EMTELLE

INDOOR SOLUTIONS FOR FTTD

GLOBAL MANUFACTURER OF PRE-CONNECTORISED, BLOWN FIBRE CABLE & DUCTED NETWORK SOLUTIONS

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FIBRE TO THE DESK

Start thinking inside the building

There are times that change the way we think and act. Times in which home office is becoming more and more important and in which high bandwidth services are more important than ever. Times when a self-ordering smart fridge does not sound so absurd after all.

These times show how important fibre optic connections are and that even FTTB/FTTH may not always be enough.

Nowadays it is important to ***think outside the box - in this case inside the building*** - and to be able to deliver a system from the distribution cabinet to the home to the subscriber connection.

FIBRE TO THE DESK

Start thinking inside the building

Today, requirements for the functionality of facilities and buildings of all kinds – from the detached house to the hospital, from the small production hall to the airport – are becoming increasingly ambitious. Especially in buildings, where many people live and work, fast communication and security aspects are of central importance.

In hotels, holiday guests and business travellers want to make unlimited and comfortable use of communication via laptop, tablet or smartphone. At the same time, applications of the future (video streaming, telemedicine, smart metering, smart home, etc.) require more and more bandwidth.

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INDOOR SOLUTIONS FOR MDU

Deploying the Gold standard in FTTH market

When optical fibre is installed all the way to each individual access point, users can enjoy speeds up to 10 Gbit/s and more. Emtelle have a variety of innovative and reliable solutions manufactured specifically for internal use, considering all requirements for Indoor applications. Currently there is considerable interest shown around the globe in MDUs as countries increase their realisation that broadband penetration via FTTH into dense housing is a key to economic growth and success.

FTTD means end-to-end optical fibre cabling, including in-house cabling. This level of fibre deployment is already in place in many public administration offices, universities, data centre and hospitals. Another overall term which is used is FTTO – Fibre to the Office.

INDOOR VS OUTDOOR

Requirements for Indoor installation

Buildings today contain a lot of cables. That's the way we can enjoy electricity, telephone – and highspeed data. The disadvantage: Cable fire is one of the most common causes of fire in buildings and 1/3 of all fire start in buildings. In case of fire, cables can contribute to causing the fire and even spread it. This may result in harmful smoke, acids or toxic fumes. The average time from the start of a fire to the ignition of the smoke gas is today only **3 minutes**.

Fire Safety

The fire properties of cables are of great importance from a fire safety perspective. As a result, construction products – also count all permanently installed data and communication cables – have been included in the classification system under the European CPR (Construction Products Regulation) published as EN 13501-6 which is as binding as a law. The CPR defines a standard at European level with the aim of improving safety in buildings.

