

Application And Operating Information

Underwriters' Laboratories, Inc. Acceptance

All F-Can and Weatherproof ballasts listed in this catalog are Underwriters' Laboratories, Inc. white card listed, except those for 347 volt operation. All Core & Coil and Potted Core & Coil ballasts listed in this catalog are Underwriters' Laboratories, Inc. yellow card listed (component recognized).

Ballast Replacement

Ballast replacement 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 the entire circuit power to fixture or equipment turned off. Installation shall be in accordance with National Electric Code.

Heat

A ballast, like any other electrical device, generates heat during normal operation. Planning for maximum heat dissipation with proper fixture design, installation planning and ballast selection will minimize the possibility of a heat-related problem arising. Excessive temperature will have an adverse effect on ballast life.

Normal temperature limits:

F-Can Ballasts

Maximum case temperature: 90°C

Potted Core & Coil Ballasts and
Core & Coil Ballasts

Insulation: Class 180°C

Maximum coil temperature: 165°C

(measured by change of resistance method)

All F-Can ballasts listed in this catalog are equipped with built-in automatic resetting internal thermal protection as a standard feature.

Whenever a ballast with thermal protection is used, it is imperative that the fixture/ballast/lamp combination be heat tested under actual or simulated installation conditions to assure that the ballast will not cycle. The resetting thermal protector functions as a thermostat which will open and temporarily

deactivate the ballast when it exceeds the permissible 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, the ballast will resume normal operation after abnormal conditions are eliminated.

To attain normal ballast life, the maximum coil temperature of the ballast should not exceed the rating of the insulation system. A temperature increase of 10° C results in a 50% reduction of ballast life.

Low Ambient Temperature (cold)

As temperatures drop, less and less vaporized gas is available within the arc tube of a high intensity discharge lamp, thereby causing an increase in the open circuit voltage required to initiate an arc in the lamp, until a point is reached where the lamp cannot be started. The minimum temperature at which any ballast listed in this catalog will provide reliable starting is listed with the electrical characteristics.

Ballasts should be protected from weather, moisture, or other abnormal atmospheric conditions, unless specifically designed for use under adverse conditions.

Fusing

The purpose of fusing an HID ballast is to remove the ballast from the power line in the event of a ballast system failure. A fuse does not protect the ballast from failing.

Because the temperature in the ballast compartment is high, typically 90°C, fuse ratings are specified at 25°C, and that this rating declines as the temperature increases, HID fuse recommendations are made between 2 and 3 times the maximum current the ballast will draw during all normal conditions.

Fast-blow fuses should not be used due to the possibility of high inrush currents. These currents are due to the fact that the power can be applied at any point in the AC voltage waveform. Standard and slow-blow are acceptable.

When using the 120V tap for auxiliary lighting, a slow-blow fuse should be used to protect the ballast from damage from a fault in the auxiliary lighting circuit.

REMOTE MOUNTING DISTANCE

Maximum Length in Feet for Remote Mounting of HID Ballasts to Lamp

ANSI	Lamp Type	Watts	12 GA	14 GA	16 GA	18 GA
M57	Metal Halide	175	272	171	107	67
M58	Metal Halide	250	194	122	77	48
M59	Metal Halide	400	132	83	52	33
M47	Metal Halide	1000	196	123	77	48
M48	Metal Halide	1500	146	92	58	36

For proper installation, insure that remote ballasts are properly vented and mounted to a heat-dissipating surface.

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Sound

High intensity discharge lamp ballasts, like all electromagnetic devices, produce noise, or "hum." It is the degree of noise which determines the existence of a problem. Ballast noise will only be noticeable when it exceeds the ambient sound level of the installation. It is obvious that a ballast designed primarily for outdoor or factory use would not be suitable in an office environment.

The vast improvements in all high intensity discharge lamps and ballasts, and their excellent energy efficiency, have made them viable options for many indoor applications. The ballasts being considered should be carefully analyzed to insure that there will not be an objectionable level of ballast noise.

All F-Can ballasts listed in this catalog are "Sound Rated" to aid in the selection of a ballast which is proper for the environment in which it will operate.

Potted Core & Coil ballasts are also designed to operate at reduced sound levels, generally several decibels lower than a standard Core & Coil ballast. Core & Coil ballasts are not sound rated.

In situations where light output necessitates using a ballast with a sound rating or noise level not normally acceptable, the ballast should be remotely mounted. Note, however, that not all ballasts listed in this catalog are designed or recommended for remote mounting.

Polarity

Polarity refers to the proper connection of ballast lead wires to line wires. To aid you in making a correct installation, Universal ballast leads are color-coded for easy identification. The white or yellow ballast lead is to be connected to the neutral or common. Choose the appropriate ballast voltage lead to connect to the line.

