

SPECIFICATION SUBMITTAL

telume™ Controls

www.lutron.com/telume

Advanced technology in an easy-to-use dimmer.

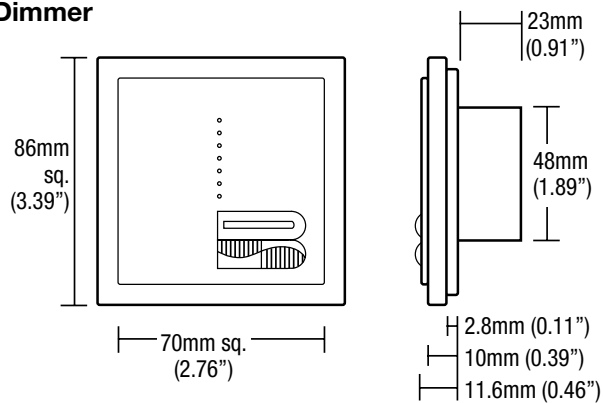


FEATURES

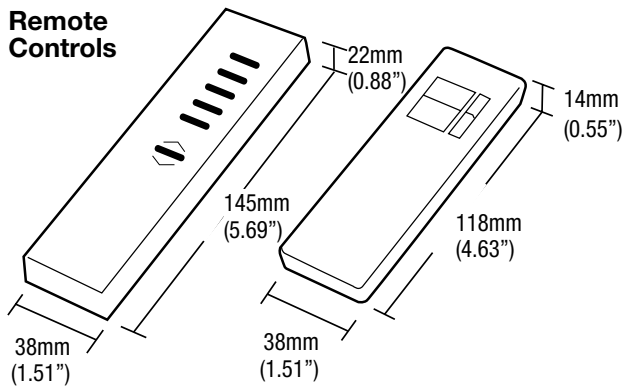
- Adjust the lighting from up to 10 locations with individual raise/lower
- Dimmers with infrared store up to 4 preset scenes that function as part of a system using an infrared remote control
- Will fade on to the last light level or to a locked preset
- Uses standard single pole, 2-way, and intermediate wiring
- Functions as a nightlight – dim room lights down to 0.4%
- Elegant appearance and operation
- Soft glow LEDs allow for easy finding in dark conditions
- Multigang alignment tabs for quick and easy installation
- Replaces an existing switch, dimmers do not require a neutral wire

DIMENSIONS

Dimmer

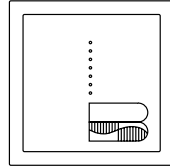


Remote Controls

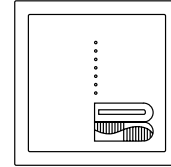


CONTROLS AND ACCESSORIES

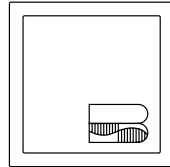
Multi-location Dimmer



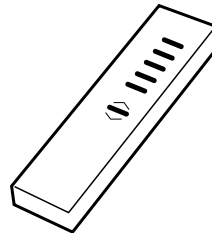
Multi-location Dimmer with IR Receiver



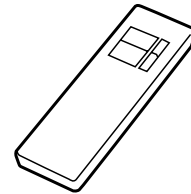
Accessory Dimmer



4-Scene IR Hand-held Remote Control



Favourite Scene IR Hand-held Remote Control



SPECIFICATION SERIES STANDARD FEATURES



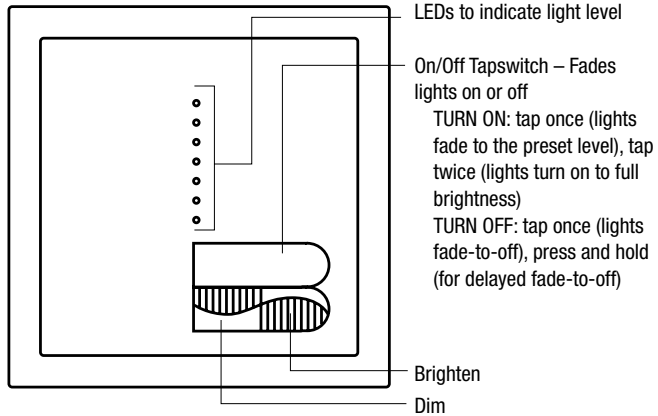
- Auto-reset thermal overload protection
- Lightning strike surge capacity (6kV, 200A)
- Short circuit protection
- Acoustically silent unit using no coil technology
- Precise colour match across all controls
- Electrostatic discharge tested
- Power-failure memory
- Frequency compensation

Lutron controls are rated at 220-240 VAC, 50/60Hz

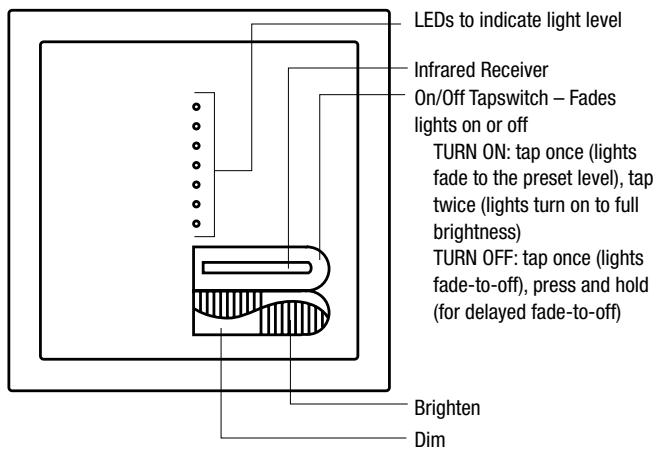
JOB NAME	AREA CONTROLLED
LOCATION	JOB NUMBER
TITLE	PAGE NO.

