TacTouch
Intuitive Push Button Control

0-10 VDC LED Dimming Control Station
TT-L6 Series

Description

The TacTouch TT-L is a decorator-style, single-gang, individual room control station designed to control 0-10 Vdc dimmable LED drivers or dimmable fluorescent ballasts. A unique feature of the TT-L is its 3 or more way type operation so users can manually adjust the light level, turn lights on or off or set the Light Level Memory set points from any of the TT-L control stations in the room. For multiple door applications the TT-L's are daisy-chained to one another via two twisted pairs of wire. The TT-L accepts a low voltage occupancy sensor signal so it can be ordered for auto on or manual on control. The TT-L auto on version (TT-L6A) automatically turns lights on to a user defined light level to meet the 50% power level requirement of ASHRAE 90.1 2010. It also provides the capability for the occupant to turn off the lights while occupants are in the room. This is a useful feature for classrooms and conference rooms that need to turn off lights for video presentations. The manual on version (TT-L6M) requires the occupant to press the ON pushbutton to turn on. Both versions (TT-L6A and TT-L6M) can automatically turn off the lights via the occupancy sensor signal.

TT-L6 White*

The TT-L6 provides six pushbuttons for occupant control. The two arrows provide full 0-10 Vdc dimming. The minimum and maximum dimming output is adjustable. The ON and OFF pushbuttons will output a high or low 0-10 Vdc signal and control a remote power pack to switch the line voltage to the dimmable LED driver or ballast. Two Light Level Memory pushbuttons (shown as 1 and 2) provide the capability to save light levels to memory. An occupant can use the up and down arrow to set the desired light level and store the light level to memory by pressing and holding the respective Light Level Memory pushbutton until its LED illuminates, much like saving a radio station on a car stereo.

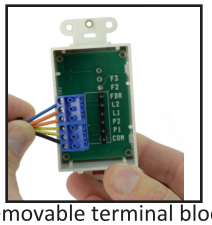
The Decorator-style design of the TT-L provides the capability to gang multiple Decorator-style devices in a multi-gang switch box or for controlling multiple lighting zones in a single room.

Unique Selling Points

- Can be daisy-chained to provide 3 or more way type capability with full dimming functionality at each door
- Two user settable Light Level Memory pushbuttons store user defined light level to memory (1 & 2)
- Integrates with low voltage occupancy for Auto On/Manual Off/Auto Off or Manual On/Auto Off operation*
- 0-10 Vdc output minimum and maximum setting is adjustable to match range of dimming driver
- Dimming Ramp Time adjustable from 2 to 7 seconds in one-second increments
- Integrates with Power Pack to switch lighting loads. Power Pack provides DC power for TT-L and sensor*
- Returns to last dimming level after return of building power. Option to turn off lights after 10 minutes if no sensor signal is detected or pushbutton is pressed
- Auto On Output can be set to control Dimming Fixture to 50% power level and Plug Loads can be switched from second Power Pack as required to meet CEC Title 24 and ASHRAE 90.1 2010 energy codes*
- (NEW 11/2014) Option for 0-10 Vdc dimming output with 100mAdc sinking capability
- (NEW 11/2014) Option for integrated relay that opens 0-10vdc control signal circuit on power failure so emergency fixtures will go to full light output

Features

- Up and Down arrows provide adjustment of light level. ON and OFF LED's indicate end of range reached
- Designed to control 0-10 Vdc dimmable LED or fluorescent luminaires
- Switch provides user with excellent tactile feel and 1,000,000 mechanical operations
- Use standard Decorator-style wall plate (not included)
- Fits side-by-side for double & multi-gang box
- Green LED in upper right help occupants find the switch when lights are off
- Contractor-friendly removable screw terminal block makes installation a snap
- Limited 5-Year Warranty
- California Energy Commission (CEC) compliant


Removable terminal block for quick and easy wiring

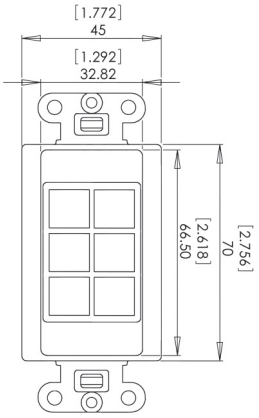
Electrical

- Dimming Output:
  TT-L6, L6M and L6A: 0-10 Vdc can sink 20mA and/or source 5mA
  TT-L6E, L6ME and L6AE: 0-10 Vdc can sink 100mA and/or source 5mA.
- RS-485 communication for daisy-chaining multiple units
- Shared common
- Power: 24Vdc, 45mA maximum (Power provided by Power Pack, not included)
- Terminal block wire size: 18-22 AWG
- Switch rated for 1,000,000 mechanical activations