4000 PEOPLE DIE IN FIRE INCIDENTS EACH YEAR. IT'S UP TO US TO BRING THIS DOWN!

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CPR

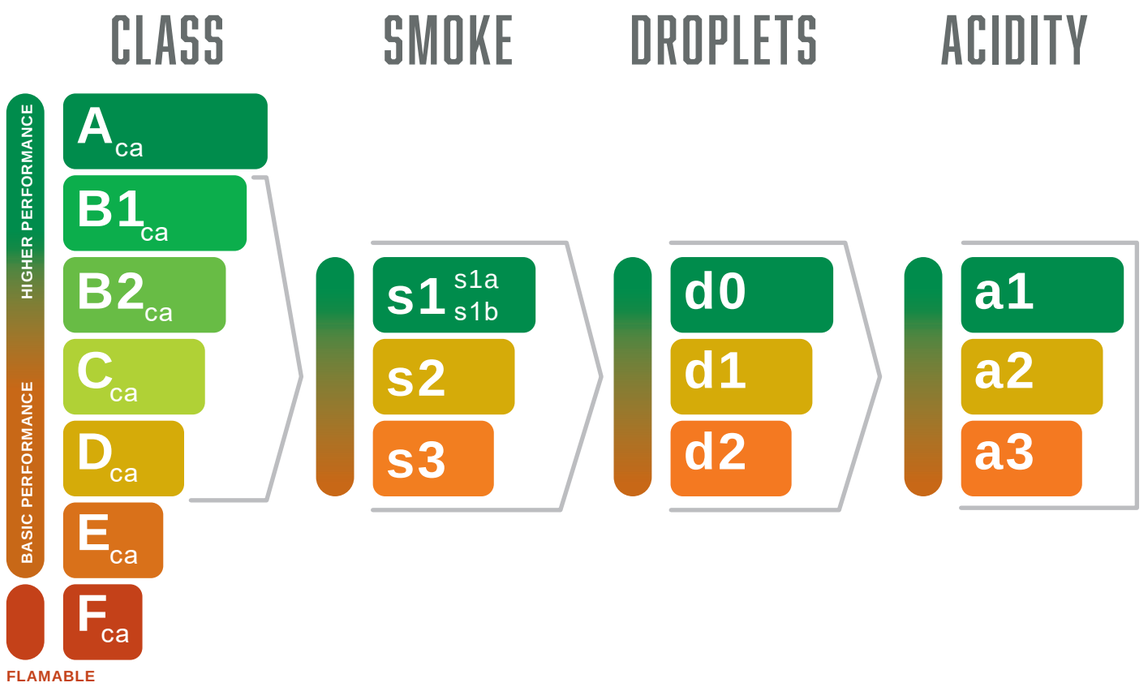
Construction Products Regulation

Under the Construction Products Regulation (CPR) published as EN13501-6 in 2014, cables are classified in **7 Euroclasses** according to their contribution to their flame spread and heat release:
Aca (cables that “do not burn”), B1ca, B2ca, Cca, Dca, Eca and Fca (no performance criteria or fail Eca), “ca” stands for cable. The European Union market requires a minimum rating of class Eca acc. to EN 13501-6 for cables. National regulations specify the following classes for data and communication cables: **B2ca, Cca, Dca, Eca.** The top performing cables are the Low-Fire Hazard families certified in classes B2ca and Cca. The requirements are defined in the harmonized standard **EN 50575: 2014**. The classification takes place according to EN 13501-6. Cables must be provided with a **CE-marking** and **Declaration of Performance (DoP)** in accordance with CPR.

