

Applied Lighting Controls

Updated for 2011

Better Buildings By Design

Burlington, Vermont

February 9, 2011

Instructor:

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Efficiency Vermont

Learning Objectives

At the end of this program, participants will be able to:

- *Obtain first-hand experience with energy-saving lighting controls*
- *Wire up a device through hands-on demonstration*
- *Discuss the pros and cons of a range of controls, including occupancy sensors, dimming, and daylight harvesting*

Course Evaluations

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Applied Lighting Controls – BBBD, Burlington, VT, 2/9/11

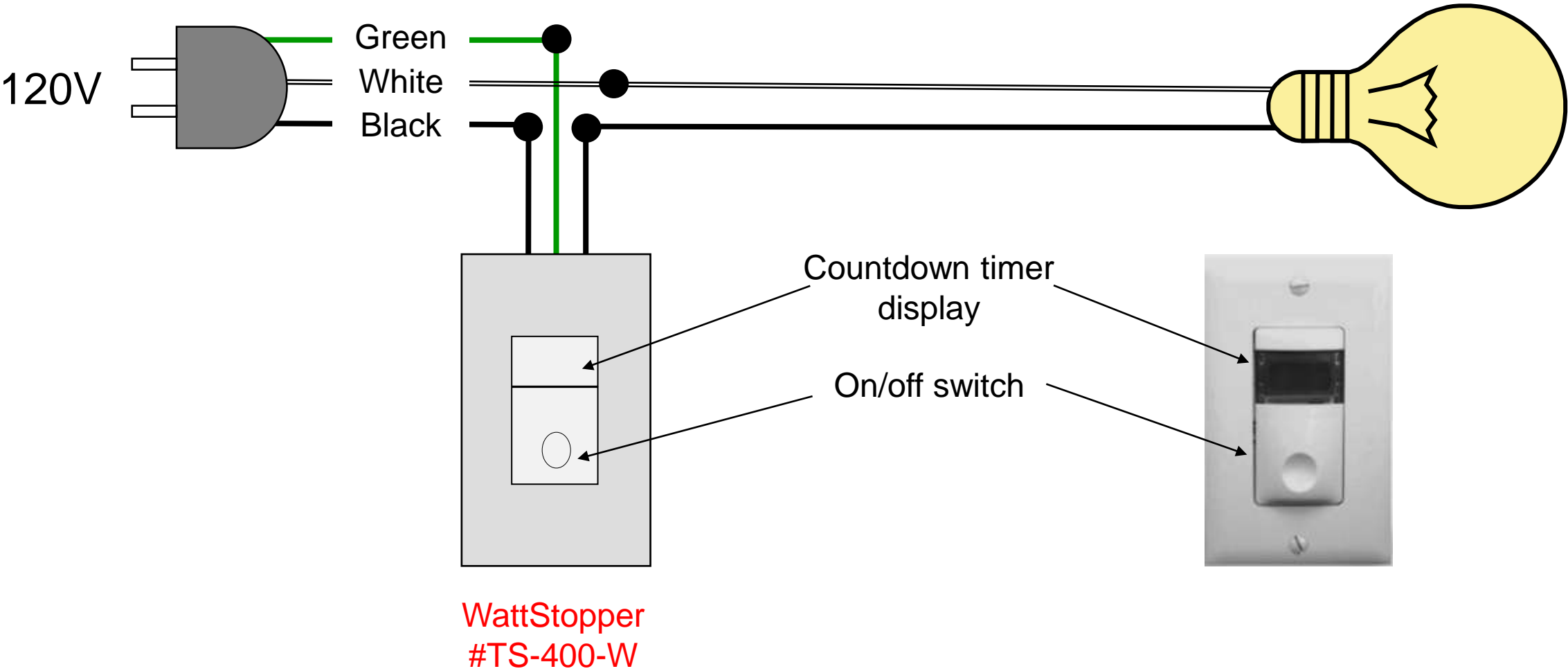
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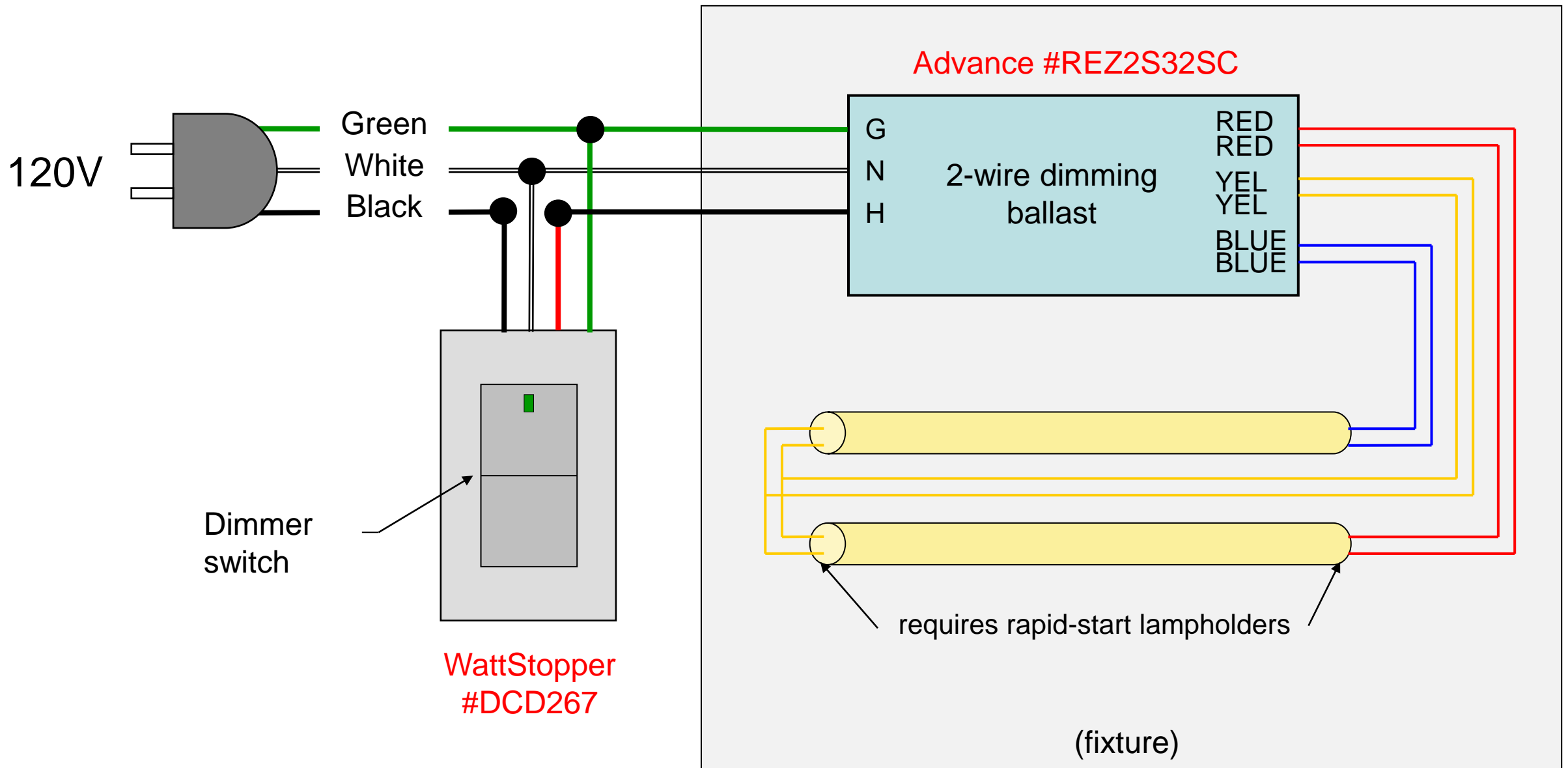
Table 1 – Wallbox devices supervised by Gabe Arnold

- 1.1 – Timer switch
- 1.2 – 2-wire phase-control dimming
- 1.3 – 3-wire phase-control dimming
- 1.4 – 4-wire 0-10VDC dimming
- 1.5 – DALI dimming
- 1.6 – Wireless dimming

