

Electronic Fluorescent Ballasts

A Complete Range of Solutions — From The Name You Trust

For more than 30 years, the lighting industry has relied on our TRIAD® brand for the most specified, most installed, most reliable electronic ballasts in the business.

The TRIAD® line offers advantages like installer-friendly universal input voltage, which ensures that you have the right voltage ballast every time, and maximum energy savings for long cycle operations.

And our ULTim8® and AccuStart™ ballasts feature high efficiency designs and programmed start technology that dramatically enhances lamp life.



Universal is the leader in energy saving electronic ballasts.

Product Overview

Setting The Pace In T8 Technology

Universal Lighting keeps pushing the frontier of T8 technology with innovative products that deliver dramatic energy savings, greater fixture design flexibility, longer lamp life and installation ease. You can count on Universal for some of the industry's highest efficiency and most hassle-free T8 ballasts.

Universal offers high efficiency T8 ballasts for Instant Start and Programmed Start applications. These ballasts deliver up to 6% additional energy savings over standard electronic ballasts, even more when used with the new F32T8/ES (25 Watt), F32T8/ES (30 Watt) or F28T8 (28 Watt) lamps. Our T8 ballasts are CEE and NEMA Premium compliant.

TRIAD® and ULTim8 Instant Start Applications

Instant Start technology for continuous operation and installer friendly Universal input voltage.

Maximizes energy savings for long cycle operations.

- Some of the most efficient ballasts in the industry for maximum energy savings.
- Available in high efficiency HE normal (.88), EL low (.77), and HEH high (1.18) ballast factor versions.
- Independent lamp operation simplifies troubleshooting. Lamps stay lit if one lamp fails preventing fixtures from going dark and replacing lamps unnecessarily.
- Lamp will auto-restrike as a standard feature allowing replacement of lamps without recycling power.
- Anti-striation control for better light quality when using energy saving lamps.
- Universal input voltage, installer friendly.
- Because these ballasts are CEE and NEMA Premium compliant they may qualify for utility incentives.
- Backed by 5 year warranty when operated at 75° C max case temperature.

ULTim8® Programmed Start Applications

Features true parallel lamp operation and fast start time (<700ms) so that if one lamp fails, other lamps stay lit. "Soft start" technology maintains lamp life, making these the perfect choice for high-cycling applications like occupancy sensors. Designed for use with 30, 28 and 25 Watt energy saving lamps for even more energy savings.

- Same benefits as Instant Start plus ...
- Available in high efficiency HE normal (.88) and EL low (.71), and HEH (1.18) ballast factor versions.
- Programmed Start ballasts are designed to quickly pre-heat lamp cathodes up to their optimum starting temperature and ignite the lamps quickly.
- Filament cut out on HE and HEH models for instant start level efficiency.
- The quick ignition results in long lamp life without the typical long delay during turn-on.
- Same 5 year warranty as instant start or 3-year warranty for HEH modules when operated at 90° C case temperature.

High Lumen and High Bay Applications

ULTim8® High Lumen ballasts are the high efficiency high ballast factor choice for high lumen T8 applications.

ULTim8® HB ballasts are designed to provide excellent performance in the high ambient temperature applications where high bay fluorescent fixtures are installed.

EL Ballasts: Used often when retrofitting existing T12 fixtures with T8 lamps to tune down lamp output.

Application areas include stairwells, hallways, bathrooms and other areas that are lit partially during the day.

They are good for using in low light level areas. Change light levels with ballast factor.

HE Ballasts: Used often in new construction, the high efficiency version of our standard HP product. Used for frequently switched applications including occupancy sensors and daylight harvesting. They are a good solution for education, commercial offices and retail.

HEH Ballasts: Used to overdrive lamps. Use these for areas with high light output. They are a great solution for high bay fixtures including applications for warehouses and manufacturing.

Product Overview

T5 & T5HO Ballasts For Architectural and High Bay Applications

Whether it's for new construction or a retrofit project, Universal's T5 and T5HO ballasts, with their smaller size and high lumen output, have become the dominant player in architectural and high bay applications.

Programmed Start ballasts feature a "soft start" technology that maximizes lamp life, making them the perfect choice for high cycling applications including those involving occupancy sensors and wall switches.

High Efficiency (AccuStart5®, ULTim5®):

Our high efficiency T5 and T5HO ballasts are ideal for bathrooms, hallways, stairwells, gymnasiums, classrooms, libraries, corridors, offices, recessed volumetric strips, wraps, wall washing, displays, direct/indirect lighting, surface mount, cove, under cabinet or task lighting. Common applications include: commercial, retail, hospitality, restaurants, law offices, medical, institutional, airports, and schools.

The **AccuStart5®** and **ULTim5®** lines of linear fluorescent T5 and T5HO ballasts offer broad appeal to the most common applications. Universal input voltage (108-305 volts). T5 ballasts support (1) or (2) 2' F14T5, 3' F21T5, 4' F28T5, and 5' F35T5 full wattage and energy saving lamps. T5HO ballasts support (1) or (2) 2' F24T5HO 3' F39T5HO and (1) (2) (3) or (4) 4' F54T5HO full wattage and energy saving lamps.

High Bay (AccuStart5HB®):

T5HO High Bay ballasts are ideal for new construction and fixture retrofits in gymnasiums, high bay retail stores and warehouses, manufacturing sites, industrial facilities and similar applications. These High Output ballasts are well suited for applications where space is at a premium, including slim pendant mounted fixtures, cove and task lighting. AccuStart5HB ballasts offer a replacement opportunity for traditional HID high bay applications. Light up the aisles for the forklift operator when lighting is needed. Keep spaces lit when and where needed.

Universal offers the **AccuStart5HB®** line of linear fluorescent T5HO ballasts for High Bay applications. Ideal for extreme temperature (90° C Case Warranty). Universal input voltage (108-305 volts) and high range voltage (347-480 volts). These ballasts support (2) and (4) 117, 119, 120, 182, 184, 229 and 235 watt T5HO ballasts.

Canadian Voltage:

Universal offers Canadian voltage in 347V and high range voltage. These ballasts come in standard efficiency, high efficiency and High Bay for T5 and T5HO applications.



Family of Universal HP Ballasts.



Flexible Fixture design options for T5 and T5HO lamps.

Application And Operating Information

SAFETY

NEC & UL Requirements

Ballast installation presents the possibility of exposure to potentially hazardous voltages and should be performed only by qualified personnel. All installation, inspection and maintenance should be performed only with power to the fixture turned off. Additionally, all fixtures and ballasts must be installed and operated in compliance with the National Electrical Code, Underwriters Laboratories Inc. (UL) requirements, and all local applicable codes and regulations.

Polarity

Polarity refers to the proper connection of ballast lead wires to line wires. To aid you in a correct installation, Universal ballast leads are color-coded for easy identification. The WHITE ballast lead is to be connected to the neutral (grounded) and the BLACK (or black with white tracer) lead always to the phase ("hot") line wire. Systems where neither of the line wires are at ground potential require specially designed ballasts. A change in polarity may result in the voltage from the lead to the ground exceeding UL-specified limits. In some types of ballasts, a change in polarity may decrease voltage from the lead to the ground, thereby impeding the starting dependability of the ballast.

Grounding

Ballast cases and fixtures must always be grounded. The ballast case may be grounded to the fixture or otherwise grounded. It could be hazardous to make contact with an ungrounded fixture or ballast when in operation. Neglecting to properly ground the ballast and fixture combination may also result in failure of certain lamps to start or for unacceptable levels of electromagnetic noise to be conducted onto the power lines.

Operating Line Voltage Limits

To receive the full benefits of rated lamp output and to prolong ballast life, it is essential that voltage supplied to an installation be maintained within limits prescribed for each circuit. These limits are listed below:

Nominal Voltage	VOLTAGE RANGE	
	Minimum	Maximum
120	108	132
220	198	242
277	249	305
347	312	382
120-277 (UNV)	108	305
347-480 (HRV)	312	528

Subjecting a ballast to excessive voltage for an extended period results in the deterioration of the insulation. This insulation breakdown will cause early ballast failure. Low voltage has no damaging effect on the ballast. However, lamps may not start reliably, and early lamp failure could result.

Internal Ballast Protection

Class P Classification - Since January 1, 1984, the National Electrical Code requires that "where Fluorescent fixtures are installed indoors, the ballast shall have thermal protection integral within the ballast except for simple reactance ballasts." This ruling applies to replacement ballasts as well as to those contained within new fixtures.

In compliance with the National Electrical Code, UL has established a Class P ballast classification for fluorescent light fixtures.

A Class P ballast must employ internal thermal protection limiting its operating temperature.

Universal UL-approved Class P ballasts comply with the National Electrical Code requirement and are equipped with an automatic resetting thermal protector, built-in and adjacent to the transformer coils. The resetting thermal protector functions as a thermostat which will open and temporarily deactivate the ballast when it exceeds the permissible temperature. It will reset when the ballast cools to a safe operating temperature. The ballast will continue to cycle until the cause of overheating is eliminated. If the ballast is defective, it must be replaced. If the cause is external, a Class P ballast will resume normal operation after abnormal conditions are eliminated.

Application And Operating Information

SAFETY

Dimming Ballasts - Ballastar® Dimming Ballasts are controlled by using 10-0vDC. Care should be taken to insure that the line voltage (AC) wires are not connected to the low voltage DC wires. Ballastar® Electronic Dimming Ballasts have protection (safety) circuitry, that will sense the error so as not to harm the installer or the ballast. Dimming ballasts manufactured after May 1999 have the protection circuit. Dimming ballasts manufactured before this date do not have low voltage circuit protection.

Fusing - Class P ballasts do not require fusing. Fusing can be used when a single circuit has a large number of fixtures/ballasts. For a comprehensive list of appropriate fuses, contact our Technical Engineering Services (TES) Department at 1-800-BALLAST or check out our TES home page at www.unvlt.com.

Grounding - ANSI C82.1 recommends all fixtures and ballasts be grounded. Universal requires all electronic ballasts be grounded.

Thermal Protection - All Universal electronic ballasts meet UL 935 Standard for thermal protection. These ballasts are designated Class P. A Class P ballast will disconnect the ballast from input power in the event of internal over-temperature.

PERFORMANCE

Lamp Connections

Fluorescent ballasts are designed to generate voltages in excess of 300 volts. It is imperative that proper connection to quality Lampholders be assured in accordance with wiring diagrams on each page of the catalog and on product labels. Some applications may not require the use of all of the ballast output leads. If any leads are not to be connected, each should be individually capped and insulated to at least 600 volts.

Application Versatility

Many Universal models are designed to allow for applications with different types or quantities of lamps. Lamp applications not listed on label cannot be warranted.

Audible Noise (Sound)

Electrical equipment, including most fluorescent lamp ballasts, produces some noise. Care must be taken to select a ballast with the proper sound rating for a particular lighting installation. Secure mounting can reduce the potential for audible noise.

EMI/RFI

Electronic ballasts operate at high frequency and, therefore, may produce radio frequency interference (RFI) or electromagnetic interference (EMI). Some sensitive electrical equipment such as televisions, radios, or some medical equipment can be adversely affected by this RFI or EMI interference. Currently the electronic frequencies from 450 kilohertz (kHz) to 300 megahertz (MHz) are regulated by the FCC. For electronic ballasts, the limits and regulations are listed in the Code of Federal Regulations, Title 47, Part 18, Subpart C titled RF Lighting Devices. ULT provides ballasts compliant with non-consumer limits for commercial applications, as well as several models in compliance with consumer limits for residential use.

See the Data Sheets for the electronic ballast of interest to determine which FCC requirement, consumer or non-consumer the particular product meets.

Remote Mounting

Excessive hot or cold temperatures, audible noise requirements, or a desire to operate lamps in more than one fixture with the same ballast (tandem), may make it desirable to mount the ballast remotely. Care must be taken to allow for ballast heat dissipation and proper grounding.

In any application, the wire used to extend leads must be at least as large as the wire supplied on the ballast (18 AWG) with an insulation rating of 1000 VAC at 90°C.

Lead lengths in excess of those noted cause loading effects that can dramatically impact ballast performance and void the warranty.

See individual data sheets to determine all wiring options.

Application And Operating Information

PERFORMANCE

- **Lamp Starting Dependability**

Fluorescent lamps are inherently more difficult to start at low temperatures. All ballasts have limitations as to their ability to start lamps at low ambient temperatures. In this catalog, the low starting point for each lamp/ballast combination appears in the column marked "Minimum Starting Temperature."

Universal four lamp instant start ballasts can operate at a minimum starting temperature down to -18°C (0°F) under the following conditions:

1. Lead lengths to the lamps are those supplied, by Universal, with the ballast or shorter.
2. The distance from the lamp to the ground plane is no greater than 3/4".
3. The line voltage supplied to the ballast is no less than rated nominal.
4. The ballast or lamps are not remotely mounted.
5. The lamps have been burned in per lamp manufacturer requirements (typically 100 hours).

The lamp manufacturer should be contacted for lamp operating characteristics and requirements below 15°C (50°F).

- **Light Output**

Optimum light output from fluorescent lamps is achieved when the lamp wall is at 100-110°F. Any substantial excursion (either colder or warmer) will result in a reduction in light output.

- **Ballast Life**

A fluorescent lamp ballast, like any other electrical device, generates heat during its normal operation. Ballast temperatures should be kept as low as possible. Maximum dissipation of heat through fixture design and proper ballast installation will help. Although excessive temperature may not cause the ballast to fail immediately, it can shorten ballast life. To assure maximum life, the ballast case temperature should not exceed 75°C, in a maximum ambient (fixture cavity) of 40°C.

Causes of ballast overheating:

- Incorrect line voltage or frequency
- Incorrect size, type or number of lamps
- Incorrect wiring
- Poor heat dissipation due to surrounding insulation
- Sealed (Vapor Tight) Fixtures - Unusual heat build-up due to lack of ventilation in fixtures may cause thermal (on/off) cycling of certain ballasts. Consult Universal for specific recommendations.

RECOMMENDATIONS...

- Selection of a proper ballast to match the requirements of the lamp, fixture, voltage and installation.
 - Mounting of ballast within the fixture with as much surface contact as possible between the ballast and metal portions of the fixture. Secure mounting will aid in proper heat dissipation and can minimize the potential for ballast hum.
 - The use of heat-conducting dissipators (radiators), if necessary, which increase surface contact between the ballast and fixture.
 - If necessary, locate the ballast in a remote, cooler area outside the fixture.
 - Consult Universal for remote mounting recommendations.
- **Starting Method Legend**
IS = Instant Start
PS = Programmed Start
RS = Rapid Start
PAR-IS = Parallel Instant Start
PAR-PS = Parallel Programmed Start
PAR-RS = Parallel Rapid Start
SER-RS = Series Rapid Start

Specifications

TYPICAL SPECIFICATIONS FOR T8 INSTANT START BALLASTS:

- HP (High Performance Normal Ballast Factor)
 - EL (High Efficiency Low Ballast Factor)
 - HE (High Efficiency Normal Ballast Factor)
 - HEH (High Efficiency High Ballast Factor)
- Ballasts shall include 18AWG solid copper leads color coded in compliance with ANSI C82.11-2011.
 - Ballasts shall be instant start and provide starting sequence consistent with ANSI standard C82.11-2011.
 - Ballasts (1-4 lamps) shall operate as Parallel Circuit, allowing remaining lamp(s) to maintain full light output if one or more lamps fail.
 - Ballasts shall operate from 50/60 Hz input source of 120 through 277 Volts, and sustained variations of $\pm 10\%$ (Voltage & Frequency) with no damage to the ballasts.
 - Ballasts shall be a high frequency electronic type, and operate lamps at a frequency above 42 kHz to minimize interference with infrared control systems.
 - Ballasts shall tolerate operation in ambient temperatures up to 105°F (40°C) without damage.
 - Ballasts shall have a minimum starting temperature of 0°F (-18°C) for the primary lamp application.
 - Ballasts shall have a maximum case temperature test point of 75°C printed on the label for easy fixture testing and trouble shooting.
 - Ballasts shall support 18' maximum lead length remote mounting for the primary lamp.
 - Ballasts shall comply with FCC Part 18 Non-Consumer Equipment for EMI (power line conducted) and RFI (Radiated).
 - Ballasts shall provide transient immunity as recommended by ANSI C82.11-2011.
 - Ballasts shall auto-restrike allowing replacement of lamps without cycling power.
 - Ballasts shall incorporate Anti-Striation Circuitry for stable operation of reduced wattage lamps.
 - Ballasts shall operate lamps with no visible flicker (<3% flicker index).
 - Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
 - Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor and/or CSA certified for both US and Canadian application.
 - Ballasts shall meet NEMA Premium/CEE High Performance for high efficiency operation.
 - Ballasts shall be quiet Class A sound rating.
 - Ballasts shall have a Ballast Factor for the primary lamp application of greater than .77 for EL, .85 for HE and 1.15 for HEH, per ANSI C82.11-2011.
 - Input current Total Harmonic Distortion shall not exceed 10% for the primary lamp.
 - Ballasts shall have a Power Factor greater than .98 for primary lamp.
 - Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation and ANSI C82.11-2011.
 - The ballasts shall not have any PCB's.
 - The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
 - Manufacturer shall have been manufacturing electronic ballasts for at least thirty years.
 - Ballasts shall be manufactured in an ISO 9001/ISO 9002 certified facility in North America.
 - Ballasts shall be Universal Lighting Technologies Bx32IUNVHP-N (x=1 or 2) or Bx32IUNVHP-A (x= 3 or 4) depending upon the quantity of lamps per fixture.

Specifications

TYPICAL SPECIFICATIONS FOR T8 PROGRAMMED START BALLASTS:

- EL (High Efficiency Low Ballast Factor)
- HE (High Efficiency Normal Ballast Factor)
- HEH (High Efficiency High Ballast Factor)

- Ballasts shall include 18AWG solid copper leads color coded in compliance with ANSI C82.11-2011.
- Ballasts shall be Programmed Start with arc current established in less than 700 milliseconds after power is applied.
- Ballasts (2-4 lamps) shall operate as a Parallel Circuit, allowing remaining lamp(s) to maintain full light output if one or more lamps fail.
- Ballasts shall have a minimum Rh/Rc of 4.25 each time the lamps are started.
- Ballasts shall have a maximum ionization current (Glow Current) of 10 milliamps during preheating interval.
- Ballasts shall operate from a 50/60 Hz input source of 120 through 277 Volts, and sustained variations of $\pm 10\%$ (Voltage & Frequency) with no damage to the ballasts.
- Ballasts shall be a high frequency electronic type, and operate lamps at a frequency above 42 kHz to minimize interference with infrared control systems.
- EL and HE ballasts shall tolerate operation in ambient temperatures up to 105°F (40°C) without damage. In addition, HEH ballasts shall operate up to a 194°F (90°C) maximum case temperature.
- Ballasts shall have a maximum case temperature test point printed on the label for easy fixture testing and trouble shooting.
- Ballasts shall have a minimum starting temperature of -20°F (-29°C) for the primary lamp application when not remote mounted.
- Ballasts shall support 20' maximum lead length remote mounting for the primary lamp.
- Ballasts shall comply with FCC Part 18 Non-Consumer Equipment for EMI (power line conducted) and RFI (Radiated).
- Ballasts shall provide transient immunity as recommended by ANSI C82.11-2011.
- Ballasts shall auto-restrike allowing replacement of lamps without cycling power.
- Ballasts shall incorporate Anti-Striation Circuitry for stable operation of reduced wattage lamps.
- Ballasts shall operate lamps with no visible flicker (<3% flicker index).
- Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.
- Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor and/or CSA certified for both US and Canadian application.
- Ballasts shall meet NEMA Premium/CEE High Performance for high efficiency operation.
- Ballasts shall be quiet Class A sound rating.
- Ballasts shall have a Ballast Factor for the primary lamp application of greater than .71 for EL, .88 for HE, and 1.15 for HEH, per ANSI C82.11-2011.
- Input current Total Harmonic Distortion shall not exceed 10% for the primary lamp application.
- Ballasts shall have a Power Factor greater than 0.98, for the primary lamp application.
- Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation and ANSI C82.11-2011.
- The ballasts shall not have any PCB's.
- The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture. In addition, HEH models shall carry a three year warranty when operated at 194°F (90°C) maximum case temperature.
- Manufacturer shall have been manufacturing electronic ballasts for at least thirty years.
- Ballasts shall be manufactured in an ISO 9001/ISO 9002 Certified Facility in North America.
- Ballasts shall be RoHS compliant.
- Ballasts shall be Universal Lighting Technologies ULTim8 Programmed Start Product B232PUNVEL-B, B332PUNVEL-A, B432PUNVEL-A, B232PUNVHE-B, B332PUNVHE-A, B432PUNVHE-A, B232PUNVHEH-A, B332PUNVHEH-A, or B432PUNVHEH-E.

