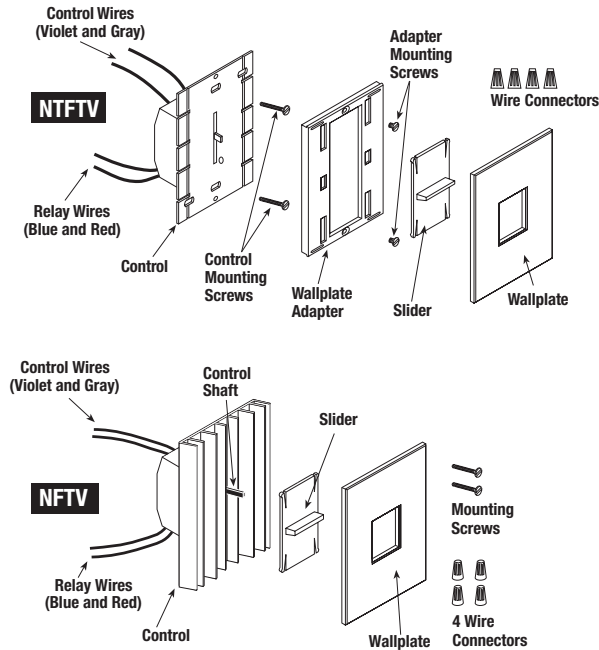


### Package Contents and Parts Identification



### Operation

The Low-Voltage Ballast Control provides dimming control for up to 60 Universal™ and Advance® Electronic Fluorescent Dimming Ballasts. Use this product only as intended with recommended accessories.

### Important Notes Please Read Before Installation

**Wallbox Dimensions:** A single-gang wallbox (3 in high x 2 in wide x 2 1/2 in deep (76 mm high x 51 mm wide x 64 mm deep)) will service all individual controls.

**Wiring Note:** Always turn OFF power before installation. Install in accordance with all national and local electrical codes.

**Lamps Seasoning Requirements:** Some fluorescent lamp manufacturers recommend that new fluorescent lamps be operated at full output (“seasoned”) before they can be dimmed, to render lamp impurities inert, ensuring proper dimming performance and average rated lamp life. Please contact your lamp manufacturer for seasoning requirements.

**Ballasts:** A single Low-Voltage Ballast Control can be used with a maximum of 60 Universal™ and Advance® Electronic Fluorescent Dimming Ballasts.

**Do not** connect this control to line voltage.

**Relays:** If wiring for ON/OFF and dimming, the Low-Voltage Ballast Control **must** be used with the Lutron PP-20, PP-120H, PP-230H, PP-277H, PP-347H or PP-DV Power Packs.

**Compatible Ballasts:** Please refer to [www.lutron.com/advance](http://www.lutron.com/advance) and [www.lutron.com/universal](http://www.lutron.com/universal) for the complete listings of compatible ballasts.

**Ballast Functionality Check:** With power OFF, check new ballast for functionality prior to installation of control by connecting the ballast’s violet and gray wires together at the control. Turn power on. The lights should now be at minimum brightness. With power OFF, disconnect the wires. Turn power ON. The lights should now be at maximum brightness.

**Cleaning Instructions:** Clean dimmer with a *soft damp cloth only*. Do not use any chemical cleaners.

### Pre-Installation

Determine whether this will be a single-gang installation or a multigang installation.

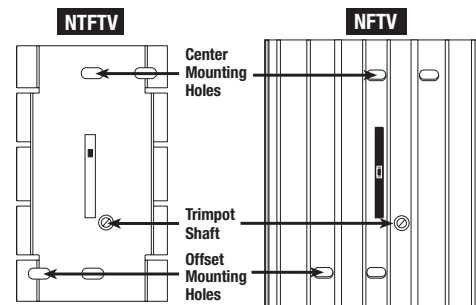
**If a single-gang installation:** Install control as outlined in the “Installation” section below.

**If a multigang installation:** Before proceeding to the “Installation” section, follow the “Multigang Installation” procedure on pages 3-4 of this sheet and refer to the instruction sheet supplied with multigang wallplates.

