



2FT/3FT/4FT LED T5 TUBE TYPE A+B HYBRID

WARNING, CAUTION, SAFETY AND INSTALLATION INSTRUCTIONS

WARNING

- Installation, service, and maintenance of luminaires should be performed by a qualified licensed electrician.
- Before installation, examine all parts that are not intended to be replaced by the lamp for damage. Replace any damaged parts prior to installation of the lamp.

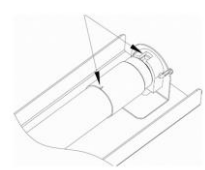
CAUTION

- This LED retrofit installation requires knowledge of luminaires and electrical systems. If not qualified, do not attempt the installation and contact a qualified electrician.
- Install this lamp only in luminaires that have the construction features and dimensions that allow the lamp to properly fit in the luminaire and where the input rating of the lamp does not exceed the input rating of the luminaire.
- Do not install this lamp in a pre-heat luminaire.
- Use in dry or damp locations only.
- Do not use where directly exposed to water or weather. Non-submergible (not watertight).
- This device is not intended for use with emergency exits.
- Do not open — No user serviceable parts inside.
- This lamp only operates on electronic ballasts. If the lamp does not illuminate when the luminaire is energized, remove the lamp from the luminaire and contact the manufacturer or a qualified electrician.
- Do not make or alter any open holes in the wiring enclosure or electrical components during lamp installation.
- Installation does not require disconnecting existing wires from the lamp holder terminals to make new connections at the lamp holder terminals. Instead, proper installation involves cutting the existing lamp holder leads away from the lamp holder and making new electrical connections to the lamp holder lead wires by employing applicable connectors.
- When working with electronic ballasts, please check the compatibility list first. If the ballast can't be found in the list, please bypass the ballast or contact the manufacturer. Do not install the tube if the ballast is not on the list.
- If the lamp or luminaire exhibits undesirable operation (buzzing, flickering, etc.), immediately turn off the power, remove the lamp from the luminaire, and contact the manufacturer.
- For single-ended power input: To avoid potential fire or shock hazard, do not use this lamp in luminaires employing shunted bi-pin lamp holders. Shunted lamp holders are found only in fluorescent luminaires with Instant-Start ballasts. Instant-start ballasts can be identified by the words "Instant Start" or "I.S." marked on the ballast. This designation may be in the form of a statement pertaining to the ballast itself, or may be combined with the marking for the lamps with which the ballast is intended to be used, for example F40T12/IS. Contact the manufacturer for additional information.
- Before installing the LED lamp, verify the lamp holders are suitable for the wiring diagram selected for the installation.
- For Type B (ballast bypass) installation, the luminaire will no longer operate fluorescent lamps after the removal of the electronic ballast.
- This lamp is accepted as a component of a luminaire where the suitability of the combination shall be determined by Authorities Having Jurisdiction (AHJ). This installation guide does not supersede local or national regulations for electrical installations.

Minimum Compartment Dimensions

Model No.	Min. Luminaire Dimensions: Length x Width x Height	Maximum # of Lamps	Spacing between tube lamps, center to center
PLTPA933 / PLTPA934 / PLTPA935	24.53 x 22.17 x 2.64in 623 x 563 x 67mm	6	2.52in 64 mm
PLTPB333 / PLTPB334 / PLTPB335	36.2 x 22.17 x 2.56in 920 x 563 x 65 mm	6	2.52in 64 mm
PLTP5535 / PLTP5534 / PLTP5533	47.95 x 22.56 x 2.56in 1218 x 573 x 65 mm	6	2.52in 64 mm

Installation Instructions

<p>NOTE: Tubes must be installed with the end cap marks in correct alignment with the lamp holders as shown.</p>	
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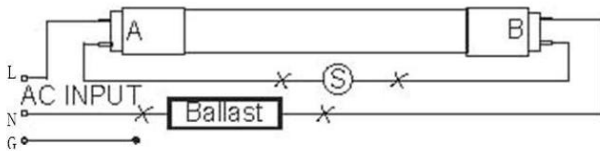
WARNING, CAUTION, SAFETY AND INSTALLATION INSTRUCTIONS

Type A (Electronic Ballast Compatible)

- Before installation, check the ballast compatibility list. If your ballast is not listed, please insert the lamp according to the Type B installation instructions.
- Turn off the power to the luminaire at the breaker panel.
- Remove the lens or diffuser (if applicable).
- Remove the existing fluorescent lamp from the luminaire by rotating the lamp one quarter turn and sliding the lamp out of the lamp holders.
- Insert the lamp into the lamp holders and rotate one quarter turn.
- Reinstall the lens or diffuser, if previously removed.
- Turn on the power to the luminaire and inspect the lamp for proper operation.