Specifications

TYPICAL SPECIFICATIONS FOR T5 & T5HO BALLASTS:

- Ballasts shall include 18AWG solid copper leads color coded in compliance with ANSI C82.11-2011 or shall use wire trap terminals for ease of installation.
- Ballasts shall be Programmed Start.
- Ballasts shall operate from a 50/60 Hz input source of 120 through 277 Volts, and sustained variations of $\pm 10\%$ (Voltage & Frequency) with no damage to the ballasts.
- Ballasts shall be a high frequency electronic type, and operate lamps at a frequency above 42 kHz to minimize interference with infrared control systems.
- Ballasts shall tolerate operation in ambient temperatures up to 105°F (40°C) without damage. HB ballasts shall operate up to 194°F (90°C) maximum case temperature.
- Ballasts shall have a minimum starting temperature of 0°F (-18°C) for the primary lamp application. T5HO ballasts shall have a minimum starting temperature of -20°F (-29°C) for the primary lamp application when not remote mounted.
- Ballasts shall support 20' lead length remote mounting for the primary lamp.
- Ballasts shall comply with FCC Part 18 Non-Consumer Equipment for EMI (power line conducted) and RFI (radiated).
- Ballasts shall provide transient immunity recommended by ANSI C82.11-2011.
- Ballasts shall incorporate lamp shutdown circuitry for end of lamp life protection.
- Ballasts shall auto-restrike to allow for re-lamping without the need to cycle power.
- Ballasts shall operate lamps with no visible flicker (<3% flicker index).
- Ballasts shall tolerate sustained open and short circuit output conditions without damage.
- Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor, and/or CSA certified for both US and Canadian application.
- Ballasts shall be quiet Class A sound rating.
- Ballasts shall have a Ballast Factor for the primary lamp application greater than .95 per ANSI C82.11-2011. Exceptions are ballasts that specify BF in part number, such as B228PUNV85-D, B228PUNV90-C and B228PUNV115-D.
- Input current Total Harmonic Distortion shall not exceed 10% for the primary lamp.
- Ballasts shall have a Power Factor greater than .98 for the primary lamp application.
- Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation and ANSI C82.11-2011.
- The ballasts shall not have any PCB's.
- The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture. In addition, HB ballasts shall carry a three year warranty at a maximum case temperature of 194°F (90°C).
- Manufacturer shall have been manufacturing electronic ballasts for at least thirty years.
- Ballasts shall be manufactured in an ISO 9001 / ISO 9002 Certified Facility in North America.
- Ballast shall be Universal Lighting Technologies Accustart5.

Specifications

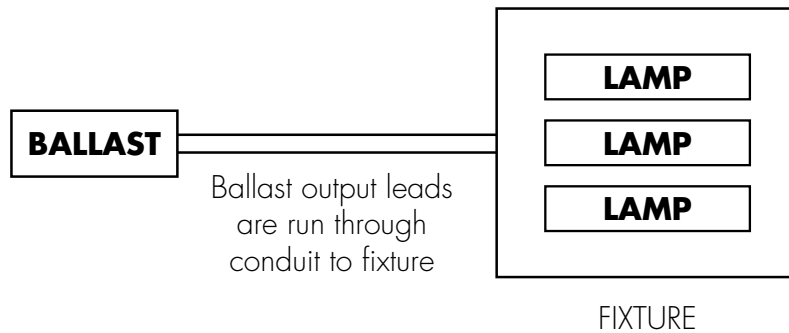
TYPICAL SPECIFICATIONS FOR ELECTRONIC COMPACT FLUORESCENT BALLASTS:

- Ballasts shall be constructed of metal housing to meet plenum and construction code requirements while providing maximum heat transfer without extra grounding wires for extended ballast life.
- Ballasts shall be constructed using dual entry color coded wire trap terminals for wiring accuracy and ease of installation.
- Ballasts shall be Programmed Start.
- Ballasts shall have a minimum Rh/Rc of 4.25 each time the lamps are started.
- Ballasts shall have a maximum ionization current (Glow Current) of 25 milliamps during preheating interval.
- Ballasts shall operate from 50/60 Hz input source of 120 through 277 Volts, and sustained variations of $\pm 10\%$ (Voltage & Frequency) with no damage to the ballasts.
- Ballasts shall be a high frequency electronic type, and operate lamps at a frequency above 50 kHz to minimize interference with infrared control systems.
- Ballasts shall have a minimum starting temperature of 0°F (-18°C) for the primary lamp application.
- Ballasts shall tolerate operation in ambient temperatures up to 140°F (55°C) without damage.
- Ballasts shall have a maximum case temperature test point of 75°C printed on the label for easy fixture testing and trouble shooting.
- Ballasts shall support 12' lead length remote mounting for the primary lamp.
- Ballasts shall comply with FCC Part 18 Non-Consumer Equipment for EMI (power line conducted) and RFI (radiated).
- Ballasts shall provide transient immunity as recommended by ANSI C82.11-2011.
- Ballasts shall incorporate end of lamp life shutdown circuitry for end of lamp life protection.
- Ballasts shall allow for re-lamping without the need to cycle power.
- Ballasts shall operate lamps with no visible flicker (<3% flicker index).
- Ballasts shall tolerate sustained open and short circuit output conditions without damage.
- Ballasts shall be Underwriters Laboratory (UL 935) listed, Class P, Type 1 Outdoor and/or CSA certified for both US and Canadian application.
- Ballasts shall be UL 935 Type CC rated to reduce arcing caused by loose connections or improper lamp-pin to lampholder contact.
- Ballasts shall be UL 2043 certified for use in plenums and marked on label as "Suitable for Air Handling Spaces".
- Ballasts shall be quiet Class A sound rating.
- Ballasts shall have a Ballast Factor for primary lamp application greater than .95 per ANSI C82.11-2011.
- Input current Total Harmonic Distortion shall not exceed 10% for the primary lamp.
- Ballasts shall have a Power Factor greater than .98 for the primary lamp application.
- Lamp Current Crest Factor (ratio of peak to RMS current) shall be 1.7 or less in accordance with lamp manufacturer recommendation and ANSI C82.11-2011.
- The ballasts shall not have any PCB's.
- The manufacturer shall provide written warranty against defects in material or workmanship, including replacement, for five years from date of manufacture.
- Manufacturer shall have been manufacturing electronic ballasts for at least thirty years.
- Ballasts shall be manufactured in an ISO 9001 / ISO 9002 Certified Facility in North America.
- Ballasts shall be manufactured by Universal Lighting Technologies.

Notes

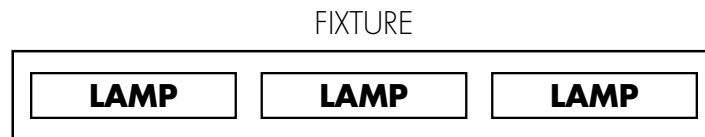
Electronic Ballast Applications

Remote Mounting



Configuration is applicable to 1, 2 and 4-lamp fixtures as well.

Through Wiring

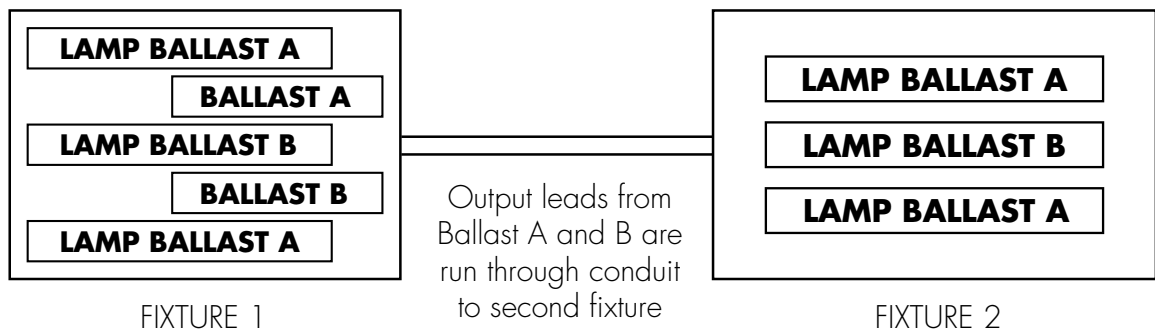


Ballast output leads are run through the fixture to each lamp, NOT through conduit. Minimize lead lengths by mounting ballast at the center of the fixture when possible.

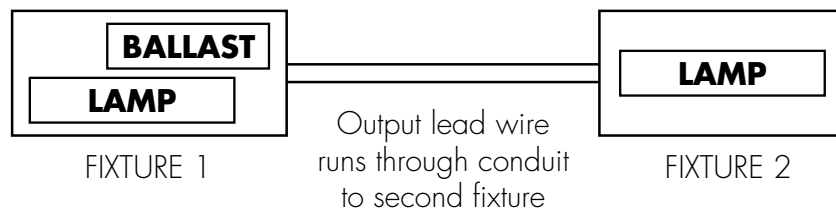
Configuration is applicable to 2 and 3-lamp fixtures as well.

Tandem Wiring

2-Ballast Configuration



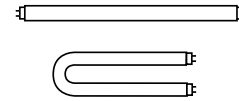
1-Ballast Configuration



TRIAD® ELECTRONIC BALLASTS

FOR (1) & (2) F17T8 LAMP

- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 1-2 Lamp Applications



F17T8

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F11T8 - One Lamp Application												
1	IS	120	B132IUNVHE-N	0.09	11	> .99	0.90	8.18	< 10	0/-18	3a	-N
		120	B232IUNVHP-N	0.12	14	> .99	0.90	6.43	< 10	0/-18	3a	-N
F11T8 - Two Lamp Application												
2	PAR-IS	120	B232IUNVHP-N	0.17	20	> .99	0.78	3.90	< 10	0/-18	3	-N
		277		0.08	21	> .96		3.71	< 15			
F15T8 - One Lamp Application												
1	IS	120	B132IUNVHE-N	0.11	14	> .99	0.90	6.43	< 10	0/-18	3a	-N
		120	B232IUNVHP-N	0.14	16	> .99	1.02	6.38	< 10	0/-18	3a	-N
F15T8 - Two Lamp Application												
2	PAR-IS	120	B232IUNVHP-N	0.21	25	> .99	0.86	3.51	< 10	0/-18	3	-N
		277		0.09		> .98		3.50	< 10			
F17T8 - One Lamp Application												
1	IS	120	B232I120RES-A*	0.35	21	> .50	1.08	5.14	< 150	0/-18	3a	-A
		120	B232I120RES-G*	0.34	22	> .50	1.08	4.91	< 150	0/-18	3a	-G
		347	B132I347HP	0.05	18	> .95	0.92	5.11	< 15	0/-18	1	ST
		120	B232IUNV-C	0.17	20	> .98	1.04	5.20	< 10	0/-18	21a	-C
		277		0.08		> .95						
		120	B132IUNVEL-A ²	0.12	14	> .98	0.78	5.57	< 15	0/-18	1	-A
		277		0.06		> .90						
		120	B132IUNVHE-N	0.14	16	> .98	0.90	5.63	< 10	0/-18	1	-N
		277		0.06		> .97						
		120	B132IUNVHP-N	0.14	17	> .96	0.90	5.29	< 10	0/-18	1	-N
		277		0.07		18		> .96	5.00			
		120	B232IUNVHP-N	0.17	21	> .99	1.07	5.10	< 10	0/-18	3a	-N
277		0.08	> .96									
1	PS	120	B132PUNVHP-A ²	0.15	17	> .99	0.91	5.35	< 10	0/-18	2	-A
		277		0.07		> .96		< 15				
		120	B232PUNVHEH-A ¹	0.23	26	> .99	1.38	5.29	< 10	-20/-29	30	-A
		277		0.11	27	> .94		5.17	< 10			
347	ES1510A	0.05	18	> .97	0.87	4.83	< 10	0/-18	40	ESA		
F17T8 - Two Lamp Applications												
2	PAR-IS	120	B232I120RES-G*	0.49	33	> .50	0.94	2.85	< 140	0/-18	3	-G
		120	B232I120RES-A*	0.49	32	> .50	0.94	2.94	< 140	0/-18	3	-A
		347	B232I347HP-A	0.09	32	> .95	0.92	2.88	< 10	0/-18	3	-A
		347	B232I347HPL	0.09	29	> .98	0.79	2.72	< 10	0/-18	3	ST
		120	B232IUNV104-A	0.30	36	> .99	1.04	2.78	< 10	0/-18	3	-A
		277		0.15		> .88						
		120	B232IUNV-C	0.27	31	> .98	0.91	2.94	< 10	0/-18	21	-C
		277		0.12								
		120	B232IUNVEL-A ²	0.21	25	> .95	0.80	3.20	< 10	0/-18	3	-A
		277		0.10	26			3.08				
		120	B232IUNVEL-N ²	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
		277		TBD	TBD							
		120	B232IUNVHE-A ²	0.24	30	> .95	0.90	3.00	< 10	0/-18	3	-A
		277		0.12								
		120	B232IUNVHP-N	0.26	31	> .99	0.89	2.87	< 10	0/-18	3	-N
		277		0.11		> .98						
120	B232IUNVHEH-A	0.33	41	> .95	1.18	2.88	< 10	-20/-29	3	-A		
277		0.15		40			2.95					

* For Residential Use Only

¹ Consult Lamp Manufacturers for applications with Ballast Factor > 1.20

² Consult Universal for Availability

See page 1-18 for Dimensions
and Wiring Diagrams

IS = Instant Start

PS = Programmed Start

RS = Rapid Start

PAR-IS = Parallel Instant Start

STARTING METHOD LEGEND

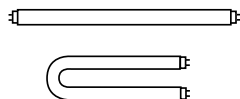
PAR-PS = Parallel Programmed Start

SER-PS = Series Programmed Start

PAR-RS = Parallel Rapid Start

SER-RS = Series Rapid Start

SER-IS = Series Instant Start



- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 3-4 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR (3) & (4) F17T8 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F17T8 - Two Lamp Applications												
2	SER-PS	347	ES1329 A	0.11	36	> .97	0.87	2.42	< 10	0/-18	37	ESA
2	PAR-PS	120	B232PUNVEL-B	.22	26	> .99	0.74	2.80	< 10	-20/-29	30	-B
		277		.11	25	> .92		2.96				
		120	B232PUNVHE-B	.25	30	> .90	0.90	3.00	< 10	-20/-29	30	-B
		277		.12								
		120	B232PUNVHEH-A	.35	41	> .99	1.20	2.95	< 10	-20/-29	30	-A
		277		.16		> .97		2.93				
120	B332PUNVHEH-A ¹	.38	46	> .98	1.31	2.85	< 10	-20/-29	30	-A		
277		.17										
F17T8 - Three Lamp Applications												
3	PAR-IS	347	B332I347HP	0.14	48	> .98	0.92	1.92	< 10	0/-18	6	ST
		347	B332I347HPL	0.12	43	> .99	0.80	1.85	< 10	0/-18	6	ST
		120	B332IUNVEL-A	0.35	42	> .99	0.82	1.95	< 10	0/-18	6	-A
		277		0.15	41	> .95		2.00				
		120	B332IUNVHE-A	0.39	46	> .99	0.92	2.00	< 10	0/-18	6	-A
		277		0.17		> .97						
120	B332IUNVHP-A	0.38	45	> .99	0.92	2.04	< 10	0/-18	6	-A		
277		0.18		> .90								
3	PAR-PS	120	B432I120RES-A*	0.72	51	> .50	1.00	1.96	< 135	0/-18	7a	-A
		120	B332PUNVEL-A	0.31	37	> .99	.74	1.99	< 10	-20/-29	49	-A
		277		0.14		> .94		2.01				
		120	B332PUNVHE-A	0.37	44	> .90	.91	2.05	< 10	-20/-29	49	-A
		277		0.16	43			2.14				
		120	B332PUNVHEH-A	0.49	59	> .98	1.19	2.02	< 10	-20/-29	49	-A
		277		0.22	58			2.04				
		120	B432PUNVHEH-E	0.47	56	> .99	1.14	2.04	< 10	-20/-29	49	-E
277		0.23	58	> .91		1.97						
F17T8 - Four Lamp Applications												
4	PAR-IS	120	B432I120RES-A*	0.84	61	> .50	0.92	1.51	< 130	0/-18	7a	-A
		347	B432I347HP	0.19	62	> .98	0.92	1.48	< 10	0/-18	7a	ST
		347	B432I347HPL	0.17	56	> .97	0.82	1.46	< 10	0/-18	7	ST
		120	B432IUNVEL-A	0.44	53	> .98	0.79	1.49	< 10	0/-18	7a	-A
		277		0.20	52	> .95		1.52				
		120	B432IUNVHE-A	0.49	59	> .98	0.90	1.53	< 10	0/-18	7a	-A
		277		0.22	58	> .95		1.55				
		120	B432IUNVHP-A	0.49	59	> .98	0.90	1.53	< 10	0/-18	7a	-A
		277		0.22	58	> .90		1.55				
4	PAR-PS	120	B432PUNVEL-A	0.42	50	> .99	0.72	1.43	< 10	-20/-29	50	-A
		277		0.18	49	> .95		1.47				
		120	B432PUNVHE-A	0.49	59	> .90	0.89	1.52	< 10	-20/-29	50	-A
		277		0.22	58			1.54				
		120	B432PUNVHEH-E	0.65	77	> .99	1.19	1.54	< 10	-20/-29	50	-E
277		0.30	79	> .95	1.20	1.52						

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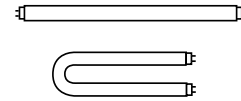
¹ Consult Lamp Manufacturers for applications with Ballast Factor > 1.20

See page 1-18 for Dimensions
and Wiring Diagrams

TRIAD® ELECTRONIC BALLASTS

FOR (1) & (2) F25T8 LAMP

- Standard & Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 1-2 Lamp Applications