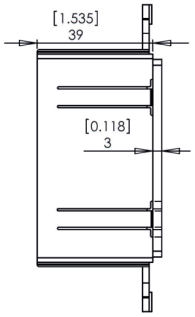
Environmental

- Operating Temperature 32-158 Deg. F, 0-70 Deg. C
- 10 - 90% Relative Humidity, non-condensing
- For Indoor Use

Mechanical



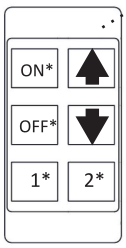
TT-L6
Front View



TT-L6
Side View

Wiring (Do Not Wire Hot)

TT-L Push Buttons

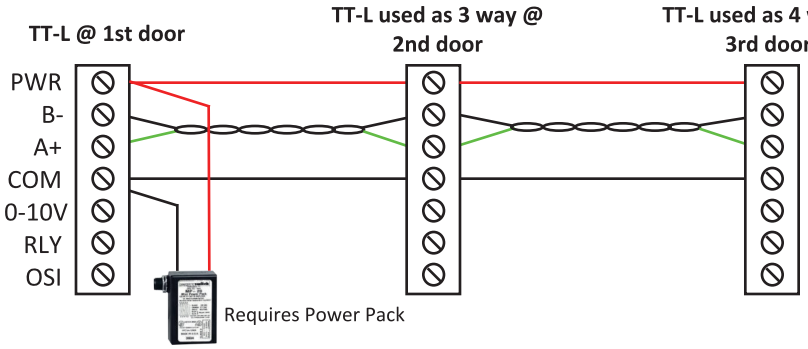


Locator/Finder LED
ON: 0-10 Vdc to max, RLY makes
OFF: 0-10 Vdc to min, RLY opens
Increase Light Output
Decrease Light Output
Two Light Level Memory Pushbuttons that provided capability to save light level to memory
* Push Button includes LED

TT-L Terminal Block Description (Do Not Wire Hot)

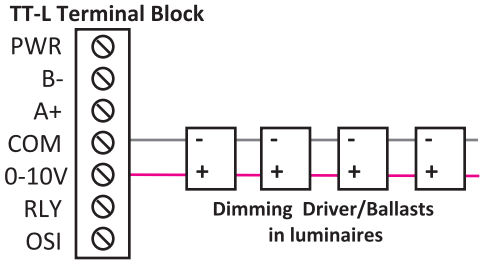
PWR	+24VDC power from Power Pack
B-	RS-485 - communication bus
A+	RS-485 + communication bus
COM	Ground
0-10V	0-10 Vdc Dimming Output
RLY	Relay output control to power pack
OSI	Low voltage occupancy sensor input

Communication and Power Wiring for 3 or More Way Applications (Do Not Wire Hot)



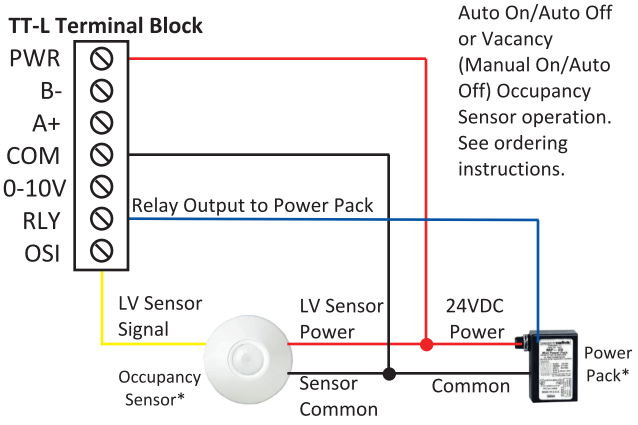
Any of the TT-L's on the network can adjust the dimming level, Light Level Memory settings and ON/OFF. One TT-L 0-10 Vdc output connects to the dimmable drivers/ballasts. The TT-L's are daisy-chained via two twisted pairs. No shield is required. Use Belden 9744 for non-plenum and 82741 plenum or similar for communication and DC power wire.

