

AVI-ON WIRELESS BLE MESH NETWORK

Avi-on Pro Bluetooth Lighting controls employ low-power, long-range Bluetooth technology, and secure patented networking (U.S. Patent 9781245) to provide an efficient, programmable and reconfigurable lighting experience.

Bluetooth with Mesh

Bluetooth Low Energy is a standardized radio technology used in billions of devices worldwide, notably cell phones, tablets, automobiles and wireless headphones. Bluetooth Low Energy Radios have much longer range (100+feet) and lower power, and better security options than conventional Bluetooth radios. As a result, Bluetooth has a growing base in commercial and industrial applications including building automation and lighting controls. Bluetooth operates in the 2.4GHz unlicensed industrial, scientific, and medical (ISM) frequency band meaning that devices can be used as certified by the manufacturer without license.

Avi-on Pro Bluetooth Lighting Controls use high quality Bluetooth Low Energy radios in a mesh topology developed by Qualcomm and Avi-on (CSR Mesh™) resulting in very low power, but highly reliable long range operation with much higher security than either standard Bluetooth or Bluetooth Low Energy. The many-to-many device communication of the mesh topology optimizes the creation of large-scale networks for full-building coverage capability in lighting and building automation solutions. The Avi-on network does not require a central gateway or controllers.

Network Functions

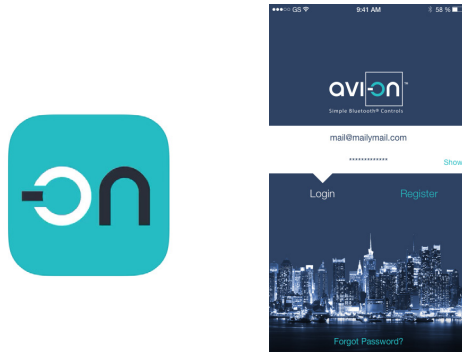
The Avi-on Pro Bluetooth Lighting Controls solution leverages Bluetooth Mesh technology to create a “cloud” of coverage around each component in the system. Once components are commissioned during the installation process, the components self-configure into a network, connecting the individual components to create a system cloud. Any component within the system may then communicate with any other component forming a completely distributed network. If a component, an Avi-on Movable Switch for example, is moved, it will seamlessly reintegrate with the new adjacent components with no required updates of gateway, routing tables, or interaction with other devices. As a result, the network can be reconfigured at will without change in operation as long as individual component ranges are not exceeded. Components typically achieve a 60 to 100 foot point to point range in office, hospitality, and residential settings, with double or triple that in open air settings like warehouse, outdoor, or manufacturing. Because all components work in concert, there is no limit to the range of the entire system Cloud as long as individual component ranges are not exceeded. The figure below conceptually demonstrates complete building coverage using the Avion Pro Bluetooth Lighting Controls solution.



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Avi-on App (iOS or Android)

The Avi-on iOS/Android App enables mobile phone and tablet users to easily set up and change the system, using schedules, scenes, groups, sensors and more, with no wires, complex programming or central controller. The mobile phone or tablet (Mobile) running the Avi-on App must support Bluetooth Low Energy (Bluetooth 4.0 or later) and an Internet connection via WiFi or cellular. The Mobile runs the Avi-on App and forms a bridge to the Bluetooth mesh system. The Mobile only connects to (generally) the closest system component and can “see” and control every element in the network.



The figure below shows a simple representation of an Avi-on Pro Bluetooth Lighting Controls system. The Avi-on App manages the user account on a phone or tablet called the Mobile, and is used to set up the network by commissioning system components such as high-bay luminaires, wall switches and occupancy sensors. Once the system is set up with the Avi-on App, a Remote Access Bridge may also be added to remotely control the system across the Internet.



