



FTTx Passive Solutions

The Prysmian challenge, as a Passive System Provider, is to be ready to offer to different types of customer a tailored, comprehensive solution, where not only a high added value Product Portfolio is supplied, but also the Training, Design & Planning Support, as well as the Installation Survey, can be provided as part of a turn-key system.

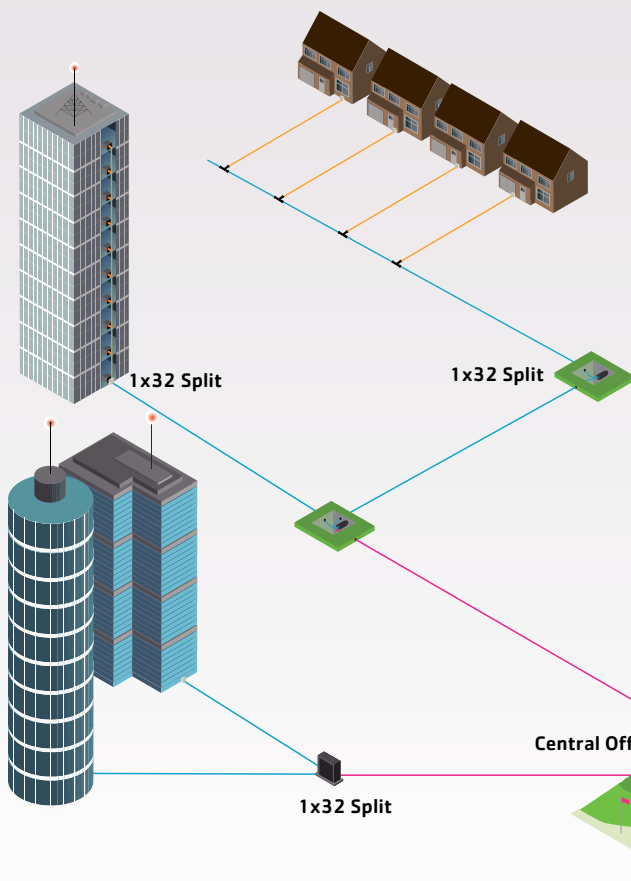


Distributed PON

Passive Optical Networks (PONs) utilise splitter assemblies to increase the number of homes fed from a single fibre. In a Distributed PON, the splitters are located in various downstream positions around the network, typically in a closure or cabinet. Each unit would feed a local area and would also act as a network access point for drop cables.

Features and Benefits

- > Reduced fibre management at central office
- > More effective utilisation of optical fibres
- > Smaller outside plant used to house splitters

