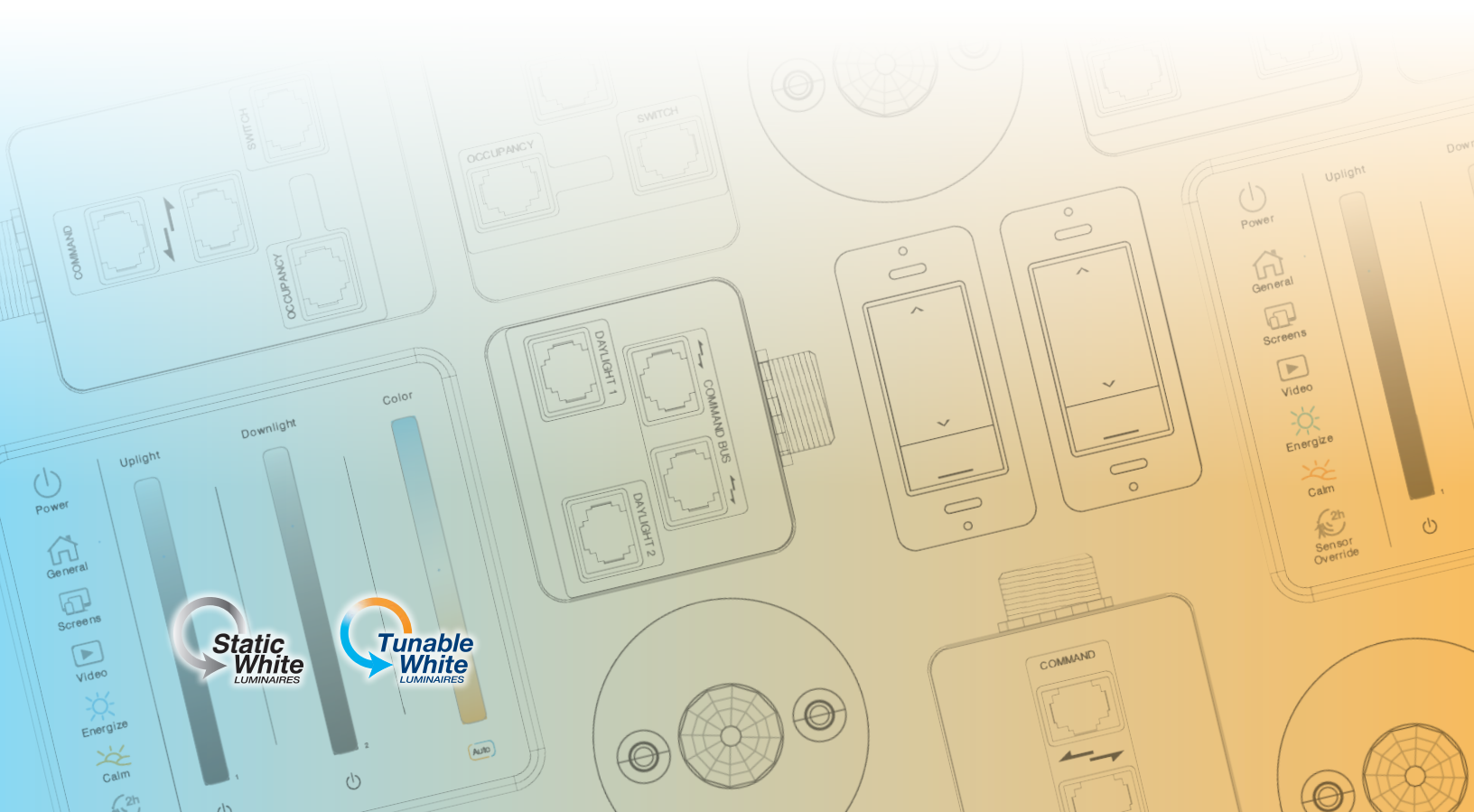




# TECHNICAL GUIDE



# INTRODUCTION

---

FineTune® Tailored Control System (**TCS**) is lighting and control solution designed with user input and validated by research. Using standard CAT5 cabling provided by Finelite, TCS plugs together Layer Packs, Switches, Control Stations, Sensors, and LED Luminaires to create a lighting system that is scalable, affordable, and easy-to-install. The system features robust and easily identifiable components all backed by a single-source Finelite 5 year warranty.



# TABLE OF CONTENTS

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|   |       |
|---|-------|
| Mobile App .....  | 4     |
| Tunable White Schedules .....                           | 5     |
| 0-10V Lighting Controllers .....                        | 6-7   |
| FMX Lighting Controllers .....                          | 8-9   |
| Local Switches .....                                    | 10    |
| Master Switches .....                                   | 11    |
| Control Stations .....                                  | 12-13 |
| Daylight Controller & Sensors .....                     | 14    |
| Occupancy Sensors .....                                 | 15    |
| Special Applications - Couplers and Plug Load .....     | 16    |
| Special Applications - BMS and Egress .....             | 17    |
| Special Applications - Egress and Demand Response ..... | 18    |
| Energy Saving & Code Requirements .....                 | 19    |
| Typical Wiring Diagrams .....                           | 20-21 |
| Ordering Information .....                              | 22-25 |

# MOBILE APP Schedule and System Settings

## Download the FineTune® TCS Mobile App

### Connect to the space you want to modify

Blink

A “Blink” button will flash the lights to confirm you are connecting to the right space.

Add the name of the space and choose from options below.

### Operational Hours / Sweeps

1. Apply operational hours to everyday or weekdays and weekends
2. Select an “enable On” time
3. Select an “Off” time
4. Press “Save” to complete

### Add Tunable Schedules

Select from Finelite’s factory designed schedules

**OR** customize your own:

1. Select a time
2. Choose a transition time
3. Select a CCT (2700K - 6500K)
4. Repeat and 'Save' when complete

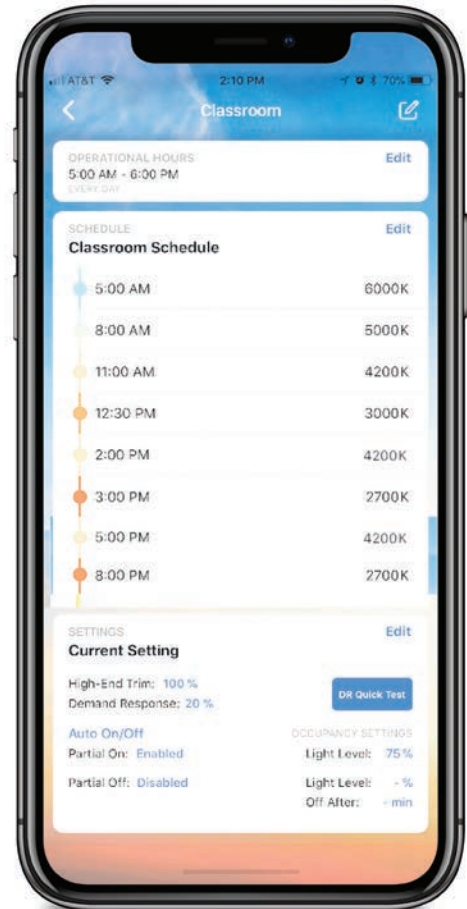
### Adjust System Settings

- Set High-End trim to all luminaires in a space
- Adjust Demand Response reduction level
- Select Occupancy functionality:
  - Auto On / Off (Default)
  - Manual On / Auto Off (Vacancy)
  - Set a Partial On (Auto On / Off only)
  - Set a Partial Off

**Note:** Custom settings and scheduling can be created On or Off site. These setting are saved and can easily be uploaded to other spaces.



FineTUNE TCS



FineTune® TCS App



iOS



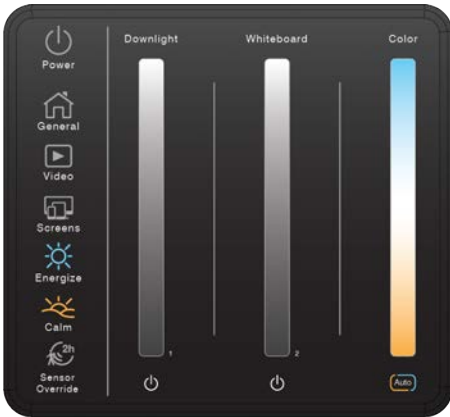
ANDROID  
(coming soon)



Bluetooth

# MOBILE APP Schedule and System Settings

## Task Specific Presets Developed with Teachers and Validated by Research



Icon driven presets intuitively convey system use



## Daylight

Mobile app supports daylight schedules 2700K to 6500K.

Custom settings and factory designed schedules can be saved and uploaded to other spaces.



## Wellness

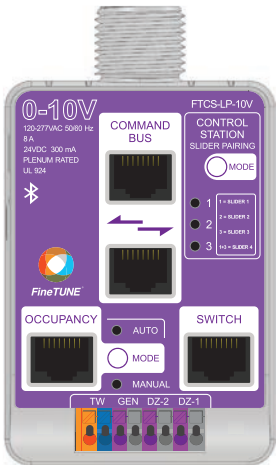
Improve mood, behavior, and concentration.

Applications

- Classrooms
- Common areas
- Administrative offices
- Libraries
- Corridors



# 0-10V LIGHTING CONTROLLERS



**0-10V Layer Pack**  
FTCS-LP-10V

## Product Information

The lighting control devices for the FineTune® Tailored Control System are called Layer Packs. Layer Packs use a BUS system to connect and communicate to each other and other system devices. The 0-10V Layer Pack has the capability to control three “layers of light” (control zones). 0-10V Layer Packs can be combined and work seamlessly with FMX Layer Packs. They can also be used to control static color temperature luminaires.

### Control Zones:

GEN = General Lighting Zone

DZ-1 = Daylight Zone 1

DZ-2 = Daylight Zone 2

DZ-1 and DZ-2 act as general lighting zones if no Daylight Sensors are applied.

For design purposes, each Layer Pack is a single switch leg with three sub zones (a, ad1, ad2). These three outputs should be considered one manual control zone.

For example, a FineTune TCS dimmer switch would turn all three zones On and Off together, as well as, adjust the intensity of each zone together. These three control zones cannot be manually controlled separately, they are designed this way to support adjustments of intensity from Daylight Sensors.

## Tunable White

Every 0-10V Layer Pack has a separate 0-10V output to adjust Tunable White luminaires. Tunable White luminaires must have a 0-10V input for intensity control and a 0-10V input for color control. Tunable White luminaires utilizing the 0-10V technology can be specified to dim to 10%, Static White luminaires can be specified to dim to 1%.

## Control Specifications

120/277VAC ~ 50/60 Hz

8A Relay

24V Power Supply @ 300mA

UL2043 - Plenum Rated

UL924 - Emergency Device

UL916 - Energy Management Equipment

Sink Current - 25mA for each 0-10V output

5-Year Warranty

### Switched Load

Total load allowed @120VAC = 960 Watts

Total load allowed @277VAC = 2,216 Watt

OR

### Dim to Off

0-10V drivers MUST be programmed to a 'Dim to Off' setting.

Sink Current - 25mA per 0-10V output

### Guidelines for determining linear fixture loads

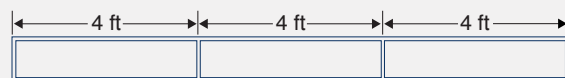
Please refer to Finelite's website and review luminaire tech sheets specific to your project for 'Watts Per Foot' data.

<http://www.finelite.com>

### Guidelines for determining linear fixtures sink current

| Finelite's Standard 0-10V Driver |                       |
|----------------------------------|-----------------------|
| Luminaire type                   | mA per 4ft linear run |
| Static White                     | 0.2mA                 |
| Tunable White                    | 0.4mA                 |

If luminaire is indirect & direct, calculate total mA as if they were separate linear fixtures

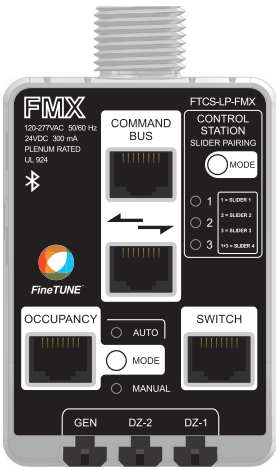


12' Linear Luminaire - 0.6 mA Static White / 1.2 mA Tunable White



# FMX LIGHTING CONTROLLERS

---



**FMX Layer Pack**  
FTCS-LP-FMX

## Product Information

The lighting control devices for the FineTune® Tailored Control System are called Layer Packs. Layer Packs use a BUS system to connect and communicate to each other and other system devices. An FMX Layer Pack has the capability to control three “layers of light” (control zones). FMX is a proprietary version of DMX that Finelite utilizes to achieve smooth Tunable White transitions and ultra granular dimming down to 1%. FMX Layer Packs can be used in conjunction with 0-10V Layer Packs.

