APPLICATION NOTES

powerCON® **TRUE1**®
etherCON® **TOP**
xlrCON® **TOP**

TRUE OUTDOOR PROTECTION

Unveiling TRUE OUTDOOR PROTECTION

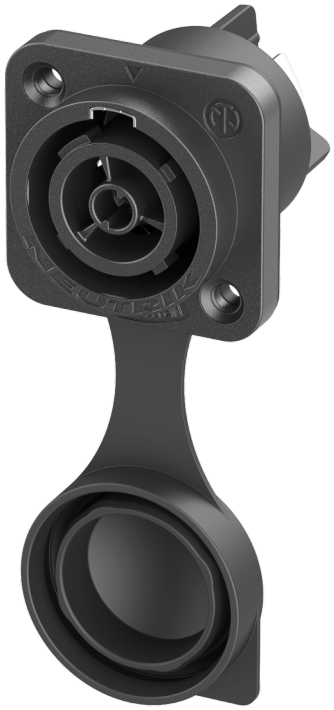
Redefining Durability and Reliability in Outdoor Technology

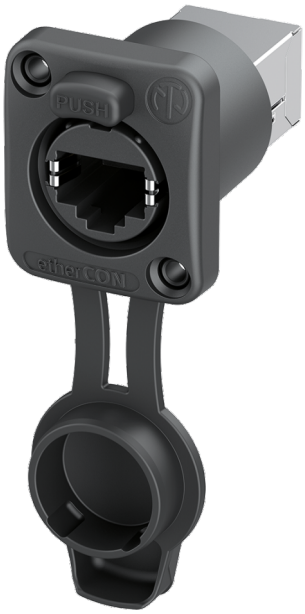
Ingress protection	Airtightness	UV resistance	Corrosion resistance

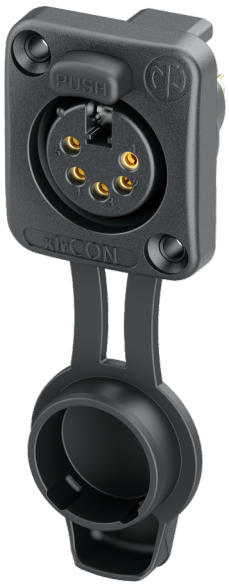
New TOP products

(including airtightness)

- **power**CON® **TRUE1**® **airtight**
- **ether**CON® **TOP airtight**
- **xlr**CON® **TOP airtight**







Ingress Protection (IP)

Ingress Protection (IP) ratings, also known as IP codes or IP classes, are a standardized system used to define and classify the level of protection provided by an enclosure or product against the intrusion of solids and liquids.
These ratings are particularly important in various industries, including electronics, automotive, industrial equipment, and outdoor appliances, to ensure that devices can withstand environmental conditions and function as intended. IP ratings are typically expressed as "IP" followed by two digits (e.g., IP67).

Here's a breakdown of what each digit in an IP RATING represents:

IP[xx]

First Digit (Protection against SOLIDS):

The first digit ranges from 0 to 6 and indicates the level of protection against solid objects, such as dust, dirt, and debris. Here's what each number means:

0	No protection against solids.
1	Protection against solid objects larger than 50 mm (e.g., a hand).
2	Protection against solid objects larger than 12.5 mm (e.g.,fingers).
3	Protection against solid objects larger than 2.5 mm (e.g., tools and wires).
4	Protection against solid objects larger than 1 mm (e.g., small tools and wires).
5	Limited dust ingress protection. Dust may enter but will not interfere with the operation of the equipment.
6	Complete dust ingress protection. No dust can enter.

Second Digit (Protection against LIQUIDS):

The second digit ranges from 0 to 9 and indicates the level of protection against liquids, such as water Here's what each number means:

0	No protection against liquids.
1	Protection against vertically falling drops of water (condensation).
2	Protection against vertically falling drops of water when tilted up to 15 degrees.
3	Protection against water sprays up to 60 degrees from vertical.
4	Protection against water splashes from all directions.
5	Protection against low-pressure water jets (e.g., from a nozzle).
6	Protection against high-pressure water jets and heavy seas.
7	Protection against temporary immersion in water (up to 1 meter for 30 minutes).
8	Protection against continuous immersion in water beyond 1 meter (the exact depth is specified by the manufacturer).
9	Protection against high-pressure, high-temperature water jets (specifically for cleaning purposes).