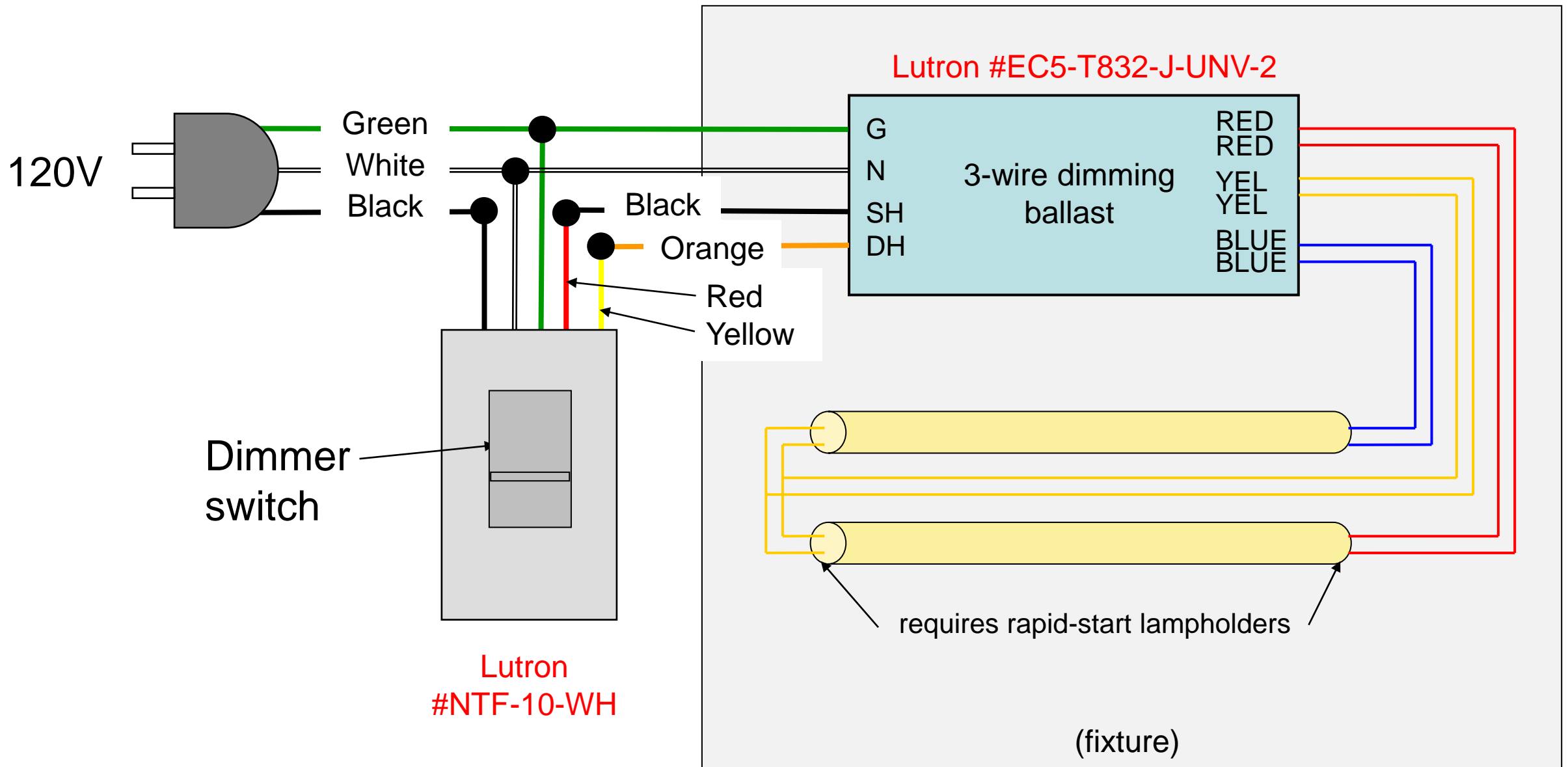
1.1 - Timer switch



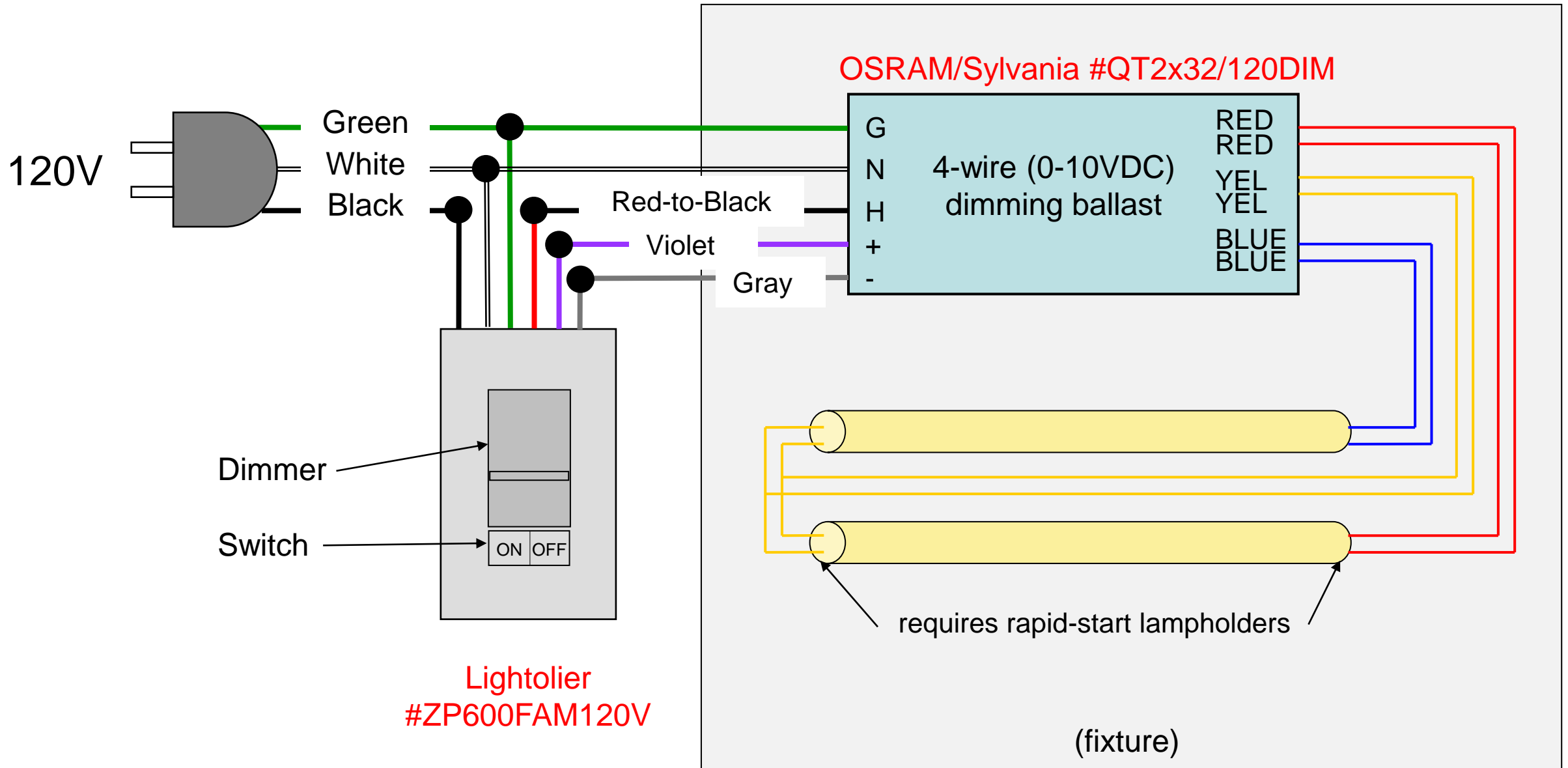
1.2 – 2-wire phase-control dimming



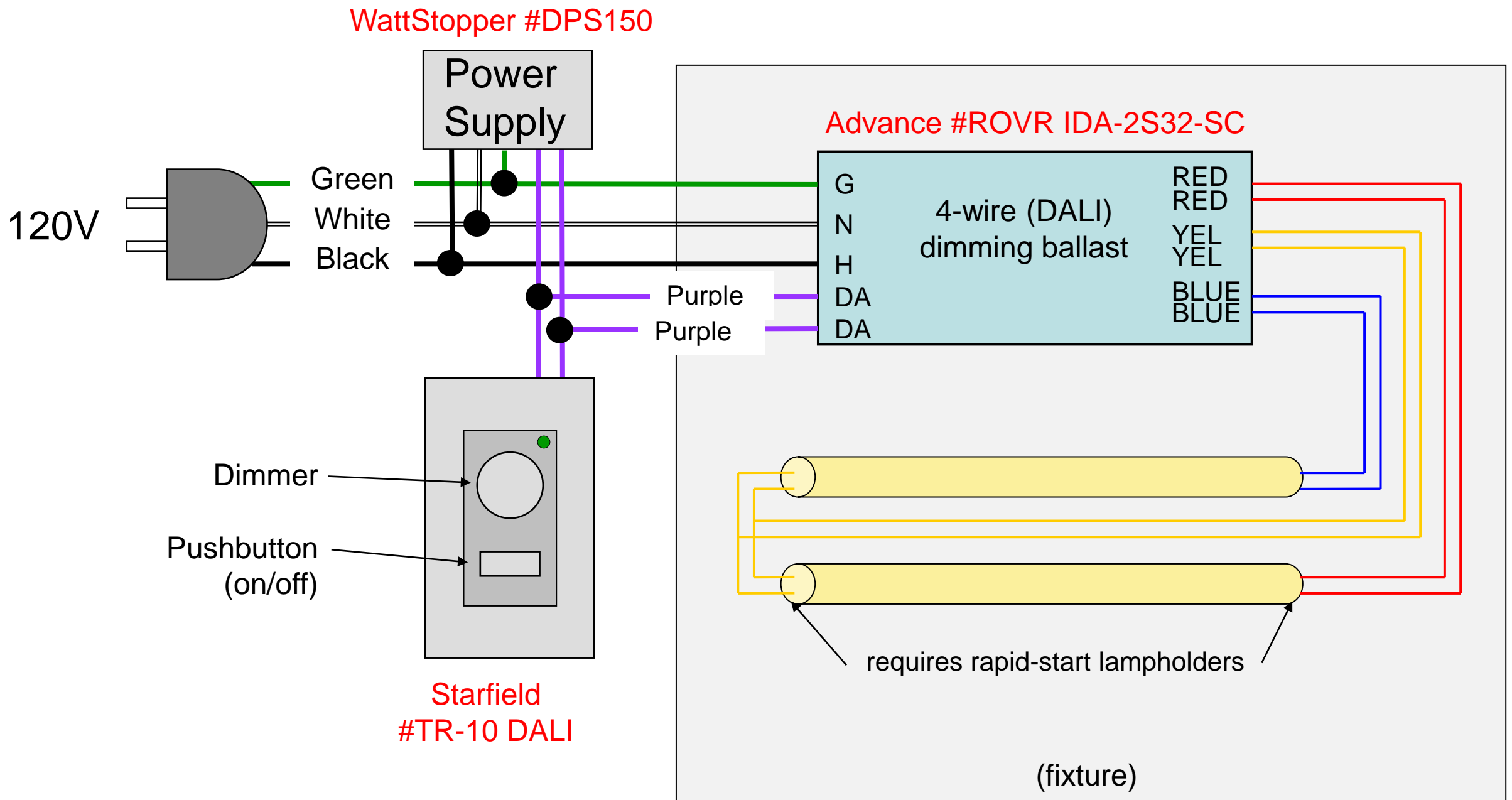
