

case study



Standing up against extreme weather conditions: Outdoor housings

Introduction

Alongside providing seamless connectivity, any installation located outside has an additional challenge to overcome. Exposed to the elements, they must be able to perform their duties while remaining unaffected by adverse weather conditions, such as heat, rain or wind. The effects of global warming have only added to this challenge, with weather conditions fluctuating now more than ever. Scientific studies indicate that extreme weather events, such as heat waves and large storms, are likely to become more frequent and intense with human-induced climate change.

These kinds of extreme weather events pose a serious threat to outdoor infrastructure. When conditions become potentially dangerous, maintaining communication is crucial for residents' safety, emergency services and the relay of vital information. Due to this, harsh environments should not be ignored in the planning process for outdoor installations.

Application

Wireless infrastructure

Technology

Fiber optics

Solutions

FTTA distribution boxes

Region

Global

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Challenge

Communication devices are especially at risk. Being installed outside is one factor, but when devices are often mounted to free-standing, or elevated structures, they become even more vulnerable. Wind speed is a particular challenge, since it can vary greatly day-to-day, and at different heights and locations. In open areas, winds can gather severe speeds.

Wind load is the resulting force from wind that impacts exposed devices. Network equipment providers are dedicating increasing efforts to the evaluation of wind load data, and the impacts it has on devices and housings. For example, because wind load has a lower impact on smaller equipment dimensions, more compact devices and housings are usually preferred for outdoor installations.

Solution

The HUBER+SUHNER FTTA Distribution Box, as shown in Figure 1, was developed for outdoor use following tests performed on housings and mounting brackets in its fiber optic test laboratory. Maximum wind speeds were simulated with practical test methods for two horizontal wind directions, as shown in Figures 2 and 3.

The displacement of the housing with a bracket was measured and the possible damage of the pole-mounted housing due to wind load evaluated.

The developed test methods were presented to the subcommittee for fiber optic interconnecting devices and passive components in IEC (SC 86B), resulting in the official development of a new international wind resistance test standard. The



Figure 1 – FTTA distribution box mounted on communication tower in winter conditions

new international standard was published as IEC 61300-2-56 in August 2020. In this standard, minimum severities for wind load of mounted housings are recommended. Planners and installers are encouraged to specify the wind load requirements for their equipment using this new international standard.

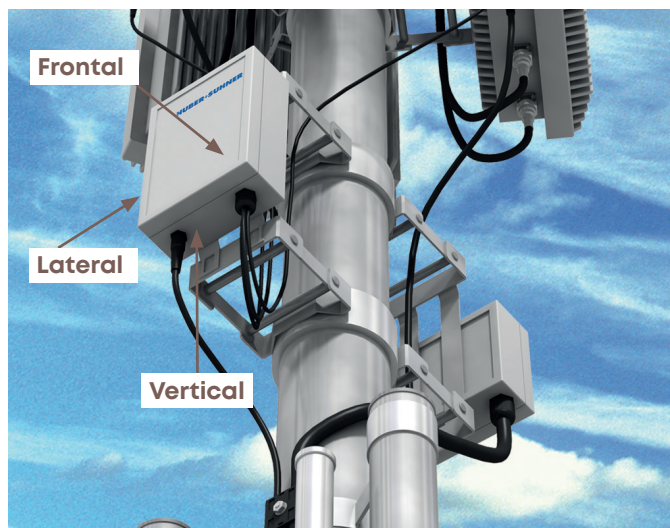


Figure 2 – Wind directions on pole-mounted housings



Figure 3 – Pole-mounted box with fixture in tensile & compression test rig for lateral load application during testing

Result

The FTTA Distribution Box by HUBER+SUHNER can be deployed for use cases where extreme wind conditions are likely, withstanding mechanical forces corresponding to horizontal wind speeds of 300 km/h and higher. As a result, damage due to severe weather events or conditions is mitigated, and down-time of contained communication devices is reduced.

The developed test standard also allows for the accurate future testing of outdoor housings against wind load, leading to more useful testing and reliable results which mimic real-life weather conditions.

More to explore

HUBER+SUHNER has expertise to provide specifications for the robustness of housings with brackets, in line with the new international standard. In addition, it can provide guidelines for the correct installation of outdoor equipment exposed to extreme weather events. To find out more about the FTTA Distribution Box, visit:

Please visit

<https://www.hubersuhner.com/en/solutions/defense/products/fiber-optic-cable-systems/masterline-classic/ftta-distribution-box>