0-10 Vdc Dimming Output Wiring (Do Not Wire Hot)



Only one TT-L output is connected to the 0-10 Vdc input on the LED drivers or dimmable ballasts. Typically, the driver/ballast provides a violet wire for 0-10 Vdc control and gray wire for common.

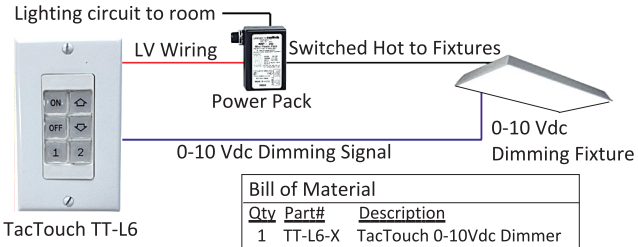
Low Voltage Occupancy Sensor and Power Pack Wiring (Do Not Wire Hot)



Can be ordered as Auto On/Auto Off or Vacancy (Manual On/Auto Off) Occupancy Sensor operation. See ordering instructions.

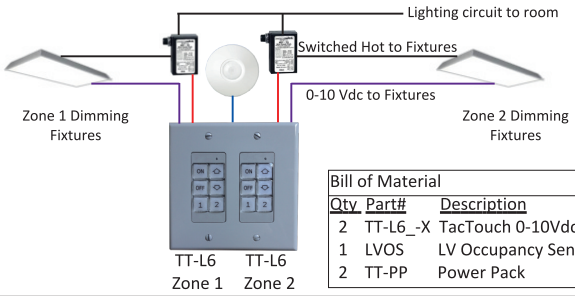
*Compatible with Leviton, Sensor Switch and most low voltage occupancy sensors and Leviton OPP20 and Sensor Switch MP20 and most Power Packs. See respective Power Pack wiring diagram for line voltage connections.

Basic 0-10 Vdc Dimming



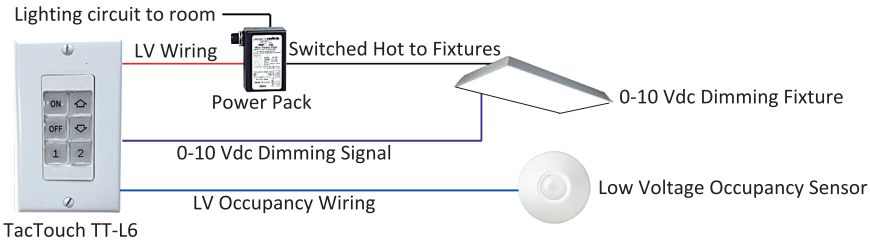
Bill of Material		
Qty	Part#	Description
1	TT-L6-X	TacTouch 0-10Vdc Dimmer
1	TT-PP	Power Pack

2-Zone Dimming with Occ Sensor Integration



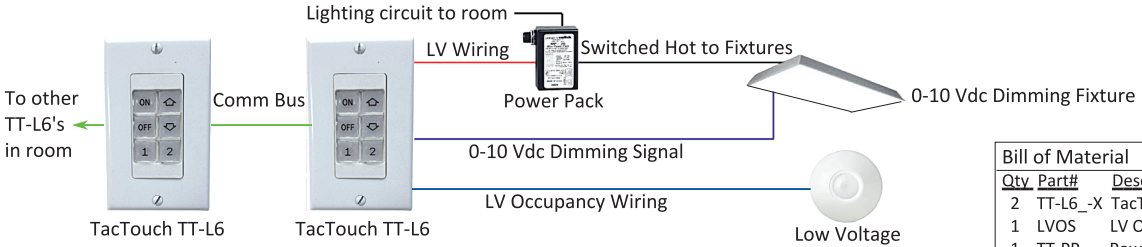
Bill of Material		
Qty	Part#	Description
2	TT-L6_-X	TacTouch 0-10Vdc Dimmer
1	LVOS	LV Occupancy Sensor
2	TT-PP	Power Pack

0-10 Vdc Dimming with Occupancy Sensor Integration



Bill of Material		
Qty	Part#	Description
1	TT-L6_-X	TacTouch 0-10Vdc Dimmer
1	LVOS	LV Occupancy Sensor
1	TT-PP	Power Pack

