METZ CONNECT

We realize ideas

Fiber In The Home –

Your way to fast Internet

P | Cabling

Our strengths – your benefit

Your fiber optic connection –

Instructions for preparation

Only 3 steps to a ready connection!

Fiber In The Home - What does that actually mean? It is the English translation for fiber optics in the home, and as such, the technology of the future when it comes to the basis for fast data connection. But what do you need to do in order to use fiber optics in your house or apartment? The following brochure will help you and your electrician to create the necessary conditions.

1. Network owner

In the course of network expansion, the network owner (municipality or association established for a special purpose) has laid a fiber optic line to your house. That's why you have concluded a house connection with the network owner. The line ends, for example, in your cellar with the house transfer point APL.

2. Customer/Owner – What do you need to do?

In order for the network operator to eventually send a signal into your living space, it's up to you to provide the specific cabling.

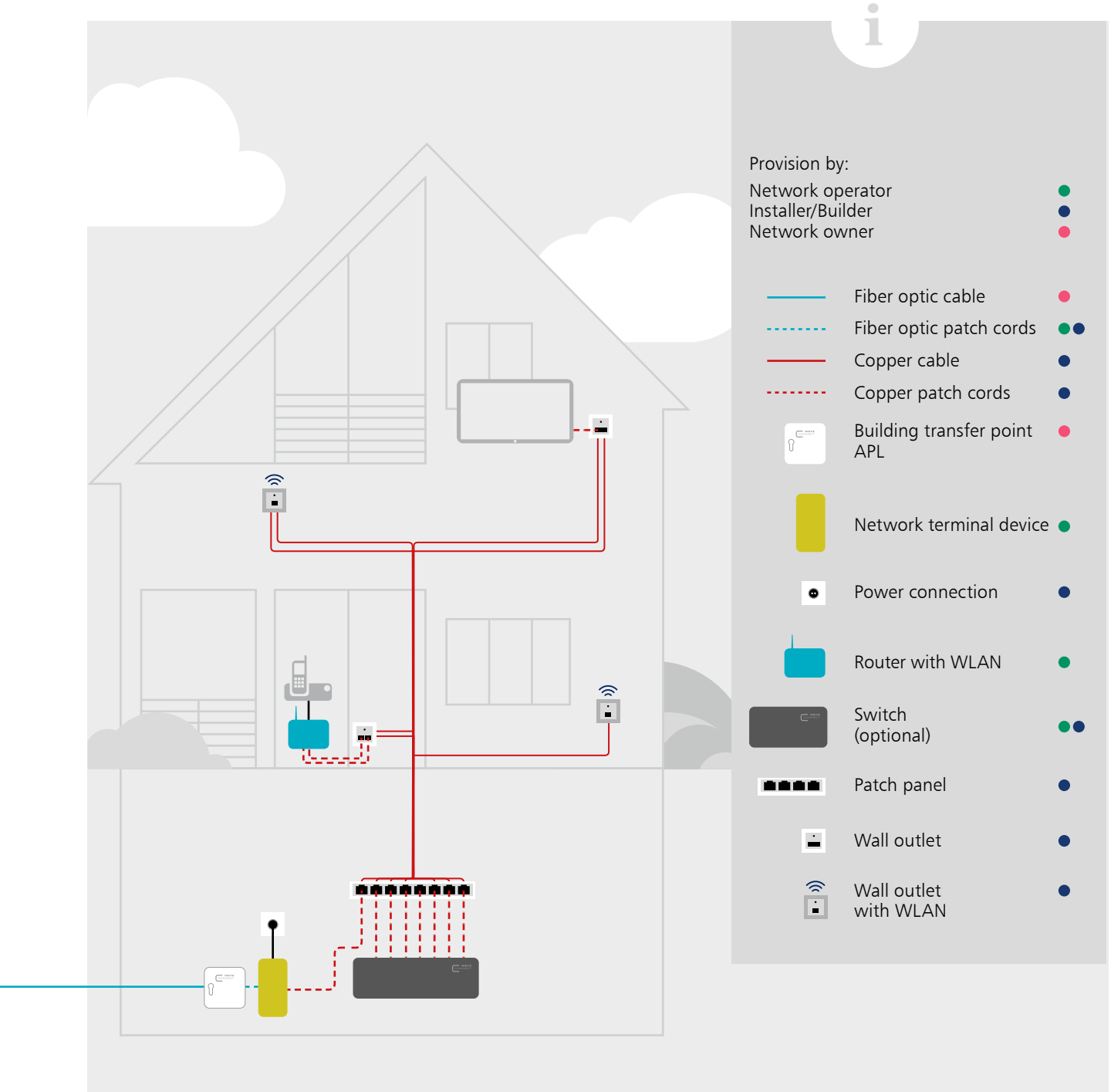
This means for a

- one family house: the network terminal device provided by the operator located near the APL requires a power connection. If your house already has a network cabling, you can immediately use this for your advantage. Otherwise, you will find cabling suggestions in this brochure.
- multi-family dwelling: installation of a fiber optic distributor in the cellar and the installation of fiber optic cables up to individual apartments, ending at the respective flat entry point.

