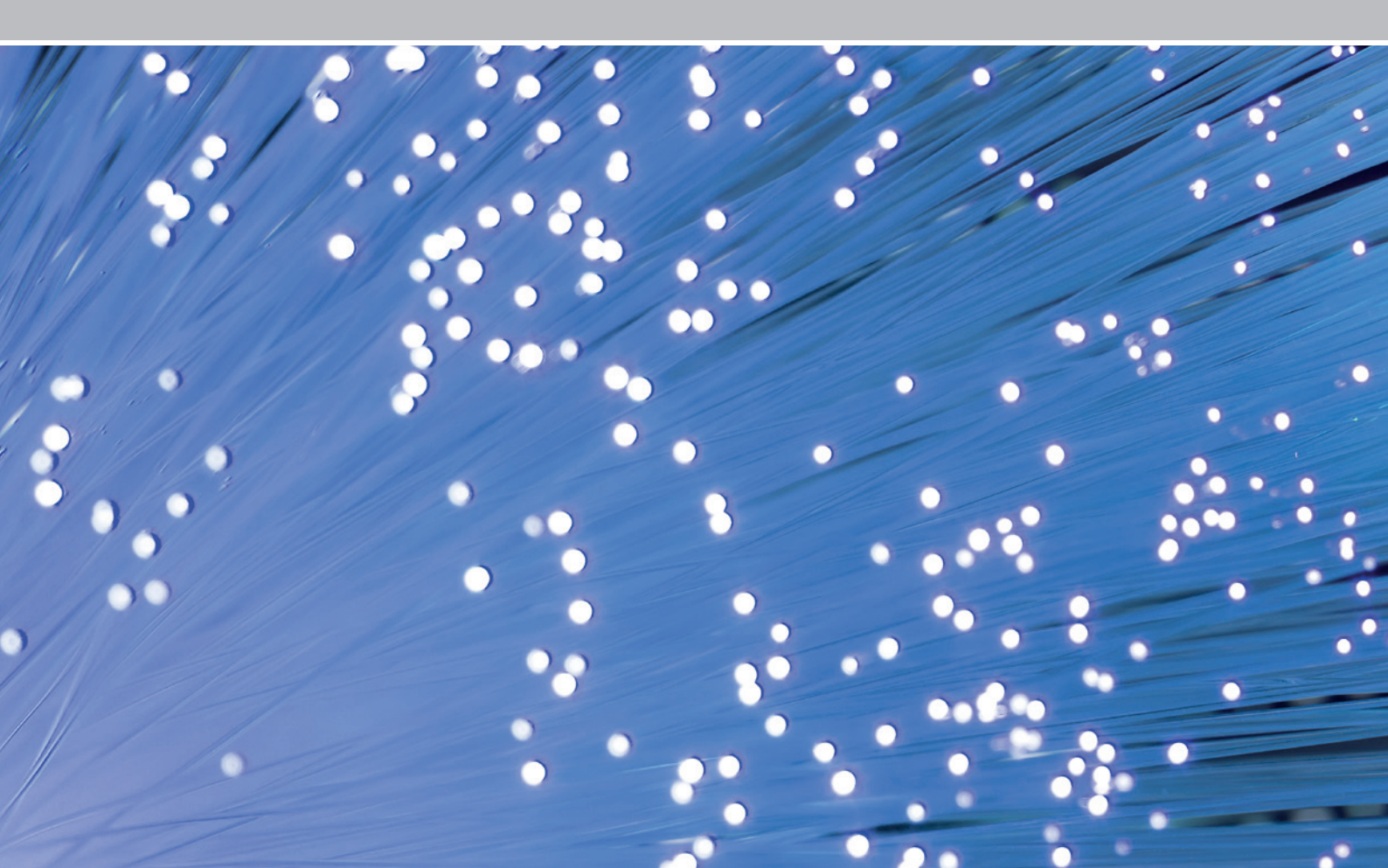


KAISER Connectivity.

Solutions for professional broadband expansion.





Gigabit network future.

Advantages of fibre optic technology.

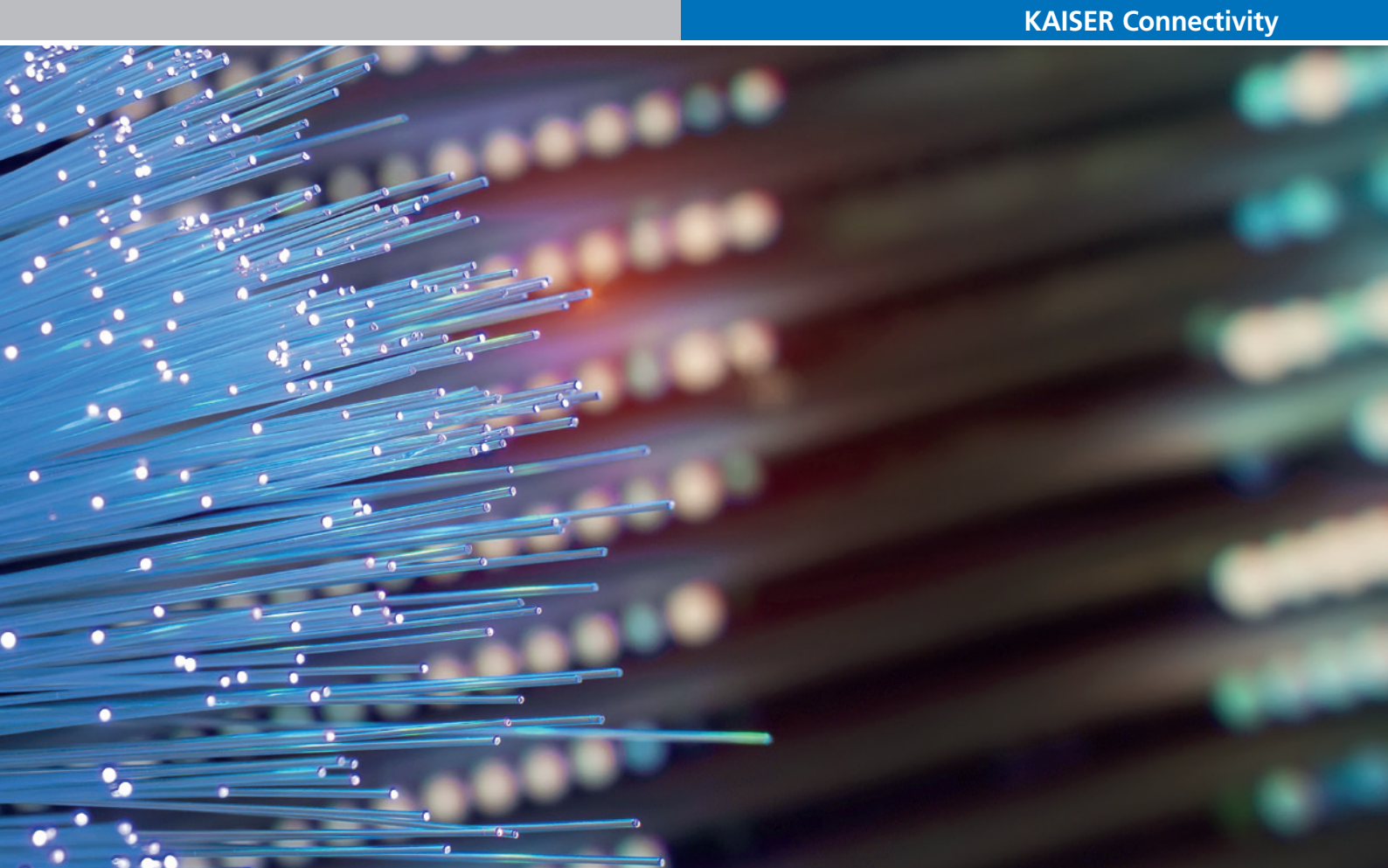
The digital transformation of the economy and society demands fast broadband networks that allow real-time transmissions at speeds in the gigabit range and secure, high-quality Internet connections. Modern infrastructure with fibre optic cables is essential for this. In addition to high-speed Internet, this technology can also be used, for example, to transmit HD and 4K television programs, IP telephony and streaming services such as online gaming or video telephony – simultaneously and practically in real time.

The data is transmitted in the form of light signals that are insensitive to electromagnetic interference (EMC). In addition, a high level of security against wiretapping (signal interception) is ensured, compared to copper-based cable networks. With fibre optic cables, there is also no significant signal attenuation with increasing cable length – in contrast to classic copper cables, in which signal attenuation causes the data transmission rate to drop with every metre of line. In global data traffic, this means a significant increase in the amount of data that can be transmitted and also the speed of transmission.

Fibre optic lines facilitate consistently high bandwidths with extremely low latency, both downstream and upstream. For industry, trade and commerce applications, and in the health care, public authority and education sectors, this is already a basic requirement and the key to new, future-oriented services and business models. In this way, digitalisation can develop its full growth potential.

The advantages of fibre optic technology at a glance

- High availability with reliable bandwidths of up to 1 gigabit
- Much faster Internet connections compared to older transmission technologies
- No loss of speed over longer distances due to signal attenuation
- Insensitive to electromagnetic interference (EMC)
- High protection against wiretapping (signal interception) compared to conventional copper cables



Gigabit network future. Advantages of fibre optic.
What really matters. **The wiring of the „last mile“.**

2
4

Requirements

Product solutions

Building installations (FTTH)

Optical telecommunications outlet.
Surface-mounted installation.
Flush-mounted installation.
E3S Connect®
Surface-mounted installation.
Flush-mounted installation.
Surface-mounted installation, pre-assembled.
Flush-mounted installation, pre-assembled.
Connection cable / System cable.
Building distributor (BEP).
Compact building distributor (BEP).
E3S Connect® building distributor.
Innovative patch cassette.
High-quality fibre optic connection cable.

AGRO OTO units – surface-mounted/flush-mounted. 6
AGRO OTO unit – surface-mounted. 8
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E3S Connect® 12
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E3S Connect® connection cable / system cable. 22
Building distributor (BEP). 24
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E3S Connect® building distributor. 28
E3S Connect® patch cassette. 30
Pigtail (LC/APC). 31

Local distribution networks (FTTS)

Underground branching of cable and conduit systems.
Splice management.
Underground connection or extension with few subscriber lines.

Shaft sleeve holder for splice distributor box. 32
Splice distributor box (FMP). 34
Midi Fibre Dome (MFD). 36

Technical information.

38



What really matters. The wiring of the „last mile“.

AGRO supports network operators, designers, system integrators and general contractors in creating efficient, future-proof fibre optic infrastructure so that gigabit networks can be quickly expanded. After all, only a secure, high-performance communications network can form the backbone of an economically and ecologically successful society. High transmission rates in the network are important for smooth telecommunications and data-heavy online activities – especially for companies, schools and hospitals, and increasingly also for private individuals.

To this end, AGRO has developed an innovative product portfolio for street distribution and building distribution applications, which significantly simplifies the work processes involved in laying and installing fibre optic infrastructure – reducing the overall costs and making a completely fibre optic-based network economical for every glass-fibre connection.

The „last mile“ refers to the connection between a distribution point (DP) and a building (FTTB), home (FTTH) or desk (FTTD). The fibre optic cable should be routed directly to the end user (or as close as possible) in order to minimise the performance-reducing impacts of the conventional copper or coaxial cables that are used beyond that point. Branching off individual fibre optic connection cables from the main street distribution cable is more complex than it appears at first glance. And there are various options for extending the fibre optics network into the building. The crucial question for planners, designers and network operators is how each optical telecommunications outlet (OTO) can be made available for use, economically and to a high technical standard, without compromising the data transmission rate.



Economical solutions from KAISER Connectivity for the „last mile“ in a fibre optic network include cleverly designed products for distribution points and building entry points as well as reliable building distributors.

The high level of investment required to include the last section of cable within a building in the fibre optic network has often resulted in some network operators continuing to rely on a hybrid network architecture, with fibre optic cable up to the distribution point and copper or coaxial cable from there to the subscriber connection point.

Thanks to the KAISER Connectivity's range of connectivity products, the extension of fibre optic networks to the subscriber connection points is now economical for all concerned, thus offering a future-oriented solution to the needs and demands of the digital age – in the interests of the entire economy and of society as a whole.



Optical telecommunications outlet (OTO), surface-mounted installation

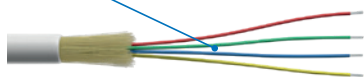
The optical telecommunications outlet forms the termination point of the fibre optic line in the home. The availability of the pre-assembled cables in various lengths makes this an optimal solution for structured cabling.