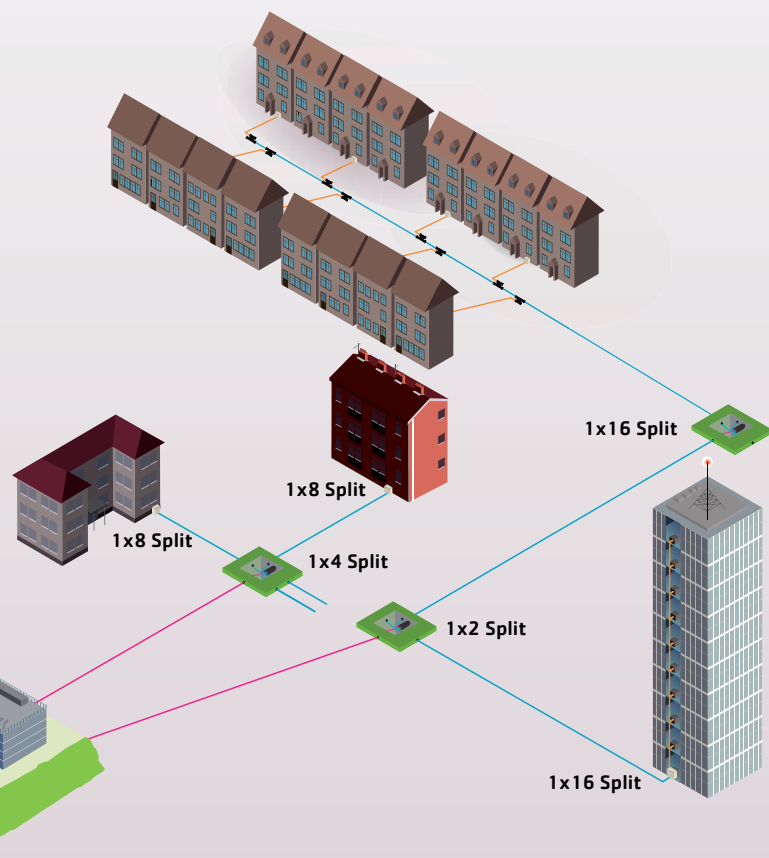


Cascaded PON

Passive Optical Networks (PONs) utilise splitter assemblies to increase the number of homes fed from a single fibre. In a Cascaded PON, there will be more than one splitter location in the pathway from central office to customer. Currently, standard splitter formats range from 1 x 2, 1 x 4, 1 x 8, 1 x 16 and 1 x 32 so a network might use a 1 x 4 splitter leading to a 1 x 8 splitter further downstream in four separate locations.

Features and Benefits

- > Extended PON customer reach
- > Easy network upgradeability
- > Defer cost of downstream splitters if required



Fibre To The x (FTTx)

Whilst not being a new concept, FTTx is finally gathering real momentum as the Telecom operators start to evaluate more closely key drivers such as the trade-off between CAPEX and OPEX when looking at new network roll-out.

Other drivers include the significant cost of maintenance in traditional copper networks, the minimization of installation cost when adding individual subscribers and last but not

least the actual need of bandwidth in the residential activities.

In addition to the traditional Incumbent Operators, who are investigating the best way to proceed along the FTTx road, many newcomers such as Utilities, Real Estate companies, Alternative Operators and Content Providers are becoming more active and are clearly more comfortable moving forward in such an environment.

Point to Point, Point to Multipoint

These networks are designed to provide a dedicated fibre pathway from the central office to the customer (one or more fibres). This allows the operator to trace specific fibres, dedicated to any individual customer, throughout the network. As a result, fibre count increases with proximity to the central office.

Features and Benefits

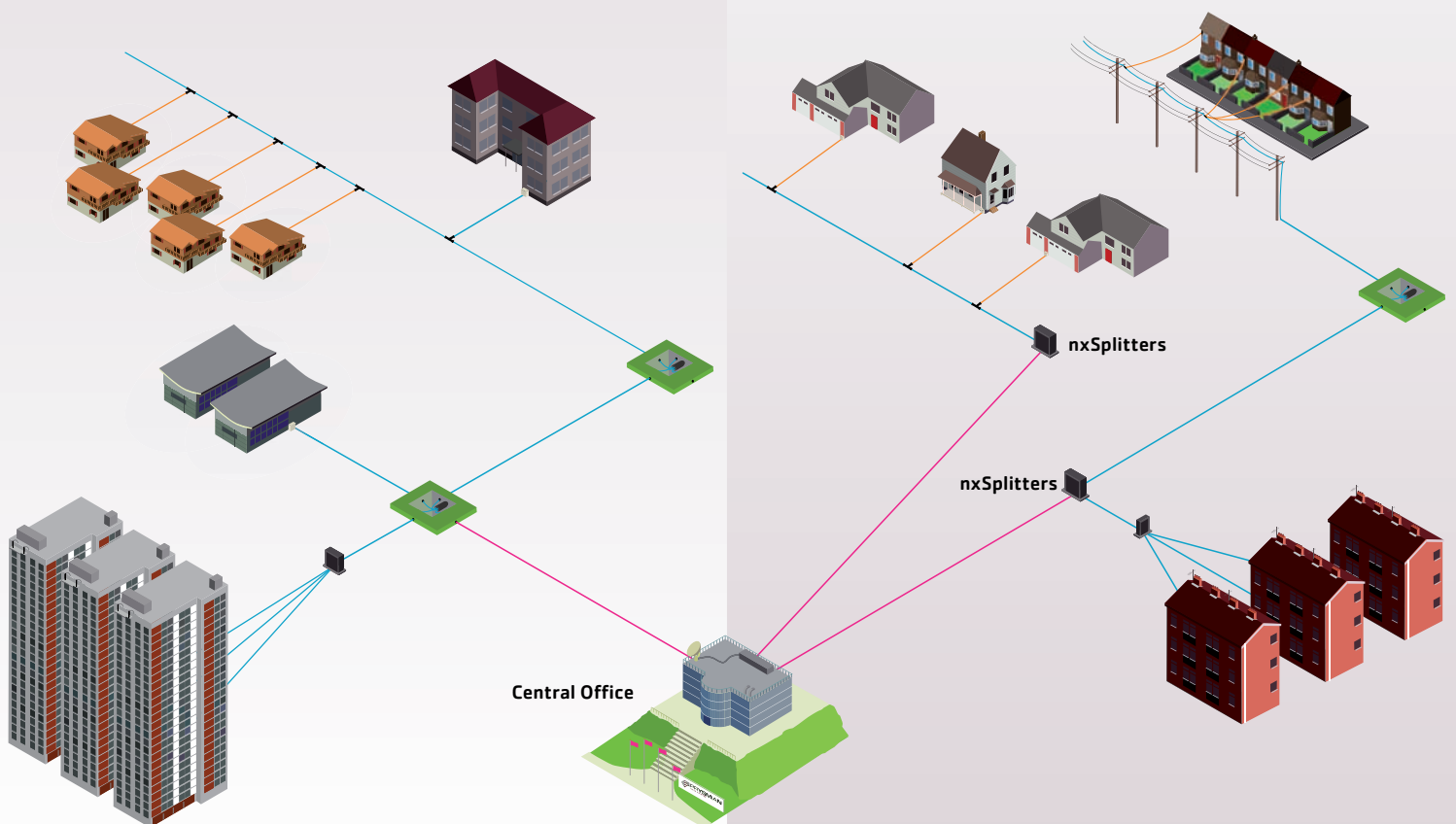
- > Simple network design and planning
- > Maximum optical reach to customers
- > Ultimate level of bandwidth upgradeability