telume™ Controls

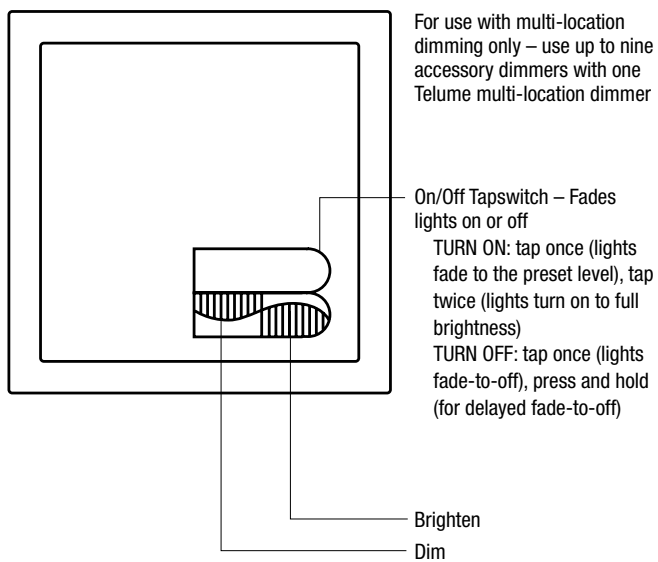
MULTI-LOCATION DIMMER



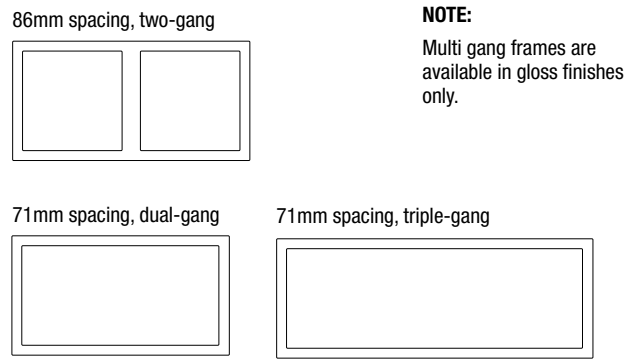
MULTI-LOCATION DIMMER WITH INFRARED RECEIVER



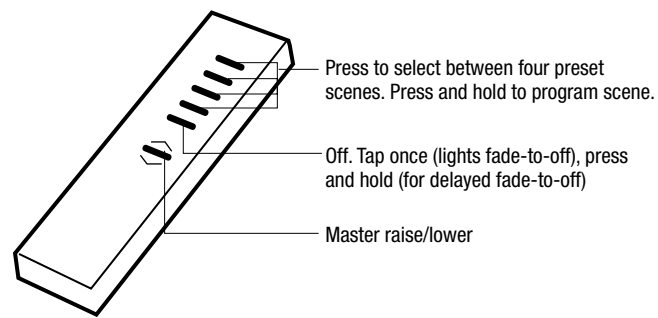
ACCESSORY DIMMER



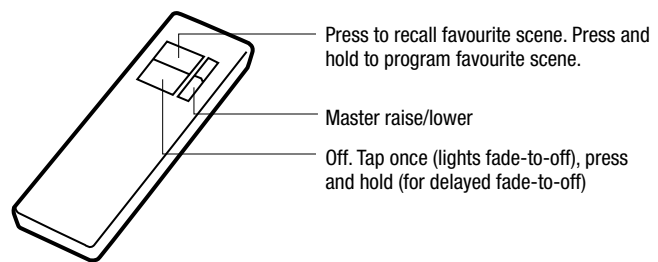
GLOSS FINISH MULTI GANG FRAMES



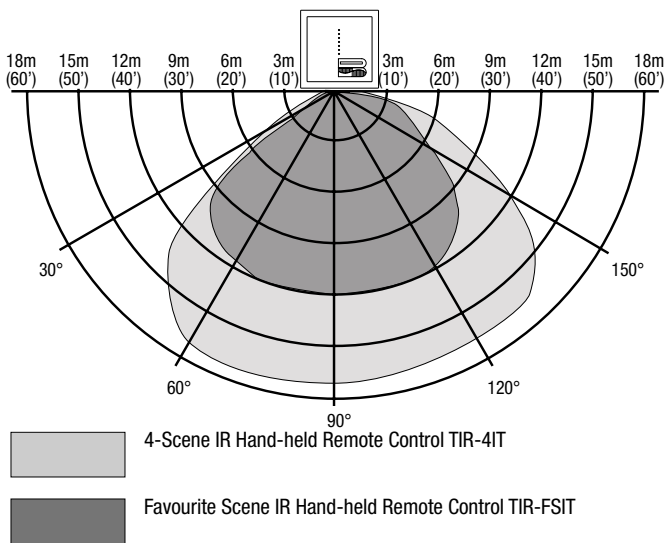
4-SCENE IR (INFRARED) HAND-HELD REMOTE CONTROL



FAVOURITE SCENE IR (INFRARED) HAND-HELD REMOTE CONTROL



INFRARED PHOTOMETRICS



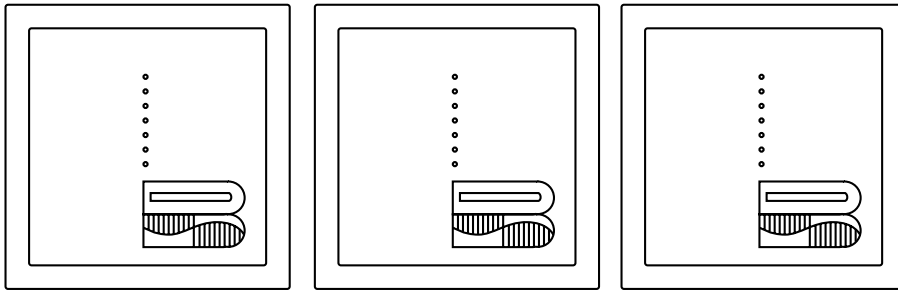


telume™ Controls

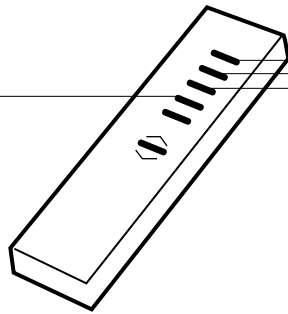
TELUME LIGHTING SCENE PROGRAMMING

Set and recall lighting scenes...like setting a radio station in your car
Just remove existing switches, install Telume dimmers and create scenes

Step 1: Set light level at each dimmer



Step 2: Press and hold the remote control scene button until the LED flashes.