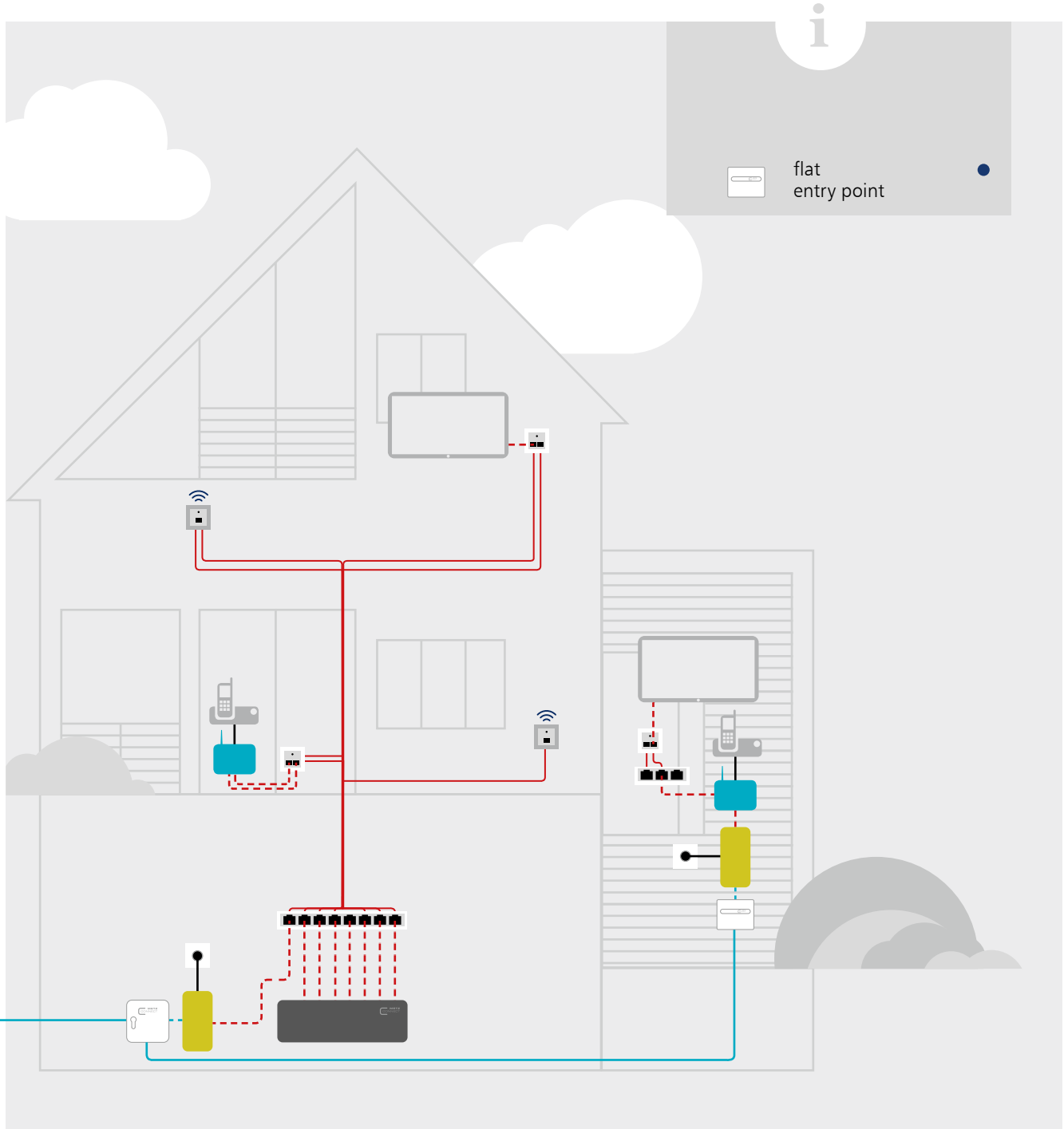
3. Network operator (Provider)

As soon as steps 1 and 2 are completed, i.e. the house connection is finished and the cabling is in place, you can make an appointment with the network operator. The prerequisite for this is a concluded signal supply contract. A technician sets the network terminal device, which then supplies your router and your terminal devices with fast Internet.

