## BALLAST TYPES

Columbia Lighting supplies ballasts from a variety of reputable vendors whose products conform to Columbia Lighting's standard specifications (pg. 107). See Ballast Specified Vendor Options to order a particular manufacturer's product or ballast series. All ballast information is based on manufacturer's published literature and is subject to change without notice.

### ELECTRONIC BALLAST TYPES

| Start Method | Definition | Designation | Characteristics |
|---|---|---|---|
| Electronic Instant Start | Strikes lamp without filament preheating. Lowest wattage draw option for applications without control systems. Used for T8 bi-pin and slimline lamp types. Ballasts for F32T8 full or reduced wattage lamps are NEMA Premium qualified. | E | Standard (.87-1.0 BF) |
| | | E104 | EnergyMax 1.04 BF |
| | | EHL | High light output (1.18-1.2 BF) |
| | | ELW | Low wattage (.77-.78 BF) |
| | | ETT | Twin Tube lamp types |
| Electronic Programmed Start | Recommended for frequently switched applications including occupancy sensor controlled lighting because programmed filament preheating can help extend lamp life. Remote mounting distance more restricted than with instant start. Sometimes called programmed rapid start. Available for all 2-pin lamp types. Ballasts for F32T8 full or reduced wattage lamps are NEMA Premium qualified and parallel wired. | EP | Standard, 0.88 BF |
| | | EPTT | Twin Tube lamp types |
| | | EP_ | Alternate ballast factors. Eg. EP95, EP115 for T5 lamp types, EP104 for T8 lamp types |
| | | EPHL | High light output (1.15 - 1.20 ballast factor) |
| | | EPSP5 | Parallel Wired for T5 lamps |
| Electronic Step Dimming | Electronic programmed start ballast with two hot leads to allow both lamps to switching between 100% and 50% light levels for energy management. Requires two switched leads from same panel. Not suitable for remote mounting. 2-lamp ballasts. | ESD | Standard BF (T5 or T8 bi-pin) |
| | | ESD104 | EnergyMax 1.04 BF (T8 Bi-pin) |
| | | ESD80 | Alternate ballast factor for 54T5HO |
| Electronic Full Dimming | Responds to either line voltage or low voltage signals to dim lamps from 100% to 10% or lower, depending on model. Many ED ballast types require voltage specified. Not suitable for remote mounting. | ED_ | Add vendor and ballast series compatible with control system. Eg. ED120 LUTEC10 |

### MAGNETIC BALLAST TYPES

| Start Method | Definition | Designation | Characteristics |
|---|---|---|---|
| Low Power Factor | Also called normal power factor (NPF). Labeled for residential use only. | L | For residential fixtures using 2', 3', or 4' Bi-pin T12 lamp types. |

# BALLAST OPTIONS

## Ballast Quantities and Specified Vendors

### BALLAST QUANTITIES

Fixtures with 3, 4, 6, and 8 lamps will be supplied with two ballasts standard. Optional ballast quantities are available.
See also Master-Satellite option for ballast quantity options on tandem-wired pairs. In tandem-length fixtures with more than one ballast, lamps are wired side by side unless left and right (LR option) is specified.

| Number of Lamps in Fixture | Standard Designation | Optional Ballast Designation |
|---|---|---|
| 1 or 2 | Provides one ballast | Adding 11, such as 11E or 11EP, provides two (2) ballasts in 2-lamp fixtures |
| 3 | Provides two ballasts, one on inboard lamp, one on outboard | Adding 3, such as 3E or 3EP, provides one (1) 3-lamp ballast |
| 4 | Provides two ballasts, one on inboard lamps, one on outboard | Adding 4, such as 4E or 4EP, provides one (1) 4-lamp ballast |
| 6 | Must specify | Adding 24 (eg.), such as 24E or 24EP, provides a 2-lamp and 4-lamp ballast (recommended). 3E or 3EP provides (2) 3-lamp ballasts |
| 8 | 4E provides two (2) 4 -lamp ballasts wired on lamps 1, 4, 5, 8 and 2, 3, 6, 7 | Consult factory |

### SPECIFIED VENDORS*

Specify ballast type, optional ballast quantity and vendor option. Eg. 3EDULUTEHD

| Vendor | Vendor Specified Designation | Vendor and Series Specified Designation | Vendor's Series Name (normal ballast factor unless noted) |
|---|---|---|---|
| dimming by LUTRON | LUT | LUTHIL | Hi-Lume Dimming |
| | | LUTES | EcoSystem incl. E1/E2 only (Dimming) |
| | | LUTESSW | EcoSystem incl. sensor wires (Dimming) |
| | | LUTEHD | EcoSystem H |
| Universal Lighting Technologies | ULT | ULTHE | Ultim8 |
| | | ULTHP | High Performance |
| imagination at work | GE | GEMAXH | Ultramax High BF |
| | | GEMAXL | Ultramax Low BF |
| | | GEMAXN | Ultramax |
| SYLVANIA | SYL | SYLQHE | High Efficiency |
| | | SYLPSX | Extreme |
| | | SYLPHO | Helios Dimming |
| | | SYLDIM | Powersense Dimming |
| PHILIPS ADVANCE | ADV | ADVCEN | Centium |
| | | ADVIOP | Optanium |
| | | ADVMK10 | Mark X Dimming |
| | | ADVMK7 | Mark VII Dimming |

*Others available, call out ballast catalog number in fixture description. Dimming ballasts use ED plus voltage and vendor designation.