Step 3: Repeat for each scene button.

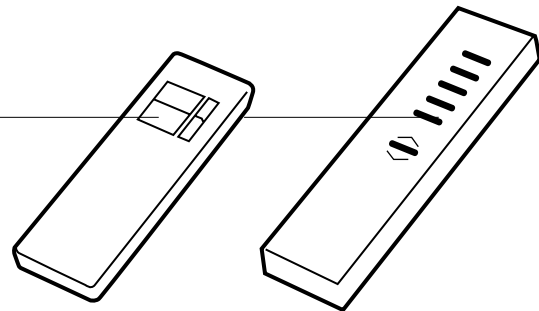
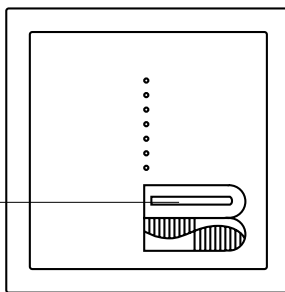
USE WITH LEARNABLE REMOTES

Telume remote controls are compatible with many learnable remote controls. Use a single remote to control your TV, VCR, stereo system, and lighting.

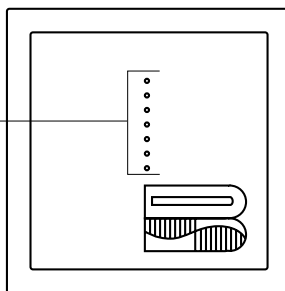
DELAYED FADE-TO-OFF FEATURE

User selectable (up to 70 second) fade-to-off for a convenient exit from your room

Step 1: Press and hold dimmer tapswitch OR remote control OFF button.



Step 2: First LED indicates a 10 second fade-to-off. Each additional LED represents a 10 second delay before lights begin fade-to-off.






telume™ Controls



Description	Maximum Capacity	Model #
-------------	------------------	---------

MULTI-LOCATION

Dimmers




 <i>Incandescent</i> Single pole/Multi-location	500W 	TM-500-
---	--	---------

 *Magnetic Low Voltage & Incandescent*
FOR USE ONLY WITH PRIMARY SIDE, THERMALLY PROTECTED, MAGNETIC LOW-VOLTAGE TRANSFORMERS AND INCANDESCENT LAMPS.


Single pole/Multi-location	500VA 	TM-MLV500-
	500W 	

Note: Magnetic loads must account for transformer efficiency. Typical magnetic low-voltage transformers are at least 80% efficient. Unless specific transformer efficiencies are known, Lutron recommends a limit of 400W of lamps on a 500VA dimmer.

Note: For magnetic low-voltage transformers without primary side thermal protection, use an NGRX-PB with a TM-PB- listed below.

 <i>Electronic Low Voltage</i> Single pole/Multi-location	500W 	TM-ELV500-
	400W 	

Note: Telume electronic low-voltage dimmers are designed to operate on a wide variety of ELV transformers. For an updated list of the compatible transformers please visit www.lutron.com/telume/ELV.

 *Power Booster Control*
REQUIRES USE OF A POWER BOOSTER NGRX-PB FOR INCANDESCENT OR MAGNETIC LOW-VOLTAGE LOADS

Single pole/Multi-location	2 NGRX-PB	TM-PB-
----------------------------	-----------	--------



 *Interface Control*
REQUIRES USE OF AN ELVI INTERFACE NGRX-ELVI FOR ELECTRONIC LOW-VOLTAGE LOADS OR A 10 VOLT INTERFACE GRX-TVI FOR 0-10 VOLT DIMMABLE FLUORESCENT LOADS


Single pole/Multi-location	2 NGRX-ELVI-5 GRX-TVI	TM-CONV-
----------------------------	-----------------------	----------



Description	Maximum Capacity	Model #
-------------	------------------	---------

IR RECEIVER

Dimmer with IR Receiver




 <i>Incandescent</i> Single pole/Multi-location	500W 	TIR-500-
---	--	----------

 *Magnetic Low Voltage & Incandescent*
FOR USE ONLY WITH PRIMARY SIDE, THERMALLY PROTECTED, MAGNETIC LOW-VOLTAGE TRANSFORMERS AND INCANDESCENT LAMPS.


Single pole/Multi-location	500VA 	TIR-MLV500-
	500W 	

Note: Magnetic loads must account for transformer efficiency. Typical magnetic low-voltage transformers are at least 80% efficient. Unless specific transformer efficiencies are known, Lutron recommends a limit of 400W of lamps on a 500VA dimmer.


Note: For magnetic low-voltage transformers without primary side thermal protection, use an NGRX-PB with a TIR-PB- listed below.

 <i>Electronic Low Voltage</i> Single pole/Multi-location	500W 	TIR-ELV500-
	400W 	

Note: Telume electronic low-voltage dimmers are designed to operate on a wide variety of ELV transformers. For an updated list of the compatible transformers please visit www.lutron.com/telume/ELV.


 *Power Booster Control*
REQUIRES USE OF A POWER BOOSTER NGRX-PB FOR INCANDESCENT OR MAGNETIC LOW-VOLTAGE LOADS

Single pole/Multi-location	2 NGRX-PB	TIR-PB-
----------------------------	-----------	---------

 *Interface Control*
REQUIRES USE OF AN ELVI INTERFACE NGRX-ELVI FOR ELECTRONIC LOW-VOLTAGE LOADS OR A 10 VOLT INTERFACE GRX-TVI FOR 0-10 VOLT DIMMABLE FLUORESCENT LOADS

Single pole/Multi-location	2 NGRX-ELVI-5 GRX-TVI	TIR-CONV-
----------------------------	-----------------------	-----------

Accessory Dimmer

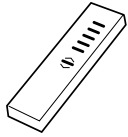
 <i>Extension Units</i> Multi-location	TAD-
--	------

Note: Use up to 9 TAD- with one TM-, or TIR- dimmer. Maximum wire length between end controls is 50m.

telume™ Controls

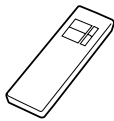
Description	Maximum Capacity	Model #
-------------	------------------	---------

REMOTE CONTROLS



4-Scene Infrared Hand-Held Remote Control ¹

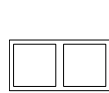
4-Scene TIR-4IT-RP
 Note: Recalls preset light levels for four scenes plus off and fine tuning of light levels (scenes dependent on dimmer settings).
 Range is 16m (52') line of sight to receiver.