- Compact optical telecommunications outlet
- Dimensions: 86 × 86 × 20 mm (L × W × H)
- Colour Cca: RAL9003, signal white; Colour Dca E9: yellow
- Available ready for splicing with pre-assembled cable in various lengths
- Available with 4 fibres

- High-quality fibre optic cable G.657.A2 and BauPVo Cca
- High-quality fibre optic cable G.657.A2 and BauPVo Dca
- Cable can be pulled in or blown in
- Supplied in handy Rollerbox cable-feed box for optimised installation

Fibres

Available with 4 fibres

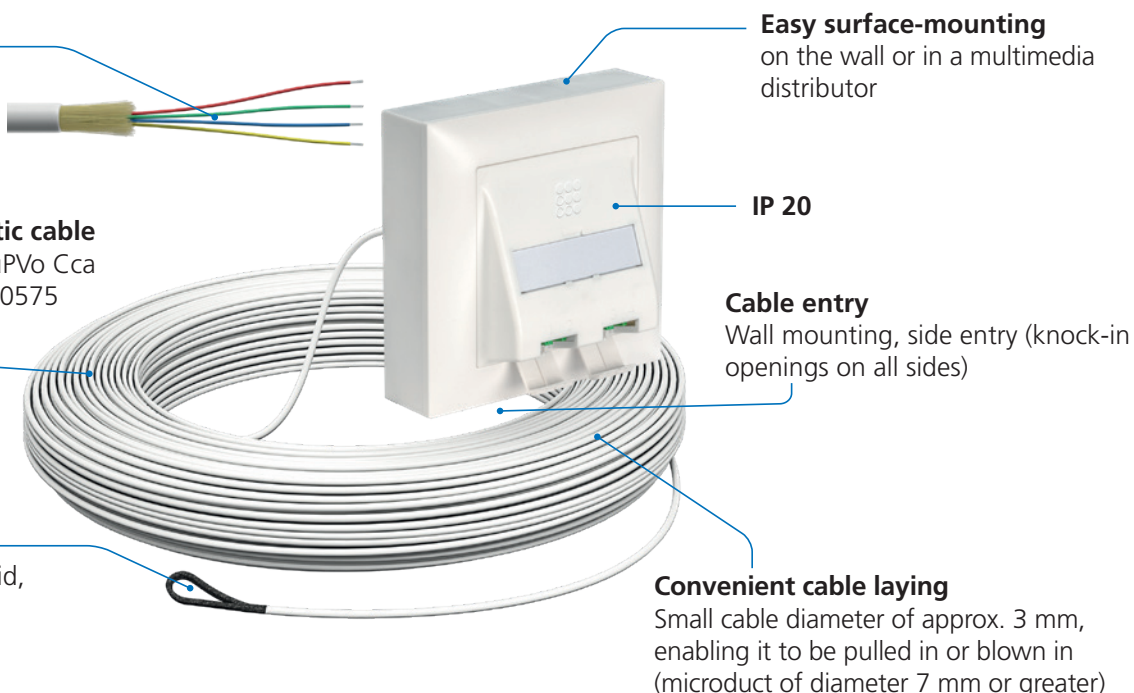


High-quality fibre optic cable

G.657.A2 fibre and BauPVo Cca in accordance with EN50575

Pull-in aid

Pre-assembled pull-in aid, e.g. for Kati-Blitz





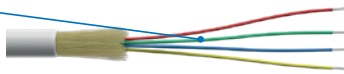
Optical telecommunications outlet (OTO), flush-mounted installation

The optical telecommunications outlet forms the termination point of the fibre optic line in the home. The availability of the pre-assembled cables in various lengths makes this an optimal solution for structured cabling.

- Installation in all AGRO inlet boxes
- Available ready for splicing with pre-assembled cable in various lengths
- Design compatibility with Feller EDIZIOdue
- Available with four fibres
- High-quality fibre optic cable G.657.A2 and BauPVo Cca
- High-quality fibre optic cable G.657.A2 and BauPVo Dca
- Cable can be pulled in or blown in
- Supplied in handy Rollerbox cable-feed box for optimised installation

Fibres

Available with 4 fibres



High-quality fibre optic cable

G.657.A2 fibre and BauPVo Cca in accordance with EN50575

Harmonised design

for precise installation in all AGRO inlet boxes

Available with LC 1x or 2x LC/APC Duplex connectors

Convenient cable laying

Small cable diameter of approx. 3 mm, enabling it to be pulled in or blown in (microduct of 7 mm diameter or greater)

Pull-in aid

Pre-assembled pull-in aid, e.g. for Kati-Blitz

Design compatibility
Compatibility with Feller EDIZIOdue

Technical details are subject to change.

FTTH Rollerbox OTO surface-mount kit

· 2x LC/APC-DX, 2.3 mm, yellow, Dca,
pre-assembled ready for splicing



Length x Width x Height	86 x 86 x 20 mm
Installation type	Surface-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Yellow (E9)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0,20 dB
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	Dca in accordance with EN50575:2017 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Huber+Suhner Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Dca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Installation / In service	0 °C / +50 °C
Internal packaging/Number of units in delivery	- / 1

Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
8655.2.3.070GE		4	7 m	Dca
8655.2.3.100GE		4	10 m	Dca
8655.2.3.150GE		4	15 m	Dca
8655.2.3.200GE		4	20 m	Dca
8655.2.3.300GE	866 700 013	4	30 m	Dca
8655.2.3.400GE		4	40 m	Dca
8655.2.3.450GE		4	45 m	Dca
8655.2.3.500GE		4	50 m	Dca
8655.2.3.600GE	866 700 113	4	60 m	Dca
8655.2.3.700GE		4	70 m	Dca
8655.2.3.750GE		4	75 m	Dca
8655.2.3.800GE		4	80 m	Dca
8655.2.3.900GE	866 700 213	4	90 m	Dca
8655.2.3.1000GE		4	100 m	Dca
8655.2.3.1100GE		4	110 m	Dca
8655.2.3.1200GE		4	120 m	Dca

FTTH Rollerbox OTO surface-mount kit

- 2x LC/APC-DX, 2.3 mm, white, Cca, pre-assembled ready for splicing



Length × Width × Height	86 × 86 × 20 mm
Installation type	Surface-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Signal white (RAL 9003)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0,20 dB
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	Cca in accordance with EN50575:2017 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Huber+Suhner Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Cca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Installation / In service	0 °C / +50 °C
Internal packaging/Number of units in delivery	- / 1

Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
8655.2.3.100WSC	866 700 003	4	10 m	Cca
8655.2.3.150WSC		4	15 m	Cca
8655.2.3.200WSC		4	20 m	Cca
8655.2.3.300WSC		4	30 m	Cca
8655.2.3.400WSC		4	40 m	Cca
8655.2.3.450WSC	866 700 103	4	45 m	Cca
8655.2.3.500WSC		4	50 m	Cca
8655.2.3.600WSC		4	60 m	Cca
8655.2.3.700WSC		4	70 m	Cca
8655.2.3.750WSC		4	75 m	Cca
8655.2.3.800WSC	866 700 203	4	80 m	Cca
8655.2.3.900WSC		4	90 m	Cca
8655.2.3.1000WSC		4	100 m	Cca
8655.2.3.1100WSC		4	110 m	Cca
8655.2.3.1200WSC		4	120 m	Cca

FTTH Rollerbox OTO flush-mount kit

- 2x LC/APC-DX, 2.3 mm, yellow, Dca, pre-assembled ready for splicing



Length x Width	86 x 86 mm
Installation type	Flush-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Yellow (E9)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0,20 dB
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	Dca in accordance with EN50575:2017 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Huber+Suhner Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Dca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Installation / In service	0 °C / +50 °C
Internal packaging/Number of units in delivery	- / 1

Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
8652.2.3.100GE		4	10 m	Dca
8652.2.3.150GE		4	15 m	Dca
8652.2.3.200GE		4	20 m	Dca
8652.2.3.300GE	866 700 313	4	30 m	Dca
8652.2.3.400GE		4	40 m	Dca
8652.2.3.450GE		4	45 m	Dca
8652.2.3.500GE		4	50 m	Dca
8652.2.3.600GE	866 700 413	4	60 m	Dca
8652.2.3.700GE		4	70 m	Dca
8652.2.3.750GE		4	75 m	Dca
8652.2.3.800GE		4	80 m	Dca
8652.2.3.900GE	866 700 513	4	90 m	Dca
8652.2.3.1000GE		4	100 m	Dca
8652.2.3.1100GE		4	110 m	Dca
8652.2.3.1200GE		4	120 m	Dca

FTTH Rollerbox OTO flush-mount kit

- 2x LC/APC-DX, 2.3 mm, white, Cca, pre-assembled ready for splicing



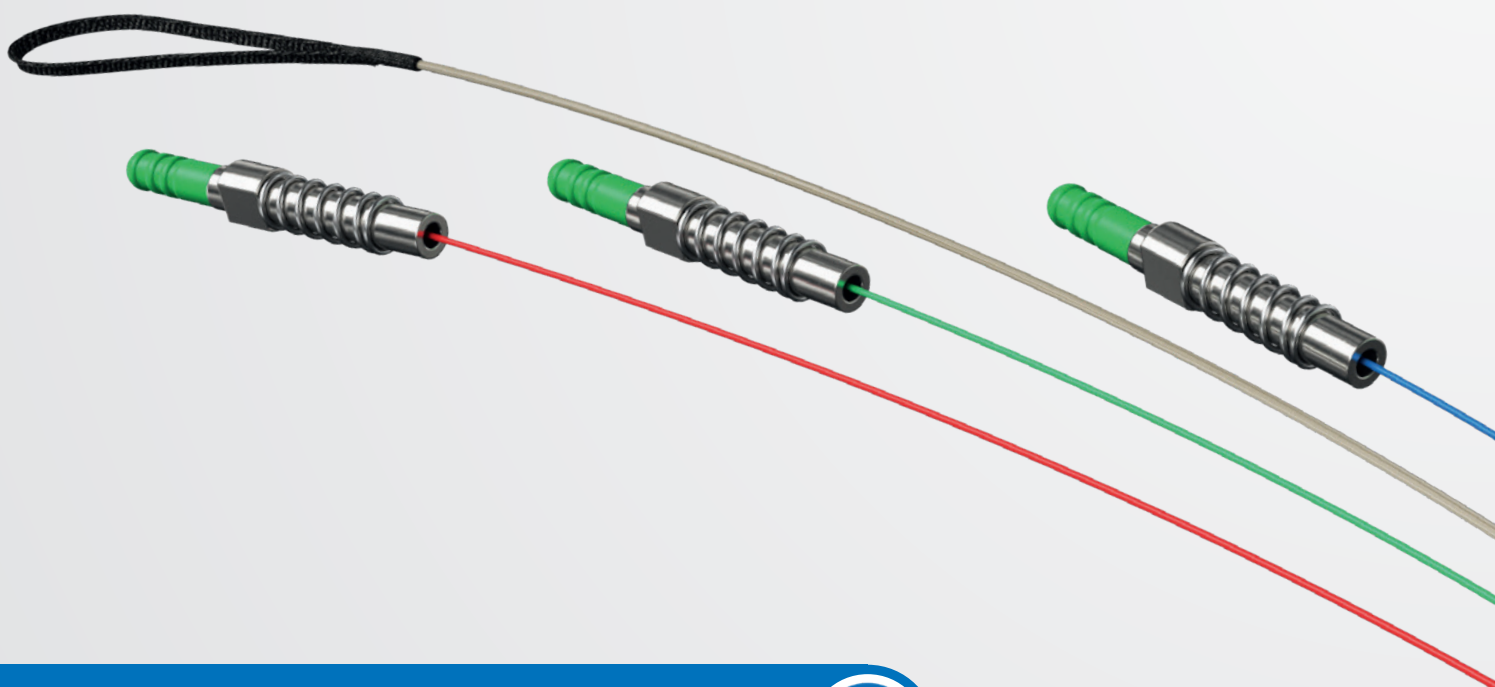
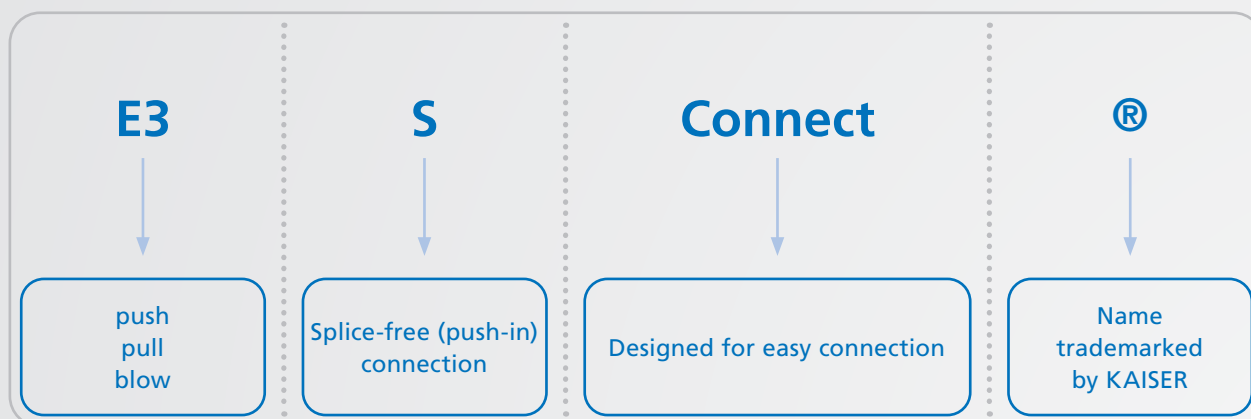
Length x Width	86 x 86 mm
Installation type	Flush-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Signal white (RAL 9003)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0,20 dB
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	Cca in accordance with EN50575:2017 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Huber+Suhner Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Cca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Installation / In service	0 °C / +50 °C
Internal packaging/Number of units in delivery	- / 1

Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
8652.2.3.150WSC	866 700 303	4	15 m	Cca
8652.2.3.200WSC		4	20 m	Cca
8652.2.3.300WSC		4	30 m	Cca
8652.2.3.400WSC		4	40 m	Cca
8652.2.3.450WSC		4	45 m	Cca
8652.2.3.500WSC	866 700 403	4	50 m	Cca
8652.2.3.600WSC		4	60 m	Cca
8652.2.3.700WSC		4	70 m	Cca
8652.2.3.750WSC		4	75 m	Cca
8652.2.3.800WSC		4	80 m	Cca
8652.2.3.900WSC	866 700 503	4	90 m	Cca
8652.2.3.1000WSC		4	100 m	Cca
8652.2.3.1100WSC		4	110 m	Cca
8652.2.3.1200WSC		4	120 m	Cca

What is E3S Connect®?

KAISER's fully "pluggable" solution for fibre-based building networks.

KAISER now offers the new, innovative E3S Connect® range for push-in fibre optic installation. So now you have all the options you need to efficiently carry out your indoor cabling work. Because the best products are those that integrate seamlessly into your work processes and your projects.