Type B (Ballast Bypass)

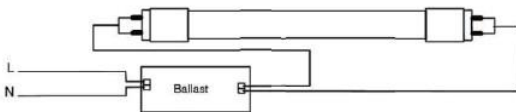
- Turn off the power to the luminaire at the breaker panel.
- Remove the lens or diffuser (if applicable).
- Remove the existing fluorescent lamp from the luminaire by rotating the lamp one quarter turn and sliding the lamp out of the lamp holders.
- Remove the ballast cover (Ballast cover may be secured with screws or tabs).
- Disconnect the wires between the starter and the ballast according to the below figure. If no starter is present, simply disconnect the wires before and after the ballast.



- Connect the two wires to the branch circuit L and N according to the appropriate wiring diagram listed in the Wiring Diagram section below.
- Before installing the LED lamp, read the label on the lamp to ensure the power end of the lamp is aligned with powered lamp holders in accordance with the wiring diagram selected for the installation.
- Insert the lamp into the lamp holders and rotate one quarter turn.
- Attach the provided Cautionary label to a location that remains visible during routine maintenance or relamping. Be sure to mark the selected wiring type (single or double-ended) and powered end on the luminaire.
- Reinstall the lens or diffuser, if previously removed.
- Turn on the power to the luminaire and inspect the lamp for proper operation.

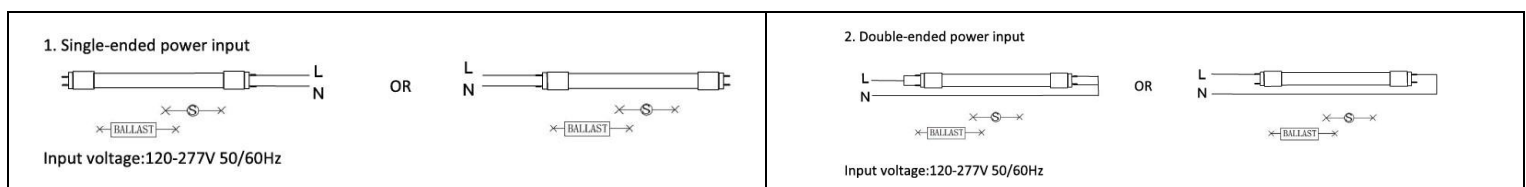
Wiring Diagrams

Type A (Electronic Ballast Compatible)



Type B (Ballast Bypass)

Case 1: Direct AC wiring diagram without dimming

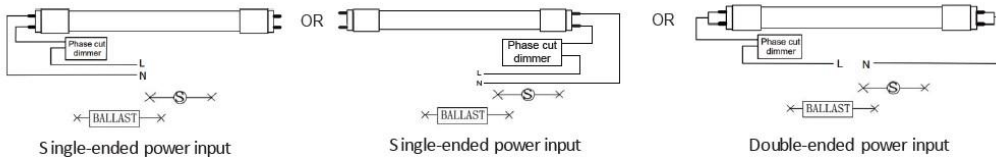




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Case 2: Direct AC wiring diagram with reverse phase dimming (Refer to Compatible Dimmers section)



Input Voltage: AC 120V 60Hz

Important Notes:

- Single-ended: use non-shunted sockets.
- Double-ended: use non-shunted or shunted sockets.

Compatible Dimmers

Brand	Model Number
LUTRON	DVELV-300P
LUTRON	DVELV-303P
LUTRON	MAELV-600

Ballast Compatibility Lists

- When working with electronic ballasts, please check the compatibility list first. If the ballast can't be found in the list, please bypass the ballast or contact the manufacturer.
- Do not install the tube if the ballast is not on the list. Use of an incompatible ballast can result in reduced lamp lifetime, arcing or localized overheating.
- Y: Compatible; N: Incompatible; N/T: Not Tested

List for PLTPA933 / PLTPA934 / PLTPA935

No.	Ballast Brand	Model No.	Start Type	Max Loading QTY	Compatible (Y/N/N/A)			
					1 LAMP		2 LAMPS	
					120VAC	277VAC	120VAC	277VAC
1	OSRAM	QHE 2X28T5/UNV PSN	Instant Start	2	Y	Y	Y	Y
2	GE	GEC140MAX-A	Instant Start	1	Y	Y	Y	Y
3	GE	GEC240MAX-A	Instant Start	2	N	N	Y	Y
4	AccuStart	B228PUNV-C	Instant Start	2	Y	Y	Y	Y
5	Fulham	WH2-120-C	Instant Start	2	Y	N/A	Y	N/A
6	FLEXCONNECT	E21338-UV-TDE-FLX	Instant Start	2	Y	Y	Y	Y
7	WORKHORSE	WH2-120-LROHS	Instant Start	2	Y	N/A	Y	N/A
8	Wellypower	ES-2-T5-28-120	-	2	N	N/A	Y	N/A
9	IOTA	I-160 NOS	Emergency	charging	Y	Y	N/A	N/A
				emergency	Y	Y	N/A	N/A