**F17T8-
F25T8**

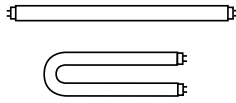
Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.		
Qty.	Starting Method													
F25T8 - One Lamp Applications														
1	IS	347	B132I347HP	0.07	25	> .95	0.90	3.60	< 10	0/-18	1	ST		
		120	B132IUNVEL-A	0.18	19	> .98	0.78	4.11	<10	0/-18	1	-A		
		277		0.09		> .90								
		120	B132IUNVHE-N	0.20	23	> .99	0.89	3.87	<10	0/-18	1	-N		
		277		0.09		> .98								
		120	B132IUNVHP-N	0.20	24	>.98	0.88	3.67	< 10	0/-18	1	-N		
		277		0.09										
		120	B232IUNVHP-N	0.24	28	> .99	1.05	3.75	< 10	0/-18	3a	-N		
		277		0.10		> .98								
		120	B232I120RES-A*	0.43	28	> .50	1.08	3.86	< 150	0/-18	3a	-A		
120	B232I120RES-G*	0.43	28	> .50	1.08	3.86	< 150	0/-18	3a	-G				
1	PS	347	B232I347HPL	0.08	26	> .98	0.88	3.38	< 10	0/-18	3a	ST		
		120	B232IUNV-C	0.24	28	> .98	1.02	3.64	< 10	0/-18	21a	-C		
		277		0.11										
		347	ES1510A	0.07	24	> .97	0.87	3.63	< 10	0/-18	40	ESA		
		120	B232PUNVHEH-A ¹	0.31	37	>.99	1.36	3.70	< 10	-20/-29	30	-A		
		277		0.14		>.97								
		120	B132PUNVHP-A	0.20	24	> .99	0.91	3.79	< 10	0/-18	2	-A		
		277		0.09		> .98								
		F25T8 - Two Lamp Applications												
		2	PAR-IS	120	B232I120RES-A*	0.64	46	> .50	0.92	2.00	< 130	0/-18	3	-A
120	B232I120RES-G*			0.64	46	> .50	0.92	2.00	< 140	0/-18	3	-G		
347	B232I347HP-A			0.13	46	> .95	0.89	1.93	< 10	0/-18	3	-A		
347	B232I347HPL			0.12	41	> .98	0.75	1.83	< 10	0/-18	3	ST		
120	B232IUNV-C			0.37	45	> .98	0.90	2.00	< 10	0/-18	21	-C		
277				0.16		44							2.05	
120	B232IUNV104-A			0.43	51	> .99	1.04	1.94	< 10	0/-18	3	-A		
277				0.20		50							> .93	1.98
120	B232IUNVEL-A ²			0.30	36	> .95	0.79	2.19	< 10	0/-18	3	-A		
277				0.14		37							0.80	2.18
120	B232IUNVEL-N ²			TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD		
277				TBD									TBD	
120	B232IUNVHE-A			0.36	44	> .95	0.88	2.00	< 10	0/-18	3	-A		
277				0.16										
120	B232IUNVHP-N			0.37	44	> .99	0.90	2.05	< 10	0/-18	3	-N		
277				0.16		43							2.09	
120	B232IUNVHEH-A	0.51	61	> .95	1.18	1.93	< 10	20/-29	3	-A				
277		0.22		60							1.97			
2	SER-PS	347	ES1329A	0.14	49	> .97	0.87	1.78	<10	0/-18	37	ESA		
2	PAR-PS	120	B232PUNVEL-B	0.30	36	> .99	0.74	2.06	<10	-20/-29	30	-B		
		277		0.14		35							> .96	2.12
		120	B232PUNVHE-B	0.35	42	> .90	0.90	2.14	<10	-20/-29	30	-B		
		277		0.16		41							2.18	
		120	B232PUNVHEH-A	0.50	60	> .99	1.18	1.98	<10	-20/-29	30	-A		
		277		0.22		59							> .98	1.99
120	B332PUNVHEH-A ¹	0.55	66	> .98	1.31	1.98	<10	-20/-29	30	-A				
277		0.24		65							2.00			

* For Residential Use Only

¹ Consult lamp manufacturer for applications with ballast factor >1.20

² Consult Universal for availability

See page 1-18 for Dimensions
and Wiring Diagrams



- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 3 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR (3) F25T8 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F25T8 - Three Lamp Applications												
3	PAR-IS	120	B432I120RES-A*	0.96	71	> .50	0.98	1.38	< 130	0/-18	7a	-A
		347	B332I347HP	0.20	68	> .99	0.91	1.34	< 10	0/-18	6	ST
		347	B332I347HPL	0.17	60	> .99	0.76	1.26	< 10	0/-18	6	ST
		120	B332IUNVEL-A	0.49	59	> .99	0.80	1.36	< 10	0/-18	6	-A
		277		0.22	58	> .97		1.38				
		120	B332IUNVHE-A	0.56	67	> .99	0.90	1.34	< 10	0/-18	6	-A
		277		0.24	66	> .98		1.36				
		120	B332IUNVHP-A	0.55	66	> .99	0.90	1.36	<10	0/-18	6	-A
277	0.25	65		> .90	1.38							
3	PAR-PS	120	B332PUNVEL-A	0.46	55	> .99	0.73	1.34	<10	-20/-29	49	-A
		277		0.20	54	> .97		1.36				
		120	B332PUNVHE-A	0.53	63	> .90	0.89	1.40	<10	-20/-29	49	-A
		277		0.23	62			1.43				
		120	B332PUNVHEH-A	0.72	86	> .98	1.18	1.36	<10	-20/-29	49	-A
		277		0.31	85			1.38				
		120	B432PUNVHEH-E	0.69	82	> .99	1.13	1.37	<10	-20/-29	49	-E
		277		0.31		> .95		1.38				

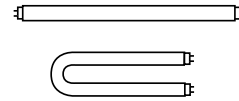
* For Residential Use Only

See page 1-18 for Dimensions and Wiring Diagrams

TRIAD® ELECTRONIC BALLASTS

FOR (3) & (4) F25T8 LAMPS

- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 3-4 Lamp Applications



F25T8

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F25T8 - Four Lamp Applications												
4	PAR-IS	120	B432I120RES-A*	1.13	85	> .50	0.90	1.06	< 130	0/-18	7a	-A
		347	B432I347HPL	0.24	83	> .98	0.78	0.94	< 10	0/-18	7	ST
		120	B432IUNVHP-A	0.72	87	> .99		1.02	< 10	0/-18	7a	-A
		277		0.32	85	> .95	0.89	1.05	< 10	0/-18	7a	-A
		347	B432I347HP	0.26	90	> .98	0.90	1.00	< 10	0/-18	7a	ST
		120	B432IUNVEL-A	0.65	78	> .98	0.78	1.00	< 10	0/-18	7a	-A
		277		0.28	76			1.03	< 10	0/-18	7a	-A
		120	B432IUNVHE-A	0.72	87	> .99		1.02	< 10	0/-18	7a	-A
		277		0.31	85	> .98	0.89	1.05	< 10	0/-18	7a	-A
4	PAR-PS	120	B432PUNVEL-A	0.61	73	> .99		0.98	<10	-20/-29	50	-A
		277		0.27	72	> .97	0.72	1.00	<10	-20/-29	50	-A
		120	B432PUNVHE-A	0.73	87	> .90	0.88	1.01	<10	-20/-29	50	-A
		277		0.31	84			1.04	<10	-20/-29	50	-A
		120	B432PUNVHEH-E	0.94	112	> .99		1.06	<10	-20/-29	50	-E
		277		0.91	108	> .95	1.18	1.09	<10	-20/-29	50	-E
F25T8ES (22W) - One Lamp Applications												
1	IS	120	B132IUNVHE-N	0.16	19	> .99	0.89	4.68	<10	60/16	3a	-N
		277		0.07		> .98						
		120	B232IUNVHP-N	0.20	24	> .99	1.14	4.74	<10	60/16	3a	-N
		277		0.09		> .98						
F25T8ES (22W) - Two Lamp Applications												
2	IS	120	B232IUNVHP-N	0.31	37	> .99	0.89	2.43	<10	60/16	3	-N
		277		0.13	36			2.46				

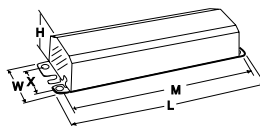
* For Residential Use Only

¹ Consult Lamp Manufacturers for applications with Ballast Factor > 1.20

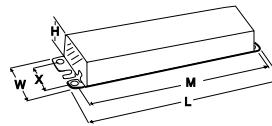
See page 1-18 for Dimensions and Wiring Diagrams

Fluorescent-Electronic

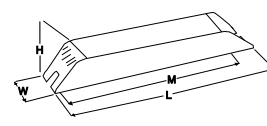
Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
ST	9.50"	2.40"	1.55"	8.89"	1.69"
-A	9.50"	1.70"	1.18"	8.89"	1.69"
-B	9.50"	1.50"	1.00"	8.89"	0.88"
-C	14.25"	1.18"	1.00"	13.75"	---
-G	9.50"	1.18"	1.00"	8.89"	---
-N	9.50"	1.30"	1.00"	8.89"	---
ESA	9.50"	1.56"	1.00"	8.88"	0.78"



ST



-A, -B, -G, ESA, -N



-C

WIRING DIAGRAMS

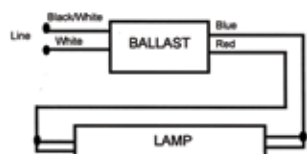


DIAGRAM 1

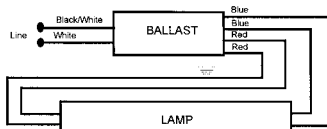


DIAGRAM 2

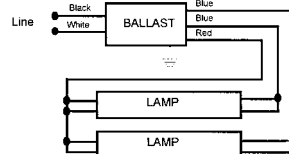
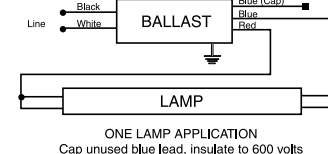


DIAGRAM 3



ONE LAMP APPLICATION
Cap unused blue lead, insulate to 600 volts

DIAGRAM 3a

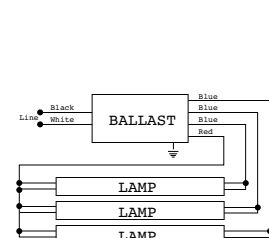
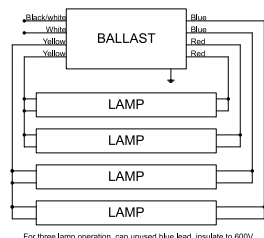
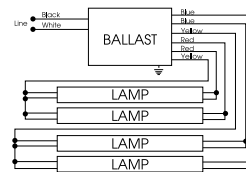


DIAGRAM 6



For three lamp operation, cap unused blue lead, insulate to 600V

DIAGRAM 7



For three lamp operation, cap any blue lead, insulate to 600V

DIAGRAM 7a

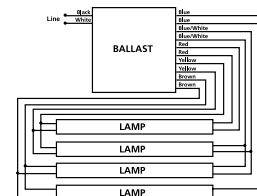


DIAGRAM 8

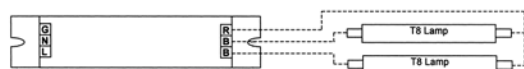


DIAGRAM 21

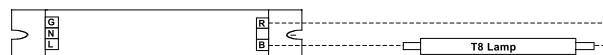
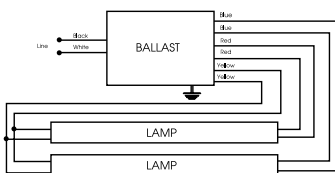
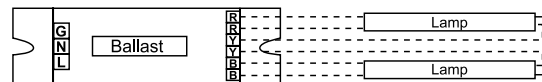


DIAGRAM 21a



For one lamp operation, individually cap blue leads, insulate to 600V

DIAGRAM 30



FOR ONE LAMP OPERATION, CAP YELLOW LEADS INDIVIDUALLY

DIAGRAM 37



DIAGRAM 40

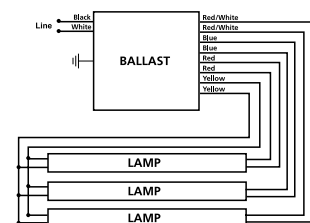


DIAGRAM 49

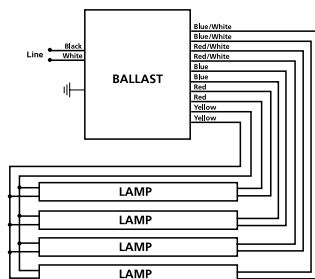
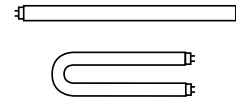


DIAGRAM 50

TRIAD® ELECTRONIC BALLASTS

FOR (1) F32T8 LAMP

- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 1 Lamp Applications



F32T8

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8 - One Lamp Applications												
1	IS	120	B132IUNVHP-N	0.25	30	> .98	0.88	2.93	< 10	0/-18	1	-N
		277		0.11								
		347	B132I347HP	0.09	31	> .98	0.88	2.84	< 10	0/-18	1	ST
		120	B132IUNVEL-A	0.22	25	> .98	0.77	3.08	< 10	0/-18	1	-A
		277		0.11		> .95						
		120	B132IUNVHE-N	0.25	28	> .99	0.87	3.11	< 10	0/-18	1	-N
		277		0.11								
		120	B232I120RES-A*	0.53	35	> .50	1.06	3.03	< 135	0/-18	3	-A
		120	B232I120RES-G*	0.53	36	> .50	1.06	2.94	< 150	0/-18	3	-G
		347	B232I347HPL	0.09	32	> .98	0.91	2.84	< 10	0/-18	3	ST
		120	B232IUNVHP-N	0.29	35	> .99	1.04	2.99	< 10	0/-18	3	-N
		277		0.13	34	> .98	1.04	3.03	< 10	0/-18	3	-N
		347	B232I347HP-A	0.11	36	> .95	1.05	2.92	< 10	0/-18	3	-A
		120	B232IUNV-C	0.29	35	> .98	1.02	2.91	< 10	0/-18	22	-C
		277		0.13								
		120	B232IUNVEL-A ²	0.24	30	> .95	0.95	3.17	< 10	0/-18	3	-A
		277		0.11								
		120	B232IUNVEL-N	0.26	31	> .95	0.91	2.95	< 10	0/-18	3	-N
		277		0.11	30			2.98				
1	PS	120	B232IUNVHE-A	0.28	33	> .95	1.05	3.18	< 10	0/-18	3	-A
		277		0.13								
		120	B232IUNVHEH-A ¹	0.39	47	> .95	1.38	2.94	< 10	-20/-29	3	-A
		277		0.18	46			3.00				
		120	B132PUNVHP-A	0.26	31	> .99	0.88	2.84	< 10	0/-18	2	-A
		277		0.11	30	> .98		2.93				
		347	ES1510A	0.09	31	> .97	0.87	2.81	< 10	0/-18	40	ESA
		120	B232PUNVHE-B	0.29	35	> .90	1.01	2.90	< 10	-20/-29	30	-B
		277		0.13	34			2.98				
		120	B232PUNVEL-B	0.24	29	> .99	0.83	2.88	< 10	-20/-29	30	-B
277		0.12	28	> .93		3.02						
120	B232PUNVHEH-A ¹	0.40	47	> .99	1.34	2.86	< 10	-20/-29	30	-A		
277		0.18										

* For Residential Use Only

¹ Consult Lamp Manufacturers for applications with Ballast Factor > 1.20

² Consult Universal for availability

See page 1-23 for Dimensions and Wiring Diagrams

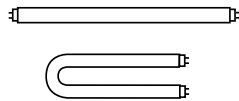
IS = Instant Start
PS = Programmed Start

RS = Rapid Start
PAR-IS = Parallel Instant Start

STARTING METHOD LEGEND
PAR-PS = Parallel Programmed Start
SER-PS = Series Programmed Start

PAR-RS = Parallel Rapid Start
SER-RS = Series Rapid Start

SER-IS = Series Instant Start



- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 2 Lamp Applications

TRIAD® ELECTRONIC BALLASTS FOR (2) F32T8 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8 - Two Lamp Applications												
2	PAR-IS	120	B232I120RES-A*	0.80	56	> .50	0.88	1.57	< 120	0/-18	3	-A
		120	B232I120RES-G*	0.80	56	> .50	0.88	1.57	< 130	0/-18	3	-G
		347	B232I347HPL	0.14	50	> .99	0.78	1.56	< 10	0/-18	3	ST
		120	B232IUNVHP-N	0.47	55	> .99	0.86	1.58	< 10	0/-18	3	-N
		277		0.20								
		347	B232I347HP-A	0.17	58	> .99	0.88	1.52	< 10	0/-18	3	-A
		120	B232IUNV-C	0.48	58	> .98	0.88	1.52	< 10	0/-18	21	-C
		277		0.20								
		120	B232IUN104-A	0.54	65	> .99	1.04	1.57	< 10	0/-18	3	-A
		277		0.24								
		120	B232IUNVEL-A ²	0.40	48	> .95	0.77	1.60	< 10	0/-18	3	-A
		277		0.17								
		120	B232IUNVEL-N	0.42	49	> .95	0.77	1.60	< 10	0/-18	3	-N
		277		0.18								
		120	B232IUNVHE-A	0.45	55	> .95	0.87	1.58	< 10	0/-18	3	-A
		277		0.20								
		120	B232IUNVHEH-A	0.62	74	> .95	1.18	1.59	< 10	-20/-29	3	-A
		277		0.26								
		347	B332IHRVHB-E ¹	0.22	76	> .97	1.22	1.61	< 10	-20/-29	46	-E
		480		0.17								
		347	B332I347HPL	0.16	56	> .99	0.87	1.55	< 10	0/-18	6	ST
		120	B332IUNVHP-A	0.53	63	> .99	0.99	1.57	< 10	0/-18	6	-A
		277		0.24								
		347	B332I347HP	0.19	66	> .99	0.99	1.50	< 10	0/-18	6	ST
		120	B332IUNVEL-A	0.48	57	> .99	0.89	1.56	< 10	0/-18	6	-A
		277		0.21								
		120	B332IUNVHE-A	0.53	64	> .99	0.99	1.55	< 10	0/-18	6	-A
		277		0.23								

* For Residential Use Only

1 Consult Lamp Manufacturers for applications with Ballast Factor > 1.20

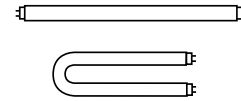
2 Consult Universal for availability

See page 1-23 for Dimensions
and Wiring Diagrams

TRIAD® ELECTRONIC BALLASTS

FOR (2) & (3) F32T8 LAMPS

- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 2 & 3 Lamp Applications



F32T8

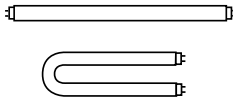
Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8 - Two Lamp Applications												
2	SER-PS	347	ES1329A	0.17	59	> .97	0.87	1.47	<10	0/-18	37	ESA
		120	B232PUNVHE-B	0.46	55	> .90	0.88	1.59	<10	-20/-29	30	-B
		277		0.20	54			1.64				
		120	B232PUNVEL-B	0.38	46	> .99	0.71	1.56	<10	-20/-29	30	-B
		277		0.16	44	> .97		1.60				
	PAR-PS	120	B232PUNVHEH-A	0.65	77	> .99	1.17	1.52	<10	-20/-29	30	-A
		277		0.28	76			1.54				
		120	B332PUNVHE-A	0.54	65	> .90	1.03	1.59	<10	-20/-29	30	-A
		277		0.24	64			1.61				
		120	B332PUNVEL-A	0.44	53	> .99	0.87	1.65	<10	-20/-29	30	-A
		277		0.20	52	> .96		1.68				
		120	B332PUNVHEH-A ¹	0.70	84	> .99	1.30	1.54	<10	-20/-29	30	-A
		277		0.30	83			1.57				
F32T8 - Three Lamp Applications												
3	SER-IS	347	B332IHRVHB-E	0.32	110	> .98		1.07	< 10	-20/-29	46	-E
		480		0.24	109	> .95	1.18	1.08	< 10	-20/-29	46	-E
		347	B332I347HPL	0.21	75	> .99	0.79	1.05	< 10	0/-18	6	ST
		120	B332IUNVHP-A	0.71	84	> .99		1.05	< 10	0/-18	6	-A
		277		0.31	83	> .98	0.88	1.06	< 10	0/-18	6	-A
	PAR-IS	347	B332I347HP	0.25	88	> .99	0.88	1.00	< 10	0/-18	6	ST
		120	B332IUNVEL-A	0.61	74	> .99		1.04	< 10	0/-18	6	-A
		277		0.26	73	> .98	0.77	1.05	< 10	0/-18	6	-A
		120	B332IUNVHE-A	0.70	83	> .99		1.05	< 10	0/-18	6	-A
		277		0.30	81	> .98	0.87	1.07	< 10	0/-18	6	-A
		120	B432I120RES-A*	1.20	92	> .50	0.96	1.04	< 130	0/-18	7a	-A
		347	B432I347HPL	0.24	83	> .98	0.87	1.05	< 10	0/-18	7	ST
		120	B432IUNVHP-A	0.77	92	> .99		1.02	< 10	0/-18	7a	-A
		277		0.34	89	> .95	0.94	1.06	< 10	0/-18	7a	-A
		347	B432I347HP	0.28	92	> .98	0.99	1.08	< 10	0/-18	7a	ST
		120	B432IUNVEL-A	0.67	80	> .99		1.08	< 10	0/-18	7a	-A
		277		0.29	78	> .98	0.86	1.10	< 10	0/-18	7a	-A
		120	B432IUNVHE-A	0.74	89	> .99		1.06	< 10	0/-18	7a	-A
		277		0.32	87	> .98	0.94	1.08				

