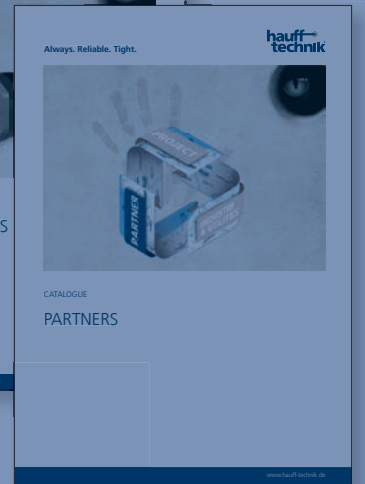
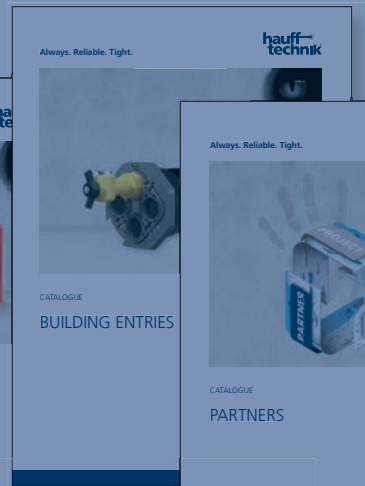
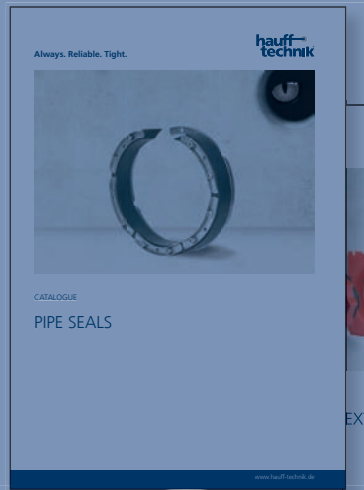




CATALOGUE

# FIBER OPTIC COMPETENCE



We combine  
the best.

THE NEW  
CATALOGUE!



# Always. Reliable. Connected.

## FIBER WORLD

### SUB DISTRIBUTORS

As a micro-tube distribution cabinet or small distributor is the sub-distributor an above-ground connection point. Scalable and modular it can be adapted to the network structures. Special seals of the tube dressings are available.

- Network distributor



### BETWEEN DISTRIBUTORS

The multifunctional cabinet is as another distributor point in the network. Modular with passive, active, power or copper components, it fits every topology. Cable glands are realised with sealings.

- Multi function cabinet
- Cable entries for between distributors



### DISTRIBUTION HUB

Above ground at the wall or at the pole, underground in the ground or in the manhole, the small distributor is the last junction point. Operational safety is provided by an interfering Hauff sealing system and ensures easy installation.

- Optical termination closure
- Customer outlet box





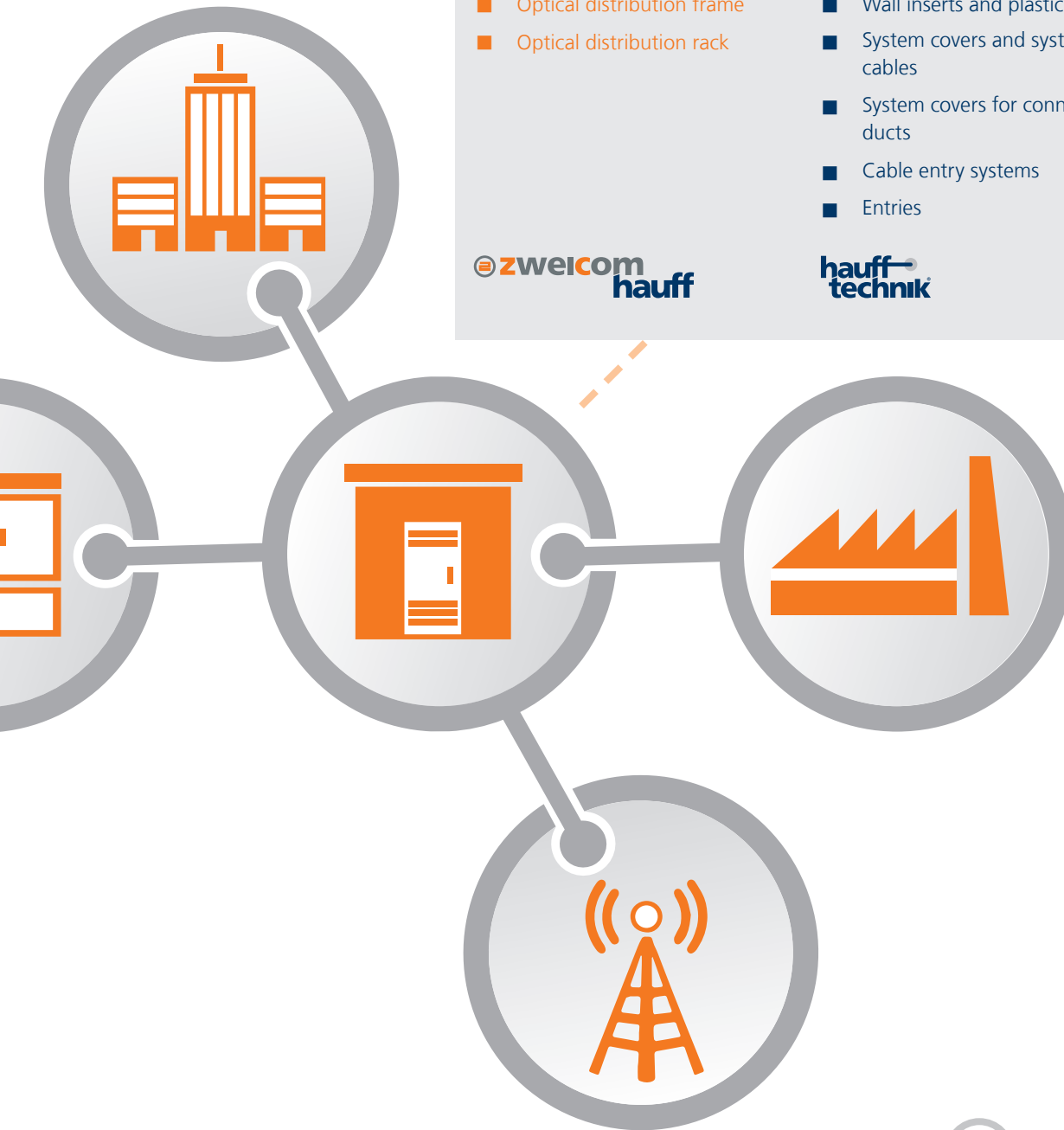
## MAIN DISTRIBUTION FRAME

Starting point of a fiber optic network is the main distribution frame or PoP. Here you find the optical distribution racks (ODF/ODR) with the connections to the customers. Accordingly, for the PoP buildings here you find seals of tube dressings and cables.

- Optical distribution frame
- Optical distribution rack
- Wall inserts and plastic flange
- System covers and system seals for cables
- System covers for connecting cable ducts
- Cable entry systems
- Entries

 **zweicom**  
**hauff**

**hauff**  
**technik**



## OPTICAL LINE TERMINATION

As the completion of the fiber optic network, the optical line termination point ensures the safe handover of the optical signals. The passage of tube technology into building is realized by an easy to use building entry system.

- Optical wall outlet
- Optical customer outlet
- Optical telecommunication outlet
- Resin injection system

 **zweicom**  
**hauff**

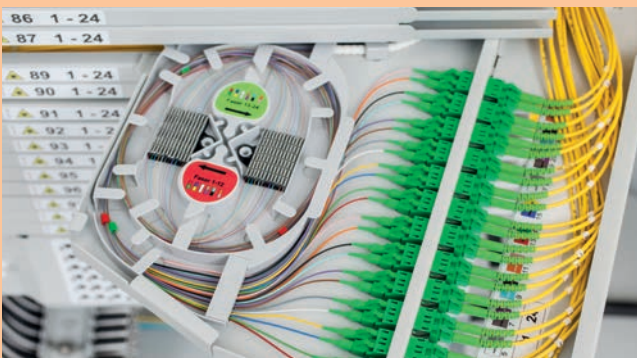
**hauff**  
**technik**



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New concept for fiber optics

## TWO STRONG PARTNERS FOR YOUR FIBER OPTIC NETWORK.

**ZweiCom was founded in 2005 and thanks to innovative, intelligent and high-quality solutions has developed into a leading specialist in Fiber to the home components.**

These components are key for a reliable and high performance fiber optic network such as: Optical Distribution Frames, Multifunctional Outdoor Cabinets, Network Distributors, Closures and Termination Boxes.

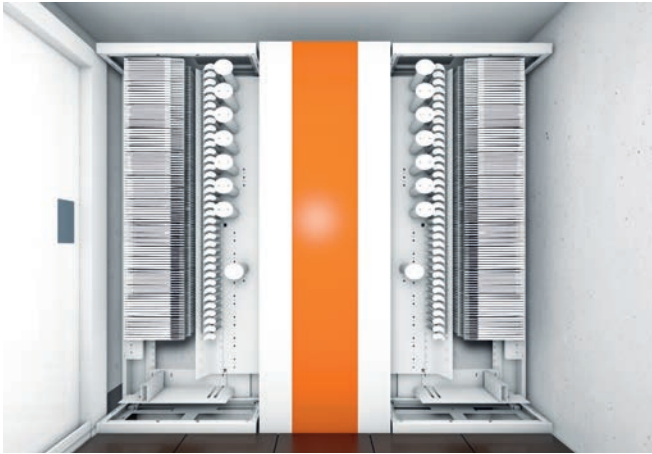
As specialist for sealing solutions, the company Hauff-Technik has developed innovating building entry systems for the future field of the fiber optic permitting for example to create FTTH house connections from the internal part of a building.

As one of Europe's leading manufacturers of sealing systems for cables, pipes and building entries, Hauff-Technik protects buildings from penetrating water, gas, fire, dirt and vermin.

Our innovative solutions guarantee absolute leak tightness, economic efficiency, user friendliness and durability in all kinds of construction work. From detached houses to various construction services through to large infrastructure projects such as airports and power stations.

Electricity, telecommunication, water, waste water, gas or district heating – whenever a perfectly safe sealing of building entries is required, Hauff-Technik offers the best possible solution. Innovative cable and pipe entries, building entries and trenchless building connections in professional quality. All from one source.

With the foundation of a new joint venture company ZweiCom-Hauff, the logical grouping of innovating force and high-quality consultancy competence beyond the respective product portfolio was implemented. This way, the common clients obtain a perceivable plus value and profit from now from the extensive complete solutions which will be developed in future in a more-targeted way.



- Pre-assembled and ready to connect.
- Customer specific.
- Best quality and powerful components for fiber optic networks.
- Time and cost saving by pre-assembled complete solutions according to the requirements.
- Fast amortization by failure-free operation for many years.
- Personal consultation and fast delivery.

## TURNKEY POP-STATION

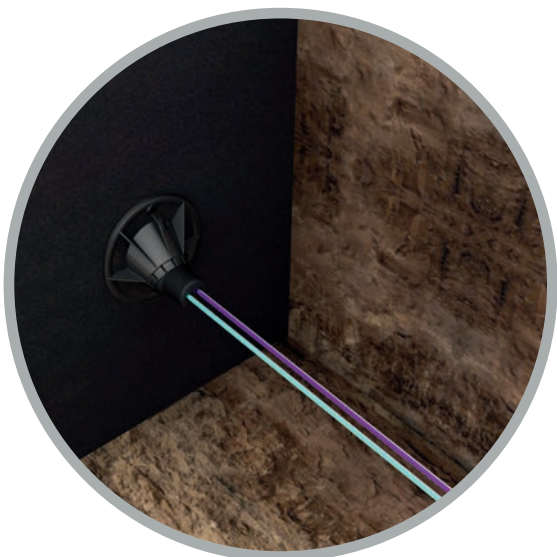
A perfect example is the turnkey PoP station in which the passive network components of Zweicom-Hauff with the sealing solutions of Hauff-Technik are combined in an all-round carefree package for the network operators.



## BUILDING ENTRY

Also for a single and multi-family home area there are direct interfaces. So the micro tube first has to get into the building and sealed before the fiber optic cable can be installed in the house to the optical wall outlet.

- Building entry and local loop.
- Easy to mount.





# Turnkey stations POINT OF PRESENCE

## POP STATION

Through the experience of our partners in station expansion and our specialization in fiber optic networks, we can individually configure your PoP station and deliver it safely.

### Features and technical data:

- reliable cable management
- supports P2P, PON, Hybrid
- UPS (uninterruptible power supply)
- 48VDC/230VAC battery inverter
- overvoltage protection, smoke alarm, intrusion detector
- fire extinguishers, emergency lights and emergency signals
- furnishing, special paintings and designs
- access control systems, remote monitoring
- all passive fiber optic components installed
- electrical distribution, lights, cable ducts and internal wiring
- air conditioning, heating, ventilation
- burglar-proof door, raised floor and drainage
- 19 „/ETSI rack systems and active equipment



- Customized.
- Ready for use.
- Pre-assembled.





# Turnkey stations

## POINT OF PRESENCE

STANDARD SIZES						
Variation	Width (mm)	Length (mm)	Height (mm)	Residential units	Fiber count	Figure
A	3100	3100	3600	1000	5000	
B	3100	4300	3600	2000	10000	
C	3100	6100	3600	3000	15000	

PoP stations can be arranged individually for each customer. Please contact us for detailed consultation.

### OPTIONS

- Facade and roof design on request.
- Earthing point.
- Heating/cooling.
- Electronic access control.
- And much more...



Distribution frame

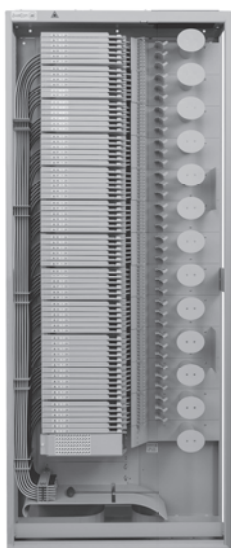
## OPTICAL DISTRIBUTION FRAME

### FIBER OPTIC CABELING SYSTEM

The 2Line ODF ST is a complete fiber optic cabling system in combination with an easy to handle patch cable management system – especially for high density networks.

#### Features and technical data:

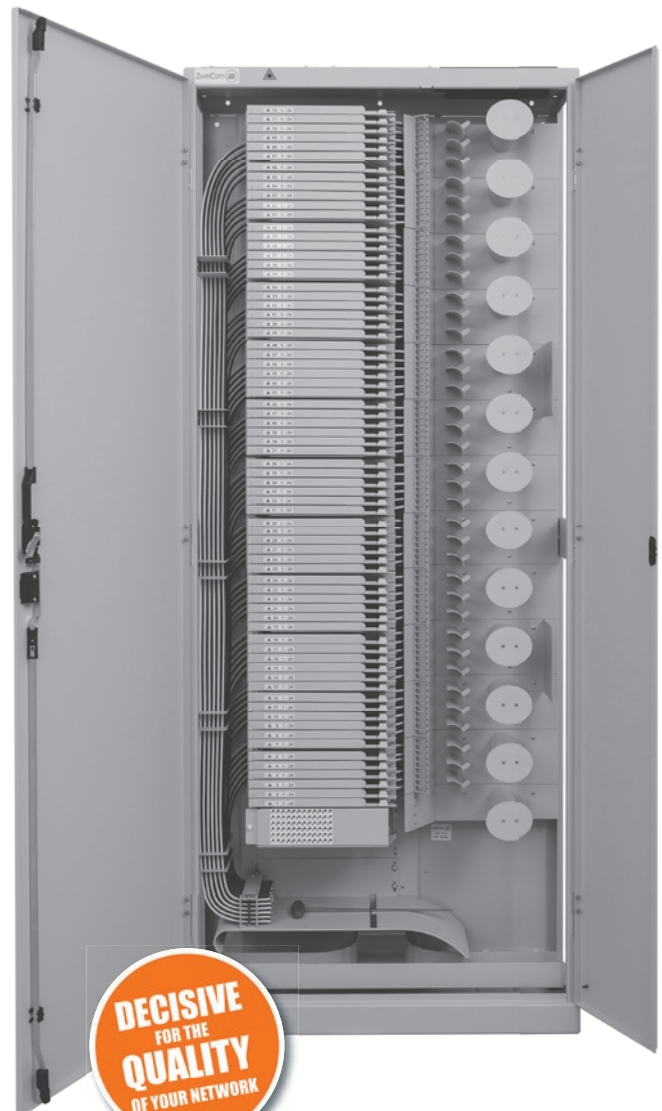
- flexible system with high fiber density
  - customized configuration
  - bend radius control for all cables, fibers and patchcords
  - central fiber optic cable management
  - mounting body to body, wall or stand alone
  - removable module system for easy splicing
  - single standard length for patch cable management of 2.60 m reaching all modules
- 
- Very cost and space saving distribution frame system with a capacity up to 2016 fibers.
  - Fits perfectly to all variations of standard cable systems, micro cable systems and blown fiber systems.
  - Customized pre-installation at our factory reduces installation cost on site by half.
  - The patch cable management system uses only uniform patch cable lengths.
  - Colored pigtailed and fibers.
  - The cable fixing plate allows cable entry from top or bottom.
  - Miniflex tubes for guiding loose tubes towards splice/patch modules.