Converged PON

Passive Optical Networks (PONs) utilise splitter assemblies to increase the number of homes fed from a single fibre. In a Converged PON, optical splitters are concentrated in a single location in a Fibre Distribution Hub (FDH), from which all customer fibre connections are made. Splitter management can be maximised to achieve full utilisation before investment in additional splitters.

Features and Benefits

- > High splitter utilisation at FDH
- > FDH offers external network test location
- > Easy customer management at FDH



About us

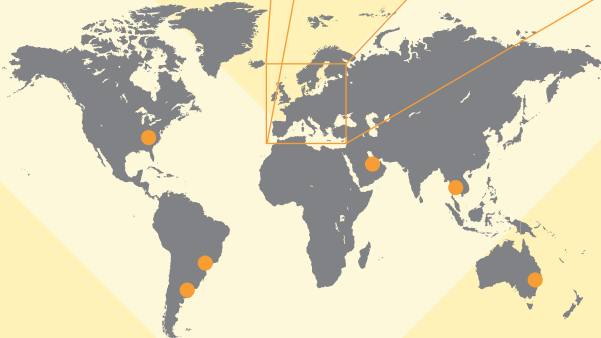
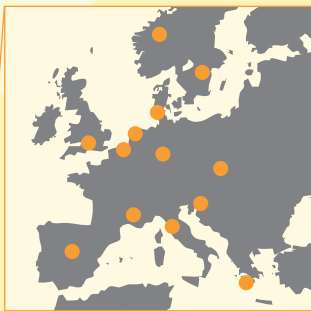
Prysmian is a global market leader in optical cables, supplying a major part of the world's optical cable needs. With a strong heritage of highly advanced R&D, Prysmian is at the leading edge of the technology.

With a worldwide telecom manufacturing presence in 12 countries and in 4 continents Prysmian's global experience and local manufacturing capacity is a significant force in the international marketplace, assuring continuity of supply and high level of service.

Prysmian's optical technology encompasses optical fibres, cables, connectivity, projects and services ensuring that not only the right cable but the right total optical communication system is matched to our customers' needs. Prysmian offers a complete service from design, development and manufacture through to technical support of commissioned cable networks. Planning and logistics are the cornerstone of our operation, with quality maintained through the expertise and dedication of all our staff working across the business to ISO 9001 and 14000 standards. When a project is in Prysmian's hands, our customers can depend on a total quality service.

