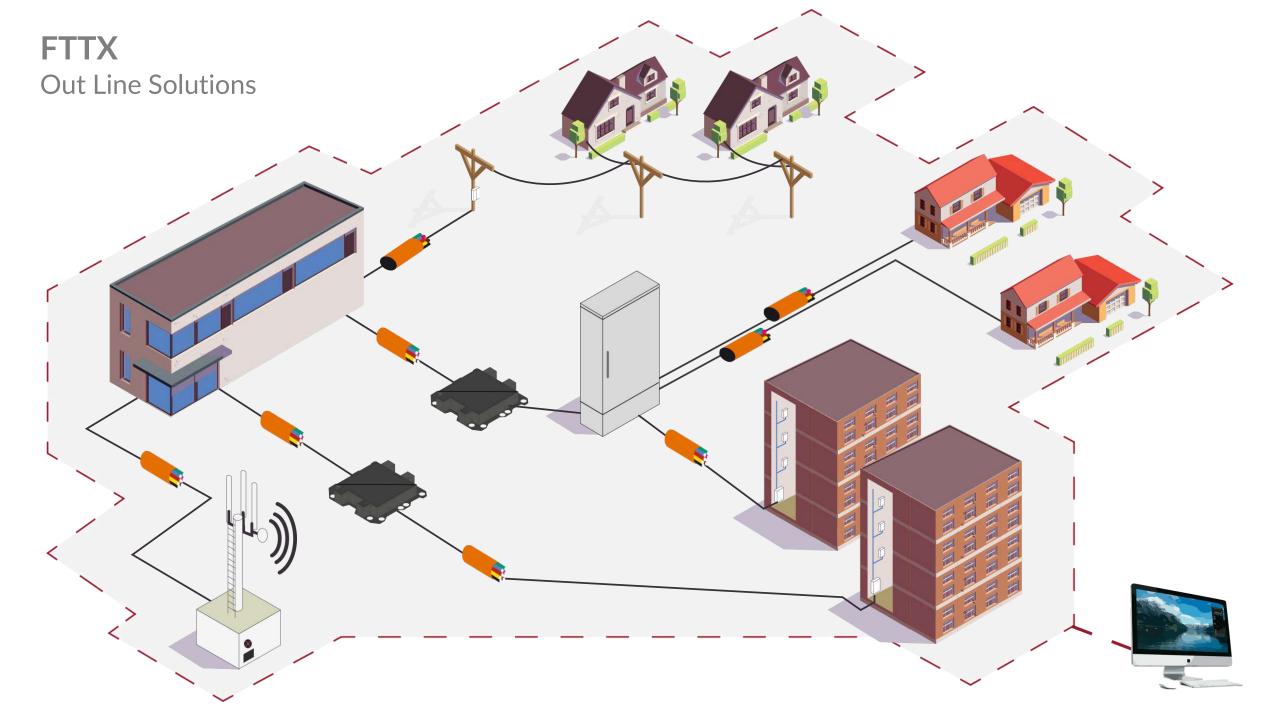




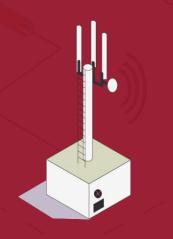
# **Catalogue for**

**FTTX** Solutions

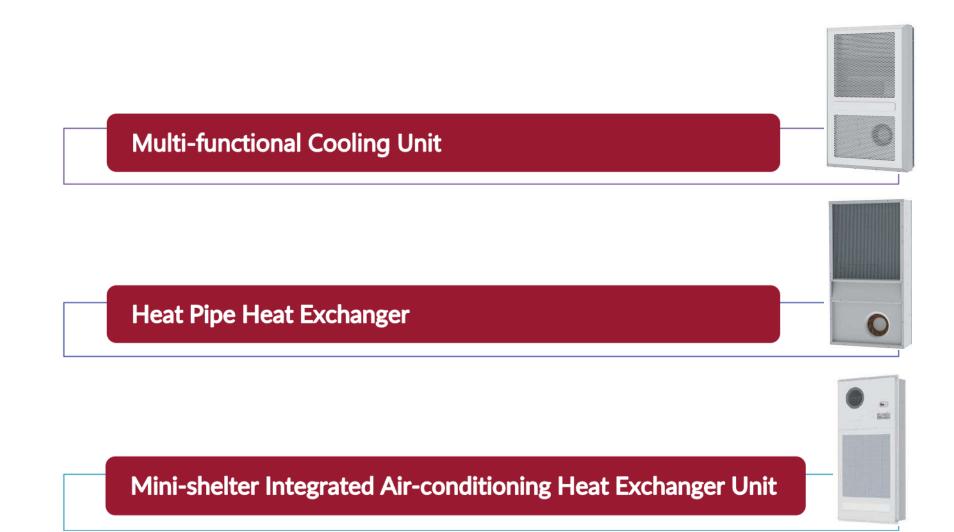




# **FTTX** Out Line Solution













Compared to the ones of traditional outdoor mobile base station without a temperature management device, the new battery of outdoor base station with a cooling unit has a service life prolonged 3 to 4 times. The new-type compression multi-functional cooling unit, which applies DC power supply, is able to ensure that the temperature of battery cabinet will not exceed 25°C when the environmental temperature is as high as 55°C, and its energy consumption only takes 1/4 of that of the traditional TEC cooling unit. By advantage of the adoption of 48V DC direct-driving compressor, the cooling unit doesn't need to bear any additional failure risk and energy consumption caused by inverter, and continues working by using the electric energy from accumulator after the interruption of mains supply. Owing to the excellent energy efficiency ratio (EER), the working cooling unit only consumes a little of back-up power.

For the regions where the mains supply is in a better and stable condition, we also provide a type of multi-functional cooling unit which applies the bi-model (AC & DC) power supply technologies. The compressor is AC-powered. When the mains supply is interrupted, the DC-powered fan and electric air damper will operate in time for indoor/ outdoor air exchange, so as to prevent the battery cabinet from excessive high temperature as a result of the interruption of mains supply. The electric air damper also has the function of exhausting hydrogen and acid gases produced by the working battery from the cabinet in daily use.

By installing the multi-functional cooling units, the outdoor station can have the longer life, and avoid reakdown due to the batter's malfunction.

The multi-functional cooling unit not only can be used for the cooling of battery chamber, but also applies to the heat management of small outdoor cabinet due to its compact and light structure.

Because of the structural problem of heat exchange core, the power-heat ratio of traditional plate heat exchanger is limited to 4~6, and the attenuation value of heat exchange will become higher and higher after a period of operation. After applying the new type double siphon heat pipe heat exchanger, which lowers the coolant flow resistance through two groups of siphon heat pipes, the power-heat ratio is 10 and higher. Meanwhile, in virtue of the parallel-flow heat exchange technology, the air resistance is 2/3 lower than traditional plate.

Accordingly, it can not only save almost half energy consumption and extend the interval of maintenance twice and more during the long-term operation. Each set of heat exchanger provides such options as standard model, low noise model and energy-saving model. In the noise-sensitive regions, the low noise model shall be selected to make the sound pressure level of noise below 55dB.











An ideal mini-shelter heat management equipment shall have low energy consumption as the heat exchanger but with the same cooling capability as the cabinet air-conditioning. Furthermore, when the cooling system malfunctions, the heat exchanger can operate automatically, so as to prevent the entire system of outdoor base station from going i<sup>o</sup>out of service due to loss of temperature control. The innovative design integrates the compression cooling system and the independent flow heat exchanger, creating the Integrated Air-conditioning Heat Exchanger a brand-new heat management device which doesn't belong to cabinet air-conditioning and is different from ordinary heat exchanger.

The outdoor base station works under changing temperatures. In general, the daily maximum temperature is in the time period from 10:00AM to 3:00PM. During such period, the compression cooling unit is used for cooling supply, while the heat exchanger is used to control the temperature during the rest periods. Therefore, under the same condition, the energy consumption of integrated air-conditioning heat exchanger is 70% lower than that of traditional cabinet air-conditioning.

With an independent cooling and heat exchange system installed inside, the mini-shelter possesses two redundant sets of equipments even if merely one set is installed.



# **FTTX** Out Line Solution





Underground distribution systems with water proofed cabinet

Underground distribution systems for socket combinations

Underground distribution systems for customer specific installations

Underground distribution systems for supply media

Underground distribution systems for fiber optic

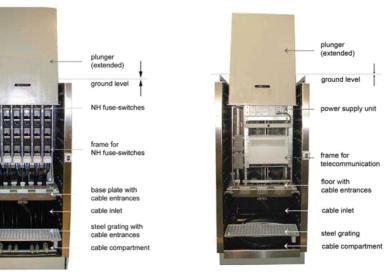


# **UNDERGROUND DISTRIBUTION SYSTEMS** WITH WATER PROOFED CABINET





System with swivelling water proofed cabinet to assemble components for power distribution, controls for streetlight management or telecommunication



System accessible with vertically installed frame to assemble units for telecommunication, control and power distribution Approved by the employer's liability insurance association.