* For Residential Use Only

¹ Consult lamp manufacturers for applications with Ballast Factor > 1.20

² Consult Universal for Availability

See page 1-23 for Dimensions and Wiring Diagrams



- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 4 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR (3) & (4) F32T8 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8 - Three Lamp Applications												
3	PAR-PS	120	B332PUNVHE-A	0.70	84	> .90	0.88	1.05	<10	-20/-29	49	-A
		277		0.30	82			1.07				
		120	B332PUNVEL-A	0.58	70	> .99	0.71	1.02	<10	-20/-29	49	-A
		277		0.25	69			1.03				
		120	B332PUNVHEH-A	0.93	112	> .99	1.15	1.03	<10	-20/-29	49	-A
		277		0.40	109			1.06				
		120	B432PUNVHE-A	0.75	90	> .90	0.95	1.06	<10	-20/-29	49	-A
		277		0.32	87			1.09				
		120	B432PUNVEL-A	0.66	79	> .99	0.77	0.97	<10	-20/-29	49	-A
		277		0.29	77			1.00				
		120	B432PUNVHEH-E	0.87	103	> .99	1.12	1.08	<10	-20/-29	49	-A
		277		0.38	102			1.10				
F32T8 - Four Lamp Applications												
4	PAR-IS	120	B432I120RES-A*	1.40	109	> .50	0.87	0.80	< 130	0/-18	7a	-A
		347	B432I347HPL	0.29	101	> .99	0.78	0.77	< 10	0/-18	7	ST
		120	B432IUNVHP-A	0.93	110	> .99	0.88	0.80	< 10	0/-18	7a	-A
		277		0.40	108			0.81				
		347	B432I347HP	0.33	114	> .99	0.88	0.77	< 10	0/-18	7a	ST
		120	B432IUNVEL-A	0.80	97	> .99	0.77	0.79	< 10	0/-18	7a	-A
		277		0.34	96			0.80				
		120	B432IUNVHE-A	0.91	109	> .99	0.87	0.80	< 10	0/-18	7a	-A
277	0.38	106		0.82								
4	PAR-PS	120	B432PUNVHE-A	0.91	109	> .90	0.87	0.80	<10	-20/-29	50	-A
		277		0.39	107			0.82				
		120	B432PUNVEL-A	0.76	91	> .99	0.71	0.78	<10	-20/-29	50	-A
		277		0.33	90			0.79				
		120	B432PUNVHEH-E	1.20	143	> .99	1.15	0.81	<10	-20/-29	50	-E
		277		0.50	141			0.82				

* For Residential Use Only
² Consult Universal for Availability

See page 1-23 for Dimensions and Wiring Diagrams

IS = Instant Start
 PS = Programmed Start

RS = Rapid Start
 PAR-IS = Parallel Instant Start

STARTING METHOD LEGEND
 PAR-PS = Parallel Programmed Start
 SER-PS = Series Programmed Start

PAR-RS = Parallel Rapid Start
 SER-RS = Series Rapid Start

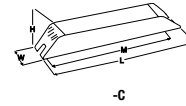
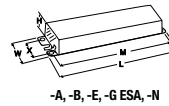
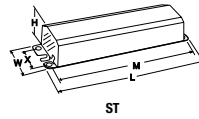
SER-IS = Series Instant Start

TRIAD® ELECTRONIC BALLASTS

FOR F32T8 LAMPS

F32T8

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
ST	9.50"	2.40"	1.55"	8.89"	1.69"
-A	9.50"	1.70"	1.18"	8.89"	1.69"
-B	9.50"	1.50"	1.00"	8.89"	0.88"
-C	14.25"	1.18"	1.00"	13.75"	---
-E	16.88"	1.74"	1.18"	16.28"	---
-G	9.50"	1.18"	1.00"	8.89"	---
-N	9.50"	1.30"	1.00"	8.89"	---
ESA	9.50"	1.56"	1.00"	8.88"	0.78"



WIRING DIAGRAMS

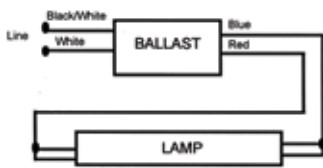


DIAGRAM 1

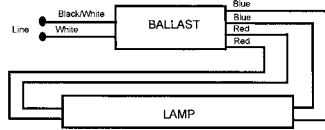
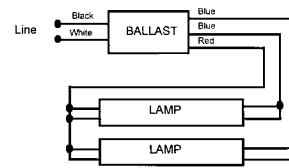
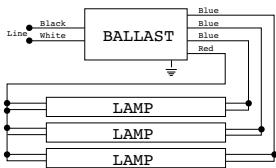


DIAGRAM 2



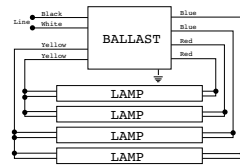
For one lamp operation, individually cap unused blue lead, insulate to 600V

DIAGRAM 3



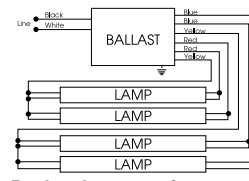
For Two Lamp operation, Insulate one blue lead to 600V

DIAGRAM 6



For Three Lamp Operation, Insulate one blue lead to 600V

DIAGRAM 7



For three lamp operation, cap any blue lead, insulate to 600V

DIAGRAM 7a

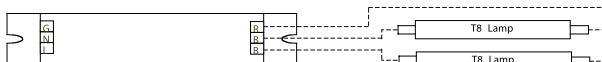


DIAGRAM 21

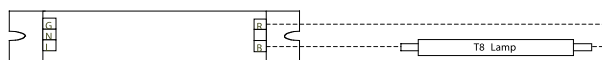


DIAGRAM 22

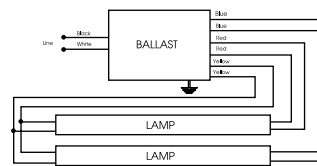
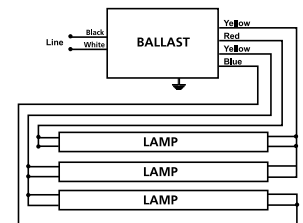
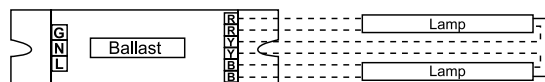


DIAGRAM 30



For two lamp application, cap one yellow lead, insulate to 600 volts

DIAGRAM 46



FOR ONE LAMP OPERATION, CAP YELLOW LEADS INDIVIDUALLY

DIAGRAM 37

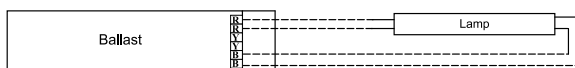


DIAGRAM 40

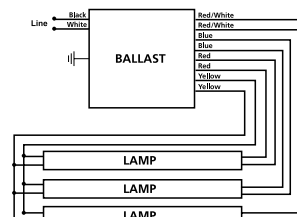


DIAGRAM 49

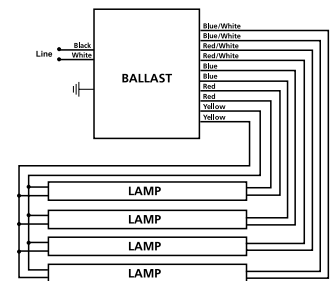
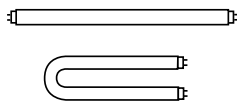


DIAGRAM 50

F32T8ES 30 WATT



- High Performance Models and Low Profile Designs
- Instant and Programmed Rapid Starting Options
- 1-2 Lamp Applications

TRIAD® ELECTRONIC BALLASTS FOR (1) & (2) F32T8ES(30 WATT) LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8ES(30W) - One Lamp Applications												
1	IS	120	B132IUNVEL-A	0.22	25	> .98	0.77	3.08	< 10	60/16	1	-A
		277	B132IUNVHE-N	0.11	26	> .95	0.87	3.35	< 10	60/16	1	-N
		120	B132IUNVHP-N	0.24	28	> .98	0.88	3.14	< 10	60/16	1	-N
		277	B232I347HP-A	0.10	34	> .98	1.04	3.06	< 10	60/16	3a	-A
		120	B232IUNVEL-A ²	0.23	28	> .95	0.92	3.92	< 10	60/16	3a	-A
		277	B232IUNVEL-N	0.11	29	> .95	0.89	3.04	< 10	60/16	3a	-N
		120	B232IUNVHE-A	0.24	32	> .95	1.05	3.28	< 10	60/16	3a	-A
		277	B232IUNVHE-A	0.12	32	> .95	1.05	3.28	< 10	60/16	3a	-A
		120	B232IUNVHP-N	0.27	33	> .99	1.02	3.14	< 10	60/16	3a	-N
		277	B232IUNVHP-N	0.12	32	> .98	1.03	3.21	< 10	60/16	3a	-N
		120	B232IUNVHEH-A ¹	0.37	43	> .95	1.38	3.21	< 10	60/16	3a	-A
		277	B232IUNVHEH-A ¹	0.16	43	> .95	1.38	3.21	< 10	60/16	3a	-A
1	PS	120	B132PUNVHP-A	0.23	28	> .99	0.88	3.14	< 10	60/16	2	-A
		277	B132PUNVHP-A	0.10	28	> .98	0.88	3.14	< 10	60/16	2	-A
		120	B232PUNVEL-B	0.23	28	> .99	0.83	3.01	<10	60/16	30	-B
		277	B232PUNVEL-B	0.12	27	> .93	0.83	3.12	<10	60/16	30	-B
		120	B232PUNVHE-B	0.27	32	> .90	1.01	3.12	<10	60/16	30	-B
		277	B232PUNVHE-B	0.12	30	> .90	1.01	3.34	<10	60/16	30	-B
		120	B232PUNVHE-B	0.27	32	> .90	1.01	3.12	<10	60/16	30	-B
		277	B232PUNVHE-B	0.12	30	> .90	1.01	3.34	<10	60/16	30	-B
120	B232PUNVHEH-A ¹	0.38	47	> .98	1.34	2.85	<10	60/16	30	-A		
277	B232PUNVHEH-A ¹	0.17	47	> .98	1.34	2.85	<10	60/16	30	-A		
F32T8ES(30W) - Two Lamp Applications												
2	SER-IS	347	B332IHRVHB-E ¹	0.21	71	> .97	1.22	1.72	< 10	60/16	46	-E
		480	B332IHRVHB-E ¹	0.16	71	> .90	1.22	1.72	< 10	60/16	46	-E
2	PAR-IS	120	B332IUNV104-A	0.50	61	> .99	1.04	1.72	< 10	60/16	3	-A
		277	B332IUNV104-A	0.23	61	> .94	1.04	1.75	< 10	60/16	3	-A
		120	B232IUNVEL-A ²	0.38	46	> .95	0.77	1.67	< 10	60/16	3	-A
		277	B232IUNVEL-A ²	0.17	46	> .95	0.77	1.67	< 10	60/16	3	-A
		120	B232IUNVEL-N	0.40	47	> .95	0.75	1.57	< 10	60/16	3	-N
		277	B232IUNVEL-N	0.17	47	> .95	0.75	1.60	< 10	60/16	3	-N
		120	B232IUNVHP-N	0.44	53	> .99	0.86	1.64	< 10	60/16	3	-N
		277	B232IUNVHP-N	0.19	51	> .99	0.86	1.69	< 10	60/16	3	-N
		120	B232IUNVHE-A	0.42	52	> .95	0.87	1.67	< 10	60/16	3	-A
		277	B232IUNVHE-A	0.19	51	> .95	0.87	1.71	< 10	60/16	3	-A
		120	B232IUNVHEH-A	0.59	70	> .95	1.18	1.69	< 10	60/16	3	-A
		277	B232IUNVHEH-A	0.25	68	> .95	1.18	1.74	< 10	60/16	3	-A
		347	B232I347HP-A	0.15	53	> .98	0.88	1.66	< 10	60/16	3	-A
		120	B332IUNVEL-A	0.46	54	> .99	0.89	1.65	< 10	60/16	6	-A
		277	B332IUNVEL-A	0.20	53	> .98	0.89	1.68	< 10	60/16	6	-A
		120	B332IUNVHE-A	0.49	59	> .99	0.99	1.68	< 10	60/16	6	-A
		277	B332IUNVHE-A	0.21	57	> .97	0.99	1.74	< 10	60/16	6	-A
		120	B332IUNVHP-A	0.50	59	> .99	0.99	1.68	< 10	60/16	6	-A
277	B332IUNVHP-A	0.22	59	> .95	0.99	1.68	< 10	60/16	6	-A		

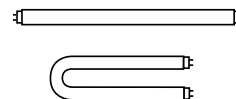
¹ Consult lamp manufacturers for applications with Ballast Factor > 1.20

² Consult Universal for availability

See page 1-31 for Dimensions
and Wiring Diagrams

TRIAD® ELECTRONIC BALLASTS

FOR (2)(cont.), (3) & (4) F32T8ES LAMPS



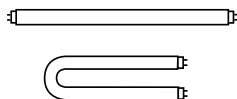
F32T8ES
30 WATT

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8ES(30W) - Two Lamp Applications												
2	PAR-PS	120	B232PUNVEL-B	0.36	43	> .99		1.64	<10	60/16	30	-B
		277		0.15	42	> .97	0.71	1.71				
		120	B232PUNVHE-B	0.42	50	> .90	0.88	1.75	<10	60/16	30	-B
		277		0.18	48			1.82				
		120	B232PUNVHEH-A ¹	0.61	75	> .99	1.26	1.68	<10	60/16	30	-A
		277		0.26	74			1.70				
		120	B332PUNVEL-A	0.41	49	> .99	0.87	1.77	<10	60/16	30	-A
		277		0.18	48	> .96		1.82				
120	B332PUNVHE-A	0.50	60	> .90	1.03	1.72	<10	60/16	30	-A		
277		0.22	59			1.73						
120	B332PUNVHEH-A ¹	0.66	82	> .99	1.30	1.59	<10	60/16	30	-A		
277		0.29	81			1.60						
F32T8ES(30W) - Three Lamp Applications												
3	SER-IS	347	B332IHRVHB-E	0.30	102	> .98		1.16	< 10	60/16	46	-E
		480		0.22	101	> .95	1.18	1.17				
3	PAR-IS	120	B332IUNVEL-A	0.58	70	> .99		1.10	< 10	60/16	6	-A
		277		0.25	69	> .98	0.77	1.12				
		120	B332IUNVHE-A	0.65	79	> .99		1.10	< 10	60/16	6	-A
		277		0.28	77	> .98	0.87	1.13				
		120	B332IUNVHP-A	0.66	79	> .99		1.13	< 10	60/16	6	-A
		277		0.29	77	> .95	0.89	1.16				
		347	B432I347HP	0.26	88	> .98	0.99	1.13	< 10	60/16	7a	ST
		120	B432IUNVEL-A	0.62	75	> .99		1.15	< 10	60/16	7a	-A
		277		0.27	73	> .98	0.86	1.18				
		120	B432IUNVHE-A	0.70	84	> .98		1.14	< 10	60/16	7a	-A
277		0.30	82	> .98	0.96	1.17						
120	B432IUNVHP-A	0.72	86	> .98		1.12	< 10	60/16	7a	-A		
277		0.32	84	> .95	0.96	1.14						
3	PAR-PS	120	B332PUNVEL-A	0.53	64	> .99		1.12	<10	60/16	49	-A
		277		0.23	63	> .97	0.71	1.13				
		120	B332PUNVHEH-A	0.89	106	> .99	1.15	1.08	<10	60/16	49	-A
		277		0.38	104			1.11				
		120	B332PUNVHE-A	0.65	78	> .90	0.88	1.13	<10	60/16	49	-A
		277		0.28	76			1.15				
		120	B432PUNVEL-A	0.60	72	> .99		1.07	<10	60/16	49	-A
		277		0.26	71	> .97	0.77	1.09				
		120	B432PUNVHE-A	0.74	89	> .90	0.95	1.07	<10	60/16	49	-A
		277		0.31	84			1.13				
120	B432PUNVHEH-E	0.84	99	> .99		1.14	<10	60/16	49	-E		
277		0.37	98	> .96	1.13	1.15						

¹ Consult lamp manufacturers for applications with Ballast Factor > 1.20

See page 1-31 for Dimensions
and Wiring Diagrams

F32T8ES (30W -25W)



- High Performance Models and Low Profile Designs
- 1-2 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR (1) & (2) F32T8ES (25 WATT) LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8ES(30W) - Four Lamp Applications												
4	PAR-IS	347	B432I347HP	0.31	106	> .99	0.88	0.83	< 10	60/16	7a	ST
		120	B432IUNVEL-A	0.75	91	> .99	0.77	0.85	< 10	60/16	7a	-A
		277		0.32	90	> .98		0.86	< 10	60/16	7a	-A
		120	B432IUNVHE-A	0.85	103	> .99	0.87	0.84	< 10	60/16	7a	-A
		277		0.36	100	> .98		0.87	< 10	60/16	7a	-A
		120	B432IUNVHP-A	0.87	104	> .98	0.88	0.85	< 10	60/16	7a	-A
277	0.38	101		> .95	0.87	< 10		60/16	7a	-A		
4	PAR-PS	120	B432PUNVEL-A	0.71	85	> .99	0.71	0.83	< 10	60/16	50	-A
		277		0.31	84	> .98		0.84	< 10	60/16	50	-A
		120	B432PUNVHE-A	0.86	103	> .90	0.87	0.84	< 10	60/16	50	-A
		277		0.37	101	> .90		0.86	< 10	60/16	50	-A
		120	B432PUNVHEH-E	1.14	135	> .99	1.18	0.87	< 10	60/16	50	-E
		277		0.50	134	> .97		0.88	< 10	60/16	50	-E
F32T8ES (25W) - One Lamp Applications												
1	IS	120	B132IUNVEL-A	0.17	20	> .98	0.77	3.85	< 10	60/16	1	-A
		277		0.07		> .95						
		120	B132IUNVHE-N	0.20	23	> .99	0.87	3.78	< 10	60/16	1	-N
		277		0.09		> .99						
		120	B132IUNVHP-N	0.20	24	> .98	0.88	3.67	< 10	60/16	1	-N
		277		0.09		> .98						
		120	B232IUNVEL-A ²	0.20	24	> .99	0.95	3.96	< 10	60/16	3a	-A
		277		0.09		> .95		3.80	< 15			
		120	B232IUNVEL-N	0.20	24	> .99	0.84	3.54	< 10	60/16	3a	-N
		277		0.09		> .95		0.85	3.55			
		120	B232IUNVHE-A	0.23	27	> .98	1.05	3.89	< 10	60/16	3a	-A
		277		0.10		> .95						
120	B232IUNVHP-N	0.22	27	> .99	0.96	3.60	< 10	60/16	3a	-N		
277		0.10		> .98		3.64	< 10					
120	B232IUNVHEH-A ¹	0.32	38	> .95	1.38	3.63	< 10	60/16	3a	-A		
277		0.14		37		3.73	< 10					
1	PS	120	B132PUNVHP-A	0.21	25	> .99	0.88	3.52	< 10	60/16	2	-A
		277		0.09		> .99						
		120	B232PUNVEL-B	0.20	24	> .99	0.83	3.49	< 10	60/16	30	-B
		277		0.11		23		> .92	3.58			
		120	B232PUNVHE-B	0.23	28	> .90	1.05	3.80	< 10	60/16	30	-B
		277		0.12		27		3.88	< 10			
		120	B232PUNVHEH-A ¹	0.33	36	> .98	1.36	3.81	< 10	60/16	30	-A
		277		0.14		36		1.35	3.72			
F32T8ES (25W) - Two Lamp Applications												
2	SER-IS	347	B332IHRVHB-E	0.18	61	> .95	1.14	1.87	< 10	60/16	46	-E
		480		0.14		> .90						
2	PAR-IS	120	B232IUNV104-A	0.42	52	> .99	1.04	1.92	< 10	60/16	3	-A
		277		0.20		> .93		1.82	< 10			
		120	B232IUNVEL-A ²	0.33	39	> .99	0.77	1.97	< 10	60/16	3	-A
		277		0.14		38		> .98	2.03			
		120	B232IUNVEL-N	0.33	39	> .99	0.72	1.83	< 10	60/16	3	-N
		277		0.14		38		> .98	0.71			
		120	B232IUNVHE-A	0.37	44	> .98	0.87	1.98	< 10	60/16	3	-A
		277		0.16		43		> .98	2.02			
		120	B232IUNVHP-N	0.36	43	> .99	0.78	1.84	< 10	60/16	3	-N
		277		0.15		42		> .99	1.88			
		120	B232IUNVHEH-A	0.49	59	> .95	1.18	2.00	< 10	60/16	3	-A
		277		0.21		58		> .95	2.03			
		120	B332IUNVEL-A	0.37	44	> .99	0.89	2.02	< 10	60/16	6	-A
		277		0.16		43		> .95	2.07			
120	B332IUNVHE-A	0.43	51	> .98	0.99	1.94	< 10	60/16	6	-A		
277		0.19		50		> .95	1.98				< 10	
120	B332IUNVHP-A	0.43	51	> .98	1.00	1.96	< 10	60/16	6	-A		
277		0.20		51			> .90					

