# Part 1. Wireless Tunable White Dimming LED Controller

* 1. WIRELESS CONTROLLER
     1. Tunable White LED Fixture Controller
        1. The Tunable White Dimming Controller shall be either Echoflex model ELED2-BU 120-277 or ELED2H-AU 240-347, Tunable White Dimming Controllers by Echoflex Solutions, Inc., or approved equal
        2. Mechanical
           1. The Controller shall be offered in a power pack model mounting to a ½” electrical junction box knock-out using the threaded nipple and retaining nut

All controller wires shall exit the enclosure through the threaded nipple

* + - * 1. The Controller shall have learn and clear buttons accessible when mounted

The learn button shall be used for manual linking of switches and sensors

The clear button shall be used for resetting the controller into the factory pre-commissioned state or factory default state

* + - * 1. The Controller shall have two LED indicators to display power/operational mode and per channel linked device information
        2. The Controller shall be UL 2043 plenum rated
      1. Electrical
         1. The Controller shall be available in 120-277VAC, 50/60 Hz or 240-347VAC, 50/60 Hz configuration
         2. The Controller shall provide a single, non-isolated latching SPST relay output, fully rated at:

20.0 Amps at 120VAC through 277VAC for Electronic or Magnetic Ballast and LED Driver loads

16.0 Amps at 347VAC for Electronic or LED Driver loads

20.0 Amps at 347VAC for Magnetic Ballast loads

* + - * 1. The Controller shall support inrush current of 460 A2s @ 277VAC
        2. The Controller shall support two low voltage output (0-10 VDC @100mA sinking current) channels for connection to LED drivers and dimming ballasts
        3. The Controller shall use a 902 MHz EnOcean radio. Systems that use other radio frequencies shall not be acceptable
        4. The internal radio shall have a radio range of 24 m (80 ft.) – commercial office space, (typical), up to 100 m (330 ft.) line of sight
        5. The Controller shall be UL listed, conform to UL 60730, and be certified to CAN/CSA Standard E60730
        6. The Controller shall conform to UL 924 for Directly Controlled Luminaires with 0-10V dimming, NEC 700.24
        7. The Controller shall comply with FCC Part 15.231 and IC RSS-210
      1. Functional
         1. The Controller shall provide switching, low voltage dimming and tunable white color temperature control of an individual fixture or lighting zone

The Controller shall have a dedicated low voltage output for intensity control of connected LED drivers or ballasts

The Controller shall have a dedicated low voltage output for tunable white color temperature control of connected LED drivers

##### The Controller shall support wireless Echoflex switches and sensors for light intensity, tunable white color temperature and relay control

###### The Controller shall support linking of at least 20 wireless devices in any combination of Echoflex stations, sensors, interfaces or gateways. Systems that do not support at least 20 remote devices shall not be acceptable

##### The Controller shall automatically configure for automatic lights-on with occupancy when no switches have been linked

##### The Controller shall support daylighting control when a wireless photo sensor is linked

The Controller shall support tunable white color temperature control when a linked wireless photo sensor provides a Correlated Color Temperature (CCT) value

The Controller shall support the use of a dynamic set point to drive the tunable white temperature output

A linked switch can provide manual control of the tunable white output

When the tunable white channel has no devices linked it will assume a dim-to-warm operation

##### The Controller shall provide the option of single or dual-hop wireless signal repeating to other controllers. Systems that do not provide signal repeating shall not be acceptable

##### The Controller shall support Central Command functions for use with integrated control systems

* + - * 1. The Controller shall support Demand Response commands that provide a temporary ceiling to the maximum dimming output level
        2. The Controller shall store values for a minimum of 15 Presets

Presets shall include a ramp time and output value

* + - * 1. The Controller shall support Preset Command messages

Supported Preset commands shall include: Preset Teach, Preset Activate, Zone Raise/Lower Start, Zone Raise/Lower End, Zone Set Output Level, Preset Record, Lockout, and Zone Mask Set

* + - * 1. The Controller shall support a minimum of 24 Preset Zones defined by a zone mask

If a Preset Command transmitting device is linked to the Controller and the message includes a zone mask shared with the Controller, the Controller will respond to the command

##### The Controller shall support commissioning and linking through software and/or mechanical means. Controllers that do not support both shall not be acceptable

##### The Controller shall provide configuration variables that allow customization of the controllers’ operation with linked sensors, switches, interfaces and gateways

##### The Controller shall provide the option of reporting relay and each of the low voltage channels status wirelessly

##### The Controller shall save all configuration settings and linked device details in non-volatile memory

The Controller shall provide the option of saving user-defined configuration settings and linked devices as recoverable default settings

* + - * 1. The Controller shall provide the option of resetting to factory defaults