Glossary

AC (Alternating Current)–Current which passes from the generator in one direction and then the other, alternately

ANSI (American National Standards Institute)–Non-profit organization that generates voluntary product performance standards for many U.S. industries. ANSI Standard C82.1 applies to electromagnetic ballasts.

Arc–Intense luminous discharge formed by the passage of electric current across a space between electrodes.

Auto Reset Shutdown Circuit–Circuit senses lamp end of life and will automatically shut off power to the lamp(s). When a new lamp is inserted in the socket, the ballast resets, and turns on the lamp automatically. Some shutdown circuits require the power to be interrupted before a new lamp will re-light.

Ballast–Device for starting and regulating fluorescent and high intensity discharge lamps.

Ballast Efficacy Factor (BEF) – Value used to evaluate various lighting systems based on light output and power input. The BEF can only be used to compare systems operating the same type and quantity of lamps.

Ballast Factor (BF)–Measure of light output from lamp operated by commercial ballast as compared to a laboratory standard reference ballast. Ballast factor .94 means ballast produces 94% of light produced by ANSI C82.2 reference ballast operating same lamps.

Ballast Hum–Sound generated by the vibration of laminations in the electromagnetic field that transforms the current for discharge lamp use.

Ballast Losses–Power which is supplied to a ballast that is not converted into lamp energy. Ballast loss is dissipated as heat.

Bottom Exit (BE)–A configuration with leads or a wire-trap on the bottom or base of the ballast. This type of configuration is usually used when the ballast is mounted onto a junction box plate.

Bottom Exit Studs (BES)–A configuration with screw studs mounted on the base plate or bottom of the ballast. The screws are 3/8˝ inches long with a #8-32 thread size (#8-32 nut). They are mounted on a two-inch center. The studs are usually used to mount the ballast directly onto a junction box plate.

Canadian Energy Standards –Indicates ballast complies with Canadian Energy Standards and meets the requirements ofCAN/CSA-C654-M91.

Canadian Standards Association (CSA)–Association that generates product performance and safety standards for many Canadian industries.

Capacitor–Device in ballast that stores electrical energy. Often used for power factor correction and lamp regulation(see "Power Factor").

Cathode–See "Electrode".

Centigrade (C)–Celsius temperature scale where 0°C = 32°F.

Circle E–Designates a ballast meets or exceeds the requirements of Public Law 100-357 establishing standards of efficiency.

Class P Thermal Protector–A switching device sensitive to current and heat that automatically disconnects ballast if the ballast temperature exceeds UL temperature limitations.

Coil–Windings of copper or aluminum wire surrounding the steel core in ballast.

Core–Component of electromagnetic ballast that is surrounded by the coil. Core is comprised of steel laminations or solid ferrite material.

Core & Coil Ballast–Another term for an electromagnetic ballast.

Crest Factor (Lamp Current Crest Factor)–Ratio of peak lamp current to RMS or average lamp operating current.

Efficacy–Lumen output per unit of power supplied to ballast (lumens per watt).

Electrical Testing Laboratory (ETL)–Independent testing laboratory that performs ballast tests and certifies accuracy of performance data.

Electrode–Metal filaments that emit electrons in a fluorescent lamp. Negatively charged free electrons emitted by one electrode are attracted to the positive electrode (anode), creating an electric current and arc between electrodes.

Electromagnetic Ballast (Magnetic Ballast)–A ballast that uses a "Core & Coil" assembly to transform electrical current to start and operate fluorescent lamps.

EMI (Electromagnetic Interference)–Electrical interference (noise) generated by electrical and electronic devices. Levels generated by high frequency electronic devices are subject to regulation by Federal Communications Commission (FCC).

Filament–Metal Tungsten wire coated with Barium Oxide that emits electrons when voltage is applied.

Filament Voltage–Voltage applied to the lamp cathode.

Fluorescent Lamp–Gas filled lamp in which light is produced by the interaction of electrons with phosphors lining the lamp's glass tube.

Foot Candles–Measure of light level on a surface being illuminated. Defined as one lumen of light per one square foot of surface area.

Four-Pin Compact Fluorescent Lamps–Type of lamps that do not have any starter built into the base of the lamp. Therefore, the ballast has the starting circuit. Traditionally 4-pin lamps are designed to work with electronic ballasts; however, Universal does offer magnetic ballasts to operate some 4-pin lamps.

Frequency–Rate of alteration in an AC current. Expressed in cycles per second or Hertz (Hz).

Harmonic–An integral multiple of the fundamental frequency (60 Hz) that becomes a component of the current (see "Harmonic Distortion").

Harmonic Distortion–Distortion of an AC waveform caused by multiples of the fundamental frequency (harmonics). Odd triplet harmonics (thirds, ninths, etc.) may result in large currents on the neutral line in a four-wire Wye three-phase system.

Hertz (Hz)–Unit used to measure frequency of alteration of current or voltage; cycles per second.

Glossary

High Efficiency (Energy Saving) Electromagnetic Ballast–Ballast with Core & Coils, designed to minimize ballast losses compared to the "standard" ballast.