BACk



System with vertically removable distributor and cast iron cover with customer-specific equipment





Variation of manhole sizes and covers, System with swivelling cover and assembled socket combination







System with vertically removable distributor and cast iron cover with customer-specific equipment

System with integrated cable outlet in the cast iron cover

With HRC00 3 pole isolator assembled in a water proofed IP 68 enclosure











# **UNDERGROUND DISTRIBUTION SYSTEMS** FOR SUPPLY MEDIA

System includes polycarbonate manhole and street cabinet with base. Application for a temporary distribution unit at market-places







System with integrated supply media such as water meter



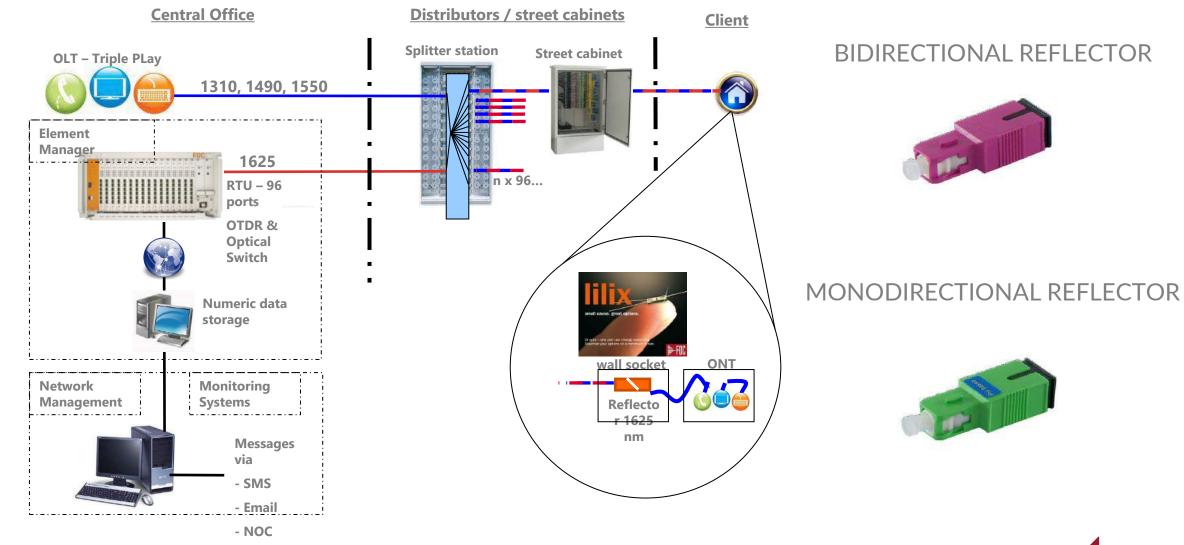






Shaft equipped with two socket mounts, adaptation of various fiber optical closures, sleeve mounted on a telescopic arm and more length recording of microducts.