ODF ST



ODF ST closed



Distribution frame

## OPTICAL DISTRIBUTION FRAME

2LINE ODF ST				
Item	Dimensions (mm) H x W x D	Capacity max.	Article code	Article number
Steel powder coated RAL 7035	2200 x 900 x 300	42HE/2016	<b>2Line ODF 220 ST,</b>	20031
	1800 x 900 x 300	33HE/1584	<b>2Line ODF 180 ST</b>	20032

ACCESSORIES		
Item	Article code	Article number
Door set 2200	<b>2Line ODF 220 Door-set</b>	20002
Side panel 2200	<b>2Line ODF 220 Side wall</b>	20003
Door set 1800	<b>2Line ODF 180 Door-set</b>	20004
Side panel 1800	<b>2Line ODF 180 Side wall</b>	20005
Fanout bracket	<b>2Line Fanout holder</b>	20006
Splitter bracket inside	<b>2Line Splitter holder inside</b>	20007
Splitter bracket outside	<b>2Line Splitter holder outside</b>	20008
Breakout bracket	<b>2Line Breakout holder</b>	20009
Cover plate	<b>2Line ODF Cover plate</b>	20010
Cable duct	<b>2Line ODF Cable duct</b>	20011
Cover cable entrance plate	<b>2Line ODF Cover plate KAP</b>	20061



Please find detailed information about our modules on page 66.



More ODF ST heights or connector types on request



Distribution frame

## OPTICAL DISTRIBUTION FRAME

### FIBER OPTIC CABELING SYSTEM

The 2Line ODF HD is a complete fiber optic cabling system in combination with an easy to handle patch cable management system – especially for high density networks.

#### Features and technical data:

- flexible system with high fiber density
  - customized configuration
  - bend radius control for all cables, fibers and patchcords
  - central fiber optic cable management
  - mounting body to body, wall or stand alone
  - removable module system for easy splicing
  - single standard length for patch cable management of 2.60 m reaching all modules
- 
- Very cost and space saving distribution frame system with a capacity up to 2592 fibers.
  - Fits perfectly to all variations of standard cable systems, micro cable systems and blown fiber systems.
  - Customized pre-installation at our factory reduces installation cost on site by half.
  - The patch cable management system uses only uniform patch cable lengths.
  - Colored pigtails and fibers.
  - The cable fixing plate allows cable entry from top or bottom.
  - Miniflex tubes for guiding loose tubes towards splice/patch modules.



ODF HD



ODF HD closed

## Distribution frame

# OPTICAL DISTRIBUTION FRAME

2LINE ODF HD				
Item	Dimensions (mm) H x W x D	Capacity max.	Article code	Article number
Steel powder coated RAL 7035	2200 x 900 x 300	42HE/2592Ports	<b>2Line ODF 220 HD</b>	20000
	1800 x 900 x 300	33HE/2160Ports	<b>2Line ODF 180 HD</b>	20001

ACCESSORIES		
Item	Article code	Article number
Door set 2200	<b>2Line ODF 220 Door-set</b>	20002
Side panel 2200	<b>2Line ODF 220 Side wall</b>	20003
Door set 1800	<b>2Line ODF 180 Door-set</b>	20004
Side panel 1800	<b>2Line ODF 180 Side wall</b>	20005
Fanout bracket	<b>2Line Fanout holder</b>	20006
Splitter bracket inside	<b>2Line Splitter holder inside</b>	20007
Splitter bracket outside	<b>2Line Splitter holder outside</b>	20008
Breakout bracket	<b>2Line Breakout holder</b>	20009
Cover plate	<b>2Line ODF Cover plate</b>	20010
Cable duct	<b>2Line ODF Cable duct</b>	20011
Cover cable entrance plate	<b>2Line ODF Cover plate KAP</b>	20061



Please find detailed information about our modules on page 66.



More ODF HD heights or connector types on request.

## OPTICAL DISTRIBUTION RACK

### FIBER OPTIC CABELING SYSTEM

The ODR is an enhancement of the existing 2Line ODF-System for FTTx-fiber optic network. It has a high fiber capacity and an easy operating fiber management system.

#### Features and technical data:

- flexible system with high fiber density
  - customized configuration
  - bend radius control for all cables, fibers and patchcords
  - central fiber optic cable management
  - mounting at the wall, at the sealing, back to back, or side by side
  - removable module system for easy splicing
  - single standard length for patch cable management of 2.60 m
- 
- Cost and space saving distribution frame system with a capacity up to 2592 fibers or rather 42 HE.
  - Fits perfectly to all variations of standard cable systems, micro cable systems and blow fiber systems.
  - Short and easy assembly at site or customized pre-installation at our factory.
  - Dissect deliverable in two packages of 30 kg.
  - The patch cable management system uses only uniform patch cable lengths.
  - The cable fixing plate allows cable entry from top or bottom.
  - Miniflex tubes for guiding loose tubes towards splice-patch-modules.
  - Completely mirrored construction possible by symmetrical components.
  - Fiber bundles as a guided variant in combs or with free channel individually selectable.
  - Patch cable management in different variants.
  - Installation of the modules standard, 19" back mounting or optional 19" front mount.
  - Installation of deep 19" modules through back to back mounting with additional frame possible.
  - Guided patch cable through cable duct at the bottom or through the roof frame.



Distribution frame

# OPTICAL DISTRIBUTION RACK

2LINE ODR				
Item	Dimensions (mm) H x W x D	Capacity max.	Article code	Article number
Insertion fit, dismountable steel panel construction	2200 x 900 x 300	42HE/3024Ports	<b>2Line ODR 220 Z*</b>	20033
			<b>2Line ODR 220 A*</b>	20034
			<b>2Line ODR 220 AL*</b>	20040
	1800 x 900 x 300	33HE/2376Ports	<b>2Line ODR 180 Z*</b>	20045
			<b>2Line ODR 180 A*</b>	20046
			<b>2Line ODR 180 AL*</b>	20052

\* Z: disassembled, A: assembled, L: lefts side unit (mirror-inverted)

Options: cable duct, 19"-unit or hybrid assemble with 19"-frame, scaleable in hight units

ACCESSORIES		
Item	Article code	Article number
Door set 2200	<b>2Line ODR 220 Door-set</b>	20057
Side panel 2200	<b>2Line ODR 220 Side wall</b>	20058
Door set 1800	<b>2Line ODR 180 Door-set</b>	20059
Side panel 1800	<b>2Line ODR 180 Side wall</b>	20060
Fanout bracket	<b>2Line Splitter holder</b>	20006
Splitter holder	<b>2Line Splitter holder</b>	20062
Breakout bracket	<b>2Line Breakout holder</b>	20009
Cover plate	<b>2Line ODR Cover plate</b>	20070
Cable duct	<b>2Line ODR Cable duct</b>	20066
Cover cable entrance plate	<b>2Line ODR Cover plate KAP</b>	20071



Please find detailed information about our modules on page 66.



## WALL INSERTS AND PLASTIC FLANGE

### SINGLE WALL INSERT FOR SETTING IN CONCRETE

**Features and technical data:**

- waterproof concrete stress class 1, stress class 2
- system seal can be connected on one side
- minimum wall thickness 70 mm
- blind cover and blind plate (to be knocked out) guarantee double safety at wall thicknesses 70 – 150 mm (in 10 mm steps)
- available for individual wall thicknesses  $\geq 150$  mm
- push fit socket frame system for block assembly
- pressure-tight up to 2.5 bar after concreting

### DOUBLE WALL INSERT FOR SETTING IN CONCRETE

**Features and technical data:**

- waterproof concrete stress class 1, stress class 2
- connection of system sealing possible on both sides
- minimum wall thickness 100 mm
- available for individual wall thicknesses  $\geq 100$  mm
- push fit socket frame system for block assembly, available ex stock
- closed on both sides with blind system cover
- special designs for double wall/element walls available
- pressure-tight up to 2.5 bar after concreting

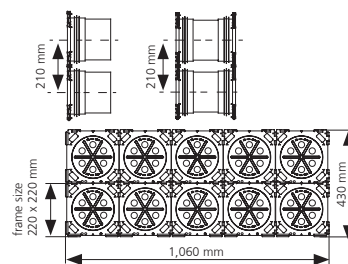
### SINGLE WALL INSERT WITH RUBBER PUSH FIT SOCKET FOR SETTING IN CONCRETE CONNECTING SMOOTH CABLE DUCTS

**Features and technical data:**

- waterproof concrete stress class 1, stress class 2
- connection of system sealing possible on one side, with integrated push fit socket for connecting smooth cable ducts
- no additional pipe components required
- minimum wall thickness with pipe connection diameter 110 and diameter 125 mm: 120 mm
- minimum wall thickness for pipe connection diameter 160 mm: 180 mm
- maximum wall thickness 500 mm
- pressure-tight up to 0.5 bar depending on the cable duct used



double wall insert HSI 150 as block used in formwork



example as a 2x5 block used in in formwork for 200 mm wall thickness:  
article code: HSI 150-2x5-K2/200



## Cable entries 150

# WALL INSERTS AND PLASTIC FLANGE

HSI 150 – WALL INSERT			
Item	Article code	Article number	Figure
Single wall insert from wall thickness 70 mm	<b>HSI 150-K/X</b>	2140100XXX *1	
Double wall insert from wall thickness 100 mm	<b>HSI 150-K2/X</b>	2140300XXX *1	
Double wall insert for double element walls	<b>HSI 150-K2-EW/X</b>	2140304XXX *1	
Single wall insert with integrated push fit socket diameter 110 mm minimum wall thickness 120 mm	<b>HSI 150-GSM 110/X</b> *2	_ *1	
Single wall insert with integrated push fit socket diameter 125 mm minimum wall thickness 120 mm	<b>HSI 150-GSM 125/X</b> *2	_ *1	
Single wall insert with integrated push fit socket diameter 160 mm minimum wall thickness 180 mm, block assembly only in conjunction with spacer	<b>HSI 150-GSM 160/X</b>	_ *1	

X = wall thickness (mm)

\*1 The article numbers for the exact wall thicknesses can be found at: [www.hauff-technik.de](http://www.hauff-technik.de)  
Standard lengths: 70 up to 500 mm (gradation in 10 mm)

\*2 Restrictions regarding number and size of cables may apply

Slanted wall inserts (30°, 45° and 60 °) and special solutions according to DIN 18533 part 1 are available on request.



**Matching accessories such as a spacer to enlarge the axial spacing to 250 mm or the pin spanner to remove and install the system cover can be found on page 68.**

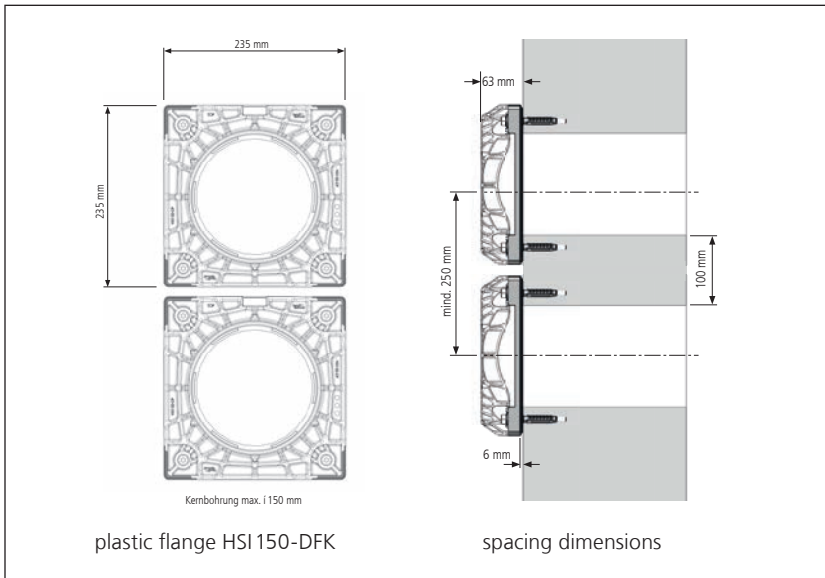


## WALL INSERTS AND PLASTIC FLANGE

### PLASTIC FLANGE FOR RETROFIT DOWELLING

**Features and technical data:**

- waterproof concrete stress class 1, stress class 2
- DIN 18533 W1.1-E, W1.2-E, W2.1-E
- flange in glass fibre reinforced polyamide with integrated spirit level
- form-closed surface seal made of EPDM
- high force absorption due to high-performance plastic, resistant to sea water
- core drill max. diameter 150 mm
- attachment elements made of stainless steel V4A (AISI 316L) including sealing rings against water ingress
- can be installed in container walls
- connection to system seal possible



multiple configuration HSI 150 – DFK




core drill and dowel holes



HSI 150-DFK plastic flange

Cable entries 150

## WALL INSERTS AND PLASTIC FLANGE

HSI 150 – PLASTIC FLANGE			
Item	Article code	Article number	Figure
Plastic flange including attachment elements made of stainless steel V4A (AISI 316L) and sealing rings for concrete walls	<b>HSI 150-DFK</b>	2118010020	



Matching accessories such as the elastic sealant to optimize wall surface are to be found on page 68.



## SYSTEM COVERS AND SYSTEM SEALS FOR CABLES

### SPLIT SYSTEM COVER FOR SUBSEQUENT SEALING

#### Features and technical data:

- split seal for retrofit installation
- individual adjustment to to the diameter of the installed cable diameters on site
- labelled segment rings
- blind plug is included with HSI 150-DG-3/24-54 and HSI 150-DG-6/10-36
- transformer oil leak-tightness, tested over 90 days – KIWA Institute
- plastic press plate made of polyamide 6.6 with 30% glass-fibre reinforcement
- screws and nuts made of stainless steel V4A (AISI 316L)
- pressure-tight up to 2.5 bar



low-voltage cables sealed with HSI 150-DG-6/10-36



various installation stages for HSI 150-DG-3/24-54







pressure plate cover HSI 150-PA-3/24-54



HSI 150-DG: labelling of segments with the application area

Cable entries 150

## SYSTEM COVERS AND SYSTEM SEALS FOR CABLES

HSI 150-DG – SYSTEM COVER FOR RETROFIT INSTALLATION				
Item	Application area cable/pipe OD	Article code	Article number	Figure
Split system cover with 1 opening including split adapter ring	36 – 70 mm	<b>HSI 150-DG-1/36-70</b>	2102200020	
Split system cover with 1 opening including split adapter ring	70 – 112 mm	<b>HSI 150-DG-1/70-112</b>	2102200030	
Split system cover with 3 openings including split adapter ring and 3x blind plugs	24 – 54 mm	<b>HSI 150-DG-3/24-54</b>	2102200000	
Split system cover with 6 openings including split adapter ring and 6x blind plugs	10 – 36 mm	<b>HSI 150-DG-6/10-36</b>	2102200010	

Included per system cover HSI 150-DG: GM lubricant stick, cutter knife, cleaning cloth.



Matching accessories such as pressure plate cover and installation toolkit are to be found on page 68.



