



With the recent implementation of Construction Product Regulations requiring even more stringent compliance to additional performance in fire conditions, M&E Design documentation is now even more critical in its accuracy within modern building design. More and more IP-Connected devices are providing several different services within modern buildings, and Power over Ethernet is enabling end-device manufacturers to offer remotely powered intelligent equipment. It is expected that the next generation of PoE, PoE++ or 4PPoE will offer 60W Powering over all four pairs of structured cabling links. This White Paper discusses the implications of CPR and what a Building Services Engineer should consider when looking at intelligent building designs.

2018 Landmarks

2018 will see two key introductions to structured cabling design strategies; in July the Construction Products Regulations standard came into force, making the compliance and CE approval of all structured cabling types mandatory. In addition, and associated to the CPR introduction, it is expected that the new higher Power over Ethernet standard IEEE 802.3bt will be ratified.

Both of these landmarks are critical to future structured cabling specifications, firstly from a standards-compliance perspective, but importantly to future-proof the infrastructure design to cover any enhancements to the network equipment further down the line that will require a higher type of PoE.

CPR – What does it really mean?

Whilst there is some information readily available online, the detail can be over-technical and confusing as to what the actual requirements are, and what indeed should be specified.

The new CPR standards are derived from EN50575, which is a harmonized standard across the EU which dictates the minimum performance requirements in fire conditions across a range of different constructions of copper and fibre optic communications cables. Compliance to the required standards must be assessed by third-party test facilities independent of the manufacturer, and be recognised by the country in which the performance is required. These organisations are often referred to as a “Notified Body”. In the UK the standard becomes BS EN 50575: 2014 + A1: 2016, and it is important to reference compliance within the data section of a building M&E Design specification.

EN50575 CPR Test standards

EN 50399

Common test methods for cables under fire conditions – Heat release and smoke production measurement on cables during flame spread test.

EN 60332-1-2

Tests on electric and optical fibre cables under fire conditions – Test for vertical flame propagation for a single insulated wire or cable.

EN 60754-1

Test on gases evolved during combustion of materials from cables – Part 1: Determination of the halogen acid gas content.

EN 60754-2

Test on gases evolved during combustion of materials from cables – Part 2: Determination of acidity (by pH measurement) and conductivity (Supersedes EN 50267-2-3).

EN 61034-2

Measurement of smoke density of cables burning under defined conditions – Part 2: Test procedure and requirements.

Euroclass Standards

The performance is categorised into several classifications based on reaction to fire, from Aca to Fca, with the worst performing cable type Fca having no performance determined, and the best, Aca having the highest performance in fire conditions.

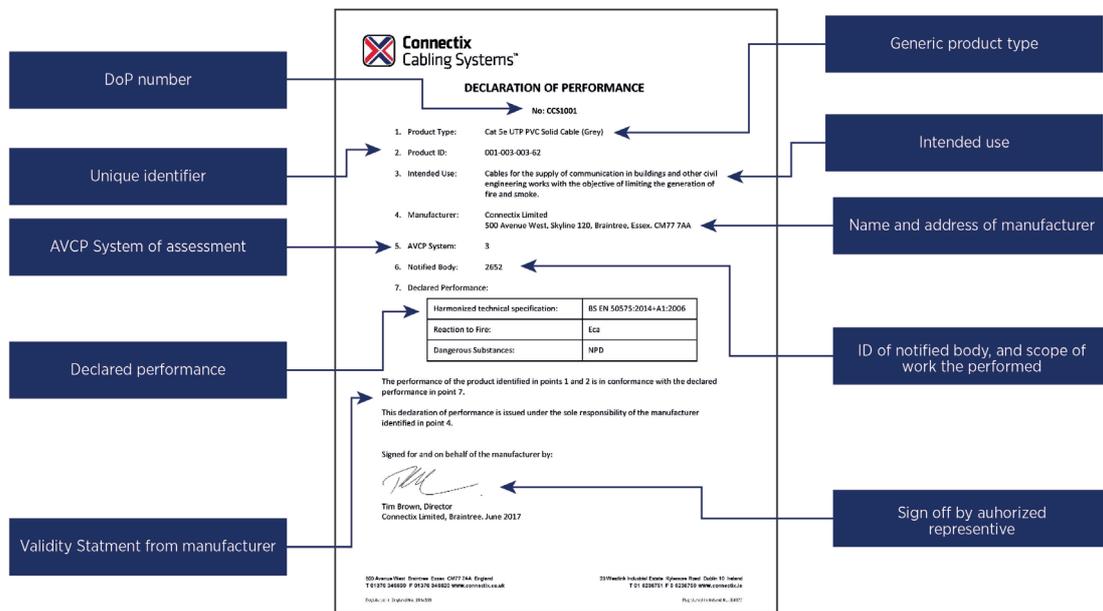
Euroclass	Classification	Additional	Assessment and Verification of Consistency of Performance Systems
A	EN ISO 1716		<p>1+</p> <p>Initial type-testing and factory inspection and continuous surveillance of factory production control (FPC) with audit testing of sample by 3rd party notified product certification body</p>
B1	EN 50399 Heat release Flame spread	Smoke production (s1a,s1b,s2,s3)	
B2		EN 50399/EN 61034-2	
C		Acidity (a1,a2,a3)	<p>3</p> <p>Initial type-testing by 3rd party notified testing laboratory</p>
D	EN 60332-1-2	Flame droplets (d0,d1,d2)	
E	EN 60332-1-2		<p>4</p> <p>Initial type-testing and FPC by manufacturer</p>
F			