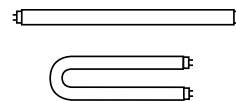
¹ Consult lamp manufacturers for applications with Ballast Factor > 1.20

See page 1-31 for Dimensions
and Wiring Diagrams

TRIAD® ELECTRONIC BALLASTS

FOR (3) & (4) F32T8ES (25 WATT) LAMPS

- High Performance Models and Low Profile Designs
- 3-4 Lamp Applications



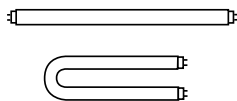
F32T8ES
25 WATT

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F32T8ES (25W) - Two Lamp Applications												
2	PAR-PS	120	B232PUNVEL-B	0.31	37	> .99	0.71	1.91	<10	60/16	30	-B
		277		0.14	35	> .96		2.03				
		120	B232PUNVHE-B	0.36	43	> .90	0.88	2.04	<10	60/16	30	-B
		277		0.16	41	> .90		2.14				
		120	B232PUNVHEH-A	0.51	59	> .98	1.18	2.01	<10	60/16	30	-A
		277		0.22	58	> .98		2.02				
		120	B332PUNVEL-A	0.35	42	> .99	0.87	2.07	<10	60/16	30	-A
		277		0.16	41	> .95		2.13				
		120	B332PUNVHE-A	0.42	50	> .90	1.04	2.07	<10	60/16	30	-A
		277		0.18	48	> .90		2.15				
		120	B332PUNVHEH-A ¹	0.57	68	> .98	1.30	1.91	<10	60/16	30	-A
		277		0.25								
F32T8ES (25W) - Three Lamp Applications												
3	SER-IS	347 480	B332IHRVHB-E	0.26 0.19	88	> .97 > .90	1.11	1.26	< 10	60/16	46	-E
		120 277		B332IUNVEL-A		0.48 0.21		58 57				
3	PAR-IS	120 277	B332IUNVHE-A		0.56 0.24	66 65	> .98 > .95	0.87	1.32 1.34	< 10	60/16	6
		120 277		B332IUNVHP-A	0.57 0.26	69 68	> .99 > .95		1.30 1.32			
		120 277	B432IUNVEL-A		0.50 0.22	60 58	> .99 > .94	0.86	1.43 1.48	< 10	60/16	7a
		120 277		B432IUNVHE-A	0.60 0.26	72 71	> .99 > .95		1.33 1.35			
		120 277	B432IUNVHP-A		0.61 0.27	73 72	> .98 > .95	0.97	1.33 1.35	< 10	60/16	7a

See page 1-31 for Dimensions
and Wiring Diagrams

Fluorescent-Electronic

F32T8ES 25 WATT



- High Performance Models and Low Profile Designs
- 1-2 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR (1) & (2) F32T8ES (25 WATT) LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.		
Qty.	Starting Method													
F32T8ES (25W) - Three Lamp Applications														
3	PAR-PS	120	B332PUNVEL-A	0.46	55	> .99	0.71	1.30	<10	60/16	49	-A		
		277		0.20	54	> .97		1.32						
		120	B332PUNVHE-A	0.55	66	> .90	0.88	1.34	<10	60/16	49	-A		
		277		0.24	65	> .90		1.35						
		120	B332PUNVHEH-A	0.75	90	> .98	1.15	1.28	<10	60/16	49	-A		
		277		0.32	88	> .98		1.31						
		120	B432PUNVEL-A	0.52	62	> .99	0.77	1.23	<10	60/16	49	-A		
		277		0.23	61	> .96		1.26						
		120	B432PUNVHE-A	0.59	71	> .90	0.95	1.35	<10	60/16	49	-A		
		277		0.26	70	> .90		1.35						
		120	B432PUNVHEH-E	0.76	90	> .99	1.13	1.26	<10	60/16	49	-E		
		277		0.35	92	> .95		1.23						
F32T8ES (25W) - Four Lamp Applications														
4	PAR-IS	120	B432IUNVEL-A	0.62	75	> .99	0.82	1.09	<10	60/16	7a	-A		
		277		0.27	73	> .95		1.12						
		120	B432IUNVHE-A	0.73	87	> .99	0.87	1.00	<10	60/16	7a	-A		
		277		0.31	85	> .98		1.02						
		120	B432IUNVHP-A	0.74	90	> .98	0.89	0.99	<10	60/16	7a	-A		
		277		0.33	88	> .95		1.01						
		4	PAR-PS	120	B432PUNVEL-A	0.61	73	> .99	0.71	0.97	<10	60/16	50	-A
				277		0.27	72	> .97		0.98				
120	B432PUNVHE-A			0.71	85	> .90	0.87	1.02	<10	60/16	50	-A		
277				0.31	84	> .90		1.03						
120	B432PUNVHEH-E			1.04	124	> .99	1.18	0.96	<10	60/16	50	-E		
277				0.45	118	> .95		1.00						

See page 1-31 for Dimensions
and Wiring Diagrams

IS = Instant Start
PS = Programmed Start

RS = Rapid Start
PAR-IS = Parallel Instant Start

STARTING METHOD LEGEND
PAR-PS = Parallel Programmed Start
SER-PS = Series Programmed Start

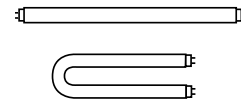
PAR-RS = Parallel Rapid Start
SER-RS = Series Rapid Start

SER-IS = Series Instant Start

TRIAD® ELECTRONIC BALLASTS

FOR (1) & (2) F28T8 LAMPS

- High Performance Models and Low Profile Designs
- Instant and Programmed Rapid Starting Options
- 1-2 Lamp Applications



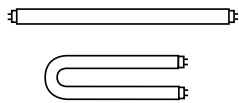
F28T8

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F28T8 - One Lamp Applications												
1	IS	120	B132IUNVEL-A	0.20	21	> .98	0.77	3.67	< 10	60/16	1	-A
		277		0.10		> .95						
		120	B132IUNVHE-N	0.20	24	> .99	0.87	3.63	< 10	60/16	1	-N
		277		0.10								
		120	B132IUNVHP-N	0.22	26	> .98	0.88	3.38	< 10	60/16	1	-N
		277		0.10								
		347	B232I347HP-A	0.09	32	> .98	1.04	3.25	< 10	60/16	3a	-A
		120	B232IUNVEL-A ²	0.22	26	> .95	0.95	3.65	< 10	60/16	3a	-A
		277		0.10	27			3.52				
		120	B232IUNVEL-N	0.23	27	> .95	0.88	3.30	< 10	60/16	3a	-N
277		0.10	26			3.31						
1	PS	120	B232IUNVHE-A	0.24	29	> .95	1.10	3.79	< 10	60/16	3a	-A
		277		0.11								
		120	B232IUNVHEH-A ¹	0.33	40	> .95	1.38	3.45	< 10	60/16	3a	-A
		277		0.15	39			3.54				
		120	B232IUNVHP-N	0.25	30	> .99	0.99	3.36	< 10	60/16	3a	-N
		277		0.11	29	> .98	1.00	3.40				
		120	B132PUNVHP-A	0.28	27	> .99	0.88	3.26	< 10	60/16	2	-A
		277		0.11								
		120	B232PUNVEL-B	0.21	25	> .99	0.83	3.33	<10	60/16	30	-B
		277		0.11	24	> .92		3.46				
120	B232PUNVHE-B	0.25	30	> .90	1.01	3.41	<10	60/16	30	-B		
277		0.12	29			3.45						
120	B232PUNVHEH-A ¹	0.35	39	> .97	1.35	3.47	<10	60/16	30	-A		
277		0.15		3.44								
F28T8 - Two Lamp Applications												
2	SER-IS	347	B332IHRVHB-E ¹	0.19	65	> .97	1.22	1.88	< 10	60/16	46	-E
		480		0.15		> .90						
2	PAR-IS	347	B232I347HP-A	0.14	50	> .98	0.88	1.76	< 10	60/16	3	-A
		120	B232IUNV104-A	0.47	56	> .99	1.04	1.79	< 10	60/16	3	-A
		277		0.21	55	> .94		1.82				
		120	B232IUNVEL-A ²	0.36	43	> .95	0.77	1.79	< 10	60/16	3	-A
		277		0.15								
		120	B232IUNVEL-N	0.36	43	> .95	0.75	1.76	< 10	60/16	3	-N
		277		0.15	42		0.74					
		120	B232IUNVHE-A	0.40	49	> .95	0.87	1.78	< 10	60/16	3	-A
		277		0.18	48			1.81				
		120	B232IUNVHP-N	0.40	48	> .99	0.83	1.76	< 10	60/16	3	-N
		277		0.17	46			1.78				
		120	B232IUNVHEH-A	0.53	64	> .95	1.18	1.84	< 10	60/16	3	-A
		277		0.23	62			1.90				
		120	B332IUNVEL-A	0.41	49	> .99	0.89	1.82	< 10	60/16	6	-A
277		0.18	48	> .95	1.85							
120	B332IUNVHE-A	0.45	54	> .99	0.99	1.83	< 10	60/16	6	-A		
277		0.19	53	> .97		1.87						
120	B332IUNVHP-A	0.46	55	> .99	0.99	1.80	< 10	60/16	6	-A		
277		0.21	54	> .90		1.83						

¹ Consult lamp manufacturers for applications with Ballast Factors > 1.20

² Consult Universal for availability

See page 1-31 for Dimensions and Wiring Diagrams



- High Performance Models and Low Profile Designs
- Instant and Programmed Rapid Starting Options
- 2-4 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR (2)(cont.), (3) & (4) F28T8 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.		
Qty.	Starting Method													
F28T8 - Two Lamp Applications														
2	PAR-PS	120	B232PUNVEL-B	0.33	40	> .99		1.79						
		277		0.15	39	> .96	0.71	1.84	<10	60/16	30	-B		
		120	B232PUNVHE-B	0.39	46	> .90	0.88	1.90	<10	60/16	30	-B		
		277		0.17	45			1.95						
		120	B232PUNVHEH-A	0.56	64	> .99	1.18	1.85	<10	60/16	30	-A		
		277		0.24	63			1.86						
		120	B332PUNVHE-A	0.45	54	> .90	1.04	1.93	<10	60/16	30	-A		
		277		0.20	53			1.97						
		120	B332PUNVEL-A	0.38	46	> .99		1.91	<10	60/16	30	-A		
		277		0.17	45	> .96	0.87	1.92						
		120	B332PUNHEH-A ¹	0.60	72	> .98	1.30	1.81	<10	60/16	30	-A		
		277		0.26	71			1.83						
F28T8 - Three Lamp Applications														
3	SER-IS	347	B332IHRVHB-E	0.28		> .97								
		480		0.21	94	> .90	1.18	1.26	< 10	60/16	46	-E		
3	PAR-IS	120	B332IUNVEL-A	0.53	66	> .99		1.17	< 10	60/16	6	-A		
		277		0.23	65	> .97	0.77	1.18						
		120	B332IUNVHE-A	0.60	75	> .99		1.16	< 10	60/16	6	-A		
		277		0.26	73	> .98	0.87	1.19						
		120	B332IUNVHP-A	0.61	73	> .99		1.22	< 10	60/16	6	-A		
		277		0.27	71	> .95	0.89	1.25						
		347	B432I347HP	0.23	78	> .98	0.99	1.27	< 10	60/16	7a	ST		
		120	B432IUNVEL-A	0.57	69	> .99		1.25	< 10	60/16	7a	-A		
		277		0.26	68	> .95	0.86	1.26						
		120	B432IUNVHE-A	0.64	77	> .99		1.25	< 10	60/16	7a	-A		
		277		0.28	75	> .98	0.96	1.28						
		120	B432IUNVHP-A	0.66	79	> .98	0.97	1.23	< 10	60/16	7a	-A		
		277		0.29	77	> .95	0.97	1.26						
		120	B332PUNVEL-A	0.49	59	> .99		1.21	<10	60/16	49	-A		
		277		0.21	58	> .97	0.71	1.22						
				120	B332PUNVHE-A	0.59	71	> .90	0.88	1.25	<10	60/16	49	-A
				277		0.25	68			1.29				
3	PAR-PS	120	B332PUNVHEH-A	0.79	94	> .98	1.15	1.22	<10	60/16	49	-A		
		277		0.34	92			1.25						
		120	B432PUNVEL-A	0.56	67	> .99		1.15	<10	60/16	49	-A		
		277		0.25	66	> .97	0.77	1.17						
		120	B432PUNVHE-A	0.64	77	> .90	0.95	1.24	<10	60/16	49	-A		
		277		0.28	76			1.25						
		120	B432PUNVHEH-E	0.76	90	> .99	1.13	1.25	<10	60/16	49	-E		
		277		0.34		> .96								

¹ Consult lamp manufacturers for applications with Ballast Factors > 1.20

See page 1-31 for Dimensions and Wiring Diagrams

TRIAD® ELECTRONIC BALLASTS

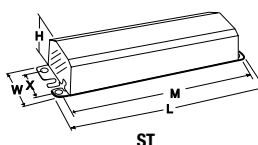
FOR F32T8ES AND F28T8 LAMPS

F28T8

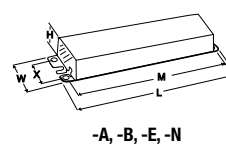
Fluorescent-Electronic

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F28T8 - Four Lamp Applications												
4	PAR-IS	347	B432I347HP	0.28	95	> .98	0.88	0.93	< 10	60/16	7a	ST
		120	B432IUNVEL-A	0.70	85	> .99	0.77	0.91	< 10	60/16	7a	-A
		277		0.31	84	> .98		0.92				
		120	B432IUNVHE-A	0.77	97	> .99	0.87	0.90	< 10	60/16	7a	-A
		277		0.33	94	> .98		0.93				
		120	B432IUNVHP-A	0.80	96	> .98	0.89	0.93	< 10	60/16	7a	-A
277	0.35	93		> .95	0.88	0.95						
4	PAR-PS	120	B432PUNVEL-A	0.64	77	> .99	0.71	0.92	<10	60/16	50	-A
		277		0.28	76	> .97		0.93				
		120	B432PUNVHE-A	0.77	92	> .90	0.87	0.94	<10	60/16	50	-A
		277		0.33	90			0.97				
		120	B432PUNVHEH-E	1.05	125	> .99	1.18	0.95	<10	60/16	50	-E
		277		0.46		> .98		0.94				

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
ST	9.50"	2.40"	1.55"	8.89"	1.69"
-A	9.50"	1.70"	1.18"	8.89"	1.69"
-B	9.50"	1.50"	1.00"	8.89"	1.69"
-E	16.88"	1.74"	1.18"	16.28"	---
-N	9.50"	1.30"	1.00"	8.89"	1.69"



ST



-A, -B, -E, -N

WIRING DIAGRAMS

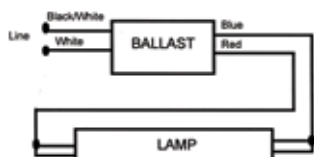


DIAGRAM 1

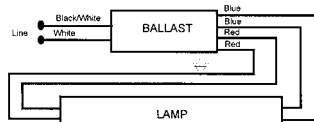


DIAGRAM 2

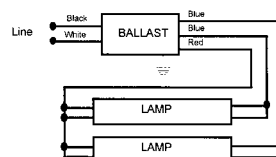
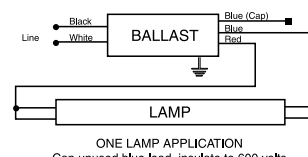
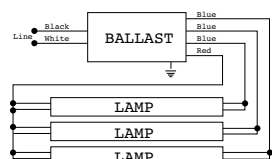


DIAGRAM 3



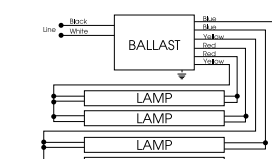
ONE LAMP APPLICATION
Cap unused blue lead, insulate to 600 volts

DIAGRAM 3a



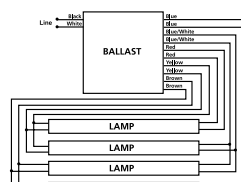
For Two Lamp operation,
Insulate one blue lead to 600V

DIAGRAM 6



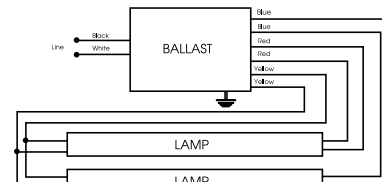
For three lamp operation, cap any
blue lead, insulate to 600V

DIAGRAM 7a



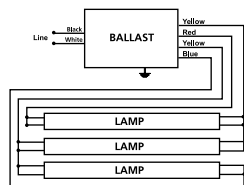
For Three Lamp Application, Individually
cap brown leads, Insulate to 600V

DIAGRAM 8



For one lamp operation, cap any
blue lead, insulate to 600V

DIAGRAM 30



For two lamp application, cap one yellow lead,
insulate to 600 volts

DIAGRAM 46

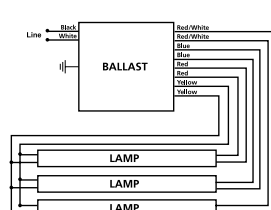


DIAGRAM 49

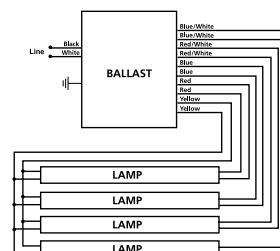
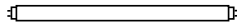


DIAGRAM 50



- Low Profile Designs Featured
- Instant & Programmed Rapid Starting Options
- 1-3 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR (1), (2), AND (3) F40T8 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F40T8 - One Lamp Applications												
1	IS	120	B132IUNVEL-A	0.25	32	> .98	0.76	2.38	< 10	0/-18	1	-A
		277		0.13								
		120	B132IUNVHE-N	0.30	35	> .99	0.86	2.46	< 10	0/-18	1	-N
		277		0.14								
		120	B132IUNVHP-N	0.31	37	> .99	0.86	2.32	< 10	32/0	1	-N
		277		0.13								
		347	B232I347HP-A	0.13	45	> .98	1.02	2.27	<10	0/-18	3a	-A
		347	B232I347HPL	0.11	38	> .98	0.86	2.26	< 10	0/-18	3a	ST
		120	B232IUNVHP-N	0.36	44	> .99	1.03	2.34	< 10	32/0	3a	-N
		277		0.16								
		347	B232I347RH-A	0.13	45	> .98	1.02	2.27	< 20	0/-18	3a	-A
		120	B232IUNV-C	0.37	43	> .98	0.99	2.30	< 10	0/-18	22	-C
		277		0.16								
1	PS	120	B232PUNVEL-B	0.28	34	> .99	0.80	2.38	<10	-20/-29	30	-B
		277		0.13								
		120	B232PUNVHE-B	0.34	41	> .90	0.99	2.43	<10	-20/-29	30	-B
		277		0.15								
F40T8 - Two Lamp Applications												
2	PAR-IS	347	B259I347HP	0.22	76	> .98	0.91	1.20	< 10	0/-18	14	ST
		347	B332I347HPL	0.20	69	> .99	0.82	1.18	< 10	0/-18	6	ST
		120	B332IUNVEL-A	0.57	68	> .99	0.89	1.31	< 10	0/-18	6	-A
		277		0.25								
		120	B332IUNVHE-A	0.64	77	> .99	0.99	1.29	< 10	0/-18	6	-A
		277		0.27								
		120	B332IUNVHP-A	0.65	78	> .99	0.95	1.22	< 10	0/-18	6	-A
		277		0.29								
2	PAR-PS	120	B332PUNVEL-A	0.53	64	> .99	0.85	1.34	<10	-20/-29	30	-A
		277		0.23								
		120	B332PUNVHE-A	0.64	77	> .90	1.02	1.33	<10	-20/-29	30	-A
		277		0.27								

