

ENSURE POWER SUPPLY IS OFF WHEN HANDLING ANY ELECTRICAL EQUIPMENT.

Ballast Compatibility List must be checked prior to installation. See www.comm-led.com for ballast compatibility on model.

Note: This product complies with Part 18 of the FCC rules but may cause interference to radios, televisions, wireless telephones and remote controls. If interference occurs, move the product away from these devices or plug it into a different outlet. Do not install this product near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30MHz.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
- This Class B digital apparatus complies with Canadian ICES-005.

PARTS/COMPONENTS INCLUDED IN KIT

- Installation Instructions
- LED Tube Lamp
- Luminaire Marking Labels. Only for Type B installation please apply the following lamp replacement label on the retrofit luminaire after the retrofit kit has been installed, where readily visible by the user during relamping, and after installation.

! WARNINGS

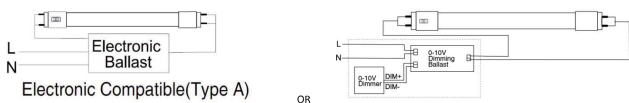
TYPE A Application (PLUG & PLAY, Ballast compatible)

To avoid personal injury and/or possible product damage, the following cautions must be followed:

- Read all safety information and instructions before installation.
- RISK OF ELECTRIC SHOCK. Disconnect power at fuse or circuit breaker before installing or servicing.
- Suitable for damp locations - Not for use where directly exposed to water.
- Caution: Only use the control provided with or specified by these instructions to control this lamp. This lamp will not operate properly when connected to a standard (incandescent) dimmer or dimming control.
- This device is not intended for use with emergency exits.
- CAUTION - RISK OF FIRE. USE ONLY IN PLACE OF FLUORESCENT LAMPS SPECIFIED ON PRODUCT LABEL.
- CAUTION RISK OF FIRE – IF THE LAMP OR LUMINAIRE EXHIBITS UNDESIRABLE OPERATION (BUZZING,

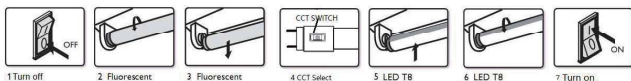
- For a linear tubular LED lamp conversion, there shall be text or a diagram showing how the supply connections were made to the lamp holders so the correct connections will be made to the lamp when the lamp is installed or replaced.

TYPE A - Wiring diagram:



Note:
The wiring diagram should be the same with the ballast wiring diagram.
When work with ballast, please check the compatible list first! If you do not find your ballast on the list then please bypass the fixture, or please contact us! Do not install the LED tube with the ballast which not on the ballast compatible list.

Type A-Installation Guide:



Instructions

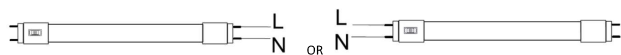
1. Switch-off power to the luminaire.
2. Remove diffuser (if provided).
3. Remove the existing fluorescent lamps from the luminaire.
4. Select the color temperature through the CCT switch on the LED lamp base.
 - Using the color (CCT) selector switch on the base, select the desired color temperature.
 - To prevent damage to lamp, lamp must not be energized when color (CCT) selector switch is changed.
5. Install the LED tube lamp.
6. Install diffuser (if removed in step 2)
7. Switch on power to the luminaire.
8. Before installation, please check specifications for the most current ballast compatibility list, if no match, please insert led tubes according to below type B installation instructions.

TYPE B - Wiring diagram:

Connect two wires to branch circuit L and N according to the below figure.

Case 1: Direct AC wiring diagram without dimming

1. Single-ended power input



Input voltage:120-277V 50/60Hz

FLICKERING, ETC), IMMEDIATELY TURN OFF POWER, REMOVE LAMP FROM LUMINAIRE AND CONTACT MANUFACTURER.

- CAUTION - RISK OF FIRE. IF LAMP DOES NOT LIGHT WHEN THE LUMINAIRE IS ENERGIZED, REMOVE LAMP FROM LUMINAIRE AND CONTACT LAMP MANUFACTURER OR QUALIFIED ELECTRICIAN.
- CAUTION - RISK OF FIRE OR ELECTRIC SHOCK. When working with electronics ballast, please check the compatible list first. If you do not find your ballast on the list, then please bypass the fixture as a Type B installation or contact us for support. Do not install the LED tube with the ballast which not on the ballast compatible list.
- To prevent damage to lamp, lamp must not be energized when color (CCT) selector switch is changed.