1.3 – 3-wire phase-control dimming



1.4 - 4-wire 0-10VDC dimming



1.5 – DALI dimming



1.6 – Wireless dimming

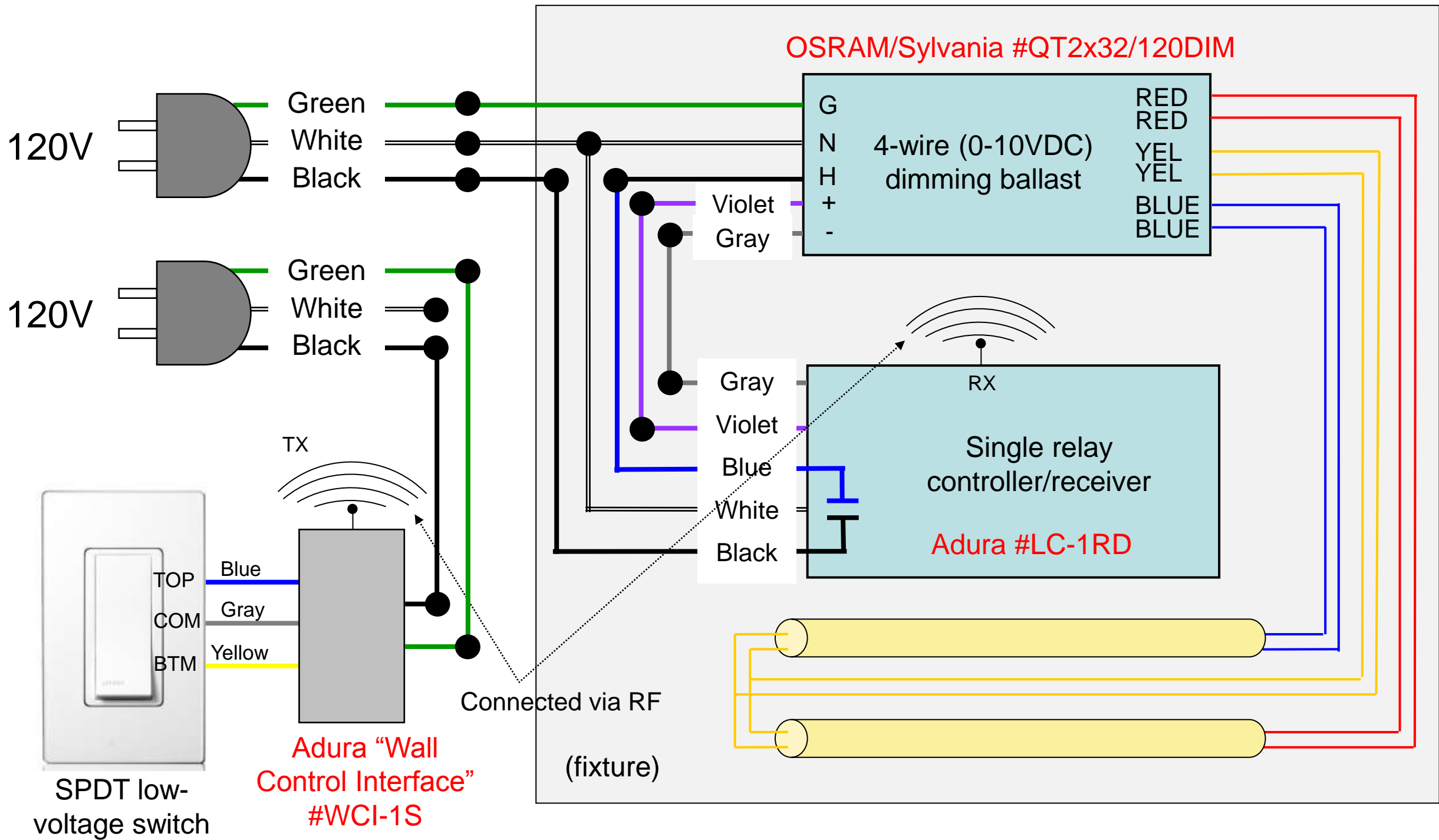
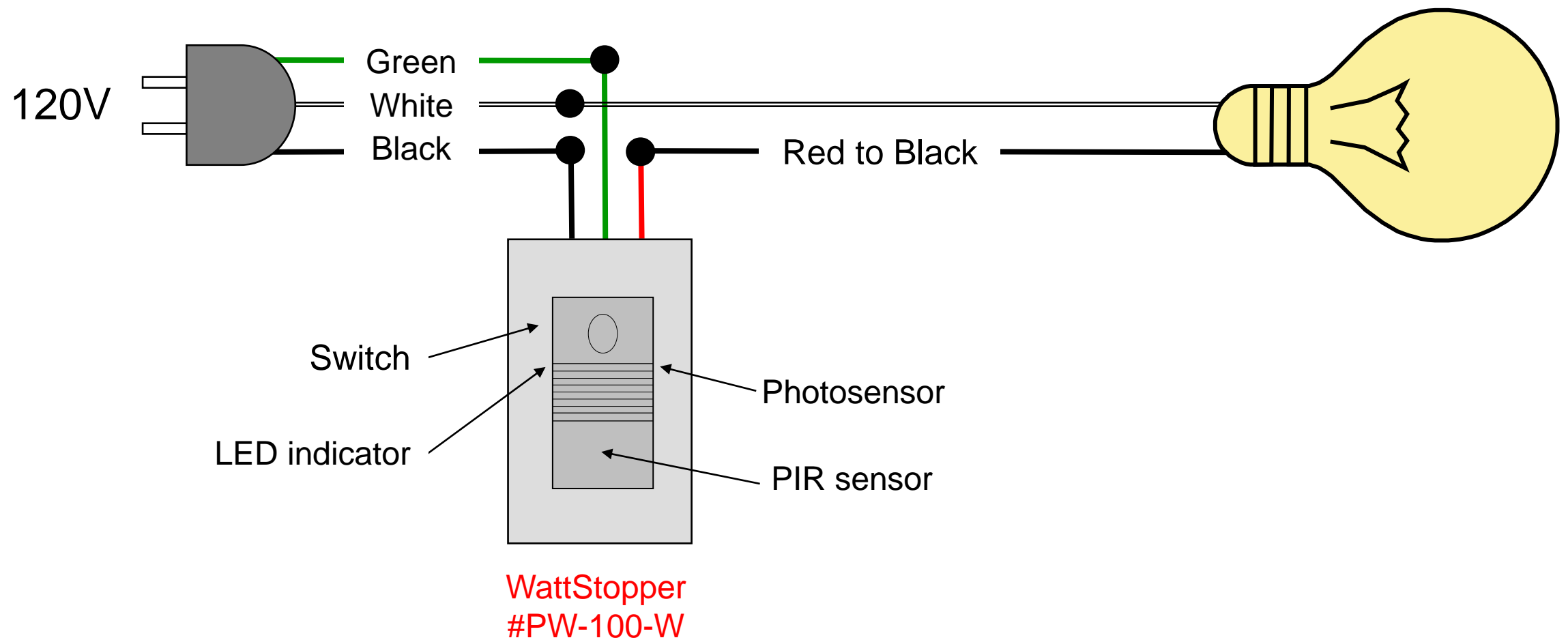