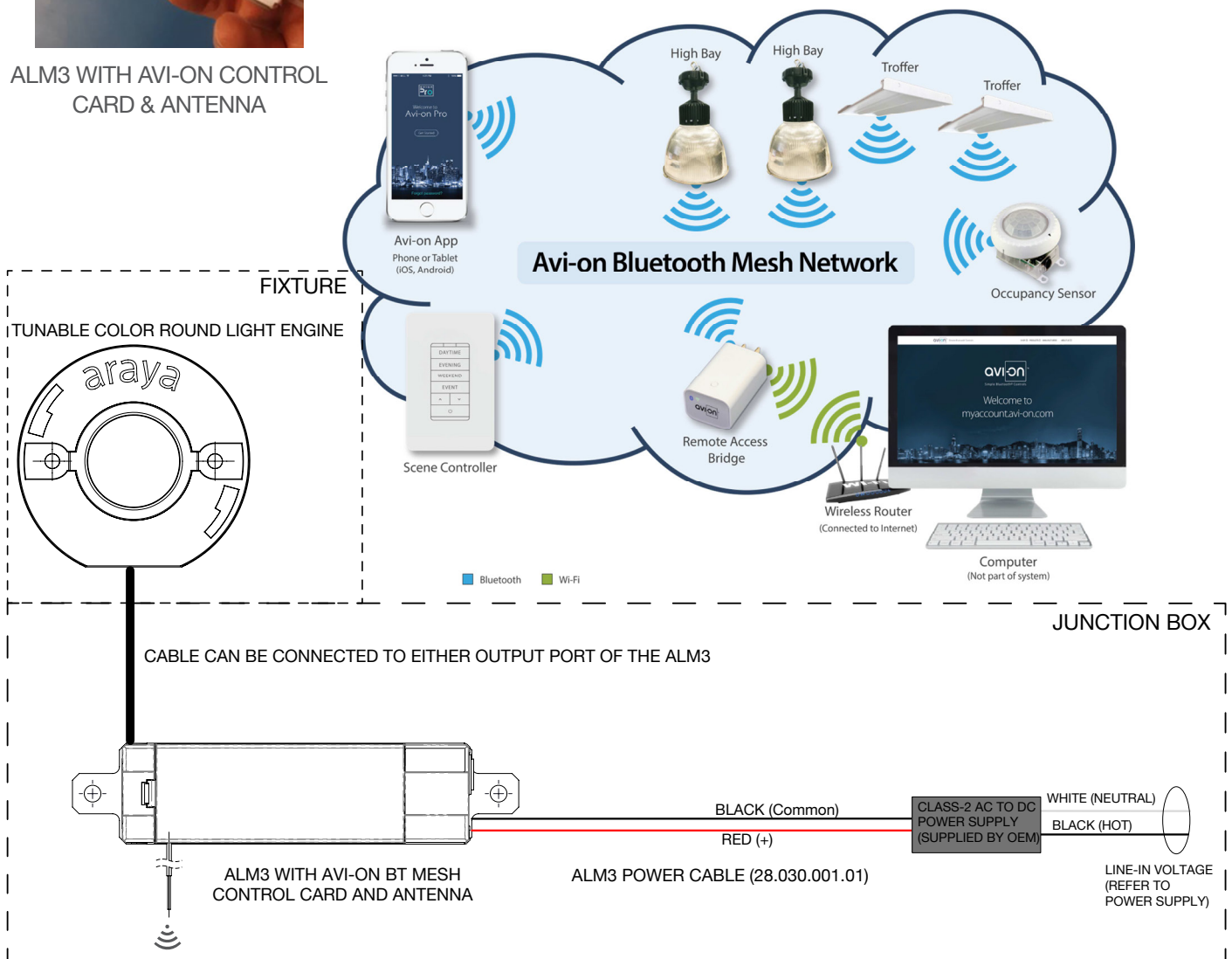
For more information and assistance, please refer to the various links on the Avi-on website at avi-on.com/resources.