### Control Zones:

GEN = General Lighting Zone  
DZ-1 = Daylight Zone 1  
DZ-2 = Daylight Zone 2

For design purposes, each Layer Pack is a single switch leg with three sub zones (a, ad1, ad2). These three outputs should be considered one manual control zone.

For example, a FineTune TCS dimmer switch would turn all three zones On and Off together as well as adjust the intensity of each zone together. These three control zones cannot be manually controlled separately.

## Tunable White

Each output on the FMX Layer Pack has the ability to control the intensity as well as color. There is no need to run any additional wires to gain Tunable White control capability.

---

## Control Specifications

**120/277VAC ~ 50/60 Hz**

**24V Power Supply @ 300mA**

**UL2043** - Plenum Rated

**UL924** - Emergency Device

**UL916** - Energy Management Equipment

**5-Year Warranty**

### FineTune FMX Drivers

Finelite's proprietary FMX driver is a redesign on standard DMX drivers to repeat the DMX signal as it passes through a driver. This allows FineTune to improve the 32 device run limit. FMX enabled luminaires can be daisy chained as many times needed and does not require a terminator at the end of each run. Simply daisy chain the luminaires using the FMX cables and plug into the proper output of the FMX Layer Pack.

**Note:** The FMX Layer Pack does not work with other DMX luminaires or DMX devices.



# FMX LIGHTING CONTROLLERS

## Command BUS Ports

Connecting other devices using the BUS defines the installed space and allows for communication amongst all devices.

The following devices connect via the BUS:

- 0-10V Layer Packs
- FMX Layer Packs
- Daylight Sensor Packs
- Control Stations

## Occupancy Port

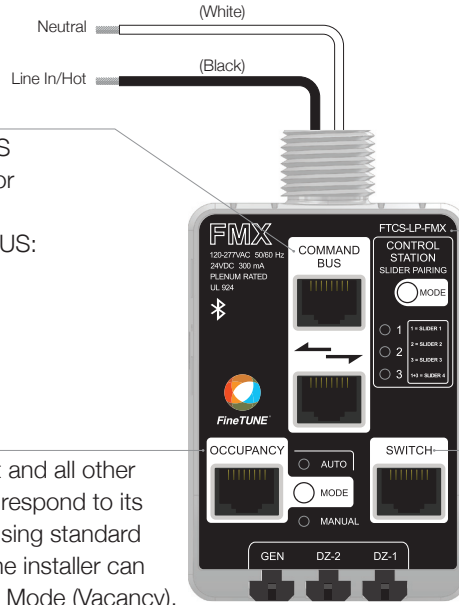
Plug an occupancy sensor into this port and all other Layer Packs sharing the same BUS will respond to its state. Daisy chain occupancy sensors using standard CAT5 cable. Using the MODE button, the installer can toggle between Auto Mode and Manual Mode (Vacancy).

## Control Station - Slider Pairing

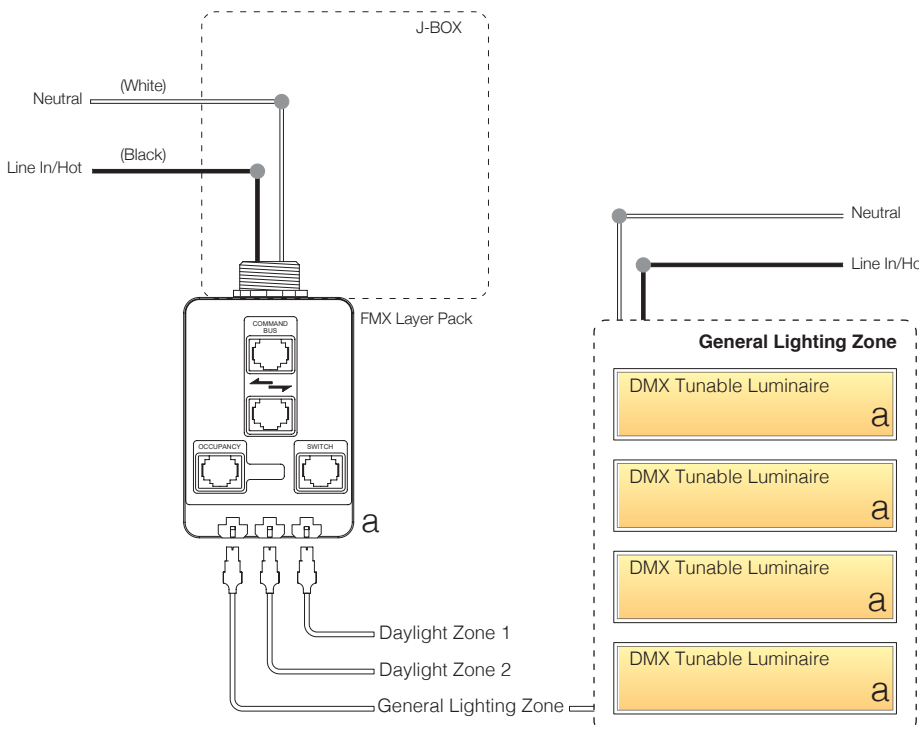
If a Control Station is specified, using the MODE button, the installer can easily select the proper slider number to correspond with the Control Station and Layer Packs installed.

## Switch Port

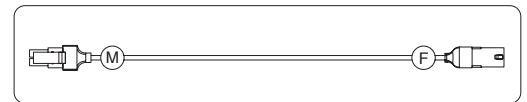
A dedicated switch port allows for the installing contractor to easily match switches to the proper "layer of light" (control zone) they are needing to control. Five switch options are available. See switch tech sheet for more information.



## FMX System Diagram



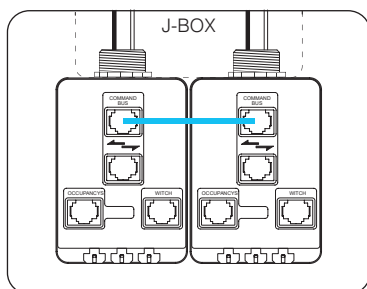
## FMX Cables



FMX cable used to daisy chain from FMX Layer Pack to other FMX fixtures  
Available in 12', 30' & 50' lengths

## Fixture wiring shown (left)

- DMX fixtures are daisy chained together in the "General Lighting Zone"
- Each fixture has an In & Out connector to easily join fixtures together in the same zone



## Side-by-Side Mounting

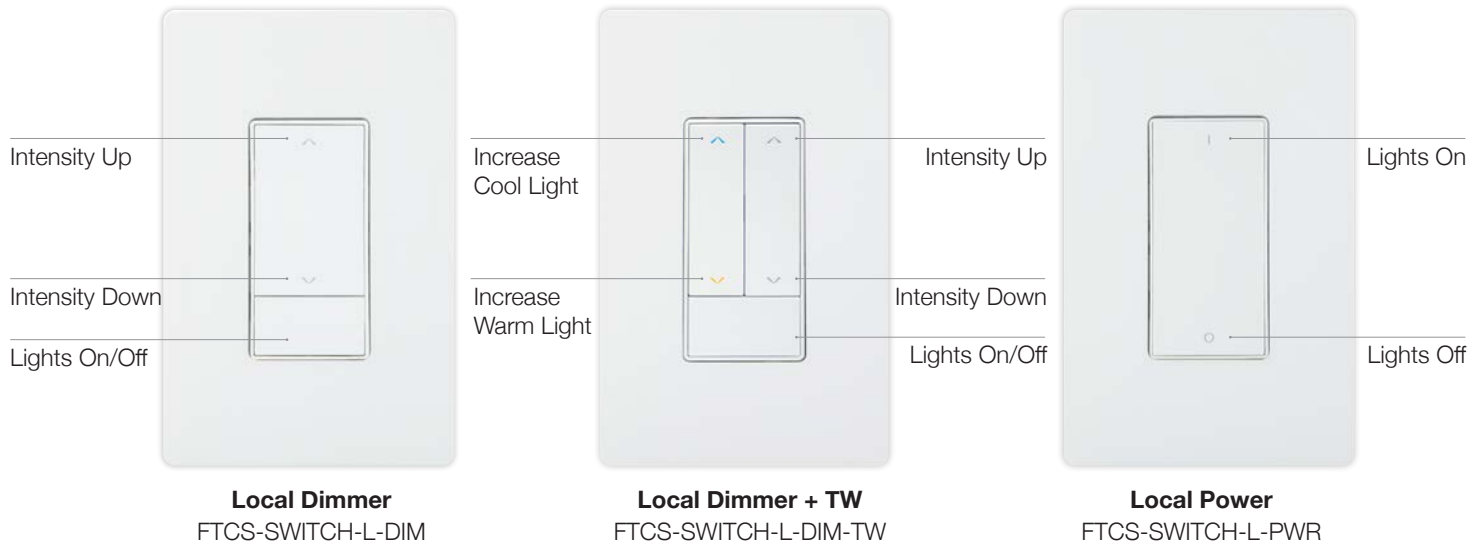
The blue line represents a CAT5 connecting the two Layer Packs together via the Command BUS.

There is no limit to how many Layer Packs can be connected together.

Continue to daisy chain using the BUS to define the installed space.

See pages 20-21 for typical single line diagrams.

# LOCAL SWITCHES



## Product Information

Local Switches control only the Layer Pack they are connected to. Plugging into a Layer Pack's "Switch" port will control the output of that Layer Pack. All switches have two CAT5 ports for daisy chaining to multiple switch locations.

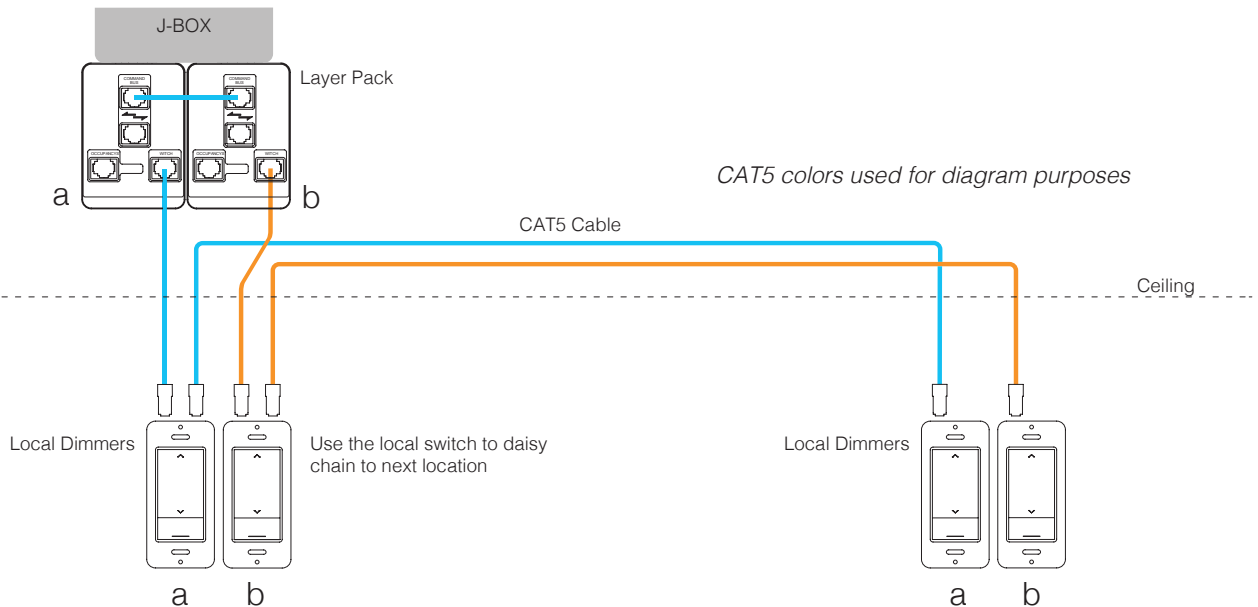
**Note:** A CAT5 splitter can be used to join Local Switches together at multiple locations to the same Layer Pack.