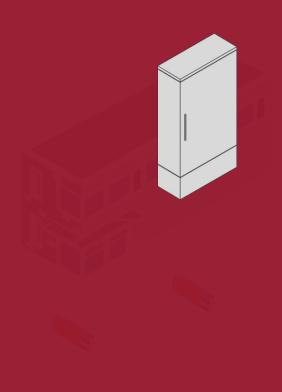
# **INTERFACES:** FTTX MONITORING

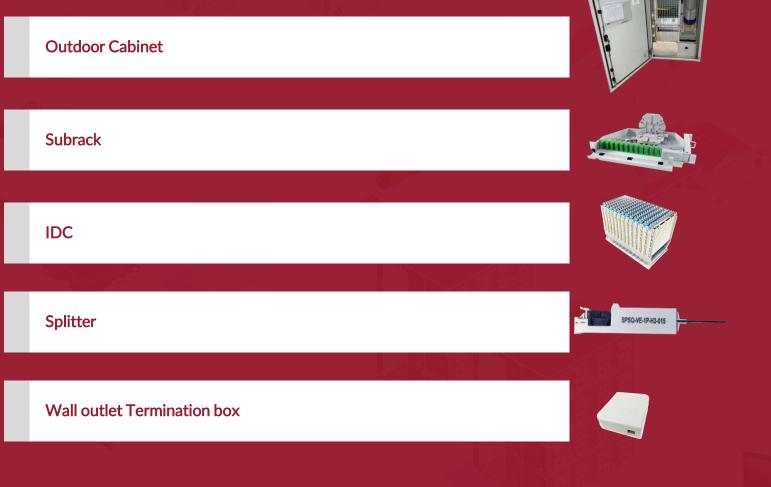


Monitoring

**Systems** 

# **FTTC/FTTH** Out Line Solutions







# **OUTDOOR CABINET**







PFS4















































# **SUBRACK**





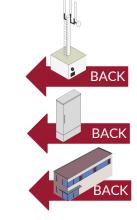
Standard sliding 19"subrack





Standard pivot 19/21 subrack







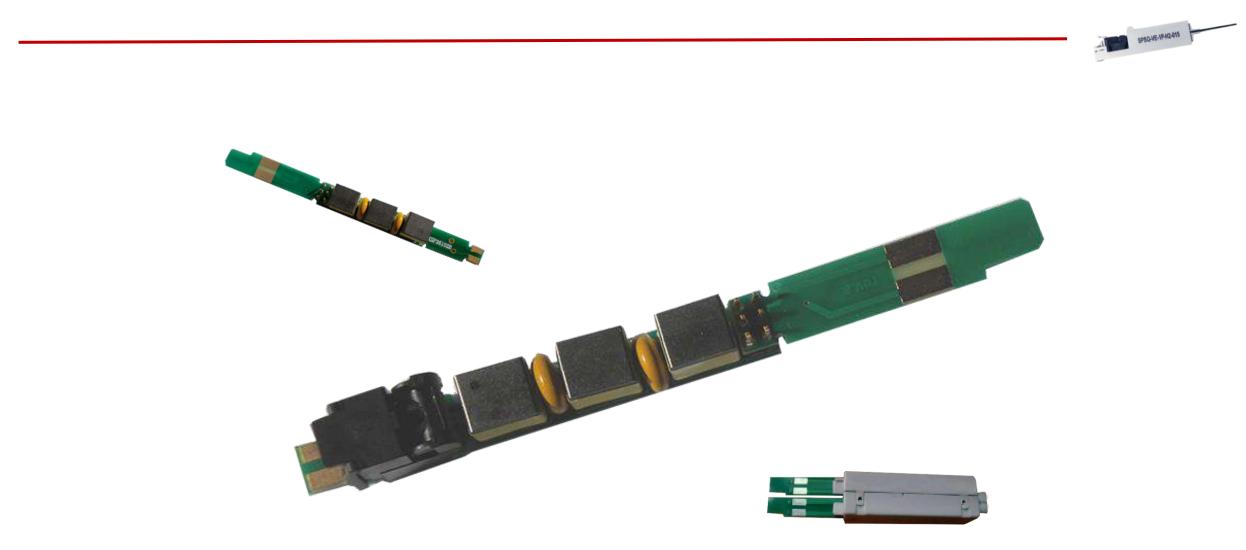


3 fixing points pivot 19 patching subrack









# WALL OUTLET





1 F.O.

2 F.O.



HYBRID

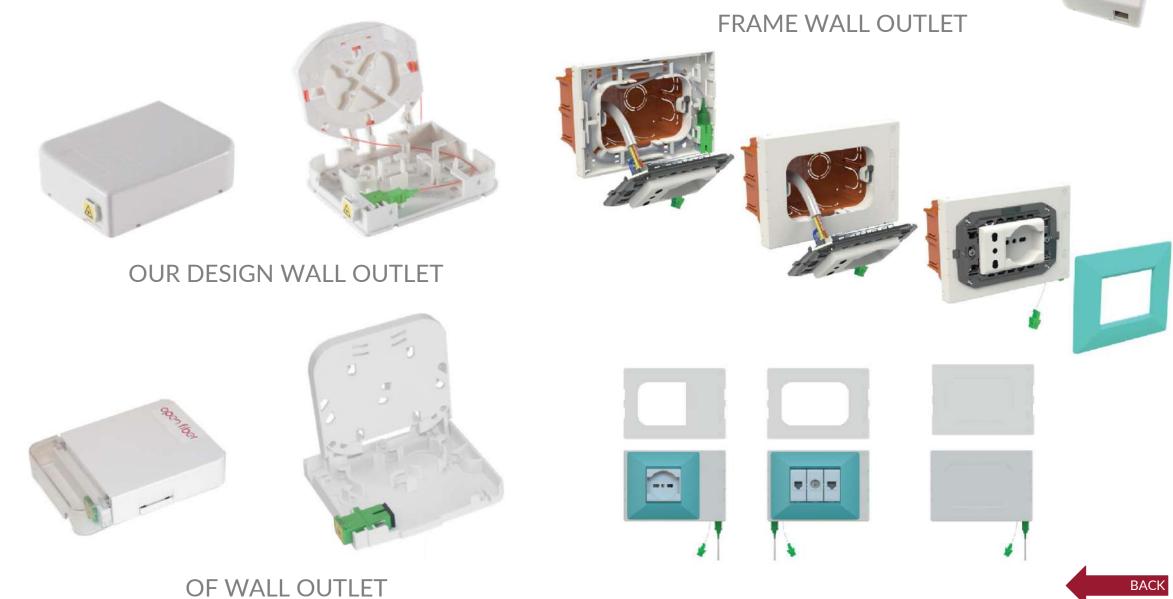


COPPER





# WALL OUTLET 1 CUSTOMER



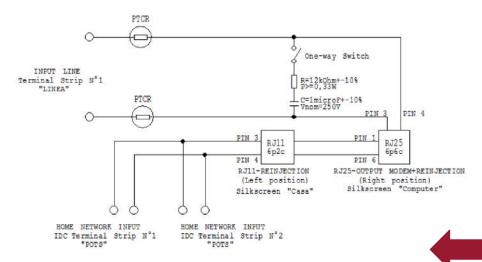


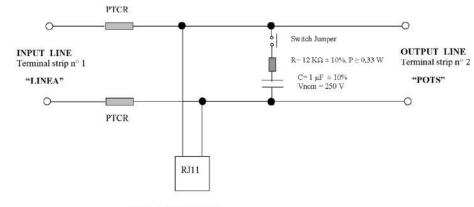
#### BASE POTS WALL OUTLET











RJ11 - OUTPUT Telephone

BACK



### STANDARD HYBRID WALL OUTLET

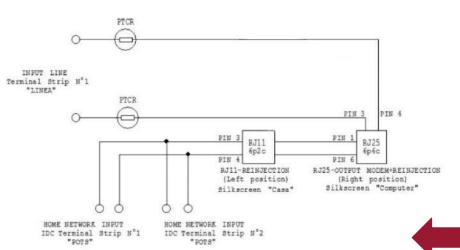
#### TIM HYBRID WALL OUTLET



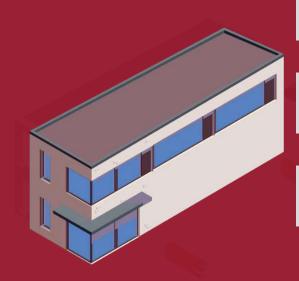








# **DATAOFFICE/DATACENTER** Out Line Solutions



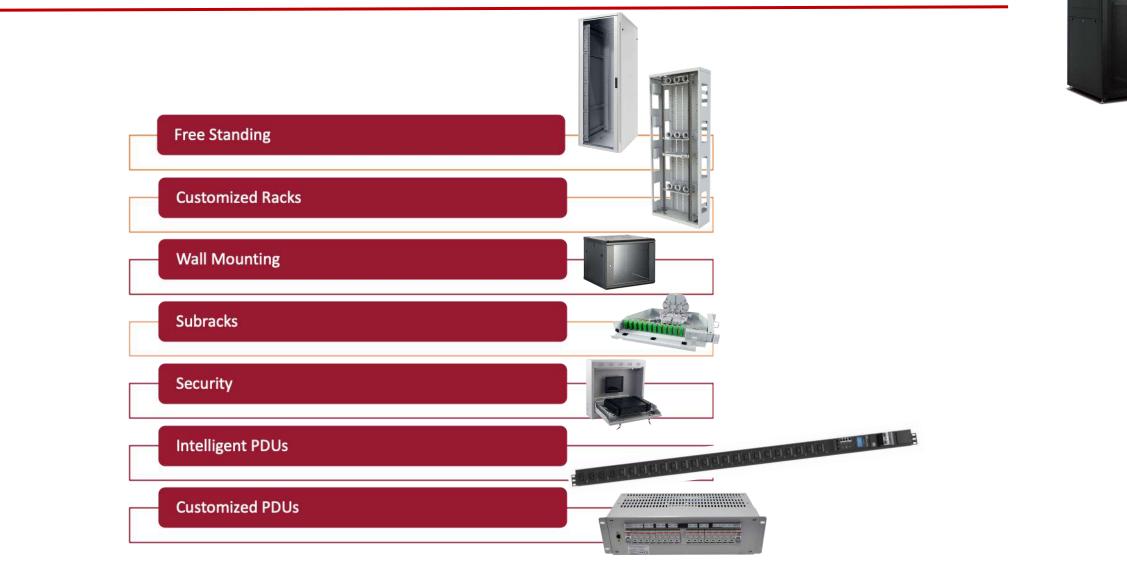
Rack and accessories

POP and Shelter infrastructures

Fiber Optical Cable Duct



# DATA OFFICE/DATACENTER SOLUTIONS RACK AND ACCESSORIES



# RACK AND ACCESSORIES IT NETWORK AND DATACENTRE INFRASTRUCTURE







# **DATA OFFICE/DATACENTER SOLUTIONS** POP AND SHELTER SOLUTION



### OF DUCTS SOLUTION

### **BIZ DUCTS SOLUTION**



## DATA OFFICE/DATACENTER SOLUTIONS TIM POP SOLUTION

































#### **RACK AND ACCESSORIES** CUSTOMIZED RACK



**VULA OF SOLUTION** 

#### ODF 3 FIXING PONTS OF SOLUTION N3 ETSI 21" SOLUTION







The shelters intended to house telecommunications equipment are equipped with active conditioning as this solution is more efficient when the heat to be dissipated is high and when there is electricity from the network.

### **FWA OUTDOOR/INDOOR** CABINET FOR FWA NETWORK







The FWA cabinet is a cabinet designed and built for use outdoors and in any case in situations not protected from bad weather.

It is used to house telecommunication equipment in areas open to the public or private, along roads and sidewalks, on building terraces or near pylons. Typically each cabinet is equipped with an input protection panel, a -48Vdc energy station with relative management module and back-up batteries to ensure continuity of power supply even in the absence of 230Vac mains voltage and a integrated distribution panel.





4RU 48Vcc 4+4ui



3RU 48Vcc 8+8ui



**3RU 230VAC FOR AUTOMATIC TRANSFER SWITCH** 





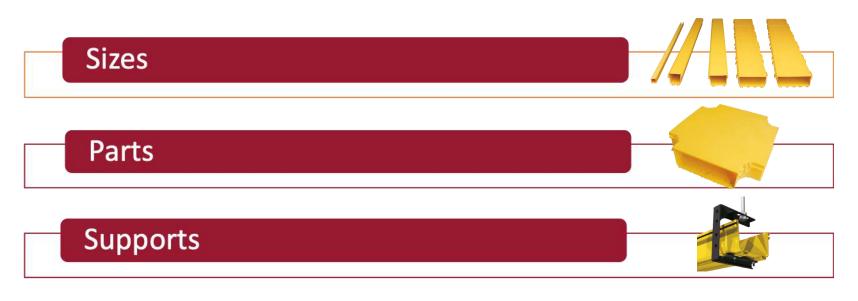
MANAGED SWITH on SWITCH off IP PDU Per Socket Base:



Power Generatrix Distribution System MONITORING AND MANAGEMENT FUNCTIONS:

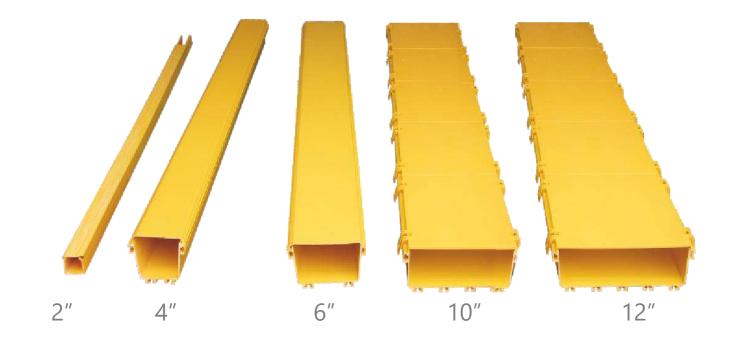


Optical cable duct is a system designed to protect and route fiber optic patch cords, cable assemblies to and from fiber guide closures, ODF and other terminal devices. Optical cable duct offers ideal solution for optical raceway requirements and application with pleasing appearance and easy maintenance.





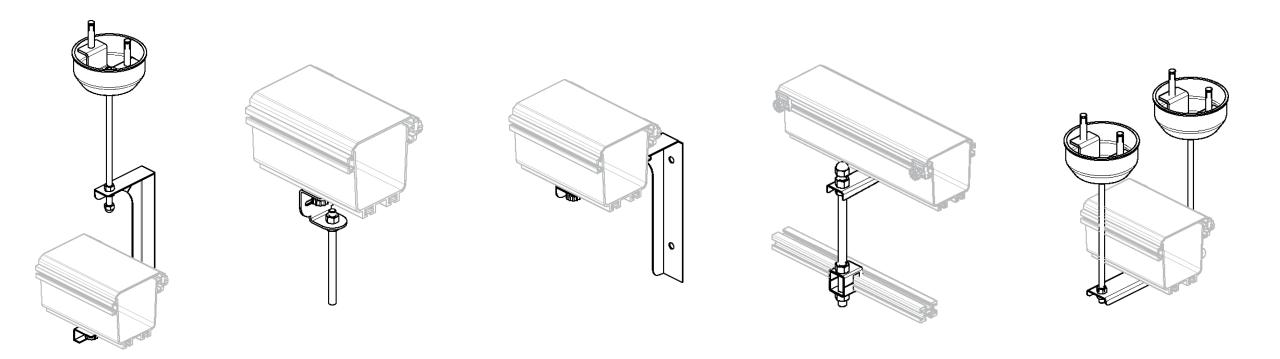




## FIBER OPTICAL CABLE DUCT PARTS









### FIBER OPTICAL CABLE DUCT INSTALLATIONS







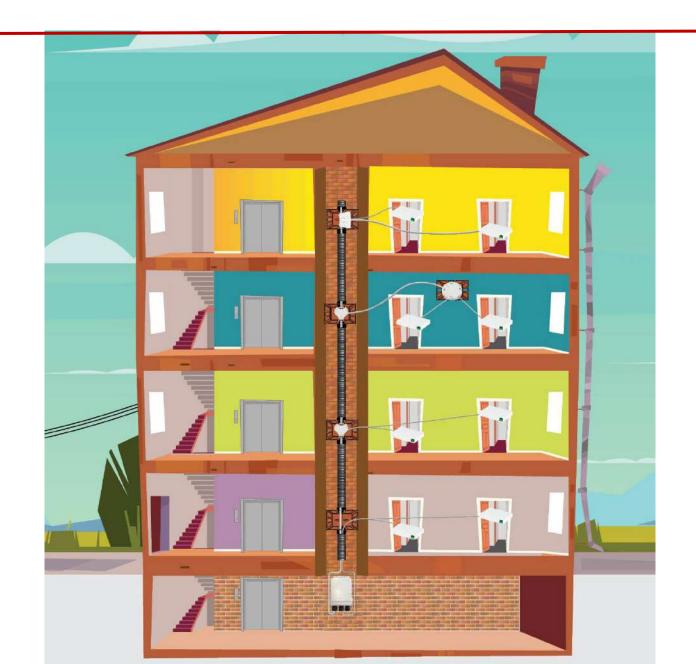




# **FTTH** Building Out Line Solutions

	Framework	
<u> </u>		
	Building distribution box	
	Floor distribution box	
	Customer wall outlet	

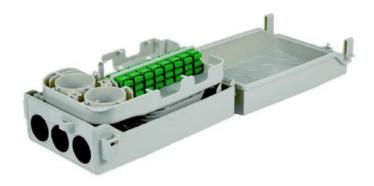
#### FRAMEWORK (FTTH)