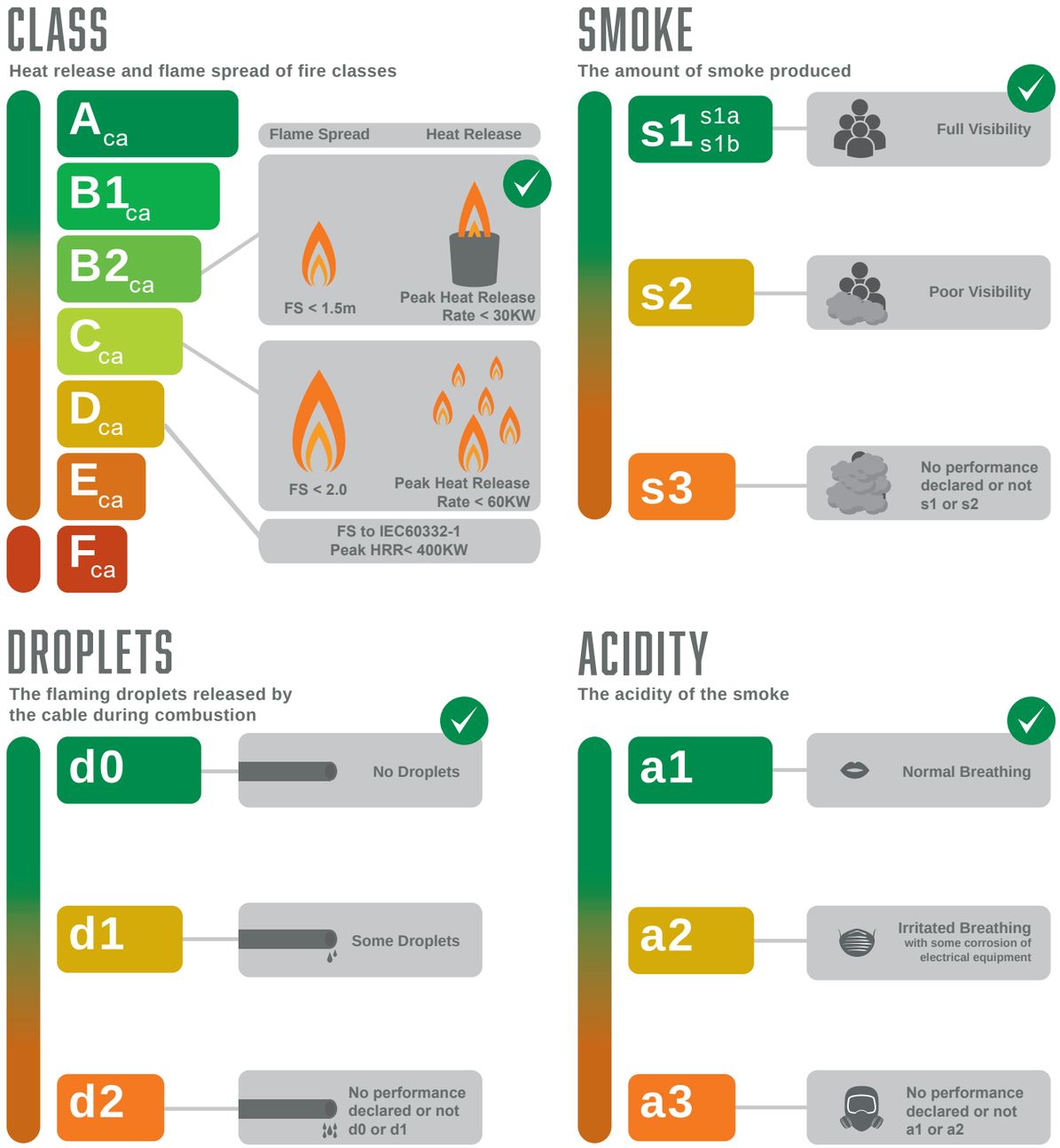
Additional Classifications

In the CPR framework, three additional classification levels have been established regarding:

- The amount of **smoke** produced
- The **flaming droplets** released by the cable during combustion
- The **acidity** of the smoke



