

The contractor's choice in rugged, linear slide dimmers.

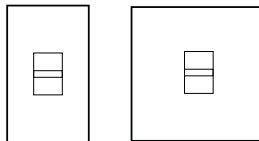


Select light level with slider; slide down to off

**Slide-to-off Dimmer**

### CONTROLS AND ACCESSORIES

#### Slide-to-Off Dimmers

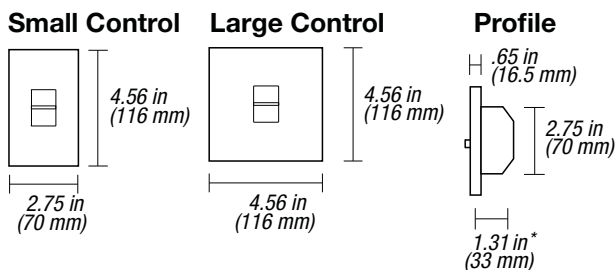


(Small Control) (Large Control)

### PRODUCT FAMILY FEATURES

- The original smooth linear-slide dimmer
- Over 25 years of proven reliability in the most demanding applications
- Exclusive heat sink design maximizes convection cooling to maximize reliability
- Full family of products for most lighting sources
- Heavy duty components for surge protection and long product life
- Precise color matching across all controls

### DIMENSIONS



\*some models up to 1.71 in (43.4 mm)

### DIMMERS

Description	Maximum Capacity <sup>1</sup>	Model #
<b>Incandescent</b>		
<i>Slide-to-Off Dimmers</i>		
<b>SMALL CONTROL</b>		
Single pole	600 W	N-600-
Single pole	1000 W	N-1000-
<b>LARGE CONTROL</b>		
Single pole	1500 W	N-1500-
Single pole	2000 W	N-2000-

### SPECIFICATION SERIES STANDARD FEATURES



- Square Law Dimming
- Power-failure memory
- Captive linear slider
- Electrostatic discharge tested
- Heavy-duty components for surge protection and long product life
- Voltage compensation
- Superior RFI suppression
- Accessible air-gap switch
- Precise color matching

Lutron controls are rated at 120VAC, 60Hz unless otherwise noted.

Description	Maximum Capacity <sup>1</sup>	Model #
-------------	-------------------------------	---------

## DIMMERS



### Magnetic Low Voltage, Neon/Cold Cathode



#### Slide-to-Off Dimmers

##### SMALL CONTROL

Single pole 600 VA (450 W <sup>2</sup>) NLV-600-



##### LARGE CONTROL

Single pole 1000 VA (800 W <sup>2</sup>) NLV-1000-  
Single pole 1500 VA (1200 W <sup>2</sup>) NLV-1500-

Note: For neon/cold cathode dimming consult Lutron Technical Support "Application Note #15".

#### Preset Dimmers



##### SMALL CONTROL

Single pole/3-way 600 VA (450 W <sup>2</sup>) NLV-603P-  
Single pole/3-way 1000 VA (800 W <sup>2</sup>) NLV-1003P-



##### LARGE CONTROL

Single pole/3-way 1500 VA (1200 W <sup>2</sup>) NLV-1503P-  
Single pole/3-way 2000 VA (1600 W <sup>2</sup>) NLV-2003P-



### Fluorescent Dimming with Hi-lume® and Eco-10™ (ECO-Series) Electronic Ballasts

#### Slide-to-Off Dimmers <sup>3</sup>



##### SMALL CONTROL

Single pole, 120 V 16 A NF-10-



##### LARGE CONTROL

Single pole, 277 V 8 A NF-10-277-

Note: Use with Lutron Hi-lume or Eco-10 (ECO-Series) line voltage control Electronic Dimming Ballasts only.

#### Preset Dimmers <sup>3</sup>



##### SMALL CONTROL

Single pole/3-way, 120 V 8 A NF-103P-  
Single pole/3-way, 277 V 6 A NF-103P-277-

Note: Use with Lutron Hi-lume or Eco-10 (ECO-Series) line voltage control Electronic Dimming Ballasts only.