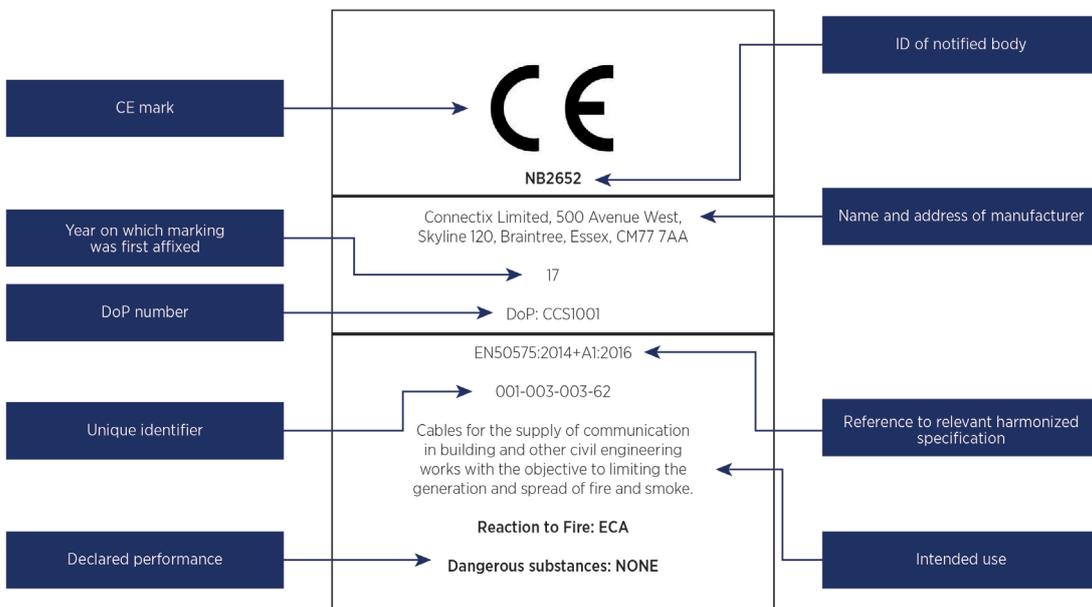
What to look for?

To ensure that the specification is referencing correct CPR standards, the specification should set out the requirement for A Declaration of Performance and that the Cable must be CE Marked. The Declaration of Performance should show in detail all of the manufacturer's compliance and production performance and test processes to achieve the accreditation to the standard. The DoP should be readily available either online or in hard copy, as below:

Declaration of Performance



CE Label Marking





Which to Specify?

Current standards suggest that a minimum Eca classification should be written into the documentation. Most reputable manufacturers are already compliant with this standard, although recent high profile incidents may see a speeding-up of legislation to make a higher class of cable be required in certain types of building as it currently does in other EU countries, but this is yet to be debated.

Moving the specification above Eca Euroclass will add additional performance with respect to Flaming droplets, Acidity and Smoke Production as referenced in the table above. What should be noted, however, is that the cost of each construction will rise along with performance, so it is important to consider this and discuss with the client and the manufacturer and make an informed decision on the most suitable classification for the project.

In conclusion the introduction of CPR puts extra responsibility on the diligence carried out in the production of the data section of a building M&E design specification. However, it is possible that it could be subject to change in the near future as government legislation may dictate further enhancements to the specification of the cabling infrastructure based on the particular application or type of building.

M&E Engineering Consultants should engage with a trusted structured cabling manufacturer to ensure that all options are considered within the building requirements to ensure the correct type and construction of cabling infrastructure is selected at the outset, ensuring the longevity of the system and its ability to expand into future migrations in IP connected technology.