Prysmian FTTx worldwide

- | | |
|-----------|-------------|
| Argentina | Netherlands |
| Australia | Norway |
| Belgium | Spain |
| Brazil | Slovakia |
| Denmark | Slovenia |
| Dubai | Sweden |
| France | Thailand |
| Germany | UK |
| Greece | USA |
| Italy | |



Cable Portfolio

FEEDER/DISTRIBUTION



UNITUBE up to 24f

- > For applications requiring 24-fibres or less, Prysmian offers many alternative designs of Unitube construction, available as non-metallic design or with steel laminate (SPL).



HEADROW® up to 288f

- > The HEADROW® cable consists of a group of one or more tubes surrounded by an extruded aluminium tube. Whilst suitable for the harshest environments, HEADROW® can also be installed in terrestrial duct systems.



MULTI LOOSE TUBE up to 432f

- > Wide range of designs, both metallic (steel laminated (SPL) or wires (SWA)) and dielectric. Special design available for installations by blowing (air) technique.



RAPIER® up to 432f

- > The RAPIER® portfolio provides a fast and efficient means of building an access network, allowing up to two-thirds of cable preparation time saving.



MASSLINK™ up to 1728f

- > This Ribbon In Loose Tube dry cable allows a significant splicing time saving through the use of mass fusion splicing technique.

DROP CABLES



ResiLink™

- > Mini Figure-8 Drop Cable for Aerial and Duct Applications.



ResiLink ADF™

- > All-Dielectric Flat Drop Cable for Aerial and Duct Applications.



ResiLink TF™

- > Toneable Flat Drop Cable for Duct Applications.



SM@RTCORE®

- > All-Dielectric Rodent resistant loose tube Drop Cable.



SM@RTCORD®

- > All-Dielectric double sheath single tight buffered fibre Drop Cable.

HOME CABLES



Drop Flat Loose

- > easy strip jelly-free structure up to 2f 2.0 x 3.0mm O.Dim.



DeskWave DW 045

- > LSOH 2 to 4 fibres micromodule cable (O.D. 2.5mm - 3.2mm).



DeskWave DW047

- > Indoor/Outdoor LSOH 2 to 4 fibres loose tube cable (O.D. 3.1mm-3.4mm).



Member since 2004



Member since 2005



Member since 2006



Blown Fibre System

Applications

The arrival of fibre is seen by many as the ultimate objective in bringing advanced facilities to people at home. For some, the future is here, with FTTx applications springing up around the globe. For most, the arrival of FTTx is 'sometime in the future'. With Sirocco®, the potential exists, particularly for new build projects, to install the tubes 'fibre-ready'. On 'green field sites', telecommunications becomes the fourth utility, alongside electricity, gas and water, laid ready for use. Adding a network of tubes, at the same time as providing the other services, reduces build costs while avoiding the higher, perhaps unnecessary cost of dark fibre provision.

Then, as the falling price of service attracts different groups of customers (innovators, early adopters, followers etc) a fibre bundle can be blown in to supply the service required, where it is required.

Benefits

Increase network design flexibility

- > Service provision on a just-in-time basis (Network on Demand)
- > Existing fibre links can be easily re-routed to new users
- > Latest and emerging fibre technologies (MM->OM3->SM) can be deployed
- > Superior damage recovery performance over conventional systems

Reduce initial expenditure/control on-going expenditure

- > Capital expenditure costs can be deferred
- > Splice and breakout expenses can be minimised
- > Deployment of fibres is related to actual requirement
- > Elimination of unlit fibre

Speed of customer connections

- > Equivalent performance for 1st connections, significantly reduced timescales and costs for subsequent connections
- > Existing tube routes can be interrupted at any place allowing rapid network upgrades

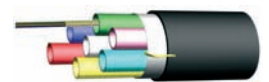
Blown Fibre Units (EPFU)

- > Utilising its core competencies in the manufacturing and cabling of optical fibre, Prysmian produces optical fibre units specifically engineered for blown fibre applications. Pre-Connectorized also available.