While a higher number in either digit generally suggests better protection, it's important to understand that for example IP67 is not necessarily better than IP65 because they offer different levels of protection against liquids.

Here's a quick explanation:

IP65: This rating means the device is dust-tight (6) and protected against low-pressure water jets (5). It can handle water projected from a nozzle but is not suitable for immersion.

IP67: This rating indicates the device is dust-tight (6) and can be temporarily immersed in water up to 1 meter for 30 minutes (7). It offers better protection against liquid immersion compared to IP65.

So, while IP67 provides better protection against water immersion, it doesn't mean it's better than IP65 in all situations. The choice between these ratings depends on the specific environmental conditions and usage requirements of your device. If you need protection against dust and water splashes but not immersion, IP65 may suffice. If you require temporary submersion protection, then IP67 is more suitable. It's essential to select the IP rating that aligns with the device's intended use to ensure it functions correctly in its environment.

Neutrik IP ratings

Certainly! This is the reason why Neutrik offers both IP65 **and** IP67 ensuring that our customer's products can perform reliably in various conditions, whether they require protection from dust and splashes or temporary submersion.

For a few products Neutrik already provides IP68 rating **additionally.**

Extra additional test duration and underpressuer during IP rating tests

While many manufacturers only test for IP65, Neutrik has not only adopted the IP65, IP67, and IP68 requirements of the standard but has also made them more stringent by extending testing times and adding additional criteria to ensure that the products truly meet all of our customers' requirements in the field.

	IEC 60529 Test		Neutrik Test	
IPx5	Test duration: Water volume:	3 min 12.5 l/min	Test duration: Water volume:	**15 min** 12.5 l/min
IPx7	Test duration: Submersion:	3 min 1 m	Test duration: Submersion:	3 min 1 m
IPx8	Test duration: Submersion:	> 30 min > 1 m	Test duration: Submersion:	**48 h** **2 m**

Airtightness

Airtightness is a crucial aspect within the comprehensive framework of TRUE OUTDOOR PROTECTION, especially for customers who demand uncompromising quality in their lighting device enclosures.

At the culmination of the production process, airtightness tests, conducted with a rigorous 100% testing protocol, are imperative to ensure the integrity of our customer's devices.
These tests are indispensable in guaranteeing that the devices remain hermetically sealed, meeting stringent IP65, IP67, and other relevant IP ratings in real-world environmental conditions.

Our airtightness assessment procedures for the TOP components adhere, among other, to the exacting standards outlined in UL 1598, UL 1573, and IEC 60598-2-17, ensuring that our customer's products meet the highest industry benchmarks for airtight performance and outdoor protection.

UV resistance

UV (ultraviolet) light, a component of sunlight, can adversely affect materials, especially plastic and rubber components, causing them to become brittle and dry out.

To demonstrate that NEUTRIK products are designed for outdoor use and exposure to sunlight, we use specially certified F1 material[1] or conduct tests to ensure our materials meet the necessary standards.

Our UV resistance tests comply with the IEC 62368-1:2018 Ed. 3.0 standard, requiring the products to endure a specific duration at a specific temperature and humidity specific testing light conditions..

Corrosion resistance

Corrosion is a well-known issue, particularly for materials and platings that are not resistant to seawater or certain gases.

To ensure our components resist corrosion, we subject them to rigorous tests. These include a saltspray test, where the products are exposed to salty water.

Additionally, NEUTRIK performs noxious gas tests, subjecting the products to 8-hour gas exposure, repeated five times. All these tests are according to IEC 62368-1:2018 Ed. 3.0 standard.

[1] ..... F1 certified materials are recognized for their ability to provide reliable UV protection and longevity, making them suitable for various applications where exposure to sunlight and outdoor elements is a concern