See page 1-33 for Dimensions and Wiring Diagrams

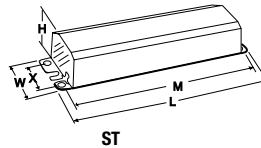
TRIAD® ELECTRONIC BALLASTS

FOR F40T8 LAMPS

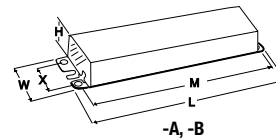
F40T8

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F40T8 - Three Lamp Applications												
3	PAR-IS	347	B432I347HPL	0.29	100	> .99	0.81	0.81	< 10	0/-18	7	ST
		120	B432IUNVEL-A	0.81	97	> .99	0.86	0.89	< 10	0/-18	7a	-A
		277		0.35	94	> .98		0.91				
		120	B432IUNVHE-A	0.93	111	> .99	0.96	0.86	< 10	0/-18	7a	-A
		277		0.39	107	> .98		0.90				
		120	B432IUNVHP-A	0.95	114	> .99	0.92	0.81	< 10	0/-18	7a	-A
277	0.41	109		> .98	0.84							
3	PAR-PS	120	B432PUNVEL-A	0.79	95	> .99	0.70	0.74	<10	-20/-29	49	-A
		277		0.34	92	> .98		0.76				
		120	B432PUNVHE-A	0.93	111	> .90	0.93	0.84	<10	-20/-29	49	-A
		277		0.40	109			0.85				

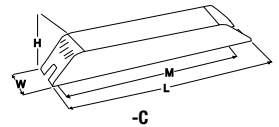
Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
ST	9.50"	2.40"	1.55"	8.89"	1.69"
-A	9.50"	1.70"	1.18"	8.89"	1.69"
-B	9.50"	1.50"	1.00"	8.89"	0.88"
-C	14.25"	1.18"	1.00"	13.75"	---



ST



-A, -B



-C

WIRING DIAGRAMS

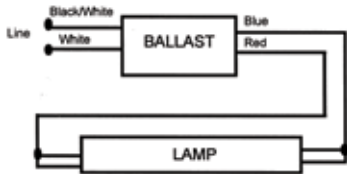


DIAGRAM 1

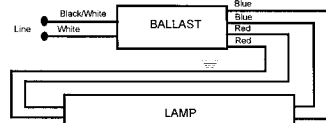


DIAGRAM 2

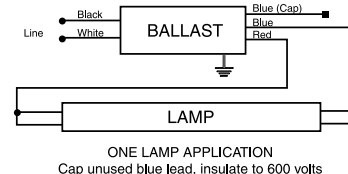


DIAGRAM 3a

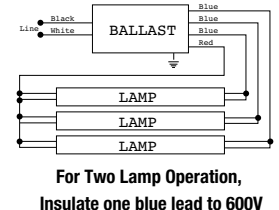
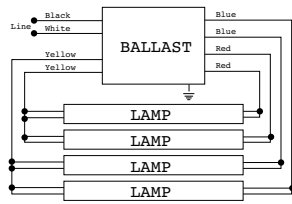
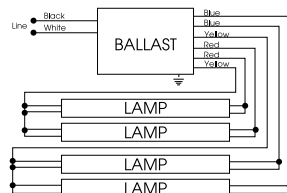


DIAGRAM 6



For Three Lamp Operation,
Insulate one blue lead to 600V

DIAGRAM 7



For three lamp operation, cap any
blue lead, insulate to 600V

DIAGRAM 7a

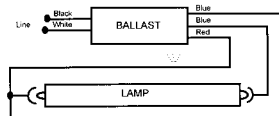
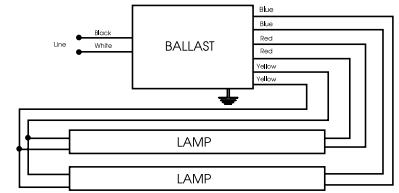


DIAGRAM 14



For one lamp operation, cap any
blue lead, insulate to 600V

DIAGRAM 30

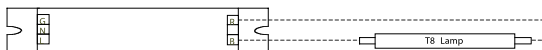


DIAGRAM 22

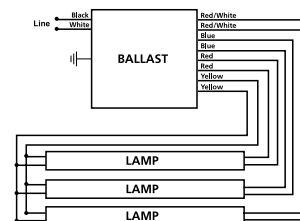
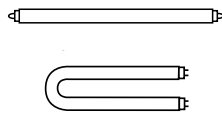


DIAGRAM 49



- Instant Starting Options
- 1-2 Lamp Applications
- 8' T8 SLIMLINE
- High Performance Models

TRIAD® ELECTRONIC BALLASTS

FOR (1) AND (2)

F48T8, F72T8, F96T8 AND F96T8ES LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.				
Qty.	Starting Method															
F48T8 - One Lamp Applications																
1	IS	120	B244I120HE	0.30	35	> .95	1.04	2.97	< 10	0/-18	14	ST				
		277	B244I277HE-A	0.14	36	> .90	1.06	2.94		0/-18	14	-A				
F48T8 - Two Lamp Applications																
2	PAR-IS	120	B244I120HE	0.47	55	> .95	0.90	1.64	< 10	0/-18	14	ST				
		277	B244I277HE-A	0.21	56		0.89	1.59		0/-18	14	-A				
F72T8 - One Lamp Applications																
1	IS	120	B244I120HE	0.42	50	> .95	1.03	2.06	< 10	0/-18	14	ST				
		277	B244I277HE-A	0.19	52		1.04	2.00		0/-18	14	-A				
F72T8 - Two Lamp Applications																
2	PAR-IS	120	B244I120HE	0.70	82	> .95	0.88	1.07	< 10	0/-18	14	ST				
		277	B244I277HE-A	0.30			0.87	1.06		0/-18	14	-A				
F96T8 - One Lamp Applications																
1	IS	120	B259IUNVEL-A	0.54	64	> .99	0.99	1.55	< 10	32/0	15	-A				
		277		0.24		> .97										
		120	B259IUNVHP-A	0.60	72	> .99	1.08	1.50	< 10	32/0	14	-A				
		277		0.26		> .98										
		120	B259IUNVHE-A	0.60	71	> .99	1.08	1.52	< 10	32/0	15	-A				
		277		0.26		> .97										
		120	B259IUNVEL-A	0.93	111	> .99	.88	0.79	< 10	32/0	15	-A				
		277		0.39		> .98										
347	B259I347HP	0.20	68	> .97	1.05	1.54	< 10	32/0	14	ST						
F96T8 - Two Lamp Applications																
2	PAR-IS	120	B259IUNVEL-A	0.84	101	> .99	.78	0.77	< 10	32/0	15	-A				
		277		0.36		> .98										
		120	B259IUNVHE-A	0.92	108	> .99	.88	0.81	< 10	60/16	15	-A				
		277		0.39		> .99										
		120	B259IUNVHP-A	0.95	113	> .99	0.88	0.78	< 10	32/0	14	-A				
		277		0.40		> .98										
		347	B259I347HP	0.33	113	> .99	0.89	0.79	< 10	32/0	14	ST				
F96T8ES (57W) - One Lamp Applications																
1	IS	120	B259IUNVHE-A	0.56	67	> .99	1.08	1.61	< 10	60/16	15	-A				
		277		0.26		> .97										
		120	B259IUNVEL-A	0.51	61	> .99	0.99	1.62					< 10	60/16	15	-A
		277		0.23		> .97										
F96T8ES (57W) - Two Lamp Applications																
2	PAR-IS	120	B259IUNVHE-A	0.92	108	> .99	0.88	0.81	< 10	60/16	15	-A				
		277		0.39		> .99										
		120	B259IUNVEL-A	0.80	95	> .99	0.78	0.82					< 10	60/16	15	-A
		277		0.34		> .98										
F96T8ES (54W) - One Lamp Applications																
1	IS	120	B259IUNVHE-A	0.51	61	> .99	1.08	1.77	< 10	60/16	15	-A				
		277		0.23		> .96										
F96T8ES (54W) - Two Lamp Applications																
2	PAR-IS	120	B259IUNVHE-A	0.80	95	> .99	0.88	0.93	< 10	60/16	15	-A				
		277		0.34		> .98										
F96T8ES (49W) - One Lamp Applications																
1	IS	120	B259IUNVEL-A	0.41	48	> .99	0.99	2.06	< 10	60/16	15	-A				
		277		0.19		> .96										
F96T8ES (49W) - Two Lamp Applications																
2	PAR-IS	120	B259IUNVEL-A	0.64	77	> .99	0.78	1.01	< 10	60/16	15	-A				
		277		0.28		> .98										

IS = Instant Start
PS = Programmed Start

RS = Rapid Start
PAR-IS = Parallel Instant Start

STARTING METHOD LEGEND
PAR-PS = Parallel Programmed Start
SER-PS = Series Programmed Start

PAR-RS = Parallel Rapid Start
SER-RS = Series Rapid Start

SER-IS = Series Instant Start

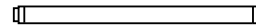
See page 1-33 for Dimensions
and Wiring Diagrams

TRIAD® ELECTRONIC BALLASTS

FOR (1) AND (2)

F48T8HO, F60T8HO, F72T8HO AND F96T8HO LAMPS

- Instant Starting Options
- 1-2 Lamp Applications
- 4-8' T8 High Output



T8HO

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F48T8HO - One Lamp Applications												
1	PS	120 277	B286PUNVHE-S	0.75 0.34	93	> .98 > .95	0.98	1.05	< 10 < 12	-20/-29	4a	-S
F48T8HO - Two Lamp Applications												
2	SER-PS	120 277	B286PUNVHE-S	0.41 0.19	49	> .96 > .92	1.01	2.06	< 10 < 15	-20/-29	4	-S
F96T8HO - One Lamp Applications												
1	PS	120 277	B286PUNVHE-S	0.80 0.36	96	> .98 > .95	1.00	1.04	< 10 < 12	-20/-29	4a	-S
F96T8HO - Two Lamp Applications												
2	SER-PS	120 277	B286PUNVHE-S	1.57 0.67	187 184	> .98 > .96	0.95	0.51 0.52	< 10	-20/-29	4	-S

IS = Instant Start
PS = Programmed Start

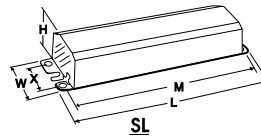
RS = Rapid Start
PAR-IS = Parallel Instant Start

STARTING METHOD LEGEND
PAR-PS = Parallel Programmed Start
SER-PS = Series Programmed Start

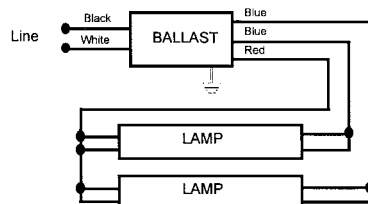
PAR-RS = Parallel Rapid Start
SER-RS = Series Rapid Start

SER-IS = Series Instant Start

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
SL	11.75"	3.13"	1.78"	11.14"	2.00"
-S	11.75"	1.70"	1.18"	11.19"	1.05"

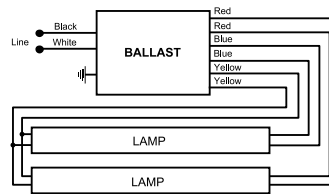


WIRING DIAGRAMS



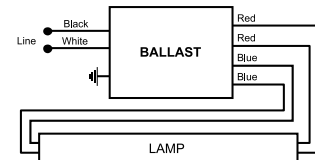
For One Lamp Operation,
Insulate one blue lead to 600V

DIAGRAM 3



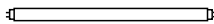
Yellow leads must be connected
to plunger end of fixture

DIAGRAM 4



For One Lamp Applications, individually
cap yellow leads, Insulate fo 600V

DIAGRAM 4a



- Multiple Lamp Operation
- Rapid and Programmed Starting Options
- T5 Ballasts meet ANSI requirement for end-of-lamp life safety shutdown
- Super Low Profile Designs
- 1-2 Lamp Applications

TRIAD® T5 ELECTRONIC BALLASTS

FOR F8, F13, F14, F21 AND F24 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F14T5 - One Lamp Applications												
1	PS	120	B114PUNV70-D	0.12	14	> .99	0.70	5.00	< 10	50/10	43	-D
		277		0.06		> .90			< 15			
		120	B228PUNV-C	0.14	17	> .98	1.05	6.17	< 10	0/-18	40	-C
		277		0.07		> .90			< 10			
		120	B228PUNV-N	0.15	17	> .98	1.02	6.17	< 10	0/-18	40	-N
		277		0.07		> .90			< 10			
		120	B228PUNV90-C	0.14	16	> .98	0.89	5.56	< 15	0/-18	37	-C
		277		0.07		17		> .85	5.24			
120	B228PUNV95-D	0.14	16	> .98	0.96	6.00	< 10	0/-18	40	-D		
277		0.07		17		> .85	5.65				< 10	
F14T5 - Two Lamp Applications												
2	SER-PS	120	B228PUNV-C	0.28	32	> .98	1.00	3.12	< 10	0/-18	37	-C
		277		0.12		> .95			< 10			
		120	B228PUNV-N	0.27	33	> .98	1.01	3.06	< 10	0/-18	37	-N
		277		0.12		> .95			< 10			
		120	B228PUNV85-D	0.24	29	> .99	0.88	3.03	< 10	0/-18	30	-D
		277		0.11		> .97			< 10			
		120	B228PUNV90-C	0.24	29	> .99	0.89	3.07	< 10	0/-18	37	-C
		277		0.11		> .90			< 15			
120	B228PUNV95-D	0.26	31	> .99	0.95	3.06	< 10	0/-18	37	-D		
277		0.12		32		> .95	2.97				< 10	
120	B228PUNV115-D	0.31	37	> .99	1.15	3.12	< 10	0/-18	37	-D		
277		0.13		36		> .98	3.19				< 10	
F21T5 - One Lamp Applications												
1	PS	120	B128PUNV50-D	0.13	15	> .99	0.50	3.33	< 10	50/10	43	-D
		277		0.07		16		> .86	3.13			
		120	B128PUNV60-D	0.14	20	> .99	0.60	3.00	< 10	50/10	43	-D
		277		0.07		20		> .88	3.00			
		120	B128PUNV70-D	0.18	21	> .99	0.70	3.33	< 10	50/10	43	-D
		277		0.08		22		> .90	3.18			
		120	B228PUNV-C	0.20	24	> .98	1.03	4.29	< 10	0/-18	40	-C
		277		0.09		24		> .95	4.29			
		120	B228PUNV-N	0.20	24	> .98	1.01	4.21	< 10	0/-18	40	-N
		277		0.10		24		> .95	4.21			
120	B228PUNV90-C	0.19	22	> .99	0.89	4.05	< 10	0/-18	37	-C		
277		0.09		23		> .90	3.87				< 15	
120	B228PUNV95-D	0.20	24	> .99	0.96	4.00	< 10	0/-18	40	-D		
277		0.09		24		> .90	4.00				< 10	
F21T5 - Two Lamp Applications												
2	SER-PS	120	B228PUNV-C	0.41	48	> .98	1.00	2.08	< 10	0/-18	37	-C
		277		0.17		46		> .98	2.17			
		120	B228PUNV-N	0.39	47	> .98	1.00	2.13	< 10	0/-18	37	-N
		277		0.17		46		> .98	2.17			
		120	B228PUNV85-D	0.35	41	> .99	0.86	2.10	< 10	0/-18	30	-D
		277		0.15		40		> .98	2.15			
		120	B228PUNV90-C	0.35	42	> .99	0.89	2.12	< 10	0/-18	37	-C
		277		0.16		42		> .95	2.12			
120	B228PUNV95-D	0.40	47	> .99	0.95	2.02	< 10	0/-18	37	-D		
277		0.17		47		> .95	2.02				< 10	
120	B228PUNV115-D	0.44	52	> .99	1.15	2.21	< 10	0/-18	37	-D		
277		0.19		51		> .98	2.25				< 10	

See page 1-41 for Dimensions and Wiring Diagrams

IS = Instant Start
PS = Programmed Start

RS = Rapid Start
PAR-IS = Parallel Instant Start

STARTING METHOD LEGEND
PAR-PS = Parallel Programmed Start
SER-PS = Series Programmed Start

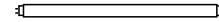
PAR-RS = Parallel Rapid Start
SER-RS = Series Rapid Start

SER-IS = Series Instant Start

TRIAD® T5 ELECTRONIC BALLASTS

FOR F28 AND F35T5 LAMPS

- Multiple Lamp Operation
- Rapid and Programmed Rapid Starting Options
- T5 Ballasts meet ANSI requirement for end-of-lamp life safety shutdown
- Super Low Profile Designs
- 1-2 Lamp Applications



T5

Fluorescent-Electronic

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F28T5 - One Lamp Applications												
1	PS	120	B128PUNV50-D	0.17	20	> .99	0.50	2.50	< 10	50/10	43	-D
		277		0.08		> .90			< 12			
		120	B128PUNV60-D	0.18	22	> .99	0.60	2.73	< 10	50/10	43	-D
		277		0.09		> .92						
		120	B128PUNV70-D	0.21	25	> .99	0.70	2.80	< 10	50/10	43	-D
		277		0.11		> .93						
		120	B228PUNV-C	0.27	32	> .98	1.00	3.12	< 10	0/-18	40	-C
		277		0.12		> .95						
		120	B228PUNV-N	0.27	32	> .98	1.00	3.12	< 10	0/-18	40	-N
		277		0.12		> .95						
		120	B228PUNV85-D	0.25	30	> .99	0.88	2.93	< 10	0/-18	40	-D
		277		0.11		> .98						
		120	B228PUNV90-C	0.25	29	> .99	0.90	3.10	< 10	0/-18	37	-C
		277		0.11		> .90			3.00			
		120	B228PUNV95-D	0.25	30	> .99	0.96	3.20	< 10	0/-18	40	-D
		277		0.11		> .95						
F28T5 - Two Lamp Applications												
2	SER-PS	120	B228PUNV-C	0.55	63	> .98	1.00	1.59	< 10	0/-18	37	-C
		277		0.23								
		120	B228PUNV-N	0.54	65	> .98	1.00	1.54	< 10	0/-18	37	-N
		277		0.23								
		120	B228PUNV85-D	0.48	54	> .99	0.85	1.57	< 10	0/-18	30	-D
		277		0.21		53						
		120	B228PUNV90-C	0.48	58	> .98	0.90	1.55	< 10	0/-18	37	-C
		277		0.21		56						
		120	B228PUNV95-D	0.51	61	> .99	0.95	1.56	< 10	0/-18	37	-D
		277		0.22		60						
		120	B228PUNV115-D	0.59	69	> .99	1.15	1.67	< 10	0/-18	37	-D
		277		0.25		68						
F28T5ES (26W) - One Lamp Applications												
1	PS	120	B228PUNV95-D	0.24	29	> .99	0.96	3.31	< 10	0/-18	40	-D
		277		0.11		> .99						
F28T5ES (26W) - Two Lamp Applications												
2	SER-PS	120	B228PUNV95-D	0.48	57	> .99	0.95	1.67	< 10	0/-18	37	-D
		277		0.21								
F28T5ES (25W) - One Lamp Applications												
1	PS	120	B228PUNV-N	0.24	29	> .98	1.00	3.45	< 10	0/-18	40	-N
		277		0.11		> .95						
		120	B228PUNV95-D	0.23	28	> .99	0.96	3.43	< 10	0/-18	40	-D
		277		0.11		> .95						
F28T5ES (25W) - Two Lamp Applications												
2	SER-PS	120	B228PUNV-N	0.49	59	> .98	1.00	1.69	< 10	0/-18	37	-N
		277		0.21		58						
		120	B228PUNV95-D	0.47	56	> .99	0.95	1.70	< 10	0/-18	37	-D
		277		0.20		54						
F35T5 - One Lamp Applications												
1	PS	120	B135PUNV70-D	0.25	30	> .99	0.70	2.33	< 10	50/10	43	-D
		277		0.12		> .95						
		120	B228PUNV95-D	0.32	38	> .99	0.95	2.50	< 10	0/-18	40	-D
		277		0.14		> .97						
		120	B228PUNV-C	0.33	40	> .99	1.00	2.50	< 10	0/-18	40	-C
		277		0.15		> .97						
		120	B228PUNV-N	0.33	40	> .99	1.00	2.50	< 10	0/-18	40	-N
		277		0.15		> .95						