CAT5 Splitter

## Local Switch Diagram

- Two layer installation with dimming layers "a" & "b".
- Connect and daisy chain the Local Dimmers to the Layer Packs controlling the intended switch layer.



# MASTER SWITCHES



## Product Information

Master Switches control all the Layer Packs on the same shared BUS. These switches can be connected to the "Switch" port on any Layer Pack or daisy chained to any Local Switch to gain control of all the Layer Packs.

### Master TW:

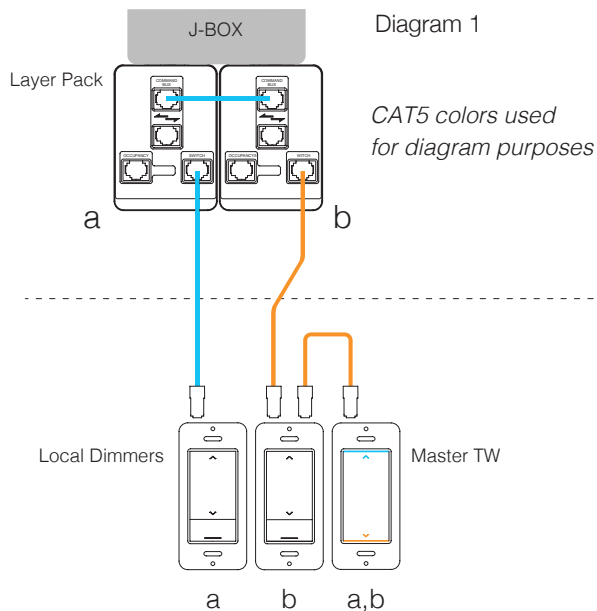
Designed to gain uniform color temperature of all Layer Packs in a space. Strongly advised to use in conjunction with local dimmers. (See diagram 1)

### Master Power:

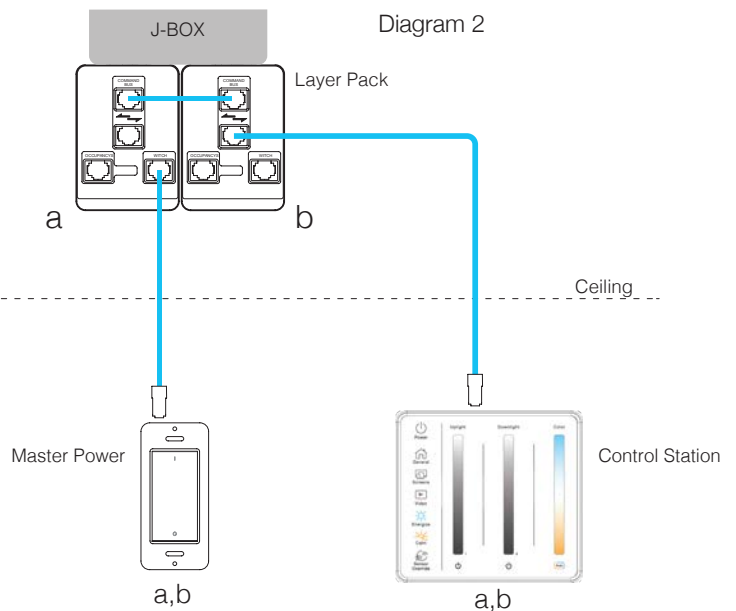
Designed to eliminate large switch gangs near exits by turning all luminaires On or Off with one switch. Ideal for use with Control Stations. (See diagram 2)

## Master Switch Diagram

Adding a **Master TW** switch to a 2-layer installation. Use a CAT5 jumper to join to either Local Dimmer switch.



Adding a **Master Power** switch to a 2-layer installation with a Control Station. Using CAT5, connect to any Layer Pack's "Switch" port.



# CONTROL STATIONS



**Control Station**  
See Ordering Page

## Product Information

Each Control Station can individually control two to four intensity zones, as well as, control the color of all the zones if Tunable White is specified. Control Stations can control FMX, 0-10V, as well as both FMX and 0-10V on the same BUS.

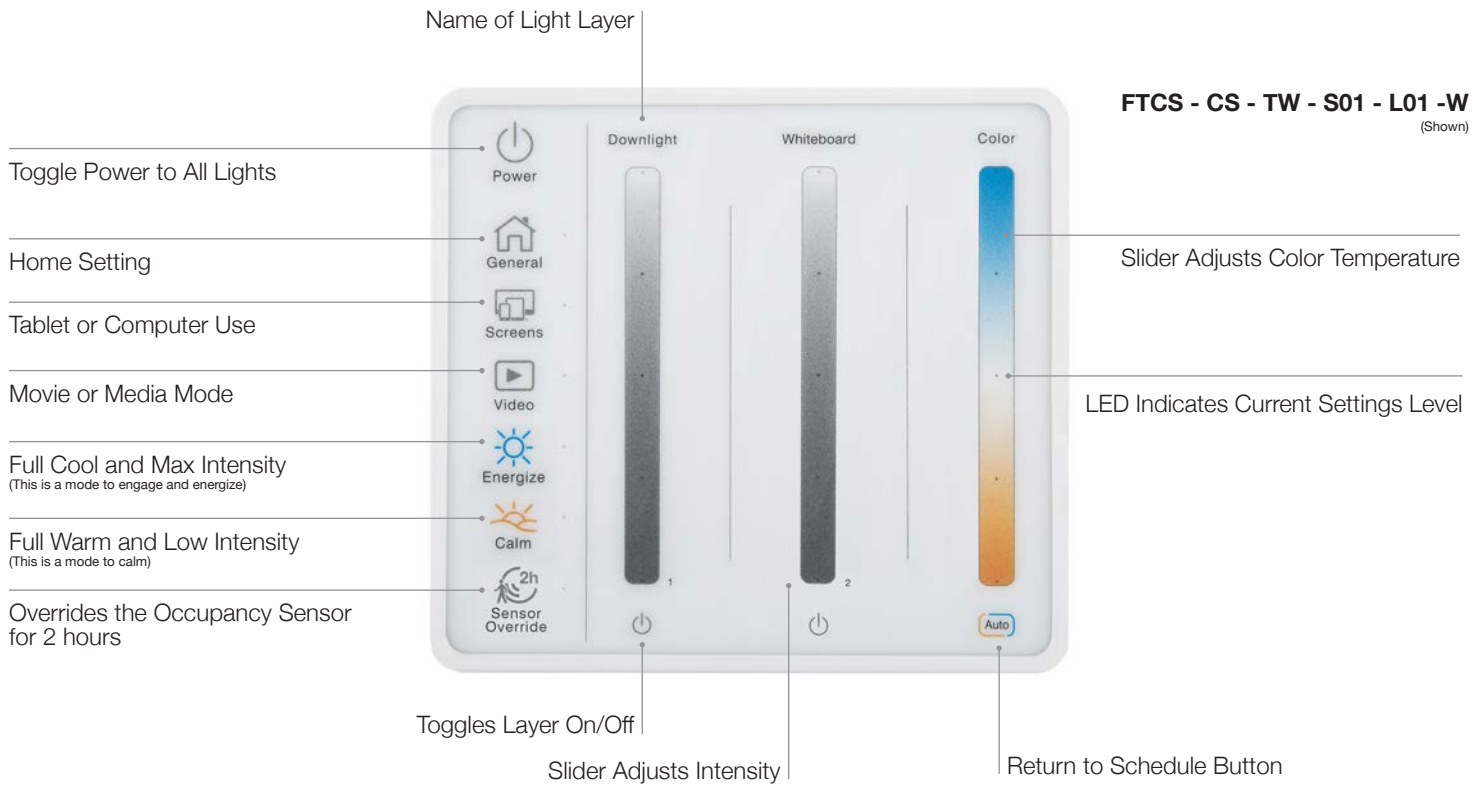
## Control Specifications

### Control Station Power: 24V @ 28mA

- Plug and play ready (No programming required).
- Up to two Control Stations can be installed per space.
- Connects into Command BUS using standard cat5.

## Ordering

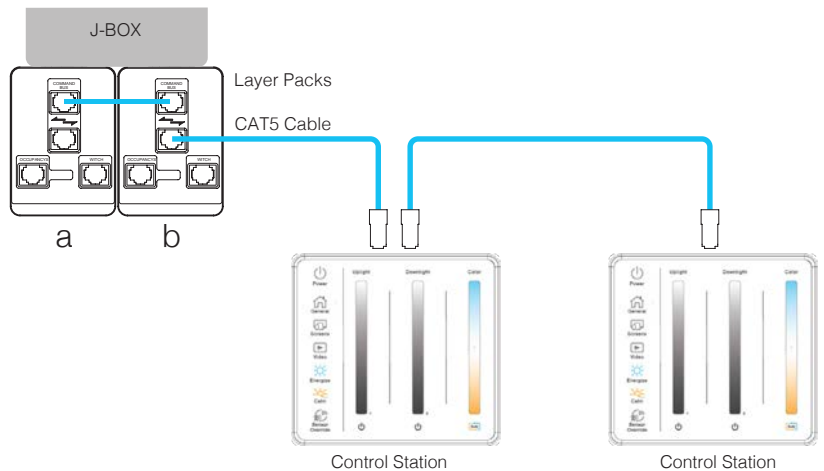
Control Stations are ordered based on the number of layers/zones in an installed space. To properly select a Control Station, ensure you have accounted for all intensity zones and determine if there is Tunable White capabilities in the space.



## Basic Control Station Diagram

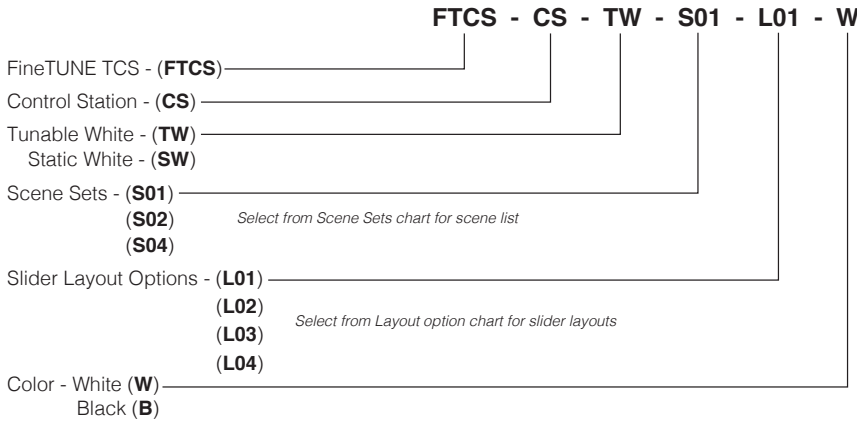
Two layer installation shown. Control zones "a" & "b" with a master color slider.

Connect a Control Station to any Command BUS port. If a second Control Station is required, simply daisy chain from the first Control Station or to any other BUS port.