# BALLAST OPTIONS

## Ballast Characteristics and Total System Watts

### BALLAST CHARACTERISTICS

#### General Definitions

**POWER FACTOR**
Measure of how effectively ballast converts power source into usable watts. Ideal power factor would measure 1.0.

**CREST FACTOR**
Measure specifying the ratio of peak current to R.M.S. current in the waveform used to drive programmed start lamps. High crest factors shorten lamp life.

**TOTAL HARMONIC DISTORTION**
Measure of magnitude of input current harmonics compared with amplitude of fundamental frequency current.

**BALLAST FACTOR**
Lamp manufacturers publish lumen data based upon a "reference ballast" built to meet ANSI standards. Ballast factor is a measure of how well a ballast performs in comparison to the "reference ballast" as a percentage of rated lumen output.

### COLUMBIA LIGHTING BALLAST SPECIFICATIONS

All factory-choice normal ballast factor electronic ballasts meet the following specifications. Optional ballast factors and customer specified vendor available as options.

Ballast must be high power factor, (min. 95), Class P, UL listed, meet IEEE and ANSI requirements C62 .41 Category A for transient protection and FCC Regulations, Class A for electromagnetic interference. Operates at voltage variance of +/- 10%, crest factor of <1.7, total harmonic distortion (THC) <10% for primary lamp type, minimum ballast factor (BF) of .87 (.95 for T5/T5HO lamp types). Ballast must start lamps at 0°F ambient temperature.

NEMA Premium All ballasts for F32T8 full and reduced wattage lamps must be NEMA premium qualified.

### TOTAL SYSTEM WATTS

The Total System Watts refer to the ballast and lamp watts consumed per luminaire. Input watts are based upon ANSI watts as published by ballast manufacturer's literature which is subject to change without notice. Ballast information shown is generic and serves as an approximation only; actual input watts vary according to specific ballast manufacturer and ballast number. For exact input wattage contact either the ballast manufacturer or Columbia Lighting Technical Support. Wattage published in Columbia IES photometric tests represents actual measured watts.

**Total System Watts (Watts/Volts = Amps)**

| Ballast Type | Catalog Designation | Lamp Type | No. of Lamps | Input Watts* |
|---|---|---|---|---|
| Electronic Programmed Start **T5** | EP | F14/T5 | 1 | 19 |
| | EP | F14/T5 | 2 | 34 |
| | EP | F24/T5HO | 1 | 28 |
| | EP | F24/T5HO | 2 | 53 |
| | EP | F28/T5 | 1 | 34 |
| | EP | F28/T5 | 2 | 66 |
| | EP | F54/T5HO | 1 | 63 |
| | EP | F54/T5HO | 2 | 121 |
| | 3EP | F54/T5HO | 3 | 182 |
| | 4EP | F54/T5HO | 4 | 240 |
| | EP80 | F54/T5HO | 2 | 96 |
| | EP95 | F28/T5 | 2 | 60 |
| | EP115 | F28/T5 | 2 | 69 |
| | ESD80 | F54/T5HO | 2 | 96/52 |
| | ESD95 | F28/T5 | 2 | 60/28 |
| | ESD104 | F32/T8 | 2 | 65/32.5 |
| | ESD115 | F28/T5 | 1, 2 | 71/34 |
| Electronic Programmed Start **T8** | EP | F32/T8 | 1 | 31 |
| | EP | F32/T8 | 2 | 62 |
| | EP104 | F32/T8 | 2 | 65 |
| | 3EP | F32/T8 | 3 | 92 |
| | 4EP | F32/T8 | 4 | 119 |

| Ballast Type | Catalog Designation | Lamp Type | No. of Lamps | Input Watts* |
|---|---|---|---|---|
| Electronic Instant Start **T8** | E | F32/T8 | 1 | 30 |
| | E | F32/T8 | 2 | 56 |
| | 3E | F32/T8 | 3 | 85 |
| | 4E | F32/T8 | 4 | 112 |
| | E | F96/T8 | 1 | 70 |
| | E | F96/T8 | 2 | 108 |
| | E | F96/HO/T8 | 1 | 100 |
| | E | F96/HO/T8 | 2 | 185 |
| | E104 | F32/T8 | 2 | 67/66 |
| | E104 | F32/T8 (28 watt) | 2 | 60/59 |
| | E105 | F32/T8 (25 watt) | 2 | 51/51 |
| Electronic **T12** | E | F96/T12/ES | 1 | 64 |
| | E | F96/T12/ES | 2 | 105 |
| | EP | F96/T12/HO | 1 | 119 |
| | EP | F96/T12/HO | 2 | 208 |
| Electronic **TT** | ETT | F40/TT | 1 | 39 |
| | ETT | F40/TT | 2 | 68 |
| | 3ETT | F40/TT | 3 | 99 |
| | EPTT | F40TT | 1 | 38 |
| | EPTT | F40TT | 2 | 76 |
| | 3EPTT | F40TT | 3 | 110 |

*Where published input watts differ between 120/277V the higher (120V) wattage is given. For 2 level step dim ballasts (ESD types) both high and low output wattages are given.