24UI OF version





24UI TIM version

48UI TIM version













## FLOOR DISTRIBUTION BOX FDB



#### EXTERNAL FLOOR BOX





CUSTOMIZED EXTERNAL FLOOR BOX

#### PRIMARY FLOOR DISTRIBUTION BOX



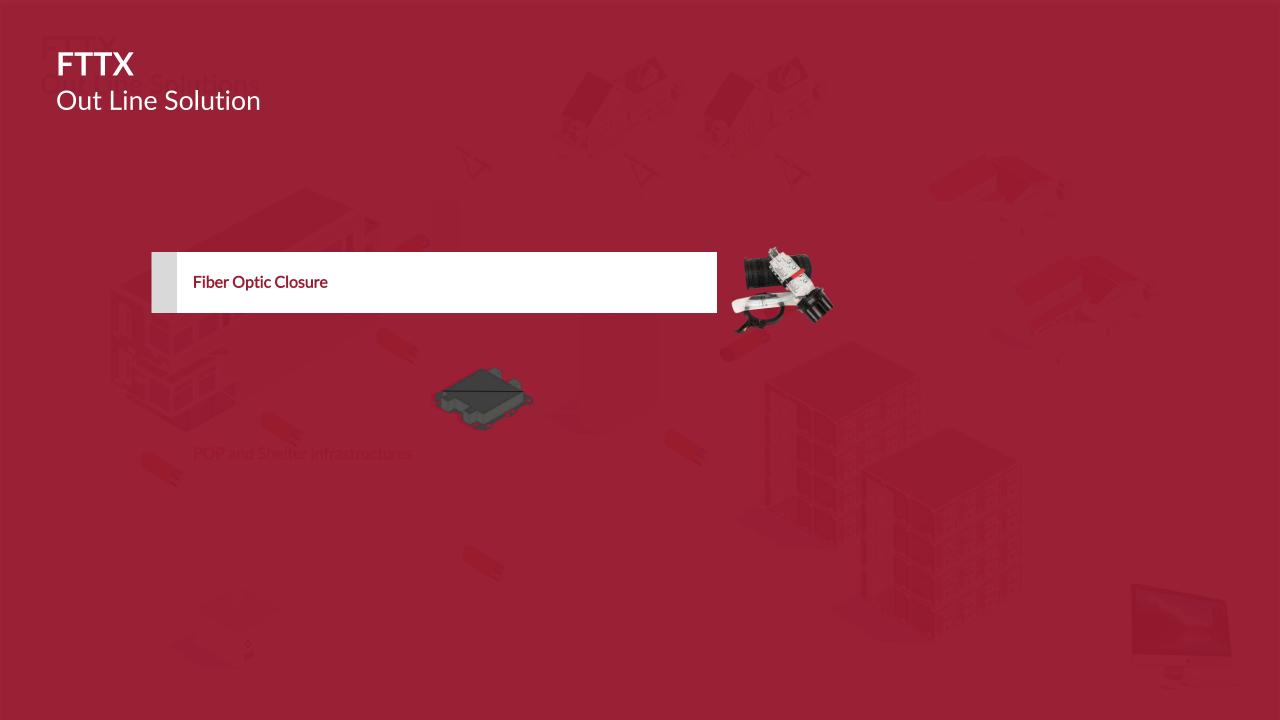
#### INTERNAL SPLICING BOX





#### SECONDARY FLOOR DISTRIBUTION BOX





# FIBER OPTIC CLOSURE

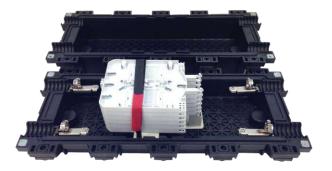




SINGLE ELEMENT (FOSC TYPE)



SINGLE CIRCUIT (FIST TYPE)



INLINE CLOSURE

## **FIBER OPTIC CLOSURE** SINGLE ELEMENT (FOSC TYPE)



SPLICE TRAYS AVAILABLE





#### MINI CLOSURE







BASES AVAILABLE

## **FIBER OPTIC CLOSURE** SINGLE CIRCUIT (FIST TYPE)







#### SQUARE CLOSURE CUSTOMIZED CLOSURE



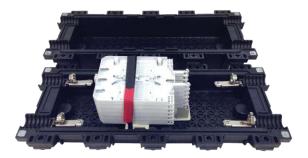






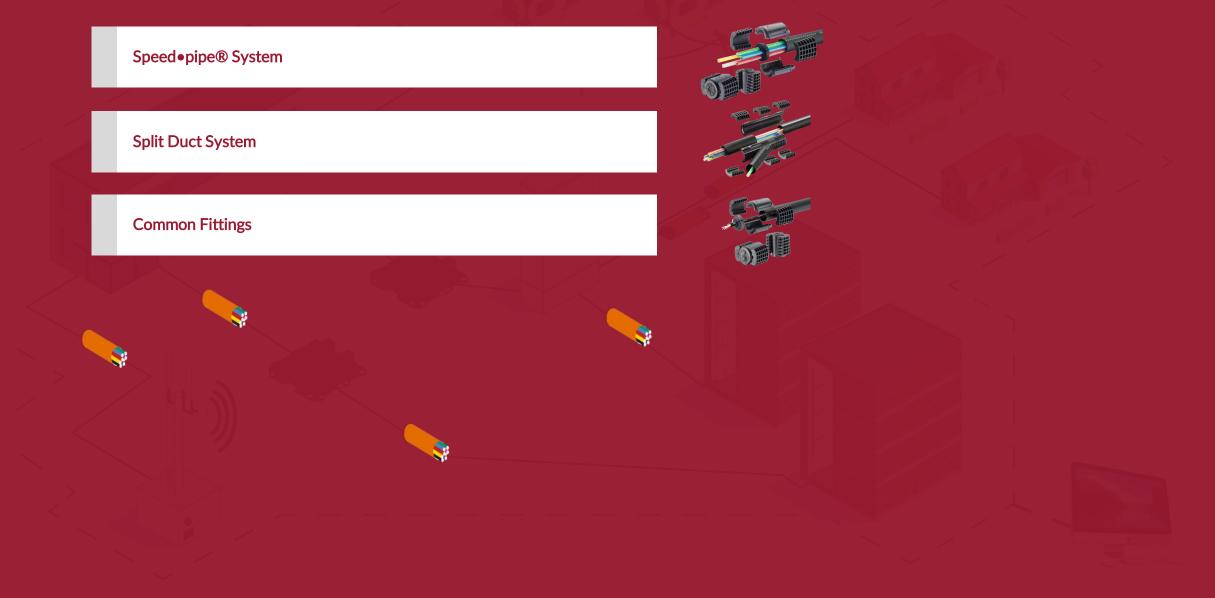








# **FTTX** Underground Out Line Solutions



# SPEED•PIPE® SYSTEM



Speed•pipe®

Pipe-in-pipe



Ground



#### Speed•pipe® fittings

Sealing and fixing elements



Connecting elements



**Branch Supports** 



**Protection elements** 



Tools



Speed • pipe ® bundles ground

Sealing and fixing elements



**Connecting elements** 



**Branch Supports** 



House lead-ins

Application in the cellar



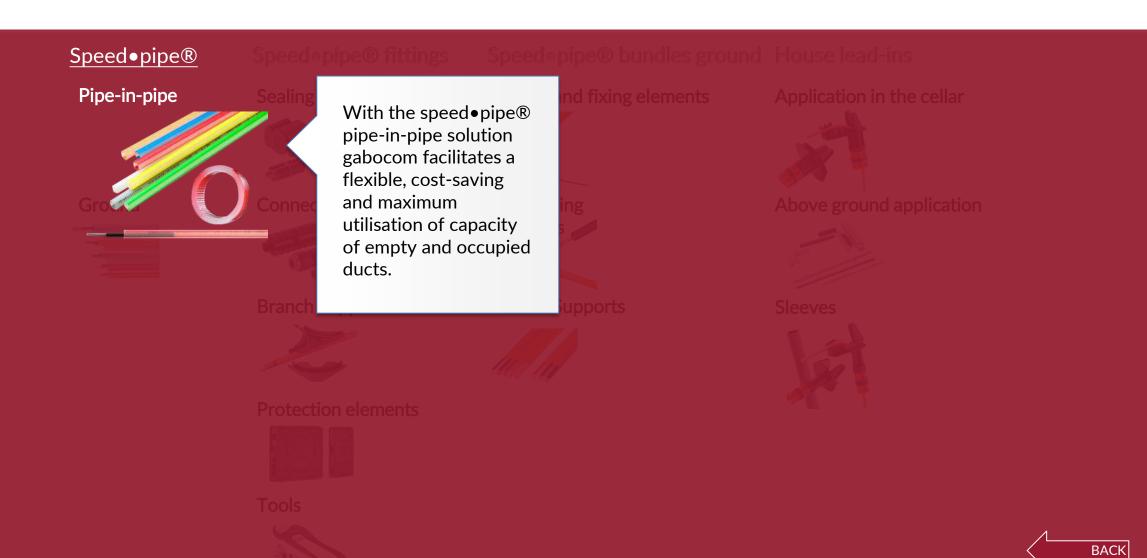
Above ground application



Sleeves









#### <u>Speed•pipe®</u>

#### Ground



The speed • pipe ® ground are directly buried and assure highest flexibility when constructing fibre optic networks.







Pipe-in-pipe



Ground

#### Speed • pipe ® fittings

#### Sealing and fixing elements Sea



**Branch Support** 



**Protection elements** 



Tools



The divisible and easy to install sealing and fixing elements of gabocom allow the gas- and water-tight sealing of empty and occupied ducts and ensure the fixing against elongation.