# CONTROL STATIONS

## Ordering Information



Control Station Example



FTCS-CS-TW-S01-L01-W

| Scene Set 1 - [S01] |  |
|---------------------|--|
|                     | <b>General Scene :</b><br>User preferred default space setting                         |
|                     | <b>Screens Scene :</b><br>Low glare setting for use with backlit devices               |
|                     | <b>Video Scene :</b><br>Designed for movies or other multimedia focused activities     |
|                     | <b>Energize Scene :</b><br>Bright light to help stimulate and revitalize occupants     |
|                     | <b>Calm Scene :</b><br>Creates a soothing environment and promotes relaxation          |
|                     | <b>Sensor Override<sup>1</sup> :</b><br>Override Occupancy Sensor shut off for 2 hours |

| Scene Set 2 - [S02] |  |
|---------------------|--|
|                     | <b>General Scene :</b><br>User preferred default space setting                     |
|                     | <b>Screens Scene :</b><br>Low glare setting for use with backlit devices           |
|                     | <b>Video Scene :</b><br>Designed for movies or other multimedia focused activities |
|                     | <b>Focus Scene :</b><br>Designed for focused discussion                            |
|                     | <b>Energize Scene :</b><br>Bright light to help stimulate and revitalize occupants |
|                     | <b>Calm Scene :</b><br>Creates a soothing environment and promotes relaxation      |

| Scene Set 4 - [S04] |  |
|---------------------|--|
|                     | <b>General Scene :</b><br>User preferred default space setting                                 |
|                     | <b>Screens Scene :</b><br>Low glare setting for use with backlit devices                       |
|                     | <b>Video Scene :</b><br>Designed for movies or other multimedia focused activities             |
|                     | <b>Whiteboard Scene :</b><br>Illuminates vertical surfaces and focuses attention on board work |
|                     | <b>Energize Scene :</b><br>Bright light to help stimulate and revitalize occupants             |
|                     | <b>Calm Scene :</b><br>Creates a soothing environment and promotes relaxation                  |

<sup>1</sup> Only use if occupancy sensor is installed in space

| Slider Layout                  | Downlight | Whiteboard | Wall 1     | Wall 2 |
|--------------------------------|-----------|------------|------------|--------|
| <b>Slider Layout 1 - [L01]</b> | Downlight | Whiteboard |            |        |
| <b>Slider Layout 2 - [L02]</b> | Uplight   | Downlight  | Whiteboard |        |
| <b>Slider Layout 3 - [L03]</b> | Uplight   | Downlight  | Wall 1     | Wall 2 |
| <b>Slider Layout 4 - [L04]</b> | Uplight   | Downlight  |            |        |

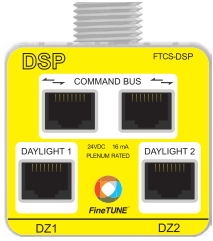
Order in which the intensity sliders will be represented on the control station

### Factory Designed Scene Settings - All scenes come pre-defined to the below settings

|                         | Uplight | Downlight (With Uplight) | Downlight (Without Uplight) | Whiteboard /Wall 1 | Wall 2 | Color |
|-------------------------|---------|--------------------------|-----------------------------|--------------------|--------|-------|
| <b>General</b>          | 100%    | 50%                      | 100%                        | 100%               | 75%    | 3600K |
| <b>Screens</b>          | 100%    | 0%                       | 50%                         | 50%                | 75%    | 5500K |
| <b>Video</b>            | 40%     | 0%                       | 40%                         | 0%                 | 25%    | 6500K |
| <b>Focus/Discussion</b> | 0%      | 100%                     | 100%                        | 0%                 | 0%     | 3600K |
| <b>Whiteboard</b>       | 40%     | 0%                       | 40%                         | 100%               | 100%   | 3600K |
| <b>Energize</b>         | 100%    | 100%                     | 100%                        | 100%               | 100%   | 6500K |
| <b>Calm</b>             | 25%     | 10%                      | 25%                         | 25%                | 25%    | 2700K |

**Note:** All scenes can be manually adjusted and saved by the user by setting the space to the desired preference and holding the scene button for 5 seconds.

# DAYLIGHT CONTROLLER & SENSORS



Daylight Sensor Pack  
FTCS-DSP

## Product Information

A Daylight Sensor Pack is implemented when a space is required to utilize available daylight to reduce the light level either by code or by user preference. This device can connect to two 0-10V daylight sensors for two separate daylight zones. These daylight zones correspond to daylight zone outputs on each Layer Pack sharing the same BUS.

## Control Specifications

**DSP Power:** 24V @16mA — Must connect to at least one Layer Pack to provide power to the device

**UL2043 - Plenum Rated** — Connects into BUS using standard CAT5

**Dimensions:** H 2.25" x W 2.45" x D 1.0" — Only one Daylight Sensor Pack is needed per space

**5-Year Warranty**

## Control Specifications

Finelite provides Wattstopper LS-301 closed loop daylight sensors.

**Power:** 30mA @24VDC

**Protocol:** 0-10VDC

**Full Range Dimming**

**UL and cUI Listed**

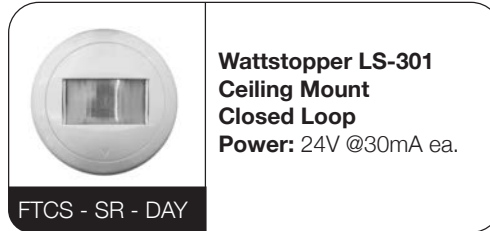
**5-Year Warranty**

[Download Legrand LS-301 Tech Sheet](#)

[Download Legrand LSR-301-S Tech Sheet](#)



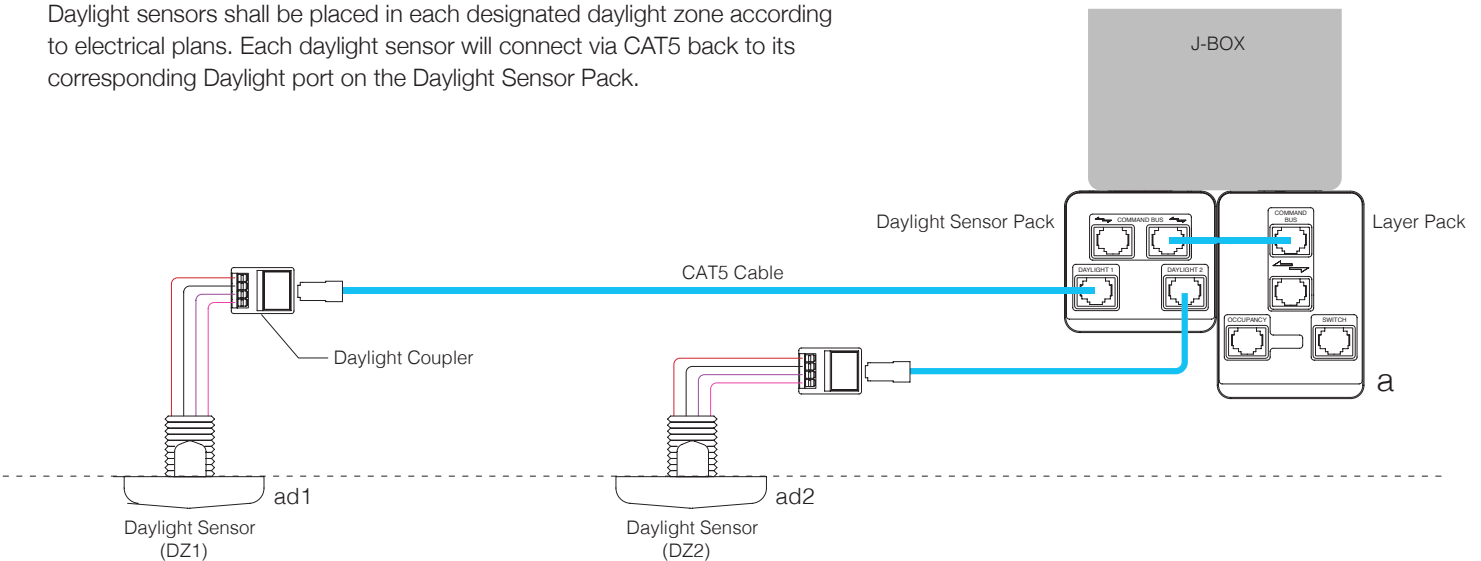
Daylight Coupler  
FTCS-CPLR-DAY



**FTCS-SR-DAY is an assembly part which includes the LS-301 and the Daylight Coupler**

## DSP System Diagram

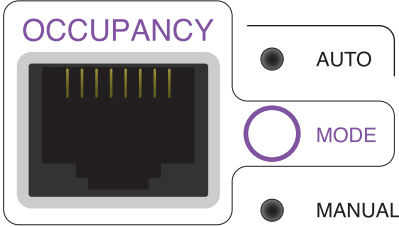
Daylight sensors shall be placed in each designated daylight zone according to electrical plans. Each daylight sensor will connect via CAT5 back to its corresponding Daylight port on the Daylight Sensor Pack.



# OCCUPANCY SENSORS

## Product Information

Finelite offers a wide range of occupancy options that are plug-n-play ready for FineTUNE TCS. All occupancy devices will be powered from the on-board power supply of the Layer Pack it is connected to. Occupancy sensors broadcast their state across the Command BUS; this allows installers to plug occupancy sensor(s) into one Layer Pack to control all other Layer Packs and thus the entire space.



Occupancy sensors connect into the dedicated 'Occupancy' port of a Layer Pack using standard CAT5.


**Selectable Modes**

Toggle the 'Mode' button to swap state, or use the mobile app

**AUTO:** Auto On / Auto Off (Default)


**MANUAL:** Manual On / Auto Off (Vacancy Mode)

## Control Specifications




**Wattstopper DT-305  
Ceiling Mount  
Dual Technology**  
Power: 24V @35mA ea  
[Download DT-305  
Tech Sheet](#)

FTCS-SR-OCC-CDT




**Wattstopper DW-100-24  
Switch Mount  
Dual Technology**  
Power: 24V @35mA ea  
[Download PW-100-24  
Tech Sheet](#)

FTCS-SR-OCC-SDT




**Wattstopper CI-305  
Ceiling Mount  
Passive Infrared**  
Power: 24V @9mA ea  
[Download CI-305  
Tech Sheet](#)

FTCS-SR-OCC-CPIR



**Wattstopper PW-100-24  
Switch Mount  
Passive Infrared**  
Power: 24V @20mA ea  
[Download PW-100-24  
Tech Sheet](#)

FTCS-SR-OCC-SPIR



**Wattstopper DT-205  
Wall Mount  
Dual Technology**  
Power: 24V @25mA ea  
[Download DT-205  
Tech Sheet](#)

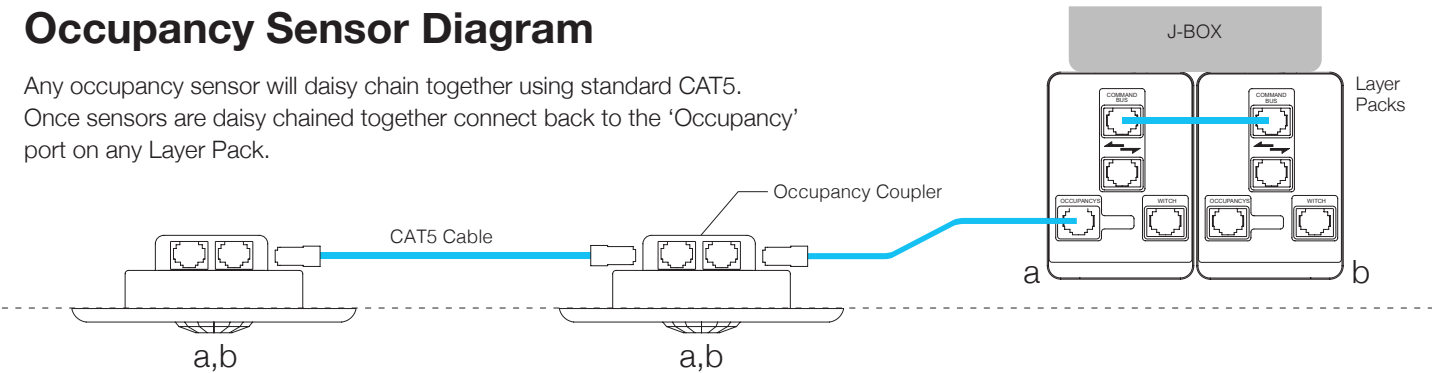
FTCS-SR-OCC-WDT

Finelite provides Wattstopper occupancy products for more details on all occupancy sensors visit the following site:  
<https://www.legrand.ca/categories/lightingcontrolsbuildingsystems/sensors.aspx>

**All catalog codes are assembly parts which include the Wattstopper occupancy sensor and corresponding coupler.**

## Occupancy Sensor Diagram

Any occupancy sensor will daisy chain together using standard CAT5. Once sensors are daisy chained together connect back to the 'Occupancy' port on any Layer Pack.



# SPECIAL APPLICATIONS - Couplers and Plug Load



Control Coupler  
FTCS-CPLR-CTRL

The Control Coupler provides agnostic integration with any low voltage occupancy sensor with flying leads. It also provides integration for use of plug load controllers (shown below) as well as providing a contact closure to Building Management Systems (BMS) to indicate if the room is occupied. (See page 17)

## Control Specifications

**UL2043 - Plenum Rated**

**Red** = 24V Power

**Black** = Common

**Blue** = Control / Signal



Occupancy Coupler  
FTCS-CPLR-OCC

Occupancy Couplers were custom designed to turn Wattstopper ceiling mount sensors into plug-n-play occupancy sensor for FineTune TCS.

## Control Specifications

**UL2043 - Plenum Rated**

Used with Wattstopper DT-305 & Wattstopper CI-305

## Product Information

In accordance to current codes, FineTune TCS offers integration for controlled receptacles. When applied, receptacles in the required areas will lose line voltage power (120VAC) when the space becomes unoccupied. Plug load controllers plug into the daisy chain along with the occupancy sensors.

