

# APPLICATION NOTES

Guide for outdoor installation



# Indice

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Introduction	03
Outdoor installations: risks and solutions	04
Risks related to the conditions of use	04
Advantage of Techno connectors	05
Connector selection and application	06
Selecting cables for installation	06
Cleaning and storing connectors	07
Installation technical information	08

# 01 Introduction

Every electrical installation requires special attention. Electrical connectors can be exposed to a range of risks due to external factors that can compromise their performance and safety. These factors include humidity, dust, vibrations, temperature fluctuations, and exposure to chemicals or corrosive substances. If not properly addressed and managed, these elements can damage electrical components, reducing the reliability of the system and increasing the risk of failures or short circuits.



## 02 Outdoor Installations: risks and solutions

Connectors are subject to aging and deterioration due wear of material, like all electronic components. The most vulnerable parts of a connector are the seals and the cable glands, which, if not properly protected, can compromise the system’s reliability.

Exposure to UV rays, sunlight, thermal fluctuations, and the presence of aggressive gaseous agents accelerate the wear of the seals, increasing the risk of water and moisture infiltration.

A damaged or poorly installed connector is particularly exposed to these risks, with potential consequences for the proper functioning of the entire system.

In humid environments or when in contact with water, if connectors are not specifically designed for such conditions, they may not provide adequate performance, compromising the safety and efficiency of the system.

With over ten years of experience in designing dust- and water-resistant connection solutions, Techno offers a wide range of electrical connectors ideal for applications in environments exposed to external elements. Additionally, to meet various installation needs, Techno provides a broad selection of complementary accessories, such as closure caps and rubber seals, ensuring reliable and long-lasting protection.

## 03 Risks related to the conditions of use

Exposure to chemical reagents found in cleaning products can compromise the integrity of plastic materials and seals, causing deformation or cracks. To ensure the compatibility of connectors with these chemicals, it is recommended to consult the supplier for technical assistance.

Additionally, mechanical stresses such as excessive connector closure, forced bending of cables at the exit, or external pressure applied to the components can damage the seals and plastic parts, compromising the functionality and safety of the connection.

### External factors



UV rays



Temperature



Gaseous agents



Water and moisture



### Risk of use



Chemical reagents



Mechanical stresses

# 04

## Advantage of Techno connectors

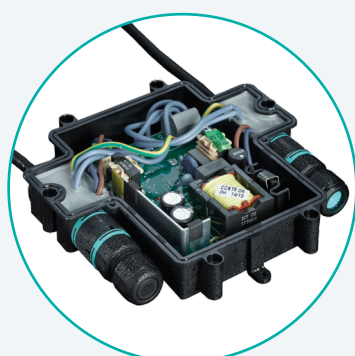
Choosing high-quality connectors ensures greater reliability and safety, reducing at the same time maintenance costs for the system.



The use of professional connection solutions is essential in many situations. For example, connectors allow the quick and safe connection of two cut cables, even in outdoor environments.



The modularity and configurability of Techno's connection solutions offer great flexibility, adapting to various installation types and simplifying the wiring process. For example, "T - Y - H" branch connectors allow for faster multiple electrical connections.



Techno's offering also includes the possibility of creating custom and special connectors, allowing customers to obtain solutions perfectly aligned with their specific technical requirements.

## 05

## Connector selection and application

Understanding the installation context of connectors is essential for selecting the most suitable model, thus optimizing both costs and performance.

### IP Classification

- IP65** Jets of water from any direction
- IP66** Strong jets of water from any direction
- IP67** Short immersion (up to 1 meter depth)
- IP68** Prolonged immersion (up to 2 hours beyond 1 meter depth)
- IP69** Hot water jet at high pressure



Exposure to water and material resistance are key factors to consider from the early stages of design for outdoor installations.

A simple and universally recognized method, also at the regulatory level, to identify the degree of protection against dust and water is the IP certification. These vary depending on the level of protection offered. In scenarios where water and phenomena such as rain or splashes are not particularly aggressive, an **IP65** certification is generally sufficient. However, in more extreme contexts, where external factors are more intense (e.g., temporary immersion, water surges, etc.), a higher level of protection is required. Depending on the aggressiveness of external agents, higher certifications may be necessary.

**IP66:** strong water jets (e.g., for water surges);

**IP67 e IP68:** resistance to immersion depth (**NOT** permanent);

**IP69:** resistance to hot water jets at high pressure.

Techno, to ensure maximum protection, integrates high-resistance seals against external agents directly into the connection, using co-molding technology, which allows the simultaneous joining of two materials.

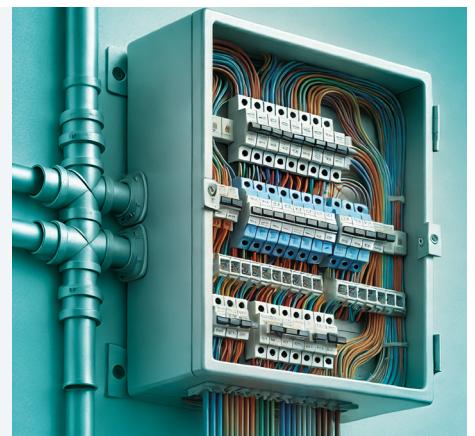
Thanks to this advanced technology, **Techno's** offer includes a wide range of connectors with protection ratings up to IP66/IP68/IP69, ideal to meet the needs of extreme environments and applications with high exposure to external agents.