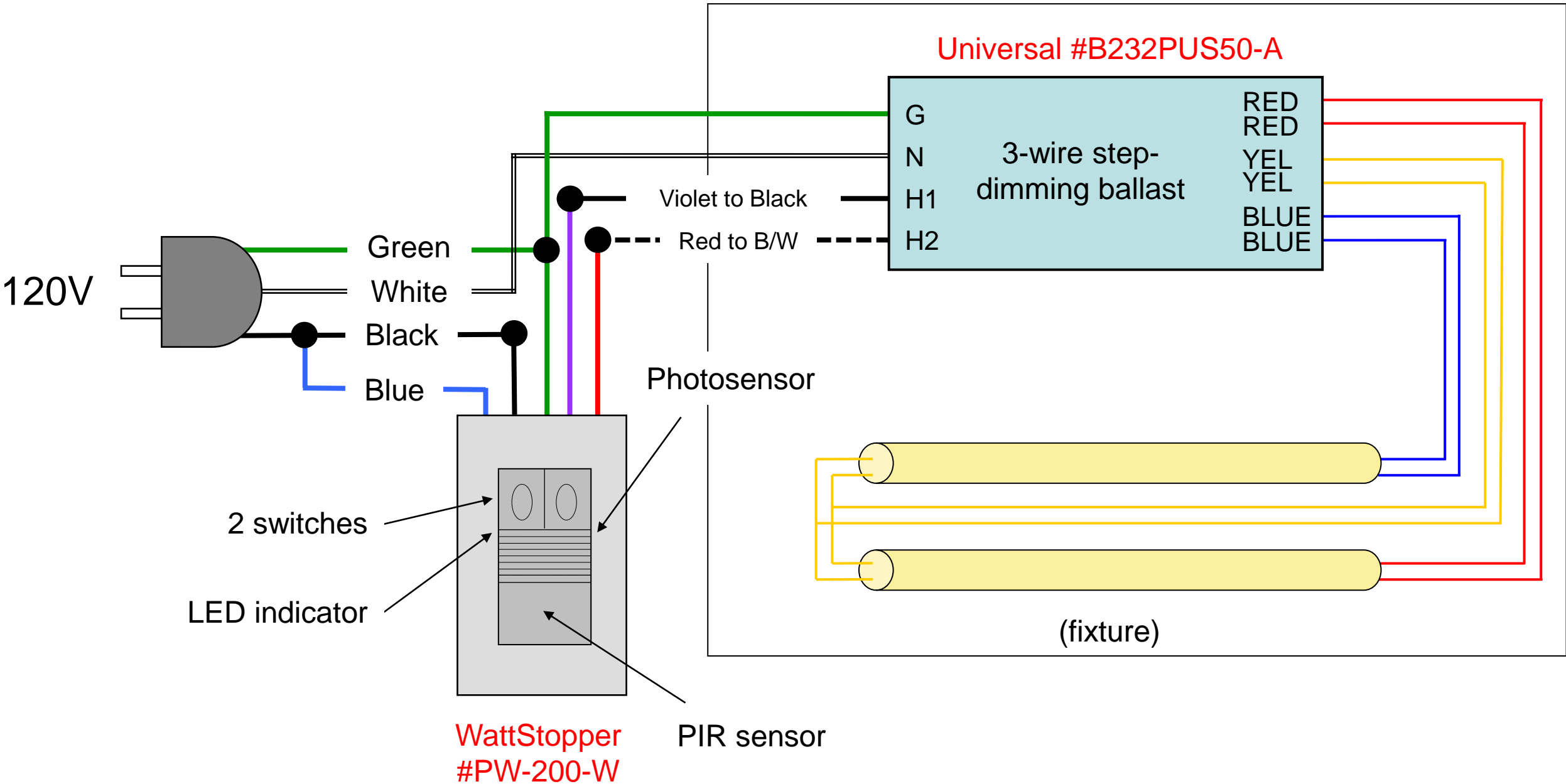
Table 2 – Occupancy sensors supervised by Steve Mesh

- 2.1 – Wallbox PIR occupancy sensor/switch, single-pole
- 2.2 – Wallbox PIR occupancy sensor/switch, two-pole (for a/b switching of step-dim ballast)
- 2.3 – Line-voltage, ceiling mount, dual technology occupancy sensor
- 2.4 – Low-voltage, ceiling mount, US occupancy sensor with power pack
- 2.5 – Wireless switch retrofit with wireless PIR occupancy sensor

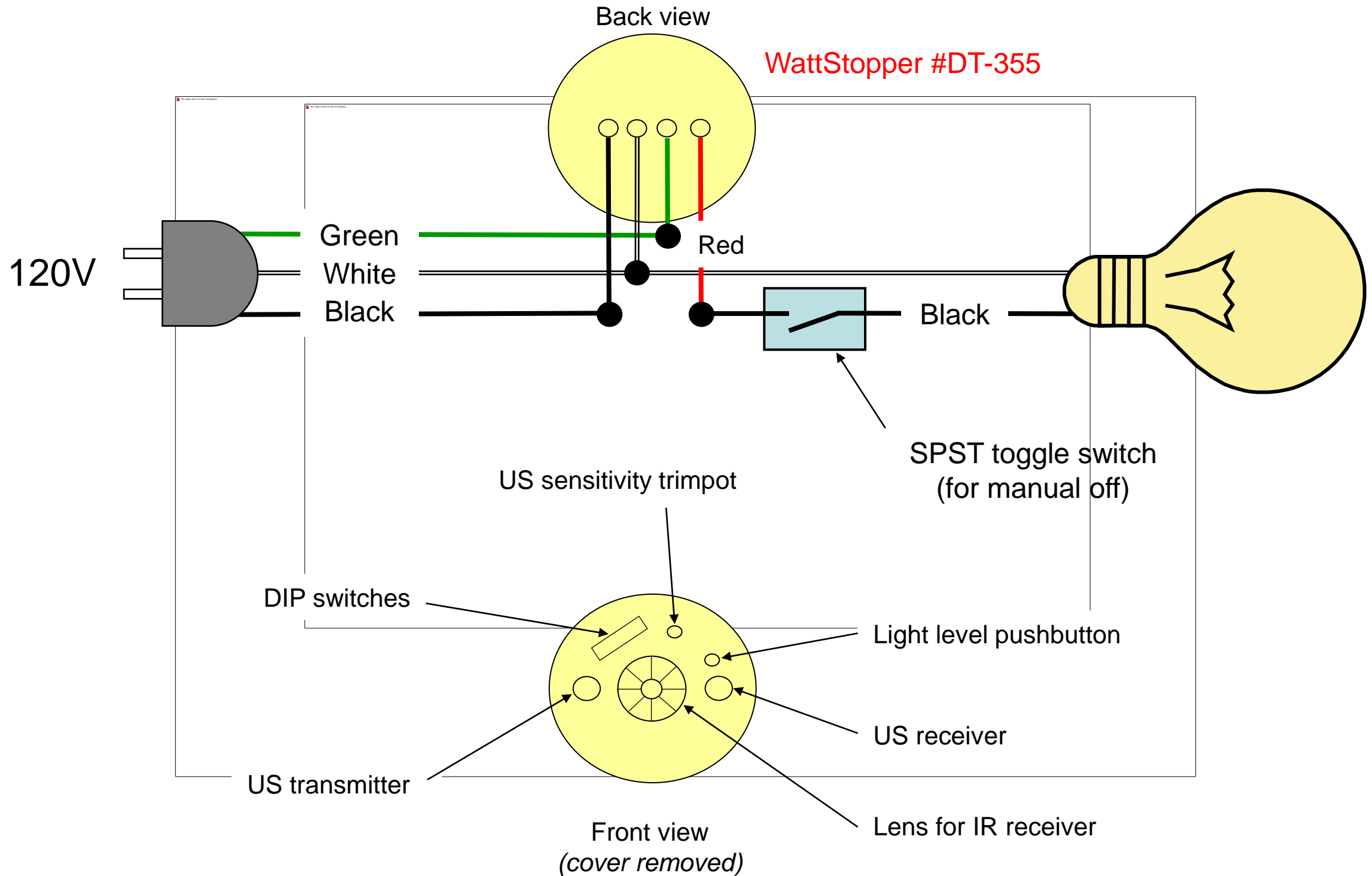
2.1 – Wallbox PIR occupancy sensor/switch, single-pole



2.2 – Wallbox PIR occupancy sensor/switch, two-pole (for a/b switching of step-dim ballast)