Favourite Scene™ Infrared Hand-Held Remote Control ¹

Favourite Scene TIR-FSIT-RP
 Note: Recalls preset light levels for one scene plus off and fine tuning of light levels.
 Range is 12m (40') line of sight to receiver.

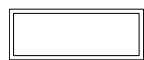
MULTI-GANG FRAMES



86mm Spacing
 Two-Gang Frame TF-2G-



71mm Spacing
 Dual-Gang Frame TF-DG-



Triple-Gang Frame TF-TG-

Note: Available in gloss finishes only.

HARDWARE



Claw Kit
 Screwless backbox mounting kit TM-CLAW

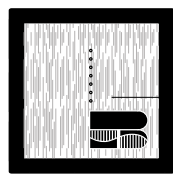
STANDARD COLOURS/ FINISHES

Add colour/finish suffix to model number to order.

Example: TM-500-**WH** (White)

Gloss		Metals	
WH	White	BB	Bright Brass
BL	Black	SB	Satin Brass
		BC	Bright Chrome
		SS	Stainless Steel

MIX-N-MATCH COLOURS/ FINISHES



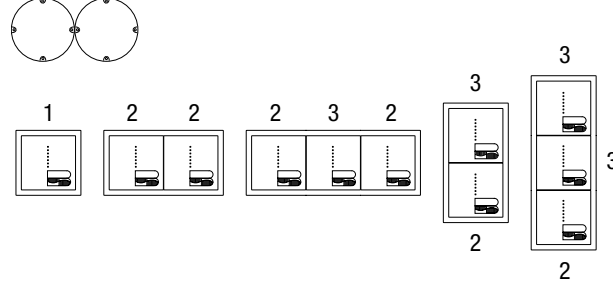
To order a frame colour different from the face, add a second colour following the first.

Example: TM-500-**SSBL**
 (Stainless Steel face with Black frame)

Note: Metal faces not available with white frame

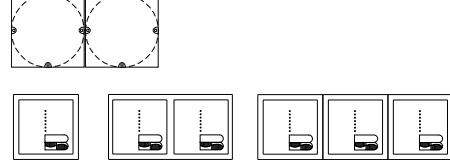
DERATING

71mm centre-to-centre spacing



Type of Dimmer	Dimmer Position		
	1	2	3
Incandescent Dimmer	500W	400W	300W
Magnetic ² Low-Voltage Dimmer	500VA	400W	300W
Electronic ³ Low-Voltage Dimmer	500W	400W	300W
Power Booster Control	no derating required		
Interface Control	no derating required		
Accessory Dimmer	no derating required		

86mm centre-to-centre spacing



Derating is not required for BS4662 backboxes mounted horizontally with center-to-center distance of 86mm.

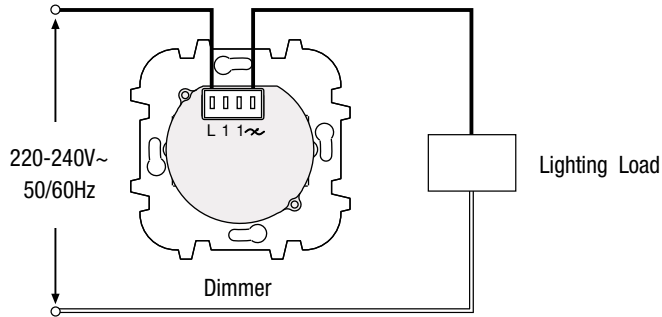
- 1 Infrared modulation frequency is 40kHz. Available in Royal Plum (RP) only.
- 2 Magnetic loads must account for transformer efficiency. Typical magnetic low voltage transformers are at least 80% efficient. Unless specific transformer efficiencies are known, Lutron recommends a limit of 400W of lamps on a 500VA dimmer.
- 3 For use with incandescent loads derate an additional 100W.