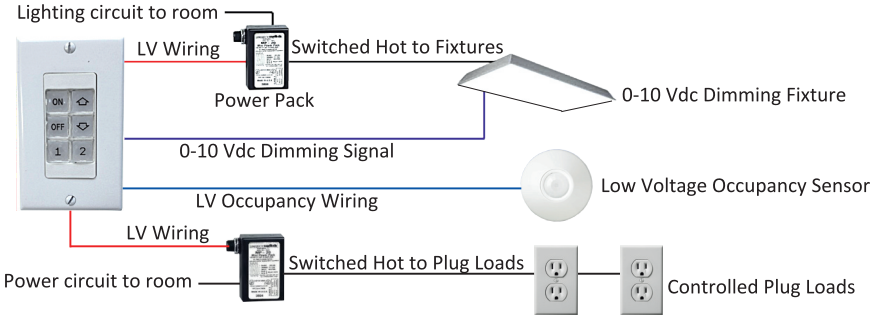
3 or More Way 0-10 Vdc Dimming with Occupancy Sensor Integration



TT-L6's connected to Comm Bus auto detect so no address needs to be set or system commissioning required.

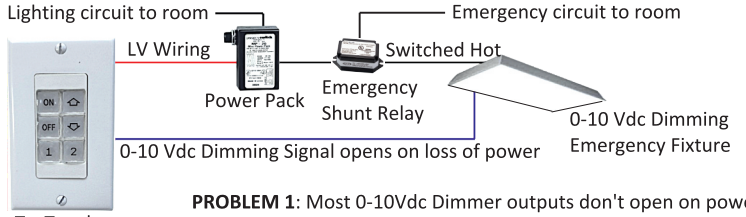
Bill of Material		
Qty	Part#	Description
2	TT-L6_-X	TacTouch 0-10Vdc Dimmer
1	LVOS	LV Occupancy Sensor
1	TT-PP	Power Pack

0-10 Vdc Dimming with Occupancy Sensor Integration including Plug Load Control



Bill of Material		
Qty	Part#	Description
1	TT-L6_-X	TacTouch 0-10Vdc Dimmer
1	LVOS	LV Occupancy Sensor
2	TT-PP	Power Pack

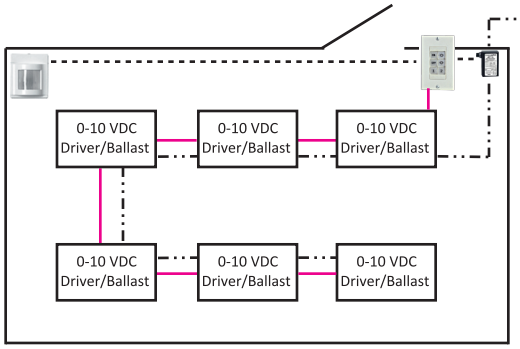
TT-L Output Option: 0-10Vdc opens on power failure for emergency lighting & 100mADC sinking



PROBLEM 2: Most 0-10 Vdc Dimmers sink 20mADC. Some of the new LED drivers sink 2mA each so only 10 of these LED fixtures can be controlled from a 20mA sinking output.
SOLUTION: The TacTouch TT-6E, TT-L6ME and TT-L6AE provide 0-10 Vdc, 100mA sinking so 50 of these LED fixtures can be controlled.

PROBLEM 1: Most 0-10Vdc Dimmer outputs don't open on power failure so emergency lights don't go to full light output. This requires an emergency shunt relay be installed to break the 0-10Vdc control signal to the emergency lights. This is additional labor and material cost for a lighting control project.
SOLUTION: The TacTouch TT-6E, TT-L6ME and TT-L6AE Output Options provide an integrated emergency shunt relay to assure 0-10 Vdc control signal opens on power failure. This eliminates the need to purchase and install separate emergency shunt relay.

Typical Room Wiring Diagram for One Door



Lighting circuit feeding room

TacTouch TT-L , 0-10 Vdc control station mounted in a single gang wall box and trimmed with a single gang Decorator-style wall plate

2 twisted pair, 22 AWG, for communication and DC power

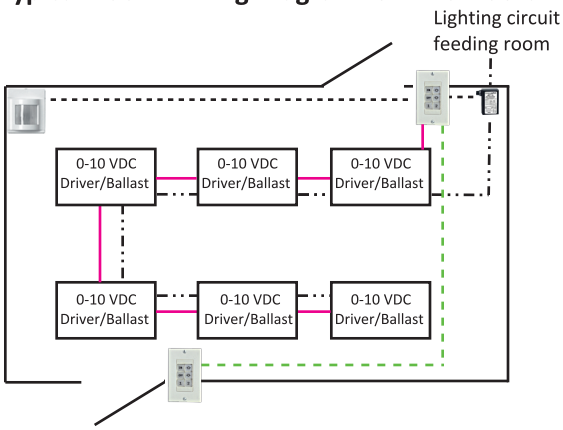
0-10 Vdc control wire shall be 2C, 22AWG, shield perferred. Wire in parallel with all 0-10 Vdc LED drivers. One TT-L 0-10 Vdc signal is connected to driver.

