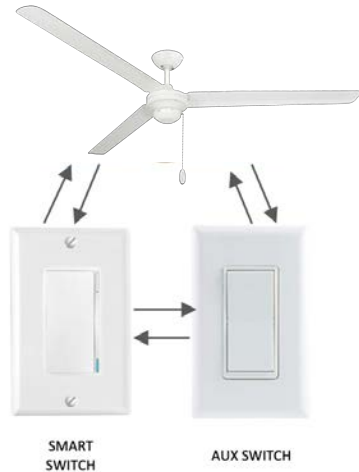
Ideal Depth



NOTE: Above screenshot taken from GE's new switches

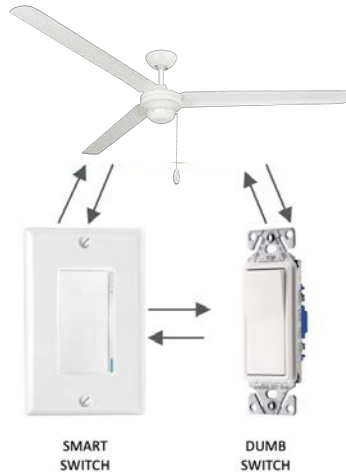
Section C – Multi-Switch Setup

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



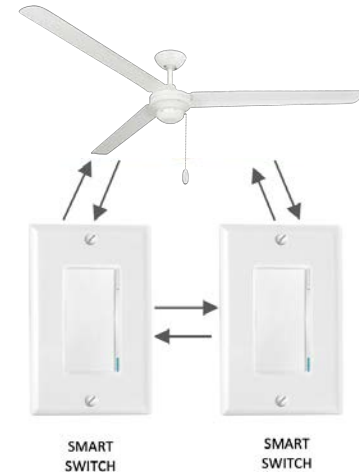
SMART & AUX SWITCH

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