

## Tu-Wire Overview

*Tu-wire* ballasts are primarily intended for retrofit applications where fluorescent dimming must be achieved without changing the existing switching wiring scheme. *Tu-wire* ballasts require only two input wires (hot and neutral) that is used both for power and dimming control. *Tu-wire* ballasts offer high performance dimming from 100% down to 5% for linear and compact fluorescent lamps.

### Features

- Continuous, flicker-free dimming from 100% to 5%
- 2-wire line voltage control for wiring simplicity
- Models for T4 compact and T8 lamp types
- Programmed rapid start design will preheat lamp cathodes before applying full arc voltage
- Lamps turn on to any dimmed level without flashing to full brightness
- 1 in (25 mm) high, low-profile design for use in low-profile architectural fixtures
- Frequency of operation ensures that ballast does not interfere with infrared devices operating between 38 and 42 kHz
- Inrush current limiting circuitry eliminate circuit breaker tripping, switch arcing, and relay failure
- End-of-lamp-life protection circuitry ensures safe operation throughout entire lamp life cycle for T4 lamps
- Ultra quiet operation
- Protected from shorts between any one lamp lead and ground
- Low-line voltage protection circuitry prevents damage to the ballast or lamps if the ballast is connected to an incompatible dimmer
- 100% compatible with all Lutron 2-wire fluorescent controls
- 100% performance tested at factory
- Designed and assembled in the USA
- 5-year limited warranty with Lutron field service commissioning (3-year standard warranty) from date of purchase
- Ballasts that dim T4 compact fluorescent lamps are intended for factory installation by OEM fixture manufacturers



### Tu-Wire, case type A

3.00 in W (76 mm) x 1.00 in H (25 mm) x 4.90 in L (124 mm)



### Tu-Wire, case type B

3.00 in W (76 mm) x 1.00 in H (25 mm) x 6.75 in L (171 mm)



### Tu-Wire, case type C

1.18 in W (30 mm) x 1.00 in H (25 mm) x 18.00 in L (457 mm)

## Specifications

### Performance




- Dimming Range: 100% to 5% measured relative light output (RLO)
- Lamp Starting: programmed rapid start
- Minimum Lamp Starting Temperature: 50 °F (10 °C)
- Ambient Temperature Operating Range: 50 °F (10 °C) to 140 °F (60 °C)
- Relative Humidity: maximum 90% noncondensing
- Operating Voltage: 120 V, 60 Hz nominal line
- Lamp Current Crest Factor: less than 1.7
- Lamp Flicker: none visible
- Light Output: constant  $\pm 5\%$  light output for line voltage variations of  $\pm 10\%$
- Lamp Life: average lamp life meets or exceeds rating of lamp manufacturer
- Ballast Factor: greater than .85
- Power Factor: greater than .95
- Total Harmonic Distortion (THD): less than 20% at full light output
- Frequency of Operation: greater than 42 kHz
- Maximum Inrush Current: 7 amps per ballast at 120 V
- Sound Rating: Inaudible in a 27 dB ambient
- Maximum Ballast Case Temperature: 167 °F (75 °C)

### Standards

- California Energy Commission (CEC) Listed
- UL Listed (evaluated to the requirements of UL935)
- CSA certified (evaluated to the requirements of C22.2 No. 74) \*
- Class P thermally protected
- Meets ANSI C82.11 High Frequency Ballast Standard
- Meets FCC Part 18 non-consumer requirements for EMI/RFI emissions
- 1-lamp ballasts for 4-pin compact fluorescent lamps meet FCC Part 18 consumer requirements for EMI/RFI emissions (FCC ID: JP2B001)
- Meets ANSI C62.41 Category A surge protection standards up to and including 6 kV
- Manufacturing facilities employ ESD reduction practices that comply with the requirements of ANSI/ESD S20.20
- Lutron Quality Systems registered to ISO 9001.2000