## SYSTEM COVERS AND SYSTEM SEALS FOR CABLES

### SEGMENTO SEGMENTS FOR INSERTION IN SYSTEM COVERS HSI 150-S3

**Features and technical data:**

- particularly flexible, gentle sealing
- for cables from diameter 5 to 31 mm
- individual clamping of segments
- no elaborate module structure
- easy and quick installation of segments that can be combined as necessary
- integrated torque control system
- simple to re-use and re-install
- all segment openings closed with blind plugs
- gastight and watertight up to 0.5 bar when installed on outside of the building



HSI 150 – wall inserts fitted with SEGMENTO sealing for control cables in a transformer house






HSI 150 – SEGMENTO – with integrated torque control system and blind plug




sealing of cables for street lighting with SEGMENTO

Cable entries 150

SYSTEM COVERS AND SYSTEM SEALS FOR CABLES

HSI 150-SEGMENTO			
Item	Article code	Article number	Figure
System cover as segment receptacle	<b>HSI 150-S3</b>	2300100000	
The violet segment – application area for 2 cables, diameter 20 - 31 mm including 2 blind plugs	<b>SEG 2/31</b>	2300130000	
The yellow segment – application area for 3 cables, diameter 20 - 26 mm including 3 blind plugs	<b>SEG 3/26</b>	2300140000	
The blue segment – application area for 6 cables, diameter 15 - 21 mm including 6 blind plugs	<b>SEG 6/21</b>	2300150000	
The orange segment – application area for 8 cables, diameter 5 - 15 mm including 8 blind plugs	<b>BS 8/15</b>	2300160000	

COMBINATION KIT SEGMENTO			
Item	Article code	Article number	Figure
SEGMENTO combination kit for pressure-tight external sealing of core drill, diameter 150 mm comprising: 1x plastic flange HSI 150-DFK with attachment elements, 1x system cover HSI 150-S3, 3x segments according to choice SEG x/xx, 1x lubricant GMS, 1x installation instructions	<b>KKS</b>  Order example: KKS 338 including: 1x HSI 150-DFK 1x HSI 150-S3, 2x SEG 3/26, 1x SEG 8/15, 1x GMS	-	



Matching accessories such as the lubricant, assignment template and screwdriver for installation are to be found on page 68.



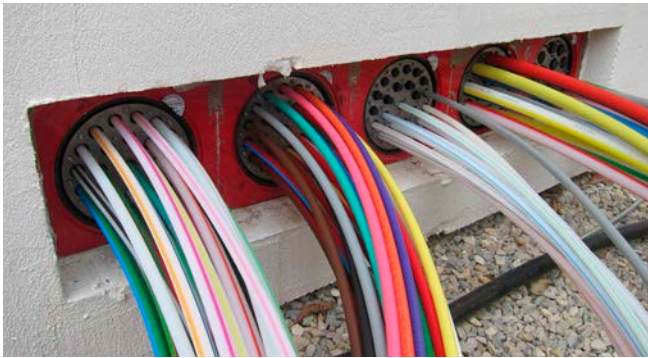
## SYSTEM COVERS AND SYSTEM SEALS FOR CABLES



### PRESS SEAL FOR MICROPIPES/EMPTY CONDUITS

#### Features and technical data:

- completely gastight and watertight
- sealing width 60 mm
- closed seal for waterproof sealing of micropipes
- for core drill holes/wall sleeves up to 150 mm diameter
- in combination with the adapter ring suitable for wall insert HSI 150
- press plate made from stainless steel V2A (AISI 304L), optionally V4A (AISI 316L)
- stable 5 mm press plates
- EPDM rubber





Cable entries 150

## SYSTEM COVERS AND SYSTEM SEALS FOR CABLES

HRD 150 – PRESS SEALS FOR MICROPIPES/EMPTY CONDUITS						
Core drill hole/ wall sleeve ID	Number of cables	Wall sleeve OD	Arrangement	Article code	Article number	Figure
150 mm	24	10 mm	2x 12/10 mm	<b>HRD 150-2-24/10*</b>	2703270012	
	15	14 mm	3x 5/14 mm	<b>HRD 150-2-15/14*</b>	2703270013	
	21	14 mm	3x 7/14 mm	<b>HRD 150-2-21/14*</b>	2703270014	
	14	16 mm	2x 7/16 mm	<b>HRD 150-2-14/16*</b>	2703270011	
	12	20 mm	3x 4/20 mm	<b>HRD 150-2-12/20*</b>	2703270010	
	4	50 mm	4x 1/50 mm	<b>HRD 150-2-4/50*</b>	2703270009	

\* without blind plugs  
More types on request.

ADAPTER RING			
Item	Article code	Article number	Figure
Adapter ring for use in wall insert HSI 150	<b>Adapting HSI 150-ARG-150-SG</b>	2700107008	



Matching accessories such as blind plugs are to be found on page 71.



## SYSTEM COVERS FOR CONNECTING CABLE DUCTS

### SYSTEM COVERS WITH PUSH FIT SOCKET FOR SMOOTH CABLE DUCTS

**Features and technical data:**

- for smooth pipes and ducts
- easy and quick installation, no additional connecting components necessary
- economical solution
- compact design
- pressure-tight up to 0.5 bar depending on the cable duct used

### SYSTEM COVERS WITH SLEEVE METHOD FOR SMOOTH AND CORRUGATED CABLE DUCTS

**Features and technical data:**

- can be used with for smooth and corrugated pipes and ducts
- patented clip ring technology for sealing corrugated pipes (please indicate pipe type and pipe manufacturer)
- mechanically stable, elastic connection using special sleeves and jubilee clips made of stainless steel V4A (AISI 316L)
- pressure-tight up to 0.5 bar depending on the cable duct used

### SYSTEM COVER WITH COLD SHRINK-FIT METHOD FOR CORRUGATED CABLE DUCTS

**Features and technical data:**

- for corrugated pipes and ducts
- cold shrink-fit method, no tools necessary
- stress-free sealing for pressure-sensitive pipes
- pressure-tight up to 0.5 bar depending on the cable duct used



connection of a rigid cable protection pipe DN 125 with HSI 150-D 125-GSM





connection of corrugated pipes with sleeve method HSI 150-M 168




connection of corrugated pipes with cold shrink sleeves HSI 150-D 110-KS


## Cable entries 150

# SYSTEM COVERS FOR CONNECTING CABLE DUCTS

HSI 150 – PUSH FIT SOCKET SYSTEM FOR SMOOTH DUCTS				
Item	Duct OD	Article code	Article number	Figure
System cover for duct connection	110 mm	<b>HSI 150-D 110-GSM</b>	2101100105	
System cover for duct connection	125 mm	<b>HSI 150-D 125-GSM</b>	2101100115	
System cover for duct connection	160 mm	<b>HSI 150-D 160-GSM</b>	2101100125	

HSI 150 – SLEEVE METHOD FOR SMOOTH AND CORRUGATED DUCTS				
Item	Duct OD	Article code	Article number	Figure
System cover for smooth ducts	110 mm	<b>HSI 150-M 110</b>	2126010110	 e.g. HSI 150-M 140
System cover for corrugated ducts including clip rings		<b>HSI 150-M 110-WR*</b>	for Kabuflex: 2126010113	
System cover for smooth ducts	125 mm	<b>HSI 150-M 125</b>	2126010125	
System cover for corrugated ducts including clip rings		<b>HSI 150-M 125-WR*</b>	for Kabuflex: 2126010007	
System cover for smooth ducts	140 mm	<b>HSI 150-M 140</b>	2126010140	
System cover for smooth ducts	160 mm	<b>HSI 150-M 168</b>	2126010000	
System cover for corrugated ducts including clip rings		<b>HSI 150-M 168-WR*</b>	for Kabuflex: 2126010001	

\* For corrugated duct connections, clip rings CR are additionally required (please specify duct type and manufacturer in your order). In addition 2 x profile sleeves from the corrugated duct manufacturer are required for each duct connection.

HSI 150 – COLD SHRINK SLEEVES FOR CORRUGATED DUCTS				
Item	Duct OD	Article code	Article number	Figure
System cover for corrugated ducts	110 mm	<b>HSI 150-D 110-KS</b>	2102100060	
System cover for corrugated ducts	125 mm	<b>HSI 150-D 125-KS</b>	2102100070	



## CABLE ENTRY SYSTEMS

### SYSTEM COVERS FOR CONNECTION TO WALL INSERT HSI 150

**Features and technical data:**

- for connecting the spiral hose Hateflex 14150 to wall insert HSI 150
- mechanically stable, elastic connection with system sleeve
- gastight and watertight up to 2.5 bar



pressure-tight connection to HSI 150 wall inserts

### SPIRAL HOSE

**Features and technical data:**

- pressure-tight flexible empty conduit system up to 2.5 bar (external pressure)
- smooth inner surface for gentle cable feed
- high mechanical load capacity and flexibility
- empty conduit system can be built over
- empty conduit without sleeve available up to 25 m, can be extended with connection sleeve
- adaptation with common cable ducts possible




KES-M 150-D and spiral hose Hateflex 14150

Cable entries 150


## CABLE ENTRY SYSTEMS

### KES-M 150 – CABLE ENTRY SYSTEM

Item	Article code	Article number	Figure
System cover for pressure-tight connection of spiral hose Hateflex 14150 to wall insert HSI 150	<b>KES-M 150-D</b>	2125810000	

\* Other variants available, see [www.hauff-technik.de](http://www.hauff-technik.de)

### SPIRAL HOSE WITH A SMOOTH INNER SURFACE FOR GENTLE CABLE FEEDING ID = 150 MM (STANDARD LENGTHS)

Length (m)	Article code	Article number	Figure
2	<b>Hateflex 14150/2000</b>	2130000200	
3	<b>Hateflex 14150/3000</b>	2130000300	
4	<b>Hateflex 14150/4000</b>	2130000400	
5	<b>Hateflex 14150/5000</b>	2130000500	
6	<b>Hateflex 14150/6000</b>	2130000600	
8	<b>Hateflex 14150/8000</b>	2130000800	
10	<b>Hateflex 14150/10000</b>	2130001000	
12	<b>Hateflex 14150/12000</b>	2130001200	
15	<b>Hateflex 14150/15000</b>	2130001500	
18	<b>Hateflex 14150/18000</b>	2130001800	
20	<b>Hateflex 14150/20000</b>	2130002000	
25	<b>Hateflex 14150/25000</b>	2130002500	

Custom lengths on request.



Matching accessories such as pipe connection and connection collars or the installation toolset are to be found on page 70.



## CABLE ENTRY SYSTEMS

### END STOP CABLE DUCT

#### Features and technical data:

- for cable seal at the end of the spiral hose Hateflex 14150
- segmented ring technology for individual adjustment to the installed cable diameters on site
- interchangeable insert is installed after the cables have been laid
- entire cross-section of the empty conduit system is used when cables are laid







pressure-tight connection of spiral hose Hateflex 14150 to wall insert HSI 150 and end stop for the cable duct



sealing in soil at the end of spiral hose Hateflex 14150 with the sealing set KES-M 150 WE 160-SG-3/22-54

Cable entries 150

CABLE ENTRY SYSTEMS

KES-M 150 – END STOP CABLE DUCT			
Item	Article code	Article number	Figure
Sealing set KES-M 150-WE including split interchangeable insert with segmented ring technology for the cable seal at the end of the spiral hose Hateflex 14150: for 1 cable, diameter 48 – 83 mm or 3 cables, diameter 22 – 54 mm or 6 cables, diameter 8 – 36 mm (installation of sleeve prior to cable laying) including blind plug	<b>KES-M 150 WE160-SG-1/48-83</b>	2125817103	 e.g. KES-M 150 WE160-SG-6/8-36
	<b>KES-M 150 WE160-SG-3/22-54</b>	2125817102	
	<b>KES-M 150 WE160-SG-6/8-36</b>	2125817101	
Sleeve for fitting with interchangeable insert WE 160-z/d for cable seal on spiral hose end of Hateflex 14150 (installation prior to cable laying)	<b>KES-M 150-WE</b>	2125817100	
Split interchangeable insert with segmented ring technology for installation in sleeve KES-M 150-WE for sealing: of 1 cable, diameter 48 – 83 mm or 3 cables, diameter 22 – 54 mm or 6 cables, diameter 8 – 36 mm including blind plug	<b>WE 160-SG-1/48-83</b>	0825817116	 KES-M90-WE 160-SG-3/22-54
	<b>WE 160-SG-3/22-54</b>	0825817115	
	<b>WE 160-SG-6/8-36</b>	0825817114	
Split interchangeable insert for installation in sleeve KES-M 150-WE production according to cable use z = number of cables d = cable diameter	<b>WE 160-z/d</b>	2125817110	

\* Other variants available, see [www.hauff-technik.de](http://www.hauff-technik.de)



Matching accessories such as the toolset for installation are to be found on page 70

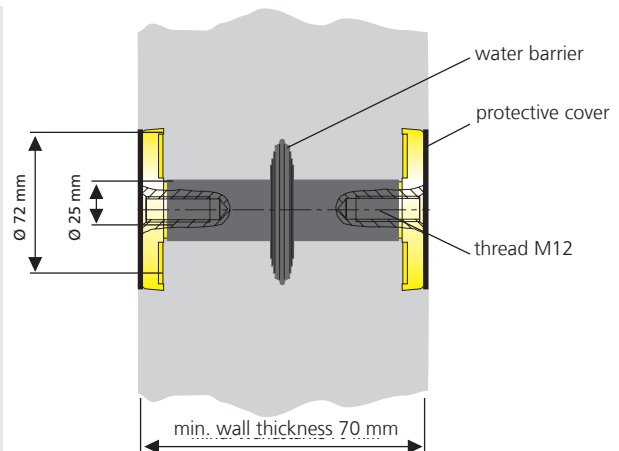


## ENTRIES

### INSULATED EARTHING ENTRY

#### Features and technical data:

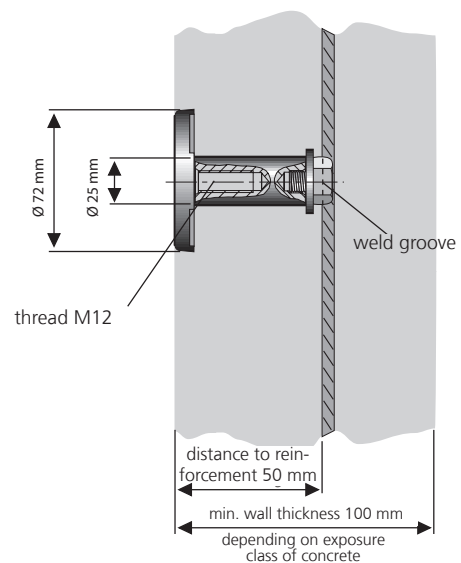
- waterproof concrete stress class 1, stress class 2
- conductor core diameter 25 mm with a threaded connection on both sides M12, made of stainless steel V2A (AISI 304L)
- pressure-tight water barrier (profiled rubber flange, EPDM)
- contact plate diameter 72 mm made of stainless steel V4A (AISI 316L)
- with protective cover
- minimum wall thickness HEA-IS: max. 70 mm
- according to VDE 0101, EN 50522
- short-circuit tested (with lightning protection)



### EARTHING FIXED POINT WITH WELD GROOVE

#### Features and technical data


- waterproof concrete stress class 1, stress class 2
- conductor core, diameter 25 mm with threaded connection M12 made of stainless steel V2A (AISI 304L)
- fixed point with welded groove made of steel St37 to connect with 10 – 12 mm round steel
- contact plate diameter 72 mm made of stainless steel V2A (AISI 304L)
- protective foil green transparent
- spacing between formwork and the core iron 50 mm (HEA-A-M12/50) or 70 mm (HEA-A-M12/70)
- short-circuit tested according to VDE 0101, EN 50522






## Earthings and fixed points

### ENTRIES

HEA-IS-M12 – INSULATED FEEDTHROUGH FOR SUBSTATION EARTHING			
Item	Article code	Article number	Figure
Insulated feedthrough for earthing connections made of stainless steel V2A (AISI 304L), connection M12 on both sides, with water barrier and protective cover (HEA-IS-M12) for wall thickness 100 mm	<b>HEA-IS-M12/100</b>	1710020100	 HEA-IS-M12/100
Insulated feedthrough for earthing connections made of stainless steel V2A (AISI 304L), connection M12 on both sides, with water barrier and protective cover (HEA-IS-M12) for wall thickness 150 mm	<b>HEA-IS-M12/150</b>	1710020150	
Insulated feedthrough for earthing connections made of stainless steel V2A (AISI 304L), connection M12 on both sides, with water barrier and protective cover (HEA-IS-M12) for wall thickness 200 mm	<b>HEA-IS-M12/200</b>	1710020156	
Insulated feedthrough for earthing connections made of stainless steel V2A (AISI 304L), connection M12 on both sides, with water barrier and protective cover (HEA-IS-M12) for wall thickness 250 mm	<b>HEA-IS-M12/250</b>	1710020157	

HEA-A-M12 – FIXED POINT WITH WELD GROOVE			
Item	Article code	Article number	Figure
Connection piece in stainless steel V2A (AISI 304L) with weld groove in St37, conductor core diameter 25 mm, connection M12, for distances between formwork and core iron of 50 mm	<b>HEA-A-M12/50</b>	1700300500	 HEA-A-M12/50
Fixed point made of stainless steel V2A (AISI 304L) with weld groove made of steel St37, conductor core diameter 25 mm, connection M12, for distances between formwork and the core iron 70 mm	<b>HEA-A-M12/70</b>	1700300520	



Between distributors

## MULTI FUNCTION CABINET

### MULTI FUNCTION CABINET

The MFC Outdoor-Street-Cabinet is a modern fiber optic node which fulfills all needs of a broadband network. Customized to the requirements of size, climatization, safety and system, it represents a high density solution.