AVI-ON WIRELESS BLE MESH WIRING DIAGRAMS

1.1 CTM3 Round Light Engine with Araya Logic Module (ALM3)



ALM3 WITH AVI-ON CONTROL CARD & ANTENNA

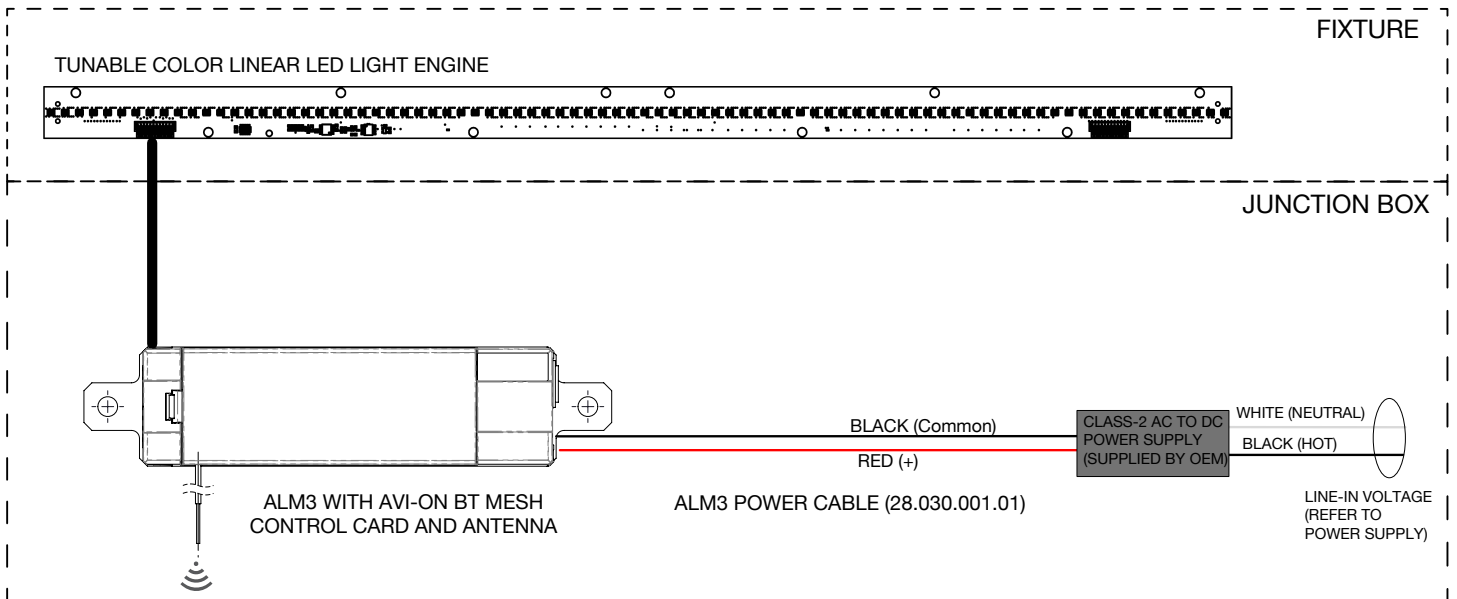
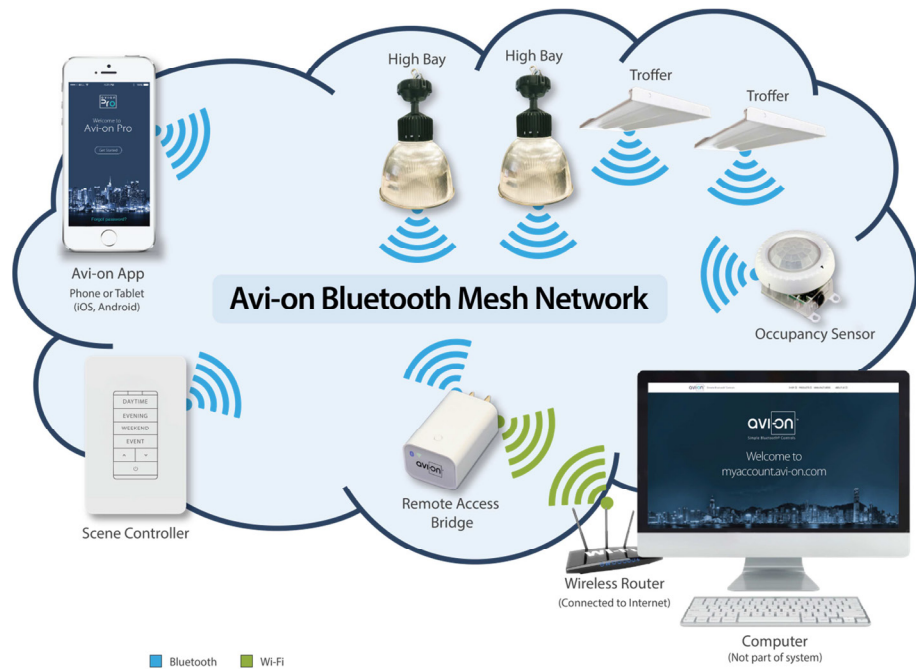