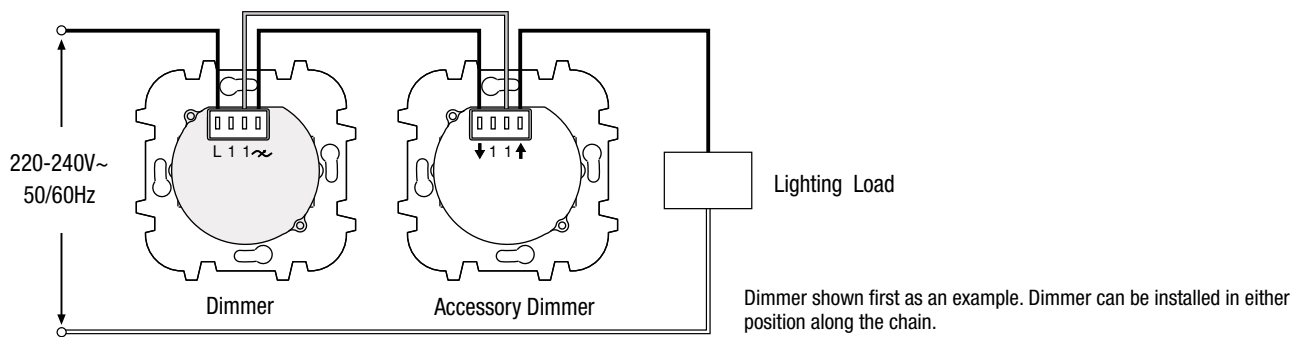
telume™ Controls

WIRING DIAGRAMS

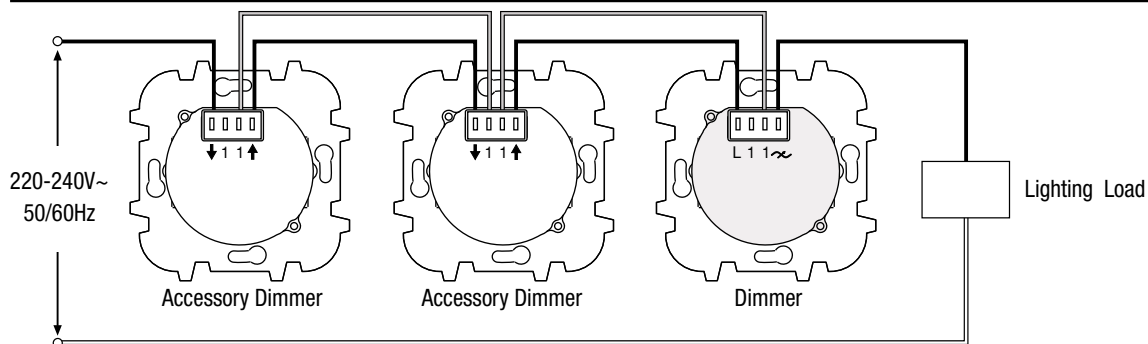
**Wiring Diagram 1
Single-Pole Installation**



**Wiring Diagram 2
2-Way Installation Using an Accessory Dimmer**



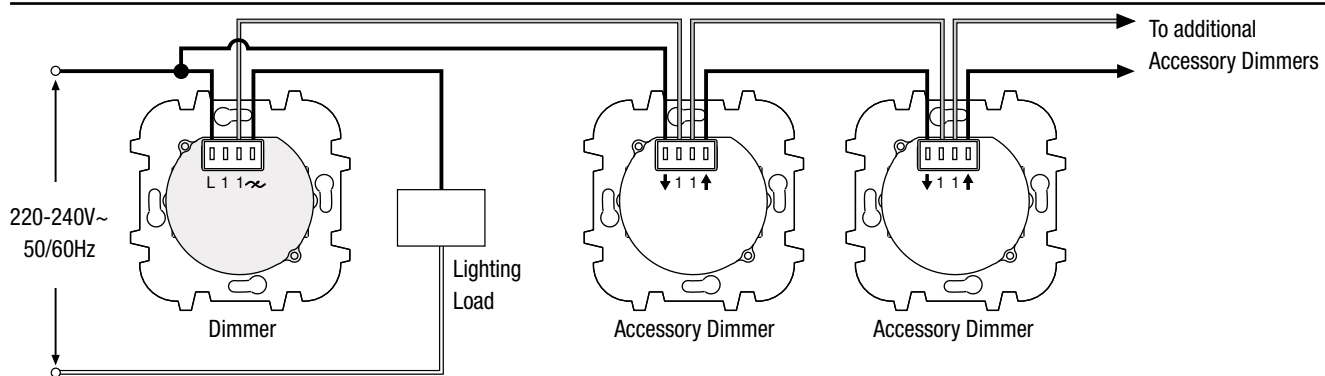
**Wiring Diagram 3
Multi-Location Dimmer Using Accessory Dimmers**



Dimmer shown third as an example. Dimmer can be installed in any position along the chain.

For multi-location dimming use up to nine Accessory Dimmers with only one of the following Telume Dimmers:
TM-500-, TM-MLV500-, TM-ELV500-, TIR-500-, TIR-MLV500-, TIR-ELV500-.

**Wiring Diagram 4
Alternate Multi-Location Wiring**



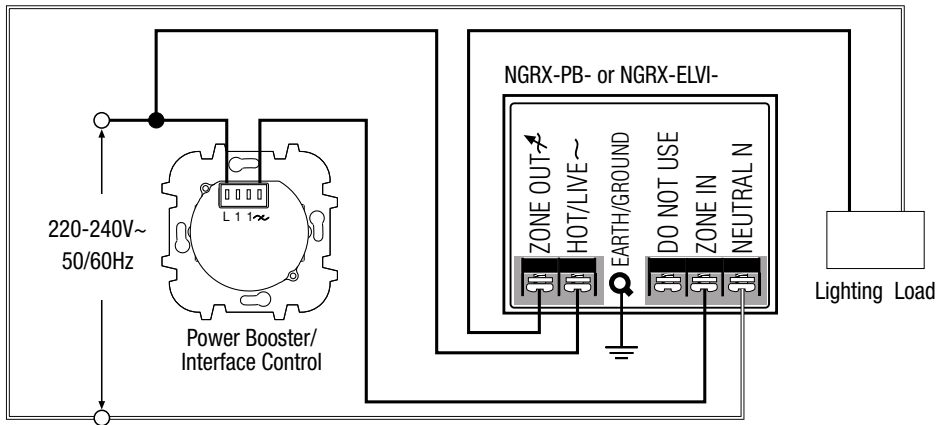
For multi-location dimming use up to nine Accessory Dimmers with only one of the following Telume Dimmers:
TM-500-, TM-MLV500-, TM-ELV500-, TIR-500-, TIR-MLV500-, TIR-ELV500-.



