# White Paper
# A Major Update in Standards.

**excel**
without compromise.



EN50173-1:2018
**Part 1**

## Introduction

Ever since 2015, I have been saying that this next year will see the biggest changes in standards and as technology continues to push forward we have. Once again, I am saying it, however this time we have seen some key changes in 2018.

At the beginning of the year, although they are dated in 2017, ISO 11801 was completely overhauled, and it changed its structure to mirror that of EN50173, breaking it down into 6 constituent and manageable parts.

This revision brought with it an important landmark with a sub-clause that basically pensioned off Class D/Category 5e.

Under Requirements. 'Horizontal balanced cabling shall provide Class E or better channel performance as specified in ISO/IEC 11801-1:2017, 6.3. Class EA or better performance is recommended for support of applications with data rates exceeding one gigabit per second'.

EN50173-2 says very much the same but in a slightly different way, referencing other parts of the standard - but I will get to that a little later.

In the last couple of months, the EN 50173 series has all been updated and published as :2018, along with the revised versions of EN 50174-1,2, which have also been published as :2018. In this paper I will go through each one highlighting some of the key changes to be aware of. The first thing to note is the change from the word 'Premises' to 'Spaces'. The key reason for this is you can have an Office in an Industrial Complex and Data Centre in an Office, for example.

## EN50173-1:2018, Part 1, General Requirements

- Introduces new balanced component Categories 8.1 and 8.2 which support new Channel Classes I and II.

- Removed balance cabling component and channel class CCCB (controls, command and communications in buildings) rarely if ever used anymore and was specified up to 0,1Mhz.

  This has the capability to carry power up to 15W and a current up to 3 Amps. With the publication of IEEE 802.3bt, 4PPoE, this has become redundant.

- Removes the optical fibre classes OF-100, OF-300, OF-500 & OF-2000 which weren't really referenced as the industry used Categories OM3, OM4 and so forth.

Furthermore, they have announced the intention to remove OM1 and OM2 at the next revision of the standard.

Also Note: there has been a naming change that has gone unnoticed but is referenced for the first time in one of the parts of the series which OS1 is now referred to as OS1a

- It defines the new cabled optical fibre category OM5

- Annex F defining supported applications has been updated to incorporate the new classes above. It also defines 802.3bt and the cables that will support the new power levels of 4 pair PoE

  It clearly states that 2.5 and 5Gb Ethernet is only supported on Class EA Channels and above. 25Gb and 40Gb are supported over Class I and Class II channels

- The whole document has been brought in line with other parts of the series

**EN50173-2:2018
Part 2**

## EN50173-2:2018, Part 2, Office Spaces

- As with Part 1, it introduces component Categories 8.1 and 8.2 as well as Classes I and II

- Like ISO 11801 it has no reference to anything lower than Class E. The exact wording requires a reference to Annex F in Part 1.

  'This standard allows the implementation of balanced cabling of Class E in the horizontal cabling subsystem. Such an implementation should only be considered where a design assessment has confirmed that applications with data rates exceeding 1 Gbit/s are not required during the intended lifetime of the cabling'

  Also note: 'With appropriate choice of components, generic cabling systems meeting the requirements of this standard are expected to have a life expectancy of at least ten years.'

- Under component choice it has a note which states:

  'Category 8.1 cannot be used to provide a Class F or FA balanced cabling channel'

  The key reason behind this is the maximum cabling channel highlighted in the series is for Class I and II is 32m, 2 Connections or less.



**EN50173-3:2018
Part 3**

## EN50173-3:2018, Part 3, Industrial Spaces

- As with Part 1, it introduces component Categories 8.1 and 8.2 as well as Classes I and II

- Introduces a new cabled optical fibre Category OM5 and Category OS1a

- Introduces a new Annex on the industrial cabling subsystem. This Annex provides guidelines and diagrams for connecting 'Automation Islands' and as with some other parts there are terminology specific to this part such as IO, Industrial Outlets, for example.

- It also updates other tables and figures to bring it in line with other parts of the series.



**EN50173-4:2018
Part 4**

## EN50173-4:2018, Part 4, Homes

Has a lot of new content changes of note it is the only one that still references Class D, however that is expected to be removed in the next revision.