## Control Specifications



FTCS-PLUG

**Wattstopper BZ-200**  
**120/277VAC ~ 50/60 Hz**  
**Plug Load**  
**Plenum Rated**

[Download BZ-200 Tech Sheet](#)

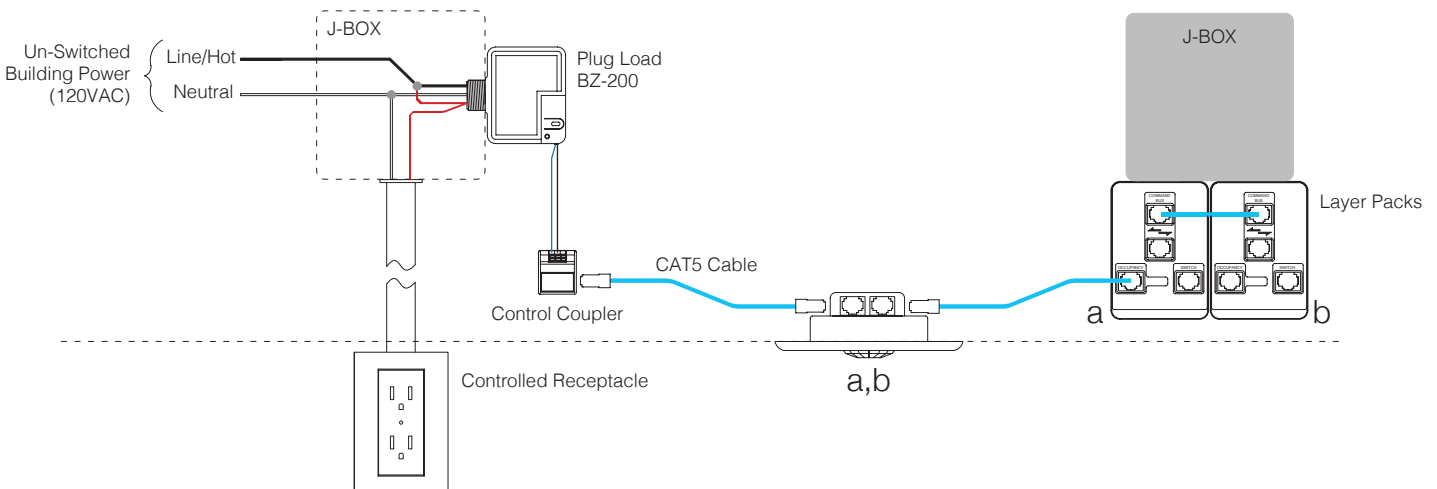
Must be used in conjunction with an occupancy sensor.

For more details on the BZ-200 visit the following site:

<https://www.legrand.us/wattstopper/plugload-controls/plug-load-power-packs/bz-200.aspx>

**FTCS-PLUG is an assembly part which includes the Wattstopper BZ-200 and the Control Coupler**

## Plug Load Diagram

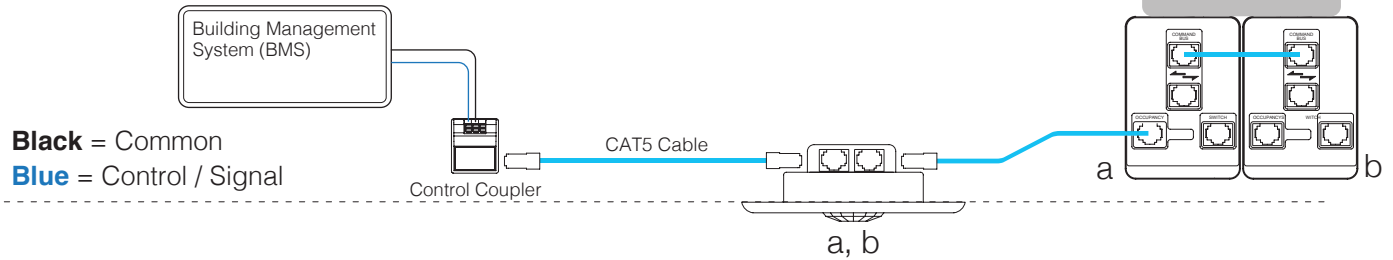




# SPECIAL APPLICATIONS - BMS and Egress

## BMS Integration

Allow a BMS to know whether a space is occupied or not using the Control Coupler. Connect from the **Black** and **Blue** terminal block on the Control Coupler to an available contact closure on the BMS

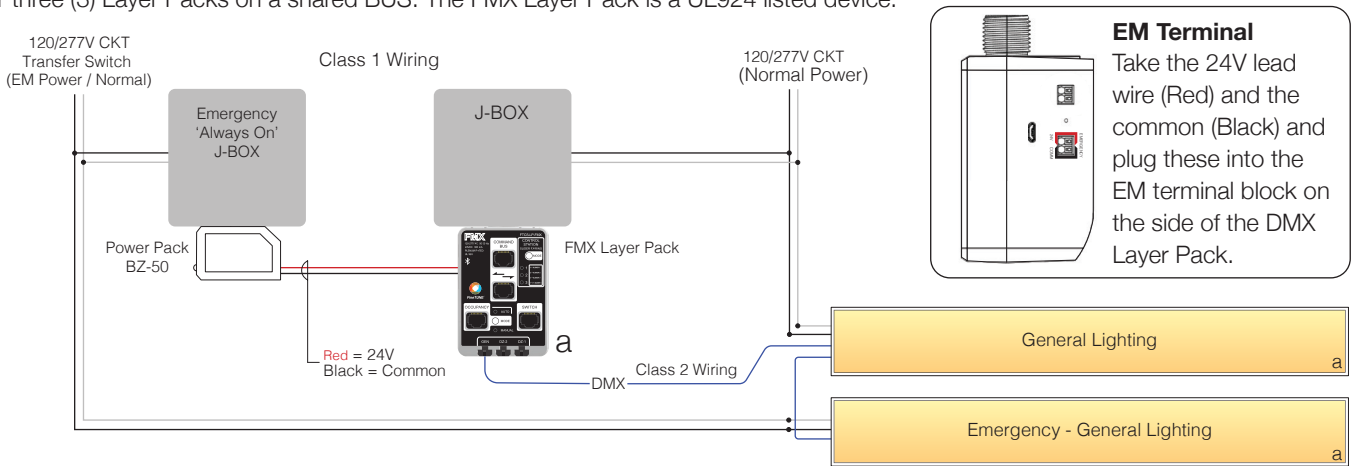


## Battery Back Up

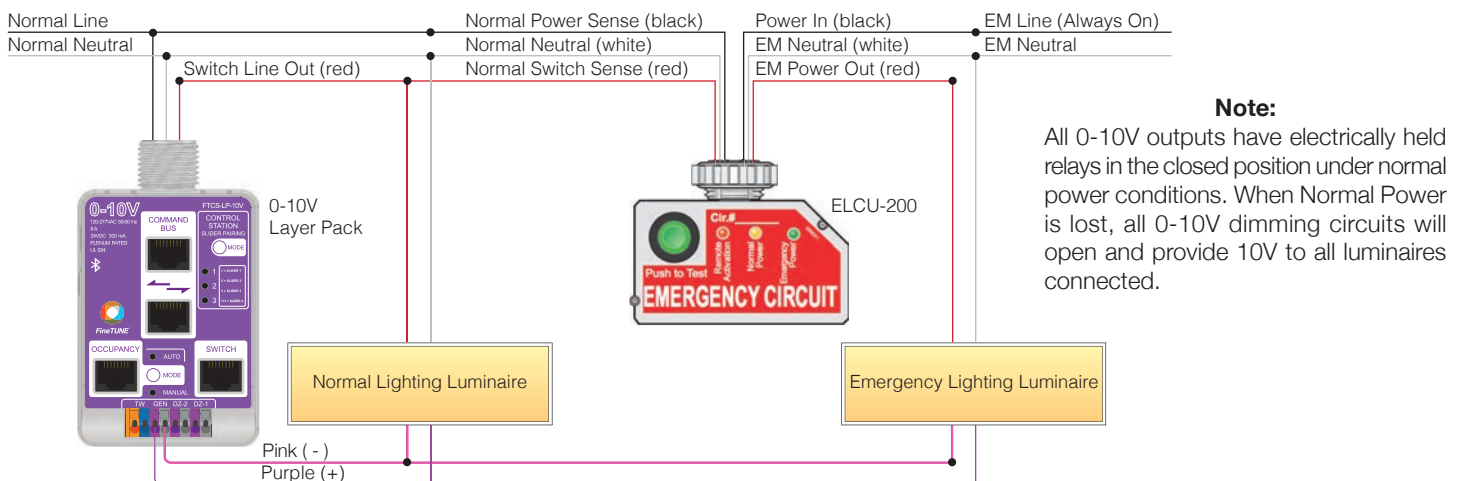
Both DMX & 0-10V fixtures can be installed with a battery back up. When used with Tunable White, the 6500K array will illuminate to the lumen output specified by the battery back up.

## Emergency Generator Wiring

**FMX Layer Pack EM/GEN:** Connect a 24V power pack to emergency generator power ('always on'). During loss of normal power the 24V from the power pack supplies power to the Layer Pack(s) to force all EM fixtures to 100% intensity at 6500K. Use one BZ-50 power pack per three (3) Layer Packs on a shared BUS. The FMX Layer Pack is a UL924 listed device.

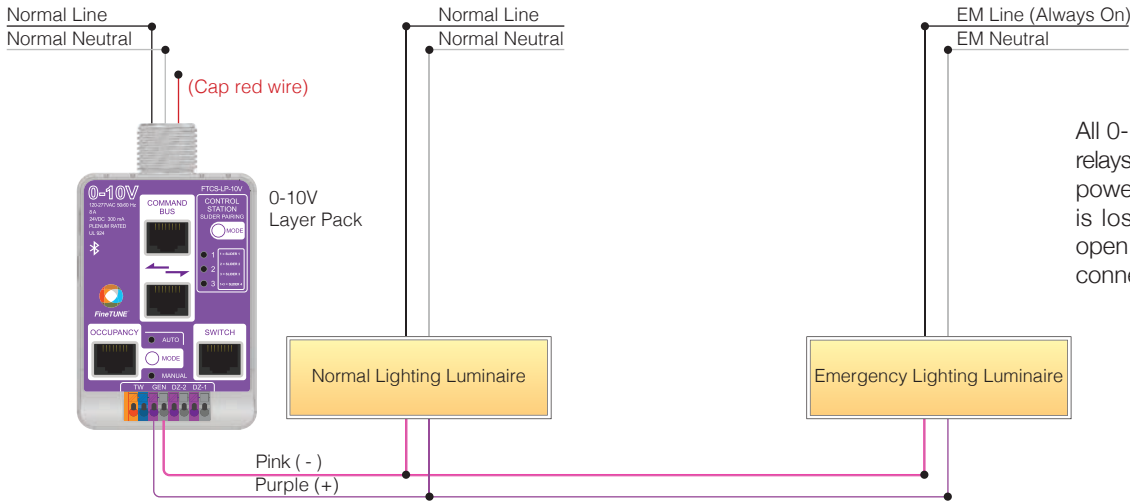


**0-10V Layer Pack EM/GEN (Switched Line):** A bypass relay can also be installed external to the egress fixtures. Finelite offers the Wattstopper ELCU-200. The 0-10V Layer Pack is a UL924 listed device.



# SPECIAL APPLICATIONS - Egress and Demand Response

**0-10V Layer Pack EM/GEN (Dim to Off):** No bypass relay is required as the 0-10V protocol turns the drivers On and Off. Run an EM Line (Always On) to emergency lighting luminaires. The 0-10V Layer Pack is a UL924 listed device.



**Note:**

All 0-10V outputs have electrically held relays in the closed position under normal power conditions. When Normal Power is lost, all 0-10V dimming circuit will open and provide 10V to all luminaires connected.

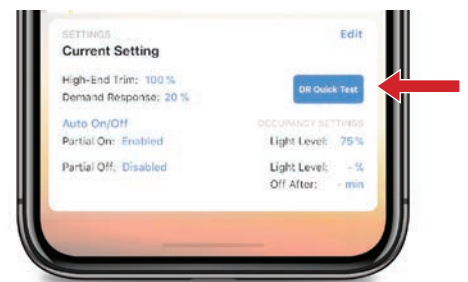
**0-10V Layer Pack EM/GEN (GTD):** 0-10V fixtures required for egress can also have Philips Bodine Generator Transfer Device installed in each EM/GEN fixture at the factory. No external devices required. The GTD datasheet can be found on Philips' website.