### Installation

1. TURN POWER OFF to disable the 0-10 V<sup>AC</sup> electronic ballast(s) to be dimmed.
  - WARNING:** Shock hazard. May result in serious injury or death. Turn off power at circuit breaker before installing the control.
2. Remove wallplate and slider from control to prevent surface damage and to access mounting holes. Pull on wallplate at top or bottom edges to snap off plate.
3. Strip wallbox wires to the following lengths:
  - 5/8 in (16 mm) for 16, 18 and 20 AWG (1.5, 1.0 and 0.75 mm<sup>2</sup>) wire
  - 1/2 in (13 mm) for 10, 12 and 14 AWG (6.0, 4.0 and 2.5 mm<sup>2</sup>) wire
4. Wire controls according to the appropriate wiring diagram shown in the “Wiring” section on pages 2-3 of this sheet and on the ballast.
5. Carefully push wires into wallbox allowing for room for the control back cover.
6. Mount control into wallbox using screws provided. Controls must be mounted vertically. See Figure A.

Figure A: Front View - Mounting Control Unit



7. Turn power ON. Pushing slider up should increase light intensity. Pushing slider down should decrease light output to approximately 10% of the maximum light level for 10% dimming ballasts.
8. The maximum light level intensity may be adjusted as follows:
  - a. Push slider to the top-most position (maximum light intensity) and run lamps for 15 minutes to warm lamps.
  - b. Locate tripot adjustment shaft (see Figure A above).
  - c. Maximum light intensity is initially set at the factory to the maximum setting. Use a small screwdriver to turn the tripot screw (inside tripot shaft) clockwise to decrease light level and counterclockwise to increase light level.
9. **NTFTV Installation:** Mount wallplate adapter plate with screws provided. Replace slider and snap on wallplate.  
**NFTV Installation:** Replace slider, then snap faceplate onto dimmer by pressing firmly at the top, center, and bottom tabs.

## Wiring

The total low-voltage wiring for this control should not exceed 500 ft (152.4 m) with 20 AWG (0.75 mm<sup>2</sup>). For long low-voltage wiring runs, or where excessive electrical noise exists, shielded cable or conduit is required. A maximum quantity of 60 electronic controllable ballasts can be connected to one control. Install in accordance with all local and national electrical codes.

**NOTICE:** LUTRON IS NOT LIABLE FOR DAMAGE DUE TO MISWIRING 0-10 V $\rightleftharpoons$  CONTROL SIGNAL WIRES WITH LINE VOLTAGE.

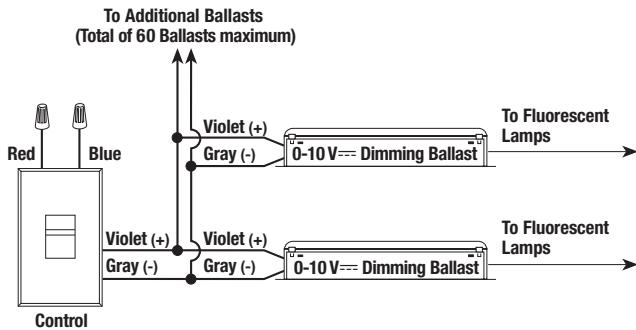
DO NOT RUN CLASS 2 WIRES AND LINE VOLTAGE CONDUCTORS TOGETHER IN THE SAME CONDUIT.

The Low-Voltage Ballast Control can be wired two ways: Dimming Only or ON/OFF and Dimming. Use the appropriate wiring diagram.

## Dimming Only (No ON/OFF Control)

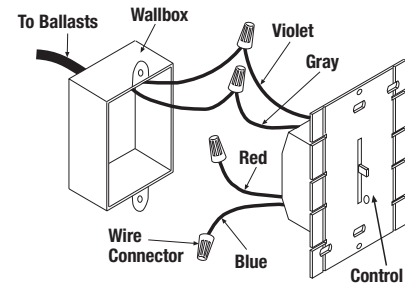
Connect the control as shown in Figure B. Changing slider position will alter light intensity from the ballast's maximum light intensity to minimum but not allow lights to be switched off.