<sup>1</sup> For capacities in multigang installations see derating, page 4.

<sup>2</sup> Actual lamp wattage.

<sup>3</sup> No derating required if ganged.

Description	Maximum Capacity <sup>1</sup>	Model #
-------------	-------------------------------	---------

## DIMMERS



### Fluorescent Dimming with Eco-10 (TVE-Series) 0-10V<sup>===</sup> Electronic Ballasts

#### Slide-to-Off Dimmers <sup>3</sup>



##### SMALL CONTROL

Single pole, 0-10 V<sup>===</sup> 60 ballasts/16 A NFTV-  
Use with PP-20 or PP-120H/277H



Note: Use with Lutron Eco-10 (TVE-Series) 0-10V<sup>===</sup> Electronic Dimming Ballasts only. Requires use of an external relay to switch ballast power on/off, Lutron model number PP-20 or PP-120H/277H.



### Fluorescent Dimming with Tu-Wire™ Electronic Ballasts

#### Slide-to-Off Dimmers



##### SMALL CONTROL

Single pole, 120 V 5 A NFTU-5A-

Note: Use with Lutron Tu-Wire line voltage control Electronic Dimming Ballasts only.



### Fluorescent Dimming with Magnetic Ballasts

#### Slide-to-Off Dimmers <sup>3</sup>



##### SMALL CONTROL

Single pole, 120 V 10 lamps NF-10-



##### LARGE CONTROL

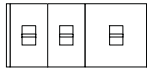
Single pole, 120 V 20 lamps NF-20-  
Single pole, 120 V 30 lamps NF-30-  
Single pole, 277 V 10 lamps NF-10-277-  
Single pole, 277 V 20 lamps NF-20-277-

Note: Magnetic dimming ballasts generally cannot be effectively dimmed below 20% low end. For best performance and reliability, Lutron strongly recommends using Hi-lume or Eco-10 electronic dimming ballasts.

## HI-POWER 2•4•6™ DIMMING MODULES

To increase load capacity up to 30,000 W/VA in most popular sources, use one N-600- and add up to five dimming modules. Cannot be used with 0-10 V<sup>===</sup> ballast.

## DERATING/MAXIMUM CAPACITY FOR MULTIGANGING



No side sections removed  
(Full Capacity)

One side section removed  
(End Units)

Two side sections removed  
(Middle Unit)

### Incandescent Dimmers

600 W	500 W	300 W
1000 W	900 W	700 W
1500 W	1250 W	1000 W
2000 W	1800 W	1500 W

### Electronic Low Voltage <sup>1</sup>

450 W	400 W	350 W
-------	-------	-------

### Magnetic Low Voltage

600 VA (450 W <sup>2</sup> )	500 VA (400 W <sup>2</sup> )	300 VA (250 W <sup>2</sup> )
1000 VA (800 W <sup>2</sup> )	900 VA (750 W <sup>2</sup> )	700 VA (500 W <sup>2</sup> )
1500 VA (1200 W <sup>2</sup> )	1250 VA (1000 W <sup>2</sup> )	1000 VA (800 W <sup>2</sup> )
2000 VA (1600 W <sup>2</sup> )	1800 VA (1500 W <sup>2</sup> )	1500 VA (1200 W <sup>2</sup> )

### Fluorescent

Nova controls may be used with either Lutron Hi-lume or Eco-10 magnetic dimming ballasts. Controls used with electronic dimming ballasts do not require derating. Reference the Lutron Residential Lighting Control Catalog.

<sup>1</sup> Requires 40 W minimum load.