Additional classifications and example

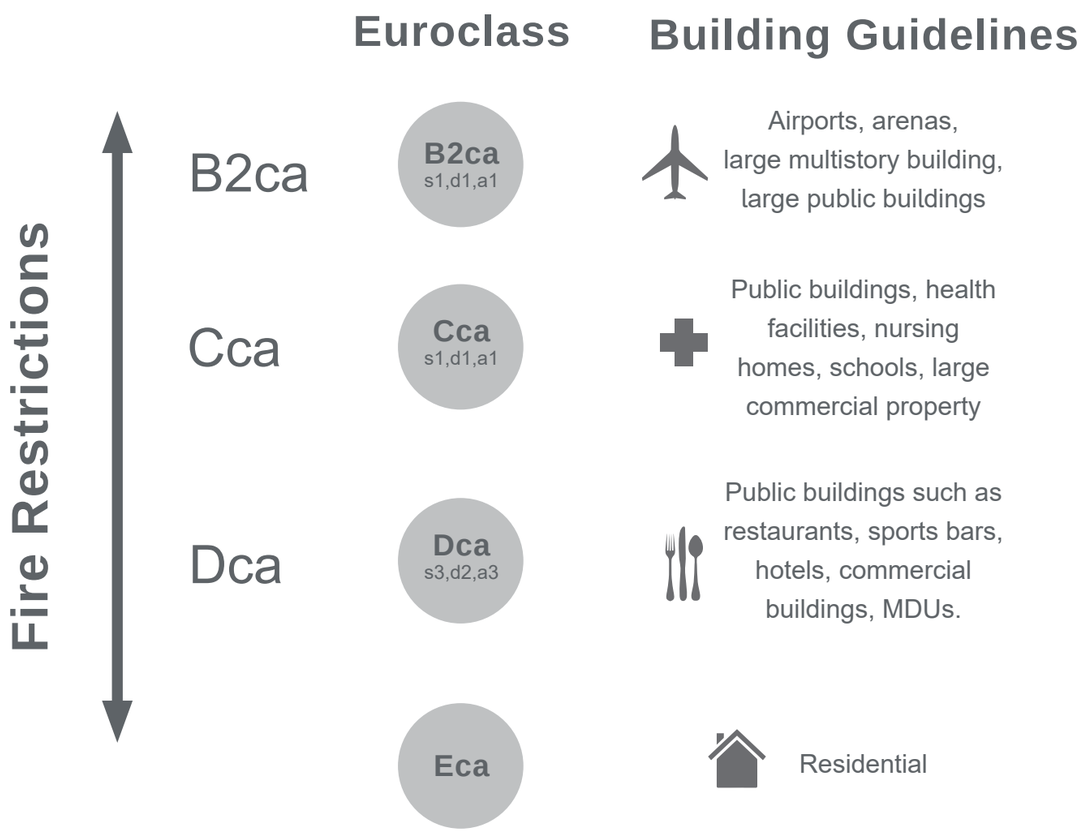


CABLE INSTALLATION GUIDE

Choosing the right cable for your application

Tall buildings becoming taller and taller – rapidly growing cities, highly populated areas, dense crowds, create high traffic in critical areas. Public areas such a theatres, libraries, schools, hospitals, care homes are difficult to evacuate in case of fire. Therefore, there are different minimum requirements for the CPR class for different building types in each country.

CPR Cable Installation Guide



Q&A BASICS

What does the term CPR stand for?

"CPR" stands for "Construction Products Regulation" acc. to EU 305/2011. In German language it is called Bauproduktenverordnung (BauPVO).

What is a construction product?

A construction product is any product that is placed into the market in order to be permanently installed in buildings or parts thereof and whose performance affects the basic requirements (in this case fire protection) on buildings.

Since when is the CPR classification valid for installers and producers?

Since July 1st, 2017, installers may only use cables with CPR classification when defined in the project.

Who defines the CPR classes to be installed in projects?

Architects / planners must specify the required CPR classes in accordance with the regional requirements for buildings.

Which standards and norms are relevant?

The corresponding harmonized standard for cables is **EN 50575** "Cables for general applications in construction works subject to reaction to fire requirements". This standard describes the CPR itself. Also **EN 50399** (heat release and smoke production), **EN 60332-1** (flame spread, single cable), **EN 60332-3** (flame spread, bunched cables)**, EN 61034-2** (smoke density), **EN 60754-2** (halogen, acid gas evolution).

Q&A PRODUCTS

Does the CPR apply to fibre optic cables?

Yes. A construction product includes all energy and communication cables (copper and fibre optic that are permanently installed in the building (surface and concealed).

Does the CPR apply to microducts?

No. Microducts are considered as cable management systems acc. to EN 50174 standards and are therefore not subject to the CPR system. This has been formally stated by BSI and German ZVEI. Empty microducts DO NOT fall within the scope of CPR they CANNOT be classified under CPR.

EN 61386-1 "Conduit Systems for Cable Management" is therefore used to verify microduct products for internal use. This includes a flame propagation test acc. to EN 60332-1 and EN 60332-3 (smoke development, flame retardant and freedom from halogen).

Does the CPR apply to pre-installed microducts?

Yes. Pre-installed microducts (Emtelle PIFU, QWKconnect, RTRYVA) are automatically defined as cables and as such are classified to CPR and have CE-marking acc. to the harmonized standard EN13501.

Do the CPR regulations apply to patch cables?

No. The regulations only apply to cables which are permanently installed and connected to the building.

Do the CPR regulations apply to Fibre Units?

No. As the Fibre Unit does not exist in a network by itself (always installed into a microduct – RTRYVA, PIFU, QWKconnect) it does not require CPR testing.

Does the CPR apply to Customer Connection boxes, fittings, cable trunks?

No. The CPR only applies to cables and wires. However, products such as customer connection closures, fittings etc. must also be flame-retardant, low smoke and halogen-free (LSH). For these products, the glow wire test acc. to EN 60695 and EN61386-22 is carried out to measure the risk of fire.

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Q&A CE-MARKING

CE marking for Indoor cables acc. CPR?

Yes. With the CE-marking, the classification in the corresponding Euroclass is documented. This ensures for the user that compliance with the required CPR class / fire protection is proven.