#### Features and technical data

- solid ground-base made from aluminium/stainless steel
- outside powder coated, color as requested
- environmental protection class IP55, -25 °C to +45 °C
- protection against destruction and vandalism, WK2
- doors with single or double closing and latching
- roof system for vent and climatization
- passive or active cooling system
- base-plates with modular sealed cable inlet
- base cable strain relief system
- lowest installation costs through preassembled setup
- modular subunits offer complete variable configuration
- supplied fully configured or single packed
- high fiber density
- bending radius control for all cables and fibers
- fiber management
- patch cable system with one single length



- The MFC system is a very cost and space saving outdoor street cabinet system with a capacity up to 3888 fibers which supports FTTx-networks.
- MFC fits all variations of standard cable systems, micro cable systems and blow fiber systems.
- Right to the customer demand the MFC can be equipped with climatization, USV, Batteries, 19"-Frames, ETSI-Frames, fiber optic modules and cable management.
- To reduce the installation cost about 50 %, the MFC can be complete pre-installed/-wired delivered.
- Splitters, WDM's and attenuators are available.
- The micro-duct-management-system at the base, supports fixes, guides and overpasses all micro-ducts from 5 mm to 20 mm.
- Double-walled boards on a solid frame and a sealed baseplate protect the active or passive network installations from strain, moist, heat and cold.
- Sealed cable inlet at the base-plate for cable entry from bottom.
- Three standard sizes and customized dimensions are available.

Between distributors

## MULTI FUNCTION CABINET

2LINE MFC						
Item	Typ	Dimensions (mm) (W x H x D)	Capacity	Article code	Article number	Figure
Aluminum, stainless steel, outside powder-coated Colour: RAL7035	08	1600 x 1000 x 500	6WU* 1296Ports	<b>2Line MFC 8 cabinet</b>	20086	
		560-640 x 1000 x 500		<b>2Line MFC 8 ground base</b>	20090	
	12	1600 x 1400 x 500	9WU* 2592 Ports	<b>2Line MFC 12 cabinet</b>	20087	
		560-640 x 1500 x 500		<b>2Line MFC 12 ground base</b>	20091	
	15	1600 x 1700 x 500	11WU* 2592Ports	<b>2Line MFC 15 cabinet</b>	20088	
		560-640 x 1700 x 500		<b>2Line MFC 15 ground base</b>	20092	
	18	1600 x 2000 x 500	13WU* 3888Ports	<b>2Line MFC 18 cabinet</b>	20089	
		560-640 x 2000 x 500		<b>2Line MFC 18 ground base</b>	20093	

\*WU: Width units for configuration of the inner setup

### Options

Customized colors, transport-hooks, inside light,grounding point, heating, batteries, power supply, electronic door control, double closing,



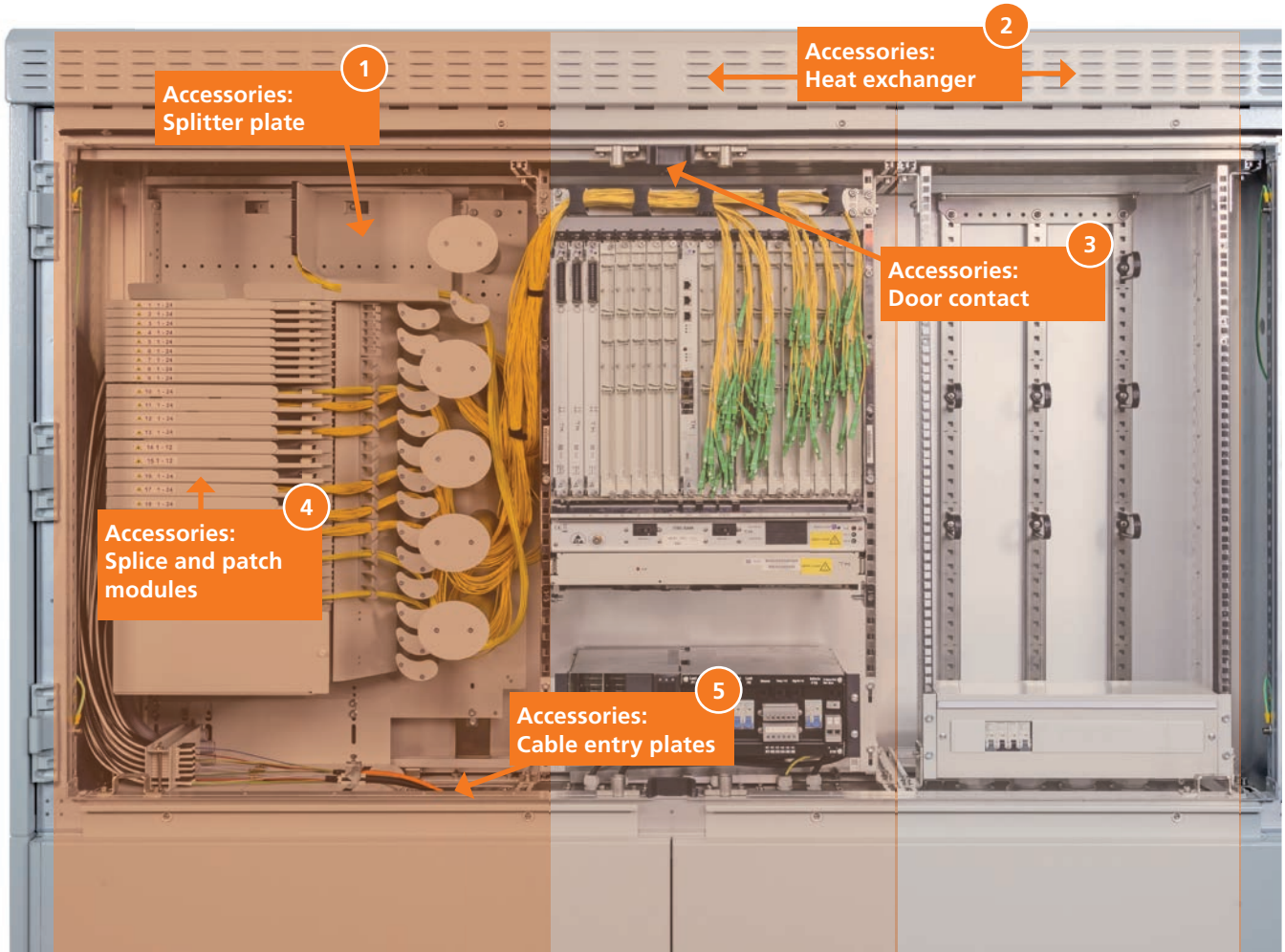
Between distributors

# MULTI FUNCTION CABINET

## CONFIGURATION OPTIONS

The MFC configuration system is freely configurable and all extensions can be combined. A universal rail system allows a free setup. Special configuration, superstructure housing and special housing sizes on request.

Example and explanation for setup:



Example setup	Fiber-unit 5WU					ETSI-unit 4WU				19"-unit 4WU			
WU	1	2	3	4	5	6	7	8	9	10	11	12	13



Please find detailed information about our modules on page 66.

4



Between distributors

## MULTI FUNCTION CABINET

EXTENTION UNITS			
Item	BE	Article code	Article number
Aluminum, stainless steel, plastic	5	<b>2Line MFC Fiber-unit</b>	20094
	3	<b>2Line MFC Fiber-unit L</b>	20095
	4	<b>2Line MFC 19"-unit</b>	20096
	4	<b>2Line MFC ETSI-unit</b>	20097
	2	<b>2Line MFC EVU* unit</b>	20098
	1	<b>2Line MFC EVU unit small</b>	20099
	2	<b>2Line MFC Cupper-unit</b>	20100
	2	<b>2Line MFC Cable management</b>	20101
	2	<b>2Line MFC Fill-panel</b>	20102
	1	<b>2Line MFC Fill-panel small</b>	20103

\*EDC: Electrical distribution cabinet according the regulations of the local power companies

ACCESSORIES			
Item		Article code	Article number
Frame for holding 4 splitters and 4 splitter plates		<b>2Line MFC Frame for holding splitter plates</b>	20104
Splitter plate for holding 4 splitter	1	<b>2Line MFC Splitter plate</b>	20105
Stainless steel frame for batteries, adjustable		<b>2Line MFC Frame for batteries</b>	20106
Vertical mounting rail for fixing of tubes and cables		<b>2Line MFC Mounting rail V</b>	20107
Horizontal mounting rail for fixing of tubes and cables		<b>2Line MFC Mounting rail H</b>	20108
Door contact for monitoring and control	3	<b>2Line MFC Door contact</b>	20109
LED for inside light		<b>2Line MFC Inside light</b>	20110
Option for double locking system		<b>2Line MFC Double locking system</b>	20111
Heatexchanger specification on request	2	<b>2Line MFC Heatexchanger</b>	20112
Cable retain and sealing system, setup on request	5	<b>2Line KDF</b>	-
Cable clamps, strain relief and guiding elements for cables and tubes		<b>2Line BÜS</b>	-

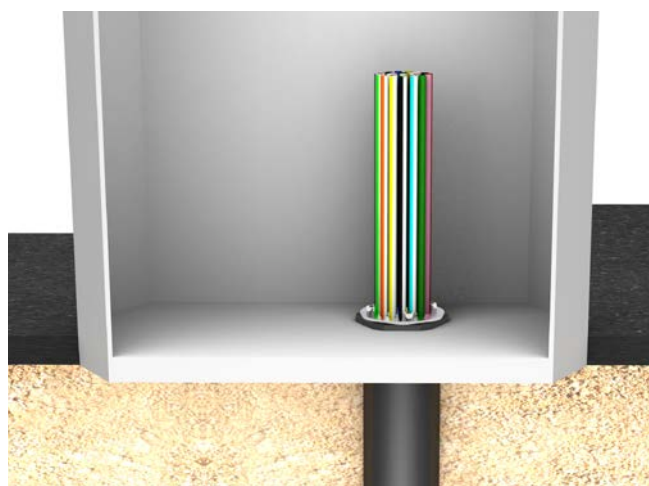
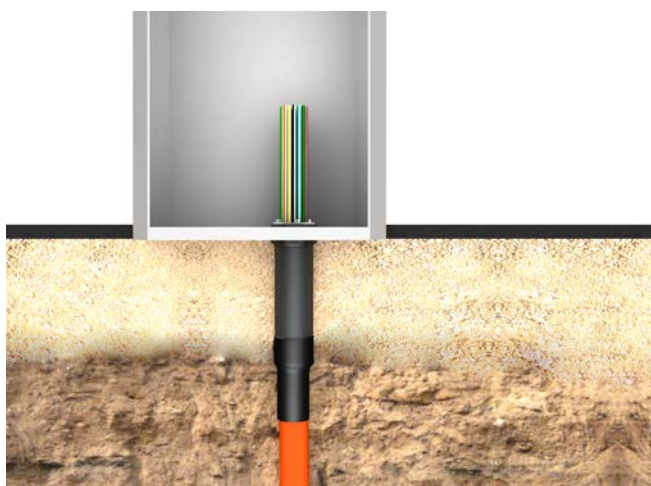


## CABLE ENTRIES FOR BETWEEN DISTRIBUTORS

### CABLE ENTRY

#### Features and technical data

- for sealing one or more cables in in the outer wall
- fast sealing of carrier pipe due to cold or heat shrink method
- high flexibility on site due to a large shrink range
- fast and easy installation
- high-grade polycarbonate material
- robust Pg Thread
- protection category IP68



### PRESS SEAL





#### Features and technical data

- sealing width 20 mm
- pressure tight up to 1 bar
- rust-free stainless steel V2A
- simple installation




Cable seals

CABLE ENTRIES FOR BETWEEN DISTRIBUTORS

KV-PG						
Item	Housing bore hole ID (mm)	Shrinking range (mm)	Shrink method	Article code	Article number	Figure
Cable screw connection made from PC inclusive shrink sleeve for sealing cables in a housing wall*	60	56 – 16	Heat shrink method	<b>KV-PG 48-WS</b>	0334020000	
	76	75 – 22		<b>KV-PG 68-WS</b>	0334010000	
	76	4 x 27 – 9		<b>KV-PG 68 4F-WS</b>	0334010100	
	60	56 – 24	Cold shrink method	<b>KV-PG 48-KS</b>	0334020090	
	76	93 – 38		<b>KV-PG 68-KS</b>	0334010090	

\*Hot and cold shrink-fit sleeves are included.

HRD 68-1F-24/7 STANDARD PRESS SEAL			
Item	Article code	Article number	Figure
Rust-free stainless steel press seals for a reliable waterproofing of 24 pipes with OD 7mm each.	<b>HRD 68-1F-24/7</b>	2702226860	
Rust-free stainless steel press seals for a reliable waterproofing of 9 pipes with OD 12mm each.	<b>HRD 68-1F-9/12</b>	2702226810	

Other layout options on request.



Between distributors

## NETWORK DISTRIBUTOR

### NETWORK DISTRIBUTOR

The 2Line NVT is an organized cable distributor, functioning as overground distribution nexus in FTTx networks. Offering an organized tube, cable and splice management system meeting all requirements of modern fiber optic networks. The integrated intelligent guiding system renders it particularly easy to install and ensures full protection of the glass fibers.

#### Features and technical data:

- polycarbonate casing, aluminum and stainless steel interior, polycarbonate and stainless steel base socket
- protection from environmental conditions IP54, IK10, -20 °C to +45 °C
- central grounding point
- capacity of up to 1728 crimp/864 shrink splice connections distributed in up to 144 cassettes
- seats for cassettes pre-installed
- single fiber and multi fiber management possible
- sealed base plate for cable insertion and up to 168 tubes
- insertion of up to 7 tube bundles, for example 24 x  $\varnothing$  7 mm and/or for example 5 cables  $\varnothing$  8 mm –  $\varnothing$  20 mm
- up to 7 fittings for  $\varnothing$  50 mm sealings of tube bundles
- including ground base with c-rail
- storage of uncut bundles and fibers (loop)
- assembly of the complete device with 4 screws through front access
- locking of the outer housing via swivel lever for profile half-cylinder

- Easy front access to the splice area, access to the tube area via hinged door.
- Up to 1728 splice connections.
- Splice connections are possible among all fibers (any-to-any).
- Tube bundles are inserted through the base plate and are sealed there.
- Single tubes are sealed with gas and water stoppers at the inner terminal.
- Easy blow in of cables and available storage space for over length.
- All cables, tubes and fibers are protected internally and guided with the correct bend radius.
- Unused and/or uncut loose tubes (loop) can be stored.