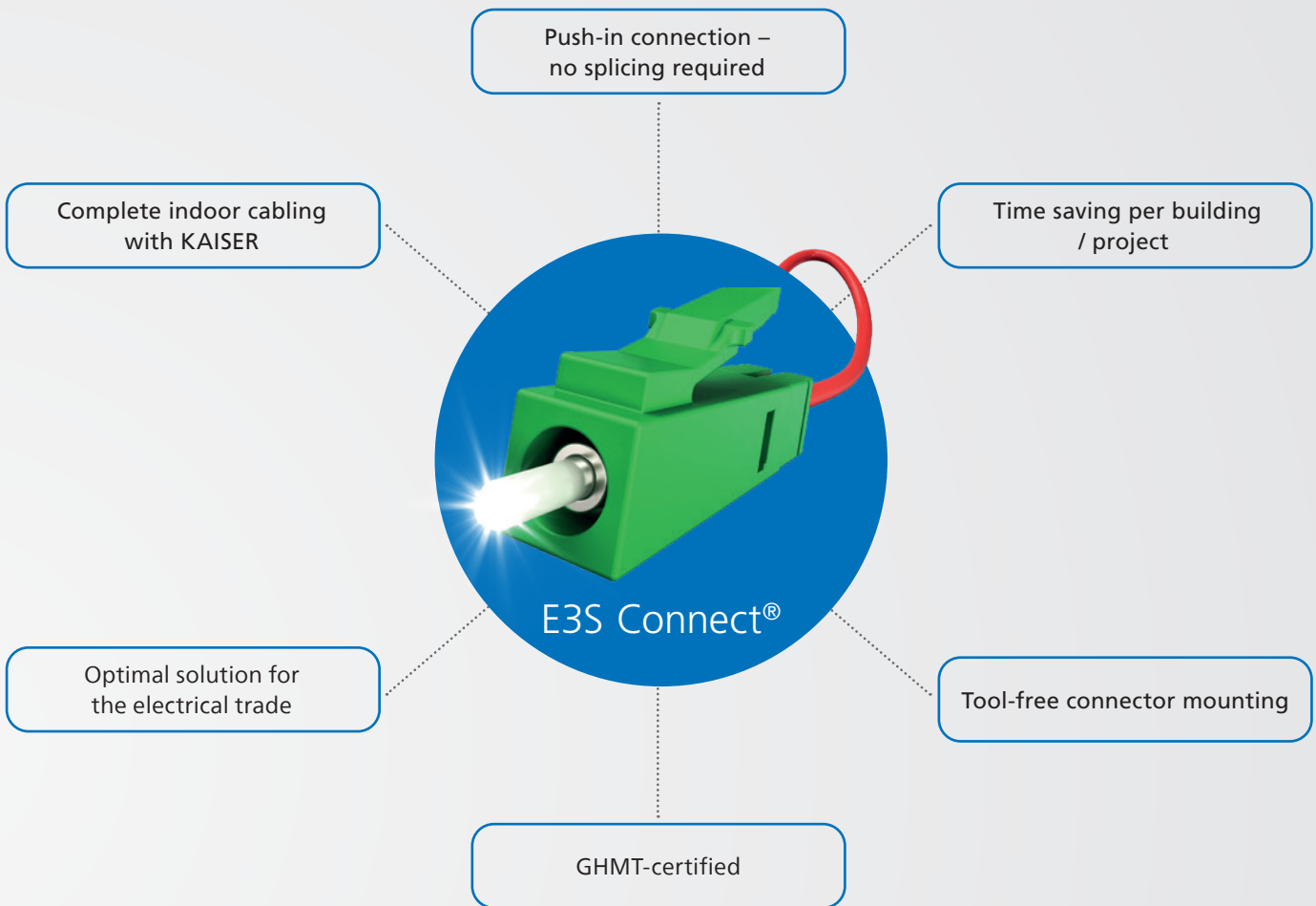


E3S Connect® from KAISER

Fibre optic installation made easy with E3S Connect®. You can recognise products featuring our innovative push-in connector by this symbol:



Benefits of E3S Connect®



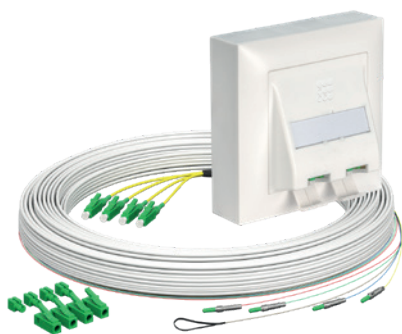
Why pluggable?

The roll-out of FTTH is a priority for network operators and governments around the world

- $\geq 1\text{Gbit/s}$ (strongly growing demand for data, increasing usage rates)
- Broadband expansion promoted by the German government and others
- Disproportionately growing market
- The right to fast fibre-based internet is increasingly enshrined in government policy and laws such as Germany's new *TKG Novelle* telecommunications act
- Increases property value (investment protection, future-proof)

New target groups / installers must be catered for

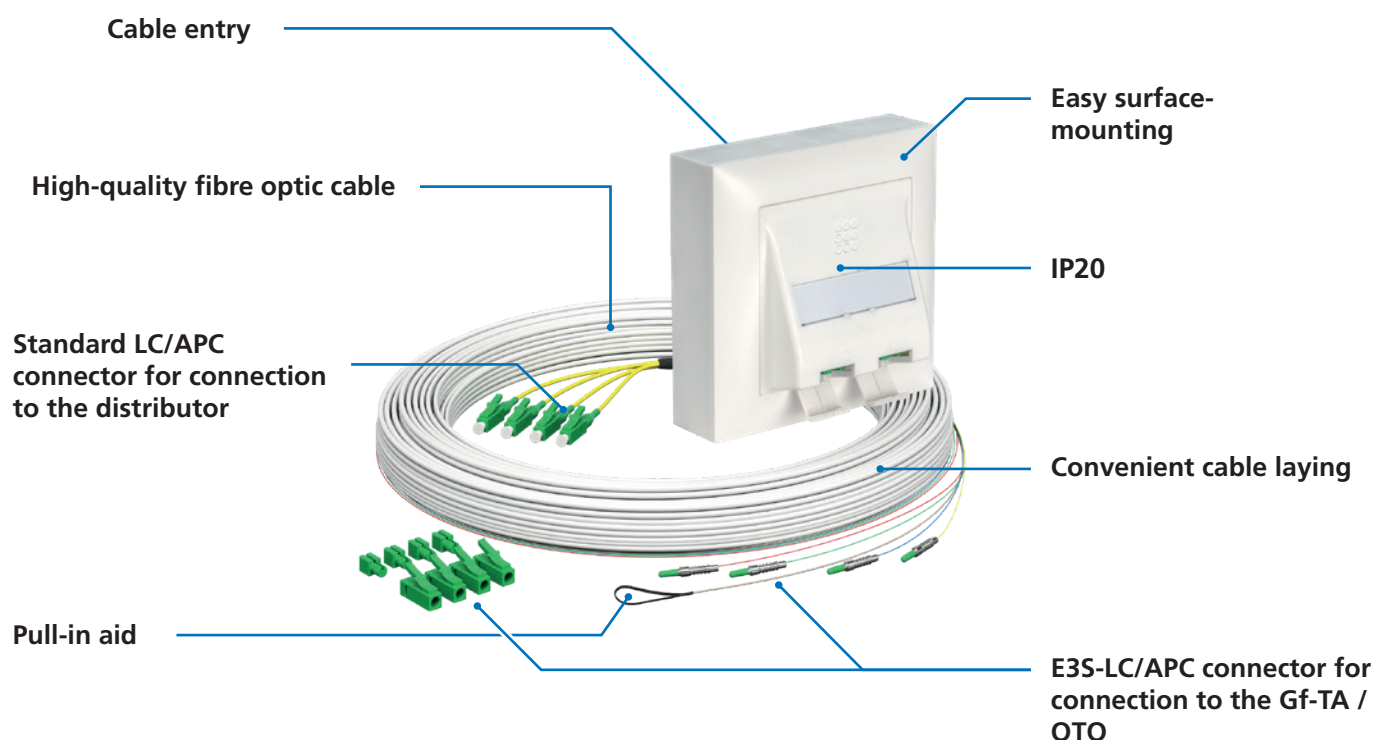
- Reduced installation costs – no splicing equipment required
- Can be installed by general electricians – no splicing skills necessary
- Increased involvement of the electrical trade in upgrading building networks
- New business field for electrical installers – wider range of services



E3S Connect® optical telecommunications outlet (OTO), surface-mounted installation with E3S fibre-optic cable for connection to the building entry point (BEP)

The optical telecommunications outlet (OTO) forms the termination point for fibre-optic cables in the home. The innovative and splice-free E3S Connect® system enables FTTH networks to be expanded quickly and easily. The pre-assembled cables with E3S Connect® – LC/APC connectors can be blown, pulled or pushed into the ducting. Handy Rollerbox cable-feed boxes with different cable lengths facilitate precise planning and easy installation. Cable entry from the distributor to the apartment.

- Compact optical telecommunications outlet
- Dimensions: 86 × 86 × 20 mm (L × W × H)
- Colour similar to RAL9003 signal white
- With pre-assembled E3S fibre-optic cable in five lengths (10m, 15m, 20m, 25m and 30m) – other lengths available on request
- Available with 4 fibres
- High-quality fibre-optic cable G.657.A2 and BauPVo B2ca
- Cable can be blown, pulled or pushed into the ducting
- Pre-assembled cable is supplied in a handy Rollerbox cable-feed box
- Optical telecommunications outlet included



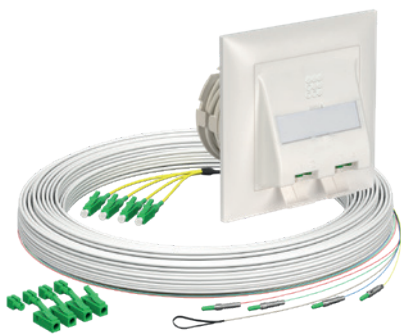
E3S Connect® FTTH Rollerbox OTO surface-mount kit

- 2x LC/APC-DX, 2.3 mm, white, Bca, E3S Connect®, 4 fibres, pluggable connection to distributor or BEP, pre-assembled E3S Connect® fibre optic cable



Length x Width x Height	86 x 86 x 20 mm
Installation type	Surface-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Signal white (RAL 9003)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0.20 dB
Connector Mating cycles	1000
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	B2 _{ca} in accordance with EN50575:2014 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Bca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Storage	-40 °C / +85 °C
Fibre optic cable Temperature range - Installation	-20 °C / +60 °C
Fibre optic cable Temperature range - In service	-40 °C / +80 °C
Internal packaging/Number of units in delivery	- / 1

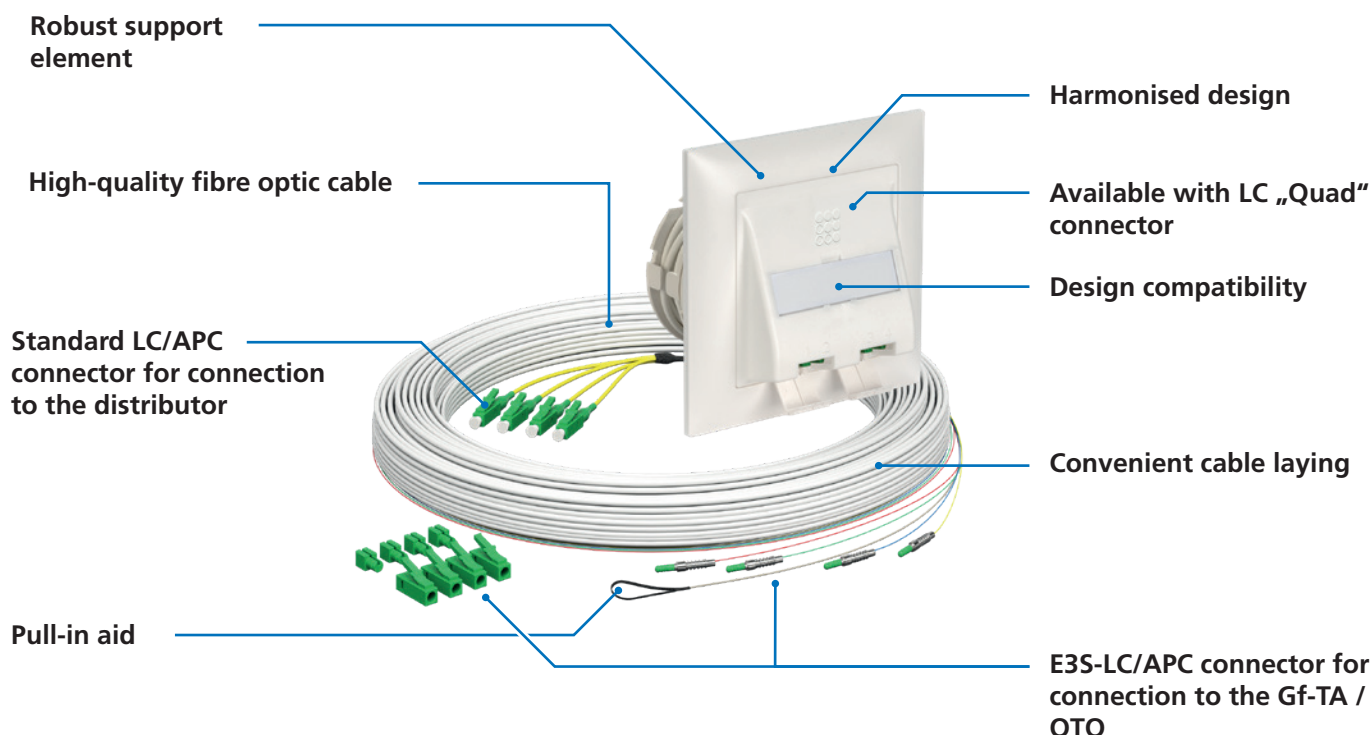
Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
4175007		4	10 m	Bca
4175008		4	15 m	Bca
4175009		4	20 m	Bca
4175010		4	25 m	Bca
4175011		4	30 m	Bca



E3S Connect® optical telecommunications outlet (OTO), flush-mounted installation with E3S fibre-optic cable for connection to the building entry point (BEP)

Innovative optical telecommunications outlet (OTO) with an installation depth of max. 32mm for precise flush-mounted installation in all common equipment connection boxes. The robust metal support ring with alignment markings facilitates convenient mounting with screwed connections. Ideal cable storage thanks to the rotatable and removable storage drum on the back. Equipped with two LC/APC Duplex connectors including shutter and dust protection. Design compatibility with all well-established switch manufacturers that use a standardised telecommunications connection unit cover. Cable entry from the distributor to the apartment.