#### House lead-ins



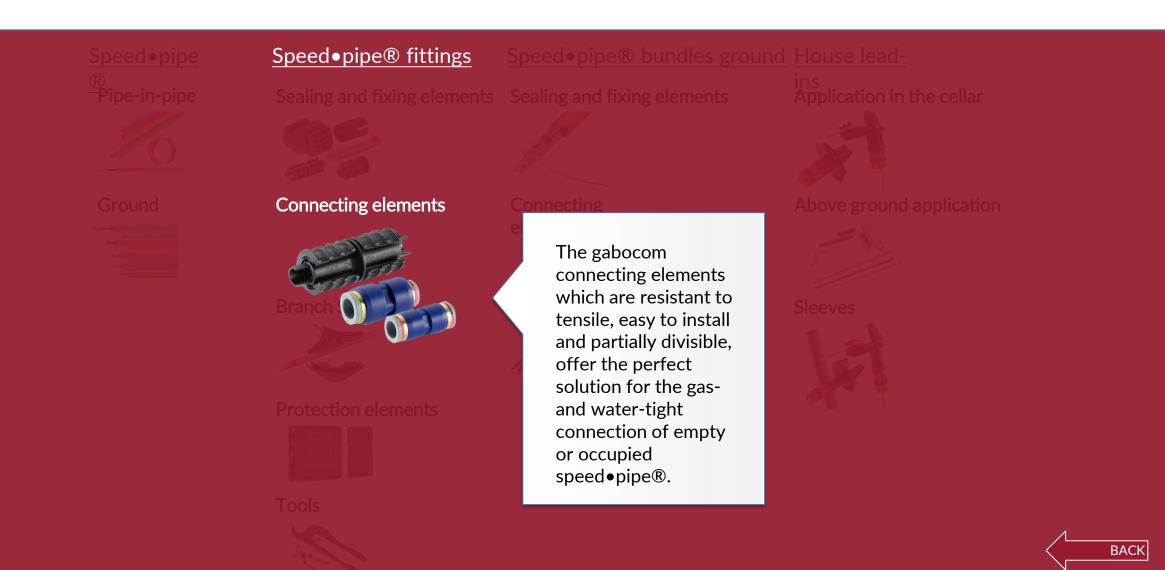


**Above ground application** 

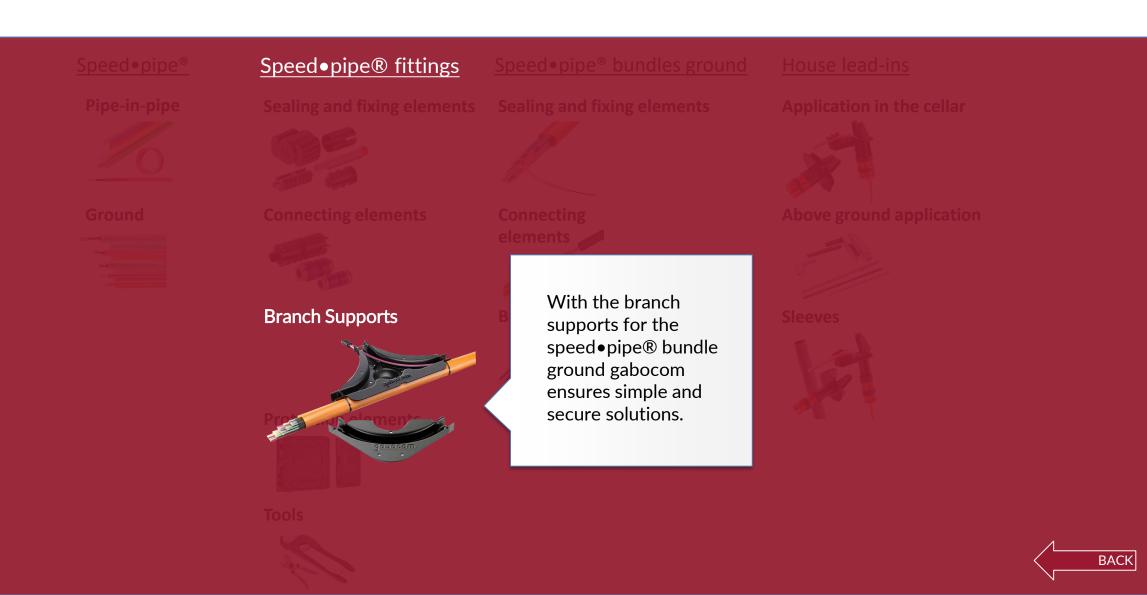
Sleeves



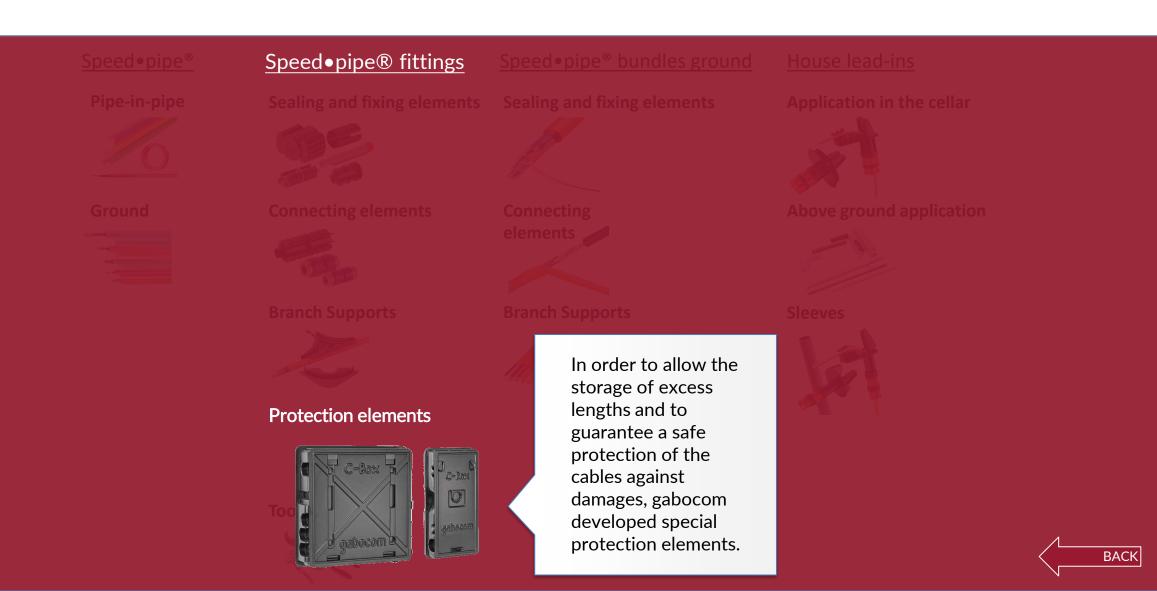




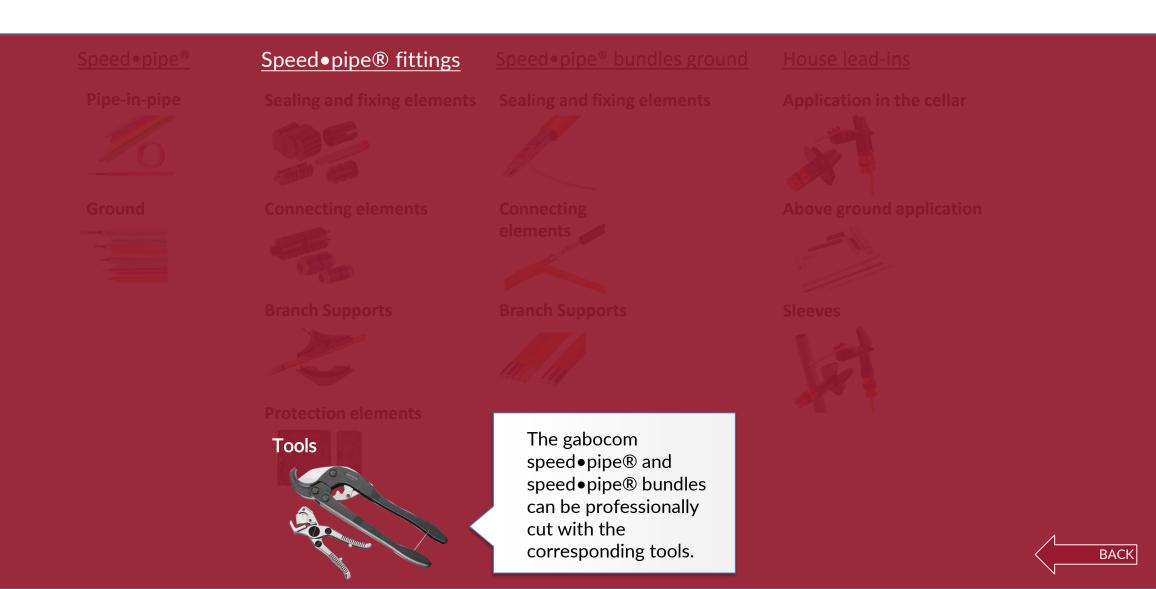




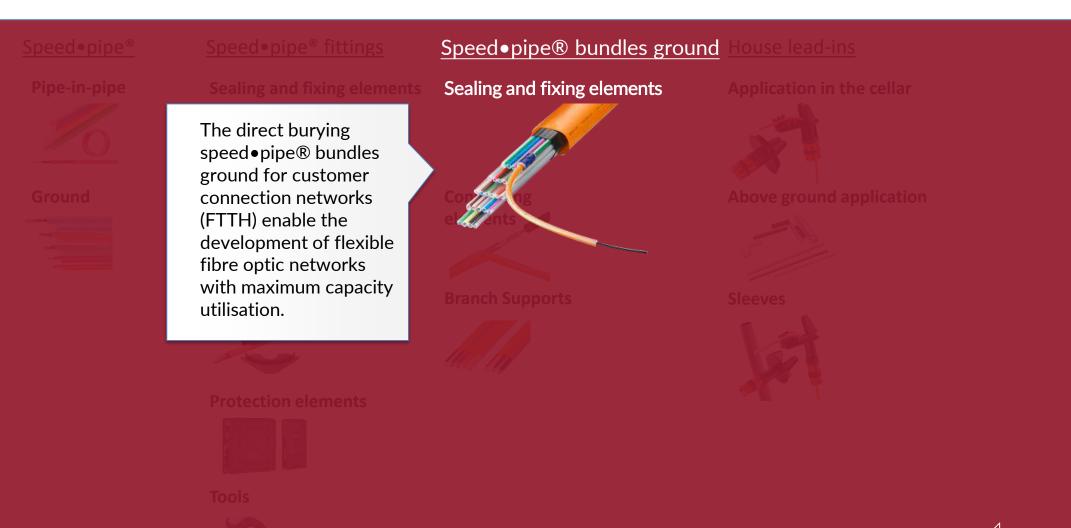




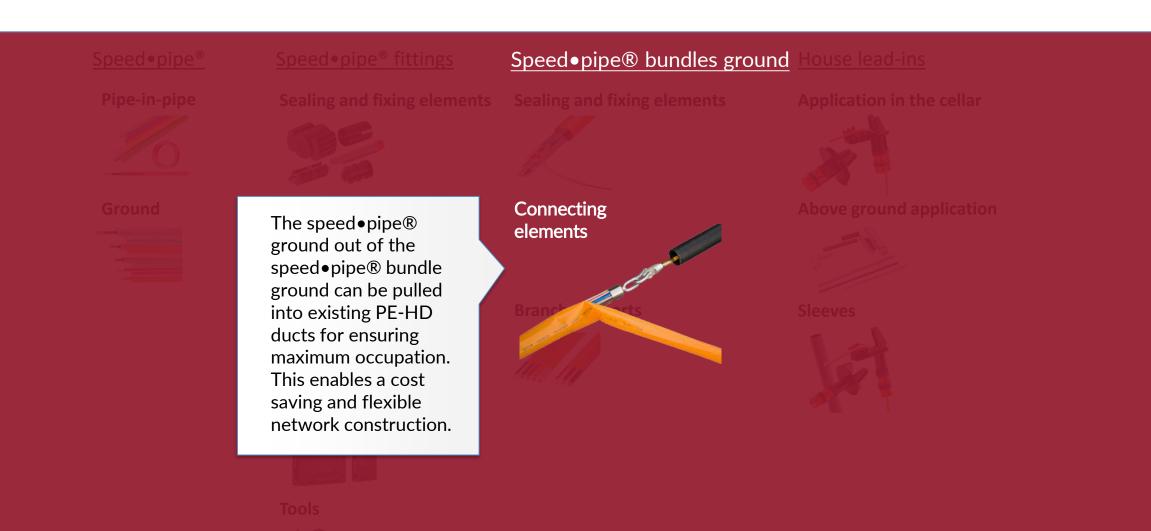






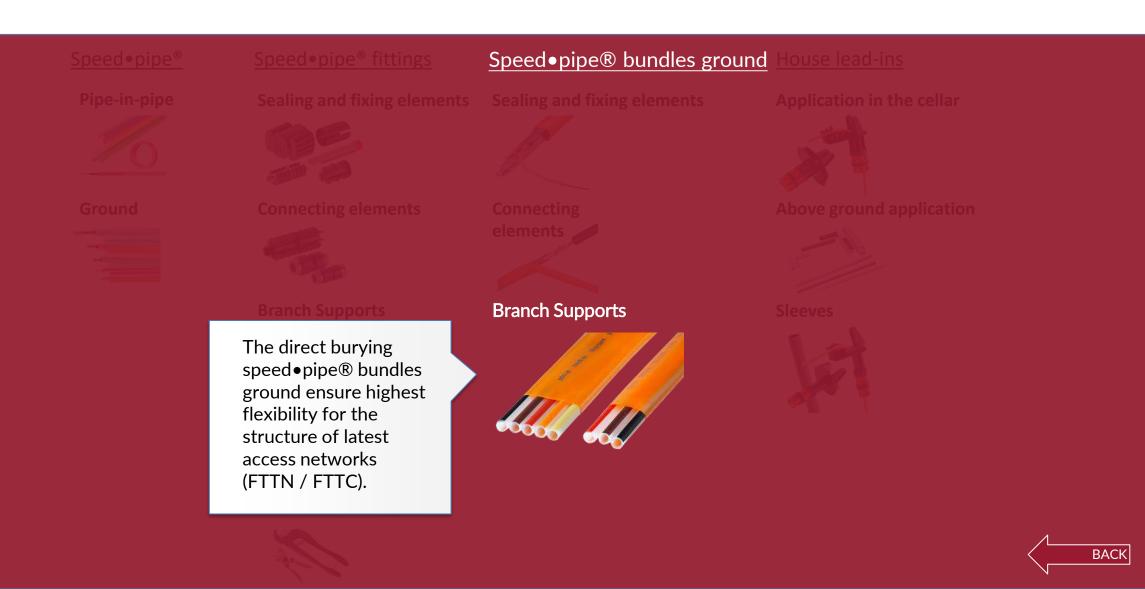




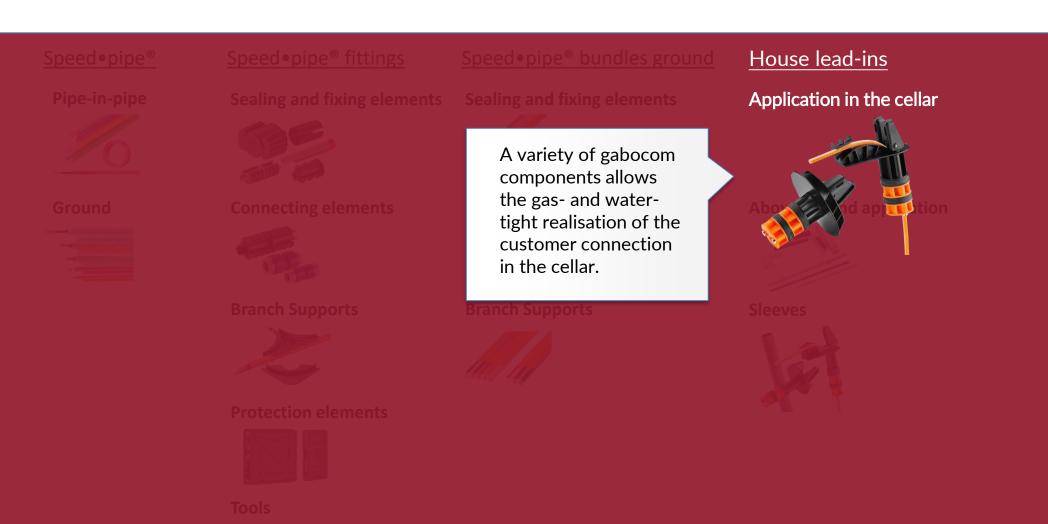






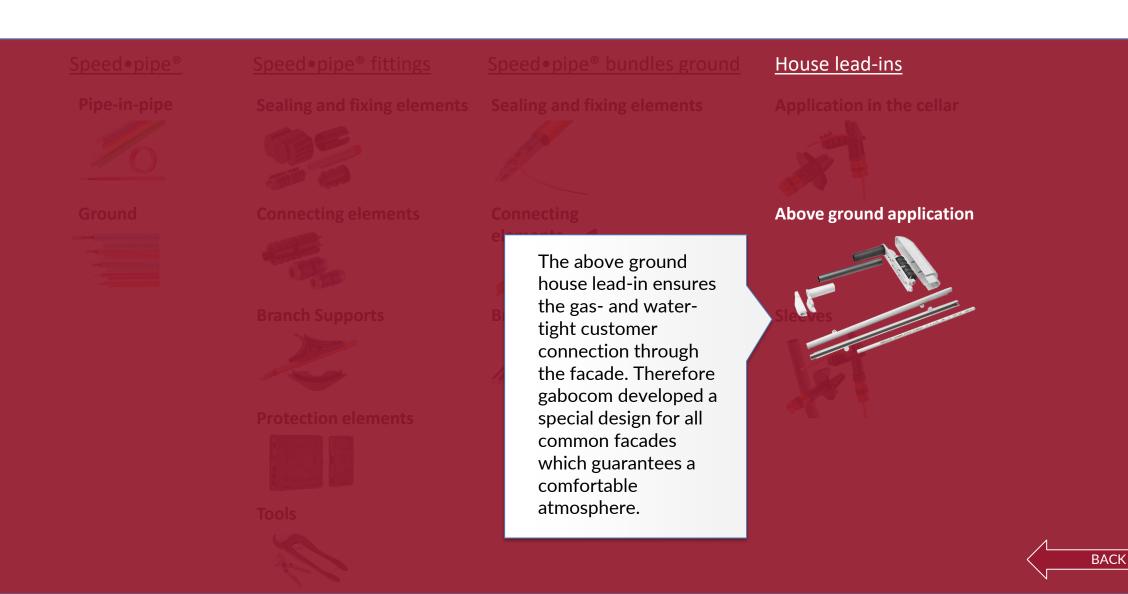




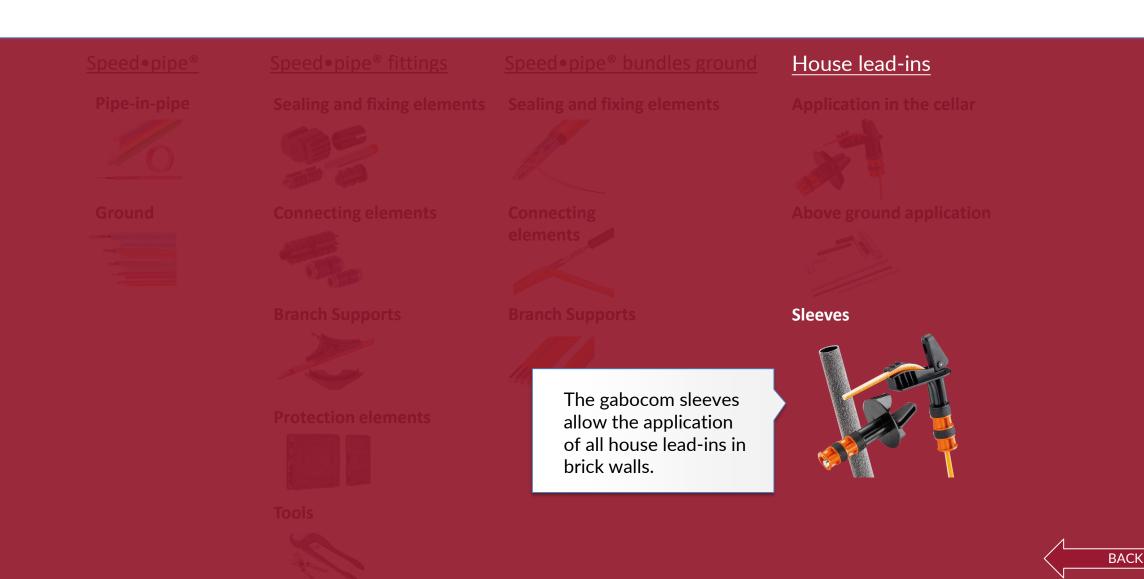


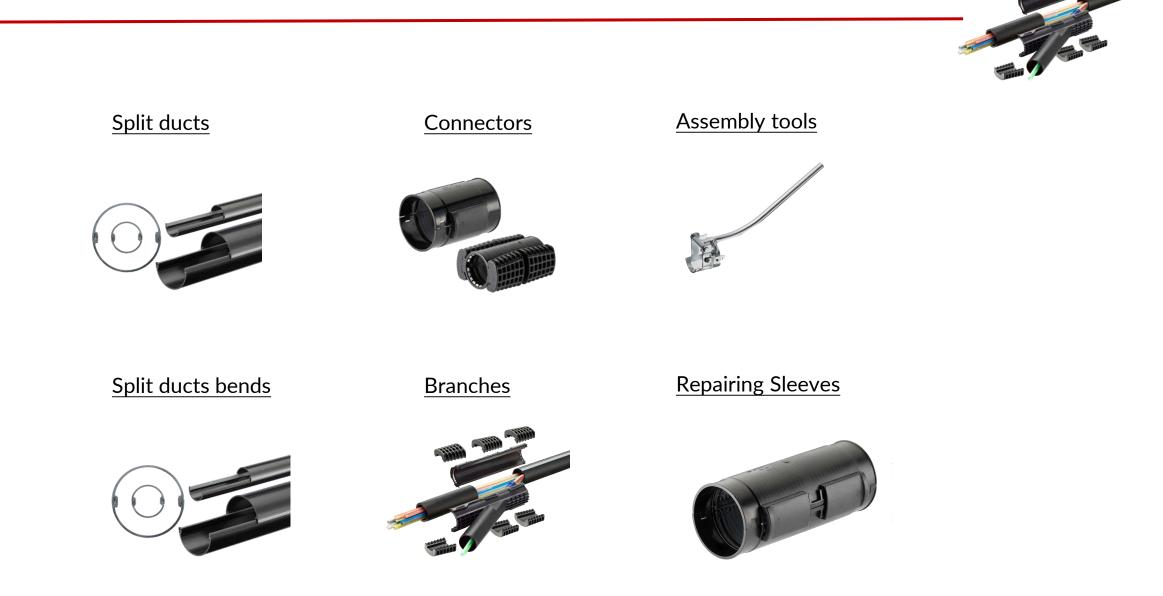
ВАСК







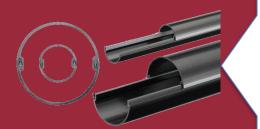




# **SPLIT DUCT SYSTEM**



#### Split ducts



#### Split ducts bends



#### <u>Connectors</u>

The split ducts KKHR were developed by gabocom for the pressure-tight repair of empty ducts or ducts occupied with cables or speed•pipe®. They are suitable for the gas- and water-tight sealing of blow-in points. They consist of two half shells manufactured out of highquality PVC-U. The easy installation facilitates the branching off from pipeline routes.