# Between distributors

## NETWORK DISTRIBUTOR

NVT				
Article	Type	Dimensions (mm) H x W x D Capacity max.	Article code	Article number
Cabinet polycarbonate/stainless steel	NVT 81	998 x 442 x 310	<b>2Line NVT 81 cabinet</b>	20321
Base polycarbonate/stainless steel	NVT 81	1060 x 442 x 284	<b>2Line NVT 81 base</b>	20126
Setup aluminium/plastic	NVT 81 4Stz	864 Splice, 96 x Ø 7 mm + 6 x Ø 20 mm	<b>2Line NVT 81 setup 4Stz</b>	20123
Cabinet polycarbonate/stainless steel	NVT 82	998 x 754 x 310	<b>2Line NVT 82 cabinet</b>	20322
Base polycarbonate/stainless steel	NVT 82	1060 x 754 x 284	<b>2Line NVT 82 base</b>	20127
Setup aluminium/plastic	NVT 82 6Stz	1728 Splice, 144 x Ø 7 mm + 6 x Ø 20 mm	<b>2Line NVT 82 setup 6Stz</b>	20124
	NVT 82 8Stz	1728 Splice, 192 x Ø 7 mm + 6 x Ø 20 mm	<b>2Line NVT 82 setup 8Stz</b>	20325
Cabinet polycarbonate/stainless steel	NVT 83	998 x 1131 x 310	<b>2Line NVT 83 cabinet</b>	20323
Base polycarbonate/stainless steel	NVT 83	1060 x 1131 x 284	<b>2Line NVT 83 base</b>	20128
Setup aluminium/plastic	NVT 839Stz	2592 Splice, 216 x Ø 7 mm + 6 x Ø 20 mm	<b>2Line NVT 83 setup 9Stz</b>	20125
	NVT 8312Stz	2592 Splice, 288 x Ø 7 mm + 6 x Ø 20 mm	<b>2Line NVT 83 setup 12Stz</b>	20324

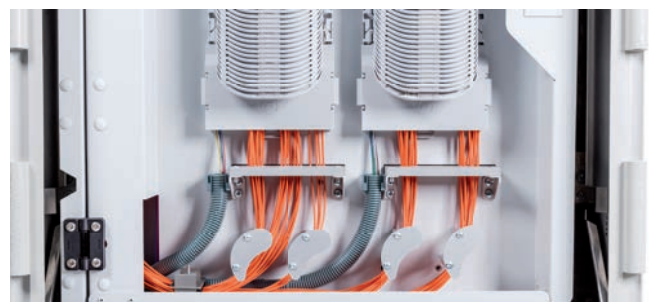
\*Capacity of the splices refers to crimp splice protection; capacity of insertable micro tubes refers to tubing 24 x Ø 7 mm, other tubing and tubing such as e.g. 12 x Ø 10 mm are possible.

### ACCESSORIES

There is additional accessory and there are more variants for installing the tubes, cables and fibers available as e.g.:

- Splice tray system 2Line SKS: Splitter cassette, colored cassette, shrink splice cassette, single fiber management cassettes
- Cable glands 2Line KDF: e.g. 2 x M20, 2 x M25
- Sealings for tube bundles 2Line ARV: 24 x Ø 7 mm, 12 x Ø 10 mm

Special setups, sizes and adjustments on request.



## OPTICAL TERMINATION CLOSURE

### FIBER OPTIC CLOSURE

The 2Line OTC fiber optic closure has been developed for the application in FTTH networks. With its innovative sealing system it is suitable for all areas of application.

#### Features and technical data:

- protection category IP68 (5 m)
  - meets DIN EN 50411  
Category A (outdoor), G (manhole) and S (ground)
  - fiber change, right, left, front, rear
  - bending radius controlled management
  - cassettes snap in open position
  - preequipped with standard seals
- 
- For single fiber management and multiple fiber management.
  - Cassette system supports crimp splice protection, shrink splice protection, splitter, WDM's and water sensor.
  - Bending radius control and protection of all cables and fibers.
  - Suitable for all types of cables.
  - Integrated shrinkless sealing system of the cables.
  - Sealing interchangeable, redetachable and retrofittable.
  - No special tools required, simple indication of the seal.
  - Closure suitable for installation outdoor, at pole, in manhole or into the ground.
  - Easy insertion of uncut fibers and bundles (Loop).
  - Direct entering of tubes with integrated gas/water stop function.
  - Simple self-explanatory assembly.



## Optic fiber management boxes

# OPTICAL TERMINATION CLOSURE

2LINE OTC				
Item	Variation	Dimensions (mm) W x H x D Capacity max.	Article code	Article number
Plastic, aluminium	OTC	600 x Ø 300/ 864 Splice	<b>2Line OTC</b>	20345
Cable glands and tubes*	Count	Sealing range (mm) for cable Ø	Article code	Article number
Round insert	8	0 – 3	<b>2Line OTS R8/3</b>	20346
	6	2,5 – 7	<b>2Line OTS R6/7</b>	20347
	2	7 – 10	<b>2Line OTS R2/10</b>	20348
	1	10 – 15	<b>2Line OTS R1/15</b>	20349
	1	15 – 19	<b>2Line OTS R1/19</b>	20350
	1	19 – 22	<b>2Line OTS R1/22</b>	20351
	1	22 – 24	<b>2Line OTS R1/24</b>	20352
Extension for tubes	8	7	<b>2Line OTS AR8/7</b>	20353
	6	10	<b>2Line OTS AR6/10</b>	20354
Oval insert (Loop)	2	5 – 11	<b>2Line OTS O2/11</b>	20355
	2	11 – 15	<b>2Line OTS O2/15</b>	20356
	2	15 – 19	<b>2Line OTS O2/19</b>	20357
	2	19 – 22	<b>2Line OTS O2/22</b>	20358
	2	22 – 25	<b>2Line OTS O2/25</b>	20359

Options: Seals and cassettes pre-fabricated and equipped according customer requirements, pre-fabricated tube/hose packages according customer requirements, pressure valve, RFID Chip/BAR-Code/QR-Code, grounding kit, additional internal strain relief, additional outer cable clamp, splitter

## ACCESSORIES

There is additional accessory and there are more splice cassette variants available as e.g.

- Splice tray system 2Line SKS: Splitter cassette, colored-cassette, shrink splice cassette, single fiber management cassettes, water sensor



# Optic fiber management boxes

## CUSTOMER OUTLET BOX

### CUSTOMER OUTLET BOX

2Line COB is a fiber optic connecting unit system for the optical access network infrastructure with a compact optic fiber management system. It is used for inhouse, as a small cabinet and for outdoor application.

The 2Line COB is a distribution box for connecting and splicing fiber optic cables. It can be mounted on walls in- or outdoor. The cables are inserted into the box from below, where they are relieved and sealed.

In the 2Line tray system, the fibers are guided and spliced respecting the bending radius. It allows individual access to any single connection and fibers without affecting or disturbing existing connections. So it enables optimal handling during installation, operation, service and upgrades.

There are a variety of different configuration options. The cover can be locked by a locking system.

#### Features and technical data

- zinc and powder coated steel box RAL 7035
- removable cover
- environmental protection class IP54, -10 °C to +45 °C
- sealing of the cable entry from the bottom with
- multiple feedthrough or brush stripe
- cable dimensions  $\varnothing 3 - \varnothing 25$  mm
- integration of splitters, WDM and attenuator
- simple wall installation
- with locking system

- Powder coated steel box RAL 7035 or customized.
- Fiber management system for configuration, connection and splicing.
- Tray system for single fiber or multi-fiber management.
- Installation of crimp or heat shrink splice protection possible.
- Extensive range of accessories available.





# Optic fiber management boxes

## CUSTOMER OUTLET BOX

COB				
Item	Variation	Dimensions (mm) W x H x D Capacity max.	Article code	Article number
Housing galvanized sheet steel, powder coated	GR3	440 x 265 x 150/ 360 Splice/24 Ports	<b>2Line COB GR3</b>	20148
	GR4	440 x 415 x 150/ 720 Splice/108 Ports	<b>2Line COB GR4</b>	20149
	GR5	440 x 640 x 150/ 1080 Splice/216 Ports	<b>2Line COB GR5</b>	20150
	GR6	514 x 640 x 150/ 1512 Splice/288 Ports	<b>2Line COB GR6</b>	20151

\*Capacity of the splices refers to the crimp splice protection; capacity of the ports refers to LC connectors where the number of splices are reduced when connectors are installed.

### ACCESSORIES

There is additional accessory and material for installing the tubes, cables and fibers available as e.g.

- Splice tray system 2Line SKS: Splitter cassette, colored cassette, shrink splice cassette, single fiber management cassettes
- Adapter holder 2Line ADH: Mounting plate for SC, LC and E2000 adapter
- Cable glands 2Line KDF: e.g. 2 x M20, 2 x M25, brush strip

Special setups, sizes and adjustments on request.



## OPTICAL WALL OUTLET

### CUSTOMER LINE TERMINATION

**OWO is an optical wall outlet box. With this box the optical line termination for outdoor or indoor area is realized for buildings and participants. In a robust and stackable plastic housing all features and function for a professional transfer and termination point of an FTtx network are represented.**

#### Features and technical data:

- capacity up to 72 fibers and 24 slots for SC, LC and E2000 adapters
- flat and robust design for mounting on the wall or at pole
- box stackable with transfer for fibers
- can be built as a pure splice box with several cable entries
- fiber optics are protected within the housing and guided in the correct bending radius
- overlengths can be stored
- cable entry from below with strain relief, cable gland or as tube with gas/water sealing
- replaceable splice holder or cassette system for crimp or shrink splices

- Plastic injection molded housing made of PC/ABS
- Color RAL 9010
- Degree of protection IP54, -20 ° C - + 60 ° C
- Halogen-free, UV-stabilized and flame retardant UL94 V-0
- Guides and storage for 24 pigtails à 140 cm
- Storage of up to 72 splices in single or multi-fiber management
- Installation of splitters or WDM's possible
- 12 slots for adapters SC, LCdx or E2000
- Cable/tube entry up to Ø 18 mm with gas/water sealing
- Access protection through lock, safety screw, lead seal or tape seal
- Single fiber management





# Optical telecommunication outlet

## OPTICAL WALL OUTLET

You can choose from two setup types and configure these individually with the appropriate connector types, fibers and provided seals.

All setups can be pre-assembled or added loosely.

OWO				
Item	Variation	Dimensions (mm) W x H x D Capacity max.	Article code	Article number
Housing plastic PC/ABS	OWO	300 x 194 x 64/ 24 Splice/24 Ports	<b>2Line OWO</b>	20370
	OWO+	300 x 194 x 64/ 72 Splice/24 Ports	<b>2Line OWO+</b>	20371

\*Capacity of the splices refers to the crimp splice protection; capacity of the ports refers to LC connectors

### ACCESSORIES

There is additional accessory and material for installing the tubes, cables and fibers available as e.g.

- Splice tray system 2Line SKS: Splitter cassette, colored cassette, shrink splice cassette, single fiber management cassettes
- Adapter and pigtails for SC, LC and E2000 adapter with standard or special fibers and colors
- Inserts for cable and tupe on request
- Locking system: lock, safety screw, lead seal or tape seal

Special labels, printing, colors and setup on request.



# Optical telecommunication outlet

## OPTICAL CUSTOMER OUTLET

### CUSTOMER LINE TERMINATION

OCO is an optical wall outlet box. With this box the optical line termination for outdoor or indoor area is realized for buildings and participants. In a robust and stackable plastic housing all features and function for a professional transfer and termination point of an FTtx network are represented.

#### Features and technical data:

- capacity up to 24 fibers and 12 slots for SC, LC and E2000 adapters
- flat and robust design for mounting on the wall or at pole
- fiber optics are protected within the housing and guided in the correct bending radius
- overlengths can be stored
- cable entry from below with strain relief, cable gland or as tube with gas/water sealing
- replaceable splice holder or cassette system for crimp or shrink splices

- Plastic injection molded housing made of PC/ABS
- Color RAL 9010
- Degree of protection IP54, -20 ° C + 60 ° C
- Halogen-free, UV-stabilized and flame retardant UL94 V-0
- Guides and storage for 12 pigtails à 140 cm
- Storage of up to 24 splices in single or multi-fiber management
- Installation of splitters or WDM's possible
- 6 slots for adapters SC, LCdx or E2000
- Cable/tube entry up to Ø 18 mm with gas/water sealing
- Access protection through safety screw, lead seal or tape seal
- Single fiber management







# Optical telecommunication outlet

## OPTICAL CUSTOMER OUTLET

You can configure this box individually with the appropriate connector types, fibers and provided seals. All setups can be pre-assembled or added loosely

OCO				
Item	Variation	Dimensions (mm) W x H x D Capacity max.	Article code	Article number
Housing plastic PC/ABS	OCO	236 x 172 x 36/24 Splice/12 Ports	<b>2Line OCO</b>	20372

\*Capacity of the splices refers to the crimp splice protection; capacity of the ports refers to LC connectors

### ACCESSORIES

There is additional accessory and material for installing the tubes, cables and fibers available as e.g.

- Adapter and pigtails for SC, LC and E2000 adapter with standard or special fibers and colors
- Inserts for cable and tupe on request
- Locking system: safety screw, lead seal or tape seal

Special labels, printing, colors and setup on request.



Optical telecommunication outlet

## OPTICAL TELECOMMUNICATION OUTLET

### OPTICAL TELECOMMUNICATION OUTLET

The OTO is a fiber optic outlet that allows easy termination of cables in an office and home environment. In a compact small housing all features are provided for an advanced FTTH installation.

#### Features and technical data

- molded solid plastic box made of ABS
- color RAL 9010
- environmental protection class IP20, -10° C to +60° C
- fire protection class UL94 V-0
- guiding and storage for 4 fiber pigtails, 140 cm
- 2 adapter places for SC and LCdx
- input cable diameter 3 – 7 mm through boot
- with integrated or additional strain relief.
- removable splice holder supports mechanical crimp splice
- protection and heat shrink splice protection.

- Capacity up to 4 fibers by providing 2 connection points for SC and LC duplex adapters and 4 splices.
- Flat and modern design can be surface-mounted on standard electrical outlet.
- All internal fibers are protected, guided and minimum bend radius controlled. Over length can be stored.
- Guided and sealed cable entrance from bottom or behind with integrated or additional strain relief.
- Removable splice holder supports mechanical crimp splice protection and heat shrink splice protection.





# Optical telecommunication outlet

## OPTICAL TELECOMMUNICATION OUTLET

You can configure this box individually with the appropriate connector types, fibers and provided seals. All setups can be pre-assembled or added loosely.

OTO				
Item	Variation	Dimensions (mm) W x H x D Capacity max.	Article code	Article number
Housing plastic PC/ABS	OTO	120 x 80 x 25/ 12 Splice/4 Ports	<b>2Line OTO</b>	20289

\*Capacity of the splices refers to the crimp splice protection; capacity of the ports refers to LC connectors

### ACCESSORIES

There is additional accessory and material for installing the cables and fibers available as e.g.


- Adapter and pigtails for SC, LC and E2000 adapter with standard or special fibers and colors
- Locking system: tape seal

Special labels, printing, colors and setup on request.



### ZAF

In addition, we offer you a simple strain relief element for cable entry, identical to a SC/LCdx adapter, suitable for fiber optic cables with  $\varnothing$  1.5 - 5.0 mm, easy installation without feeding through the cable.