Tube Cable - External/Internal

- > HDPE tubes are available in a variety of sizes, combinations and protective systems. LSOH indoor version is suitable for installations in buildings. Plenum and Riser rated tube assemblies will be available in 2007.



Compact Splitter Joint

- > Housing up to four 1 x 8 Splitter Assemblies, this joint enables cables (or blown fibre) to be spliced to splitters for distribution for up to 32 customers on a single fibre per customer basis. A comprehensive range of joints is also available.



MDU Cabinets

- > The Multi Dwelling Unit Cabinet range of products is designed to allow inter-connection between external network cables and the MDU internal cable network within a compact and secure cabinet. A variety of configurations are available for splice, split and/or patch applications.



Riser Box

- > The Riser Box is designed for use within apartment blocks and mid/highrise office blocks. The unit allows fibres from an in-line blown fibre tube cable, to be spliced to up to 12 customer drop cables.



External Customer Splice Box

- > The unit houses a single splice tray and allows fibres from externally fed cables, to be spliced to pigtails for connection to the optical network unit.



FTTx Entry Kit

- > These items are used to provide an ergonomic and managed cable entry at the customer premises. The kits contain all of the items necessary to secure the cable to the outside wall of the building, take the cable elements through the wall in a controlled manner, and terminate them within the customer premises.



QUICKDR@W®

Pre-connectorized solution

Applications

With the advent of Fibre To The Premises (FTTP) networks a need has emerged for a low cost and simple method of connecting customer's premises. Prysmian has recognised this need and developed a system that allows the simple and effective connection of customer CPE.

Initial deployments of FTTP are most likely to take place in so called green field developments due to the improved cost effectiveness relative to traditional copper cable access networks. The problem with this type of deployment is that it is often very difficult to predict where individual services will be required since dwellings may be constructed relatively randomly on the different sub-divisions in the development area. With this in mind it is necessary to implement a strategy that allows customers to be connected quickly and simply, when their dwelling is ready, without the need for expensive truck rolls and the use of complex equipment (such as fusion splicers) make the connection.

Benefits

- > Pre-made cable lead-in with factory fitted connectors avoids the need for fusion splicing at the time of service activation.
- > Customer activation cost is minimised and delayed by only installing and connecting the lead-in cable when the customer premises is ready, which may be long after the initial network build.
- > The pulling shroud houses and protects the connector body from dirt or moisture and facilitates the simple connection of a hauling cord to pull the cable assembly through the lead-in conduit to the dwelling.
- > The pulling shroud can house most common standard connectors.
- > Pulling shroud will pass readily through a 20mm customer lead-in conduit and around 100mm radius bends.



Installation Details

QUICKDR@W® Pulling Shroud

- > Direct pulling of SM@RTCORD® cable into 20mm conduit
- > Prevents moisture and dirt ingress
- > Patent Pending



QUICKDR@W® Lead-In Sealing

- > Quick and simple screw-fit connection of Lead-in Cable Assembly to CLJ
- > Patent Pending



Patch Lead-In Cable

- > Pre-assembled coils for low skilled customer connection
- > Pre-connectorized at both ends
- Supplied in 25, 50, 75 & 100m lengths



SM@RTCORD® 4-way Cable

- > Multiway Breakout Drop Cable
- > Facilitates the single installation of n cables



Customer Lead-In Joint (CLJ)

- > Permits low skilled connection of patch lead-in cables
- > Facilitates quick 'plug and play' customer connection
- > Allows incremental or mass cable connection
- > Isolates the lead-in connection area from the skilled operator splicing area
- > Can house splitters up to 1:8
- > Patent Pending



Fibre Distribution Hub

- > House Splitters 1:16 and 1:32
- > Up to 576f output
- > Outside plant



ZEPHYR

Mini Blown Cables

Applications

Whilst the continued upgrade and development of metro and access networks is inevitable, the timescales for such activities are often not well defined. This can lead to uncertainty and delays in terms of investment in the installation of fibre systems. Now, the concept of Fibre on Demand, typical of Blown Fibre Systems such as Sirocco® can be extended to distribution cables with the use of Zephyr.