\* For all models except 25 W T8

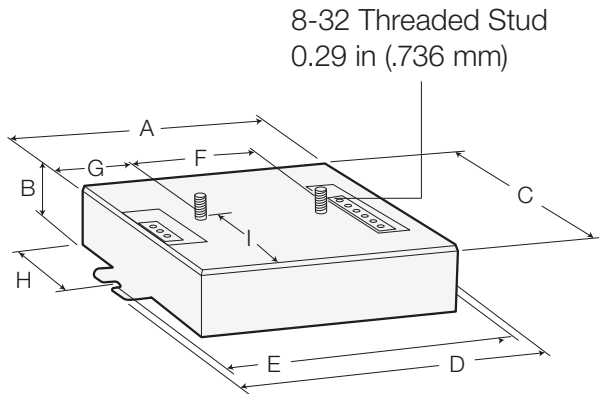
### Tu-Wire Ballast Models

Lamp Type	120 VOLTS				
	Lamp Watts (length)	Lamps per ballast	Case Type	Ballast Current (amps)	Tu-Wire Model Number
<b>T4 4-pin Quad-tube or Triple Tube</b>  1/2 in diameter	18 W	2	B	.41	2W-T418-120-2-S (studded) 2W-T418-120-2 (non-studded)
	26 W	1	A	.27	2W-T426-120-1-S (studded) 2W-T426-120-1 (non-studded)
		2	B	.53	2W-T426-120-2-S (studded) 2W-T426-120-2 (non-studded)
<b>T4 4-pin Triple-tube</b>  1/2 in diameter	32 W	1	A	.33	2W-T432-120-1-S (studded) 2W-T432-120-1 (non-studded)
		2	B	.58	2W-T432-120-2-S (studded) 2W-T432-120-2 (non-studded)
<b>T8 linear and U-bent</b>  1 in diameter	17 W (24 in)	2	C	.40	2W-T817-120-2
	25 W (36 in)	1	C	.30	2W-T825-120-1
		2	C	.50	2W-T825-120-2
32 W (48 in)	1	C	.37	2W-T832-120 1	
	2	C	.70	2W-T832-120 2	



Case Dimensions

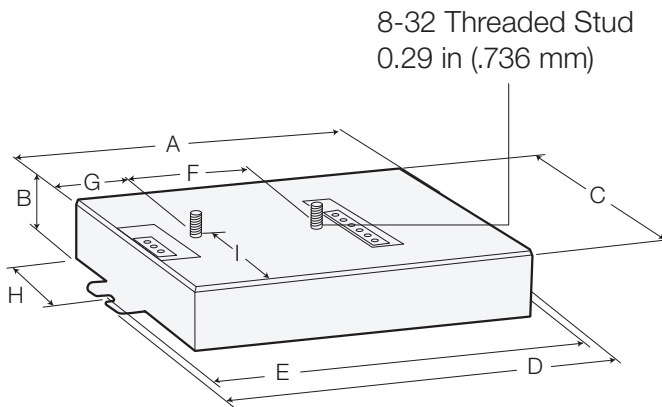
**A<sup>1</sup>**



8-32 Threaded Stud  
0.29 in (.736 mm)

A	4.20 in (107 mm)
B	1.00 in (25 mm)
C	3.00 in (76 mm)
D	4.90 in (124 mm)
E	4.60 in (117 mm)
	(mounting centers)
F	2.00 in (51 mm)
G	1.08 in (27 mm)
H	1.60 in (41 mm)
I	1.39 in (35 mm)

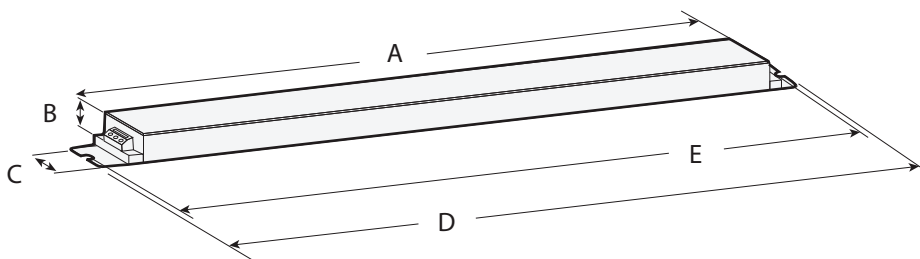
**B<sup>1</sup>**



8-32 Threaded Stud  
0.29 in (.736 mm)

A	6.00 in (152 mm)
B	1.00 in (25 mm)
C	3.00 in (76 mm)
D	6.75 in (171 mm)
E	6.50 in (165 mm)
	(mounting centers)
F	2.00 in (51 mm)
G	1.00 in (29 mm)
H	1.60 in (41 mm)
I	1.39 in (35 mm)