2LINE ZAF					
Item	Variation	Dimensions (mm) W x H x D Capacity max.	Article code	Article number	Figure
Housing plastic PC	ZAF	13 x 10 x 20/ 1 cable $\varnothing$ 1,5 – 5,0 mm	<b>2Line ZAF</b>	20375	



Single building entries – open construction

## WALL-MOUNTED ENTRIES, RESIN INJECTION SYSTEM

### FOR COMMUNICATION CABLES/FIBRE OPTIC CABLES

#### Features and technical data:

- waterproof concrete stress class 1, stress class 2
- DIN 18533 W1.1-E, W1.2-E, W2.1-E
- universal building entry with resin injection system for drill holes in the most common types of wall
- for holes ID 30 mm, for min. wall thicknesses 200 mm
- horizontal installation or with an inclination of up to 45°
- sealing lips ensure gentle seal for micropipes
- quickly installed in just a few minutes
- no restoration of basement seal to DIN 18533 W2.1-E is necessary
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

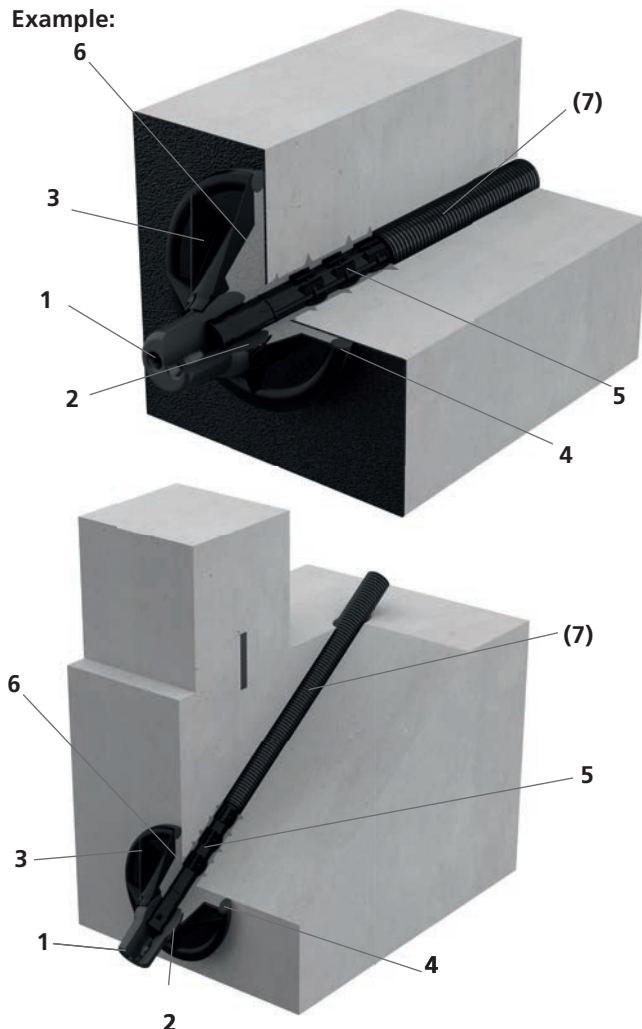
- 20 x GFH 30
- 20 x mixing nozzle
- 10 x 2-component resin iM3000, 150 ml

- 1 x adapter/plunger for the cartridge gun
- 1 x dosage sleeve for injection of half the cartridge quantity

#### Necessary accessories:

- Cartridge gun


#### Example:



1. Sealing lips
2. Ball head with integrated snap-in sleeve for receiving the punching pin.
3. Flange with joint covers the wall break-through, ties in the building seal on the outer wall, and allows a horizontal or inclined installation. The resin is injected through a filler opening at the flange.
4. Butyl tape ensures a tightly sealed connection between the wall surface/building seal and the flange.
5. Punching pin with stays to hold it securely in the drill hole.
6. Expanded 2-component resin fills the spaces between the flange and the wall surface/building seal and between the drill hole and punching pin, including any blowholes and cavities, and creates a reliable seal.
7. PE corrugated pipe (optional) this is pushed directly onto the punching pin. It protects the cables and allows carrier lines to be added or replaced at a later date.

Single building entries – open construction

## WALL-MOUNTED ENTRIES, RESIN INJECTION SYSTEM

GFH 30				
Number of cables/ carrier lines	Suitable for carrier pipe OD (mm)	Article code	Article number	Figure
2	7 – 10	<b>GFH 30/2x7-10</b>	2900001301	
1	12-16	<b>GFH 30/1x12-16</b>	290001303	



Accessories can be found on the accessories page 72.



## WALL-MOUNTED ENTRIES, RESIN INJECTION SYSTEM

### FOR COMMUNICATION CABLES

#### Features and technical data:

- waterproof concrete, stress class 1, stress class 2
- DIN 18533 W1.1-E, W1.2-E, W2.1-E
- universal building entries with membrane injection system for drill holes in the wall
- sealing lips ensure gentle seal for carrier lines
- controlled ejection of resin through slit membrane hose
- quickly installed in just a few minutes
- no restoration of basement seal to DIN 18533 W2.1-E is necessary
- suitable for core drill hole ID 40 to 50 mm
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

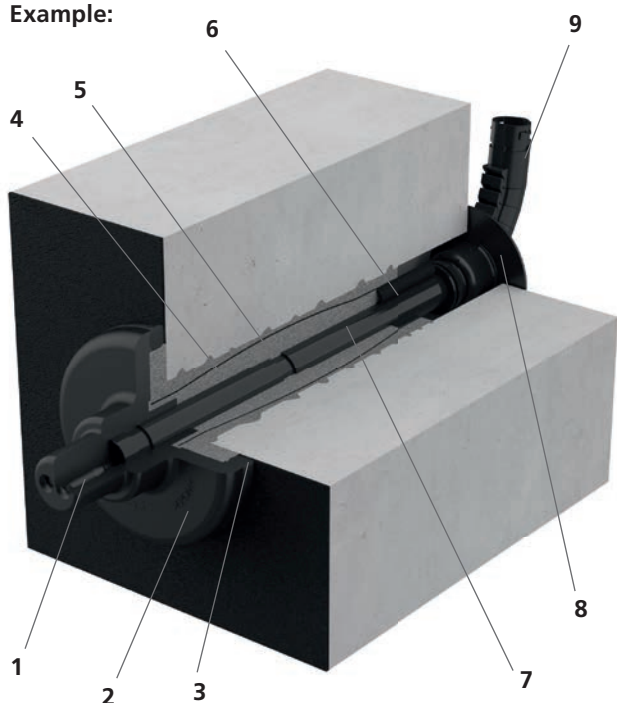
- 10 x MIS 40
- 10 x wall rosette
- 10 x tubular guide elbows
- 10 x 2-component resin iM3000, 150 ml
- 1 x quick tensioning device MIS 40-SVS

#### Necessary accessories:

- Cartridge gun, suitable for use with double chamber cartridges

Article code, article number and other, optional accessories can be found on page 72.

#### Example:



1. Sealing lips

2. Flange  
covers the wall break-through and ties in the building seal on the outer wall.

3. Butyl tape  
ensures a tightly sealed connection between the wall surface/building seal and the flange.

4. Membrane tube

5. Expanded 2-component resin  
fills the spaces between the flange and the wall surface/building seal and between the drill hole and the pipe, including any blowholes and cavities, and creates a reliable seal.

6. Resin injection tube  
ensures targeted injection of the 2-component resin from inside the building.


7. Duct  
this protects the cables and allows carrier lines to be added or replaced at a later date.

8. Wall rosette  
ensures a tidy finish on the inside of the building.

9. Tubular guide elbow  
aligns the carrier line at the inner wall in the desired direction and ensures compliance with the minimum permitted bending radius of micropipes.

Single building entries – open construction

## WALL-MOUNTED ENTRIES, RESIN INJECTION SYSTEM

<b>MIS 40 – FOR BUILDINGS WITH A BASEMENT</b>					
Number of cables/ carrier lines	Suitable for carrier pipe OD (mm)	Overall length (mm)	Article code; wall thicknesses (mm)	Article number	Figure
2	5 – 7	1,000	<b>MIS 40/2x5-7; 200-900</b>	2900000797	
2	5 – 7	1,300	<b>MIS 40/2x5-7; 900-1200</b>	2900000870	
1	9 – 12	1,000	<b>MIS 40/1x9-12; 200-900</b>	2900000798	
1	9 – 12	1,300	<b>MIS 40/1x9-12; 900-1200</b>	2900000875	



Accessories can be found on the accessories page 72.



Single building entries – open construction

## FLOOR ENTRY, RESIN INJECTION SYSTEM

### FOR COMMUNICATION CABLES

#### Features and technical data:

- waterproof concrete, stress class 1, stress class 2
- DIN 18533 W1.1-E, soil moisture
- universal building entries with membrane injection system for inclined drill holes in walls or floors
- sealing lips ensure gentle seal for carrier lines
- controlled ejection of resin through slit membrane hose
- quickly installed in just a few minutes
- suitable for core drill hole ID 40 to 50 mm
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

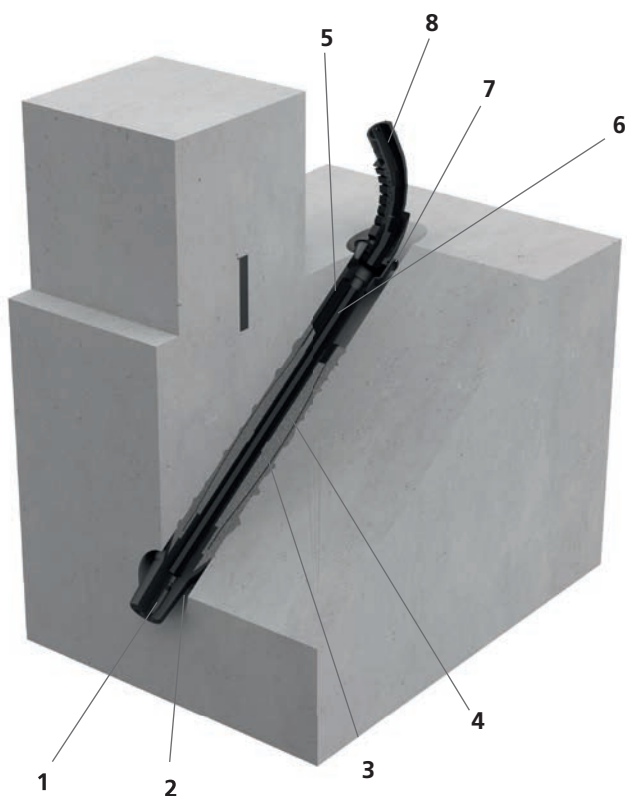
- 10 x MIS 40S
- 10 x wall rosette
- 10 x tubular guide elbows
- 10 x 2-component resin iM3000, 150 ml
- 1 x quick tensioning device MIS 40-SVS

#### Necessary accessories:

- Cartridge gun, suitable for use with double chamber cartridges

Article code, article number and other, optional accessories can be found on page 72.

#### Example:




1. Sealing lips
2. Flange  
remains in the drill hole and ensures controlled injection of the resin.
3. Membrane tube
4. Expanded 2-component resin  
fills the spaces between the flange, drill hole and pipe, including any blowholes and cavities, and creates a reliable seal.
5. Resin injection tube  
ensures targeted injection of the 2-component resin from inside the building.
6. Duct  
this protects the cables and allows carrier lines to be added or replaced at a later date.
7. Wall rosette  
ensures a tidy finish on the inside of the building.
8. Tubular guide elbow  
aligns the carrier line at the inner wall in the desired direction and ensures compliance with the minimum permitted bending radius of micro-pipes.



Single building entries – open construction

## FLOOR ENTRY, RESIN INJECTION SYSTEM

<b>MIS 40S – INCLINED BUILDING ENTRY FOR BUILDINGS WITHOUT A BASEMENT</b>					
Number of cables/ carrier lines	Suitable for carrier pipe OD (mm)	Overall length (mm)	Article code	Article number	Figure
2	5 – 7	1,300	<b>MIS 40S/2x5-7</b>	2900000910	
1	9 – 12	1,300	<b>MIS 40S/1x9-12</b>	2900000920	



Accessories can be found on the accessories page 72.



Single building entries – open construction

## WALL-MOUNTED ENTRY, RESIN INJECTION SYSTEM

### FOR ELECTRICITY AND TELECOMMUNICATIONS SERVICES

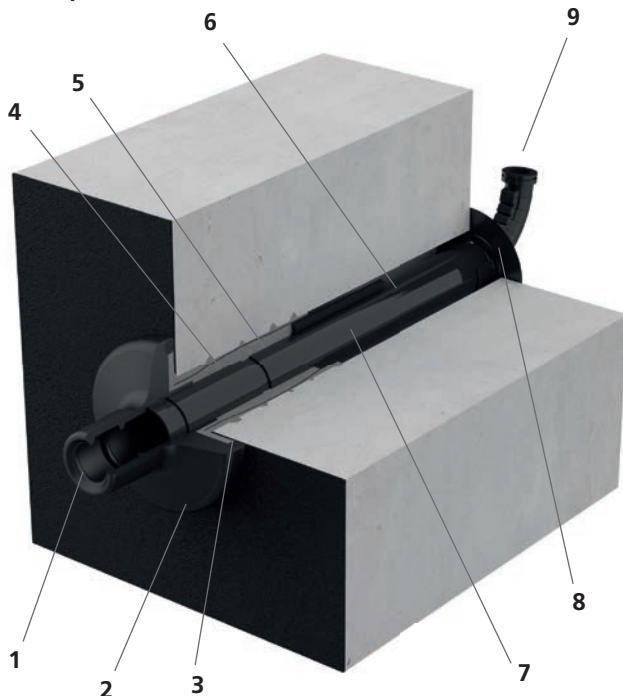
#### Features and technical data:

- waterproof concrete, stress class 1, stress class 2
- DIN 18533 W1.1-E, W1.2-E, W2.1-E
- universal building entries with membrane injection system for drill hole in walls or floors
- sealing lips ensure gentle seal for carrier lines
- controlled ejection of resin through slit membrane hose
- variety of pre-mounted seal inserts for variable configuration
- quickly installed in just a few minutes
- no restoration of basement seal to DIN 18533 W2.1-E is necessary
- suitable for core drill hole ID 62 to 65 mm
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

- 10 x MIS 60D
- 10 x wall rosette
- 10 x 2-component resin iM3000, 150 ml
- 1 x quick tensioning device MIS 60-SVS

#### Example:



1. Sealing lips
2. Flange  
covers the wall break-through and ties in the building seal on the outer wall.

#### Necessary accessories:


- Cartridge gun, suitable for use with double chamber cartridges

Article code, article number and other, optional accessories can be found on page 72.

3. Butyl tape  
ensures a tightly sealed connection between the wall surface/building seal and the flange.
4. Membrane tube
5. Expanded 2-component resin  
fills the spaces between the flange and the wall surface/building seal and between the drill hole and the pipe, including any blowholes and cavities, and creates a reliable seal.
6. Resin injection tube  
ensures targeted injection of the 2-component resin from inside the building.
7. Duct  
this protects the cables and allows carrier lines to be added or replaced at a later date.
8. Wall rosette  
ensures a tidy finish on the inside of the building.
9. Tubular guide elbow  
aligns the carrier line at the inner wall in the desired direction and ensures compliance with the minimum permitted bending radius of micro-pipes.

Single building entries – open construction

## WALL-MOUNTED ENTRY, RESIN INJECTION SYSTEM

<b>MIS 60D – FOR BUILDINGS WITH A BASEMENT</b>					
<b>Number of cables/ carrier lines</b>	<b>Suitable for carrier pipe OD (mm)</b>	<b>Overall length (mm)</b>	<b>Article code; wall thicknesses (mm)</b>	<b>Article number</b>	<b>Figure</b>
4	5 – 7	1,000	<b>MIS 60D/4x5-7; 200-900</b>	2900100070	
4	5 – 7	1,300	<b>MIS 60D/4x5-7; 900-1200</b>	2900100076	
3	10	1,000	<b>MIS 60D/3x10; 200-900</b>	2900100078	
3	10	1,300	<b>MIS 60D/3x10; 900-1200</b>	2900100077	
1	6 – 12	1,000	<b>MIS 60D/6-12; 200-900</b>	2900100069	
1	6 -12	1,300	<b>MIS 60D/6-12; 900-1200</b>	2900100075	
1	12 – 18	1,000	<b>MIS 60D/12-18; 200-900</b>	2900100068	
1	12 – 18	1,300	<b>MIS 60D/12-18; 900-1200</b>	2900100074	
1	18 – 24	1,000	<b>MIS 60D/18-24; 200-900</b>	2900100067	
1	18 – 24	1,300	<b>MIS 60D/18-24; 900-1200</b>	2900100073	
1	24 – 30	1,000	<b>MIS 60D/24-30; 200-900</b>	2900100066	
1	24 – 30	1,300	<b>MIS 60D/24-30; 900-1200</b>	2900100072	
1	30 – 34	1,000	<b>MIS 60D/30-34; 200-900</b>	2900100065	
1	30 – 34	1,300	<b>MIS 60D/30-34; 900-1200</b>	2900100071	



Accessories can be found on the accessories page 72.