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List for PLTPB333 / PLTPB334 / PLTPB335

Ballast Brand	Model No.	Start Type	Max Loading QTY	Compatible (Y/N/N/A)					
				1 LAMP			2 LAMPS		
				120VAC	277VAC	347VAC	120VAC	277VAC	347VAC
GE	GEC240MAX-A	Instant Start	2	Y	Y	N/A	Y	Y	N/A
Keystone	KTEB-126-1-TP	Rapid Start	1	Y	N/A	N/A	N/A	N/A	N/A
QUICKTRONIC	QTP 2x26CF/UNV DM	Programmed Rapid Start	2	Y	Y	N/A	Y	Y	N/A
GE Current	GEC242-MVPS-3W	Program Start	2	Y	Y	N/A	Y	Y	N/A
TRIAD	C2642/347ME	Programmed Rapid Start	2	N/A	N/A	Y	N/A	N/A	Y
Sylvania	QTP 2x26CF/UNV DM PEM	Programmed Rapid Start	2	Y	Y	N/A	Y	Y	N/A
Osram	QTP 2x26/32/42CF/UNV DM PEM	Programmed Rapid Start	2	Y	Y	N/A	Y	Y	N/A
OSRAM Sylvania	QTP 2x26/32/42CF/UNV DM	Programmed Rapid Start	2	N	N	N/A	Y	Y	N/A
Triad	C2642UNVME	Programmed Rapid Start	2	Y	Y	N/A	Y	Y	N/A
KEYSTONE	C2642UNVME	Rapid Start	2	N	N	N/A	Y	Y	N/A
STANDARD	ED2150-347BS	Program Start	2	N/A	N	N	N/A	Y	Y
OSRAM	QTP 2x26CF/UNV DM	PROGRAMMED RAPID START	2	Y	Y	N/A	Y	Y	N/A

List for PLTP5533 / PLTP5534 / PLTP5535

No.	Ballast Brand	Model No.	Start Type	Max Loading QTY	Compatible (Y/N/N/A)							
					1 LAMP		2 LAMPS		3 LAMPS		4 LAMPS	
					120VAC	277VAC	120VAC	277VAC	120VAC	277VAC	120VAC	277VAC
1	PHILIPS ADVANCE	ICN-2554-90C-T	Programmed Start	2	Y	Y	Y	Y	N/A	N/A	N/A	N/A
2	PHILIPS ADVANCE	ICN-2554-90C-N	Instant Start	2	Y	Y	Y	Y	N/A	N/A	N/A	N/A
3	KEYSTONE	KTEB-254HO-UV-PS-SL	Program Start	2	Y	Y	Y	Y	N/A	N/A	N/A	N/A
4	OSRAM	QHE 2X54T5HO/UNV PSN HT	Program Rapid Start	2	Y	Y	Y	Y	N/A	N/A	N/A	N/A
5	HI HOWARD INDUSTRIES	EP2/54HO/PRS/MV/W/MC	Programmed Rapid Start	2	N	N	Y	Y	N/A	N/A	N/A	N/A
6	ESPEN	VE254MVHRP 11101	Programmed Start	2	Y	Y	Y	Y	N/A	N/A	N/A	N/A
7	arcata	ACT4M54PSUNV	Instant Start	4	Y	Y	Y	Y	Y	Y	Y	Y
8	ACT	ACT2554PSUNV	Instant Start	2	N	N	Y	Y	N/A	N/A	N/A	N/A
9	OSRAM	QHE 4X54T5HO/UNV PSN HT SCL	Programmed Rapid Start	4	Y	Y	Y	Y	Y	Y	Y	Y
10	HI HOWARD INDUSTRIES	EP4/54HO/PRS/MV/L	Programmed Rapid Start	4	Y	Y	Y	Y	Y	Y	Y	Y
11	AccuStart	B454PUNVHB-E	Programmed Rapid Start	4	Y	Y	Y	Y	Y	Y	Y	Y
12	ESPEN	VE454MVHRP 11088	programmed Start	4	Y	Y	Y	Y	Y	Y	Y	Y
13	FULHM RACEHORSE	RHA-UNV-454-LT5	program Start	4	Y	Y	Y	Y	Y	Y	Y	Y
14	Plusrite	BAF454PS/MV	program Start	4	Y	Y	Y	Y	Y	Y	Y	Y
15	FULHM RACEHORSE	RHA-UNV-254-LT5	programmed Start	2	N	N	Y	Y	N/A	N/A	N/A	N/A
16	FULHM WORKHORSE	WH5-277-L	Instant Start	2	N/A	Y	N/A	Y	N/A	N/A	N/A	N/A
17	AccuStart	B254PUNV-D	programmed Start	2	Y	Y	Y	Y	N/A	N/A	N/A	N/A
18	PHILIPS ADVANCE	ICN-4554-90C-2LS-G	Programmed Start	4	Y	Y	Y	Y	Y	Y	Y	Y
19	Fulham	WH33-120-L	Instant Start	2	Y	N/A	Y	N/A	N/A	N/A	N/A	N/A
20	LEVITON	SD2J5-28M	Dimming Start	2	Y	Y	Y	Y	N/A	N/A	N/A	N/A
21	arcata	ACT4M54PSUNV	Instant Start	4	Y	Y	Y	Y	Y	Y	Y	Y
22	TRIDONIC	PC 2X80 T5 PRO lp	Instant Start	2	N/A	Y	N/A	Y	N/A	N/A	N/A	N/A
23	IOTA	I-160 NOS	Emergency	charging	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A
				emergency	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A