**C**

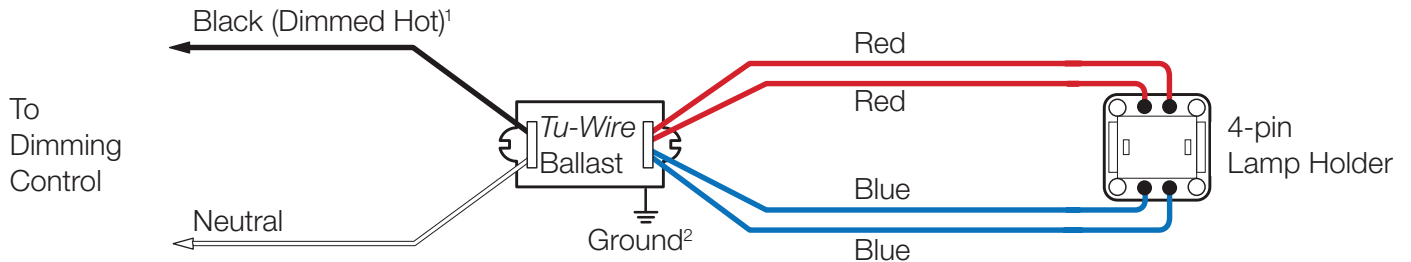


A	16.12 in (409 mm)
B	1.00 in (25 mm)
C	1.18 in (30 mm)
D	18.00 in (457 mm)
E	7.70 in (450 mm)
	(mounting centers)

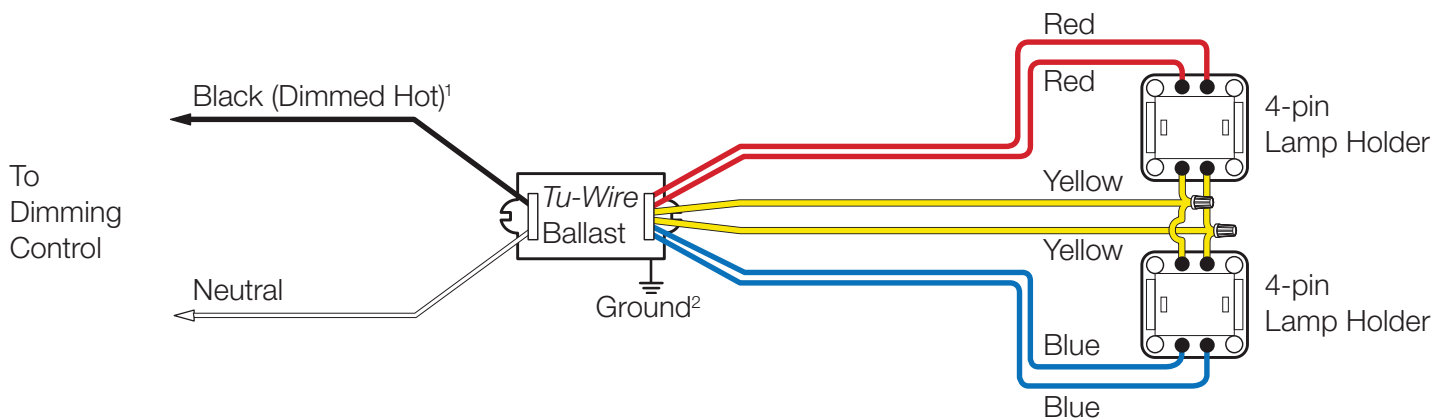
<sup>1</sup> Mounting studs are provided on models ending in "-S". When ordering, delete the suffix -S in the ballast model number if the mounting studs are not needed.

## Wiring Diagrams

### One T4 Compact Lamp



### Two T4 Compact Lamps



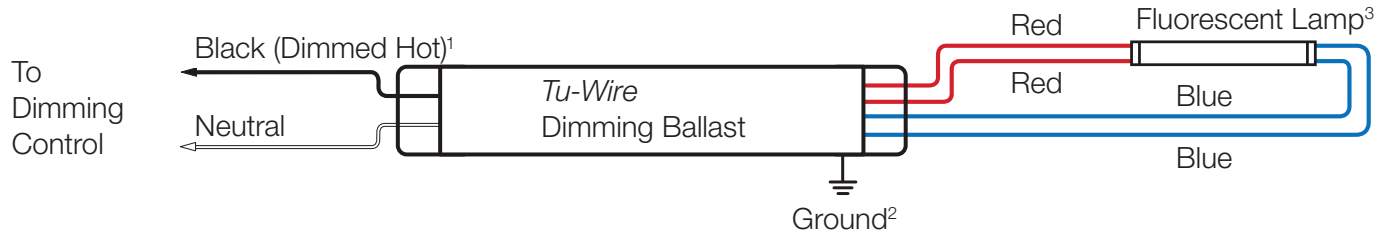
<sup>1</sup> Dimming control wire colors do not necessarily match the ballast wire colors (e.g. control “dimmed hot” may be red and ballast “dimmed hot” may be black). Wire colors shown are for Lutron ballasts and controls only.