#### Assembly tools

# Renairing Sleeves









## **SPLIT DUCT SYSTEM**

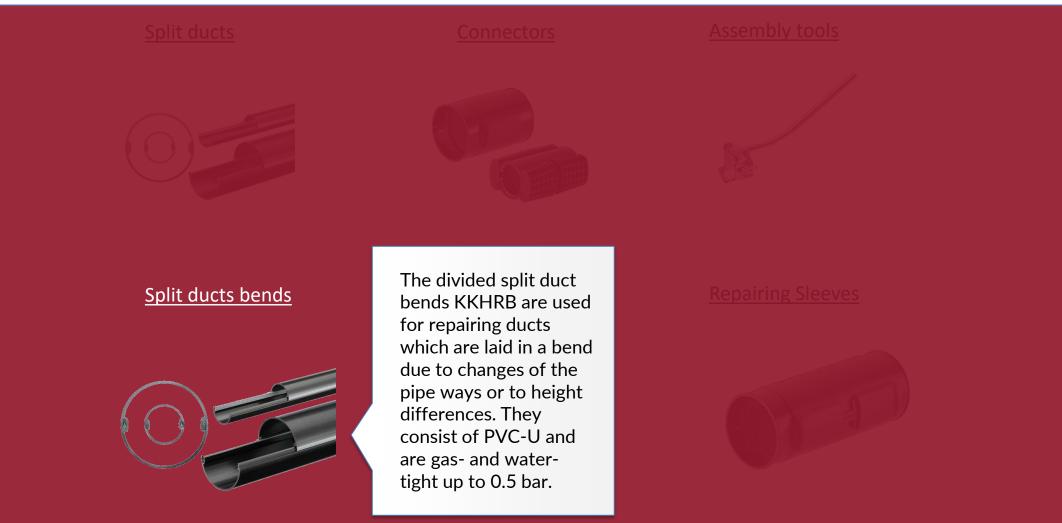


#### Assembly tools

The assembly tools KKHRG are divisible. They are used for the professional assembly of the gabocom split ducts.

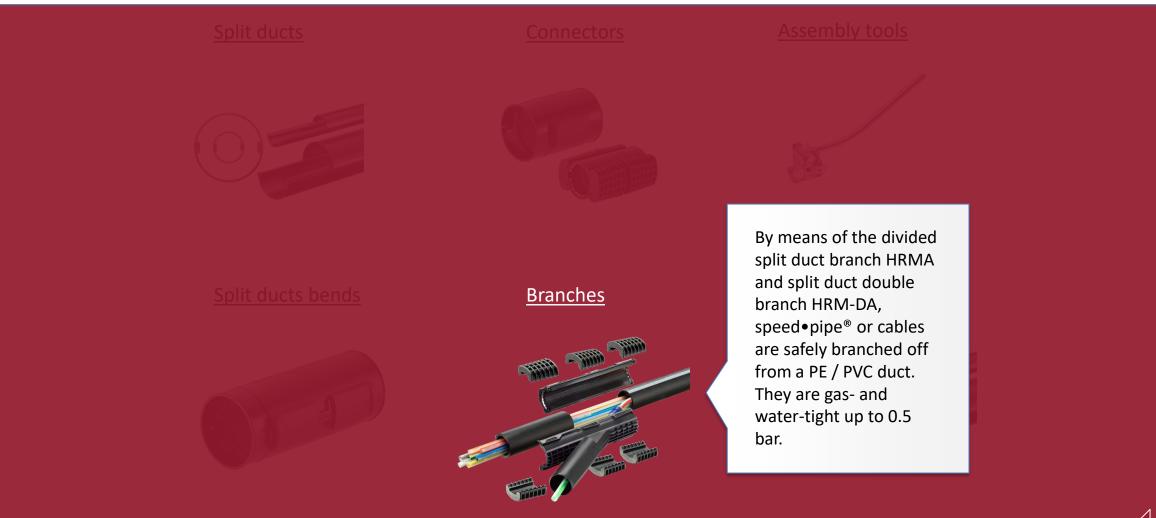




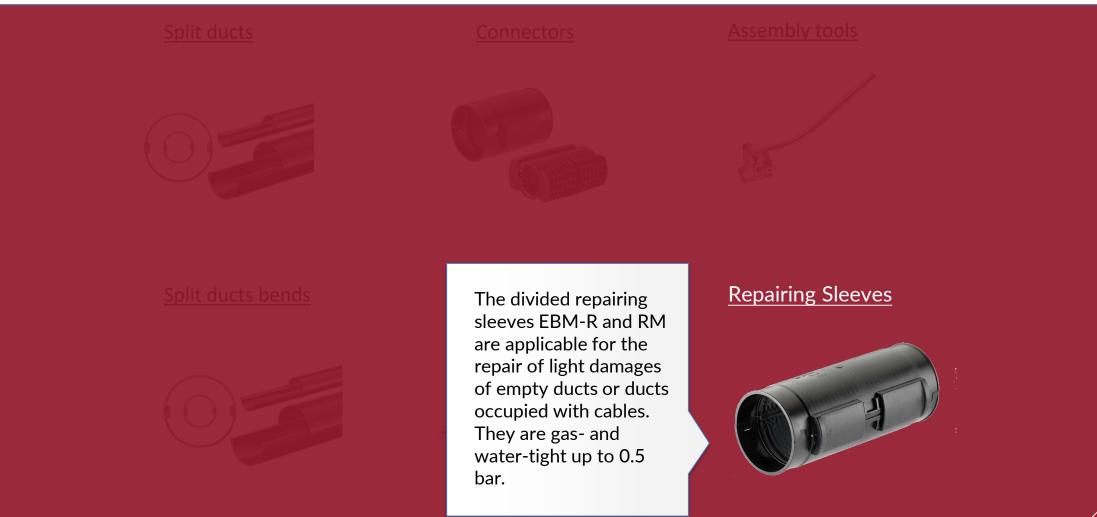


BACK











#### Sealing elements

Divisible sealing elements



Protective duct sealing



Sealing plugs



Sealing caps



Sealing and fixing discs









#### Sealing elements

#### Divisible sealing elements



#### Sealing caps



#### The divisible sealing elements ensure the gas- and water-tight sealing of empty ducts or ducts occupied with cables.

#### Sealing and fixing discs



#### ealing plugs







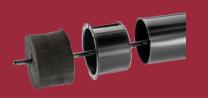


#### Sealing elements

#### **Divisible sealing elements**



#### Protective duct sealing



Sealing plugs

The protective duct sealings allow the sealing against sand of empty ducts or ducts occupied with cables.

#### **Sealing caps**



#### Sealing and fixing discs









#### Sealing elements

	Sealing plugs		
The sealing plugs ensure the gas- and water-tight sealing of insertion ends and sockets up to 0.5 bar.			



#### Sealing elements

Divisible sealing elements



**Protective duct sealing** 



Sealing plugs



Sealing caps



#### **Sealing and fixing discs**

The protective duct sealings allow the sealing against sand of empty ducts or ducts occupied with cables.







#### Sealing elements

#### **Divisible sealing elements**



Sealing caps



With the divisible sealing and fixing discs gabocom offers an optimised solution for the gas- and water-tight sealing of the cavity between the cable duct and the multi pipe.

#### Sealing and fixing discs



#### Sealing plugs









#### Sealing elements

#### Divisible sealing elements



#### **Protective duct sealing**



#### Sealing plugs



#### Sealing cap



#### **Sealing and fixing discs**

The cable end caps ensure the gas- and water-tight sealing of cable ends.