See page 1-41 for Dimensions and Wiring Diagrams



- Multiple Lamp Operation
- Programmed Rapid and Instant Starting Models
- T5HO Ballasts meet ANSI requirements for end-of-lamp life safety shutdown
- Super Low Profile Designs
- 1-4 Lamp Applications

TRIAD® T5HO ELECTRONIC BALLASTS

FOR F24, F39 AND F54 T5HO LAMPS

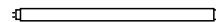
Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F24T5HO - One Lamp Applications												
1	PS	120 277	B224PUNV-C	0.23 0.10	28	> .98 > .95	1.06	3.79	< 10	0/-18	40	-C
F24T5HO - Two Lamp Applications												
2	SER-PS	120 277	B224PUNV-C	0.45 0.19	53 52	> .98	1.00	1.89 1.92	< 10	0/-18	37	-C
		120 277	B239PUNV-D	0.51 0.22	59	> .98 > .95	1.15	1.95	< 10	0/-18	37	-D
F39T5HO - One Lamp Applications												
1	PS	120 277	B224PUNV-C	0.34 0.15	41 40	> .98	0.95	2.32 2.38	< 10	0/-18	40	-C
		120 277	B239PUNV-D	0.39 0.18	47	> .98 > .95	1.10	2.34	< 10	0/-18	40	-D
F39T5HO - Two Lamp Applications												
2	SER-PS	120 277	B239PUNV-D	0.75 0.32	89 88	> .98	1.00	1.12 1.14	< 10	0/-18	37	-D
F54T5HO - One Lamp Applications												
1	PS	347	B254P347-D	0.19	64	> .95	1.02	1.59	< 10	-20/-29	37	-D
		347	B254PHRVHB-E	0.19	66	> .98	1.02	1.55	< 10	-20/-29	42	-E
		480	B254PHRVHB-E	0.15	66	> .90	1.02	1.55	< 15	-20/-29	42	-E
		120 277	B254PUNV-D	0.49 0.22	59	> .99 > .96	1.00	1.69	< 10	-20/-29	40	-D
		120 277	B254PUNVHB-D	0.49 0.22	59	> .99 > .96	1.00	1.69	< 10	-20/-29	40	-D
		120 277	B254PUNVPL-A	0.50 0.23	60 59	> .99 > .94	1.00 1.02	1.67 1.71	< 10	-20/-29	A	-A
		120 277	B254PUNVPLHBA	0.50 0.23	60 59	> .99 > .94	1.00 1.02	1.67 1.71	< 10	-20/-29	A	-A
		120 277	B454PUNV-E	0.54 0.26	65	> .95 > .90	1.05	1.62	< 15 < 20	-20/-29	44	-E
		120 277	B454PUNVHB-E	0.54 0.26	65	> .95 > .90	1.05	1.62	< 15 < 20	-20/-29	44	-E
		F54T5HO - Two Lamp Applications										
2	SER-PS	347 480	B254PHRVHB-E	0.35 0.26	120 119	> .98 > .95	1.00	0.83 0.84	< 10	-20/-29	41	-E
		120 277	B254PUNV-D	0.96 0.41	116 113	> .99 > .98	1.00	0.86 0.88	< 10	-20/-29	37	-D
		120 277	B254PUNVHB-D	0.96 0.41	116 113	> .99 > .98	1.00	0.86 0.88	< 10	-20/-29	37	-D
		347	B254P347-D	0.35	120	> .98	1.00	0.83	< 10	-20/-29	37	-D
		120 277	B454PUNV-E	1.01 0.44	122 121	> .95	1.00	0.82 0.83	< 10 < 15	-20/-29	44	-E
		120 277	B454PUNVHB-E	1.01 0.44	122 121	> .95	1.00	0.82 0.83	< 10 < 15	-20/-29	44	-E
		120 277	B254PUNVPL-A	0.94 0.40	113 110	> .99 > .98	0.96 0.99	0.85 0.90	< 10	-20/-29	A	-A
		120 277	B254PUNVPLHBA	0.94 0.40	113 110	> .99 > .98	0.96 0.99	0.85 0.90	< 10	-20/-29	A	-A
F54T5HO - Three Lamp Applications												
3	SER-PS	120 277	B454PUNV-E	1.52 0.66	184 182	> .98 > .95	1.05	0.57 0.58	< 10	-20/-29	44	-E
		120 277	B454PUNVHB-E	1.52 0.66	184 182	> .98 > .95	1.05	0.57 0.58	< 10	-20/-29	44	-E
3	PAR-PS	120 277	B454PUNVPL-E	1.34 0.58	159 157	> .99 > .97	0.90	0.57	< 10	-20/-29	B	-E
		120 277	B454PUNVPLHBE	1.34 0.58	159 157	> .99 > .97	0.90	0.57	< 10	-20/-29	B	-E

See page 1-41 for Dimensions and Wiring Diagrams

TRIAD® T5HO ELECTRONIC BALLASTS

FOR F24, F39 AND F54 T5HO LAMPS

- Multiple Lamp Operation
- Programmed Rapid and Instant Starting Models
- T5HO Ballasts meet ANSI requirements for end-of-lamp life safety shutdown
- Super Low Profile Designs
- 1-4 Lamp Applications



T5HO

Fluorescent-Electronic

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F54T5HO - Four Lamp Applications												
4	SER-PS	120	B454PUNV-E	1.96	235	> .98	1.00	0.43	< 10	-20/-29	44	-E
		277		0.84	229	> .99		0.44				
		120	B454PUNVHB-E	1.96	235	> .98	1.00	0.43	< 10	-20/-29	44	-E
		277		0.84	229	> .99		0.44				
4	PAR-PS	120	B454PUNVPLHBE	1.77	210	> .99	0.90	0.43	< 10	-20/-29	B	-E
		277		0.76	207	> .98						
F54T5HOES (51W) - One Lamp Applications												
1	PS	120	B254PUNV-D	0.46	55	> .99	1.00	1.82	< 10	60/16	40	-D
		277		0.20		> .96						
		120	B254PUNVPL-A	0.46	55	> .99	1.00	1.81	< 10	60/16	A	-A
		277		0.21		> .93		1.83				
120	B254PUNVPLHBA	0.46	55	> .99	1.00	1.81	< 10	60/16	A	-A		
277		0.21		> .93		1.83						
F54T5HOES (51W) - Two Lamp Applications												
2	SER-PS	120	B254PUNV-D	0.89	107	> .99	1.00	0.93	< 10	60/16	37	-D
		277		0.37	103	> .98		0.97				
2	PAR-PS	120	B254PUNVPL-A	0.90	104	> .99	0.96	0.92	< 10	60/16	A	-A
		277		0.39	101	> .97		0.95				
		120	B254PUNVPLHBA	0.90	104	> .99	0.96	0.92	< 10	60/16	A	-A
		277		0.39	101	> .97		0.95				
F54T5HOES (51W) - Three Lamp Applications												
3	PAR-PS	120	B454PUNVPL-E	1.27	151	> .99	0.90	0.60	< 10	60/16	B	-E
		277		0.55	148	> .97		0.61				
		120	B454PUNVPLHBE	1.27	151	> .99	0.90	0.60	< 10	60/16	B	-E
		277		0.55	148	> .97		0.61				
F54T5HOES (51W) - Four Lamp Applications												
4	PAR-PS	120	B454PUNVPL-E	1.65	196	> .99	0.90	0.46	< 10	60/16	B	-E
		277		0.71	192	> .97		0.47				
		120	B454PUNVPLHBE	1.65	196	> .99	0.90	0.46	< 10	60/16	B	-E
		277		0.71	192	> .97		0.47				
F54T5HOES (50W) - One Lamp Applications												
1	PS	120	B254PUNVPL-A	0.47	56	> .99	1.00	1.79	< 10	60/16	A	-A
		277		0.21	55	> .92		0.99				
		120	B254PUNVPLHBA	0.47	56	> .99	1.00	1.79	< 10	60/16	A	-A
		277		0.21	55	> .92		0.99				
F54T5HOES (50W) - Two Lamp Applications												
2	PAR-PS	120	B254PUNVPL-A	0.92	106	> .99	0.96	0.90	< 10	60/16	A	-A
		277		0.40	103	> .97		0.93				
		120	B254PUNVPLHBA	0.92	106	> .99	0.96	0.90	< 10	60/16	A	-A
		277		0.40	103	> .97		0.93				
F54T5HOES (50W) - Three Lamp Applications												
3	PAR-PS	120	B454PUNVPL-E	1.30	154	> .99	0.90	0.58	< 10	60/16	B	-E
		277		0.56	151	> .97		0.60				
		120	B454PUNVPLHBE	1.30	154	> .99	0.90	0.58	< 10	60/16	B	-E
		277		0.56	151	> .97		0.60				
F54T5HOES (50W) - Four Lamp Applications												
4	PAR-PS	120	B454PUNVPL-E	1.67	198	> .99	0.90	0.45	< 10	60/16	B	-E
		277		0.72	194	> .98		0.46				
		120	B454PUNVPLHBE	1.67	198	> .99	0.90	0.45	< 10	60/16	B	-E
		277		0.72	194	> .98		0.46				
F54T5HOES (49W) - One Lamp Applications												
1	PS	120	B254PUNV-D	0.44	54	> .99	1.00	1.85	< 10	60/16	40	-D
		277		0.20	53	> .96		1.89				
		120	B254PUNVHB-D	0.44	54	> .99	1.00	1.85	< 10	60/16	40	-D
		277		0.20	53	> .96		1.89				
		120	B254PUNVPL-A	0.45	54	> .99	1.00	1.85	< 10	60/16	A	-A
		277		0.21	53	> .92		1.89				
		120	B254PUNVPLHBA	0.45	54	> .99	1.00	1.85	< 10	60/16	A	-A
		277		0.21	53	> .92		1.89				



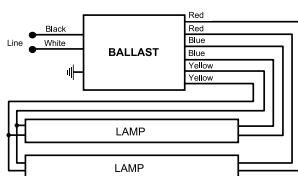
- Multiple Lamp Operation
- Programmed Rapid and Instant Starting Models
- T5HO Ballasts meet ANSI requirements for end-of-lamp life safety shutdown
- Super Low Profile Designs
- 1-4 Lamp Applications

TRIAD® T5HO ELECTRONIC BALLASTS

FOR F24, F39 AND F54 T5HO LAMPS

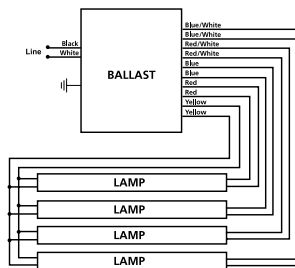
Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.		
Qty.	Starting Method													
F54T5HOES (49W) - Two Lamp Applications														
2	SER-PS	120	B254PUNV-D	0.87	105	> .99	1.00	0.95	< 10	60/16	37	-D		
		277		0.37	102	> .98		0.98						
		120	B254PUNVHB-D	0.87	105	> .99	1.00	0.95	< 10	60/16	37	-D		
		277		0.37	102	> .98		0.98						
2	PAR-PS	120	B254PUNVPL-A	0.86	103	> .99	0.97	0.94	< 10	60/16	A	-A		
		277		0.37	101	> .97		0.96						
		120	B254PUNVPLHBA	0.86	103	> .99	0.97	0.94	< 10	60/16	A	-A		
		277		0.37	101	> .97		0.96						
F54T5HOES (49W) - Three Lamp Applications														
3	PAR-PS	120	B454PUNVPL-E	1.19	142	> .99	0.90	0.63	< 10	60/16	B	-E		
		277		0.52	140	> .96		0.64						
		120	B454PUNVPLHBE	1.19	142	> .99	0.90	0.63	< 10	60/16	B	-E		
		277		0.52	140	> .96		0.64						
F54T5HOES (49W) - Four Lamp Applications														
4	PAR-PS	120	B454PUNVPL-E	1.61	192	> .99	0.90	0.47	< 10	60/16	B	-E		
		277		0.69	188	> .98		0.48						
		120	B454PUNVPLHBE	1.61	192	> .99	0.90	0.47	< 10	60/16	B	-E		
		277		0.69	188	> .98		0.48						
F54T5HOES (47W) - One Lamp Applications														
1	PS	120	B254PUNV-D	0.42	54	> .99	1.00	1.85	< 10	60/16	40	-D		
		277		0.20	53	> .95		1.89						
		120	B254PUNVPL-A	0.45	54	> .99	1.00	1.86	< 10	60/16	A	-A		
		277		0.21	53	> .92		1.87						
		120	B254PUNVPLHBA	0.45	54	> .99	1.00	1.86	< 10	60/16	A	-A		
		277		0.21	53	> .92		1.87						
F54T5HOES (47W) - Two Lamp Applications														
2	PAR-PS	120	B254PUNV-D	0.85	102	> .99	1.00	0.98	< 10	60/16	37	-D		
		277		0.36	99	> .98		1.01						
		120	B254PUNVPL-A	0.86	100	> .99	0.96	0.96	< 10	60/16	A	-A		
		277		0.37	98	> .97		0.96						
		120	B254PUNVPLHBA	0.86	100	> .99	0.96	0.96	< 10	60/16	A	-A		
		277		0.37	98	> .97		0.96						
		F54T5HOES (47W) - Three Lamp Applications												
		3	PAR-PS	120	B454PUNVPL-E	1.21	144	> .99	0.90	0.63	< 10	60/16	B	-E
277	0.53			142		> .96	0.63							
120	B454PUNVPLHBE			1.21	144	> .99	0.90	0.63	< 10	60/16	B	-E		
277				0.53	142	> .96		0.63						
F54T5HOES (47W) - Four Lamp Applications														
4	PAR-PS	120	B454PUNVPL-E	1.59	189	> .99	0.90	0.48	< 10	60/16	B	-E		
		277		0.68	185	> .97		0.49						
		120	B454PUNVPLHBE	1.59	189	> .99	0.90	0.48	< 10	60/16	B	-E		
		277		0.68	185	> .97		0.49						

See page 1-41 for Dimensions and Wiring Diagrams



For one lamp operation, cap blue leads individually, insulate to 600V.

DIAGRAM A



For three lamp operation, cap Blue/White leads individually, insulate to 600V.

DIAGRAM B

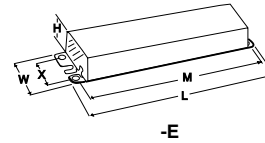
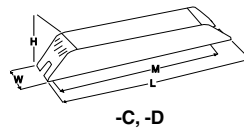
TRIAD® T5 & T5HO ELECTRONIC BALLASTS

T5 & T5HO

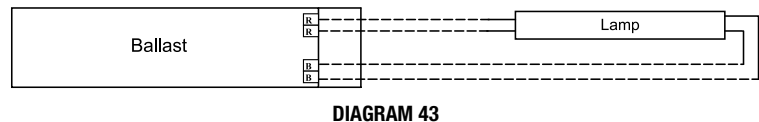
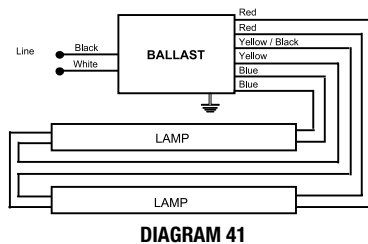
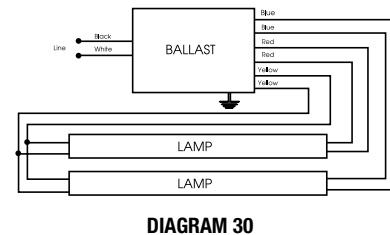
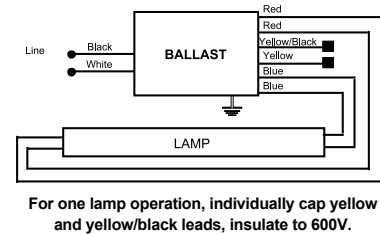
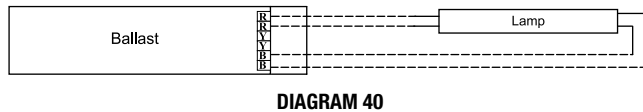
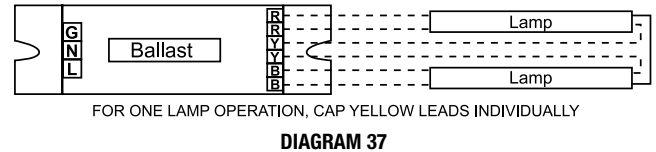
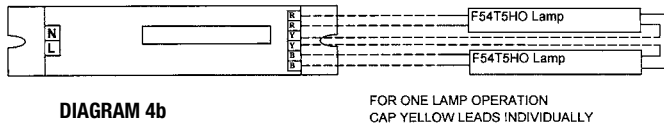
Fluorescent-Electronic

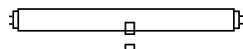
Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F54T5HOES (44W) - One Lamp Applications												
1	PS	120	B254PUNVPL-A	0.43	51	> .99	1.00	1.95	< 10	60/16	A	-A
		277		0.20								
		120	B254PUNVPLHBA	0.43	51	> .99	1.00	1.95	< 10	60/16	A	-A
		277		0.20								
F54T5HOES (44W) - Two Lamp Applications												
2	PAR-PS	120	B254PUNVPL-A	0.81	97	> .99	0.93	0.96	< 10	60/16	A	-A
		277		0.35								
		120	B254PUNVPLHBA	0.81	97	> .99	0.93	0.96	< 10	60/16	A	-A
		277		0.35								
F54T5HOES (44W) - Three Lamp Applications												
3	PAR-PS	120	B454PUNVPL-E	1.10	131	> .99	0.92	0.70	< 10	60/16	B	-E
		277		0.49								
		120	B454PUNVPLHBE	1.10	131	> .99	0.92	0.70	< 10	60/16	B	-E
		277		0.49								
F54T5HOES (44W) - Four Lamp Applications												
4	PAR-PS	120	B454PUNVPL-E	1.46	174	> .99	0.92	0.53	< 10	60/16	B	-E
		277		0.63								
		120	B454PUNVPLHBE	1.46	174	> .99	0.92	0.53	< 10	60/16	B	-E
		277		0.63								

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
-C	14.25"	1.18"	1.00"	13.75"	—
-D	16.88"	1.18"	1.00"	16.20"	—
-E	16.88"	1.74"	1.18"	16.28"	—



WIRING DIAGRAMS





- Rapid Starting Options
- Standard & High Performance Models
- 1-3 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

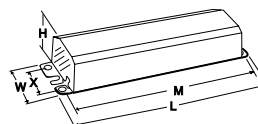
FOR (1), (2) AND (3)
F30T12, F30T12ES, & (2)F32T12 LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F25T12 - Two Lamp Applications												
2	PAR-IS	120 277	B232IUNV-C	0.40 0.17	47 46	> .98	0.89	1.89 1.93	< 10	0/-18	21	-C
F25T12 - Three Lamp Applications												
3	PAR-IS	120 277	B332IUNVHP-A	0.58 0.26	69 68	> .99 > .95	0.90 0.91	1.30 1.34	< 10	0/-18	6	-A
F25T12 - Four Lamp Applications												
4	PAR-IS	120 277	B432IUNVHP-A	0.77 0.34	91 88	> .99 > .95	0.90	0.99 1.02	< 10	0/-18	7a	-A
F32T12 - One Lamp Applications												
1	RS	277	B234SR277M-A*	0.15	33	> .80	0.94	2.85	< 30	50/10	4	-A
F32T12 - Two Lamp Applications												
2	SER-RS	120 277	B234SR120M-A ^Δ B234SR277M-A*	0.46 0.21	54 55	> .98 > .90	0.90 0.87	1.67 1.58	< 10 < 30	50/10 50/10	30 4	-A -A

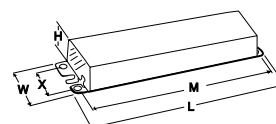
^Δ Residential use only.

