



Solar loading in Oberon® Wireless Bollards



INTRODUCTION

Oberon® NetPoint™ Bollards are a cost-effective way to extend wireless and Wi-Fi coverage into auditoriums, sports venues, courtyards, malls, and campus open areas. The Wireless bollards can be used to mount wireless and Wi-Fi APs and antennas in locations where mounting on buildings is aesthetically unacceptable or does not provide adequate coverage. The bollard is designed to protect APs, antennas and associated cabling from weather and tampering. The bollards are available in a wide variety of custom colors and custom heights.

Oberon's Netpoint bollards are NEMA 3R rated enclosures. They have the ability to protect enclosed equipment from falling water, but they are not "water tight". Therefore, only outdoor rated NEMA4 / IP66 wireless and Wi-fi gear should be used inside the bollards. Another reason to use outdoor rated equipment only is the temperature range. The bollards are not ventilated and therefore the heat generated by wireless gear, and even more significantly, by solar loading, will build up inside the bollard.

Problem Statement

Most outdoor wireless equipment is rated have an upper operational temperature limit of 65°C-75°C (149°F-167°F). Please confirm the specific operational upper temperature limit for the AP intended for use. The AP will be de-rated when mounted inside the bollard by the amount of temperature rise inside the bollard versus ambient temperature.

Equipment upper temp. limit - Temp. rise inside bollard = De-rated upper temp. limit

For example, if the AP's specified upper temperature limit is +65°C, and the temperature inside the bollard is 10°C higher than the ambient air temperature due to solar loading, then the APs derated upper temperature limit is +55°C ambient air temperature.

Is this a problem? It depends on the temperature limit of the equipment, the ambient air temperature, solar loading, and perhaps most importantly, the color of the bollard!

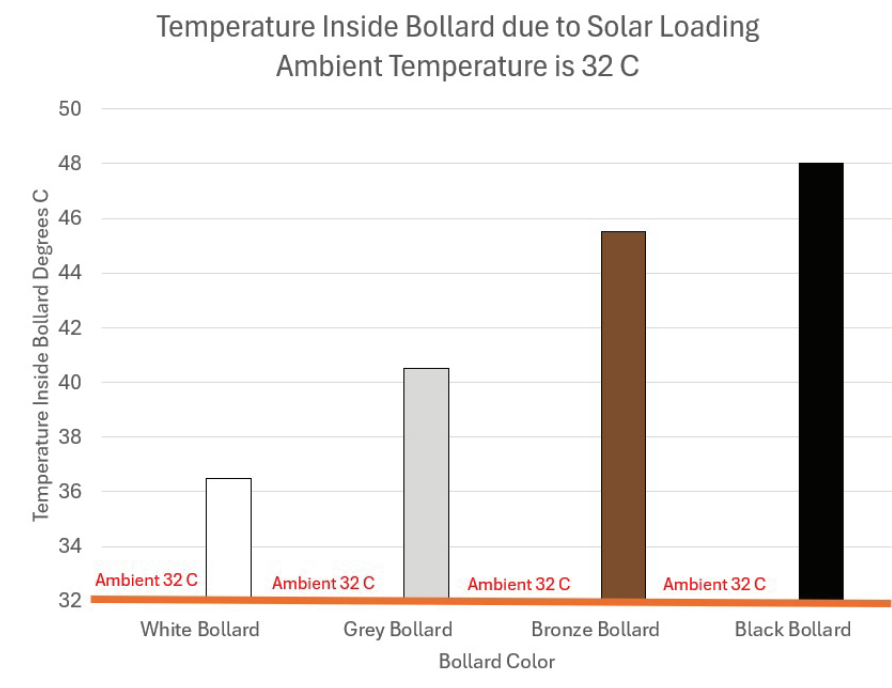
Availability: US, Canada, Latin America, Europe, Middle East & Africa

MEASUREMENT

Oberon engineers have performed tests on wireless bollards of different colors, and confirmed the obvious - there is a difference in temperature rise depending on the color. The test was performed by placing the bollard in a sunny location and measuring internal temperature versus ambient air temperature.

Color	Solar Loading Temp Rise	De-Rated Equipment Ambient Air Limit (for equipment with operational limit of 65°C)
White	+4.3°C (7.7°F)	60.7°C (141°F)
Light Grey	8.3°C (15°F)	56.7°C (134°F)
Bronze	13.3°C (24°F)	51.7°C (125°F)
Black	15.8°C (28.5°F)	49.2°C (120.5°F)

- Notes:
- This test was performed in a temperate latitude (42N latitude), in mid-summer, ambient temperature 32°C. Lower latitudes will have higher solar loading at mid-day.
 - Most wireless gear will dissipate less than 50W of power. Because of the bollards fairly large volume, the temperature rise due to equipment heat dissipation is typically <3°C (5°F). The potential for solar loading is a much bigger factor.



Solutions

When using Oberon wireless bollards, consider the following methods to reduce solar loading:

- When there is a choice, pick a lighter color. White absorbs the least solar radiation, black absorbs the most and gets hotter.
- Locate the bollard in a substantially shaded location. This will cut down on the solar loading significantly. The more shade the better, especially during peak ambient air temperature times (afternoon).
- Check the upper temperature range of the equipment being used. Some vendor's equipment will have a higher upper limit than others.
- Use outdoor rated equipment only. Indoor equipment has a limited temperature range, which will not provide desired performance over outdoor temperature ranges.

oberonwireless.com

877-867-2312



While every effort has been made to ensure the accuracy of all information, CPI does not accept liability for any errors or omissions and reserves the right to change information and descriptions of listed services and products.

©2025 Chatsworth Products, Inc. All rights reserved. Chatsworth Products, Click-Nut, CPI, CPI Passive Cooling, CUBE-IT, eConnect, EuroFrame, Evolution, GlobalFrame, MegaFrame, Motive, Oberon, QuadraRack, RMR, Saf-T-Grip, Secure Array, SeismicFrame, SlimFrame, TeraFrame, Velocity, Wi-Tile and ZetaFrame are federally registered trademarks of Chatsworth Products. Elevate, H-Plane, Hi-Bar, In-Plane, M-Frame, NetPoint, Simply Efficient, and Skybar are trademarks of Chatsworth Products. All other trademarks belong to their respective companies. 01/25 OB: Solar Application Notice