**Connecting elements** 

Transition fitting



Duoble clamp fittings



**Duct adaptors** 



Connector

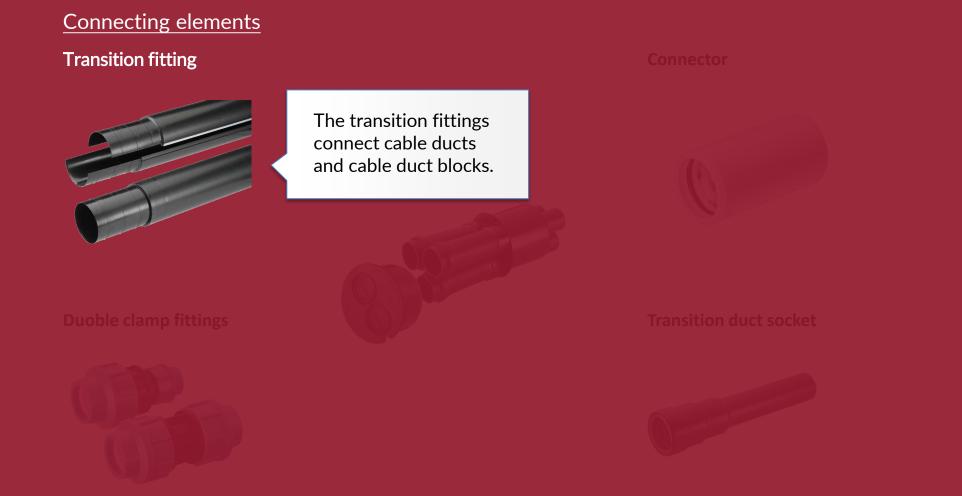


Transition duct socket









BACK









#### Connecting elements

The transition duct socket allows the connection of PE-HD culvert pipes to cable ducts.

#### Transition duct socket







BACK





#### Connecting elements

**Transition fitting** 



Duoble clamp fittings



The double clamp fittings connect PE-HD ducts.

#### Connector

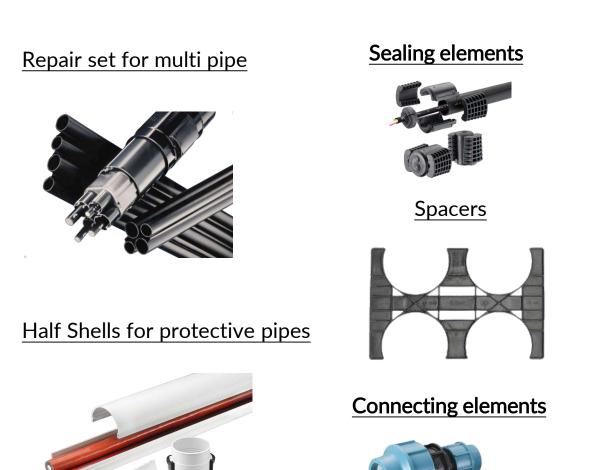


#### **Transition duct socket**

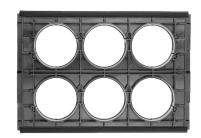








#### Ducting terminal panels



Jointed Duct bends





#### Half Shells for protective pipes



The protective half shells HS protect communication and power cables being laid above ground. Furthermore they meet all requirements for repairing half shells for sand-tight cable protection ducts. They consist of two half shells with snap lock and are manufactured out of UVresistant PVC-U. Due to its white colour the extension caused by solar radiation is kept low. The easy handling allows a rapid installation. The half shells are reusable.





#### Repair set for multi pipe



#### Half Shells for protective pipe

The repair set for multi pipe MR-RS was developed by gabocom for repairing occupied multi pipes and for the connection in manholes. The gas- and water-tight system completes the split duct system KKHR 110. It is compatible with multi pipes of the dimension 2×32 and 2×40 and can easily be installed.

#### Ducting terminal panels

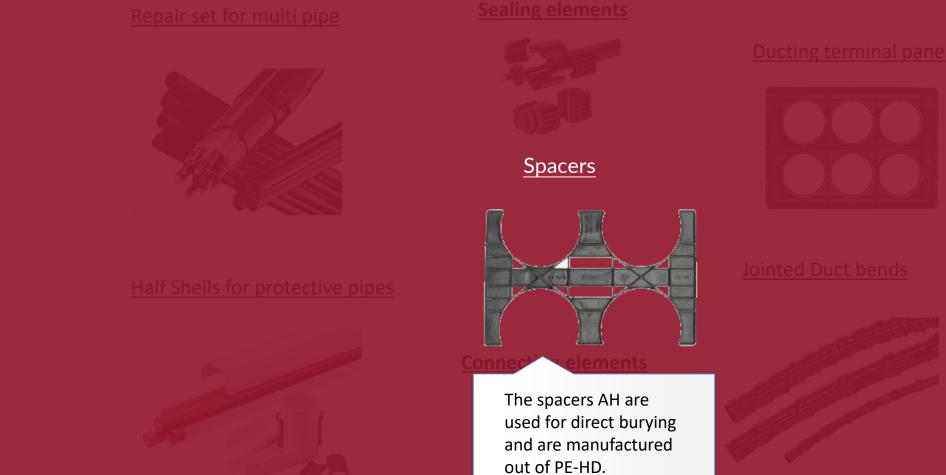


#### lointed Duct bends





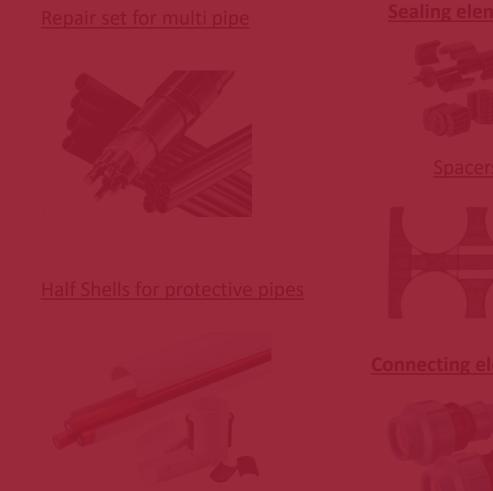






BACK

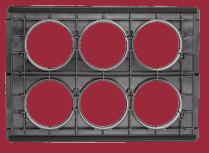








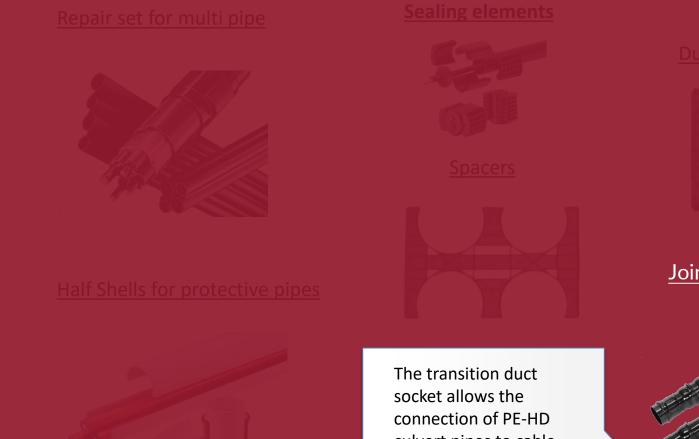
#### Ducting terminal panels



The ducting terminal panels EP were developed for the insertion of ducts with diameter 110mm into distribution boxes and small manholes. They consist of PE-HD, are self-clamping at the duct and thus especially easy to install. An afterward installation is also possible.

BACK







#### Jointed Duct bends





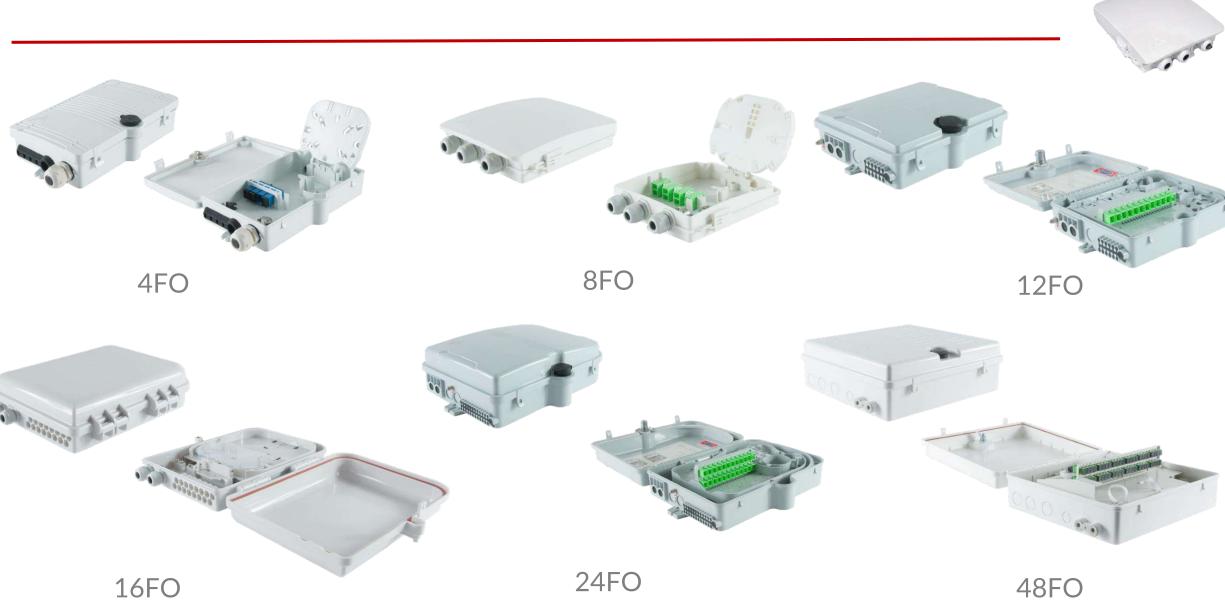
culvert pipes to cable ducts.

## **FTTH** Aerial Out Line Solution

	Aerial distribution cabinet			
C	Outdoor boxes		00	
	Suspensions			
	Wall outlet			



## **RADIAL DISTRIBUTION BOX**



## **AERIAL DISTRIBUTION CABINET**



## 600X600X25MM

## STANDARD CABLE 144FO



#### MPO CABLE 288FO



\*\*\*\*\*\*\*



## 12FO IP67 MPO/SC







8FO IP67 MPO/SC







16FO IP67 standard cable/SC











This box can accommodate up to 72FO. It's for splicing only. For this solution is developed a special splice tray, that can accommodate 12 smouvs and 1 splitter each.