AVI-ON WIRELESS BLE MESH WIRING DIAGRAMS

1.2 LTM3 Linear Light Engine with Araya Logic Module (ALM3)

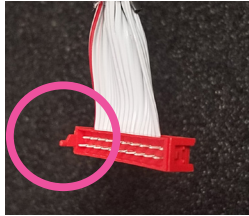


ALM3 WITH AVI-ON CONTROL CARD & ANTENNA



AVI-ON WIRELESS BLE MESH WIRING DIAGRAMS

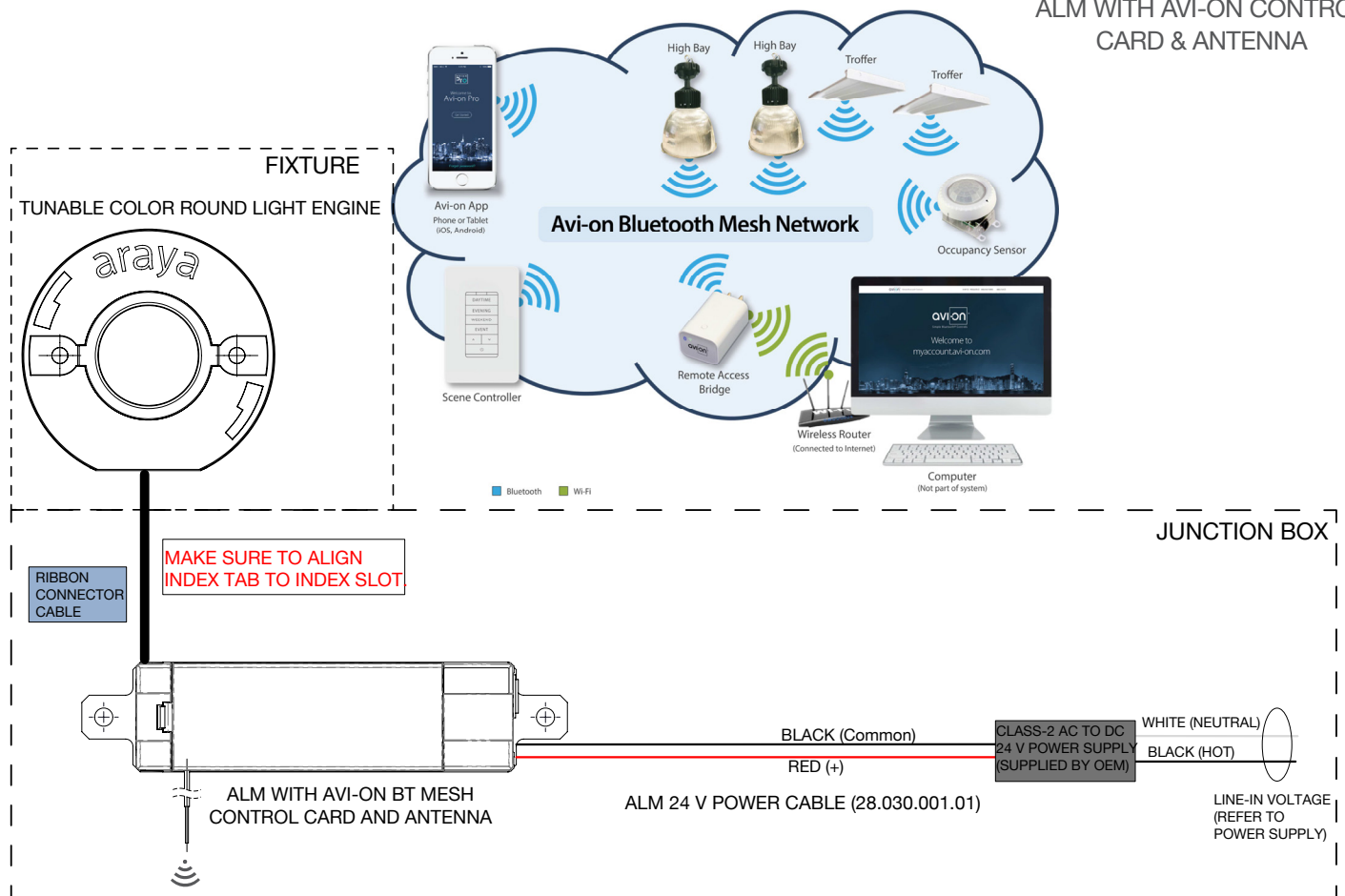
1.3 CTM2 Round Light Engine with Araya Logic Module (ALM2)



INDEX TAB ON RED END OF CABLE CONNECTOR SHOULD LINE UP WITH INDEX SLOT ON ALM.