## 06

## Selecting cables for installation

The correct selection of cables is essential for the proper functioning of the connector. It is therefore crucial to ensure that the technical characteristics of the cable, such as the outer sheath and the conductor cross-section, are compatible with those required by the connector being used.

Additionally, besides being compatible with the connector, the choice of cable must be suitable for the specific conditions of use. Therefore, during the design and installation phase, it is essential to consult qualified professionals who can ensure the overall quality and efficiency of the system formed by the cable and connector.

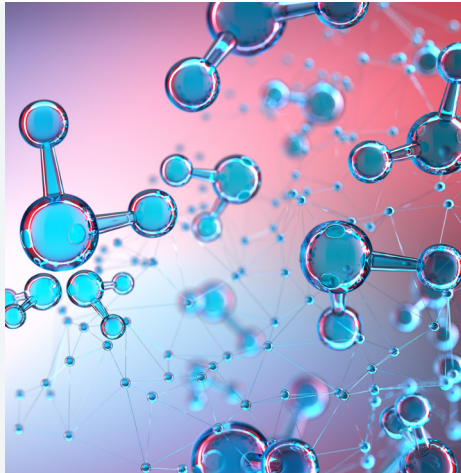


# 07

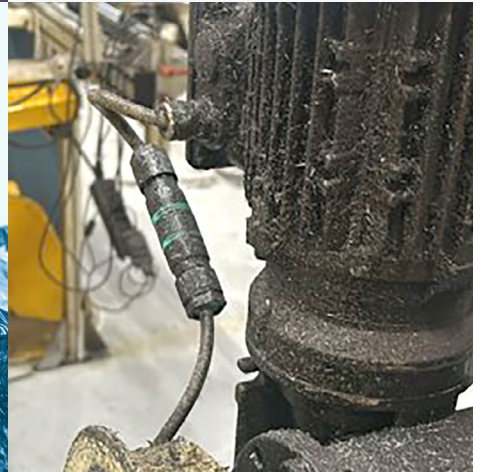
## Cleaning and storing connectors

The selected connectors must be resistant to the chemicals used for cleaning components and installations, in order to ensure long-lasting durability and proper functioning over time.

The plastic material must maintain its integrity, without suffering corrosion or damage caused by chemical molecules. Similarly, the seals must ensure an optimal seal, resisting the effects of chemical reagents to prevent loosening or cracking.



Periodic maintenance is essential in many applications to ensure the longevity and reliability of the connection over time. It is important, therefore, to consider the applicable regulations and the specifications of the components. Before cleaning, it is necessary to select the appropriate products and follow the correct procedures for the maintenance and sanitization of the connectors.



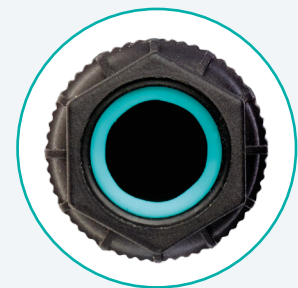
### Technical and hygienic requirements



The surfaces of the components must have a specific finish to prevent microbiological contaminants.

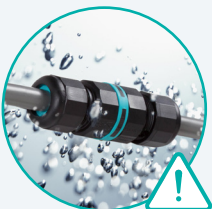


Connection elements such as screws must be accessible and, if necessary, removable to ensure proper cleaning and disinfection.



Additionally, connectors inevitably have junction parts that must be periodically checked and cleaned.

# 08 Installation technical information



Not all connectors designed to withstand water and humidity are suitable for total and permanent immersion. It is essential to select the connector according to the type of installation for which it was designed. Techno advises against permanent immersion for its connectors.



The orientation of the installed connector should not be vertical, to avoid the flow or accumulation of water inside the component and along the cables. It is recommended to position the connector horizontally. If this is not possible, it should be properly protected, for example by placing it under a cover in the system or device where it is installed.



Connectors installed in harsh environments should be protected as much as possible from factors such as solar radiation (UV), high temperatures, and aggressive gases. In any case, it is recommended to use certified and tested electrical connection solutions that are designed to withstand the aforementioned weather conditions and substances.



Connectors, though designed and tested for outdoor environments, are subject to the aging process, like all technical products. For this reason, it is always recommended to protect the connection with functional protective covers to ensure its longevity over time.

# 08 Installation technical information



It is always good practice, before connecting the components of the system (e.g., connector, cables, branches, etc.), to ensure that they are clean and free of any foreign objects that could compromise proper functioning.



It is important to properly close the connectors to avoid excessive mechanical stress during mating. Bending cables or sharp bends near the cable gland generate stress on the components, compromising their functionality.



Techno recommends to avoid placing the connector directly in contact with the ground. It is good practice to place the connector in pits or compartments specifically designed to house installation components and cable wiring. The installation should be accessible and easily visible for inspection and maintenance.



Techno recommends making sure of the IP rating indicated in the data sheet of each individual product.