Single building entries – open construction

## FLOOR ENTRY, RESIN INJECTION SYSTEM

### FOR ELECTRICITY AND TELECOMMUNICATIONS SERVICES

#### Features and technical data:

- waterproof concrete, stress class 1, stress class 2
- DIN 18533 W1.1-E, soil moisture
- universal building entries with membrane injection system for inclined drill holes in walls or floors
- sealing lips ensure gentle seal for carrier lines
- controlled ejection of resin through slit membrane hose
- variety of pre-mounted seal inserts for variable configuration
- quickly installed in just a few minutes
- suitable for core drill hole ID 62 to 65 mm
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

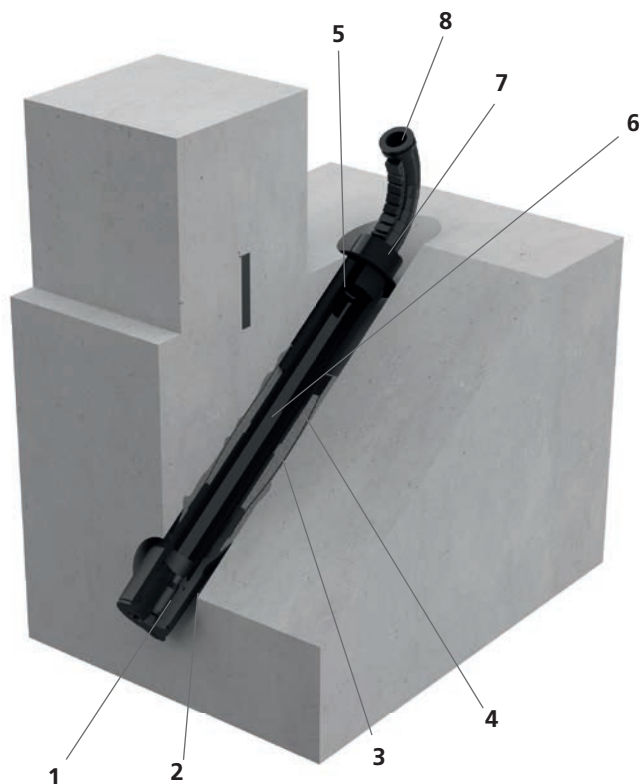
- 10 x MIS 60S
- 10 x wall rosette
- 10 x 2-component resin iM3000, 150 ml
- 1 x quick tensioning device MIS 60-SVS

#### Necessary accessories:

- Cartridge gun, suitable for use with double chamber cartridges

Article code, article number and other, optional accessories can be found on page 72.


#### Example:



1. Sealing lips
2. Flange  
remains in the drill hole and ensures controlled injection of the resin.
3. Membrane tube
4. Expanded 2-component resin  
fills the spaces between the flange, drill hole and pipe, including any blowholes and cavities, and creates a reliable seal.
5. Resin injection tube  
ensures targeted injection of the 2-component resin from inside the building.
6. Duct  
this protects the cables and allows carrier lines to be added or replaced at a later date.
7. Wall rosette  
ensures a tidy finish on the inside of the building.
8. Tubular guide elbow  
aligns the carrier line at the inner wall in the desired direction and ensures compliance with the minimum permitted bending radius of micro-pipes.

Single building entries – open construction

## FLOOR ENTRY, RESIN INJECTION SYSTEM

<b>MIS 60S – INCLINED BUILDING ENTRY FOR BUILDINGS WITHOUT A BASEMENT</b>					
Number of cables/ carrier lines	Suitable for carrier pipe OD (mm)	Overall length (mm)	Article code	Article number	Figure
4	5 – 7	1,300	<b>MIS 60S/4x5-7</b>	2900100236	
3	10	1,300	<b>MIS 60S/3x10</b>	2900100223	
1	6 – 12	1,300	<b>MIS 60S/6-12</b>	2900100235	
1	12 – 18	1,300	<b>MIS 60S/12-18</b>	2900100234	
1	18 – 24	1,300	<b>MIS 60S/18-24</b>	2900100233	
1	24 – 30	1,300	<b>MIS 60S/24-30</b>	2900100232	
1	30 – 34	1,300	<b>MIS 60S/30-34</b>	2900100231	



Accessories can be found on the accessories page 72.



Single building entries – open construction

## WALL-MOUNTED ENTRY, RESIN INJECTION SYSTEM

### FOR WATER, ELECTRICITY AND TELECOMMUNICATIONS SERVICES

#### Features and technical data:

- waterproof concrete, stress class 1, stress class 2
- DIN 18533 W1.1-E, W1.2-E, W2.1-E
- universal building entries with membrane injection system for drill holes in the wall
- flexible sealing sleeve with segmented ring technology ensures simultaneous, gentle sealing of water and communication services or electricity and communication services
- controlled ejection of resin through slit membrane hose
- quickly installed in just a few minutes
- no restoration of basement seal to DIN 18533 W2.1-E is necessary
- suitable for core drill hole ID 92 to 102 mm
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

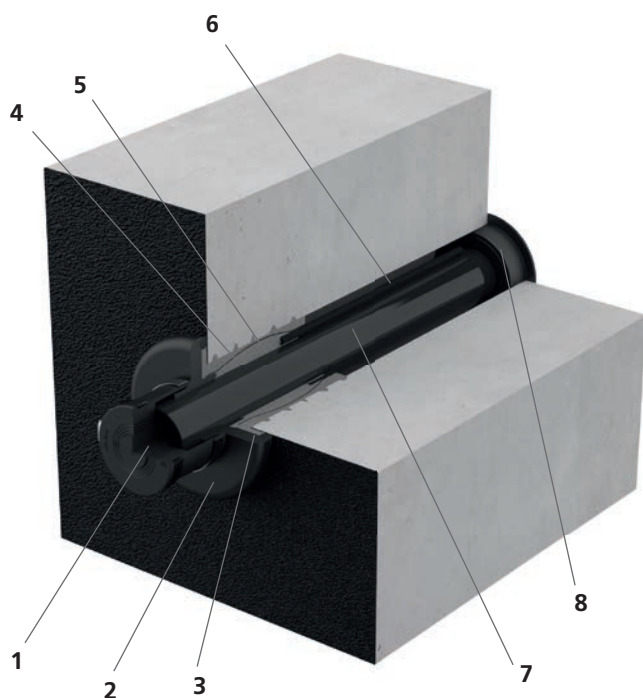
- 6 x MIS 90
- 6 x wall rosette WAR 90

#### Necessary accessories:

- Quick tensioning device MIS 90-SVS
- Cartridge gun, suitable for use with double chamber cartridges
- 2-component resin M3000 EH 300/1400

Article code, article number and other, optional accessories can be found on page 72.


#### Example:



1. Sealing sleeve with segmented ring technology for sealing the carrier line.
2. Flange covers the wall break-through and ties in the building seal on the outer wall.
3. Butyl tape ensures a tightly sealed connection between the wall surface/building seal and the flange.
4. Membrane tube
5. Expanded 2-component resin fills the spaces between the flange and the wall surface/building seal and between the drill hole and the pipe, including any blowholes and cavities, and creates a reliable seal.
6. Resin injection tube ensures targeted injection of the 2-component resin from inside the building.
7. Duct this protects the cables and allows carrier lines to be added or replaced at a later date.
8. Wall rosette ensures a tidy finish on the inside of the building.

Single building entries – open construction

## WALL-MOUNTED ENTRY, RESIN INJECTION SYSTEM

<b>MIS 90 – FOR BUILDINGS WITH A BASEMENT</b>					
<b>Number of cables/ carrier lines</b>	<b>Suitable for carrier pipe OD (mm)</b>	<b>Overall length (mm)</b>	<b>Article code; wall thicknesses (mm)</b>	<b>Article number</b>	<b>Figure</b>
3	1 x 24-52 2 x 7*	1,000	<b>MIS 90 SPEEDPIPE-U; 200-900</b>	2900212000	
3	1 x 24-52 2 x 7*	1,300	<b>MIS 90 SPEEDPIPE-U; 900-1200</b>	2900217000	
6	1 x 24-40 3 x 7-12 2 x 7	1,000	<b>MIS 90-EW; 200-900</b>	2900211000	
6	1 x 24-40 3 x 7-12 2 x 7	1,300	<b>MIS 90-EW; 900-1200</b>	2900216000	
7	1 x 13-21 3 x 7-13 1 x 5-13 2 x 7	1,000	<b>MIS 90-KD; 200-900</b>	2900212500	
7	1 x 13-21 3 x 7-13 1 x 5-13 2 x 7	1,300	<b>MIS 90-KD; 900-1200</b>	2900218000	

\* Speedpipe installation in flange and wall rosette and thus outside the sleeve pipe



Accessories can be found on the accessories page 72.



Single building entries – open construction

## FLOOR ENTRY, RESIN INJECTION SYSTEM

### FOR WATER, ELECTRICITY AND TELECOMMUNICATIONS SERVICES

#### Features and technical data:

- waterproof concrete, stress class 1, stress class 2
- DIN 18533 W1.1-E, soil moisture
- universal building entries with membrane injection system for inclined drill holes in walls or floors
- flexible sealing sleeve with segmented ring technology ensures simultaneous, gentle sealing of water and communication services or electricity and communication services
- controlled ejection of resin through slit membrane hose
- variety of pre-mounted seal inserts for variable configuration
- quickly installed in just a few minutes
- suitable for core drill hole ID 92 to 102 mm
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

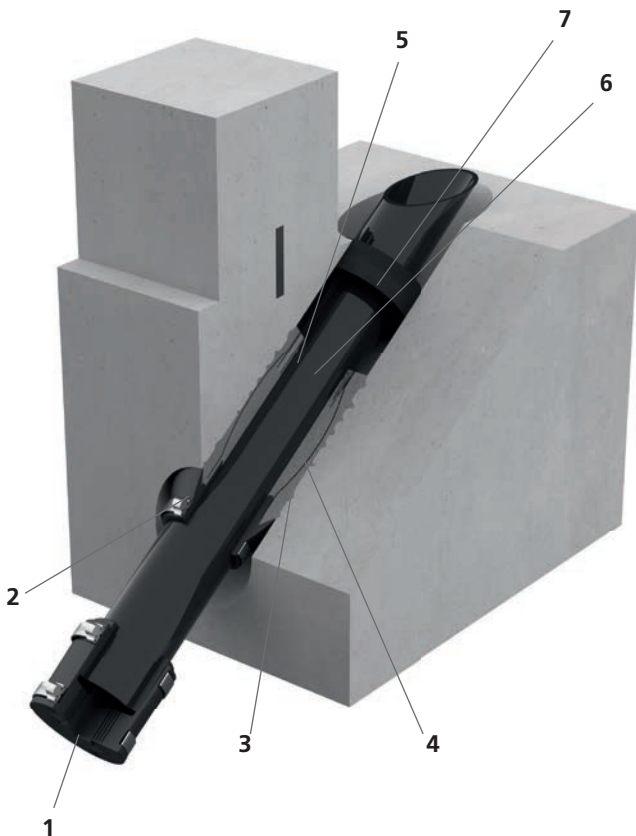
- 1 x MIS 90
- 1 x sealing cap

#### Necessary accessories:

- Quick tensioning device MIS 90-SVS
- Cartridge gun, suitable for use with double chamber cartridges
- 2-component resin M 3000 EH300/1400

Article code, article number and other, optional accessories can be found on page 72.

#### Example:




1. Sealing sleeve with segmented ring technology for sealing the carrier lines.
2. Flange remains in the drill hole and ensures controlled injection of the resin.
3. Membrane tube
4. Expanded 2-component resin fills the spaces between the flange, drill hole and pipe, including any blowholes and cavities, and creates a reliable seal.
5. Resin injection tube ensures targeted injection of the 2-component resin from inside the building.
6. Duct this protects the cables and allows carrier lines to be added or replaced at a later date.
7. Sponge rubber ring ensures a tidy finish on the inside of the building.



Single building entries – open construction

## FLOOR ENTRY, RESIN INJECTION SYSTEM

<b>MIS 90S – INCLINED BUILDING ENTRY FOR BUILDINGS WITHOUT A BASEMENT</b>					
<b>Number of cables/ carrier lines</b>	<b>Suitable for carrier pipe OD (mm)</b>	<b>Overall length (mm)</b>	<b>Article code</b>	<b>Article number</b>	<b>Figure</b>
1	1 x 24 – 52	1,300	<b>MIS 90S-U</b>	2900200510	
4	1 x 24 – 40 3 x 7 – 12	1,300	<b>MIS 90S-EW</b>	2900200520	
5	1 x 13 – 21 3 x 7 – 13 1 x 5 – 13	1,300	<b>MIS 90S-KD</b>	2900200530	



Accessories can be found on the accessories page 72.



## WALL-MOUNTED ENTRY, RESIN INJECTION SYSTEM

### FOR ELECTRICITY AND TELECOMMUNICATIONS SERVICES

#### Features and technical data:

- waterproof concrete, stress class 1, stress class 2
- DIN 18533 W1.1-E, soil moisture
- universal building entries with membrane injection system for drill holes in the wall
- sealing lips ensure gentle sealing
- trenchless construction means no groundwork is necessary at the property
- controlled ejection of resin through slit membrane hose
- variety of pre-mounted seal inserts for variable configuration
- quickly installed in just a few minutes
- suitable for core drill hole ID 62 to 65 mm
- gastight and watertight to 1 bar

#### Scope of supply/sales unit:

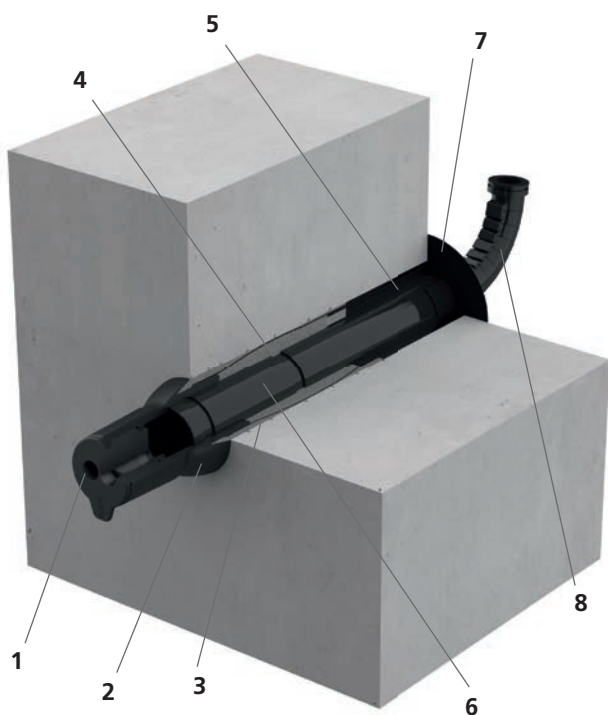
- 10 x MIS 60-ND
- 10 x wall rosette
- 10 x 2-component resin iM3000, 150 ml
- 1 x core drill cleaning brush
- 1 x quick tensioning device MIS 60-SVS

#### Necessary accessories:

- Cartridge gun, suitable for use with double chamber cartridges

Article code, article number and other, optional accessories can be found on page 72.


#### Example:



1. Sealing lips
2. Flange  
controls the exit of the resin at the wall of the building.
3. Membrane tube
4. Expanded 2-component resin  
fills the spaces between the flange and the wall surface and between the drill hole and the pipe, including any blowholes and cavities, and creates a reliable seal.
5. Resin injection tube  
ensures targeted injection of the 2-component resin from inside the building.
6. Duct  
this protects the cables and allows carrier lines to be added or replaced at a later date.
7. Wall rosette  
ensures a tidy finish on the inside of the building.
8. Tubular guide elbow  
aligns the carrier line at the inner wall in the desired direction and ensures compliance with the minimum permitted bending radius of micro-pipes.