telume™ Controls

WIRING DIAGRAMS

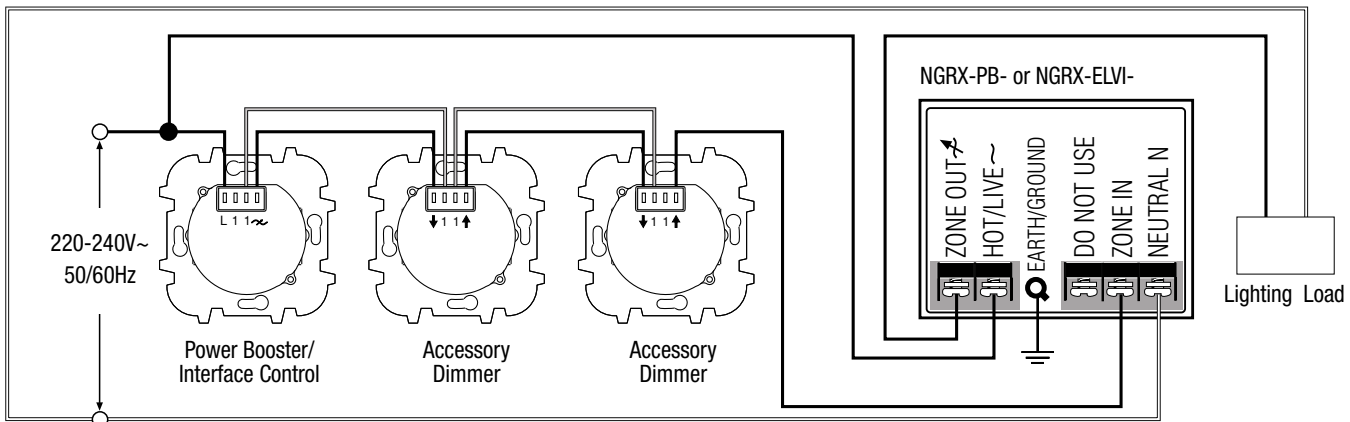
Wiring Diagram 5 Wiring to Power Booster (PB) or Electronic Low-Voltage Interface (ELVI) Single-Pole Installation



Power Booster Control TM-PB/TIR-PB requires use of a Power Booster NGRX-PB for incandescent or magnetic low-voltage loads.

Interface Control TM-CONV/TIR-CONV requires use of an ELVI interface NGRX-ELVI for electronic low-voltage loads or a 10 volt interface GRX-TVI for 0-10 volt dimmable fluorescent loads.

Wiring Diagram 6 Wiring to Power Booster (PB) or Electronic Low-Voltage Interface (ELVI) Multi-Location Installation



Power Booster/Interface Control shown first as an example. Power Booster/Interface Control can be installed in any position along the chain.

For multi-location dimming use up to nine Accessory Dimmers with only one of the following Telume Power Booster/Interface Control: TM-PB-, TM-CONV-, TIR-PB-, TIR-CONV-

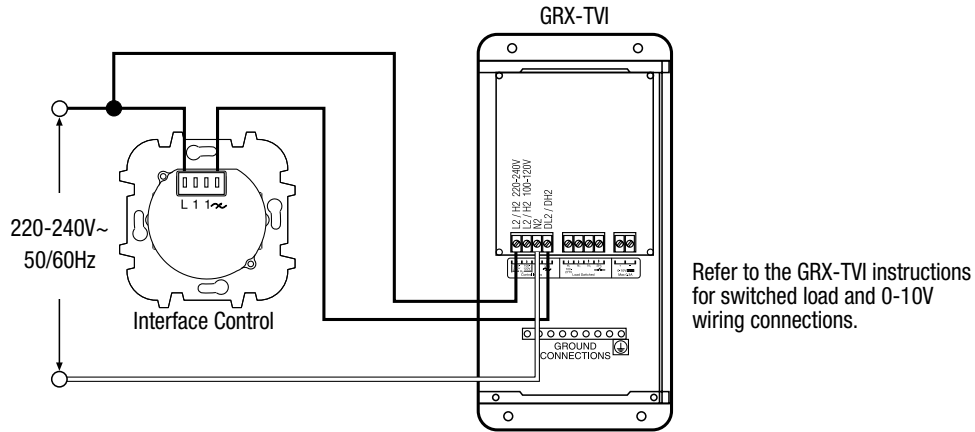
Power Booster Control TM-PB/TIR-PB requires use of a Power Booster NGRX-PB for incandescent or magnetic low-voltage loads.

Interface Control TM-CONV/TIR-CONV requires use of an ELVI interface NGRX-ELVI for electronic low-voltage loads or a 10 volt interface GRX-TVI for 0-10 volt dimmable fluorescent loads.

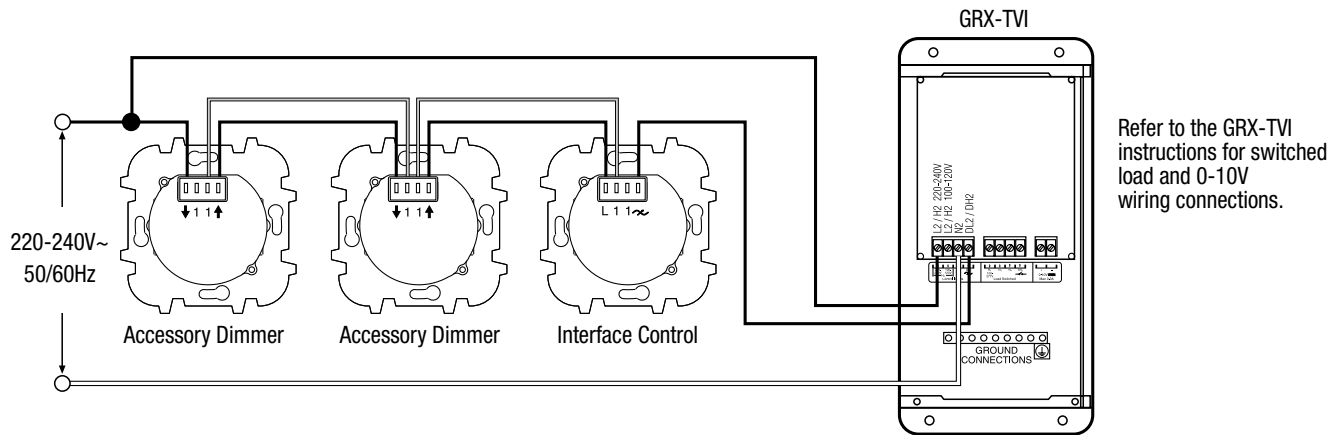
telume™ Controls

WIRING DIAGRAMS

Wiring Diagram 7 Wiring to 0-10V Interface (TVI) Single-Pole Installation



Wiring Diagram 8 Wiring to 0-10V Interface (TVI) Multi-Location Installation



Interface Control shown third as an example. Interface Control can be installed in any position along the chain.
For multi-location dimming use up to nine Accessory Dimmers with only one of the following Telume Interface Control:
TM-CONV-, TIR-CONV-

telume™ Controls

PART 1 - GENERAL

1.01 SUMMARY

- A. Scope: Provide, install, and test all dimmers and related devices as specified herein for the areas indicated on the drawings, specifications, and load schedules.