ALM WITH AVI-ON CONTROL CARD & ANTENNA

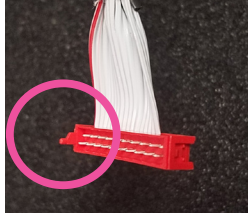


IMPORTANT:

CTM 241 IS PROVIDED WITH TWO ALMS AND REQUIRES TWO POWER CABLE ASSEMBLIES AND TWO RIBBON CABLES FOR FULL FUNCTIONALITY AND PERFORMANCE. THE WIRING CONNECTIONS AND THE ALM WILL BE MIRRORED ON **TWO** CONNECTOR OPENINGS (LABELED AS LEFT AND RIGHT) ON THE LIGHT ENGINE. THE ALM LABELED “LEFT” AT ONE END SHOULD ONLY BE ATTACHED VIA RIBBON CABLE TO THE CONNECTOR OPENING LABELED “LEFT”. THE OTHER ALM LABELED “RIGHT” AT ONE END SHOULD ONLY BE ATTACHED VIA RIBBON CABLE TO THE CONNECTOR OPENING LABELED “RIGHT”.

AVI-ON WIRELESS BLE MESH WIRING DIAGRAMS

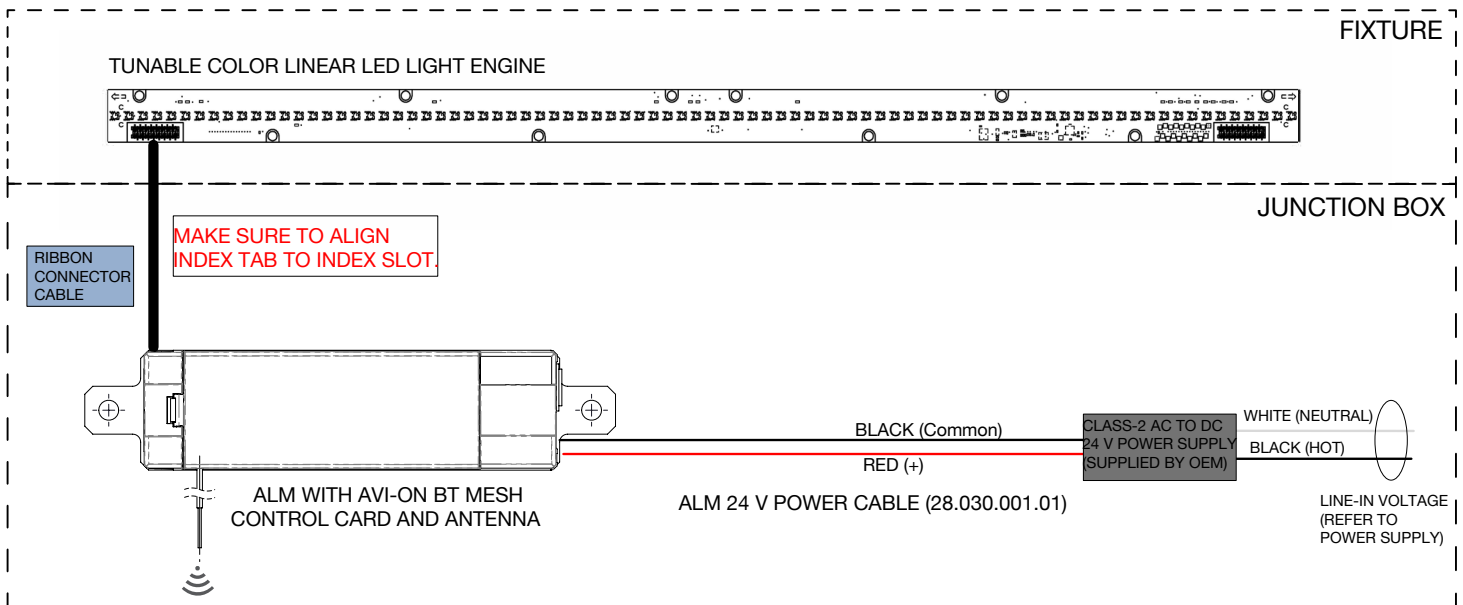
1.4 LTM2 Linear Light Engine with Araya Logic Module (ALM2)



INDEX TAB ON RED END OF CABLE
CONNECTOR SHOULD LINE UP
WITH INDEX SLOT ON ALM.