<sup>2</sup> Ballast and lighting fixture must be effectively grounded.

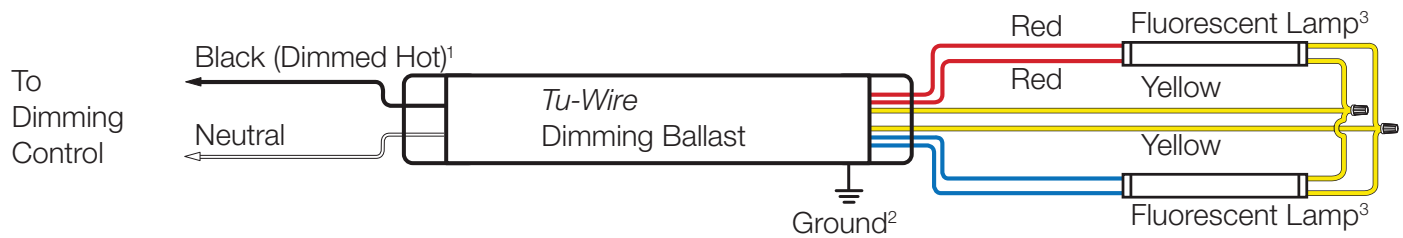
**Note:** For T4 compact lamps, the maximum lamp-to-ballast wire length is 3 feet (1 m).

## Wiring Diagrams

### One T8 Lamp



### Two T8 Lamps



<sup>1</sup> Dimming control wire colors do not necessarily match the ballast wire colors (e.g. control “dimmed hot” may be red and ballast “dimmed hot” may be black). Wire colors shown are for Lutron ballasts and controls only.

<sup>2</sup> Ballast and lighting fixture must be effectively grounded.

<sup>3</sup> Includes 6 in T8 U-bent lamps.

**Note:** For T8 lamps, the maximum lamp-to-ballast wire length is 7 feet (2 m).



## ATTENTION ELECTRICIANS AND CONTRACTORS

### Ballast/Socket Leads

Lead lengths from ballast to socket must not exceed 7 ft. (2 m) for T8 linear lamps, and 3 ft. (1 m) for T4 compact lamps.

### Lamp Sockets

Quality lamp sockets are required to ensure positive lamp-pin to socket contact. T8 lamps require knife-edge sockets. U-bent lamps require locking sockets and proper lamp support to hold lamp pins in full contact with the socket.

### Lamp Mounting for T8

Many fluorescent lamp sockets are available with mounting slots to vary the height of the lamp away from the grounded metal surface. Use these slots to get the lamp glass to be 1/2 in  $\pm$  1/4 in away from the grounded metal surface.

Having a fluorescent lamp too close to the grounded metal will make the minimum intensity too low and will reduce lamp life. Having a fluorescent lamp too far away from the grounded metal will make the lamp flicker or not turn on at all.

### Lamp Mounting for T4

Keep lamps 3/8 in  $\pm$  1/8 in away from the grounded metal surface.

Having a T4 lamp too close to the grounded metal will not reduce lamp life but may cause a visible difference in brightness along the length of the lamp.

### Ballast Operating Temperature

Ballast case temperature must not exceed 75 °C at any point on ballast.

### Wiring and Grounding

All wiring from the dimming control to the *Tu-Wire* ballasts is line voltage wiring and may be run together in the same conduit.

Ballast and lighting fixture must be effectively grounded. Ballasts must be installed per national and local electrical codes.

### Number of Ballasts Per Control

To calculate the maximum number of ballasts allowed per control, divide control's current capacity by individual ballast current. Certain controls allow a specific maximum number of ballasts.



## ATTENTION FACILITIES MANAGERS

### PERFORMANCE

#### 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.

### SERVICE

#### Replacement Parts

Use replacement parts with exact Lutron model numbers. Consult Lutron if you have any questions.