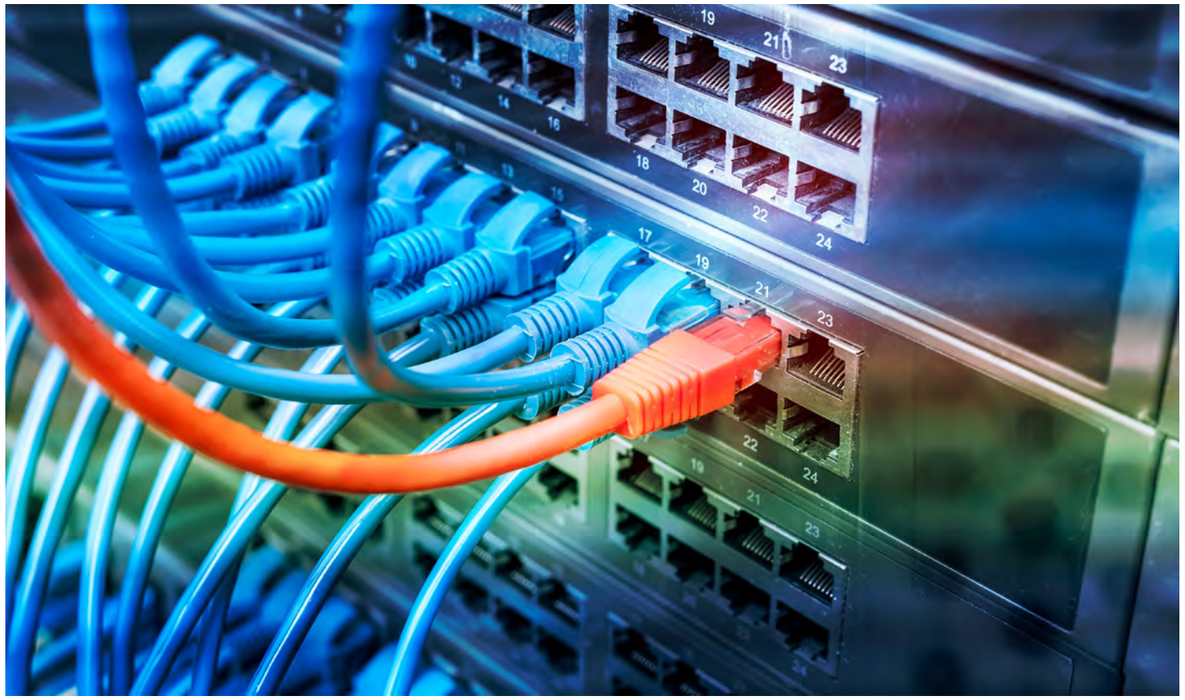
Construction products that have been tested and approved in accordance with harmonized standards and that have been provided with a declaration of performance (DoP) must be signed with a CE-marking.

CE-marking for Indoor microducts?

In general **any product that complies with EU harmonized standards can be given a CE-marking**. For microducts for Indoor application, this is EN 61386 (61386-1 and 61386-22 are harmonized standards).

Microducts for Indoor installation that have been tested according to this standard receive a CE-marking, however, as described above, **the microducts are not classified according to CPR.**

Please note: Microducts for Outdoor/Direct Bury installation do **NOT** require a CE-marking.



FROM OUTDOOR TO INDOOR WITH EMTELLE SOLUTIONS

Don’t let the customer termination point become a termination point. Emtelle does not only offer a full range solution for the drop to the house. Emtelle offers Indoor solutions according to all requirements which lead fibre up to the customer access point in the building.