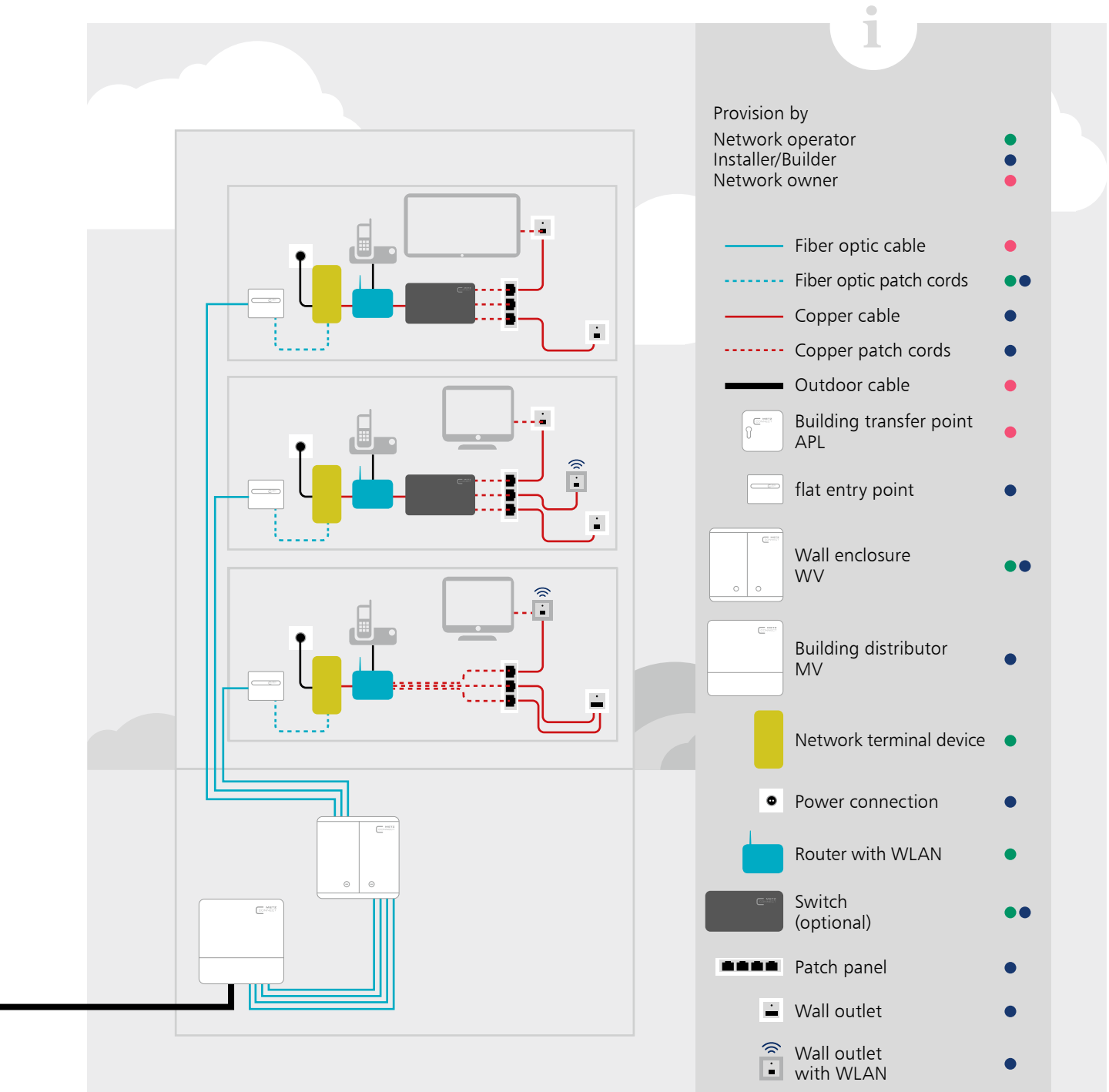
Single family house



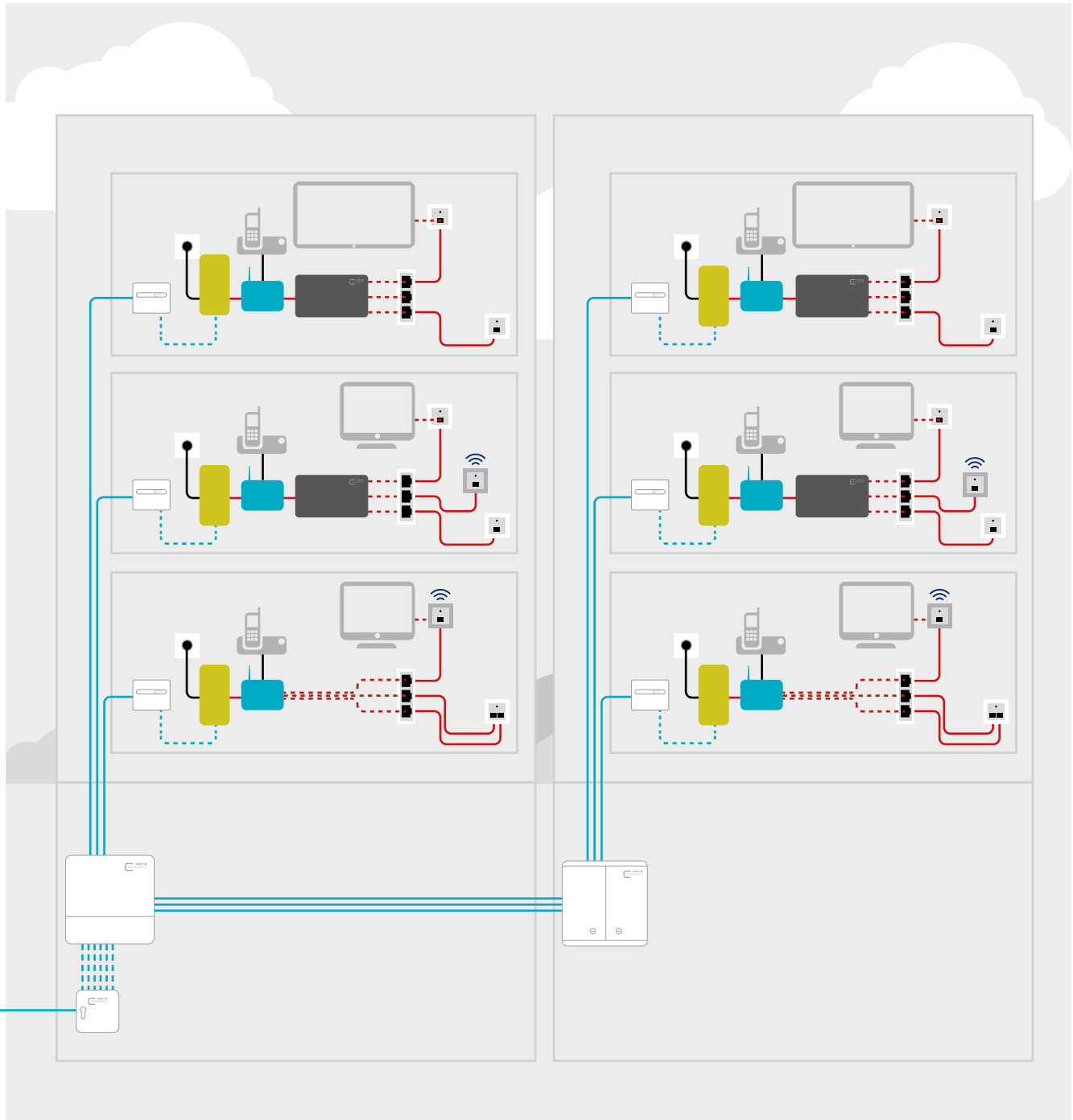
Single family house with self-contained apartment



Multi-family house

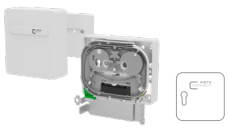
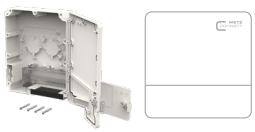


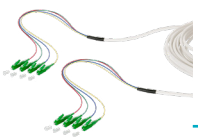
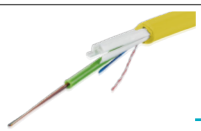
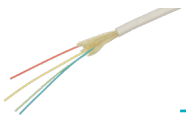
Properties with two or more houses