- As with Part 1 it introduces component Categories 8.1 and 8.2 as well as Classes I and II

- It revises the functional elements in Clause 4 which is quite complex, it looks at:

  - Connecting Hardware
  - Cable Sharing
  - Application Outlets that covers both ICT outlets and BCT (Building Control Technology)
  - It provides the sizes of the rooms and the number outlets required to service them
  - There is a Provision for BO (Broadcast Outlets)

- The relation of the Generic home cabling systems to the network access cabling subsystem is clarified

- It introduces a set of design objectives for home cabling

- Removes CCCB cabling and the relevant component requirements

- Annex B is removed which mainly deals with CCCB cabling and it was employed for associated applications within the home. These included Burglar Alarms, ISDN, Intercom and appliance control, which involved outdated topologies

- It also updates other tables and figures to bring it in line with other parts of the series

## EN50173-5:2018, Part 5, Data Centre Spaces

- This had the smallest amount of work done. It clarifies that the cabling defined in this standard applies to computer rooms in data centres as well. As with Part 1, it introduces component Categories 8.1 and 8.2 as well as Classes I and II and brought the whole document in line with other parts of the series.



## EN50173-6:2018, Part 6, Distributed Building Services

This has two key changes of note, whilst also introducing Categories 8.1 and 2 as well as Classes I and II.

- Revises Annex B on Services and Applications which has introduced IEEE 802.11ac High Power Wi-Fi as an application. It provides far more detail on the services that can be supported along with the size of the Service Areas for each one.

- Revises Annex D on optical fibres used in Type B Service Distribution, by removing the Classes as mentioned in EN50173-1.



## EN50174-1:2018, Installation Specification and Quality Assurance

This along with Part 2 of the EN 50174 series has undergone some of the biggest and most important changes.

- It is not just the inclusion of the Euroclasses from the CPR which is covered in a new Annex G that takes precedent. It is all the changes related to the publication of IEEE 802.3bt 4PPoE

- The guidelines for administration are changed with the addition of an Enhanced Level through the introduction of AIM (Automated Infrastructure Management). This section also provides clarification on the need for warning labels on cabinets housing remote powering devices such as switches to avoid inadvertent disconnection.

- Annex B which is a Normative i.e. an extension and part of the standard has been broken down into two annexes. The new Annex B is purely down to the optical fibre colour code scheme and general duplex connectivity.

- Annex covers Array Connectivity and Polarity for MPO/MTP



## EN50174-2:2018, Installation planning and practices inside buildings

This has some of the biggest and most important changes.

- Revision in the requirements regarding closures and the cable stacking height in pathways as well as the use of surge protection devices.

  The maximum stack height in a basket tray has been reduced. For example, a tray with 100mm between wires has been reduced from 140mm to 125mm.

- It also introduces a new subclause and Annex C on planning and assessment of cabling in support of remote powering. This is a new Normative Annex and provides a series of calculations based on the findings of the research. Excel, amongst others, carried out research to look at the potential impact in performance due to the increase in heat caused when 4PPoE is deployed.

- Clause 6 on Segregation is amended, the main change being to provide more clarity on certain points as well as the subject of cable sag between support, meaning the cables become closer to each other than required in places. Thankfully the actual calculations for separation have not changed.

- Clause 7 on Electricity distribution systems and lightning protection has been modified with the sub-clause for earthing design within the building being removed. As this is the responsibility of others, this action is to remove confusion on this point.

- Annex A, which was an informative annex covering EMC and Protection Coupling mechanisms & countermeasures, has been removed.

- Finally, a completely new Clause 12 has been introduced; Cabling for distributed services within buildings which is in support of EN 50173-6 Distributed Building Services.

**Conclusion**

There is a great deal of change in the new standards. It is important to understand and recognise them, as some of them will have a major impact on how we design Network Infrastructures in the coming years.

All professional organisations should make sure they invest in the latest versions of the standards; otherwise how do they expect to be able to design and install a standards compliant solution for your customers?

*This White Paper has been produced by Paul Cave, Technical Manager, on behalf of Excel.*

excel
without compromise.

MF959_06/18