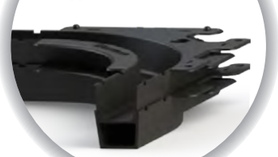
1

RTRYVA™

Indoor

2

EM-BEND



3

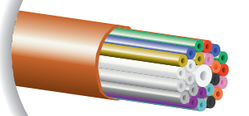
INDOOR MINI TRUNKING

4

MDU CABINET

5

FibreFlow DB



6

EMTELLE HomeConnect

7

INTERNAL CUSTOMER CONNECTION POINT

8

INSTALLATION EQUIPMENT

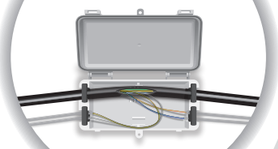
9

QWKconnect™

Indoor

10

EMU BOX



11

STREET CABINET

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LFH FIBREFLOW MICRODUCTS

Low Fire Hazard

Emtelle LFH (Low Fire Hazard) FibreFlow™ microducts are tested according to EN 61386-1 and 61386-22 and are proven to be fire retardant, which is given by their low flammability, low smoke, low acid/fume and halogen-free properties. It is made from 100% virgin compounds thus out performs across the spectrum of characteristics from tensile strength, elongation, heat, and temperature performance index. The FibreFlow™ ducts are lightweight, metal-free, flexible and are intended for indoor installation. The microducts can come as a bundle, being surrounded with a sheath of LFH material suitable for indoor fire regulation use and giving excellent performance in fire scenario as well.

When blowing into a LFH microduct Emtelle recommends a maximum of 2-12 fibre cabes/Fibre Units and a maximum of 8 x 90° bends with 25cm bend radius for best blowing results.

No CPR required

Microducts are considered as cable management systems by EN 50174 series standards and are therefore not subject to the CPR system. Microducts for Indoor installation that have been tested according to EN 61386 receive a CE-marking, but are not classified according to CPR.

Safe in case of fire

Emtelle LFH microducts are in conformity with the Union harmonisation legislation:
EN 61386-1 and 61386-22 Conduit Systems for cable management
(Forward Testing Ltd. No. 2538, Report # 2078)

- Flame resistance acc. to EN 60332-1 -2 and EN 61386-1
- Low smoke emission acc. to EN 61034-2
- No emission of acidic and corrosive gas acc. to EN 60754-2

CE

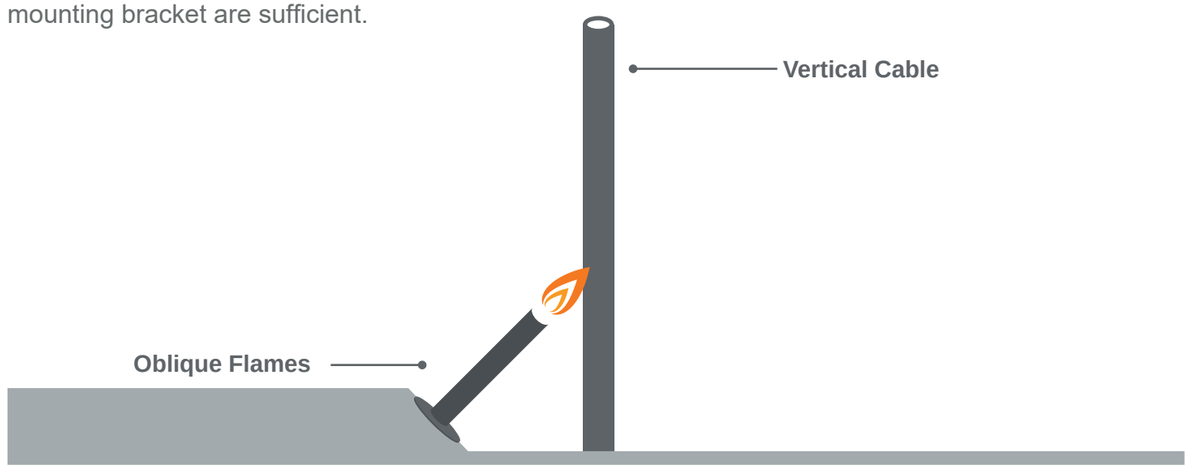
FibreFlow LFH

TESTING

According to EN 60332-1 and 60332-3

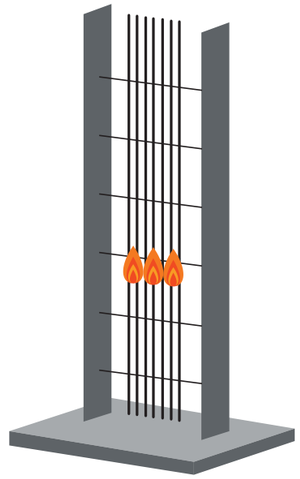
Flame propagation acc. EN 60332-1

Test of vertical flame spread with 1 kW flame with a gas / air mixture (minimum 1 min) The cable must be self-extinguishing. The damage or charring may only be up to 50 mm below the upper mounting bracket are sufficient.