- Design compatible with all common telecommunications connection unit covers
- Installation in all KAISER equipment connection boxes
- Overlength management
- With pre-assembled E3S fibre-optic cable in five lengths (10m, 15m, 20m, 25m and 30m) – other lengths available on request
- Available with 4 fibres
- High-quality fibre-optic cable G.657.A2 and BauPVo B2ca
- Cable can be blown, pulled or pushed into the ducting
- Pre-assembled cable is supplied in a handy Rollerbox cable-feed box
- Optical telecommunications outlet included



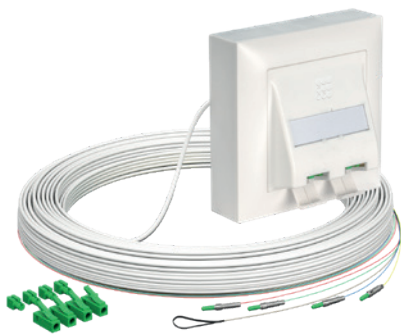
E3S Connect® FTTH Rollerbox OTO flush-mount kit

- 2x LC/APC-DX, 2.3 mm, white, Bca, E3S Connect®, 4 fibres, pluggable connection to distributor or BEP, pre-assembled E3S Connect® fibre optic cable



Length x Width	86 x 86 mm
Installation type	Flush-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Signal white (RAL 9003)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0.20 dB
Connector Mating cycles	1000
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	B2 _{ca} in accordance with EN50575:2014 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Bca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Storage	-40 °C / +85 °C
Fibre optic cable Temperature range - Installation	-20 °C / +60 °C
Fibre optic cable Temperature range - In service	-40 °C / +80 °C
Internal packaging/Number of units in delivery	- / 1

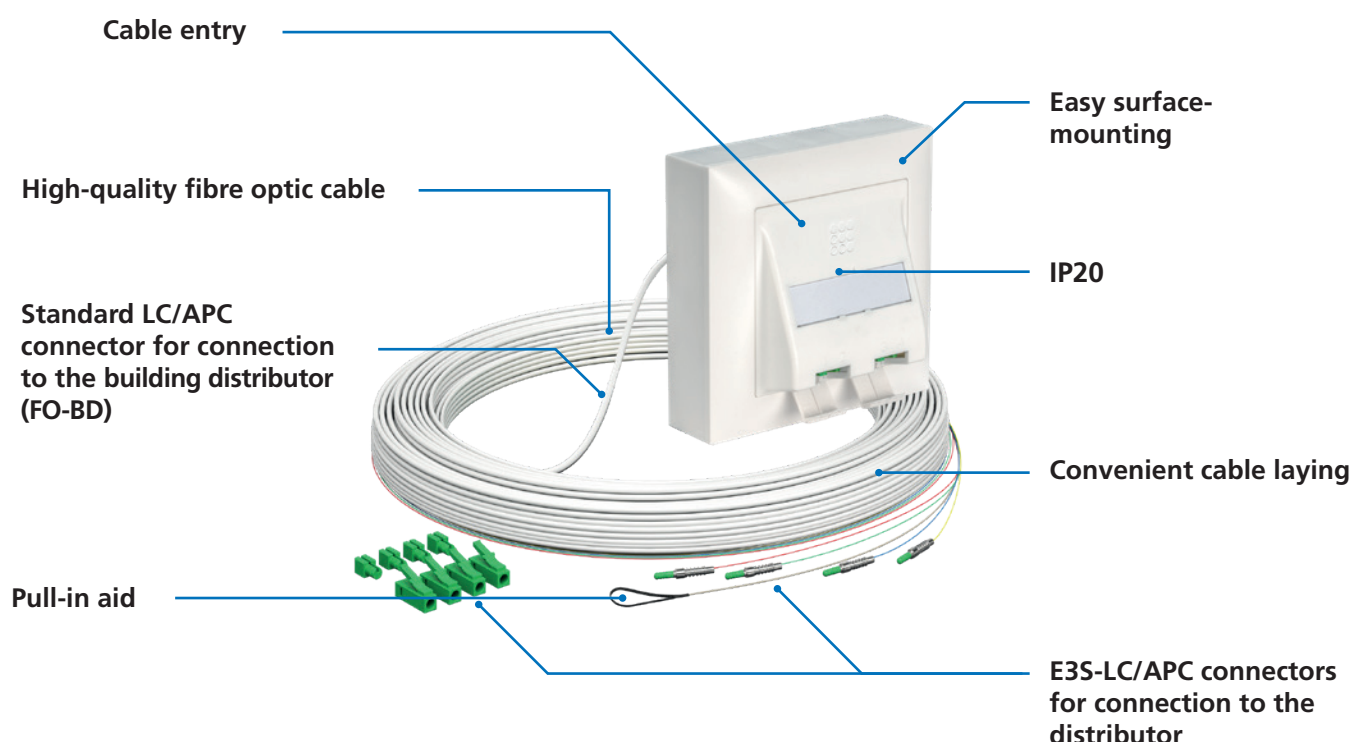
Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
4176007		4	10 m	Bca
4176008		4	15 m	Bca
4176009		4	20 m	Bca
4176010		4	25 m	Bca
4176011		4	30 m	Bca



E3S Connect® optical telecommunications outlet (OTO), surface-mounted installation with E3S fibre optic cable for connection to the building distributor (FO-BD)

The optical telecommunications outlet (OTO) forms the termination point for fibre-optic cables in the home. The innovative and splice-free E3S Connect® system enables FTTH networks to be expanded quickly and easily. The pre-assembled cables with E3S Connect® – LC/APC connectors can be blown, pulled or pushed into the ducting. Handy Rollerbox cable-feed boxes with different cable lengths facilitate precise planning and easy installation. Cable entry from the apartment to the distributor.

- Compact optical telecommunications outlet
- Dimensions: 86 × 86 × 20 mm (L × W × H)
- Colour similar to RAL9003 signal white
- With pre-assembled E3S fibre-optic cable in five lengths (10m, 15m, 20m, 25m and 30m) – other lengths available on request
- Available with 4 fibres
- High-quality fibre-optic cable G.657.A2 and BauPVo B2ca
- Cable can be blown, pulled or pushed into the ducting
- Pre-assembled cable is supplied in a handy Rollerbox cable-feed box
- Optical telecommunications outlet included



E3S Connect® FTTH Rollerbox OTO surface-mount kit

- 2x LC/APC-DX, 2.3 mm, white, Bca, E3S Connect®, 4 fibres, pluggable E3S connection, pre-assembled E3S Connect® fibre optic cable



Length x Width x Height	86 x 86 x 20 mm
Installation type	Surface-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Signal white (RAL 9003)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0.20 dB
Connector Mating cycles	1000
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	B2 _{ca} in accordance with EN50575:2014 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Bca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Storage	-40 °C / +85 °C
Fibre optic cable Temperature range - Installation	-20 °C / +60 °C
Fibre optic cable Temperature range - In service	-40 °C / +80 °C
Internal packaging/Number of units in delivery	- / 1

Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
4175002		4	10 m	Bca
4175003		4	15 m	Bca
4175004		4	20 m	Bca
4175005		4	25 m	Bca
4175006		4	30 m	Bca



E3S Connect® optical telecommunications outlet (OTO), flush-mounted installation with E3S fibre-optic cable for connection to the building distributor (FO-BD)

Innovative optical telecommunications outlet (OTO) with an installation depth of max. 32mm for precise flush-mounted installation in all common equipment connection boxes. The robust metal support ring with alignment markings facilitates convenient mounting with screwed connections. Ideal cable storage thanks to the rotatable and removable storage drum on the back. Equipped with two LC/APC Duplex connectors including shutter and dust protection. Design compatibility with all well-established switch manufacturers that use a standardised telecommunications connection unit cover. Cable entry from the apartment to the distributor.

- Design compatible with all common telecommunications connection unit covers
- Installation in all KAISER equipment connection boxes
- Overlength management
- With pre-assembled E3S fibre-optic cable in five lengths (10m, 15m, 20m, 25m and 30m) – other lengths available on request
- Available with 4 fibres
- High-quality fibre-optic cable G.657.A2 and BauPVo B2ca
- Cable can be blown, pulled or pushed into the ducting
- Pre-assembled cable is supplied in a handy Rollerbox cable-feed box
- Optical telecommunications outlet included

Robust support element

High-quality fibre optic cable

Standard LC/APC connector for connection to the building distributor (FO-BD)

Harmonised design

Available with LC „Quad“ connector

Design compatibility

Convenient cable laying

E3S-LC/APC connectors for connection to the distributor

Pull-in aid

E3S Connect® FTTH Rollerbox OTO flush-mount kit

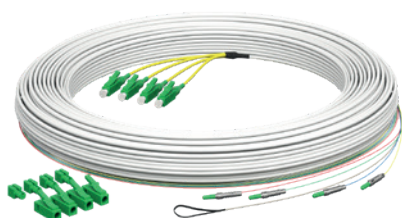
- 2x LC/APC-DX, 2.3 mm, white, Bca, E3S Connect®, 4 fibres, pluggable E3S connection, pre-assembled E3S Connect® fibre optic cable



Length x Width	86 x 86 mm
Installation type	Flush-mounted
Protection class	IP 20
Halogen-free	Yes
Loop length	60 cm per fibre
Bending radius (fibre)	25 mm
Splice protection holder	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Colour	Signal white (RAL 9003)
Connector LC/APC Duplex	With flange, SC Simplex Footprint
Connector Number	2
Connector Sleeve material	Ceramic, split
Connector Housing material	Plastic, halogen-free, flame-resistant
Connector Laser and dust protection	Integrated protective cap
Connector Insertion loss	≤ 0.20 dB
Connector Mating cycles	1000
Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable LC/APC-DX connectors	2x
Fibre optic cable Fibre type	4x 9/125 LowBand ITU G657.A
Fibre optic cable Fibre colour coding	1 = red, 2 = green, 3 = yellow, 4 = blue
Fibre optic cable Stranding element	Aramid yarn
Fibre optic cable Material	LSZH, IEC 60332-1
Fibre optic cable BauPVo	B2 _{ca} in accordance with EN50575:2014 + A1:2016
Fibre optic cable Sheath thickness	0.40 mm
Fibre optic cable Cable Ø	3.00 mm +/- 0.15 mm
Fibre optic cable Cable marking	Fiberoptic 4x 9/125 LowBand ITU G657.A2 LSFH, Bca
Fibre optic cable Minimum bending radius	30 mm (Installation), 60 mm (permanent)
Fibre optic cable Tension force	450 N (max. fibre loading 0.50 %), 225 N (max. fibre loading 0.25 %)
Fibre optic cable Compressive strength	500 N / 10 cm
Fibre optic cable Temperature range - Storage	-40 °C / +85 °C
Fibre optic cable Temperature range - Installation	-20 °C / +60 °C
Fibre optic cable Temperature range - In service	-40 °C / +80 °C
Internal packaging/Number of units in delivery	- / 1

Art.-No.	E-No.	No. of fibres	Cable length	Fire protection rating
4176002		4	10 m	Bca
4176003		4	15 m	Bca
4176004		4	20 m	Bca
4176005		4	25 m	Bca
4176006		4	30 m	Bca

E3S Connect® cables

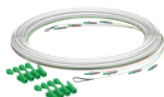


The E3S system cable forms the connection line between the fibre optic building distributor and the fibre optic floor distributor, for example in apartment buildings.