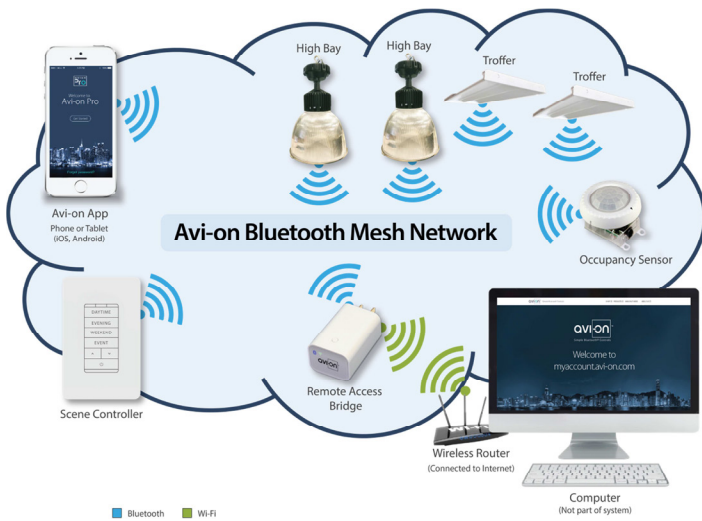
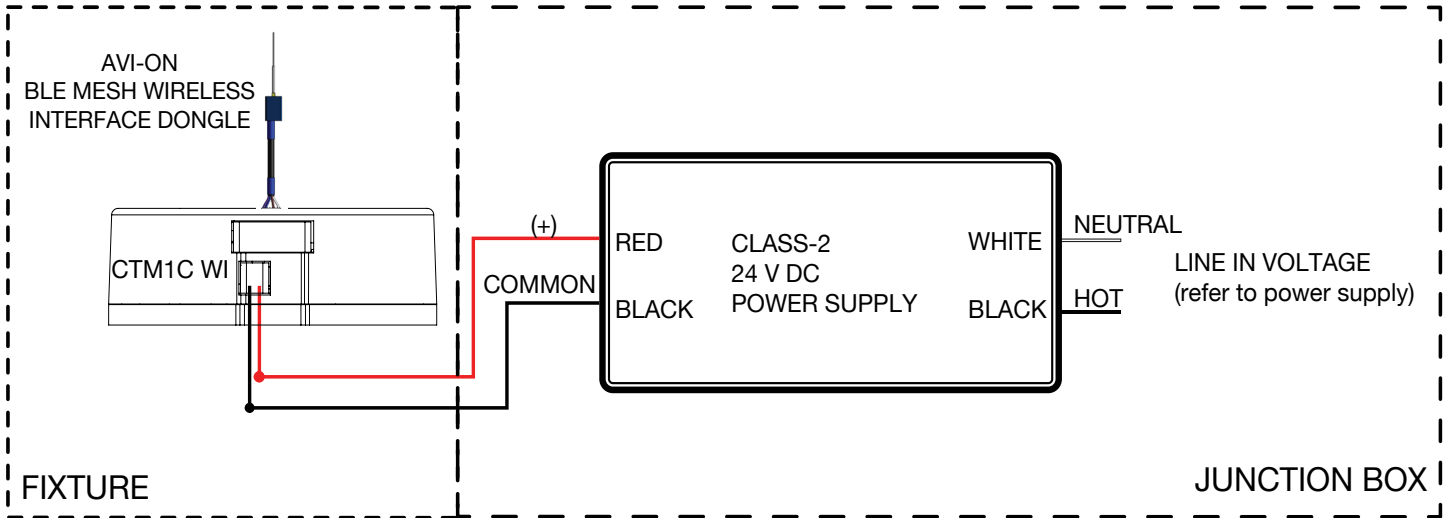


ALM WITH AVI-ON CONTROL
CARD & ANTENNA



AVI-ON WIRELESS BLE MESH WIRING DIAGRAMS

1.5 CTM1C WI – 24 V



Lead Color and Input

Lead Color	Input
Red	Power 24 V DC (+)
Black	Power Common (-)



Part Number:
28.002.001.01 (power cable assembly)

Part Number:
80.005.004.01 (Avi-on BLE Mesh wireless interface dongle)