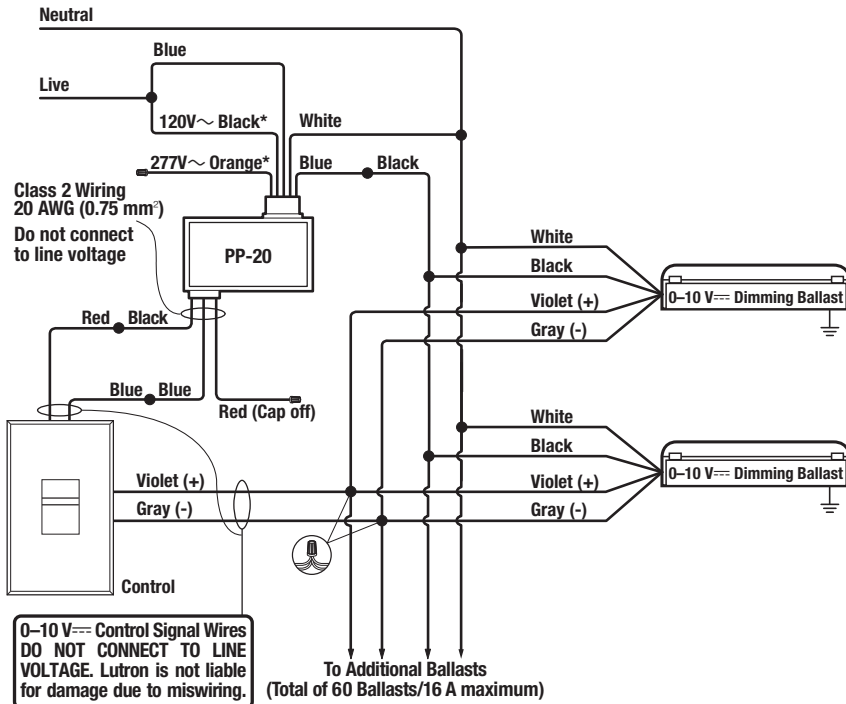
<sup>2</sup> Actual lamp wattage.

## WIRING DIAGRAMS

### Wiring Diagram 9 Dimming with ON/OFF Control Using PP-20 Relay

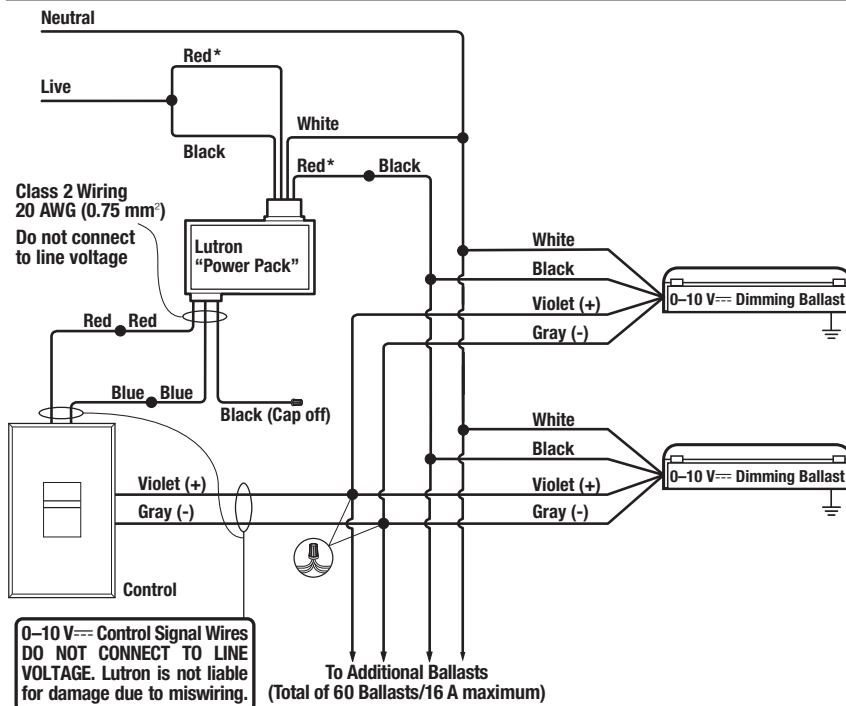
Model #

NFTV-



\* When wiring for 120 V~, cap off orange wire. When wiring for 277 V~, cap off black wire.