Flame propagation acc. EN 60332-3

Test of vertical flame spread of vertical bundled ducts (3500mm) with ribbon gas burner. The burned length must not exceed 2.5 meters from the lower end of the burner.

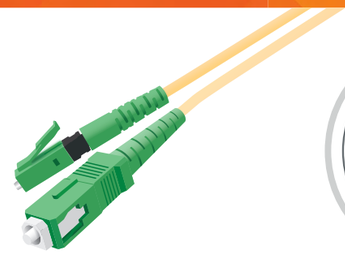


CE

FibreFlow LFH

QWKlink™

Pre-connectorised Fibre Unit



What:

Emtelle QWKlink™ is a pre-connected Fibre Unit on one or both ends which easily allows for fibre connectors (SC or LC APC ferrule) to be installed. This eliminates the need for splicing fibre in the house.

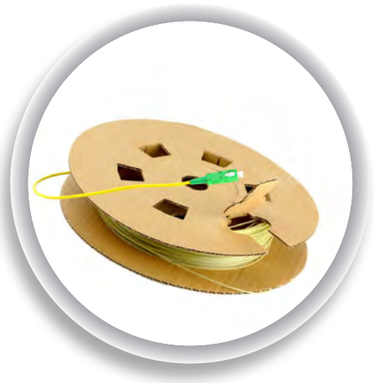
QWKlink is supplied with a ferrule that can be blown into a microduct with a minimum diameter of 3.5mm.

Where:

Has to be installed/blown in a LFH microduct (QWKconnect)

Features:

- Pre-connectorized Fibre Unit
- No need for splicing --> reduced installation costs
- Offers flexible installation within a microduct
- Ferrule can be build up after installation within seconds



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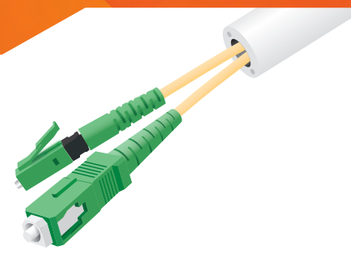
QWKconnect™

Pre-connectorised Fibre Unit in a fire rated microduct



What:

QWKconnect™ Indoor is a pre-connectorised fibre bundle pre-installed within a fire rated LFH microduct at the manufacturing process. QWKconnect Indoor gives all the advantages of blown fibre, without the need for blowing. As the pre-installed Fibre Unit is only 1.1mm in diameter, any excess fibre can easily be coiled at the home or in fibre management housing. QWKconnect Indoor can be supplied in various lengths from 25m up to 500m, perfectly suited for indoor projects.

Where:

- Underground for external use
- Riser
- Surface-mounted / flush-mounted
- Into existing ducts / cable management systems
- Cavity walls / suspended ceilings

Features:

- Pre-connectorized and pre-installed Fibre Unit
- Ideal to feed apartments from the outside of the building to the inside
- No need for splicing or blowing – Fibre units can be retracted and plugged into apartment CCP --> reduced installation costs
- Flexible installation within the building

Dimension	CPR rating
QWKconnect 5/3.5mm 2FU/4FU	B2ca-s1a, d2, a1
QWKconnect 7/4mm 2FU/4FU	Dca s1a d2, a1

CE BS EN 13501-6:2014

PIFU™

Pre-installed Fibre Unit in a fire rated microduct

What:

Emtelle PIFU™ Indoor is a microduct which comes with a pre-installed Fibre Unit. PIFU™ Indoor is manufactured out of LFH material meaning it is suitable for use within buildings and gives excellent performance in a fire scenario.

