



Grounding of Fluorescent Ballasts

A White Paper: Grounding Requirements for Fluorescent Ballasts (Electronic Magnetic)

What is grounding? Grounding is the intentional connection between an electrical circuit and the earth. Earth ground is designated by the symbol:



With A/C wiring, the ground is a wire with an electrical connection to earth which provides an alternative path to ground for currents that might otherwise flow through a victim of electric shock. This power ground wiring is (directly or indirectly) connected to one or more earth electrodes. This grounding wire is usually but not always connected to the neutral wire. The ground wire is usually bonded to pipework to keep it at the same potential as the electrical ground during a fault. Water supply pipes made of metal are often used as ground electrodes. Proper grounding is covered by the National Electric Code in section 410.



There are three basic reasons why ballasts should be grounded.

1. A properly grounded ballast, in conjunction with a properly grounded electrical system, provides a measure of safety. Proper grounding enhances safety for personnel working on luminaries and ballasts by providing a low resistance path to earth, bypassing the worker's body.
2. All ballasts, especially electronic ballasts, produce EMI, Electromagnetic Interference. The Federal Communications Commission (FCC), restricts the maximum allowable EMI generated by fluorescent ballasts. All electronic ballasts have an internal EMI filter to limit the amount of EMI. The EMI filter relies upon a proper ground to be effective for electrical noise suppression. A proper ballast ground is critical to meet the FCC EMI limits. An ungrounded ballast will have much higher EMI emissions and will be much more likely to have interference with other electrical equipment.

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3. Grounding of a ballast and the luminaire can also aid in proper starting of the fluorescent lamp. This is especially important when magnetic fluorescent ballasts are utilized. The metal reflector provides a capacitive path to ground through the wall of the fluorescent tube. This helps to ionize the gases inside the tube and initiate conduction in the tube. However, once current is flowing from end-to-end, the impedance in the ballast circuit is much lower than this capacitive path. Thus, the added capacitance is irrelevant once the tube has started.

Most often, ballast grounding can be accomplished by simply mounting the ballast to a grounded metal luminaire. Some ballasts do require the use of a separate grounding wire if the ballast enclosure material is non-metallic.

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Philips Lighting Electronics
10275 W. Higgins Road
Rosemont IL 60018
Tel: 800-322-2086 Fax: 888-423-1882
Customer Support/Technical Service: 800-372-3331
OEM Support: 866-915-5886
www.philips.com/advance