Single building entries – trenchless construction

## WALL-MOUNTED ENTRY, RESIN INJECTION SYSTEM

MIS 60-ND – FOR BUILDINGS WITH A BASEMENT					
Number of cables/ carrier lines	Suitable for carrier pipe OD (mm)	Overall length (mm)	Article code; wall thicknesses (mm)	Article number	Figure
4	5 – 7	1,300	<b>MIS 60-ND/4x5-7; 200-1.200</b>	2900100221	
3	10	1,300	<b>MIS 60-ND/3x10; 200-1.200</b>	2900100222	
1	6 – 12	1,300	<b>MIS 60-ND/6-12; 200-1.200</b>	2900100220	
1	12 – 18	1,300	<b>MIS 60-ND/12-18; 200-1.200</b>	2900100219	
1	18 – 24	1,300	<b>MIS 60-ND/18-24; 200-1.200</b>	2900100218	
1	24 – 30	1,300	<b>MIS 60-ND/24-30; 200-1.200</b>	2900100217	
1	30 – 34	1,300	<b>MIS 60-ND/30-34; 200-1.200</b>	2900100216	



Accessories can be found on the accessories page 72.



trenchless method with underground rocket



## ACCESSORIES

### SPLICE/PATCH MODULES

The 2Line Splice/Patch Modules are compact connection and termination solutions for our passive fiber optic network systems such as ODF, ODR and MFC. With their high fiber and port capacities in all common connector types, it is possible to realize compact, simple and clearly comprehensible systems. The highest tested quality and solid design guarantee safety and long operational life.

#### Features and technical data:

- modules in 1, 2 or 3 height units 19" (44.45 mm)
- 2 trays/HE (ST) or 3 trays/HE (HD)
- 24 connections per tray
- connector types: SC, LC and E2000 in PC, UPC or APC
- equipped with adapters and pigtails
- colored pigtails set and laid bend radius controlled
- 1.5 m fiber forward color marked and laid in splice cassette
- splice cassette with splice holder for crimp splice protection or shrink splice protection
- printed and labelled following norm or customer specification

- Compact modules with the highest port density.
- Space-saving design.
- Easy and self-explanatory assembly.
- Smooth installation through logical color coding.
- Guiding of the fibers bend radius controlled and safe.
- Completely modular system.
- Protected access to the optical components.
- Additional functions for installation and maintenance.
- Labelling according to customer specifications.



## Distribution frame and between distributors

# ACCESSORIES

MODULES (STANDARD SETUP)										
Item	Vari- ation	HU*	Capa- city	De- sign**	Conne- ctor	Grade	Article code	Article number		
Housing galvanized sheet steel, powder coated RAL 7035, Width 350mm, Height 280mm, Depth 280mm	SPM Splice/ Patch Module	1	48 Ports	ST	SC/APC	B1	<b>SPM 1HE ST SC/APC B1</b>	20175		
					LC/APC		<b>SPM 1HE ST LC/APC B1</b>	20196		
					E2000		<b>SPM 1HE ST E2000 B1</b>	20226		
			72 Ports	HD	LC/APC		<b>SPM 1HE HD LC/APC B1</b>	20247		
					96 Ports		ST	SC/APC	<b>SPM 2HE ST SC/APC B1</b>	20176
								LC/APC	<b>SPM 2HE ST LC/APC B1</b>	20197
		144 Ports	HD	E2000	<b>SPM 2HE ST E2000 B1</b>		20227			
				LC/APC	<b>SPM 2HE HD LC/APC B1</b>		20248			
		3	144 Ports	ST	SC/APC		<b>SPM 3HE ST SC/APC B1</b>	20177		
					LC/APC		<b>SPM 3HE ST LC/APC B1</b>	20198		
			216 Ports	HD	E2000		<b>SPM 3HE ST E2000 B1</b>	20228		
					LC/APC		<b>SPM 3HE HD LC/APC B1</b>	20249		
	Splice box modul	2	144 Splice	Splice box	Crimp splice protector	<b>SBM 2HE</b>	20267			
		3	216 Splice	Splice box	Crimp splice protector	<b>SBM 3HE</b>	20268			

\*HU: Hight Units, 1HE=44mm, 2HE=88mm, 3HE=132mm

\*\*ST: Standard, HD: High Density

### MORE TYPES OF MODULS ARE AVAILABLE:

- Connector quality: PC, UPC, Grade A1, Grade B2
- Fiber types: G.652.D, G.655, G.657.A1, G.657.A2
- Design: PPM Patch/Patch modul, FOM Fanout modul, left version

Special labels, printing, colors and assembly on request.



SC/APC








LC/APC




E2000/APC

## ACCESSORIES




GENERAL ACCESSORIES			
Item	Article code	Article number	Figure
Flexible pin spanner	<b>SLS 6G</b>	0352010000	
Flexible pin spanner (buildings with perimeter insulation up to 100 mm)	<b>SLS 6GD</b>	0352010100	
Lubricant 200 g	<b>GML</b>	1591000754	
Cable cleaner, content 1000 ml, fast and residue-free evaporation	<b>KR M.T.X.</b>	0331010100	




WALL INSERTS AND PLASTIC FLANGE			
Item	Article code	Article number	Figure
Spacer set (2 x) to enlarge the axial spacing of the wall inserts to 250 mm. Enables block assembly HSI 150 with HSI 90	<b>HSI-AH 40</b>	2101090010	
290 ml cartridge, colour grey. Elastic sealant to optimize wall surface in combination with sealing flanges	<b>EGO MS-805</b>	0505071621	

SYSTEM COVERS WITH SHRINK-FIT SLEEVE			
Item	Article code	Article number	Figure
To seal unused sockets			
Sealing plug for system cover HSI 150-D7/33 (available as single unit or packing unit = 10 x)	<b>VS 32/34</b>	2140403234	
Sealing plug for system cover HSI 150-D3/58 (available as single unit or packing unit = 10 x)	<b>VS 58/60</b>	2140405860	
For centering and fixing the cables into the system cover sockets for optimal shrinking. Centring tape set, comprising 3 x elastomer strips 30 x 430 mm	<b>HSI-ZB</b>	2102200700	

## Cable entries 150

### ACCESSORIES

SPLIT SYSTEM COVER			
Item	Article code	Article number	Figure
<p>Tool set for installation, comprising</p> <ul style="list-style-type: none"> <li>1 torque wrench 4-20 Nm, ¼-inch</li> <li>1 adapter for cordless screwdriver square end, ¼ inch</li> <li>2 extensions, 150 mm, ¼ inch</li> <li>1 extension, 100 mm, ¼ inch</li> <li>1 wrench socket M6, SW 5, ¼ inch</li> <li>1 wrench socket M6, 100 mm with ball head, ¼ inch</li> <li>1 hexagon spanner M8, 50 mm with ball head, ¼ inch</li> </ul>	<b>HSI 150-DG-W</b>	2102200600	
<p>Press plate cover for HSI 150-DG-3/24-54 for protecting the thread against dirt</p>	<b>HSI 150-PA3/24-54</b>	2102200400	
<p>Press plate cover for HSI 150-DG-6/10-36 for protecting the thread against dirt</p>	<b>HSI 150-PA6/10-36</b>	2102200410	

SYSTEM COVER SEGMENTO			
Item	Article code	Article number	Figure
<p>SEGMENTO torque screwdriver (1.2 Nm) with acoustic signal generator</p>	<b>DMS</b>	2300300000	
<p>SEGMENTO special lubricant 10 g</p>	<b>GMS</b>	2300310000	
<p>SEGMENTO assignment template to determine the suitable segments according to the cable diameter</p>	<b>BSS</b>	2300320000	

## Cable entries 150

### ACCESSORIES

CABLE ENTRY SYSTEMS – GENERAL			
Item	Article code	Article number	Figure
Connection sleeve to connect rigid cable ducts OD = 110 mm* to spiral hose Hateflex 14150	<b>KES-M 150-M 110</b>	2125814000	-
Connection sleeve to connect rigid cable ducts OD = 125 mm* to spiral hose Hateflex 14150	<b>KES-M 150-M 125</b>	2125813000	-
Connection sleeve for hose extension/connection Hateflex 14150	<b>KES-M 150 HTV</b>	2128020000	
Connection sleeve to connect rigid cable ducts OD = 160 mm* to spiral hose Hateflex 14150	<b>KES-M 150-M 160</b>	2125812000	
1 set of clip rings to stabilize the corrugated pipe within the sleeve (please specify pipe type and manufacturer in your order)	<b>CR 110</b>	for Kabuflex: 1630001730	
1 set of clip rings to stabilize the corrugated pipe within the sleeve (please specify pipe type and manufacturer in your order)	<b>CR 125</b>	for Kabuflex: 1630001750	
1 set of clip rings to stabilize the corrugated pipe within the sleeve (please specify pipe type and manufacturer in your order)	<b>CR 160</b>	for Kabuflex: 1630001770	
Rigid pipe section 440 mm projecting and OD = 160 mm with sleeve for connection to spiral hose Hateflex 14150 (tight wall sealing in core drills in combination with an HRD press seal).	<b>KES-M 150-R 160</b>	2125818000	
Spacer e.g. 2x3 to attach and position hose blocks with Hateflex 14150 (other variants available)	<b>KES 150-2x3 KA</b>	2101090200	
Tool set for pressure-tight strap assembly, comprising 1 torque 4-20 Nm, ¼ inch, 1 extension 150 mm, ¼ inch, 1 socket for hexagon spanner SW 13, ¼ inch, 1 socket for hexagon spanner SW 8, ¼ inch	<b>KES-M-W</b>	2128030000	




\* Additional clip rings CR are necessary to connect corrugated pipes.  
An additional 2 x profile sleeves from the corrugated pipe manufacturer are required for each pipe connection.






Cable entries 150  
**ACCESSORIES**

<b>BLIND PLUGS FOR PRESS SEALS</b>		
<b>Item</b>	<b>Article code</b>	<b>Article number</b>
Blind plug for entries which are not in use	<b>Blindstopfen 10</b>	0903580050
	<b>Blindstopfen 14</b>	0903580054
	<b>Blindstopfen 16</b>	0903580051
	<b>Blindstopfen 20</b>	0903580052
	<b>Blindstopfen 50</b>	0903580053

## ACCESSORIES

GFH – ACCESSORIES			
Item	Article code	Article number	Figure
PE corrugated pipe DN23 black empty conduit system for connecting or extending the GFH 30, 50 m coil	<b>DN23-K, schwarz</b>	1591000730	
Wall bracket for PE corrugated pipe DN23 black sales unit = 50 pieces	<b>WH DN23-K</b>	2900001350	
Adapter for cartridge gun, including dosage aid sales unit = 10 sets	<b>GFH-Montagewerkzeug</b>	2900001351	

MIS 40 – ACCESSORIES			
Item	Article code	Article number	Figure
Quick tensioning device for MIS 40	<b>MIS 40-SVS</b>	2900000550	
Wall rosette for MIS 40 sales unit = 10 pieces	<b>WAR 40</b>	2900000520	
Tubular guide elbow for MIS 40 sales unit = 10 pieces	<b>MIS 40-RB</b>	2900000510	

## Resin injection system

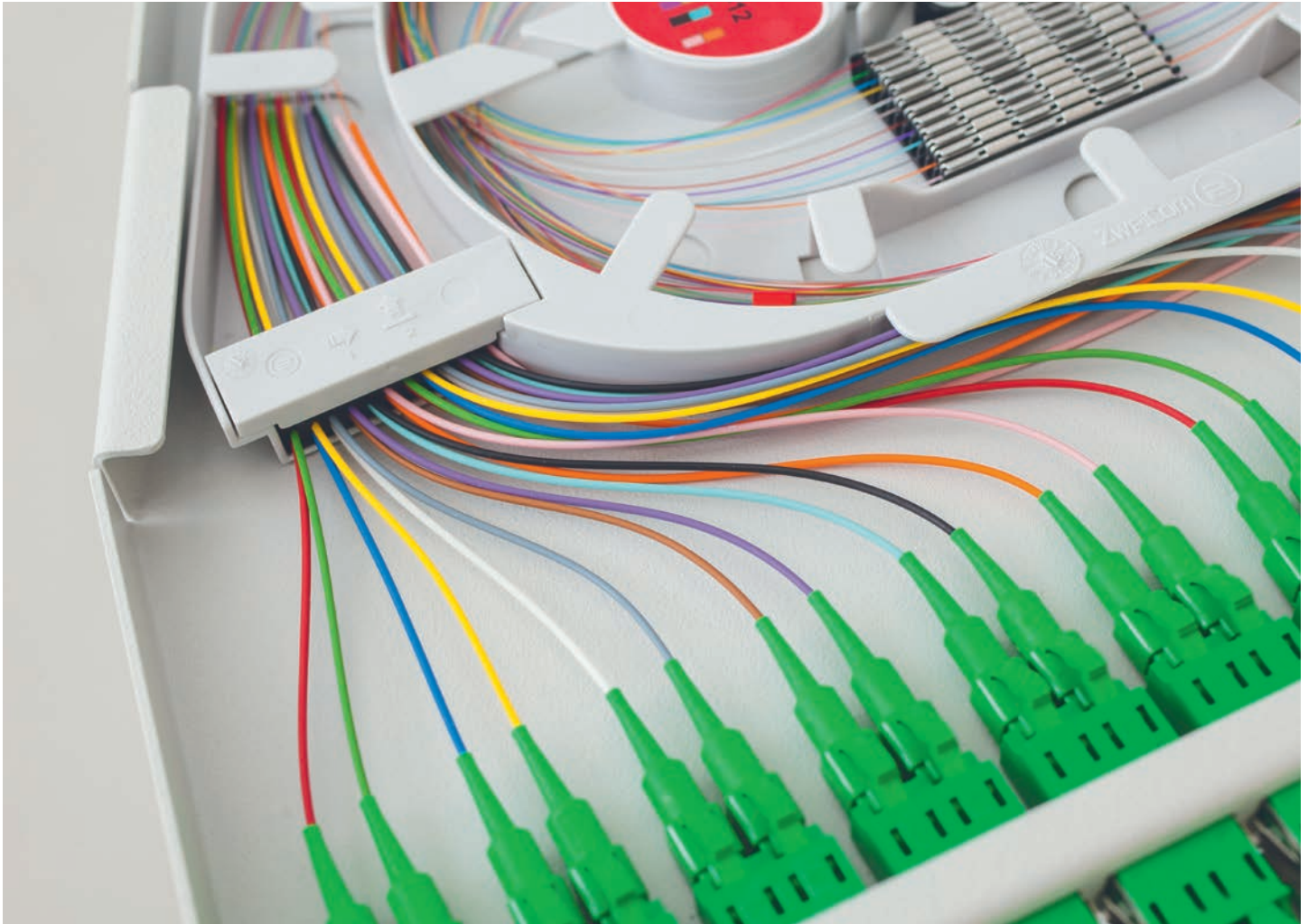
### ACCESSORIES

<b>MIS 60 – ACCESSORIES</b>			
<b>Item</b>	<b>Article code</b>	<b>Article number</b>	<b>Figure</b>
Quick tensioning device for MIS 60	<b>MIS 60-SVS</b>	2900100850	
Wall rosette for MIS 60 sales unit = 10 pieces	<b>WAR 60</b>	2900100820	
Tubular guide elbow including adapter for MIS 60 (for cables up to 16 mm) sales unit = 10 pieces	<b>MIS 60-RB</b>	2900100810	
Core drill cleaning brush	<b>MIS 40/60-REB</b>	2900100860	
Rolling gravel tip for use where there is rolling gravel fill next to the outside wall	<b>MIS 60-ND-RKS</b>	2900100770	

<b>MIS – ACCESSORIES</b>			
<b>Item</b>	<b>Article code</b>	<b>Article number</b>	<b>Figure</b>
2-component resin iM3000 including mixing nozzle sales unit = 10 pieces for GFH 30, MIS 40, MIS 60	<b>EH 150/700</b>	1920002000	
2-component resin M3000 including mixing nozzle sales unit = 6 pieces for MIS 90, MIS 100	<b>EH 300/1400</b>	1920002003	
Cartridge gun for 2-component resin	<b>Kartuschen- pistole</b>	1920002002	
Lubricant contents 200 ml	<b>GML</b>	1591000754	







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