2.3 – Line-voltage, ceiling mount, dual technology occupancy sensor



2.4 – Low-voltage, ceiling mount, US occupancy sensor with power pack

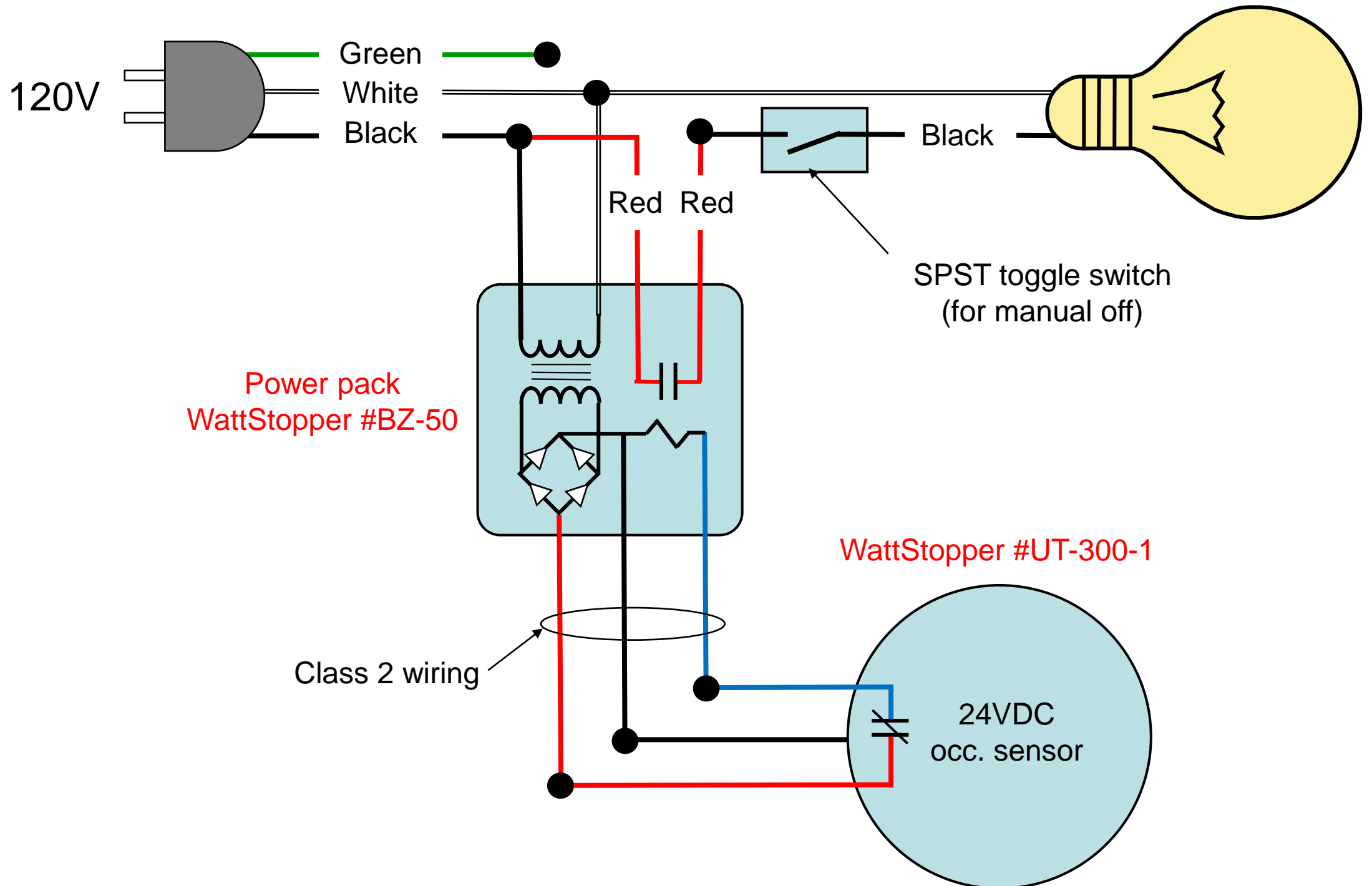
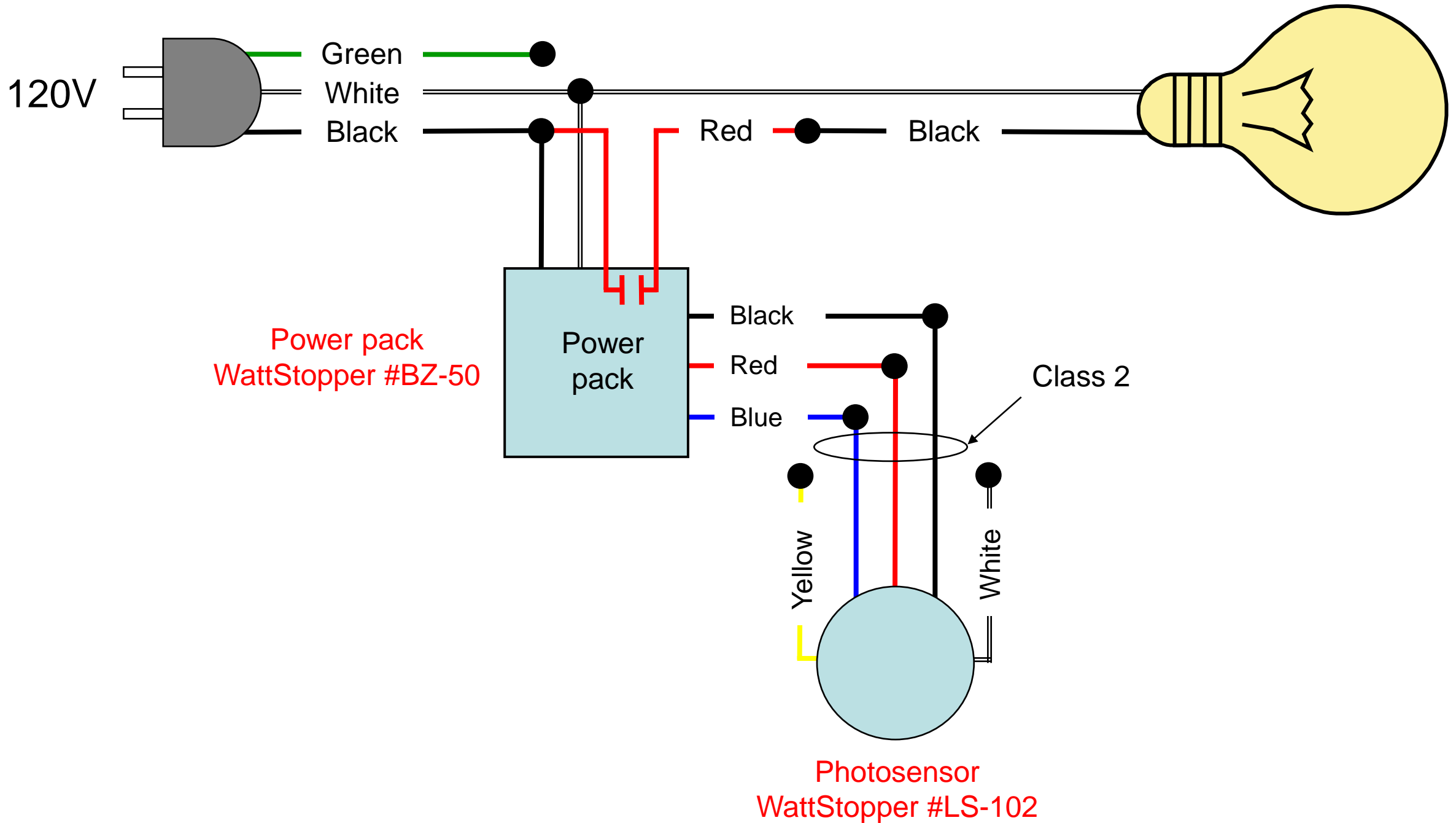


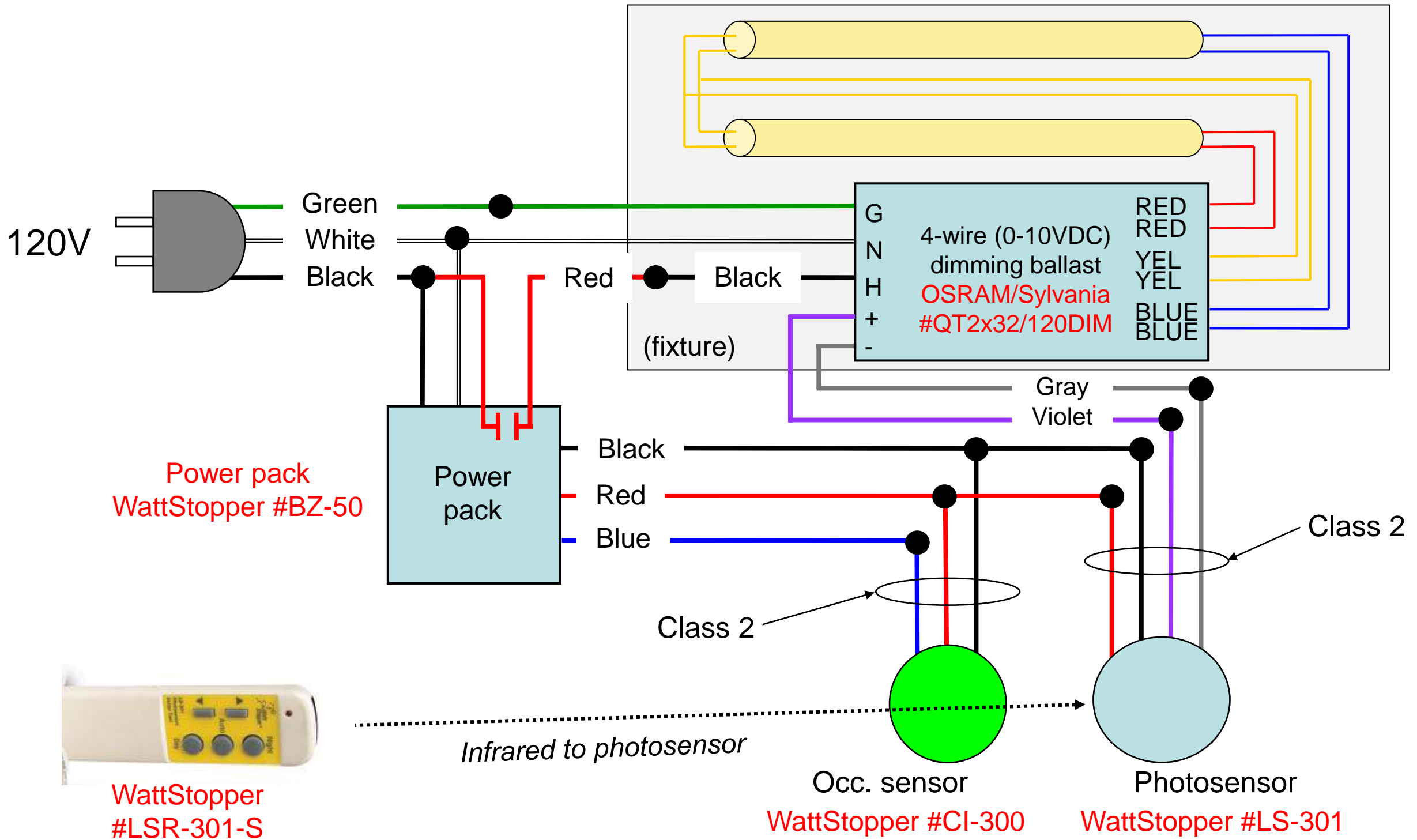
Table 3 – Photosensors supervised by Steve Mesh