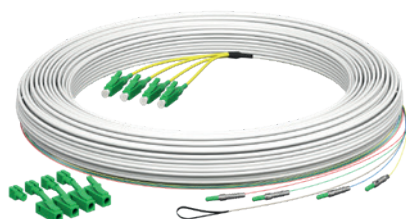
- E3S system cable available in 5x lengths (10m, 15m, 20m, 25m and 30m) – further lengths available on request
- Available with 4 fibres
- High-quality fibre-optic cable G.657.A2 and BauPVo B2_{ca}
- Cable can be pulled or blown into duct
- Supplied in a handy Rollerbox cable-feed box for optimised installation

E3S Connect® cables, four fibres

· pre-assembled E3S Connect® fibre-optic cable

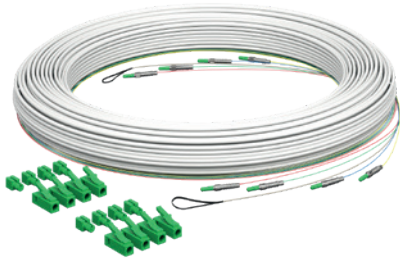


Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable Fibre colour coding	Four-fibre: 1=red, 2=green, 3=blue, 4=yellow
Fibre optic cable Material	LSZH, IEC 60332-1/-2
Fibre optic cable BauPVo	B2ca in accordance with EN50575:2014 + A1:2016
Fibre optic cable Cable Ø	2.00 x 2.40 mm
Fibre optic cable Cable marking	KAISER FTTH E3S Connect System Cable / 2E9/125 G657A2 CPR B2ca DOP 12013034
Fibre optic cable Minimum bending radius	40 mm (Installation), 10 mm (permanent)
Fibre optic cable Tension force	250 N (Installation), 100 N (permanent)
Fibre optic cable Compressive strength	1000 N / 10 cm
Connectors Connection to OTO	Standard LC/APC
Connectors Split length at OTO	approx. 7 cm connector (all same length)
Connectors Connection to FD	E3S – LC/APC
Connectors Split length at FD	approx. 100 cm connector (of different lengths)
Connectors Insertion loss	≥ 0.12dB Ø - ≤ 0.25dB Max. (Grade B)
Connectors Return loss	≥ 70 dB (Grade B)
Connectors Ferrule	Ø 1.25 mm, ceramic, axially spring-loaded
Connectors Strain relief	≥ 100 N
Connectors Laser and dust protection	Filler plugs
Connectors Standard (specification)	IEC 61754-20
Internal packaging/Number of units in delivery	- / 1



Art.-No.	No. of fibres	Cable length
4264014	4	10 m
4264015	4	15 m
4264016	4	20 m
4264017	4	25 m
4264018	4	30 m

E3S Connect® cables



The E3S system cable forms the connection line between the fibre optic building distributor and the fibre optic floor distributor, for example in apartment buildings.

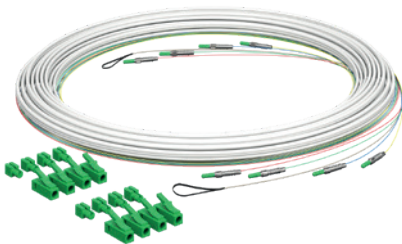
- E3S system cable available in 5x lengths (10m, 15m, 20m, 25m and 30m) – further lengths available on request
- Available with 4 fibres
- High-quality fibre-optic cable G.657.A2 and BauPVo B2_{ca}
- Cable can be pulled or blown into duct
- Supplied in a handy Rollerbox cable-feed box for optimised installation

E3S Connect® cables, four fibres

- pre-assembled E3S Connect® fibre-optic cable



Fibre optic cable Fibre class	Single Mode OS2 (G.657.A2)
Fibre optic cable Fibre colour coding	Four-fibre: 1=red, 2=green, 3=blue, 4=yellow
Fibre optic cable Material	LSZH, IEC 60332-1/-2
Fibre optic cable BauPVo	B2ca in accordance with EN50575:2014 + A1:2016
Fibre optic cable Cable Ø	2.00 x 2.40 mm
Fibre optic cable Cable marking	KAISER FTTH E3S Connect System Cable / 2E9/125 G657A2 CPR B2ca DOP 12013034
Fibre optic cable Minimum bending radius	40 mm (Installation), 10 mm (permanent)
Fibre optic cable Tension force	250 N (Installation), 100 N (permanent)
Fibre optic cable Compressive strength	1000 N / 10 cm
Connectors Connection to OTO	Standard LC/APC
Connectors Split length at OTO	approx. 7 cm connector (all same length)
Connectors Connection to FD	E3S – LC/APC
Connectors Split length at FD	approx. 100 cm connector (of different lengths)
Connectors Insertion loss	≥ 0.12dB Ø - ≤ 0.25dB Max. (Grade B)
Connectors Return loss	≥ 70 dB (Grade B)
Connectors Ferrule	Ø 1.25 mm, ceramic, axially spring-loaded
Connectors Strain relief	≥ 100 N
Connectors Laser and dust protection	Filler plugs
Connectors Standard (specification)	IEC 61754-20
Internal packaging/Number of units in delivery	- / 1

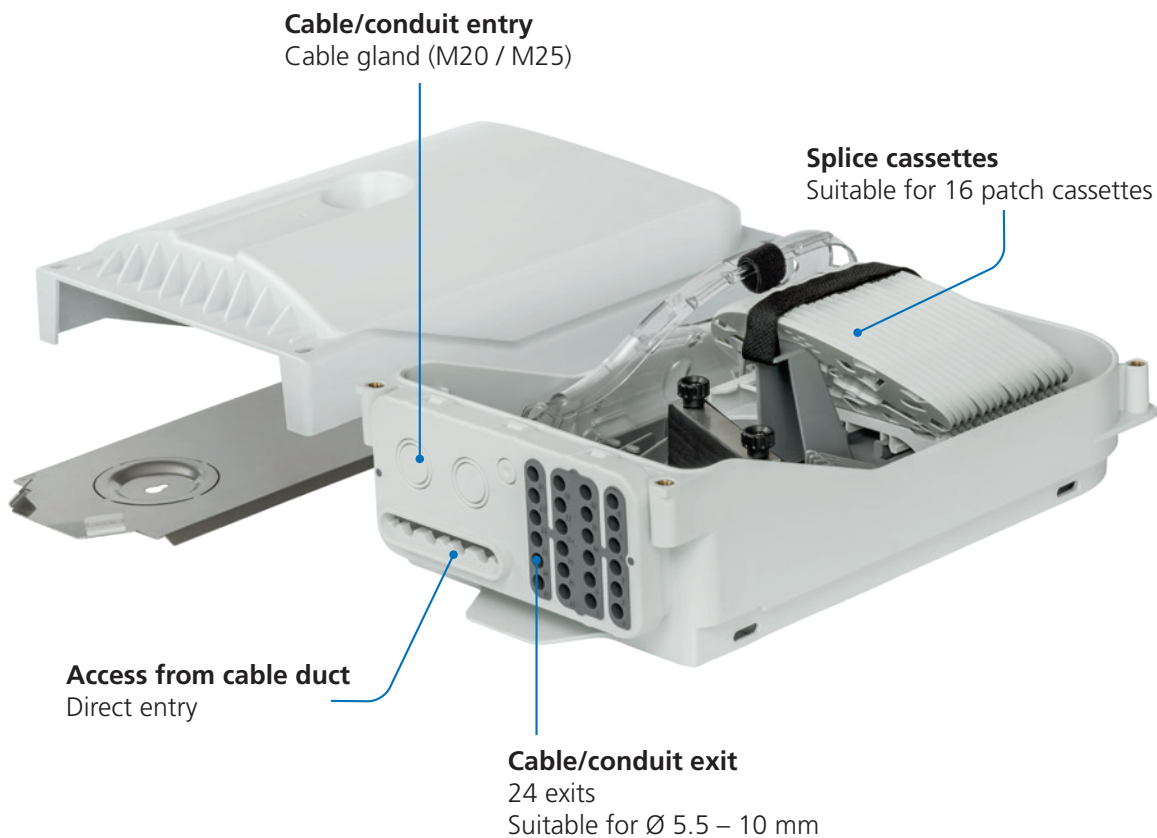


Art.-No.	No. of fibres	Cable length
4264019	4	10 m
4264020	4	15 m
4264021	4	20 m
4264022	4	25 m
4264023	4	30 m

Spliceable building distributor

The innovative product design of the building distributor is suitable for use with spliced cables in establishing fibre-based building infrastructure. The installation-friendly design facilitates quick and easy installation. The building distributor is based on purely spliceable components.

- Flexibility in the installation and management of fibre-based building networks
- Flexibility in indoor solutions



Building distributor

- Supplied: Building distributor including 16 patch cassettes, 4 mounting screws, sealing materials, moisture absorber

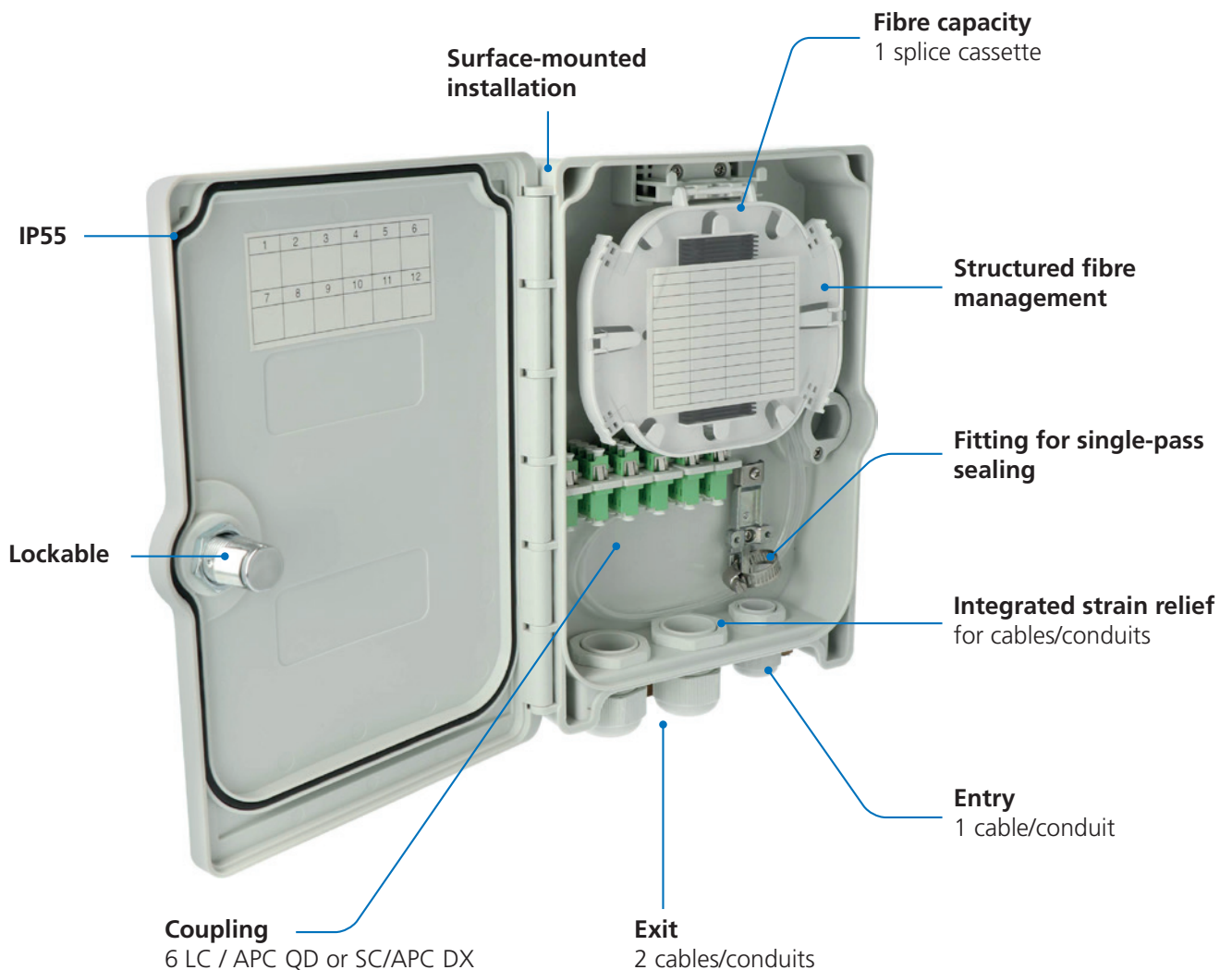


Length	380
Width	220
Height	130
Installation type	Surface-mounted
Protection class	IP 65 (Surface-mounted installation)
Number of fibres	64
No. of patch cassettes supplied	16
No. of spaces for patch cassettes	16
Colour	Grey - RAL 7035
Halogen-free	Yes
Loop length (patch cassette)	250
Bending radius (patch cassette)	30
No. of cable/conduit entries	2
Cable/conduit entry Ø	M20 / M25
Cable gland	M20 (4-13 mm)
No. of cable/conduit exits	24
Cable/conduit exit Ø	5,5 - 10
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Art.-No.	4177001

Compact building distributor (BEP)

AGRO's compact building distributor is designed for up to 24 fibres and can be supplied with different configurations.

- Flexibility in managing fibre optic networks
- Protected plug-type connection, fibre optic coupling inside
- Removable housing cover
- FTTX flexibility
- Structured fibre management



Note

Mechanical protection and easy installation are ensured. The compact building distributor also features six holders for LC / Quad or SC / DX couplings. These holders may be delivered without couplings or fully or partially equipped with couplings, as preferred. The couplings are located inside the enclosure to prevent unauthorised access. The compact building distributor is lockable. There is also the option of sealing the compact building distributor to prevent unauthorised opening.