**Figure B:**  
Dimming Only Wiring

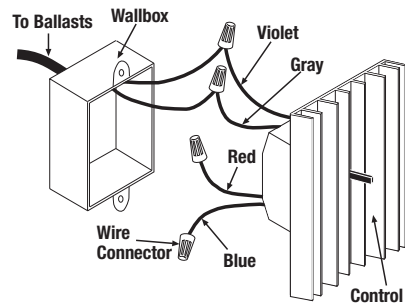


### Dimming Only Wallbox Wiring: NTFTV

**NTFTV**



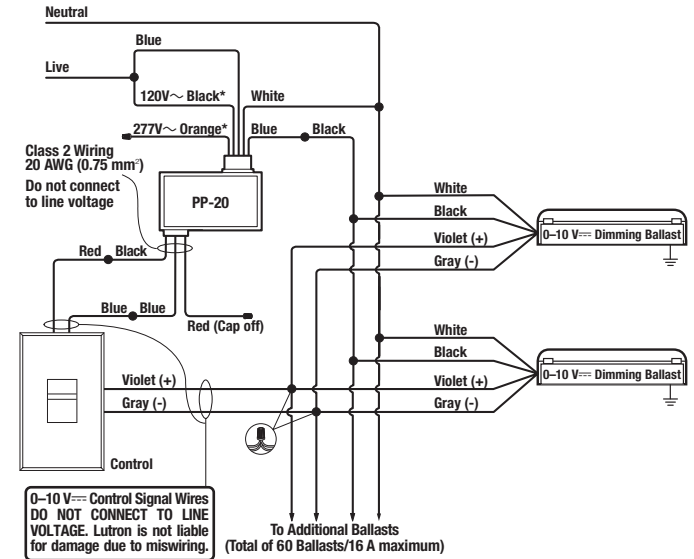
**NFTV**



## Dimming With ON/OFF Control

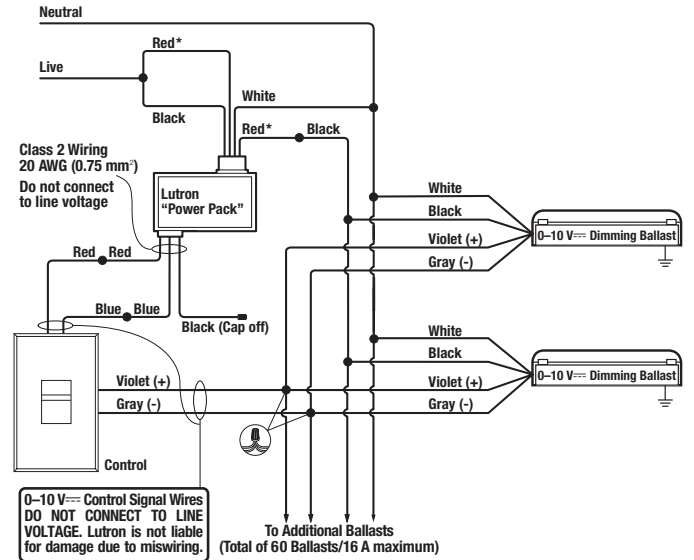
Use only Lutron PP-20, PP-120H, PP-230H, PP-277H, PP-374H or PP-DV Power Packs for AC line switching. Connect the control as shown in Figure C1 or C2 based on the Power Pack model used. Do not install the Power Pack in the same wallbox as the Low-Voltage Ballast Control. Refer to the wiring sheet included with the Power Pack for more information.

