

PROVIDING GUIDANCE TO MANUFACTURERS AND USER COMMUNITIES

**GUIDANCE ON
PRODUCT
PORTFOLIOS AND
CLIMATE CHANGE**



**Climate Change, Elevated Temperatures and Unpredictable
Weather – Considerations for the Design Procurement and Siting of
Traffic Control Equipment - A Guidance Note**

Introduction

The last two summers, of 2021 and 2022 have seen temperatures exceeding previous levels. There have also been more instances of very heavy localised rain and other extreme weather events.

As a consequence, items of equipment that normally operate at the roadside are being exposed to more extreme temperatures, higher levels of rainfall and/or surface water and spray at levels in excess of prevailing UK test requirements.

This note offers advice on mitigating the effects of these weather conditions thereby improving the availability of traffic control services.

This note should only be used in conjunction with other constraints on equipment colour, placement, etc. but, where options are available, it may assist designers and buyers.

Context

Traffic control and signage products used in the UK are tested against specific environmental criteria for

- *Constant Low Temperature (Cold)*
- *Constant High Temperature (Heat)*
- *Solar Radiation*
- *Damp Heat (Cyclic)*
- *Water Penetration*
- *Wind and load*

The specific performance levels for each are set down in the relevant standards and specifications called up for example BS EN 12966, BS EN 12899, BS EN 12368, TOPAS 2130; BS 8442.

These criteria have successfully ensured reliable operation of traffic control equipment across the UK for decades.

However, during some of the more extreme weather conditions of recent years there have been occasions where equipment shuts down or ceases to operate correctly. While the equipment recovers when the conditions revert to 'normal' this is not a desirable situation. Specifically, heat and water ingress have been problematic.

Using the environmental criteria listed above we have sought to offer some mitigations against extremes below.

Cold



Cold severity is not currently a consideration in the UK. However, with lower power consumption, and therefore less self-heating of equipment, this may need to be addressed in the future.

Heat and Solar Radiation

These two criteria are grouped as they have a cumulative effect, with direct sunlight further raising temperatures above the prevailing air temperature.



Noting that, for traffic signal controllers, these should be placed where an operator at the cabinet has a good view of the crossing or junction being controlled, there may still be a choice of possible locations. Pick one that is shaded during the middle of the day or the early afternoon in the summer. Where there is scope for horticultural design, consider planting or other options to provide shade.



Black cabinets and enclosures can become significantly hotter than lighter coloured cabinets. Recognising that in conservation areas there may be constraints, where possible specify light colours for enclosures and cabinets. Note too that matt colours perform worse than glossy ones.

Where practical, site traffic signal controllers in areas that are shaded and request light colours for equipment enclosures.

Other items of equipment such as signal heads and detection need to be located on poles, so are often unavoidably exposed to direct sunlight. While the colouring of signal heads is defined by legislation there is scope to use lighter colours for the enclosures of detection equipment, or even the addition of sun-shades, such as those already used in hotter climates.

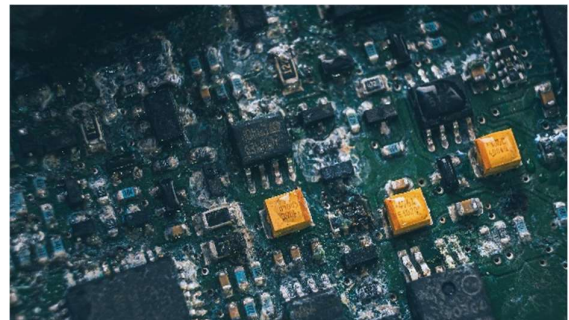
Damp Heat



The current levels of Damp Heat testing are thought to address the UK's foreseeable needs.

Water Penetration

Most traffic control equipment has an elevated position lifting it clear of both ground water and spray. Traffic signal controllers and feeder pillars are an exception. When siting and orienting these items of equipment consider locations where they are raised above the surrounding ground, set back from the kerb line and the doors and apertures do not face in an up-hill direction. This will reduce the adverse effects of standing water, spray and flowing water on the equipment.



Wind

The forces exerted by high winds can be substantial. Portable signals and VMS and permanent equipment mounted on poles or mast arms are particularly vulnerable.



Fixed plate signs are also vulnerable to excessive wind loading or sudden gusting.

For portable equipment, adding ballast (typically sand-bags) lowers the centre of mass so increases the resistance to toppling or displacement.

High-tensile fastenings should be considered for equipment mounted to tall poles, mast arms, or in exposed locations.

Sign design software already considers site exposure when specifying foundation volume and size.

Longer Term

ARTSM Members are aware of these climate issues. As new products emerge these climate factors will have been taken into account, but this is not a quick process. As we sit on those bodies who produce standards and specifications, we are well placed to ensure that National Annexes are updated to meet any changes in UK requirements and also monitor changes which may occur in Europe and across the globe.

Summary

Apply this advice, talk to your suppliers, report issues so the community can develop a knowledge base of best practice and evolve our test requirements accordingly.

- Make climate and extreme weather conditions a factor in your design processes.
- Be aware of the effects of
 - colour,
 - mounting location,
 - shade,
 - surface water
 - drainage and
 - exposure
- Design and buy accordingly.

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