- 3.1 – Low-voltage on/off
- 3.2 – 0-10VDC dimming with photosensor (ceiling mounted)
- 3.3 – Wireless photosensor dimming
- 3.4 – Multi-zone photosensor dimming

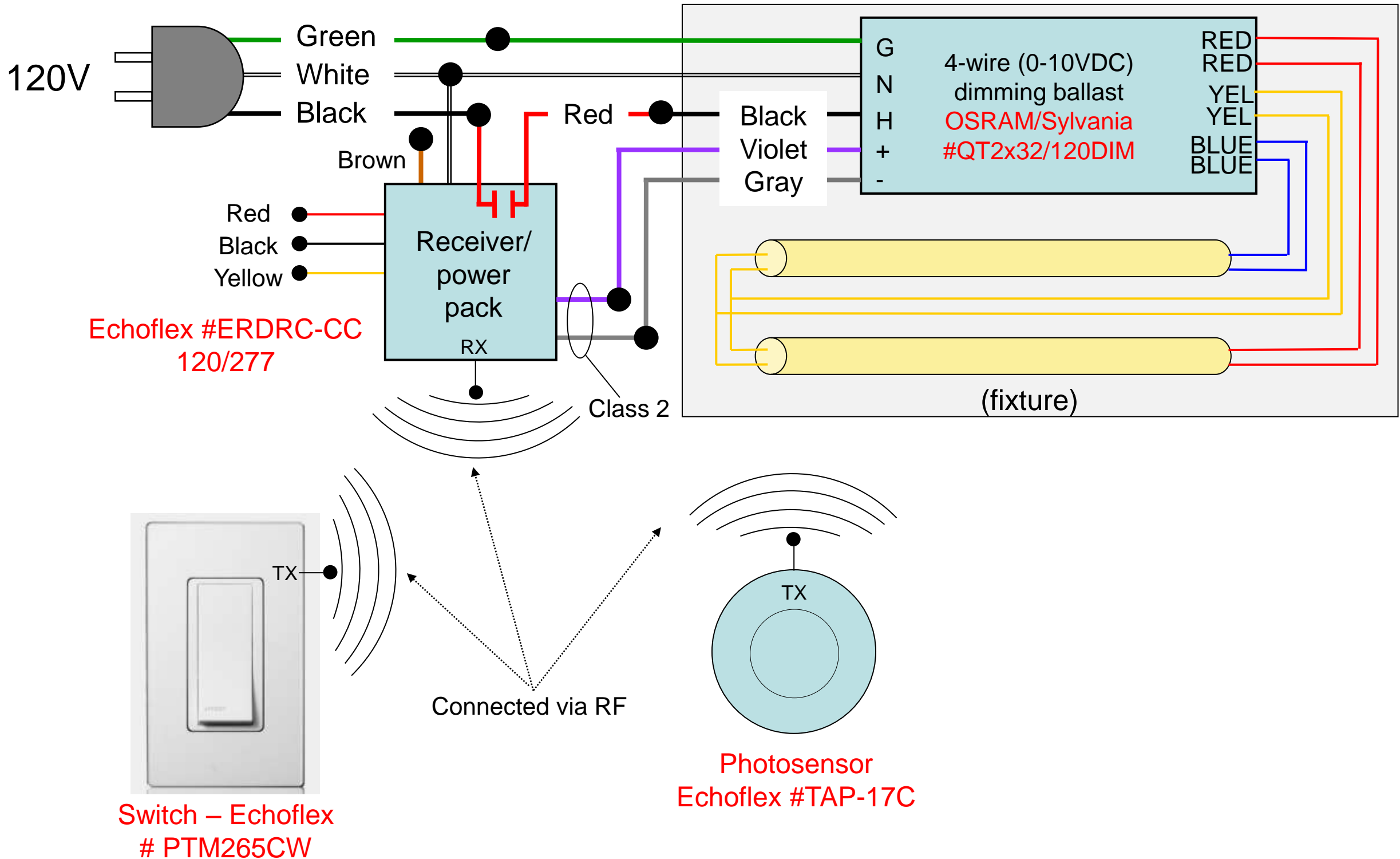
3.1 – Low-voltage on/off



3.2 – 0-10VDC dimming with photosensor (ceiling mounted)



3.3 – Wireless photosensor dimming



3.4 – Multi-zone photosensor dimming

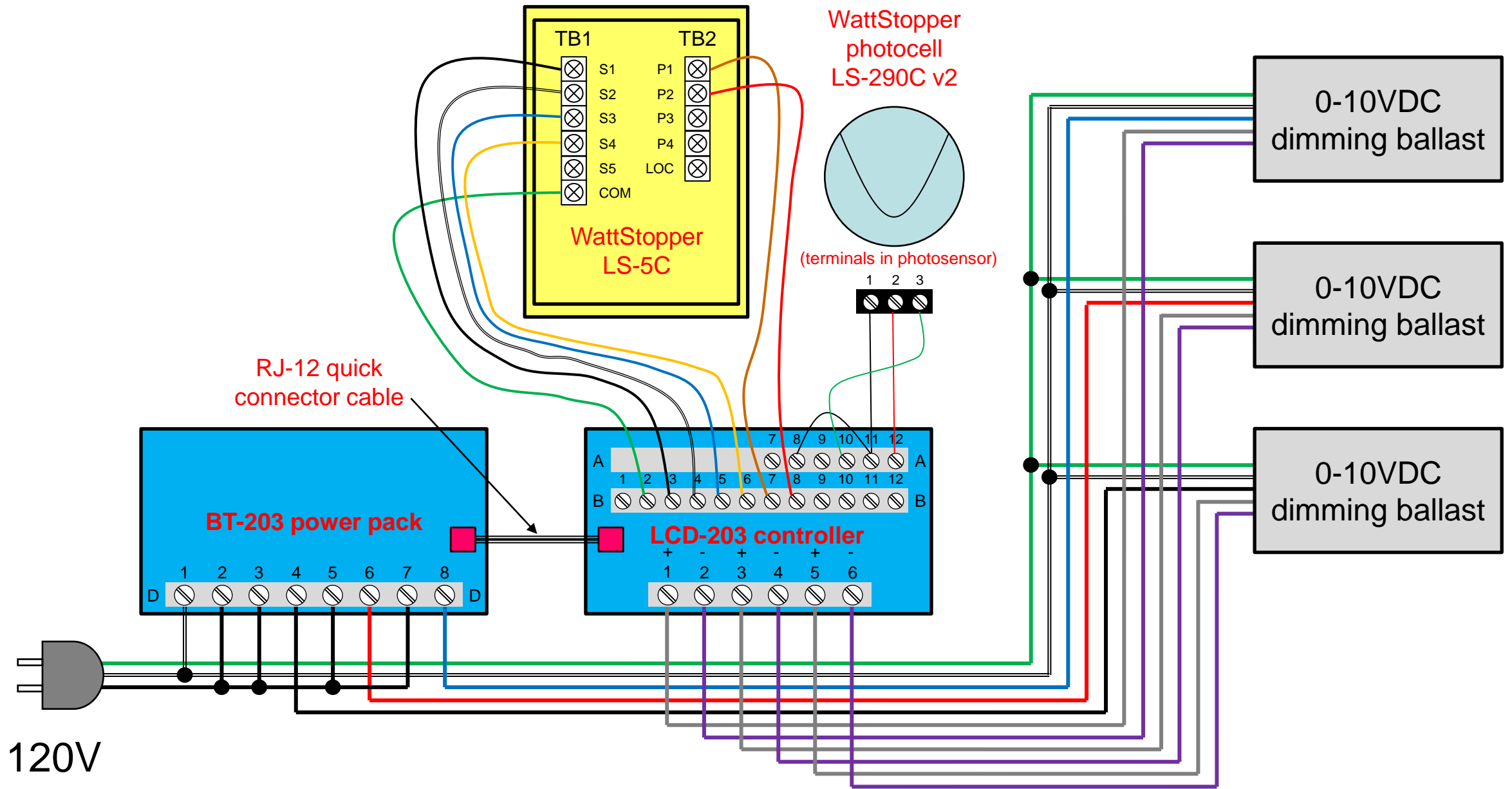
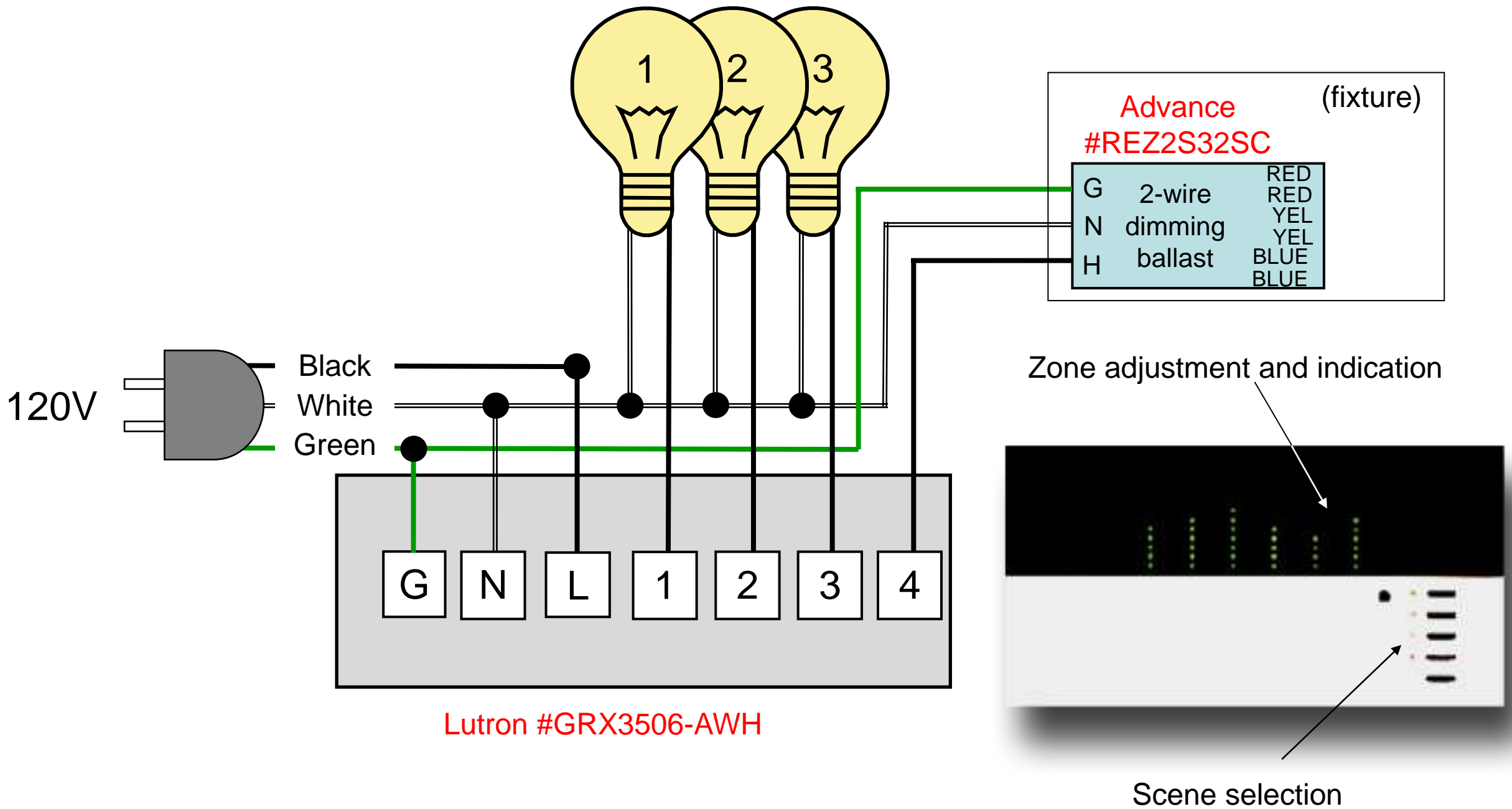