Compact building distributor (BEP), CSS, partially equipped

- Supplied: Compact floor distributor, LC/APC QD coupling

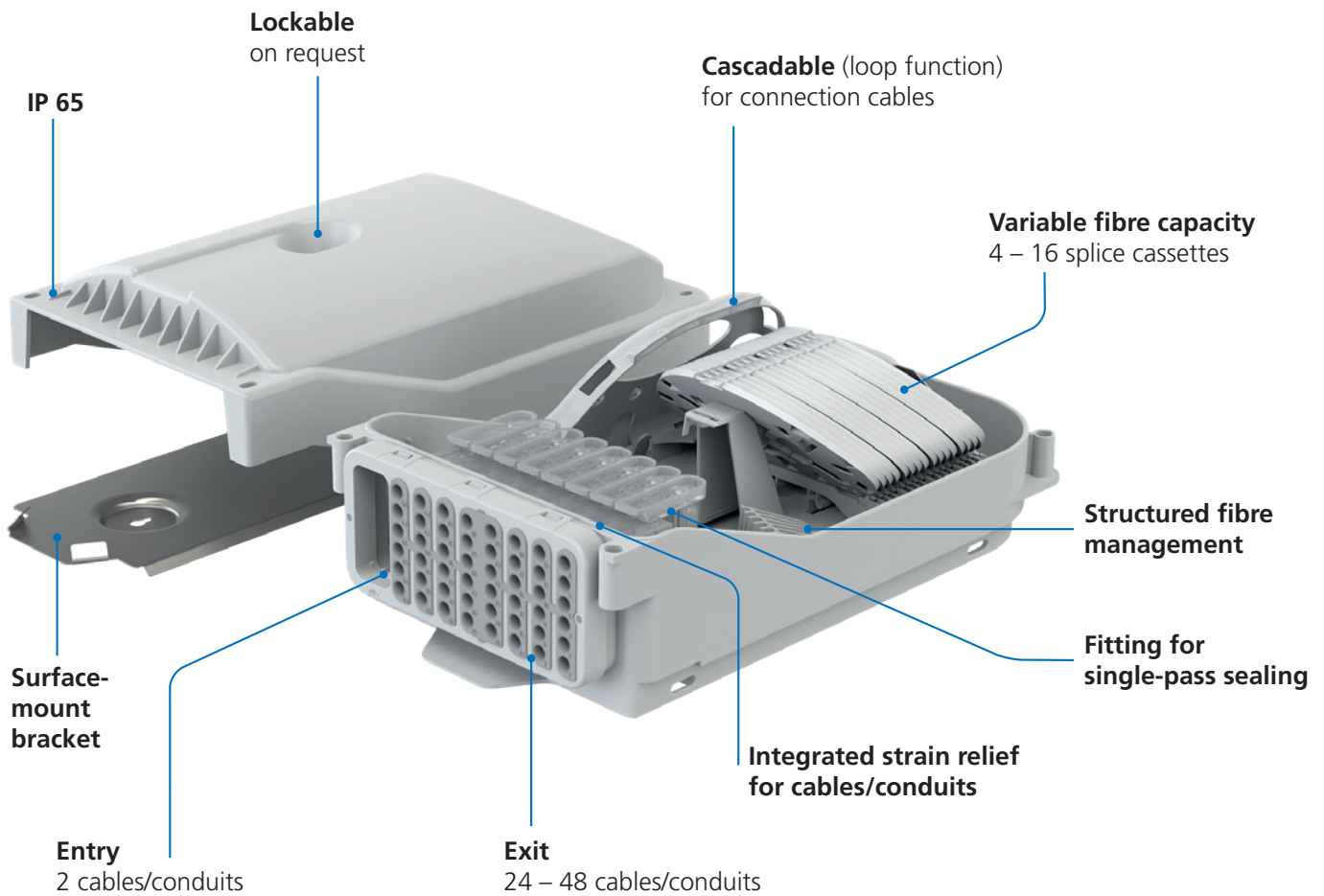


Installation type	Surface-mounted
Protection class	IP55 (Surface-mounted installation)
Number of fibres	4
Number of splice cassettes	1
Number of couplings	1
Coupling type	LC/APC QD
atene KOM-approved	Yes
Halogen-free	Yes
Loop length (splice cassette)	250 mm
Bending radius (splice cassette)	23 mm
Splice protection holder	CSS crimp / Mini heat-shrink tubing
No. of cable/conduit entries	1
Cable/conduit entry Ø	max. 11,0 mm
No. of cable/conduit exits	2
Cable/conduit exit Ø	max. 12× 2 mm
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Length × Width × Height	258 × 186 × 61 mm
Colour	Grey (RAL 7035)
Art.-No.	AT29231

Building distributor (BEP)

The splice distributor box can, with the help of the mounting bracket and the cover, be used if required as a surface-mounted building distributor. The splice distributor box with cover (FMB) offers protection class IP 65 and prevents the ingress of dust and water.

- Flexibility in managing fibre optic networks
- Plug & Play installation
- FTTX flexibility



Building distributor (FD), CSS

- Supplied: FMB including splice cassettes, 4 installation screws, sealing materials, mounting bracket



Installation type	Surface-mounted	Surface-mounted	Surface-mounted
Protection class	IP 65	IP 65	IP 65
Halogen-free	Yes	Yes	Yes
Number of fibres	192	96	96
Spleisskassetten Number	16	8	8
Spleisskassetten Height	4 mm	8 mm	8 mm
Cascadable (loop function)	No	Yes	No
Loop length (splice cassette)	300 mm	300 mm	300 mm
Bending radius (splice cassette)	30 mm	30 mm	30 mm
Splice protection holder	CSS Crimp / Mini heat-shrink tubing	CSS Crimp / Mini heat-shrink tubing	CSS Crimp / Mini heat-shrink tubing
No. of cable/conduit entries	2	2	2
Cable/conduit entry Ø	4,5 - 8,3 mm	4,5 - 8,3 mm	4,5 - 8,3 mm
No. of cable/conduit knock-out openings	1	No	1
Cable/conduit knock-out opening Ø	M12/16/20/25	No	M12/16/20/25
No. of cable/conduit exits	48	48	48
Cable/conduit exit Ø	3,0 - 8,0 mm	3,0 - 8,0 mm	3,0 - 8,0 mm
Temperature range - Storage	-10 °C / +60 °C	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C	-20 °C / +60 °C	-20 °C / +60 °C
Length x Width x Height	380x220x130 mm	380x220x130 mm	380x220x130 mm
Colour	Transparent / Grey	Transparent / Grey	Transparent / Grey
Art.-No.	AT29363	AT29371	AT29362

Building distributor (FD), HS

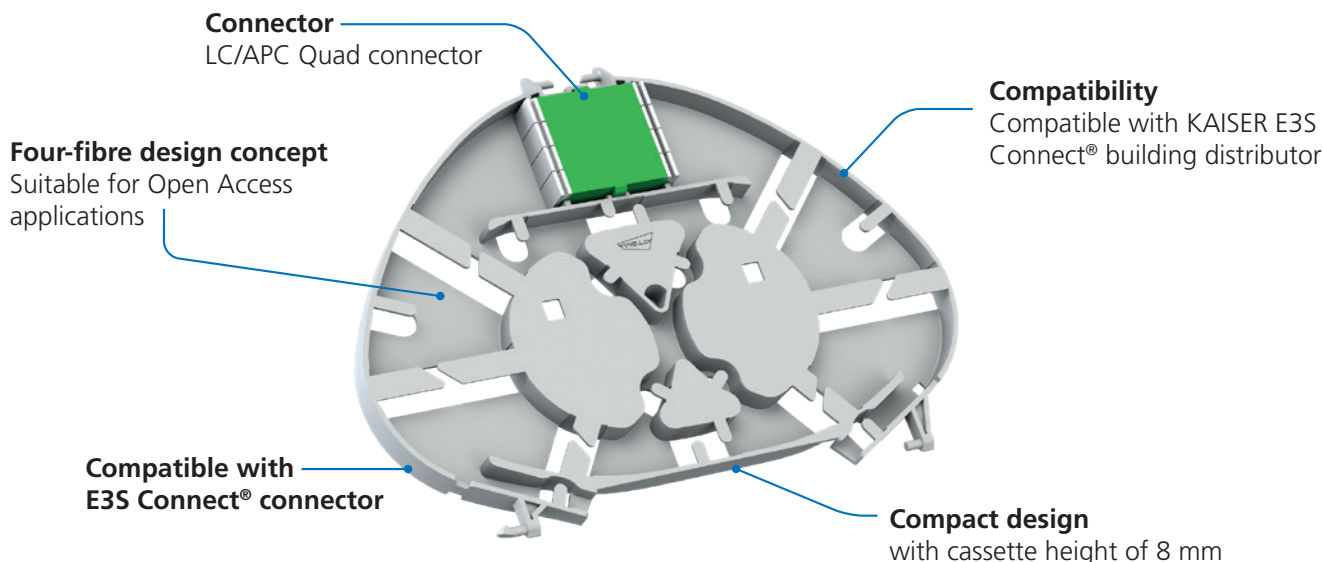
- Supplied: FMB including splice cassettes, 4 installation screws, sealing materials, mounting bracket



Installation type	Surface-mounted	Surface-mounted
Protection class	IP 65	IP 65
Halogen-free	Yes	Yes
Number of fibres	96	48
Number of splice cassettes	8	4
Splice cassette height	8 mm	8 mm
Cascadable (loop function)	No	Yes
Loop length (splice cassette)	300 mm	300 mm
Bending radius (splice cassette)	30 mm	30 mm
Splice protection holder	Heat-shrink tubing	Heat-shrink tubing
No. of cable/conduit entries	2	2
Cable/conduit entry Ø	4,5 - 8,3 mm	4,5 - 8,3 mm
No. of cable/conduit knock-out openings	1	2
Cable/conduit knock-out opening Ø	M12/16/20/25	M20/M25
No. of cable/conduit exits	48	24
Cable/conduit exit Ø	3,0 - 8,0 mm	3,0 - 8,0 mm
Temperature range - Storage	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C	-20 °C / +60 °C
Length x Width x Height	380x220x130 mm	380x220x130 mm
Colour	Transparent / Grey	Transparent / Grey
Art.-No.	AT29361	AT29391

E3S Connect® patch cassette

This innovative patch cassette is specially designed for the E3S Connect® building distributor, and each one can accommodate one LC/APC QD connector. The use of these patch cassettes enables the building distributor to receive E3S Connect® cables, facilitating the creation of a purely pluggable fibre optic-based building network.



Patch cassette, set of four, E3S Connect®

· Supplied: Four patch cassettes,
four LC/APC QD

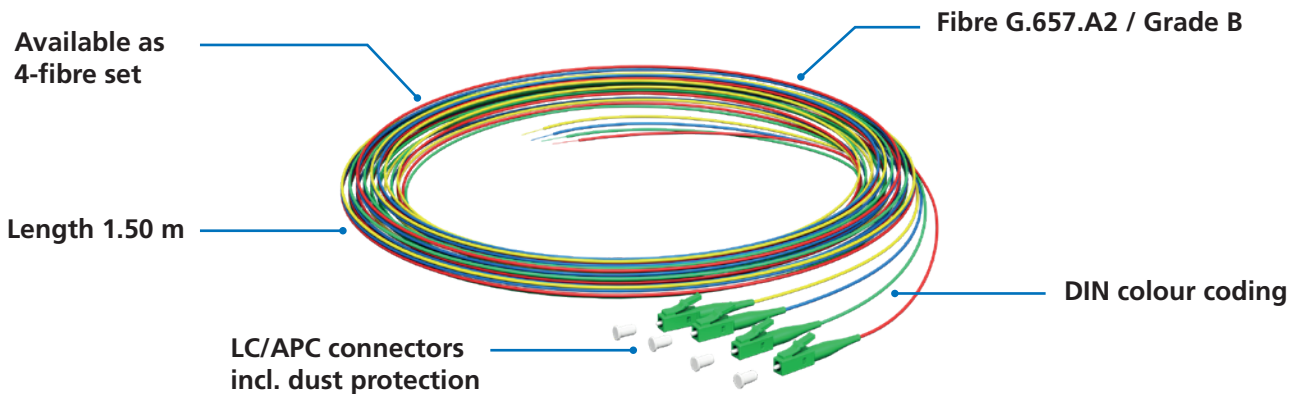


Length	150
Width	110
Height	8
Certificate	GHMT Channel Link (z7479a-22 ; c7479a-22)
Type	Patch
Number of patch cassettes	4
Patch cassette height	8
Loop length (patch cassette)	300
Bending radius (patch cassette)	30
Attachment possibilities	On cassette mount
Connector type	LC/APC Quad
Colour	Grey - RAL 7035
Halogen-free	Yes
Temperature range - Storage	-10 °C / +50 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Number of units in delivery	20
Art.-No.	4264013

Pigtail LC/APC, SX, G.657.A2, 1.50 m

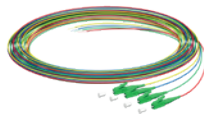
This pigtail set consists of high-quality fibre-optic connection cables (pigtails), in accordance with the DIN colour code, which are terminated at one end with a factory-assembled LC-APC connector. The other end is prepared as a free fibre optic cable end for fusion splicing.

