Application Note

VividTune color tuning solutions

Room Controller Classroom Example

Overview

The room controller uses a standard switching and 0-10V dimming architecture to provide a simple, code compliant lighting control solution for automatic lighting, emergency and plug load control. The room controller operates wired loads immediately upon connection of low voltage accessories. Preconfigured scene or zone control wallstations add manual control capability, while occupancy sensors and daylight sensors provide code compliant energy savings. Customize preprogrammed scene and daylight levels using the easy-to-use, handheld programming remote or achieve more advanced applications for larger spaces with network enabled room controllers and the Keeper Enterprise software.

The VividTune™ color tuning solution adds additional value to room controller applications. While the room controller maximizes energy savings, a CCT slide controller adjusts the correlated color temperature. By incorporating VividTune technology, facilities have the capability of not only meeting energy code requirements, but also of altering the atmosphere and mood of the space to meet the task at hand.

What is CCT?

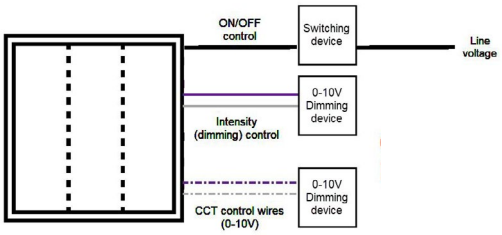
The abbreviation, CCT, stands for correlated color temperature. Artificial light sources emit different tones of white light, ranging from warm to cool. In terms of lighting, CCT is measured in degrees Kelvin (K). Warmer, yellower tones of light will have a lower CCT while cooler, bluer tones of light will have a higher CCT. Within the VividTune products, luminaire models are available for white tuning adjustment within the 3000K-5000K range or the 2700K-6500K range.

Why is CCT Important?

In an educational environment, it has been proven that tuning the correlated color temperature of lighting throughout the day can help students maintain focus and productivity during certain tasks, and foster creativity and relaxation during other tasks.

How does a Luminaire with VividTune Work?

VividTune Luminaires use 0-10V technology to allow for easy integration into multiple systems. Like most standard 0-10V drivers, connections are provided for line voltage power (typically this connection is made through a switching device to allow for ON/OFF control) and for connection to a 0-10V dimming device through a set of purple and gray wires. In addition to these standard connections, the VividTune luminaire has an additional set of striped purple and gray wires that connect to another 0-10V dimming device to tune the CCT.



- The switching device controls whether the luminaire is ON or OFF.
- The standard 0-10V wiring allows the connected dimming device to adjust the intensity, i.e. how dim or bright the light output is.
- The added striped pair of 0-10V wires allows the connected dimming device to adjust the correlated color temperature.

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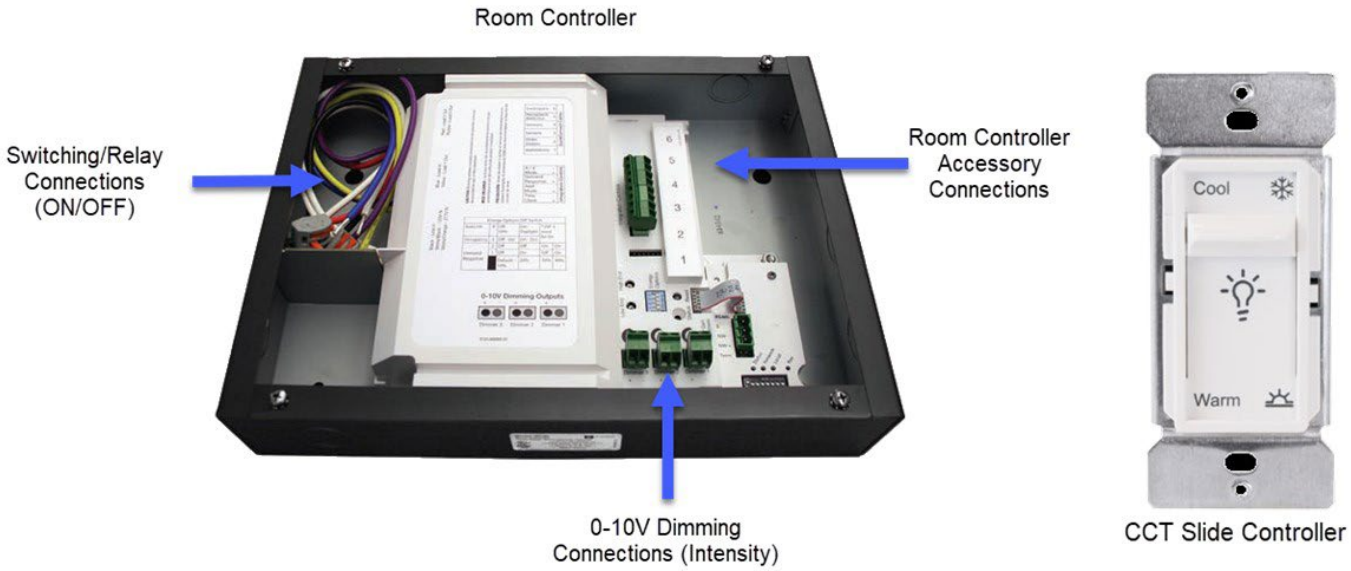
How does a VividTune Luminaire Connect in Room Controller Applications?

