

Troubleshooting Outdoor Electrical Connections

If you have outdoor lighting, you will have to deploy your system to include moisture ingress protection to avoid nuisance GFI trips. Systems that regularly see nuisance GFI trips, especially when it rains or the weather produces dew, likely need more moisture ingress mitigation. This application note details some of the tools you can use to stop moisture ingress and keep your control system functioning as intended. Please note that all outdoor installations should observe NEC® guidelines and local ordinances.

Scope

This document covers ingress protection for:

1. NEMA® electrical plugs
2. NEMA® extension cords
3. The Lutron outdoor smart plug

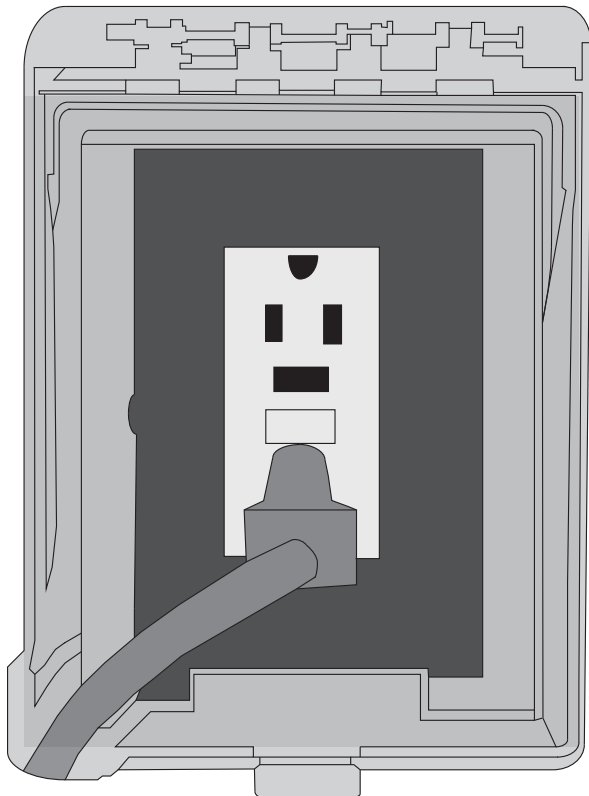
Exterior fixtures are not covered as most contain ingress protection as part of the product design. Please consult your fixture manufacturer for help if moisture ingress commonly happens on an exterior fixture.

Moisture Ingress Solutions

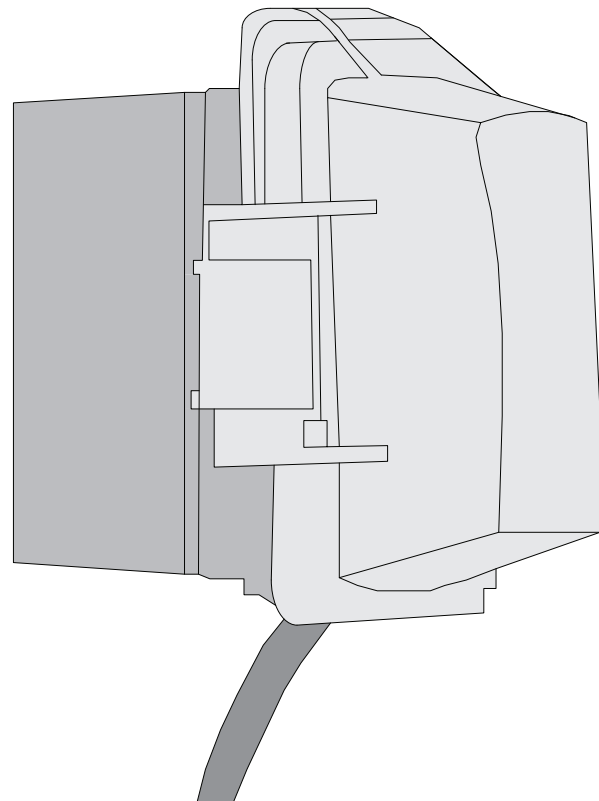
Weatherproof Outlet Box Covers

NEC® 2020 regulations require outlet box covers on exterior NEMA® plugs. Typical plug covers are shown below. Most are designed to allow for extension cords and Lutron products to be engaged in the plug with the cover closed. If you find that the cover can't be closed, consider an alternate cover.