**Note:** On loss of normal power, all 0-10V outputs open and go to 100% Intensity and 6500K if Tunable White was specified.

## Auto Demand Response (ADR)

FineTune TCS is ADR capable per Title 24 California code. This code applies to buildings larger than 10,000 ft<sup>2</sup>. Understanding this, we have a few options to test the system's ability to perform ADR. The Layer Packs are preset at 20% ADR setting. This can be adjusted from 0-50% through the mobile app.

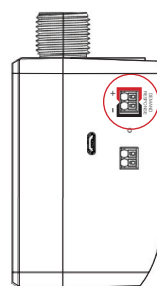
**Option 1:** Connect via bluetooth using the FineTune TCS Mobile App simply select the space you want to perform the test on, and push the "DR Quick Test" button. This will activate the Demand Response event for 5 seconds. **No wiring needed.**



**Option 2:** Stub two 18AWG wires into the Demand Response terminal block on one of the Layer Packs and touch them together. Doing so provides a contact closure and performs the ADR event across all Layer Packs on the same BUS.

**Option 3:** Setting up a project for ADR requires the installer to daisy chain into one Layer Pack in each space with a pair of 18AWG wires. End the daisy chain at the location of the utility service's ADR hardware. The utility service will need to provide a contact closure during an Auto Demand Response event.

**We highly recommend using a light meter when performing these tests.**



**Demand Response Terminal**

Using two 18AWG wires, plug into the top terminal on the Layer Pack. This communicates to all other Layer Packs on the same BUS. No need to wire to each Layer Pack.

# ENERGY SAVING & CODE REQUIREMENTS

## Default Settings



- **High-End Trim** - No High-End Trim Applied (100% Light Output)
  - **Occupancy Mode** - Auto On / Auto Off
  - **Occupancy Partial On** - Lights turn On to 70% light output
  - **Demand Response** - 20% light reduction on ADR event
- All settings can be altered using the FineTune TCS mobile app.



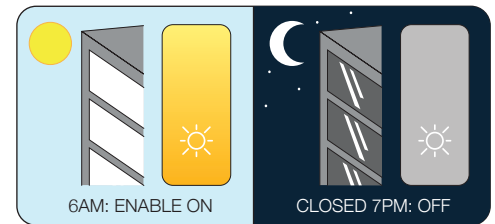
FineTUNE TCS

## Operational Hours

**TITLE 24** 130.1 (c) 1.A, C Shut-OFF Controls

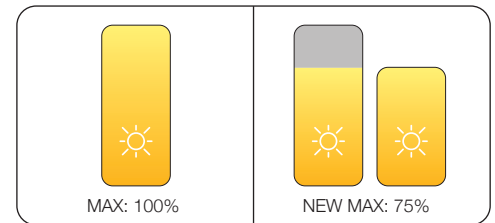
**ASHRAE** 9.4.1.1 (j)

Allows for businesses to enable their lights On and turn them Off at the end of the day based on their hours of operation. Can be set for everyday or weekdays and weekends.



## High-End Trim

Adjusting the High-End Trim creates a new maximum light output that cannot be exceeded by manual controls. Set this based on target foot candle requirements.

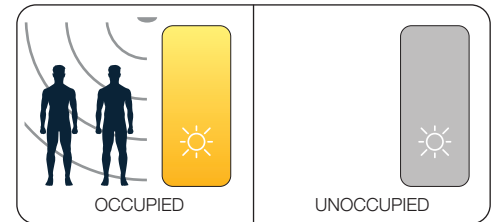


## Occupancy Sensor

**TITLE 24** 130.1 (c) 5, 7 Shut-OFF Controls

**ASHRAE** 9.4.1.1 (b) (c) (g) (h)

When a space becomes occupied, lights turn On and when all occupants have left the space, the lights will turn Off. Partial On and Off can be applied.

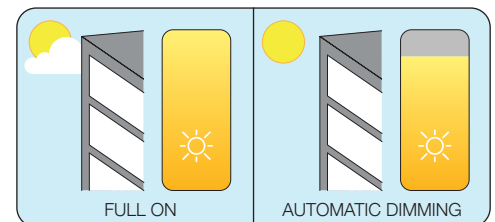


## Daylight Harvesting

**TITLE 24** 130.1 (d) Automatic Daylight Controls

**ASHRAE** 9.4.1.1 (e) (f)

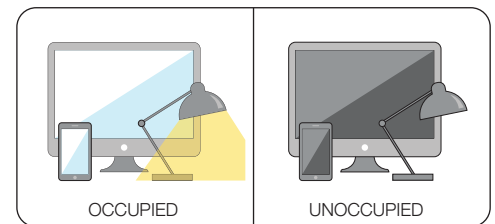
On bright days where daylight contributes to illuminating the space, electric light will automatically dim up to two independent daylight zones based on the amount of available daylight.



## Plug Load Control

**TITLE 24** 130.5 (d) Controlled Receptacles

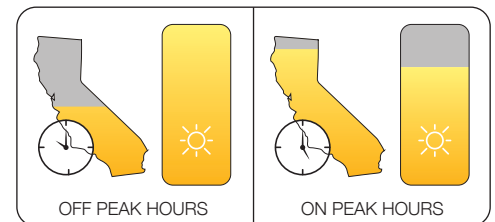
Turns Off outlets providing power to 'Phantom Loads' such as computer monitors, task lights, chargers and printers when there are no occupants in the space.



## Demand Response

**TITLE 24** 130.1 (e) Demand Responsive Controls

During peak hours of energy use, the utility company can send a signal to automatically reduce the lighting load for building with ADR capabilities.