- DIN colour coding
- Grade B
- 100% tested
- LC/APC connector with dust protection



Pigtail LC/APC, SX, G.657.A2, 1.50 m, 4 pieces

· Supplied: 4 pigtails

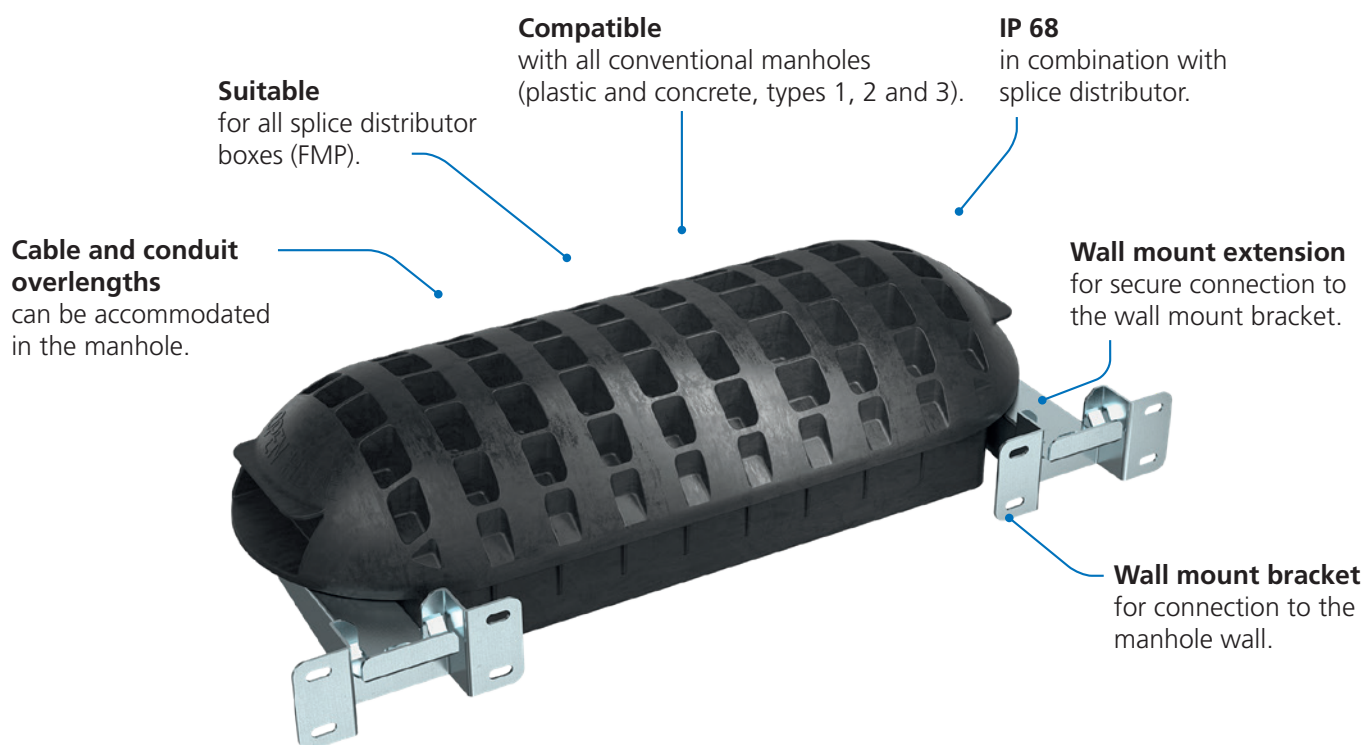


Pigtail LC/APC connectors	Polished with 8° angle
Pigtail Number	4
Pigtail Material	Plastic, halogen-free, flame-resistant
Pigtail Insertion loss	≥ 0.12dB Ø - ≤ 0.25dB max. (Grade B)
Pigtail Return loss	≥ 60 dB (Grade B)
Pigtail Mating cycles	1000
Pigtail Ferrule	Ø 1.25 mm, ceramic, axially spring-loaded
Pigtail Strain relief	≥ 100
Pigtail Laser and dust protection	Filler plugs
Pigtail Fibre class	Single Mode OS2 (G.657.A2)
Pigtail Fibre type	EasyBand® Plus-Mini 200µm Reduced Diameter Bending Insensitive Fibre
Pigtail Faser length	1,5
Pigtail Fibre colour coding	1 = red, 2 = green, 3 = blue, 4 = yellow (coloured through)
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Art.-No.	4262002

Shaft sleeve holder for splice distributor box (FMP) incl. wall mounts

For the underground branching of cable and conduit systems, man-hole structures of plastic or concrete are generally used. With the help of the shaft sleeve holder, the splice distributor box (FMP) is easy to install in all conventional manhole structures. All splice distributor boxes (FMP) are compatible with the shaft sleeve holder.

- Compatible with plastic or concrete manholes
- Compatible with all splice distributor boxes (FMP)
- Protection class IP 68 (diving bell principle)
- Simple and quick installation (few parts)
- Cable and conduit overlengths can be accommodated in the manhole



Note

The sleeve holder must be installed horizontally in the manhole. The supplied drilling template enables the installation work to be carried out without any problems. The sleeve holder is compatible with all common plastic and concrete manholes of types 1, 2 and 3.

Shaft sleeve holder for splice distributor box (FMP) incl. wall mounts

· Supplied: Shaft sleeve holder, wall mounts

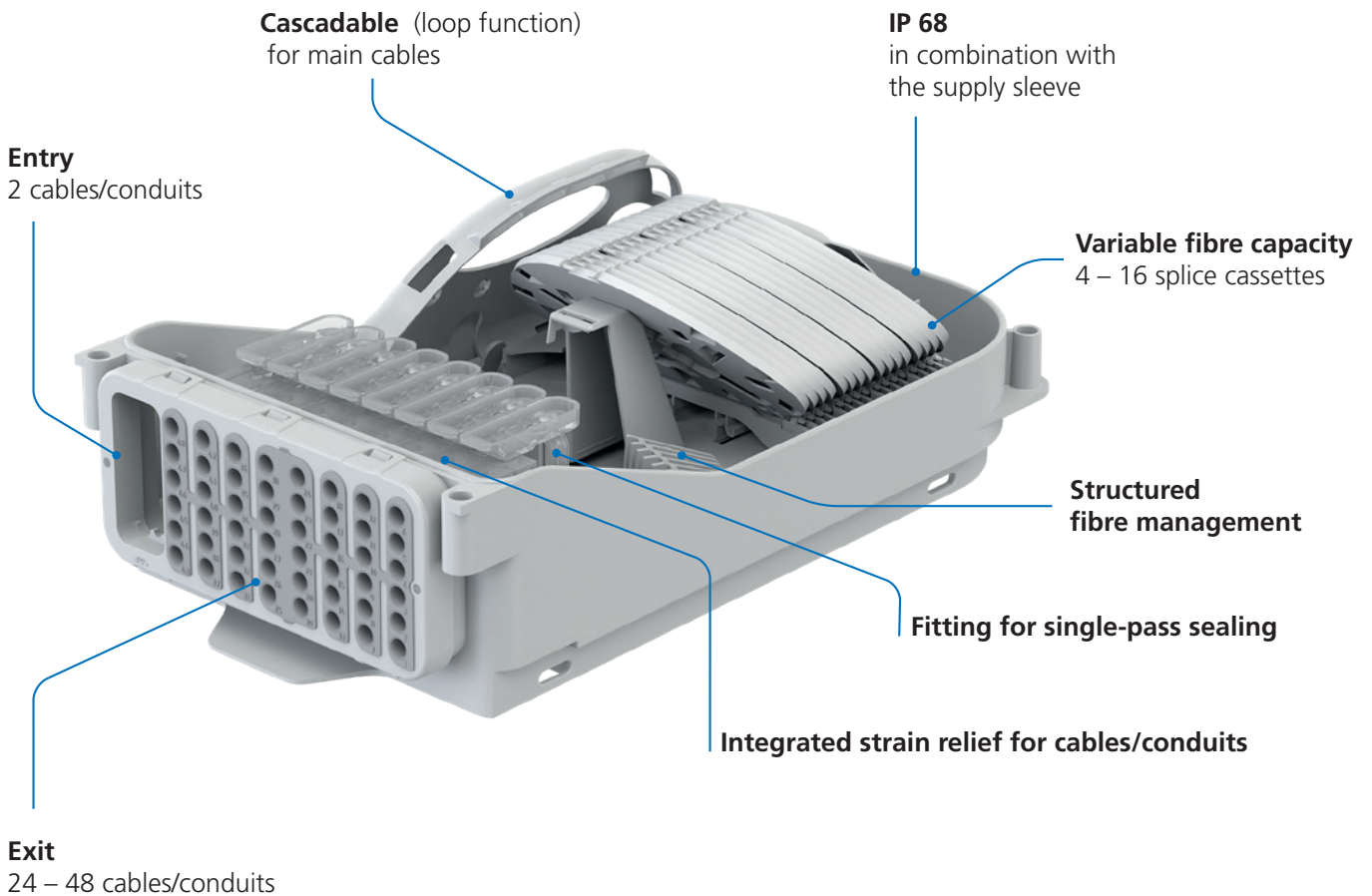


Installation type	Subsurface
Protection class	IP 68
Overlength management	Abhängig vom Schachtdurchmesser
Resistant to chemicals	Yes
Resistant to vibrations	Yes
Impact resistance	IK07
Halogen-free	Yes
Temperature range - Storage	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C
Length	665
Width	325
Height	180
Colour	Black / Silber
Number of units in delivery	10
Art.-No.	4232001

Splice distributor box (FMP)

The innovatively-designed splice distributor box (FMP) is suitable for installation in subsurface distribution point supply sleeves (AT29030), and facilitates simple, fast and thus time-saving installation.

- Flexibility in managing fibre optic networks
- Plug & Play installation
- FTTX flexibility



Note

The cable/conduit entry of the splice distributor box is designed for standard cable and microduct diameters.

The splice distributor box can also be used for cascading. The version with a window-cut (WC) is used for cascading.

The sheath of the main cable is removed to the prescribed length, and the loose strands are stored in the excess-length tray of the splice distributor box and fed back. The fibres to be spliced to customer cables in the splice distributor box can be stored in the splice cassette.

Splice distributor box (FMP), CSS, 96 / 192 fibres

- Supplied: FMP including splice cassettes, 4 installation screws, sealing materials, moisture absorber



Installation type	Subsurface	Subsurface	Subsurface	Subsurface
Protection class (in supply sleeve)	IP 68	IP 68	IP 68	IP 68
Halogen-free	Yes	Yes	Yes	Yes
Number of fibres	192	192	96	96
Number of splice cassettes	16	16	8	8
Splice cassette height	4 mm	4 mm	4 mm	4 mm
Cascadable (loop function)	No	Yes	Yes	No
Loop length (splice cassette)	300 mm	300 mm	300 mm	300 mm
Bending radius (splice cassette)	30 mm	30 mm	30 mm	30 mm
Splice protection holder	CSS Crimp / Mini heat-shrink tubing	CSS Crimp / Mini heat-shrink tubing	CSS Crimp / Mini heat-shrink tubing	CSS Crimp / Mini heat-shrink tubing
No. of cable/conduit entries	2	2	2	2
Cable/conduit entry Ø	4,5 - 8,3 mm	4,5 - 8,3 mm	4,5 - 8,3 mm	4,5 - 8,3 mm
No. of cable/conduit knock-out openings	1	2	No	1
Cable/conduit knock-out opening Ø	M12/16/20/25	M20/M25	No	M12/16/20/25
No. of cable/conduit exits	48	24	48	48
Cable/conduit exit Ø	3,0 - 8,0 mm	3,0 - 8,0 mm	3,0 - 8,0 mm	3,0 - 8,0 mm
Temperature range - Storage	-10 °C / +60 °C	-10 °C / +60 °C	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C	-10 °C / +60 °C	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C	-20 °C / +60 °C	-20 °C / +60 °C	-20 °C / +60 °C
Length x Width x Height	380 x 220 x 130 mm	380 x 220 x 130 mm	380 x 220 x 130 mm	380 x 220 x 130 mm
Colour	Transparent / Grey	Transparent / Grey	Transparent / Grey	Transparent / Grey
Art.-No.	AT29344	AT29333	AT29353	AT29343

Splice distributor box (FMP), HS, 96 / 48 fibres

- Supplied: FMP including splice cassettes, 4 installation screws, sealing materials, moisture absorber