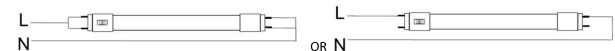
! WARNINGS

TYPE B Application (DIRECT WIRE, Ballast-Free)

To avoid personal injury and/or possible product damage, the following cautions must be followed:

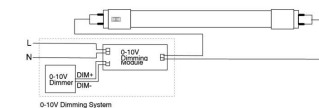
- Read all safety information and instructions before installation.
- RISK OF ELECTRIC SHOCK. Disconnect power at fuse or circuit breaker before installing or servicing.
- To prevent damage to lamp, lamp must not be energized when color (CCT) selector switch is changed.
- Suitable for damp locations - Not for use where directly exposed to water.
- Caution: Only use the control provided with or specified by these instructions to control this lamp. This lamp will not operate properly when connected to a standard (incandescent) dimmer or dimming control.
- This device is not intended for use with emergency exits.
- To prevent early lamp failure, lamp should only be installed in operating environments ranging between: -20°C and +45°C (-4°F and +113°F).
- WARNING – RISK OF FIRE OR ELECTRIC SHOCK. LED Retrofit Kit installation requires knowledge of luminaires electrical systems. If not qualified, do not attempt installation. Contact a qualified electrician.
- WARNING – RISK OF FIRE OR ELECTRIC SHOCK. Install this kit only in the luminaires that have the construction features and dimensions shown in the photographs and/or drawings and where the input rating of the retrofit kit does not exceed the input rating of the luminaire.
- Do not make or alter any open holes in an enclosure of wiring or electrical components during kit installation.
- WARNING - To prevent wiring damage or abrasion, do not expose wiring to edges of sheet metal or other sharp objects.
- Installers should not disconnect existing wires from lamp socket terminals to make new connections at lamp socket terminals. Instead, installer should cut existing lamp socket leads away from the lamp socket and make new electrical connections to lamp socket lead wires by employing connectors suitable for the application.
- THIS RETROFIT KIT IS ACCEPTED AS A COMPONENT OF A LUMINAIRE WHERE THE SUITABILITY OF THE COMBINATION SHALL BE DETERMINED BY AUTHORITIES HAVING JURISDICTION. PRODUCT MUST BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH THE APPLICABLE AND APPROPRIATE ELECTRICAL CODES. THE INSTALLATION GUIDE DOES NOT SUPERSEDE LOCAL OR NATIONAL REGULATIONS FOR ELECTRICAL INSTALLATIONS.
- Examine all parts that are not intended to be replaced by the retrofit kit for damage and replace any damaged parts prior to installation of the retrofit kit.
- The tube is installed as Type B, the luminaire, once modified as retrofit fixture, will no longer operate fluorescent lamps.

2. Double-ended power input



Input voltage:120-277V 50/60Hz

Case 2: Direct AC wiring diagram with 0-10V dimming system



Input Voltage: AC120-277V 50/60Hz

Important Notes:

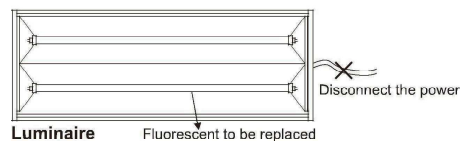
- For single-ended wiring installation of tubes, un-shunted lamp holders must be used.
- For double-ended wiring installation, it is not needed to change the sockets/lamp holders (if they are in good condition) regardless of the type of sockets.

Type B-Installation Guide:

Please completely comply with these instructions and notes to ensure that the product is operated in a safe condition. Important safety information - read all instructions before installation.

Instructions

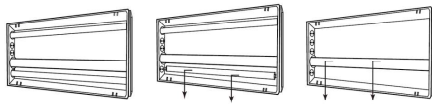
1. DISCONNECT POWER OF LUMINAIRE



Disconnect power to luminaire or circuit (if possible). Ensure all power is off by using a voltmeter or other method to confirm.