1.02 REFERENCES

- A. IEC/EN 60669-2-1, IEEE Std. C62.41, ISO 9001, ASTM B117, ASTM D3363, ASTM D4674-89, ASTM E308-99.

1.03 SYSTEM DESCRIPTION AND OPERATION

- A. Permanently installed, wallbox mounted dimmers.

1.04 SUBMITTALS

- A. Submit manufacturer's standard catalog data given all application, wiring, and installation information on basic components. Provide test data and/or samples as required to demonstrate conformance with PART 2 of this specification.

1.05 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of 10 years continuous experience in manufacturing wallbox dimming products.
 B. Dimmers shall be CE marked and comply with IEC/EN 60669-2-1 for each required load (i.e., tungsten and magnetic low-voltage transformers). Manufacturer shall provide a declaration of conformity and test reports demonstrating compliance to EMC requirements from an independent test lab upon request. Universal load-type dimmers shall not be acceptable.
 C. Manufacturer shall maintain ISO 9001 certification and provide a copy of the certificate upon request.

1.06 WARRANTY

- A. All devices shall be covered by a minimum one-year warranty.

PART 2 - EQUIPMENT

2.01 ACCEPTABLE MANUFACTURERS

- A. Lutron Electronics Co., Inc.

2.02 EQUIPMENT

- A. Controls Lutron Telume Style
1. Performance
 - a. Dimmers shall provide full-range, continuously variable control of light intensity.
 - b. Dimmer and accessory dimmer shall have discrete raise and lower buttons positioned directly below a tapswitch. Dimmers shall have seven discrete LEDs to the upper left of the tapswitch. An infrared receiver will be built into the tapswitch on the IR model. Wallcontrols and frames shall have a gloss or metallic finish.
 - c. A single tap of the tapswitch shall raise lights from off to the preset light level, or fade lights to off. The raise/lower fade rate shall travel the dimming range in 3 seconds when buttons are held. A rapid double tap of the tapswitch shall raise lights to full on in 1.5 seconds. Pressing and holding the tapswitch shall activate a delayed fade-to-off function. Fade-to-off shall be delayed in 10-second increments up to 60 seconds, after which lights shall fade-to-off over 10 seconds. Time remaining to off shall be indicated by LED display.
 - d. LEDs shall indicate light level when the dimmer is on. When the dimmer is off, the LEDs shall glow softly as a nightlight with the preset level slightly brighter than any of the other LEDs.
 - e. Raise/lower buttons on the dimmers and accessory dimmers shall increase or decrease the light level. Dimmer shall incorporate 2 preset modes: last light level and protected preset. Protected preset is activated by first setting the desired light level, then pushing the tapswitch 4 times. Selection between the modes shall be accomplished by neither removing the device from the wall nor using tools.
 - f. Raise/lower buttons shall be able to raise the lights from off to low-end and up, and shall lower the lights to low-end, not to off.
 - g. All actuators shall be captured internally to the control.
 - h. Within rated capacity, dimmers shall be available for direct control of incandescent, magnetic low-voltage, and electronic low-voltage loads.
 - i. Dimmers shall be capable of operating at the rated capacity; this includes modified capacities for ganging configurations. Operation at rated capacity shall be possible across the full ambient temperature range, without shortening design lifetime.
 - j. Dimmers shall operate in an ambient temperature range of 0°C (32°F) to 40°C (104°F) without derating.
 - k. To ensure a precise colour match between all plastic parts, colour variation of any gloss finish control or accessory shall not exceed delta E of 1, CIE L*a*b* colour units as defined in ASTM E308-99.
 - l. Metallic finish shall withstand the ASTM B117 salt-spray environment for a minimum of 48-hours, without visible signs of corrosion.
 - m. Dimmers shall have a resettable overload protection that automatically shuts off when dimmer capacity is exceeded. Protection methods that are non-resettable or require the device to be removed from the wall or replacement parts to reset shall not be acceptable.
 - n. Dimmers shall be designed to withstand a short, as detailed in IEC/EN 60699-2-1 abnormal conditions, between dimmed live and either neutral or earth without damage.
 - o. Dimmers shall meet IEEE Std. C62.41, tested to withstand lightning voltage surges of up to 6000V and current surges of up to 200A without damage.
 - p. Dimmer shall use no-coil technology for acoustically silent dimmer operation.
 - q. Dimmers shall incorporate power-failure memory. Should power be interrupted and subsequently returned, the lights will come back on to the same levels set prior to the power interruption. Restoration to some other default level is not acceptable.
 - r. Dimmers shall not be susceptible to damage or loss of memory due to static discharge experienced during normal use.
 - s. Dimmers shall minimize effects of changing line frequency.
 - t. Dimmers shall maintain constant phase angle in the presence of AC voltage fluctuations to reduce light level variations.
 - u. Dimmer shall wire using conventional mains wiring. Accessory dimmers shall wire using conventional 2-way and intermediate wire runs. Dimmers or Accessory Dimmers which require a neutral shall not be acceptable.
 - v. Dimmers shall have multigang alignment tabs for quick and easy installation.
 - w. Mounting claws shall be manufactured from rust resistant stainless steel so as to comply with IEC/EN 60 669-2-1, resistance to rusting.
 - x. Contractors shall install all backboxes with a minimum wallbox depth of 25mm.
 - y. Dimmer shall fade on smoothly without a flash.