Low voltage wiring

Low voltage occupancy sensor, sensor output connects to TT-L

24 Vdc Power Pack, (24V@45mADC minimum for each TT-L, add sensor power requirement if power pack is powering both TT-L's and sensor

Typical Room Wiring Diagram for Two Doors



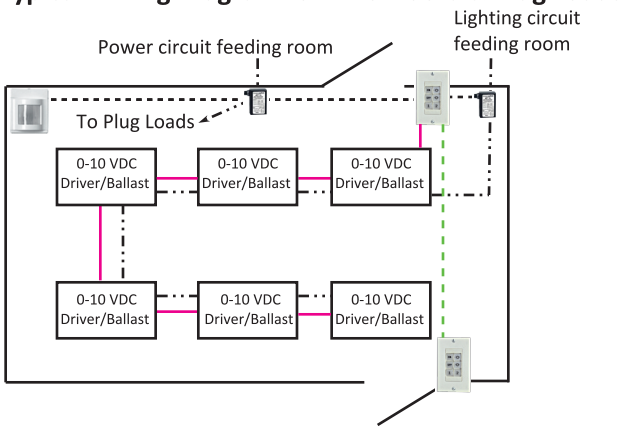
Auto On/Manual Off/Auto Off (see diagram):

• Occupant enters room. Occupancy sensor detects occupant and makes its signal to TT-L signal. TT-L makes its relay output to power pack and automatically turns on lights to 50% power level (this value can be set during installation. It is a requirement for ASHRAE 90.1 2010 and CEC Title 24). Occupant can also press TT-L ON pushbutton to turn on lights if occupancy sensor is malfunctioning.

• Occupant can press OFF push button to turn off lights at any time even though occupant is in the room. Lights will remain off until occupant exits room and occupancy sensor times out and occupant re-enters room or occupant presses the TT-L ON pushbutton.

• After occupant exits the room and sensor times out, sensor signal to TT-L opens and TT-L automatically turns off lights by opening relay output to power pack or occupant can press OFF push button to turn off lights. If Plug Load control is utilized then the connected receptacles are also switched off with lights.

Typical Wiring Diagram for Two Doors & Plug Loads



Manual On/Auto Off, also called Vacancy mode (see diagram):

• Occupant enters room. Occupancy sensor detects occupant and makes its signal to TT-L but lights do not turn on until occupant presses TT-L ON push button which makes its relay output to power pack. This typically saves additional energy over auto on/auto off sensor applications.

• After occupant exits the room and sensor times out, sensor signal to TT-L opens and TT-L automatically turns off lights by opening relay output to power pack or occupant can press OFF push button to turn off lights. If Plug Load control is utilized then the connected receptacles are also switched off with lights.

Ordering Instructions

TT-L__ __- __ - __

Example: TT-L6AE-W: *6 Push Button, Factory set Auto on/Manual Off/Auto Off, 0-10 Vdc dimming circuit opens on power failure, 100mADC sinking, mfg other than in USA*

Mfg Origin
Blank = Other than USA
U = Assembled in USA**

Color
W = White
V = Ivory
G = Gray
R = Red**

Output Option
Blank = 0-10 Vdc dimming circuit does not open on power failure, 20mADC sinking
E = Integrated relay that opens 0-10vdc control signal circuit on power failure so emergency fixtures go to full light output, and 0-10 Vdc output that provides 100mA sinking capability**

Configuration
6 = 6 Push Buttons, Factory set for Manual On/Manual Off*
6M = 6 Push Buttons, Factory set for Manual On/Auto Off sensor*
6A = 6 Push Buttons, Factory set for Auto On/Auto Off sensor*

* *A Power Pack is required for the TT-L. The TT-L6M-X or TT-L6A-X can share the Power Pack with the Occupancy Sensor. Occupancy sensor, Power Pack and Decorator-Style switch plate is not included.*

** *There is an additional cost for these options.*