2. REMOVE EXISTING TUBE LAMP(S)

- a. Remove troffer lens, if present.
- b. Remove existing fluorescent by rotating one quarter turn and sliding lamp(s)
- c. Remove ballast cover. (Cover may be secured with screws or tabs)



a) Troffer and lamps b) Remove tube lamps c) Remove ballast cover (lens removed)

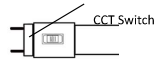
3. RETROFIT LUMINAIRE

Modify the circuit according to the TYPE B wiring diagram.

4. SELECT THE CCT

Select the color temperature through the CCT switch on the LED lamp's base

- Using the color (CCT) selector switch on the base, select the desired color temperature.
- To prevent damage to lamp, lamp must not be energized when color (CCT) selector switch is changed.



5. INSERT LED TUBES

- Read label on the LED tube to ensure the power end of LED is aligned with powered tube socket, then insert LED lamp in the normal way by sliding pins into sockets and rotating a quarter turn until LED tube locks in place.
- LED lamps are now fully installed.
- Replace troffer lens, if present.
- After modification completed. Attach the Replacement Marking and cautionary Label to a visible place on the luminaire and keep it visible after installation. Be sure to mark the type of wiring on the luminaire label (single or double-ended).

6. RESTORE THE POWER OF LUMINAIRE

Restore power to circuit/luminaire and test light. If necessary, adjust position of LED tube, and enjoy your new LED tube light!

Compatible Ballast List Tested On:

MANUFACTURER	BALLAST MODEL	MANUFACTURER	BALLAST MODEL
ACT	ACT3P32ISUNVE	GE	GE332MAX-G-H
ACT	ACT4P32ISUNVE	GE	GE332MAX-G-N
DAMAR	1688B	GE	GE332MAX-G-N-DIYB
DAMAR	1688D	GE	GE332MAX-P-N/ULTRA
DAMAR	3654C	GE	GE432MAX-G-N
EIKO	PM-2X32T8-UNV-IS	GE	GE432MAX-G-N-DIYL
ESPEN	VE232MVHIPL	GE	GE432MAX-L/Ultra
ESPEN	VE2P32MVHIPE 11068	GE	GE432MAX-L/Ultra
ESPEN	VE2P32MVHIPHE 11069	GE	GE432MAX-L/ULTRA
ESPEN	VE332MVHIPL	GE	GE132-MVPS-H
ESPEN	VE3P32MVHIPE 11070	GE	GE-132-MV-PS-L
ESPEN	VE3P32MVHIPL 11056	GE	GE232-MV-PS-H
ESPEN	VE4P32MVHIPE 11072	GE	GE232-MVPS-L
ESPEN	VE4P32MVHIPL 11057	GE	GE232-MVPS-N
ESPEN	VEL-4P32-SC	GE	GE-232-MV-PS-N
ESPEN	VEL100BN-4C	GE	GE-232-MVPS-XL
ESPEN	VEL30BN-2C-10V	GE	GE240RES120-4PK
ESPEN	VEL30BN-2C-10V(White)	GE	GE240RES120-B
ESPEN	VEL50BN-2C	GE	GE332-MVPS-L
ESPEN	VE2P32MVHPPE 11080	GE	GE-332-MVPS-XL
ESPEN	VE4P32MVHPPE 11086	HALCO	EP232IS/MV/HE
FULHAM	FH12-UNV-1400L-CEC	HALCO	EP332IS/L/MV/HE
GE	GE132MAX-G-N	HALCO	EP332IS/MV/HE
GE	GE132MAX-H/Ultra	HALCO	EP432IS/L/MV/HE
GE	GE-132-MV-N	HOWARD	EP2/32IS/MV/MC/HE
GE	GE232-120RES-B	HOWARD	EP4/32IS/MV/MC/HE
GE	GE232MAX-G-N	HOWARD	EPL2/32IS/MV/MC/HE
GE	GE232MAX-G-N-DIYB	HOWARD	EPL3/32IS/MV/SC/HE
GE	GE232MAX-G-N-DIYL	HOWARD	EPL4/32IS/MV/MC/HE
GE	GE232MAX-L/ULTRA	KEYSTONE	KT-EMRG-1400
GE	GE-232-MV-N	KEYSTONE	KT-EMRG-500-SL