**Figure C1: Dimming With ON/OFF Control Wiring Diagram Using PP-20 Only**



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

**Figure C2: Dimming With ON/OFF Control Wiring Diagram Using PP-120H, PP-230H, PP-277H, PP-374H and PP-DV Only**



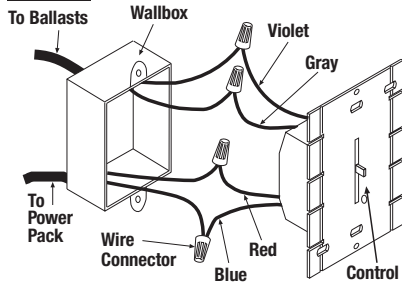
\* Red wires are interchangeable—either may be connected to line side or load side

(See next page for Dimming With ON/OFF Control Wallbox Wiring)

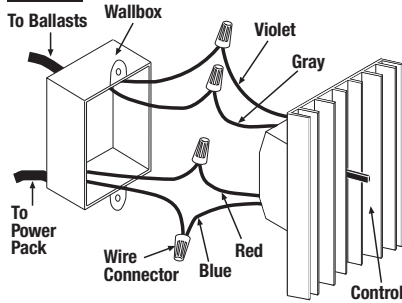
## Dimming With ON/OFF Control (continued)

### Dimming With ON/OFF Wallbox Wiring

**NTFTV**



**NTFTV**



## Multigang Installation

In multigang installations several Low-Voltage Ballast Controls can be grouped horizontally in one ganging wallbox or in a series of connected wallboxes. Multigang wallplates are available to simplify and improve the appearance of this installation. For retrofit installations, the side sections can be removed to fit existing wallboxes (refer to the section “Multigang Installations” – “Side Sections Removed” on page 4).

## No Side Sections Removed

1. Determine the number of wallboxes necessary by using the Wallbox Requirement Chart (Table A).

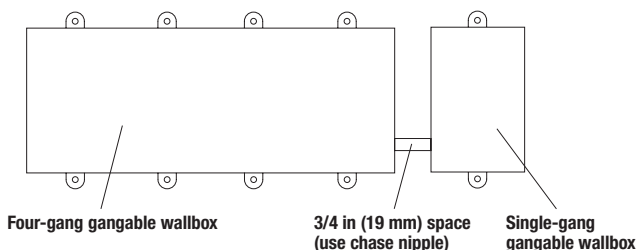
**Table A: Wallbox Requirement Chart**  
**No Side Sections Removed**

	Number of Controls					
	1	2	3	4	5	6
Wallboxes	1	1+1*	4	4+1*	7	7+1*

\* See Item 2

2. When ganging, use 3 in x 2 in (76 mm x 51 mm) gangable wallboxes. **Do not use plaster rings or gangbox covers.** For an EVEN number of controls, one wallbox will be 3/4 in (19 mm) apart from the other wallbox(es) to provide necessary space for the wallplate(s). For example, when ganging four controls, three would be in the four connected wallboxes and one would be in a wallbox separated by 3/4 in (19 mm). See Figure D.

**Figure D: Wallbox Positioning Four-Ganged Controls**

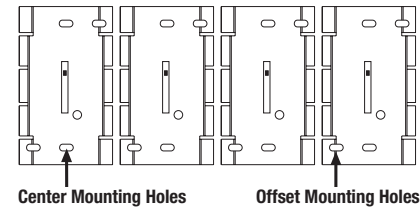


## No Side Sections Removed (continued)

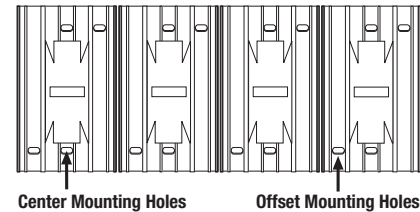
3. When mounting controls in wallboxes, use center mounting holes as required for first control, then use offset mounting holes as required for proper alignment. See Figure E. Allow 1/32 in (0.08 mm) between controls for ease in attaching wallplates.

**Figure E: Four-Ganged Installation**  
**No Side Sections Removed**

**NTFTV**



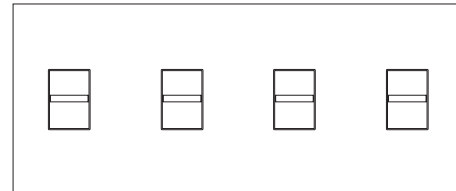
**NTFTV**



4. **NTFTV:** Install multigang wallplate adaptor and replace sliders, snap on faceplate. See Figure F.