### Wiring Diagram 10 Dimming with ON/OFF Control Using PP-120H/230H/277H/347H



\* Red wires are interchangeable—either may be connected to line side or load side

## NOVA CONTROLS AND ACCESSORIES

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Scope: Provide, install and test all switches, dimmers and related devices as specified herein for the areas indicated on the drawings, specifications, and load schedules.
- B. Related Sections: Section 16580 (Ballasts), Section 16570 (Dimming Systems).

#### 1.02 REFERENCES

- A. UL 1472, CSA, NOM, ISO 9001

#### 1.03 SYSTEM DESCRIPTION AND OPERATION

- A. Permanently installed, wallbox mounted switches and dimmers
- B. Permanently installed, wallbox mounted fan-speed controls
- C. Permanently installed, wallbox mounted receptacles
- D. Permanently installed, wallbox mounted data, voice and cable jacks
- E. Screwless, seamless wallplates

#### 1.04 SUBMITTALS

- A. Submit manufacturer's standard catalog data giving all application, wiring, and installation information on basic components and wallplate kits. 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 UL listed, CSA and NOM approved specifically for each required load (i.e., tungsten, electronic low voltage transformer, magnetic low voltage transformer, and fluorescent). Manufacturer shall provide file card or certificate 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.
- B. Unless otherwise noted, all basic components (dimmer, receptacle, telephone jack and cable TV jack) and wallplate kits shall be provided by one manufacturer.

#### 2.02 EQUIPMENT

- A. Controls Lutron Nova Style
  - 1. Performance
    - a. Dimmers shall provide full-range, continuously variable control of light intensity.
    - b. Controls shall fit a 1 inch wide, 1.5 inch tall wallplate opening with a vertical linear-slide. Unless otherwise specified, controls shall have a matte finish.

- c. Controls shall provide a vertical slider allowing the light level to be set by the user. "Slide-to-off" controls shall use the vertical linear-slide to turn the control on and off. "Preset" dimmers shall provide the on/off function independent of the dimmer slider position. This preset function shall be provided as a push on/push off switch integral to the slider. For preset dimmers, when the lights are on, the slider shall change the light level and when the lights are off, the slider shall preselect the light level the lights will turn on to.
- d. Control on/off function must be accomplished utilizing a mechanical air-gap switch to totally disconnect power from the load during "off" condition, no leakage current shall be present at the fixture(s).
- e. Slider shall be captured behind wallplate.
- f. Preset dimmers shall be capable of multi-location on and mechanical air-gap off using standard 3-way and 4-way switches.
- g. Controls shall be able to have their visible plastic parts replaced, for color changes in the field, without removing the body of the control from the wall and with requiring special tools.
- h. Within rated capacity, dimmers shall be available for direct control of incandescent, electronic low voltage, magnetic low voltage, neon cold cathode, and fluorescent.
- i. Controls shall be capable of operating at the rated capacity; this includes modified capacities for ganging configurations which require the removal of fins. Operation at rated capacity shall be possible across the full ambient temperature range, without shortening design lifetime.
- j. Dimmer shall provide smooth and continuous Square Law dimming curve, for the full slider travel, on their rated load per The IESNA Lighting Handbook, 9th edition, p. 27-4.
- k. Controls shall meet the applicable requirements of UL 20 and UL 1472 referring to the inclusion of a visible, accessible air-gap off switch and the limited short circuit test.
- l. Controls shall meet ANSI/IEEE Std. C62.41-1980, tested to withstand voltage surges of up to 6000 V and current surges of up to 200 A without damage.
- m. Dimmers shall be designed to reduce interference with radio, audio, and video equipment.
- n. Controls shall incorporate power-failure memory. Should power be interrupted and subsequently returned, the lights or fans will come back on to the same levels set prior to the power interruption. Restoration to some other default level is not acceptable.
- o. Controls shall not be susceptible to damage or loss of memory due to static discharge.
- p. Dimmer shall include voltage compensation to compensate light output for variation in the AC line-voltage. Dimmers in which the light output is not held constant with varying AC line-voltage shall not be acceptable.
- q. Controls shall operate in an ambient temperature range of 0 °C (32 °F) to 40 °C (104 °F).
- r. 3-Way controls shall wire using conventional 3-way and 4-way wire runs.
- s. Contractors shall install all backboxes with a minimum wallbox depth of 2.5 inches.