Table 4 – Preset dimming systems supervised by Gabe Arnold

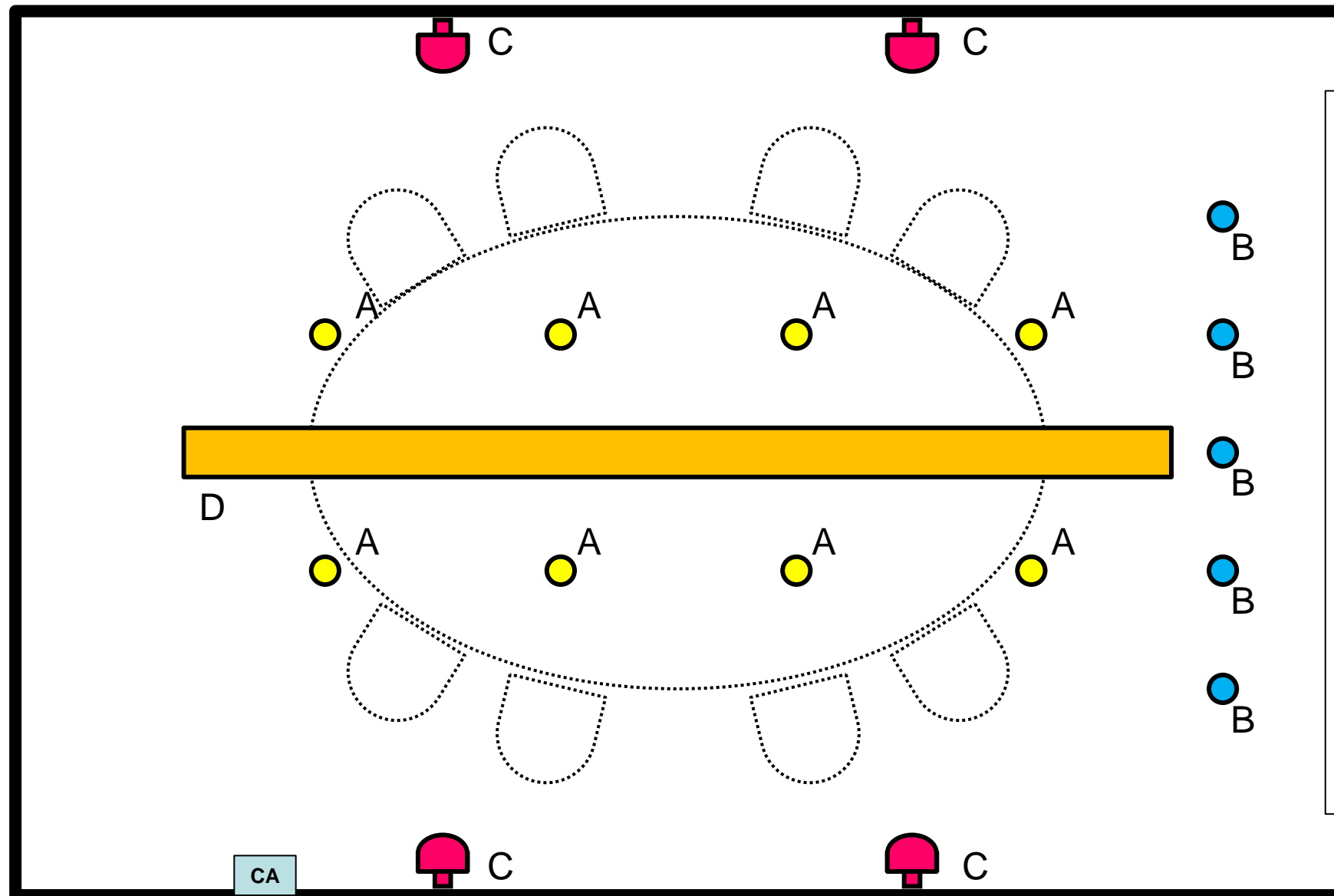
- 4.1 – Integrated multi-zone multi-scene preset
- 4.2 – Modular multi-zone multi-scene preset

4.1 – Integrated multi-zone multi-scene preset



Fixture types:

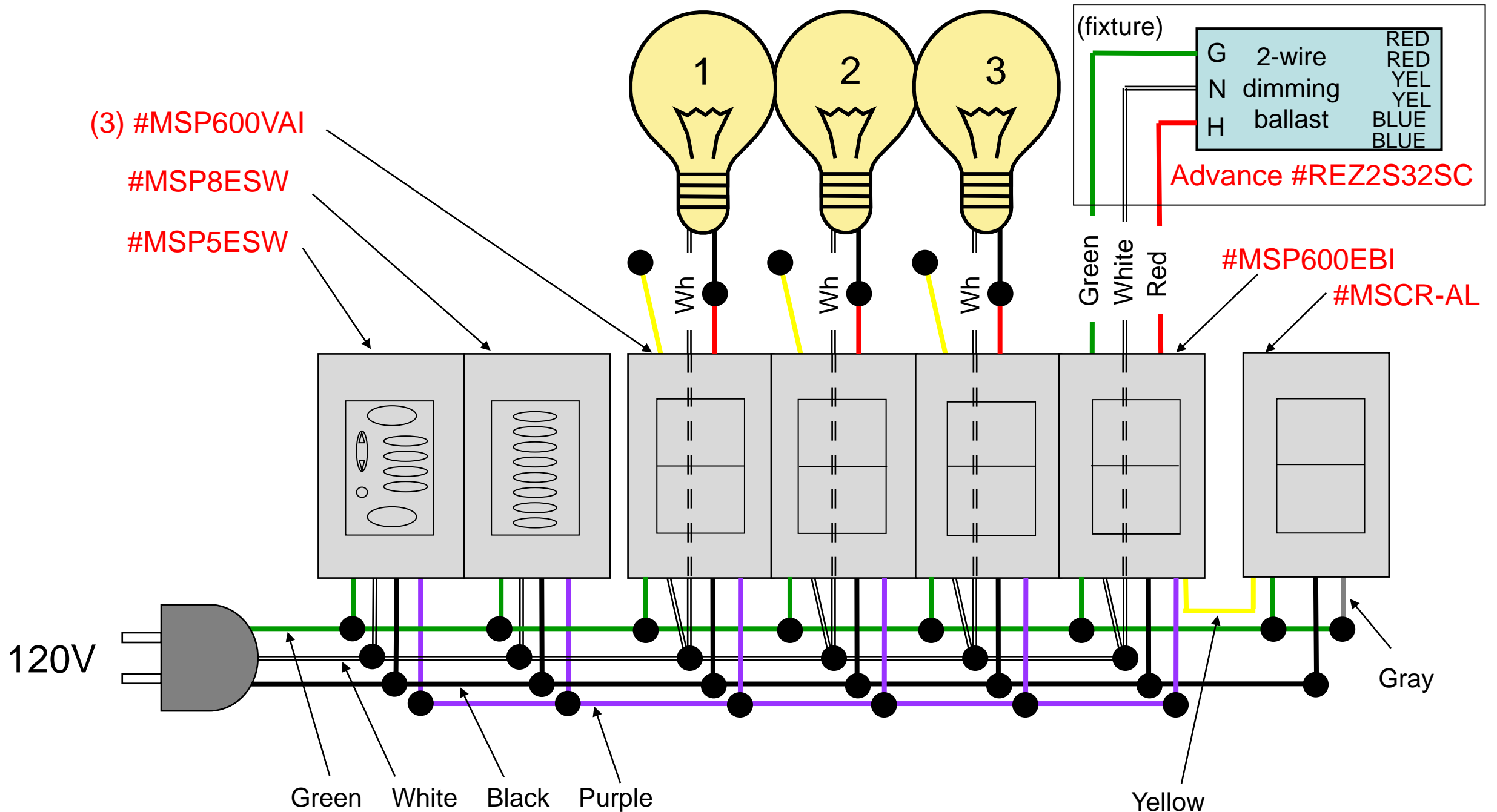
A – Q37MR16 downlights B – LED wallwashers C – CFL wall sconces D – F32T8 pendant direct-indirect ambient light