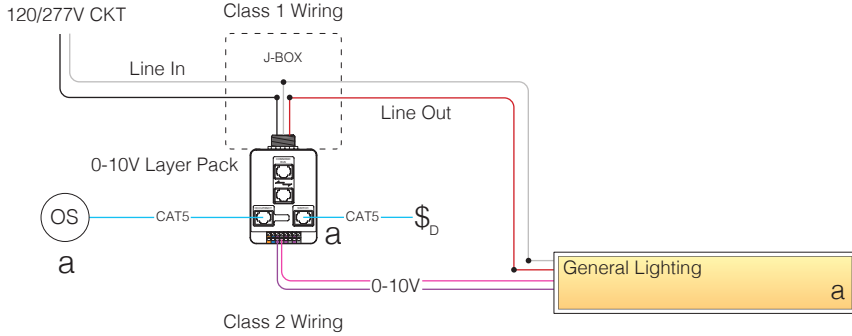


# TYPICAL WIRING DIAGRAMS

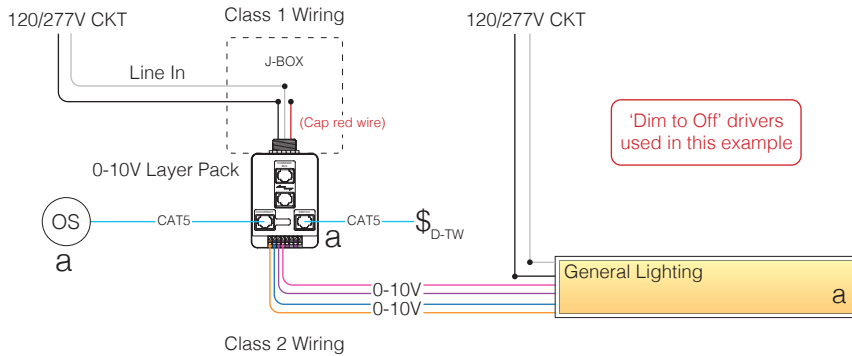
## 1 Layer Diagrams

### Single Line Diagram (0-10V Shown)

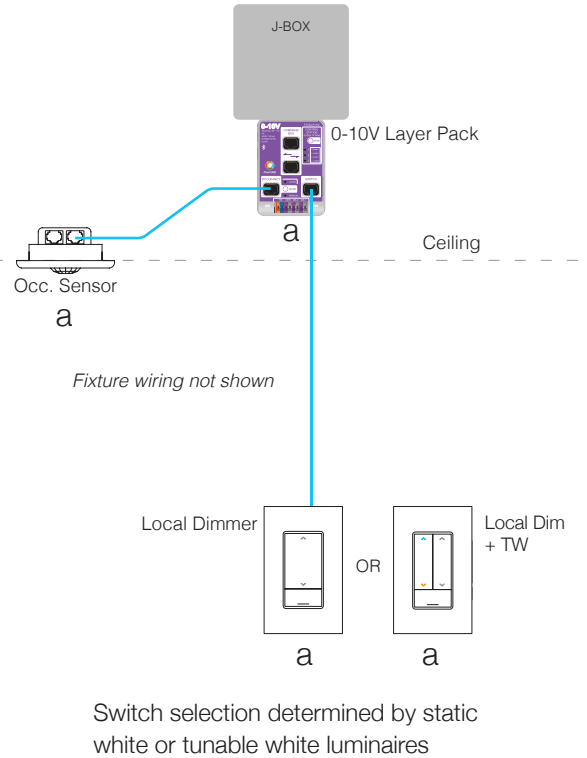
#### Static White



#### Tunable White

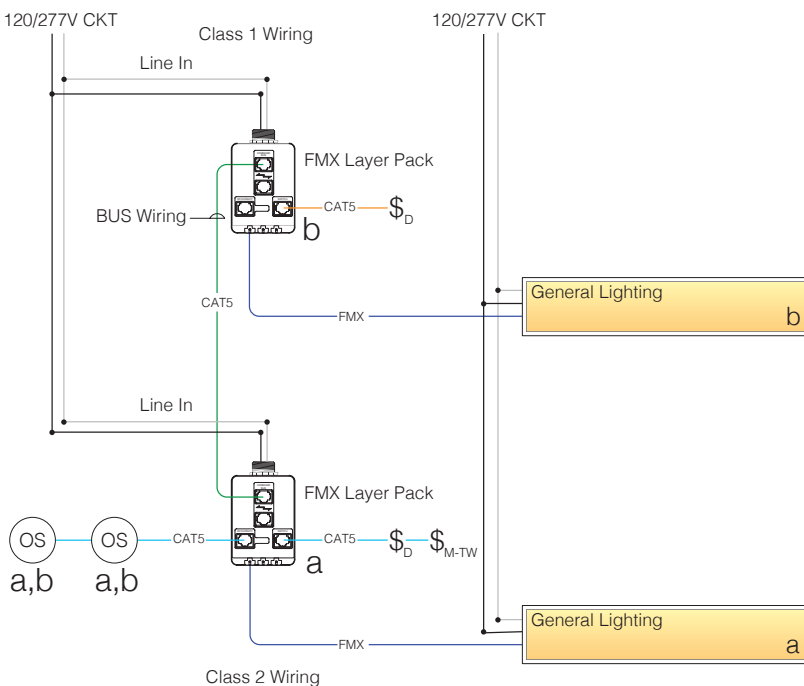


### Field Installation Diagram

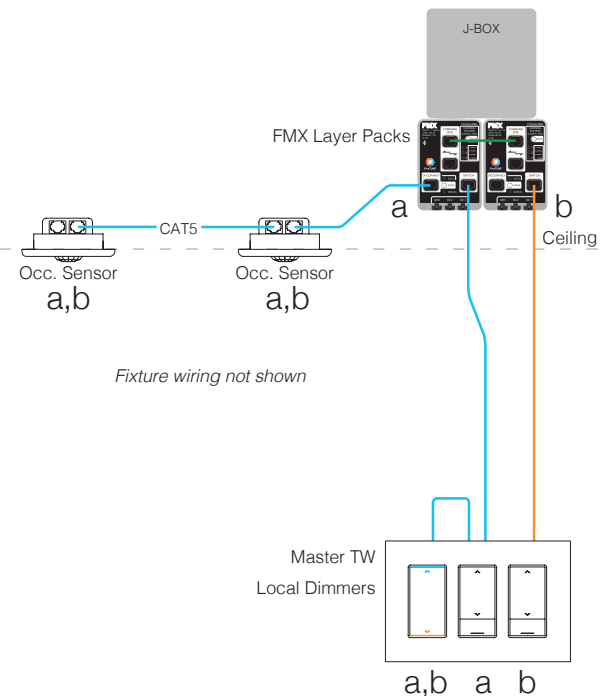


## 2 Layer Diagrams

### Single Line Diagram (FMX Shown)



### Single Line Diagram (FMX Shown)

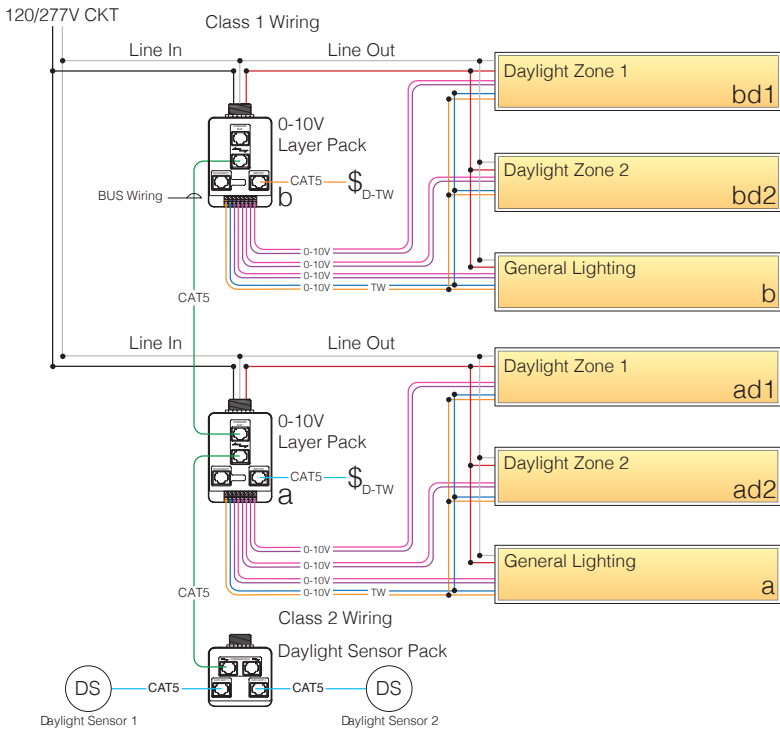


# TYPICAL WIRING DIAGRAMS

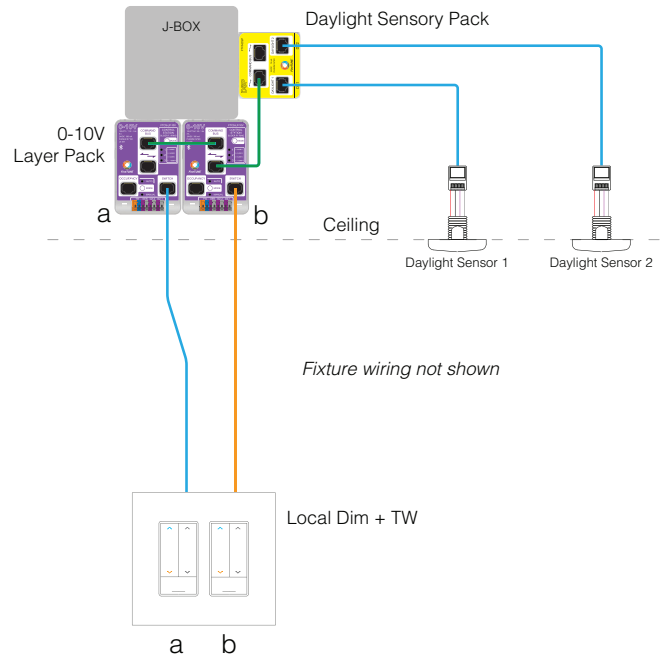
## 2 Layer Daylight Installation Diagrams

### Single Line Diagram (0-10V Shown)

#### Tunable White



### Field Installation Diagram



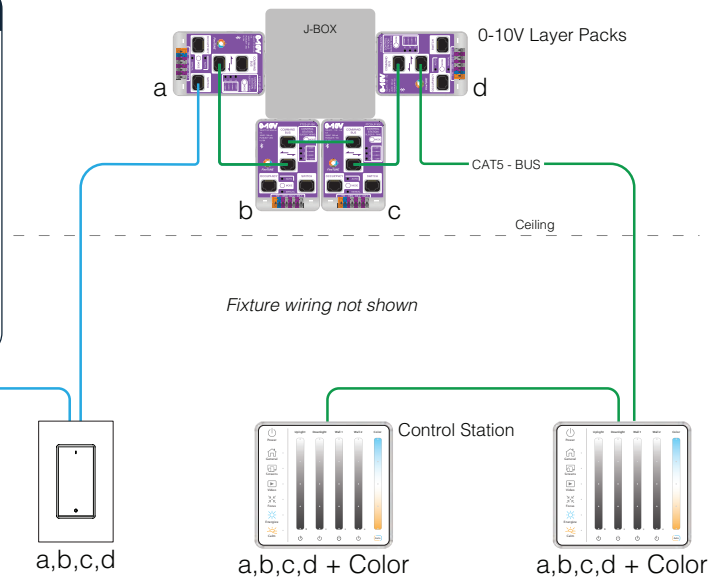
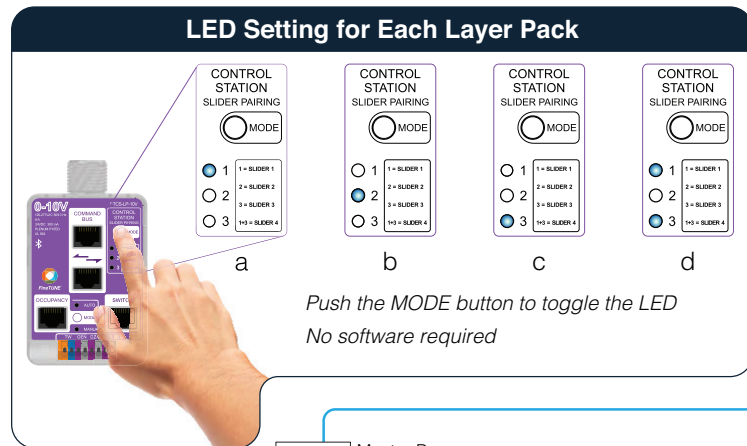
Switch 'a' will control 'a,d1' & 'a,d2' as the same switching zone  
 Switch 'b' will control 'b,d1' & 'b,d2' as the same switching zone

## 4 Layer Diagram w/ Control Station Setup

### Field Installation Diagram (0-10V shown)



#### Pairing Layer Packs to Control Station Intensity Sliders

The lit LED on the 'Control Station - Slider Pairing' section on each Layer Pack corresponds to the slider it will control on the Control Station. Each slider has a number at the bottom which corresponds to the lit LED number value. Contractors will have to properly assign number values to the Layer Packs based on the zone they have connected the Layer Pack to.



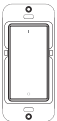
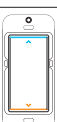











# ORDERING INFORMATION

## Lighting Controllers

| Component   | Ordering Code      | Description   |
|---|--------------------|---|
|  | <b>FTCS-LP-10V</b> | <b>0-10V Layer Pack</b> Ñ 120/277VAC ~ 50/60 Hz / 8A Relay<br>24V Power Supply @ 300mA / UL2043 / UL924 / UL916<br>¥ Includes 6-inch cat5 jumper cable in every box |
|  | <b>FTCS-LP-FMX</b> | <b>FMX Layer Pack</b> Ñ 120/277VAC ~ 50/60 Hz<br>24V Power Supply @ 300mA / UL2043 / UL924 / UL916<br>¥ Includes 6-inch cat5 jumper cable in every box              |

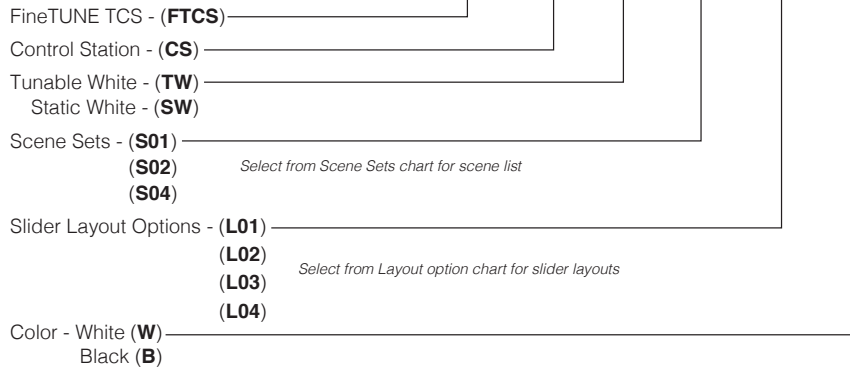
## Switches and Switch Plates

| Component   | Ordering Code               | Description   |
|---|-----------------------------|---|
|    | <b>FTCS-SWITCH-L-DIM</b>    | <b>Local Dimmer Switch</b> – Digital Switch / Low voltage<br>Controls the power and intensity of a Layer Pack<br>• Switch plate not included  |
|   | <b>FTCS-SWITCH-L-DIM-TW</b> | <b>Local Dimmer + TW Switch</b> – Digital Switch / Low voltage<br>Controls the power, intensity & Tunable White light of a Layer Pack<br>• Switch plate not included  |
|  | <b>FTCS-SWITCH-L-PWR</b>    | <b>Local Power Switch</b> – Digital Switch / Low voltage<br>Turns a Layer Pack On & Off<br>• Switch plate not included  |
|  | <b>FTCS-SWITCH-M-TW</b>     | <b>Master TW Switch</b> – Digital Switch / Low voltage<br>Adjusts all Layer Packs Tunable White light on the same BUS<br>• Switch plate not included  |
|  | <b>FTCS-SWITCH-M-PWR</b>    | <b>Master Power Switch</b> – Digital Switch / Low voltage<br>Turns all Layer Packs On & Off on the same BUS<br>• Switch plate not included  |
|  | <b>FTCS-SP-1G-W</b>         | <b>Radiant Screwless Wall Plate</b> – One-Gang / White<br>Modern low profile design<br><a href="#">Download Legrand One-Gang Tech Sheet</a>      |
|  | <b>FTCS-SP-2G-W</b>         | <b>Radiant Screwless Wall Plate</b> – Two-Gang / White<br>Modern low profile design<br><a href="#">Download Legrand Two-Gang Tech Sheet</a>      |
|  | <b>FTCS-SP-3G-W</b>         | <b>Radiant Screwless Wall Plate</b> – Three-Gang / White<br>Modern low profile design<br><a href="#">Download Legrand Three-Gang Tech Sheet</a>  |
|   | <b>FTCS-SP-4G-W</b>         | <b>Radiant Screwless Wall Plate</b> – Four-Gang / White<br>Modern low profile design<br><a href="#">Download Legrand Four-Gang Tech Sheet</a>    |

# ORDERING INFORMATION

## Control Station

FTCS - CS - TW - S01 - L01 - W



| Create Ordering Code |    |   |   |   | Qty |
|----------------------|----|---|---|---|-----|
| FTCS                 | CS | - | - | - |     |
| FTCS                 | CS | - | - | - |     |
| FTCS                 | CS | - | - | - |     |
| FTCS                 | CS | - | - | - |     |
| FTCS                 | CS | - | - | - |     |
| FTCS                 | CS | - | - | - |     |

### Scene Set 1 - [S01]

- General Scene :** User preferred default space setting
- Screens Scene :** Low glare setting for use with backlit devices
- Video Scene :** Designed for movies or other multimedia focused activities
- Energize Scene :** Bright light to help stimulate and revitalize occupants
- Calm Scene :** Creates a soothing environment and promotes relaxation
- Sensor Override<sup>1</sup> :** Override Occupancy Sensor shut off for 2 hours

### Scene Set 2 - [S02]

- General Scene :** User preferred default space setting
- Screens Scene :** Low glare setting for use with backlit devices
- Video Scene :** Designed for movies or other multimedia focused activities
- Focus Scene :** Designed for focused discussion
- Energize Scene :** Bright light to help stimulate and revitalize occupants
- Calm Scene :** Creates a soothing environment and promotes relaxation

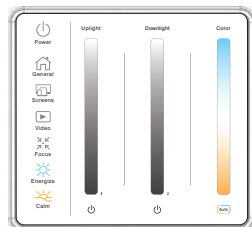
### Scene Set 4 - [S04]

- General Scene :** User preferred default space setting
- Screens Scene :** Low glare setting for use with backlit devices
- Video Scene :** Designed for movies or other multimedia focused activities
- Whiteboard Scene :** Illuminates vertical surfaces and focuses attention on board work
- Energize Scene :** Bright light to help stimulate and revitalize occupants
- Calm Scene :** Creates a soothing environment and promotes relaxation