Equally important is the need to have ever smaller cables which increase fibre density and better utilise the reduced space available in the existing infrastructures of most brown field urban environments.

When designed with the patented 200micron PRYSMIAN PrimaLight™ fibre, a fibre density increase exceeding 30% is possible with the same size of cable.

All cables in the range are also available with PRYSMIAN Bend Insensitive Fibre providing enhanced cable bend performance.

Benefits

- > Can be blown into most common tube sizes (5/3.5 – 7/5.5 – 8/6 – 10/8 – 12/10mm)
- > Optimized for Long Span Blowability
- > Reduced bending radius
- > Very easy and quick fibre access

Drop Flat Loose

- > Easy strip jelly-free structure up to 2f
- > 2.0 x 3.0mm O.Dim.
- > Undercarpet install
- > High crush resistance

Dielectric Mini Cable

- > Easy strip jelly-free micromodule up to 6f
- > 1.8mm – 2.1mm O.D.
- > Suitable for 5/3.5mm microduct

Dielectric Mini CLT

- > Up to 24f
- > 4.5mm O.D.
- > Temp. range -20°C / +60°C

Outdoor Mini CLT

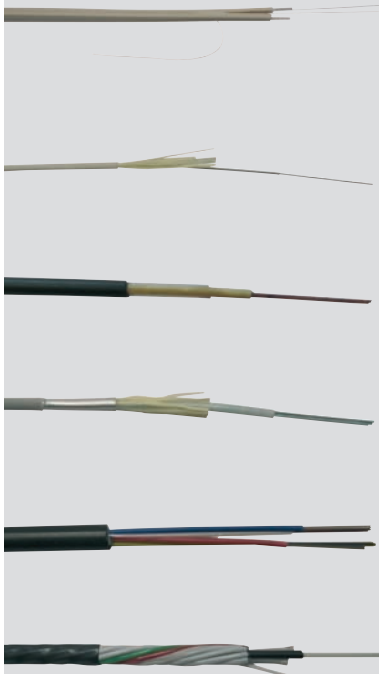
- > Up to 24f
- > 4.0mm O.D.
- > Moisture barrier

Mini RAPIER®

- > Up to 48f
- > 6.7mm O.D.
- > suitable for 10/8mm microduct

Dry Core Dielectric

- > Up to 96f
- > 8.0mm O.D.
- > Very low friction outer sheath



HEADROW®

Heavy Duty for Right Of Way applications

Applications

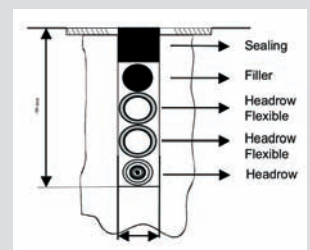
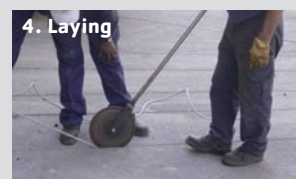
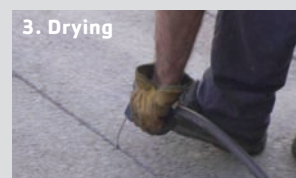
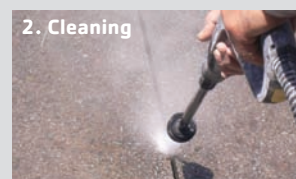
Coming from the OPGW technology, HEADROW® is a special cable designed to be used on heavy-duty applications. Installation in microtrench on urban areas, sewers, submarine connections, directly buried is safe thanks to the perfect sealing of the extruded aluminum tube protecting the optical core.

A variety of cable designs and different installation technologies allows fibre deployment at a lower cost than any other traditional method.

Benefits

- > Extruded aluminum tube provides total sealing
- > Crush resistance exceeding 1000N/10mm
- > Outstanding rodent and termite resistance
- > Cost effective heavy duty alternative
- > Recommended for Microtrenching: low ground penetration but enough not to be affected by asphalt maintenance works

HEADROW® in Microtrench



Flexible Capacity
Initial: HEADROW® 2-144
Add up to 2 by 72 cables
Max Capacity: 288 fibres

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