Front View



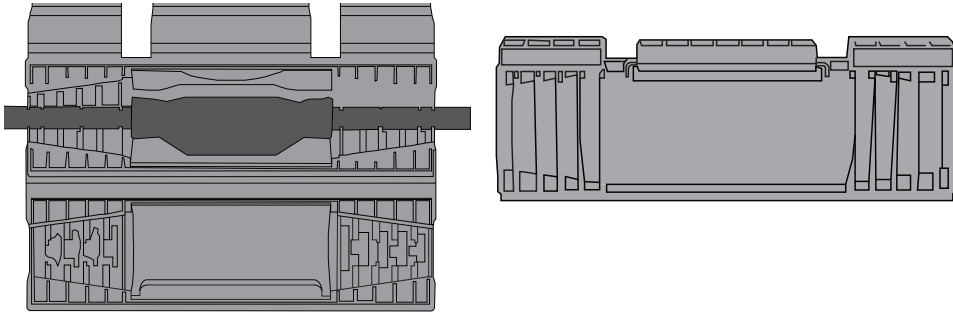
Side View



Moisture Ingress Solutions *(continued)*

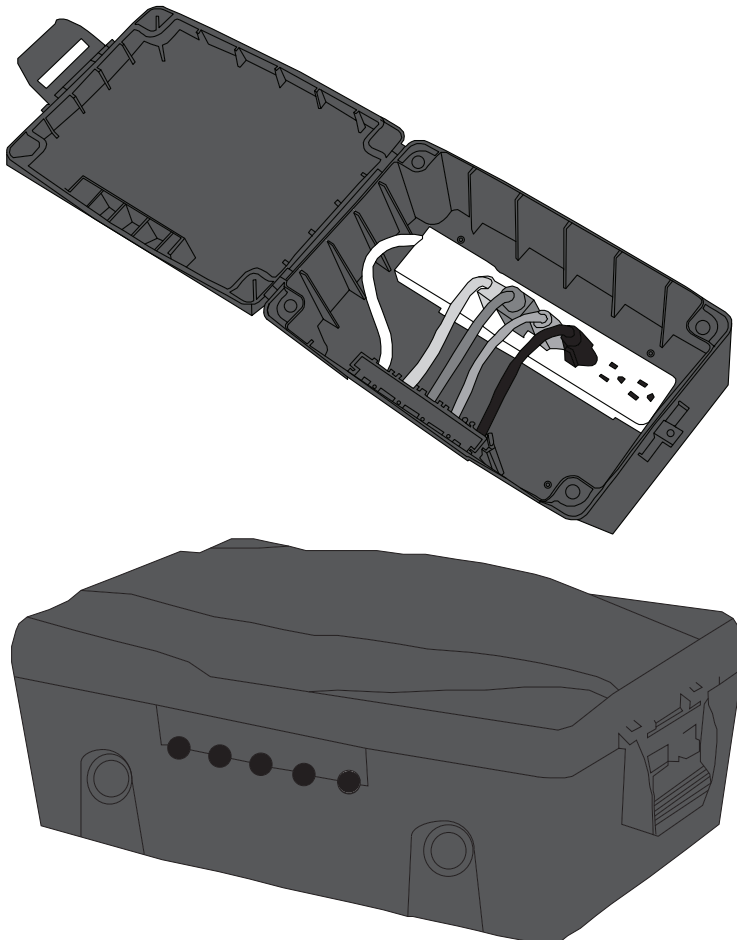
Single Cord Seals

Most outdoor extension cords do not have any moisture ingress protection at the plug or socket end. The cord itself provides sufficient protection, but where the plug and socket are engaged to other devices – be they loads, controls, or outlets – some moisture mitigation is required. A water-resistant enclosure that surrounds the junction completely is preferred to provide protection against moisture, especially if the cords may be laying on the ground. For the greatest protection when connecting two devices with flexible-style cords, there are solutions that use pressure-fit gaskets like the ones shown below.



Plug Protector Junction Boxes

If you need to connect multiple loads to a single extension cord or corded outdoor control, there are solutions for multiple incoming and outgoing cables like the outdoor plug protector junction box shown below. These boxes are designed to completely enclose power distribution hardware (i.e., surge protectors and power strips which are not rated for outdoor exposure on their own) with weather-resistant seals.



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