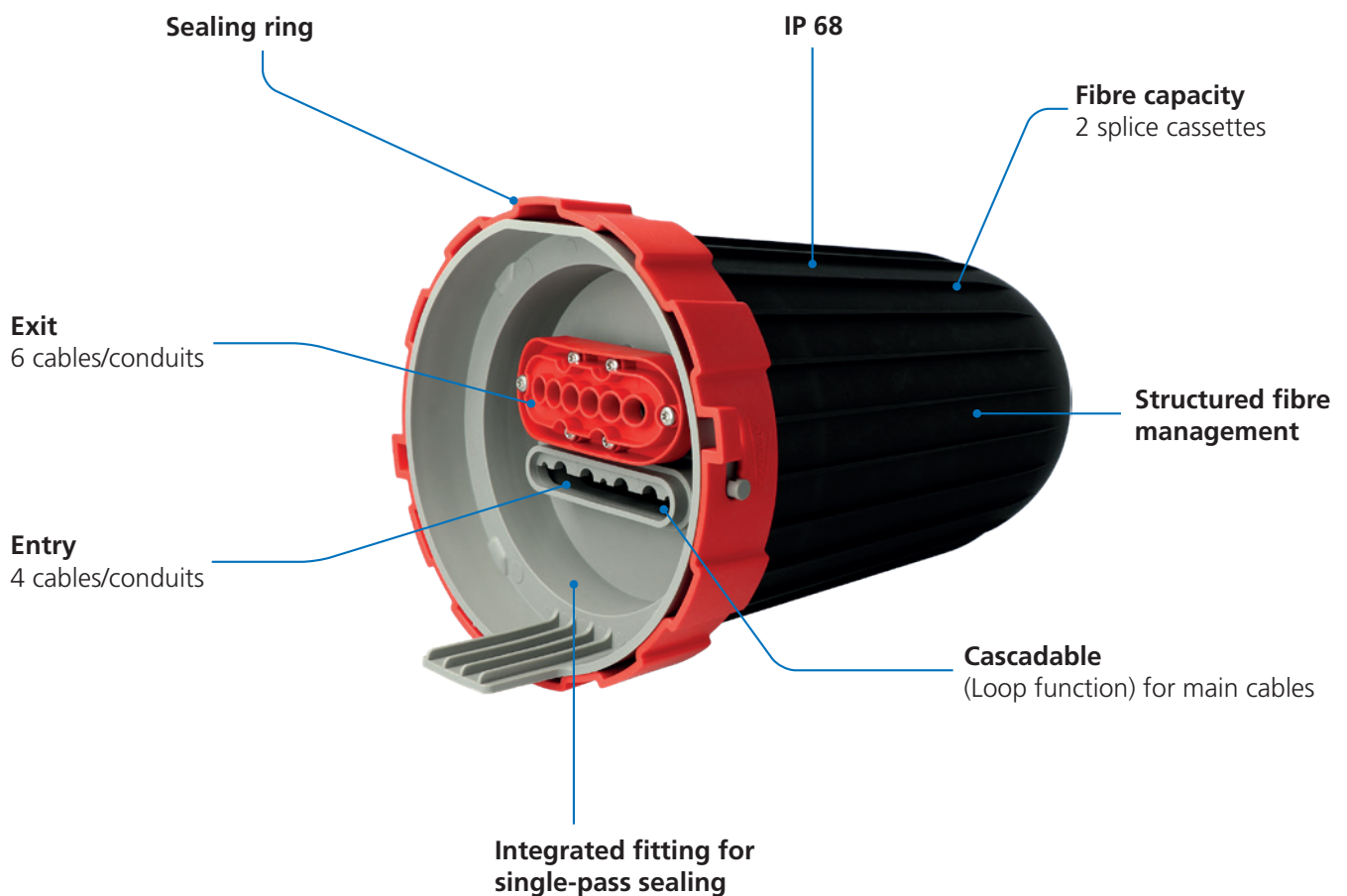


Installation type	Subsurface	Subsurface
Protection class (in supply sleeve)	IP 68	IP 68
Halogen-free	Yes	Yes
Number of fibres	96	48
Number of splice cassettes	8	4
Splice cassette height	8 mm	8 mm
Cascadable (loop function)	No	Yes
Loop length (splice cassette)	300 mm	300 mm
Bending radius (splice cassette)	30 mm	30 mm
Splice protection holder	Heat-shrink tubing	Heat-shrink tubing
No. of cable/conduit entries	2	2
Cable/conduit entry Ø	4,5 - 8,3 mm	4,5 - 8,3 mm
No. of cable/conduit knock-out openings	1	2
Cable/conduit knock-out opening Ø	M12/16/20/25	M20/M25
No. of cable/conduit exits	48	24
Cable/conduit exit Ø	3,0 - 8,0 mm	3,0 - 8,0 mm
Temperature range - Storage	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - Installation	-10 °C / +60 °C	-10 °C / +60 °C
Temperature range - In service	-20 °C / +60 °C	-20 °C / +60 °C
Length x Width x Height	380 x 220 x 130 mm	380 x 220 x 130 mm
Colour	Transparent / Grey	Transparent / Grey
Art.-No.	AT29341	AT29331

Midi Fibre Dome (MFD)

The Midi Fibre Dome (MFD) can be buried in soil and is suitable for connecting or expanding FTTB/H networks in rural areas with fewer subscriber connections and longer distances than in an urban environment.

- Easy and quick installation
- Universally usable
- Well-organised installation sequence



Note

The Midi Fibre Dome (MFD) is suitable for use in cable and conduit systems. Up to six customer connections can be implemented per Midi Fibre Dome (MFD). The window-cut offers the option of cascading, so the main cable can be extended from the Midi Fibre Dome (MFD) to the next junction point. Furthermore, the Midi Fibre Dome (MFD) is equipped with watertight universal cable/conduit entries and integrated strain relief. The Midi Fibre Dome (MFD) offers protection class IP 68 and prevents the ingress of dust and water.

Midi Fibre Dome (MFD)

· Supplied: Midi Fibre Dome, sealing materials



Installation type	Subsurface	Subsurface	Subsurface	Subsurface
Protection class	IP 68	IP 68	IP 68	IP 68
Resistant to chemicals	Yes	Yes	Yes	Yes
Resistant to vibrations	Yes	Yes	Yes	Yes
Impact resistance	IK 09	IK 09	IK 09	IK 09
Halogen-free	Yes	Yes	Yes	Yes
No. of fibres per splice cassette	12	12	12	12
No. of splice cassettes	2	2	2	2
Cascadable (loop function)	Yes	Yes	Yes	Yes
Loop length (splice cassette)	300 mm	300 mm	300 mm	300 mm
Bending radius (splice cassette)	22,5 mm	22,5 mm	22,5 mm	22,5 mm
Splice protection holder	CSS crimp / Mini heat-shrink tubing	Heat-shrink tubing	Heat-shrink tubing	CSS crimp / Mini heat-shrink tubing
Cable/conduit entry characteristics	Sand and water tight	Sand and water tight	Sand and water tight	Sand and water tight
Cable/conduit entry bending strength	Yes	Yes	Yes	Yes
Cable/conduit entries – Number	4	4	2	2
Cable/conduit entry Ø	2,5 - 8,0 mm	2,5 - 8,0 mm	14 – 16 mm	14 – 16 mm
Cable/conduit exits – Number	6	6	4	4
Cable/conduit exit Ø	2,5 - 8,0 mm	2,5 - 8,0 mm	5,5 - 10 mm	5,5 - 10 mm
Housing sealing mechanism	Twist lock	Twist lock	Twist lock	Twist lock
Standard	EN 124-1:2015 Group 2	EN 124-1:2015 Group 2	EN 124-1:2015 Group 2	EN 124-1:2015 Group 2
Temperature range - Storage	-10 °C / +50 °C	-10 °C / +50 °C	-10 °C / +50 °C	-10 °C / +50 °C
Temperature range - Installation	-10 °C / +50 °C	-10 °C / +50 °C	-10 °C / +50 °C	-10 °C / +50 °C
Temperature range - In service	-20 °C / +60 °C	-20 °C / +60 °C	-20 °C / +60 °C	-20 °C / +60 °C
Length x Width	360 x 190 mm	360 x 190 mm	360 x 190 mm	360 x 190 mm
Colour	Black / Red	Black / Red	Black / Red	Black / Red
Art.-No.	AT29293	AT29292	AT29294	AT29295

Bend-insensitive fibre optic cables

are fibre optic cables that can be installed with a lower bending radius.

While fibre optic cables typically have a permissible bending radius of at least 30 mm, bend-insensitive fibre optic cables have a permissible bending radius of 10 mm or 7.5 mm in accordance with the specification ITU-T G.657.

ITU-T G.657.A1

(Single-mode fibre optic cable): Bending radius 10 mm

ITU-T G.657.A2

(Single-mode fibre optic cable): Bending radius 7.5 mm

FTTX cabling (EN 50173-1)					
Class	Link length	Fibre class	Channel attenuation (dB)		Application
OF-5000	5.000 m	OS2	1310 nm 4,0 dB	1550 nm 4,0 dB	10GBase SR

Factors affecting the transmission rate

A crucial factor in achieving the best possible transmission rate for a subscriber's Internet connection is the attenuation along the fibre optic cable route.

The following factors are of critical importance:

- Possible losses through scattering and absorption
- Natural path losses (length), signal spread
- Losses due to spliced connections

Calculation of channel attenuation (single-mode fibre, 150 m long, with two connectors)				
Description	Attenuation (standard)	Length / Number	Calculation	Loss (dB)
Attenuation loss in fibre	1,00 dB/km	150 m	$0,001 \times 150$	0,15 dB
Insertion loss per connector	0,75 dB	2	$2 \times 0,75$	1,50 dB
Insertion loss per splice	0,30 dB	1	$1 \times 0,30$	0,30 dB
Total channel attenuation				1,95 dB

The maximum permissible channel attenuation of 4.0 dB is not exceeded, so failure-free data transmission can be ensured. After the cabling has been installed, the calculated channel attenuation must be confirmed and recorded using a suitable certifier (measuring device).

Fibre optic connectors

Fibre optic connectors are attached at both ends of a fibre optic cable to create a fibre optic patch cord. In addition, the connectors are combined with a coupler. The coupler is specially designed for the connectors and positions the connectors' endfaces against each other so that the light signal can be optimally transmitted. After fabrication, the connectors are polished and covered with a dust protection cap to protect against dirt and dust. Before the connectors are used, the ends must be cleaned using a suitable cleaning agent (dust-free cloth, alcohol, cleaning pen, etc.) since the

slightest contamination can have a major effect on the damping. In the FTTX environment, only connectors with an 8° APC (Angled Physical Contact) cut are used. The face is bevelled and polished. The reflections in the fibre optic cable are not forwarded through the connectors, which improves channel attenuation.

Connector	Typical insertion loss	Ferrule diameter	Nombre of fibres	Standard	Interlocking mechanism
SC	0,2 dB	2,50 mm	1	IEC 874-13	Pull/Push
LC	0,2 dB	1,25 mm	1	IEC 61754-20	Retaining tab
E2000	0,2 dB	2,50 mm	1	IEC 61754-15	Pull/Push





































Fibre identification

The fibre optic categories and connectors differ from each other in terms of colour, enabling characteristics of the installed system to be easily identified.

Category	Connector / Coupling	Patch cord
OS2 Single-mode	Blue	Yellow
OS2 Single-mode APC	Green	Yellow

Splice identification

The individual optical fibres in a fibre optic cable are defined by standards in order to simplify splicing work.

Fibre no.	Swisscom	DIN (IEC 60304)	IEC 60794-2
1	 Red	 Red	 Blue
2	 Green	 Green	 Yellow
3	 Yellow	 Blue	 Red
4	 Blue	 Yellow	 White
5	 White	 White	 Green
6	 Purple	 Grey	 Purple
7	 Orange	 Brown	 Orange
8	 Black	 Purple	 Grey
9	 Grey	 Turquoise	 Turquoise
10	 Brown	 Black	 Black
11	 Pink	 Orange	 Brown
12	 Turquoise	 Pink	 Pink

Glossary

BEP	Building Entry Point (building handover point of the network operator)
Broadband	In communications engineering, the term broadband communication describes a transmission channel whose amplitude response is not constant, resulting in signal distortions. In contrast to narrowband channels, broadband channels require distortion correction using adaptive filters to compensate for signal distortions.
DSL	The end customer is connected to the telecommunications network by copper-based cable. The telecommunications cable runs from the main distributor to the cable splitter and from there to the house connection.
FD	Floor Distributor
FTTB	Fibre to the Building: In contrast to FTTC/VDSL, FTTB/FTTH networks consist entirely of fibre optic infrastructure. The fibre optic cable extends from the PoP exchange point via the manhole or street cabinet to the BEP.
FTTC	Fibre to the Curb: The fibre optic cable extends only to the cable splitter / multifunction cabinet / integrated DSLAM (digital subscriber line access multiplexer) at the roadside. From there, the existing copper telecommunications cable of the distribution network forms the connection to the end customer.
FTTH	Fibre to the Home: In the case of FTTH, the entire cabling in the building up to the OTO consists of fibre optic lines.
FTTX	Fibre to the „X“: In fibre optic networks, a distinction is made between FTTC (F ibre t o the C urb), FTTB (F ibre t o the B uilding) and FTTH (F ibre t o the H ome), depending on how the end customer is connected.
FTU	Fibre Termination Unit
FDC	The Fibre Distribution Cabinet is used to passively distribute the fibre optic telecommunication cables within a local network
HFC	Hybrid Fibre/Coax refers to an approach used by cable network operators to connect cable television (CATV) networks to end users. Fibre optic cable is used from the CATV headend (exchange) to the distribution point (fibre node), and coaxial cable is used from the distribution point to the antenna socket in the house.
OTO	Optical Telecommunications Outlet
PoP	Point of Presence
Supply sleeve	The supply sleeve is a passive distribution enclosure for fibre optic telecommunication lines within a local network.
Vectoring	Vectoring technology is an extension of VDSL2. Vectoring can be used to minimise crosstalk (NEXT) between the individual wires in a copper telecommunications cable and to increase a cable splitter's transmission speed and number of connected subscribers.

Product Glossary

CFD	Compact Fibre Dome (repair sleeve)
DP	Distribution Point between PoP and BEP, e.g. supply sleeve (subsurface) or street cabinet (above ground)
FMB	Fibre Management Box (splice distributor box with cover)
FMP	Fibre Management Plate (splice distributor box)
MFD	Midi Fibre Dome

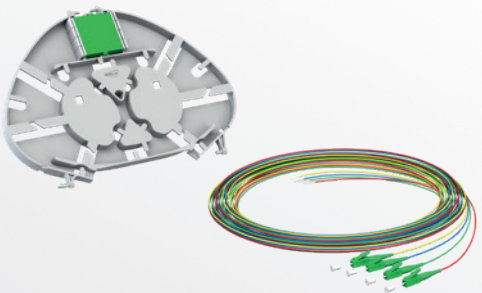
Systems and solutions for professional electro-installations.

AGRO has been developing and manufacturing systems and products as a basis for good installations since 1953. Designers and fabricators around the world use the practice-oriented solutions in their daily work for all types of installation.



Spliceable building distributor.

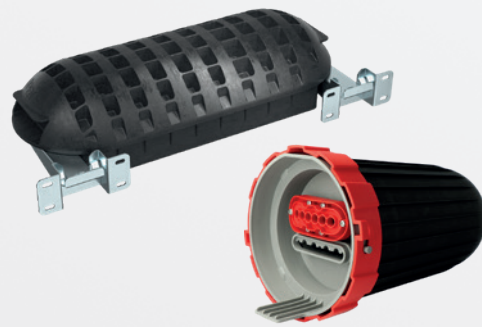
The innovative product design of the building distributor is suitable for use with spliced cables in establishing fibre-based building infrastructure. The installation-friendly design facilitates quick and easy installation.



Accessories E3S Connect®.

This innovative patch cassette is specially designed for the E3S Connect® building distributor.

This pigtail set consists of high-quality fibre-optic connection cables (pigtails), in accordance with the DIN colour code.



Shaft sleeve and midi fibre dome.

For the underground branching of cable and conduit systems, manhole structures of plastic or concrete are generally used. With the help of the shaft sleeve holder, the splice distributor box (FMP) is easy to install in all conventional manhole structures.

Technical information and advice

For further information about our products, system solutions and communication media, please visit our website: www.agro.ch

Our team of technical advisors will be happy to answer any questions you may have or to provide further information, and looks forward to hearing from you: **+41 (0)62 889 47 47 · sales@agro.ch**

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