Grounding

Ballasts and capacitors or starters in metallic casings must always be grounded. Ballasts and components may be grounded to the fixture or otherwise connected to ground. It would be hazardous to make

contact with an ungrounded fixture, ballast or other electrical component while in operation.

Operating Line Voltage Limits

To receive the full benefits of rated lamp output and to prolong ballast life, it is essential that the voltage supplied to an installation be maintained within the prescribed limits.

In general, the line voltage supplied to a lag type ballast (reactor or high reactance autotransformer) should be maintained within 5% of the voltage for which the ballast is rated. The line voltage to lead type ballasts (constant wattage autotransformer or constant wattage isolated) should be maintained within 10%.

Subjecting a ballast to excessive voltage for an extended period of time results in the deterioration of the coil insulation. This insulation breakdown will cause early ballast failure.

Low voltage has no damaging effect on the ballast. It could, however, have an adverse effect on lamp performance and starting dependability.

Maintenance

Selecting and installing an adequate and efficient lighting system means nothing if it is not properly maintained. Maintenance must always be considered as part of the life cycle cost of any high intensity discharge lighting installation in order to assure the continued performance of the system as originally specified.

First and foremost in importance is proper lamp maintenance. High intensity discharge lamps do not "burn out" like an incandescent bulb, but rather, undergo changes within the arc tube which prevent the lamp from starting properly, warming up and producing full light output. The beginning of difficulties such as these generally indicates the end of a lamp's useful life. Also, a dead lamp left in a fixture can be very damaging to the ignitor in systems which utilize them. To overcome this problem, Universal offers automatic shutoff ignitors, which are described in the ignitor section of this catalog.

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In difficult locations, group replacement of all the lamps, working or not, is often more economical and convenient than spot replacement. The same, of course, applies to ballasts which might be approaching the end of their life. Only you can decide what is right for your lighting system, but what is important is that you have a maintenance program.

Periodic cleaning of the fixtures' lenses and reflectors is also important in maintaining proper light output. For indoor systems, maintenance of reflective surfaces, such as walls and ceilings, will also help assure proper levels of illumination.

STANDBY LIGHTING AND PACKAGING

Standby Lighting

To provide light during a high intensity discharge lamp's warmup period, or the cool-down period following a power interruption which has extinguished it, incandescent standby lighting can be incorporated. This is accomplished by use of a standby lighting device, or remote, that switches off an incandescent lamp incorporated into the fixture once an arc has been established, or reestablished, in the HID lamp. Generally, standby lighting devices operate on 120 volts, so a tap must be provided on ballasts designed to operate at higher line voltages.

The 120 volt terminal or lead on all Universal dual-, tri-, quad- and multi-volt ballasts can be used as a tap for standby lighting when the ballast is utilized for any of the higher voltages. Many single voltage ballasts are available with a 120 volt tap and are listed throughout the Core & Coil data section. Other single voltage ballasts may be available in this version. Consult our Customer Service Department for availability and price information.

Any connection to the 120 volt tap must be accomplished by means of a slow-blow fuse. This fuse will protect the ballast from abnormal conditions in the standby lamp circuit or its control device. The fuse should be located in the coolest place in the fixture (below 80°C). The recommended fuse amperage and maximum auxiliary lamp wattage are listed in this catalog for each ballast suitable for standby lighting applications.

Be sure to follow the wiring instructions of the standby lighting device manufacturer. All applicable requirements of the National Electrical Code must be met.

Packaging

Standard Pack

Universal's high intensity discharge lamp ballasts are routinely packed in easy-to-handle cartons containing from 1 to 20 units per carton, depending on the size and weight of the ballasts. Consult Customer Service for the number of "units per carton" for shipment with attached mounting brackets, capacitors (for high power factor units), and ignitors (if required). Other ordering criteria may cause packaging to vary.

Tray Pack

For the convenience of large quantity users who request it, Universal ballasts may be packed in trays. The number of units depends upon the size and weight of each ballast. These trays are large corrugated cartons with lids and sides that come off easily. This type of packaging affords Universal customers a savings of time and money on their own production costs. There are fewer cartons to open, break up and dispose of on the assembly line; warehouse handling is reduced and inventory control is easier. There is no additional charge for tray packing.

Individual Cartons

All Distributor Replacement Kits, Weatherproof, Potted Core & Coil and other larger ballasts are packaged in individual cartons.

Individual cartons serve a threefold purpose: as a display carton, a stock package, and a shipping container for the retail market. Individual cartons may be packed in master cartons, depending on weight and size.

Individual carton packaging may be available for other ballasts. Contact our Customer Service Department for availability and cost.