Where:

- Underground for external use
- Surface-mounted / flush-mounted
- Into existing ducts / cable management systems
- Cavity walls / suspended ceilings
- Riser

Features:

- Pre-installed Fibre Unit
- Offers flexible installation within a building
- Easy to repair and replace the fibres in an event where physical damage has occured
- No need of blowing
- Can come as a pre-connectorized version as well (QWKconnect)

Dimension	CPR rating
PIFU 5/3.5mm 2FU/4FU	B2ca-s1a,d2,a1
PIFU 7/4mm 2FU/4FU	Dca-s1a,d2,a1

BS EN 13501-6:2014

RTRYVA™

Simple break and branch pull back (“Retrieve”) system

What:

The Emtelle RTRYVA™ Indoor solution is a single microduct which comes with several pre-installed Fibre Units to maximise fibre density with minimal build intrusion. RTRYVA™ Indoor is manufactured out of LFH material meaning it is suitable for use within buildings and gives excellent performance in a fire scenario.

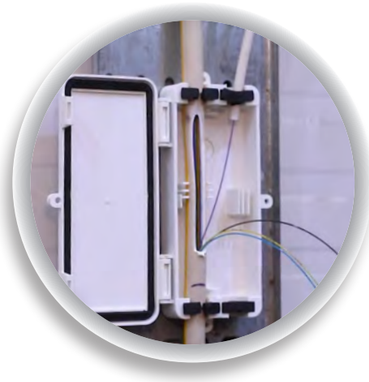
Where:

- Underground for external use
- Riser
- Surface-mounted / flush-mounted
- Into existing ducts / cable management systems
- Cavity walls / suspended ceilings

Features:

- Maximise fibre density with minimal build intrusion
- No need of splicing and blowing - Fibre Units can be pulled out and led to the apartment
- EMU box for protection of branch points
- Can be perfectly installed in a riser from the basement to supply Fibre Units directly to the single apartments in MDUs

Dimension	CPR rating
RTRYVA 8/5 LFH 12x2FU	Dca-s2, d2, a1
RTRYVA 15/9 LFH 48x2FU	Eca-s2, d2, a1

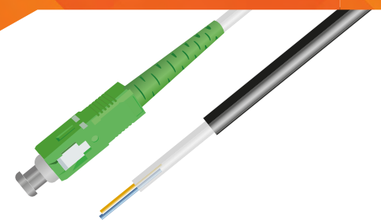


BS EN 13501-6:2014

CONSTRUCTION PRODUCTS REGULATION
CPR
COMPLIANT
EN 50575

EMTELLE HomeConnect™

Customer Connection point with length of Indoor cable



What:

Emtelle HomeConnect offers a full solution kit including a Customer Connection Point with a CPR rated cable. The fibre is spliced onto a fibre connector and then inserted into the Customer Connection Point.

Where:

The kit is the optimal solution to provide a fibre termination point within a residential property saving blowing and splicing costs indoor. The customer connection point comes complete with pre-installed pigtail, connector, and adaptor.

Features of the CPR cable:

- Cca rating Indoor cable
- 1 core G657A2 fibre, diameter 2.6mm
- Optical fibre is wrapped with a layer of aramid yarn, then LSZH inner sheath, aramid yarns as strength member, then completed with LSZH outer sheath

Features of Customer Termination Box:

- Body Manufactured from Self-extinguishing ABS UL-0
- Can be fitted directly to a wall or a standard UK 1-gang back box.
- Room to accommodate 2x Fusion Splices and excess fibre storage
- Company Logo to suit customer requirements

Dimension	CPR rating
Emtelle HomeConnect 2.6mm	Cca-s1a,d0,a1

CE BS EN 13501-6:2014

EMTELLE D-LINE TRUNKING

Indoor D-Line for proper routing of fibre

Cable guide rail for proper routing of branched cables to the individual subscriber connection points. Can be optimally combined as a covering solution with RTRYVA Indoor.

Features:

- Small and low profile providing an attractive solution for fibre provision in apartment buildings
- Hinged lid allowing easy placement of fibre
- Bend clips to allow the trunking to be installed around most 90 degree bends
- Fibre clips are installed to keep trunking in place during a fire
- The trunking acts as an upgradable pathway for future fibre provision
- No Branch boxes required to access apartments

Lead In Options

Internal customer lead in: The internal customer lead in is used when the cable entry is from under the floor inside the building. The duct cover is designed to cover skirting boards and can be trimmed to suit most sizes and designs.

Videos on Indoor installation available on Emtelle YouTube channel!

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