VividTune equipped luminaires will connect to the room controller's onboard relays for switching control and to the onboard 0-10V dimmers for intensity control. Connections to the room controller will depend on the application's required number of switching and dimming zones as well as the room controller model and accessories used.

The VividTune luminaires will also connect to a CCT slide controller for correlated color temperature control. The CCT slide controller provides a connection for the 0-10V striped pair of CCT adjustment wires. Typically all luminaires in the room will connect to the same CCT slide controller to allow for uniform CCT adjustment.*

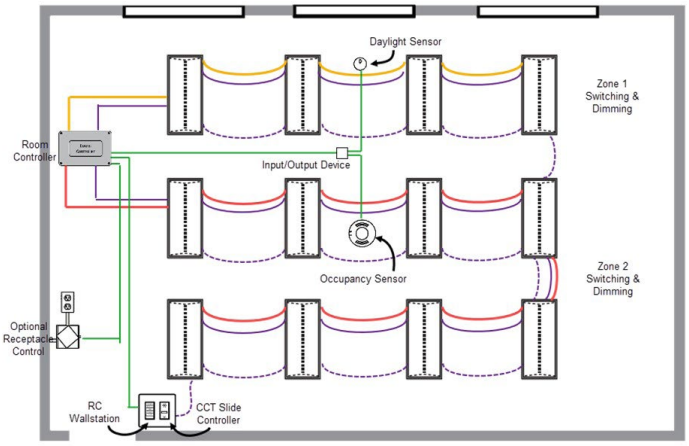


*Although unusual, additional CCT slide controllers may be used to split the CCT connections to allow for accommodating complex applications requiring different CCTs within the same space.

Sample VividTunes Room Controller Layout

This section depicts one example of how a classroom equipped with VividTune luminaires might be connected for control. In this application:

- Two lighting zones are wired to two different room controller switching relays for ON/OFF control.*
- The lighting zones are wired to two separate room controller 0-10V dimming connections for control of lighting intensity (dimming).
- Each luminaire's correlated color temperature wiring (striped purple and gray wires) is attached to the CCT slide controller wire run to allow uniform adjustment of the CCT.
- The room controller wallstation(s), occupancy sensor(s), optional daylight sensor, and optional receptacle control(s) are connected to the designated room controller accessory connection port.



In the sample application, the operation is simplified with the separation of the switching/dimming functions and the CCT control.

- The occupant manually controls the switching and dimming through the room controller wallstation. Response to the room controller wallstation will be based on the wallstation's faceplate configuration. The occupant can adjust preprogrammed scene levels with the handheld programming remote (optional accessory).
- The occupant manually controls the correlated color temperature by adjusting the CCT slide controller until the desired color temperature is achieved. Lowering the slider position will cause a warmer color temperature while raising the slider will result in a cooler color temperature.
- The room controller will automatically turn ON optional receptacle controls when an occupancy signal is received. For lighting to also respond to an occupancy signal, refer to the room controller installation guide to use the onboard adjustment switches to change from vacancy to occupancy mode. The occupancy sensor will have no effect on the CCT.
- The room controller will automatically turn OFF all lighting and receptacle loads upon receipt of a vacancy signal from the occupancy sensor. The occupancy sensor will have no effect on the CCT.
- The room controller will automatically begin daylight dimming for zone 1 and zone 2. The separation of zone 1 and zone 2 lighting allows for the daylight sensor to dim the window zone 1 more aggressively than zone 2 which is further into the space. The occupant can adjust preprogrammed daylight gain levels with the handheld programming remote (optional accessory). The daylight sensor will have no effect on the CCT.
- The room controller also supports advanced integration connections from a time clock, demand response system, or an external A/V input or alert signal. If used, the room controller will respond to the received signals with the appropriate switching and dimming response as described in the room controller installation guide. The advanced integration signals will have no effect on the CCT.

*Switching functions operate independently of dimming functions in the room controller. If ON/OFF functions of the zones are not being independently controlled, the switching wires could be combined into a single zone. Alternately, zone switching wiring could be run in a different configuration, i.e. front vs. back of room lighting zones. Dimming wiring zones depicted are necessary to achieve the desired daylighting application.

*A daylight sensor is required if using the handheld programming remote.

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