No.	Ballast Brand	Model No.	Start Type	Max Loading QTY	Compatible (Y/N/N/A)			
					1 LAMP	2 LAMP	3 LAMP	4 LAMP
					347VAC	347VAC	347VAC	347VAC
1	PHILIPS ADVANCE	HCN-2554-90C-WL	Instant Start	2	Y	Y	N/A	N/A
2	SYLVANIA	QTP 2X54T5HO/347-480 PSN HT	Programmed Start	2	Y	Y	N/A	N/A
3	GE	GE454PS347/480-E	program Start	4	N	Y	Y	Y
4	Advance	HCN-4554-90C-2LS-G	Programmed Start	4	Y	Y	Y	Y
5	GE Current	GE254PS347/480-F	program Start	2	N	Y	N/A	N/A



⚠ WARNING

- Before installing, servicing, or performing routine maintenance upon this equipment, follow these general precautions.
- To reduce the risk of death, personal injury, or property damage from fire, electric shock, falling parts, cuts/abrasions, and other hazards, read all warnings and instructions included with and on the fixture box and all fixture labels.
- Proper grounding is required to ensure safety.
- Power must be turned off at the breaker before installation or maintenance.
- This product must be installed in accordance with the applicable installation code by a person familiar with the construction and operation of the product and the hazards involved.
- Wear gloves and eye protection at all times while installing, servicing, or performing maintenance on the luminaire, and avoid direct eye exposure to the light source while it is on.
- To prevent wiring damage or abrasion, do not expose wiring to edges of sheet metal or other sharp objects.
- Do not install damaged product. Inspect luminaire for damage that may have occurred during transit. If damaged, contact the manufacturer immediately.
- These instructions do not purport to cover all details or variations in equipment nor to provide every possible contingency to meet in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's or owner's purposes, contact the manufacturer.

⚠ ADVERTENCIA

- Antes de instalar, reparar o realizar el mantenimiento de rutina de este equipo, siga estas precauciones generales.
- Para reducir el riesgo de muerte, lesiones personales o daños a la propiedad por fuego, descarga eléctrica, caída de piezas, cortes / abrasiones y otros peligros, lea todas las advertencias y instrucciones incluidas con y en la caja del dispositivo y todas las etiquetas del dispositivo.
- Se requiere una conexión a tierra adecuada para garantizar la seguridad.
- Se debe apagar la energía en el disyuntor antes de la instalación o el mantenimiento.
- Este producto debe ser instalado de acuerdo con el código de instalación aplicable por una persona familiarizada con la construcción y operación del producto y los peligros involucrados.
- Utilice guantes y protección para los ojos en todo momento durante la instalación, el servicio o el mantenimiento de la luminaria, y evite la exposición directa de los ojos a la fuente de luz mientras está encendida.
- Para evitar daños o abrasiones en el cableado, no exponga el cableado a bordes de láminas de metal u otros objetos afilados.
- No instale un producto dañado. Inspeccione la luminaria en busca de daños que puedan haber ocurrido durante el tránsito. Si está dañado, comuníquese con el fabricante de inmediato.
- Estas instrucciones no pretenden cubrir todos los detalles o variaciones en el equipo ni proporcionar todas las posibles contingencias a cumplir en relación con la instalación, operación o mantenimiento. Si desea obtener más información o si surgen problemas particulares que no están suficientemente cubiertos para los propósitos del comprador o propietario, comuníquese con el fabricante.