**NTFTV:** Replace sliders and install multigang faceplate, adjust up and down for a snug fit. See Figure F.

**Figure F: Multiganged Control With Wallplate**  
**No Side Sections Removed**

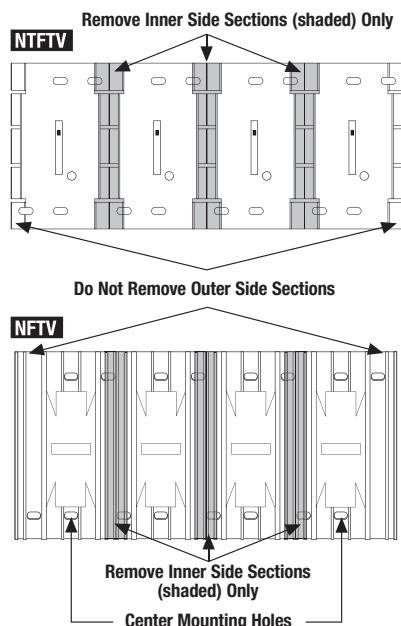


*Multigang wallplates, are available in a variety of colors to beautify and simplify your installation.*

## Side Sections Removed

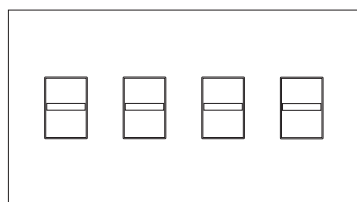
1. One gangable wallbox is needed for each control in the multiganged control. Individually connect wallboxes or use a pre-assembled multigang wallbox.
2. Remove INNER side sections of control only. Use pliers, bend side sections down as far as you can and then back to their original positions. Side sections will break off.  
**NOTE:** DO NOT REMOVE OUTER SIDE SECTIONS OF THE TWO CONTROLS WHICH ARE ON THE ENDS OF THE GANG.
3. When mounting, use center mounting holes as required for proper alignment. See Figure G.

**Figure G: Front View – Four-Ganged Installation  
Side Sections Removed**



4. **NFTV:** Install multigang wallplate adaptor and replace sliders, snap on faceplate. See Figure H.  
**NFTV:** Replace sliders and install multigang faceplate, adjust up and down for a snug fit. See Figure H.

**Figure H: Multiganged Unit With Wallplate  
Side Sections Removed**



Multigang wallplates are available in a variety of colors to beautify and simplify your installation.

## Troubleshooting

### LIGHTS DO NOT OPERATE AT FULL BRIGHTNESS:

- Push slider up. Turn trimpot counterclockwise with a small screwdriver to achieve maximum light intensity.
- Check to see that violet and gray wires are not cross connected in any fixture, conduit, or wallbox.

### LIGHTS DO NOT DIM LOW ENOUGH:

- A dimming range of 100% to 10% should be achieved for 10% dimming ballasts by moving the slider position. Check the ballast output with a light meter in the absence of other sources of illumination (or correct for other sources) at both high and low light readings. The ratio of the low reading and the high reading should be 1:10 or 0.1.
- When taking the high-end measurement, the slider should be at the top-most position and trimpot adjusted to provide maximum light output. When taking the low-end measurement, the slider should be at the bottom most position. Allow lamps to stabilize for a minimum of 10 minutes before taking readings.
- If the 100% to 10% dimming range is not achieved, check to see that violet and gray wires are not cross connected in any fixtures.

## Troubleshooting

If you have questions concerning the installation or operation of this product, call the **Lutron Technical Support Center**. Please provide exact model number when calling.  
1.800.523.9466 (U.S.A., Canada, and the Caribbean)  
Other countries call +1.610.282.3800  
Fax: +1.610.282.6311  
Internet: [www.lutron.com](http://www.lutron.com)

## Limited Warranty

Lutron will, at its option, repair or replace any unit that is defective in materials or manufacture within one year after purchase. For warranty service, return unit to place of purchase or mail to Lutron at 7200 Suter Rd., Coopersburg, PA 18036-1299, postage pre-paid.

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