*Not for sale for use in the US.

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
ST	9.50"	2.40"	1.55"	8.89"	1.69"
-A	9.50"	1.70"	1.18"	8.89"	1.69"

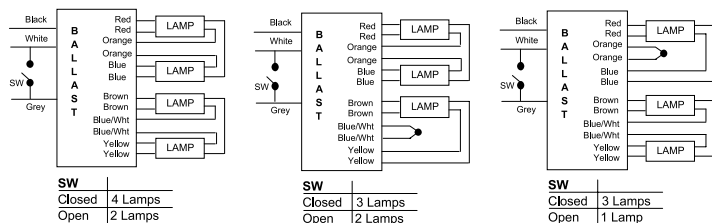


ST



-A

WIRING DIAGRAMS



Application Notes:

- 'SW' controls the lamps connected between the Brown and Yellow leads
- For lamp switching applications, connect 'SW' between the white and the grey leads as shown in the wiring diagram above OR between the Black and Grey leads. The switch "SW" may be an on-off switch, an occupancy sensor, a relay, etc.
- If lamp switching is not required, short the white and grey leads OR the black and the grey leads
- A single control device, "SW", may be connected to control multiple ballasts
- For three lamp use: Short Blue/White leads or Orange leads and cap

DIAGRAM 44

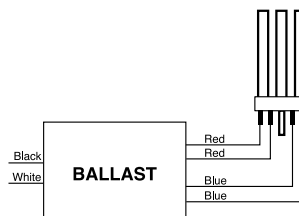


DIAGRAM 47

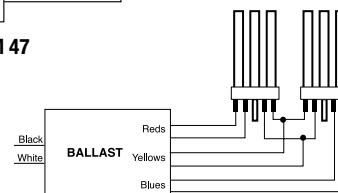
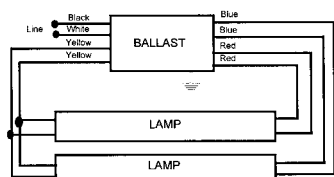
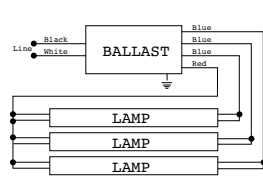


DIAGRAM 48



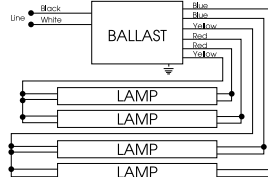
For One lamp Operation, Individually
Cap blue leads, Insulate to 600V

DIAGRAM 4



For Two Lamp Operation,
Insulate one blue lead to 600V

DIAGRAM 6



For three lamp operation, cap any
blue lead, insulate to 600V

DIAGRAM 7a

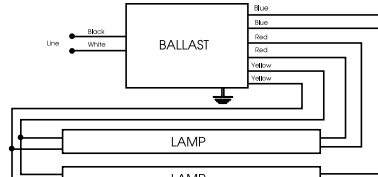


DIAGRAM 30

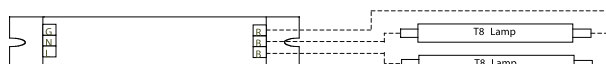
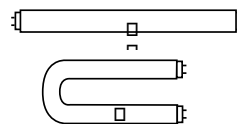


DIAGRAM 21

TRIAD® ELECTRONIC BALLASTS

FOR (1) , (2) AND (3) F40T12 AND F34T12ES LAMPS

- Standard & High Performance Models
- Rapid Starting Options
- 1-3 Lamp Applications



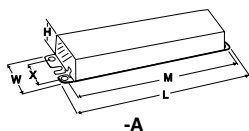
**F40T12
&
F34T12ES**

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F40T12 - One Lamp Applications												
1	RS	220	B240R220-A*	0.20	44	> .99	1.04	2.38	< 10	50/10	4	-A
		277	B234SR277M-A*	0.17	42	> .88	0.94	2.24	< 30	50/10	4	-A
F40T12 - Two Lamp Applications												
2	SER-RS	120	B234SR120M-A ^Δ	0.58	69	> .98	0.90	1.30	< 10	50/10	30	-A
		277	B234SR277M-A*	0.26	70	> .90	0.87	1.24	< 30	50/10	4	-A
2	PAR-RS	220	B240R200-A*	0.32	70	> .99	0.90	1.29	< 10	50/10	4	-A
F40T12ES (34W) - One Lamp Applications												
1	RS	220	B240R200-A*	0.17	36	> .99	1.04	2.86	< 10	60/16	4	-A
		277	B234SR277M-A*	0.15	35	> .80	0.94	2.69	< 30	60/16	4	-A
F40T12ES (34W) - Two Lamp Applications												
2	SER-RS	120	B234SR120M-A ^Δ	0.48	58	> .98	0.86	1.48	< 10	60/16	30	-A
		277	B234SR277M-A*	0.23	60	> .90	0.87	1.45	< 30	50/10	4	-A
2	PAR-RS	220	B240R200-A*	0.27	59	> .99	0.90	1.52	< 10	60/16	4	-A

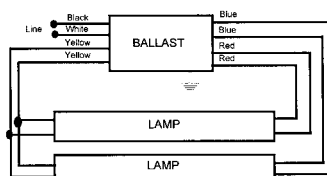
^Δ Residential use only.

* Not for sale for use in the US.

Overall Dimensions		Mounting Dimensions			
Draw #	L	W	H	M	X
-A	9.50"	1.70"	1.18"	8.89"	1.69"



WIRING DIAGRAMS



For One Lamp Applications, individually cap blue leads, Insulate to 600V

DIAGRAM 4

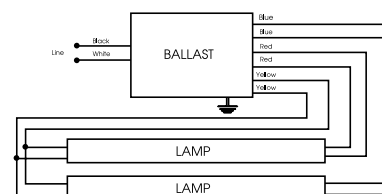
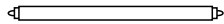


DIAGRAM 30

T12 SLIMLINE



- Standard & High Performance Models
- Instant Starting Options
- 1-2 Lamp Applications

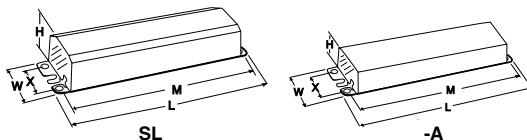
TRIAD® ELECTRONIC BALLASTS

FOR F48T12, F48T12ES, F60T12, F64T12 & F72T12 LAMPS

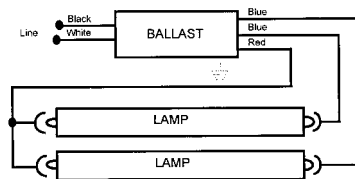
Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F48T12 - One Lamp Applications												
1	IS	120	B260IUNVHP	0.39	47	> .95	1.10	2.34	< 10	0/-18	14	SL
		277		0.18								
F48T12 - Two Lamp Applications												
2	PAR-IS	120	B260I120M-A*	0.62	68	> .90	0.90	1.32	< 30	50/10	14	-A
		120	B260IUNVHP	0.61	75	> .98	0.95	1.27	< 10	0/-18	14	SL
		277		0.27	74	> .95		1.28				
F48T12ES - One Lamp Applications												
1	IS	120	B260IUNVHP	0.32	38	> .98	1.10	2.89	< 10	60/16	14	SL
		277		0.15	39	> .95		2.82				
F48T12ES - Two Lamp Applications												
2	PAR-IS	120	B260IUNVHP	0.57	67	> .95	0.93	1.39	< 10	60/16	14	SL
		277		0.25	66	> .95		1.41				
F60T12 - One Lamp Applications												
1	IS	120	B260IUNVHP	0.49	58	> .98	1.10	1.90	< 10	0/-18	14	SL
		277		0.22		> .95						
F60T12 - Two Lamp Applications												
2	PAR-IS	120	B260IUNVHP	0.77	92	> .98	0.92	1.00	< 10	0/-18	14	SL
		277		0.33	91	> .98		1.01				
F64T12 - One Lamp Applications												
1	IS	120	B260IUNVHP	0.51	61	> .98	1.10	1.80	< 10	0/-18	14	SL
		277		0.35	96	> .95		1.15				
F64T12 - Two Lamp Applications												
2	PAR-IS	120	B260IUNVHP	0.81	97	> .98	0.92	0.95	< 10	0/-18	14	SL
		277		0.35	96	> .98		0.96				
F72T12 - One Lamp Applications												
1	IS	120	B260IUNVHP	0.55	68	> .95	1.06	1.56	< 10	0/-18	14	SL
		277		0.25	67	> .95		1.58				

* Residential use only.

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
SL	11.75"	3.13"	1.78"	11.14"	2.00"
-A	9.50"	1.70"	1.18"	8.89"	1.69"



WIRING DIAGRAMS



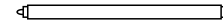
For One Lamp Operation, Insulate one blue lead to 600V

DIAGRAM 14

TRIAD® ELECTRONIC BALLASTS

F72T12(cont.), F84T12, F96T12 & F96T12ES LAMPS

- Standard & High Performance Models
- Instant Starting Options
- 1-2 Lamp Applications



**T12
SLIMLINE**

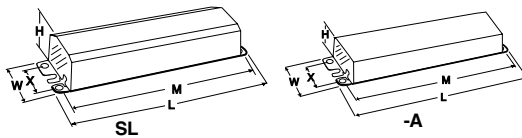
Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F72T12 - Two Lamp Applications												
2	PAR-IS	120	B260I120M-A*	0.90	105	> .95	0.90	0.86	< 30	50/10	14	-A
		120	B260IUNVHP	0.90	109	> .99	0.91	0.83	< 10	0/-18	14	SL
		277		0.39	107		0.85					
F84T12 - One Lamp Applications												
1	IS	120	B260IUNVHP	0.63	76	> .98	1.10	1.45	< 10	0/-18	14	SL
		277		0.28	75			1.47				
F84T12 - Two Lamp Applications												
2	PAR-IS	120	B260IUNVHP	1.03	123	> .98	0.88	0.72	< 10	0/-18	14	SL
		277		0.44	120			0.73				
F96T12 - One Lamp Applications												
1	IS	120	B260IUNVHP	0.70	85	> .98	1.05	1.24	< 10	0/-18	14	SL
		277		0.31	84			1.25				
F96T12 - Two Lamp Applications												
2	PAR-IS	120	B260IUNVHP	1.16	139	> .99	0.88	0.63	< 10	0/-18	14	SL
		277		0.50	137			0.64				
F96T12ES - One Lamp Applications												
1	IS	120	B260I120M-A*	0.61	66	> .90	1.09	1.65	< 30	60/16	14	-A
		120	B260IUNVHP	0.59	72	> .98	1.03	1.43	< 10	60/16	14	SL
		277		0.26	70		1.47					
F96T12ES - Two Lamp Applications												
2	PAR-IS	120	B260I120M-A*	0.90	105	> .95	0.88	0.84	< 30	60/16	14	-A
		120	B260IUNVHP	0.96	112	> .99	0.88	0.79	< 10	60/16	14	SL
		277		0.40	110		0.80					

* Residential use only.

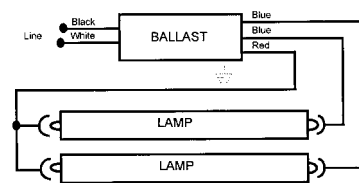
STARTING METHOD LEGEND

IS = Instant Start RS = Rapid Start PAR-PRS = Parallel Programmed Rapid Start PAR-RS = Parallel Rapid Start SER-IS = Series Instant Start
 PRS = Programmed Rapid Start PAR-IS = Parallel Instant Start SER-PRS = Series Programmed Rapid Start SER-RS = Series Rapid Start

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
SL	11.75"	3.13"	1.78"	11.14"	2.00"
-A	9.50"	1.70"	1.18"	8.89"	1.69"

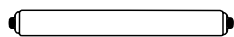


WIRING DIAGRAMS



For One Lamp Operation, Insulate one blue lead to 600V

DIAGRAM 14



- High Performance Models
- Rapid Starting Options
- 2 Lamp Applications

TRIAD® ELECTRONIC BALLASTS

FOR T12 HIGH OUTPUT LAMPS

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											

F48T12HO - One Lamp Applications

1	PS	120	B295PUNVHE-S	0.46	55	> .98	0.93	1.69	< 10	-20/-29	80	-S
		277		0.22		> .90			< 12			

F48T12HO - Two Lamp Applications

2	SER-PS	120	B295PUNVHE-S	0.88	105	> .98	0.90	0.86	< 10	-20/-29	80	-S
		277		0.39	104	> .95		0.87				

F60T12HO - One Lamp Applications

1	PS	120	B295PUNVHE-S	0.56	67	> .98	0.92	1.37	< 10	-20/-29	80	-S
		277		0.26		> .92						

F60T12HO - Two Lamp Applications

2	SER-PS	120	B295PUNVHE-S	1.08	127	> .98	0.89	0.70	< 10	-20/-29	80	-S
		277		0.47	126	> .95		0.71				

F72T12/BL/HO - Two Lamp Applications

2	SER-RS	120	493B2	1.60	180	> .90	1.00	0.56	< 25	50/10	4	ST
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F72T12HO - One Lamp Applications

1	PS	120	B295PUNVHE-S	0.70	83	> .98	0.92	1.11	< 10	-20/-29	80	-S
		277		0.31		> .95						

F72T12HO - Two Lamp Applications

2	SER-PS	120	B295PUNVHE-S	1.34	157	> .98	0.88	0.56	< 10	-20/-29	80	-S
		277		0.57	155	> .95		0.57				

F73T12/BL/HO - Two Lamp Applications

2	SER-RS	120	493B2	1.60	180	> .90	1.00	0.56	< 25	50/10	4	ST
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F96T12HO - One Lamp Applications

1	PS	120	B295PUNVHE-S	0.88	104	> .98	0.92	0.88	< 10	-20/-29	80	-S
		277		0.38	103	> .95		0.89				

F96T12HO - Two Lamp Applications

2	SER-PS	120	B295PUNVHE-S	1.72	204	> .98	0.88	0.43	< 10	-20/-29	80	-S
		277		0.72	197	> .95		0.45				

F96T12HOES (95W) - One Lamp Applications

1	PS	120	B295PUNVHE-S	0.73	87	> .98	0.92	1.06	< 10	60/16	80	-S
		277		0.32		> .95						

F96T12HOES (95W) - Two Lamp Applications

2	SER-PS	120	B295PUNVHE-S	1.45	170	> .98	0.88	0.52	< 10	-20/-29	80	-S
		277		0.61	167	> .95		0.53				

Overall Dimensions			Mounting Dimensions			
Draw #	L	W	H	M	X	
ST	9.50"	2.40"	1.55"	8.89"	1.69"	
-S	11.75"	1.70"	1.18"	11.19"	1.05"	

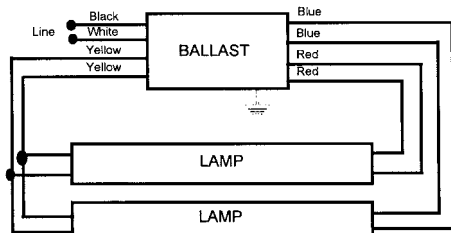
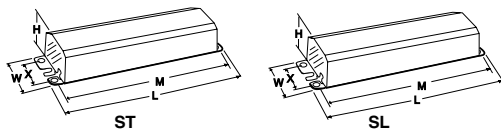


DIAGRAM 4

WIRING DIAGRAMS

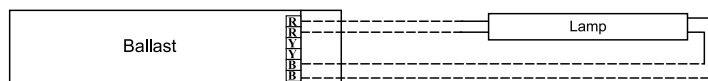
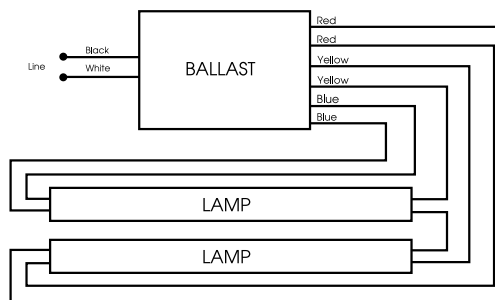


DIAGRAM 40



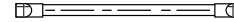
For One Lamp Operation, Individually cap yellow leads, Insulate to 600V

DIAGRAM 80

TRIAD® ELECTRONIC BALLASTS

FOR F6T2, F8T2, F11T2 AND F13T2 LAMPS

- Programmed Rapid Starting Options
- 1-2 Lamp Applications



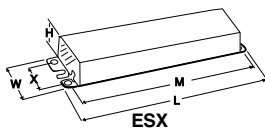
T2

Lamp		Line Volts	Catalog Number	Line Current (Amps)	Input Power (Watts)	Power Factor (PF)	Ballast Factor (BF)	Ballast Efficacy Factor (BEF)	THD %	Min. F/C Start Temp	Wiring Diag.	Dim.
Qty.	Starting Method											
F6T2 - One And Two Lamp Applications												
2	SER-PS	120 277	ES1786X	0.12 0.07	14 15	> .97	1.00	7.14 6.67	< 10	0/-18	37	ESX
1	PS	120 277	ES1786X	0.07 0.05	8 9	> .97	1.00	12.50 11.11	< 10	0/-18	40	ESX
F8T2 - One And Two Lamp Applications												
2	SER-PS	120 277	ES1786X	0.17 0.08	20 21	> .97	1.00	5.00 4.76	< 10	0/-18	37	ESX
1	PS	120 277	ES1786X	0.10 0.06	11	> .97	1.00	9.09	< 10	0/-18	40	ESX
F11T2 - One And Two Lamp Applications												
2	SER-PS	120 277	ES1786X	0.20 0.09	26	> .97	1.00	3.85	< 10	0/-18	37	ESX
1	PS	120 277	ES1786X	0.12 0.07	15	> .97	1.00	6.67	< 10	0/-18	40	ESX
F13T2 - One And Two Lamp Applications												
2	SER-PS	120 277	ES1786X	0.27 0.13	31 32	> .97	1.00	3.23 3.13	< 10	0/-18	37	ESX
1	PS	120 277	ES1786X	0.15 0.08	16 17	> .97	1.00	6.25 5.88	< 10	0/-18	40	ESX

STARTING METHOD LEGEND

IS = Instant Start RS = Rapid Start PAR-PRS = Parallel Programmed Rapid Start PAR-RS = Parallel Rapid Start SER-IS = Series Instant Start
 PRS = Programmed Rapid Start PAR-IS = Parallel Instant Start SER-PRS = Series Programmed Rapid Start SER-RS = Series Rapid Start

Overall Dimensions			Mounting Dimensions		
Draw #	L	W	H	M	X
ESX	14.13"	1.24"	0.73"	13.78"	—



WIRING DIAGRAMS

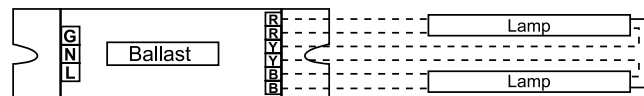


DIAGRAM 37

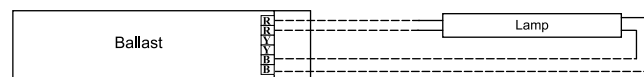


DIAGRAM 40