telume™ Controls

2. System Operation
 - a. All dimmers shall operate individually, by manual actuation. Dimmers shall be available with or without IR receivers.
 - b. Dimmers with IR receivers shall operate as part of the system from IR hand-held remote control.
 - c. Preset scenes shall be accessible and programmable via IR hand-held remote control.
 - d. Dimmers with IR receivers shall minimize the effect of overhead lighting on remote control operation.
 3. Incandescent Dimmers
 - a. Provide incandescent dimmers for direct control of up to 500 watts of incandescent or line-voltage halogen load only.
 - b. Dimmers shall have a high-end of no less than 90% of line voltage.
 - c. Dimmer shall be capable of operating in any location of a multi-location installation.
 4. Electronic Low-Voltage (ELV) Transformer Dimmers
 - a. Provide ELV dimmers for direct control of up to 500W of electronic low-voltage load.
 - b. Dimmers shall contain circuitry specifically designed to control the input of electronic (solid state) low-voltage transformers. Dimmers capable of using leading edge phase control shall not be acceptable.
 - c. Manufacturer shall provide a list of ELV transformers for which the dimmer is tested and approved. Dimmers limited to a single transformer source shall not be acceptable.
 - d. Dimmers shall have a high-end of no less than 90% of line voltage.
 - e. Dimmer shall be capable of operating in any location of a multi-location installation.
 - f. Dimmers shall be designed to withstand intermittent transformer conduction.
 5. Magnetic Low-Voltage (MLV) Transformer Dimmers
 - a. Provide MLV dimmers for direct control of up to 500VA of primary side, thermally protected, magnetic low-voltage transformers.
 - b. All dimmed magnetic low-voltage transformers require a thermal cutout for the primary windings.
 - c. Dimmers shall contain circuitry specifically designed to control and provide a symmetrical AC waveform to the input of magnetic low-voltage transformers per IEC/EN 60669-2-1 Section 13.
 - d. Dimmers shall have a high-end of no less than 90% of line voltage.
 - e. Dimmer shall be capable of operating in any location of a multi-location installation.
 - f. Dimmers shall be designed to withstand intermittent transformer conduction.
 6. Power Booster/Interface Controls for high power loads
 - a. Dimmers shall be available for Power Boosters and Interfaces which control incandescent, magnetic low voltage, electronic low voltage, and 0-10 volt dimmed fluorescent ballasts.
 - b. Power Boosters/Interfaces shall be remotely mounted.
 7. Accessory Dimmers
 - a. Aesthetically coordinated accessory dimmers shall provide multi-location control. All tapswitch and raise/lower functions shall operate from each accessory dimmer. Up to 9 accessory dimmers may be used with a Telume dimmer. All dimmers shall be capable of setting delayed fade-to-off.
 - b. Accessory dimmers shall not have LEDs nor an infrared receiver.
 8. Infrared Transmitters
 - a. Favourite Scene hand-held remote control shall be capable of activating the dimmer from up to 12m (40') line of sight, directly in front of dimmer.
 - b. Favourite Scene hand-held remote control shall provide access to one preset, user-selected scene, and shall provide separate raise, lower and off. Raise and lower will allow full-range continuously variable control of light intensity.
 - c. 4-Scene hand-held remote control shall be capable of activating the dimmer from up to 16m (52') line of sight, directly in front of dimmer.
 - d. 4-Scene hand-held remote control shall provide access and programming to four user-selected preset scenes, and shall provide separate off and master raise/lower. Master raise/lower will allow full-range continuously variable control of light intensity.
 - e. All hand-held remote control shall provide access to delayed fade-to-off function.
- B. Wallframes**
1. Performance
 - a. Wallframes shall attach to the basic components without using exposed hardware or screws.
 - b. Multigang wallframes shall be available for both 71 and 86 mm center to center mounting.
 - c. Colour variation of any gloss finish wallframe shall not exceed delta E of 1, CIE L*a*b* colour units.
 - d. Metallic finish shall withstand the ASTM B117 salt-spray environment for a minimum of 48-hours, without visible signs of corrosion.
 - e. Visible parts of dimmers, wallframes, infrared remotes, and accessories shall exhibit ultraviolet stability when tested with multiple actinic light sources as defined in ASTM D4674-89.
 - f. Gloss wallframes shall be manufactured from durable polycarbonate plastic.

2.03 SOURCE QUALITY CONTROL

- A. All dimming controls shall be 100% function tested at the time of manufacture. Statistical sampling shall not be acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Contractor shall furnish all devices (dimmers and accessories), labour, and other services necessary for the proper installation of the devices as indicated on the drawings and specified herein.
- B. Contractor shall be responsible for properly derating dimmer capacity if ganged.
- C. Devices shall be installed utilising manufacturer's recommended application, wiring, and installation instructions.

3.02 FIELD QUALITY CONTROL

- A. Twenty-four hours a day, seven days a week, global customer service and technical hotline available.
- B. Supplemental information shall be provided by manufacturer's Internet site.



telume™ Controls





telume™ Controls



World Headquarters

Lutron Electronics Co., Inc.
7200 Suter Road
Coopersburg, PA 18036-
1299
U.S.A.

Tel: +1-610-282-3800
Fax: +1-610-282-1243

Great Britain

Lutron EA Ltd.
Lutron House
6 Sovereign Close
London E1W 3JF
UK

Tel: +44 (0) 207-702-0657
Fax: +44 (0) 207-
480-6899

Spain

Madrid

Tel: +34-91-567-8479
Fax: +34-91-567-8478

Barcelona

Tel: +34-93-496-5742
Fax: +34-93-496-5750

France

Tel: +33-(0)1-44-70-71-86
Fax: +33-(0)1-44-70-70-47

Germany

Tel: +49-309-710-4590
Fax: +49-309-710-4591

Japan

Tel: +81-3-5405-7333
Fax: +81-3-5405-7496

Hong Kong

Tel: +852-2104-7733
Fax: +852-2104-7633

Singapore

Tel: +65-220-4666
Fax: +65-220-4333



PN 367-059/EA 4/02

Lutron EA Ltd.

6 Sovereign Close • London E1W 3JF • 44-207-702-0657