Compatible Ballast List Tested On:

MANUFACTURER	BALLAST MODEL	MANUFACTURER	BALLAST MODEL
KEYSTONE	KTEB-232RIS-1-TP-SL/J	PHILIPS ADVANCE	IOPA-2P32-LW-N
KEYSTONE	KTEB-232-UV-IS-N-P	PHILIPS ADVANCE	IOPA-2P32-N
KEYSTONE	KTEB-332-UV-IS-N-P	PHILIPS ADVANCE	IOPA-3P32-LW-N
KEYSTONE	KTEB-432RIS-1-TP-SL	PHILIPS ADVANCE	IOPA-3P32-LW-SC
KEYSTONE	KTEB-432-UV-IS-N-P	PHILIPS ADVANCE	IOPA-3P32-N
OSRAM SYLVANIA	QHE 1X32T8/UNV ISL-SC	PHILIPS ADVANCE	IOPA-4P32-LW-N
OSRAM SYLVANIA	QHE 1X32T8/UNV ISN-SC	PHILIPS ADVANCE	IOPA-4P32-N
OSRAM SYLVANIA	QHE 2X32T8/UNV ISL-SC-1	PHILIPS ADVANCE	REB-4P32-SC
OSRAM SYLVANIA	QHE 3X32T8/UNV HT-SC	PHILIPS ADVANCE	ICN-2S40-N
OSRAM SYLVANIA	QHE 3XLEDT8/UNV-ISN-SC	PHILIPS ADVANCE	IOP-2PSP32-N
OSRAM SYLVANIA	QHE 4X32T8/UNV ISN-SC	PHILIPS ADVANCE	IOP-4PSP32-SC
OSRAM SYLVANIA	QHE 4XLEDT8/UNV-ISN-SC	PHILIPS ADVANCE	RELB-2S40-N
OSRAM SYLVANIA	QTP 2X59T8/UNV ISN-SC	PLUSRITE	BAF232IS/MV
OSRAM SYLVANIA	QTP 3X32T8/UNV ISN-SC	PLUSRITE	BAF332IS/MV
OSRAM SYLVANIA	QTP 4X32T8/UNV ISN-SC	PLUSRITE	BAF432IS/MV
OSRAM SYLVANIA	QHE 3X32T8/UNV-PSN-SC	PLUSRITE	BAF232PS/MV
OSRAM SYLVANIA	QHE 4X32T8/UNV PSX-SC	ROBERTSON	IEA432T8120N 3P20135
OSRAM SYLVANIA	QHE 2X32T8/UNV PSN-MC	SUNLITE	40155-SU-SB/232/MV
OSRAM SYLVANIA	QHE 2X32T8/UNV PSX-MC	ULTRASAVE	UT 232347
OSRAM SYLVANIA	QTP 2X32T8/UNV ISN-SC	UNIVERSAL	B232IUNV-C
PHILIPS ADVANCE	REZ-2S32-SC	UNIVERSAL	B232IUNVEL-N
PHILIPS ADVANCE	REZ-3S32-SC	UNIVERSAL	B232IUNVHEH-A
PHILIPS ADVANCE	ICN-1P32-N	UNIVERSAL	B232IUNVHP-N
PHILIPS ADVANCE	ICN-2P32-N	UNIVERSAL	B332IUNVEL-A
PHILIPS ADVANCE	ICN-3P32-N	UNIVERSAL	B332IUNVHE-A
PHILIPS ADVANCE	ICN-4P32-N	UNIVERSAL	B332IUNVHP-A
PHILIPS ADVANCE	IOP-2P32-HL-N	UNIVERSAL	B432IUNVHE-A
PHILIPS ADVANCE	IOP-2P32-LW-N	UNIVERSAL	B432IUNVHP-A
PHILIPS ADVANCE	IOP-2P32-N	UNIVERSAL	B232PUNVHE-B
PHILIPS ADVANCE	IOP-2P59-N	UNIVERSAL	B432PUNVHE-A
PHILIPS ADVANCE	IOPA-1P32-LW-N	UNIVERSAL	