High Intensity Discharge (HID) Lamp–A lamp containing a filled arc tube in which the active element becomes vaporized (a gaseous state) and is discharged into the arc stream to produce light.

High Power Factor–A ballast whose power factor is corrected to 90% or greater by use of a capacitor.

Incandescent Lamp–Lamp in which light is produced by a filament heated by an electric current.

Input Voltage–Power supply voltage required for proper operation of an arc discharge lighting ballast.

Inputs Watts–The total power input to the ballast which includes lamp watts and ballast losses. The total power input to the fixture is the input watts to the ballast or ballasts and is the value to be used when calculating cost of energy and air conditioning loads.

Instant Start Lamp–a fluorescent lamp with a single pin at each end. The lamp is ignited by a high voltage without any filament heating.

Instant Start–Lamp starting method in which lamps are started by high voltage input with no preheating of lamp filaments. Some rapid start lamps are designed so that they may be instant started.

Laminations–Layers of steel, making up the "core" that is surrounded by the coils in a core & coil ballasts.

Lamp Current Crest Factor–See "Crest Factor."

Lamp Filament–See "Electrode."

Lamp Watts –Input power used to operate lamps.

Lumens/Watt–A measurement of white light produced by each output watt.

Metal Cases–Case design used in both magnetic and electronic ballasts. These ballasts are grounded once they are mounted to the fixture. They meet all safety codes, some of which do not allow plastic in open plenum areas.

National Electric Code (NEC)–A nationally accepted electrical installation code to reduce the risk of fire, developed by the National Fire Protection Association.

National Energy Standards for Fluorescent Ballasts–A federal law enacted in 1988 that sets energy standards for ballasts consistent throughout the United States.

NOM –Laboratory that sets safety standards for building materials, electrical appliances and other products for Mexico.

Non-PCB Capacitor–Capacitor used in ballasts to help provide power factor correction. Contains no polychlorinated biphenyls and meets EPA requirements.

Normal Power Factor–Ballasts with power factor less than .90 and do not incorporate any means of Power Factor Correction.

Parallel Lamp Operation–Refers to ballasts that employ multiple-output current paths from a single ballast to allow lamps to operate independent of one another, allowing other lamps operated by the ballast to remain lit should companion lamp(s) fail.

PCB (Polychlorinated Biphenyls)–Chemical pollutant formerly used in ballast capacitors.

Potting–Material used to completely surround and cover components of some magnetic and electronic ballasts. Potting compound fulfills functions of protecting components, dampening sound, and dissipating heat.

Power Factor–Measurement of the relationship between the AC source voltage and current. High power factor ballasts require less AC operating current operating at the same wattage than an equivalent low power factor ballast. Formula: Power Factor equals Input Watts divided by the product of Line Volts times Line Amps (Volt Amps or VA).

Power Factor Corrected–Ballasts that incorporate a means of Power Factor Correction but whose power factor is <90% and >50%.

Preheat Lamp–A fluorescent lamp in which the filament must be heated by use of a starter before the arc is created. These lamps are typically operated with electromagnetic ballasts.

Programmed Rapid Start–lamp starting method which preheats the lamp filaments while not allowing the lamp to ignite and then applies the open circuit voltage (OCV) to start the lamp. The user may experience a half to one-second delay after turning on the lamps while the pre-heating takes place. This type of starting circuit keeps lamp end blackening to a minimum and improves lamp life performance, especially in applications where the lamps are frequently switched on and off.

Rapid Start Lamp–A fluorescent lamp with two pins at each end connected to the filament. The filaments are heated by the ballast to aid in starting. Some rapid start lamps may be instant started without filament heat, for example, the F32T8 lamp.

Rapid Start–Lamp starting method in which lamp filaments are heated while open circuit voltage (OCV) is applied to facilitate lamp ignition.

Series Lamp Operation–Refers to ballasts that employ a single current path passing through all lamps operated by the ballast. If one lamp should fail, companion lamps operated by the same ballasts will also extinguish or dim.

Standard Alternating Current Frequency in the United States–60 Hertz (Hz) or 60 cycles per second.

Total Harmonic Distortion (THD)–The combined effect of Harmonic Distortion on the AC waveform produced by a ballast or other device. Expressed as a percentage. Excessive levels of THD can create large currents on the neutral line of a four-wire Wye three phase system. (See "Harmonic Distortion".)

Transients–High voltage surges through an electrical system caused by lightning strikes to nearby transformers, overhead lines or the ground. May also be caused by switching of motors and compressors, as well as by short circuits or utility system switching. Can lead to premature ballast failure.

Two-Pin Compact Fluorescent Lamps–Type of lamps that have the glow bottle starter built into the base of the lamp. Traditionally 2-pin lamps are designed to work with electromagnetic ballasts.

UL (Underwriters' Laboratories, Inc.)–Laboratory that sets safety standards for building materials, electrical appliances and other products.

Watts–Measurement of electrical ability to do work.