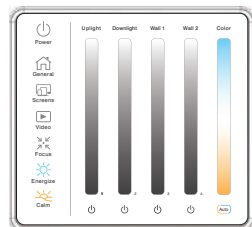
<sup>1</sup> Only use if occupancy sensor is installed in space

| Slider Layout           | Downlight | Whiteboard |            |        |
|-------------------------|-----------|------------|------------|--------|
| Slider Layout 1 - [L01] | Downlight | Whiteboard |            |        |
| Slider Layout 2 - [L02] | Uplight   | Downlight  | Whiteboard |        |
| Slider Layout 3 - [L03] | Uplight   | Downlight  | Wall 1     | Wall 2 |
| Slider Layout 4 - [L04] | Uplight   | Downlight  |            |        |

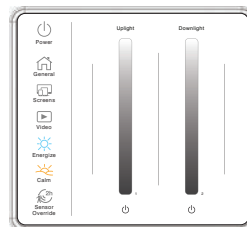
## Control Station Samples



FTCS-CS-TW-S02-L04-W



FTCS-CS-TW-S02-L03-W



FTCS-CS-SW-S01-L04-W



FTCS-CS-TW-S04-L04-W



FTCS-CS-TW-S02-L04-B



FTCS-CS-SW-S01-L02-B









FTCS-CS-SW-S02-L03-B












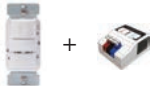






FTCS-CS-TW-S02-L02-B

# ORDERING INFORMATION

## Daylight Controls

| Component   | Ordering Code        | Description   |
|---|----------------------|---|
|  | <b>FTCS-DSP</b>      | <b>Daylight Sensor Pack</b> — Low Voltage / UL2043<br>Power: 24V @16mA  |
|   | <b>FTCS-SR-DAY</b>   | <b>Wattstopper LS-301</b> — Ceiling Mount / Closed Loop<br>Power: 24V @30mA<br>• FTCS-CPLR-DAY comes attached  |
|  | <b>FTCS-SR-REM</b>   | <b>Wattstopper LSR-301-S</b><br>Remote control setup tool for Wattstopper LS-301                               |
|  | <b>FTCS-CPLR-DAY</b> | <b>FineTune TCS</b> — Daylight Sensor Coupler   |

## Occupancy - Plug Load - Emergency Controls

| Component   | Ordering Code           | Description   |
|---|-------------------------|---|
|    | <b>FTCS-SR-OCC-CDT</b>  | <b>Wattstopper DT-305</b> — Ceiling Mount / Dual Technology<br>Power: 24V @35mA<br>• FTCS-CPLR-OCC comes attached <a href="#">Download DT-305 Tech Sheet</a>             |
|   | <b>FTCS-SR-OCC-CPIR</b> | <b>Wattstopper CI-305</b> — Ceiling Mount / Passive Infrared<br>Power: 24V @9mA<br>• FTCS-CPLR-OCC comes attached <a href="#">Download CI-305 Tech Sheet</a>             |
|  | <b>FTCS-CPLR-OCC</b>    | <b>FineTune TCS</b> — Occupancy Sensor Coupler  |
|   | <b>FTCS-SR-OCC-WDT</b>  | <b>Wattstopper DT-205</b> — Wall Mount / Dual Technology<br>Power: 24V @25mA ea.<br>• FTCS-CPLR-CTRL comes attached <a href="#">Download DT-205 Tech Sheet</a>           |
|  | <b>FTCS-SR-OCC-SDT</b>  | <b>Wattstopper DW-100-24</b> — Switch Mount / Dual Technology<br>Power: 24V @35mA ea.<br>• FTCS-CPLR-CTRL comes attached <a href="#">Download DW-100-24 Tech Sheet</a>   |
|  | <b>FTCS-SR-OCC-SPIR</b> | <b>Wattstopper PW-100-24</b> — Switch Mount / Passive Infrared<br>Power: 24V @20mA ea.<br>• FTCS-CPLR-CTRL comes attached <a href="#">Download PW-100-24 Tech Sheet</a>  |
|  | <b>FTCS-CPLR-CTRL</b>   | <b>FineTune TCS</b> — Plug Load and BMS Coupler   |
|   | <b>FTCS-PLUG</b>        | <b>Wattstopper BZ-200</b> — Plug Load / 120/277VAC ~ 50/60 Hz<br>UL2043 Plenum Rated<br>• FTCS-CPLR-CTRL comes attached <a href="#">Download BZ-200 Tech Sheet</a>       |
|  | <b>FTCS-BYPASS</b>      | <b>Wattstopper ELCU-200</b> — Emergency Lighting Control<br>120/277VAC ~ 50/60 Hz / UL924 / UL2043 Plenum Rated<br><a href="#">Download ELCU-200 Tech Sheet</a>          |



# ORDERING INFORMATION

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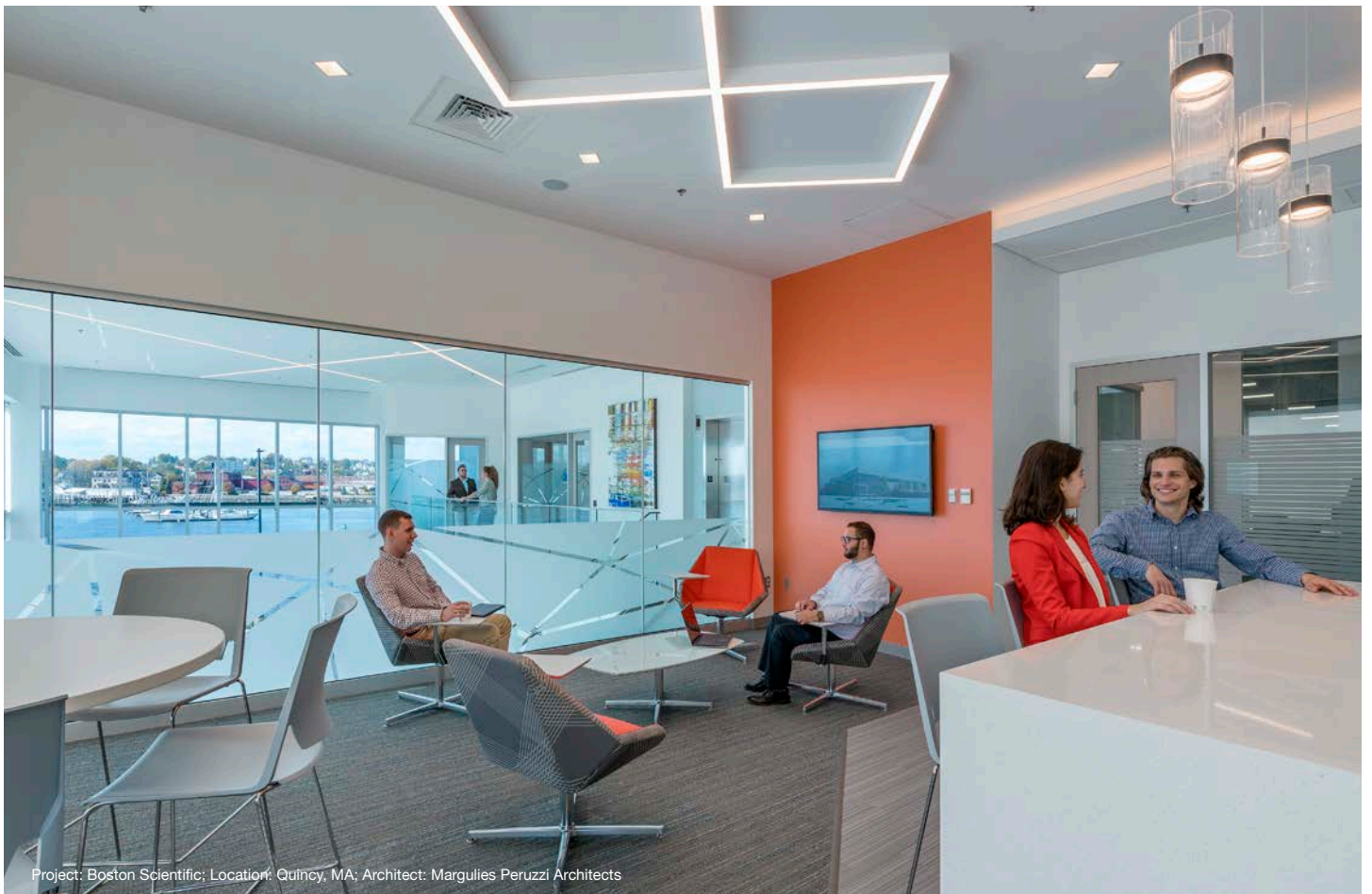
## Cables

| Ordering Code        | Description  |
|----------------------|--|
| <b>FTCS-C5-6IN</b>   | <b>6 in CAT5 - Plenum Rated Cable (RJ45 termination 568B)</b>  |
| <b>FTCS-C5-18IN</b>  | <b>18 in CAT5 - Plenum Rated Cable (RJ45 termination 568B)</b> |
| <b>FTCS-C5-15FT</b>  | <b>15 ft CAT5 - Plenum Rated Cable (RJ45 termination 568B)</b> |
| <b>FTCS-C5-30FT</b>  | <b>30 ft CAT5 - Plenum Rated Cable (RJ45 termination 568B)</b> |
| <b>FTCS-C5-50FT</b>  | <b>50 ft CAT5 - Plenum Rated Cable (RJ45 termination 568B)</b> |
| <b>FTCS-FMX-12FT</b> | <b>12 ft FMX - Plenum Rated Cable</b>                          |
| <b>FTCS-FMX-30FT</b> | <b>30 ft FMX - Plenum Rated Cable</b>                          |
| <b>FTCS-FMX-50FT</b> | <b>50 ft FMX - Plenum Rated Cable</b>                          |

FMX cables plug together if longer lengths are required



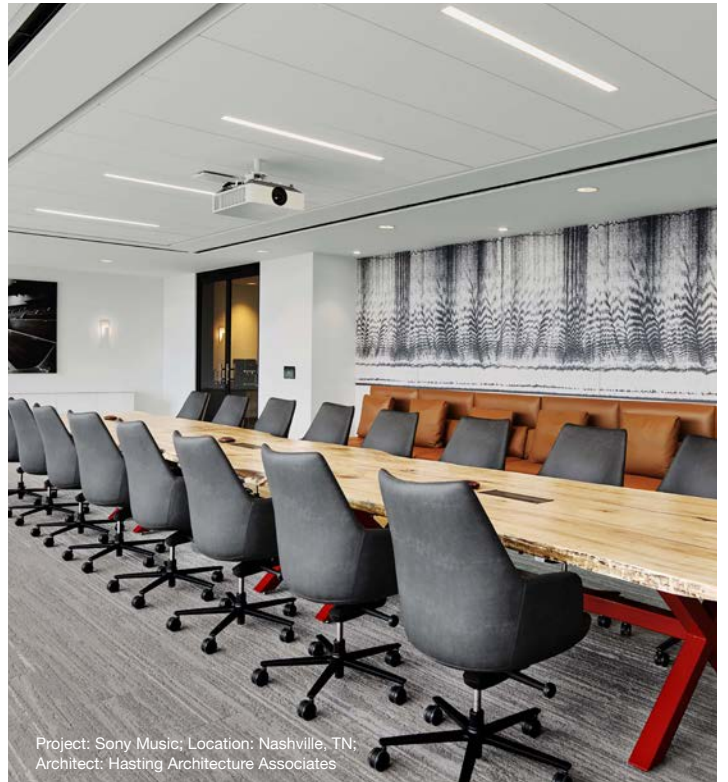
Project: Unity Christian High School; Location: Hudsonville, MI; Architect: GMB Architecture + Engineering



Project: Boston Scientific; Location: Quincy, MA; Architect: Margulies Peruzzi Architects



Project: Niagara University - Clet Dining Hall; Location: Niagara Fall, NY; Architect: BHNT Architects



Project: Sony Music; Location: Nashville, TN; Architect: Hasting Architecture Associates



Project: NDSST Conservatory Green Middle School; Location: Denver, Colorado; Architect: RB+B Architects



**FineTUNE**<sup>®</sup>  
Tailored Control System

**FINELITE**<sup>®</sup>  
*Better Lighting*

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