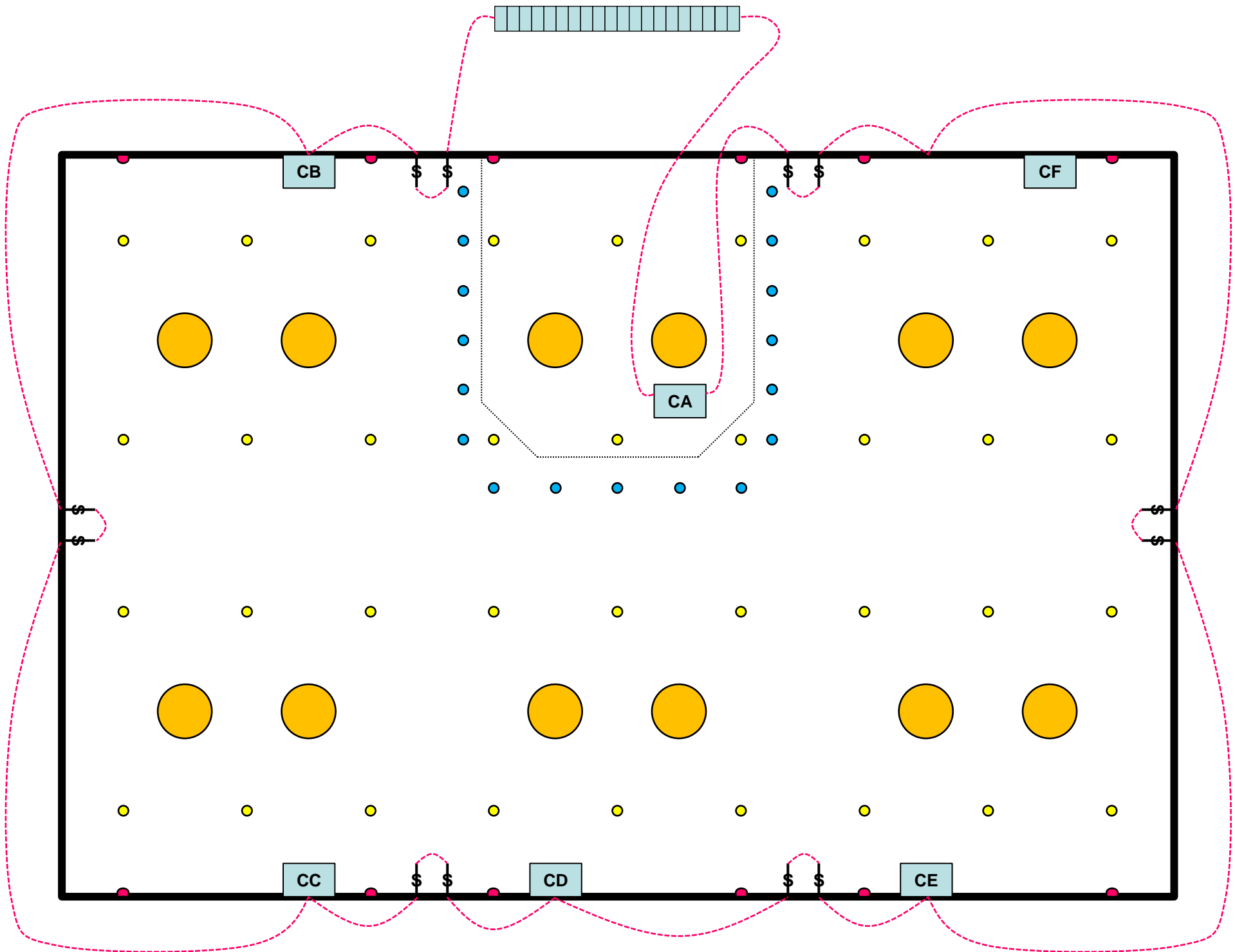


Scenes for conference room preset system:

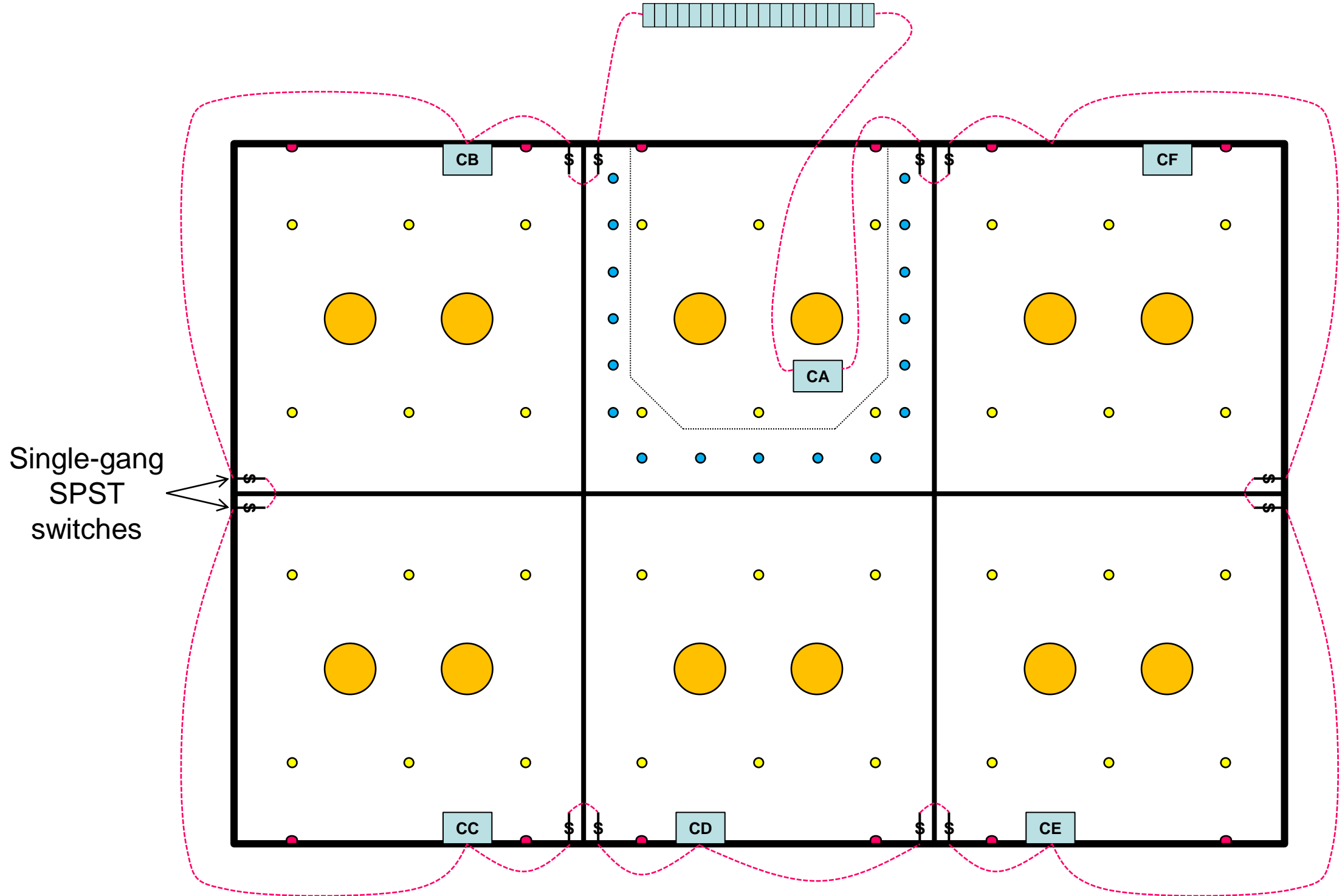
1 – Client meeting (face-to-face) 2 – A/V presentation 3 – Reviewing legal documents on table 4 – After-hours cleaning

4.2 – Modular multi-zone multi-scene preset





Dimmers in electrical room for Bay "A"



Typical control station ("CB" – "CF");
1 – 5-scene preset selector + 3 dimmers