2. Incandescent Dimmers
  - a. Provide incandescent dimmers for direct control of up to 2000 watts.
  - b. Dimmers shall have a high-end of no less than 95% of line voltage.
  - c. Dimmer shall be capable of operating in either 3-way switch location.
3. Electronic (Solid-State) Low Voltage (ELV) Transformer Dimmers
  - a. Provide ELV dimmers for direct control of up to 450 watts of electronic low voltage load.
  - b. Dimmers shall contain circuitry specifically designed to control the input of electronic (solid state) low voltage transformers. Dimmers using standard phase control shall not be acceptable.
  - c. 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 to reset shall not be acceptable.
  - d. Dimmers shall be designed to withstand a short, per UL 1472 section 5.10, between load hot and either neutral or ground without damage to the dimmer.
  - e. Dimmers shall have a high-end of no less than 90% of line voltage.
4. Magnetic Low Voltage (MLV) Transformer Dimmers
  - a. Provide MLV dimmers for direct control of up to 2000 VA of magnetic low voltage load.
  - b. Dimmers shall contain circuitry specifically designed to control and provide a symmetrical AC waveform to the input of magnetic low voltage transformers per UL1472 section 5.11.
  - c. Dimmers shall not cause a magnetic low voltage transformer to operate above the transformers rated operating current or temperature.
  - d. Dimmers shall have a high-end of no less than 95% of line voltage.
  - e. Dimmer shall be capable of operating in either 3-way switch location.
5. Fluorescent Dimming Ballast Dimmers
  - a. Provide Fluorescent dimmers for direct control of fluorescent dimming ballasts up to the manufacturers specified rating.
  - b. Dimmers shall be designed to operate the following ballasts. Dimmers and ballasts shall be produced by the same manufacturer to ensure proper ballast/control compatibility:
    - 1) Hi-Lume® Architectural Dimming Ballasts (1% 3-wire)
    - 2) Hi-Lume® Compact™ Lamp Dimming Ballasts (5% 3-wire)
    - 3) Eco-10™ Lighting Management Dimming Ballasts (10% 3-wire)
    - 4) Eco-10™ Lighting Management Dimming Ballasts (10% 0-10V===)
    - 5) Tu-Wire™ High Performance Dimming Ballasts (5% 2-wire)
  - c. Dimmers shall be designed to provide full ballast output at high-end.
6. Remote dimming modules for high power loads
  - a. Where lighting loads exceed the full rated capacity of single dimmers, provide a Nova incandescent dimmer driving high power modules. High power module and dimmer shall be from the same manufacturer to ensure compatibility.
  - b. High power modules shall be remotely mounted.
  - c. High power module shall be rated and UL listed for control of incandescent, magnetic low voltage, electronic low voltage, fluorescent, and neon/cold cathode loads in increments of 2000 Watts up to 30,000 Watts.

### 2.03 SOURCE QUALITY CONTROL

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

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. Contractor shall furnish all devices (dimmers, accessories, & wallplate kits), labor 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 derating dimmer capacity if side sections are removed.
- C. Contractor shall run separate neutral wires in 120/208 V~ installations.
- D. Devices shall be installed utilizing manufacturer's recommended application, wiring and installation instructions.
- E. Contractor to provide seamless wallplate covers per specification 2.02 for all devices ganged in a common box. Contractor shall provide barriers within the box where required by code.

### 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.