Fiber optic components

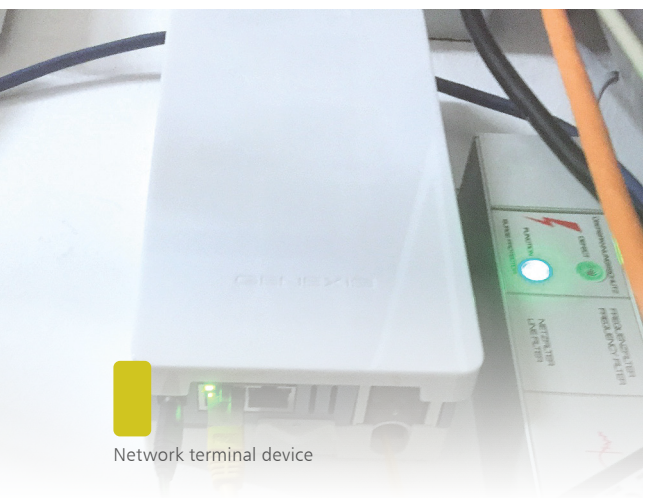
Once installed – enjoy unlimited freedom!

	DESCRIPTION	METZ CONNECT	PROVIDER	INSTALLER	NETWORK OWNER
	**Building transfer point OpDAT APL** The building transfer point connects the external fiber optic cable with the internal cabling	1501597GXXHC 1501591HXXHC			●
	**Flat entry point without cable drum (ADT)** Without cable, suitable for VIK, for up to 4 fibers prepared	1501107G02HC		●	
	**Flat entry point with cable drum(WÜP)** Connection from apartment to fiber optic distributor, with open end for splicing or assembled on both sides	150C049HKxxxxE 150F049HK00xxE		●	
	**Wall distributor OpDAT WV (apartment building)** Serves as a central floor splice distributor for forwarding the fiber optic cables to the apartments	1503397AXX-C		●	
	**Building distributor OpDAT MV** Is a universally applicable distributor for floor cabling or as a house distribution point in the equipment room	1503600RJ00-E 15036C97609-E 15036C97612-E		●	
	**Network terminal device (NAG)** The network terminal device converts a fiber optic technology to a copper technology. A power connection is necessary. Connection to the building transfer point via the fiber optic patch cords.	-	●		
	**Internet router** Interface between your own network and the Internet. With a WLAN function. Recommended: AVM FRITZ!Box 7490 4 x LAN, WLAN, AC + N, ISDN, DECT	-	●		
	**Switch (copper 10 MB/100 MB/1 GB)** Duplicates the network connections from the router and controls the communication in the network; it is required if more than three terminal devices are to be connected	-	●	●	
	**WLAN repeater** Can be optionally used if the WLAN range is not sufficient	-	●	●	

	DESCRIPTION	METZ CONNECT	PROVIDER	INSTALLER	NETWORK OWNER
	**Fiber optic patch cable** For connection of the house transfer point or network termination device. Length available from 0.2 to 10 m.	151P7JAJAxxE	●	●	
	**Pre-assembled Installation cables (VIK)** For connection of the apartment transfer point. 4 fibers, ready mounted with connectors on both sides. Length available from 5 to 200 m.	152C049KK0xxxE		●	
	**Universal cable** For outdoor installation such as building connection. Without connector, number of fibers between 4 and 48	150UXXX9E120M		●	
	**Mini breakout cable compact** Suitable for cable laying in the house, without connector, 4 fibers	150C0049D010M		●	
	**FITH cable** Suitable for cable laying in the house, without connector, 4 fibers	150F0049B040M		●	

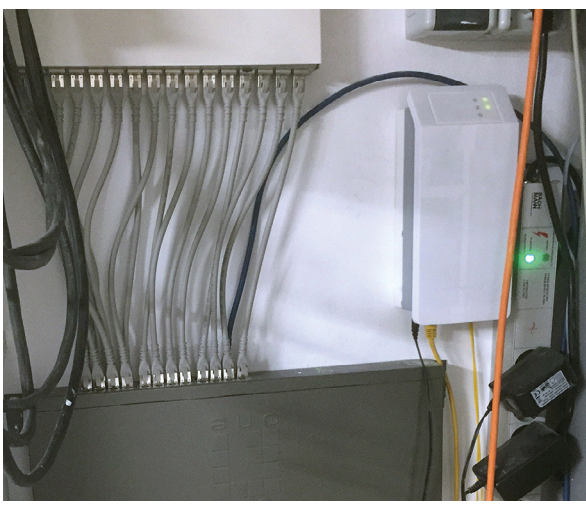
Practical examples

Make sure there is sufficient space for your installation. Consult your installer!



Network terminal device

Patch panel module
AP housing 16 port



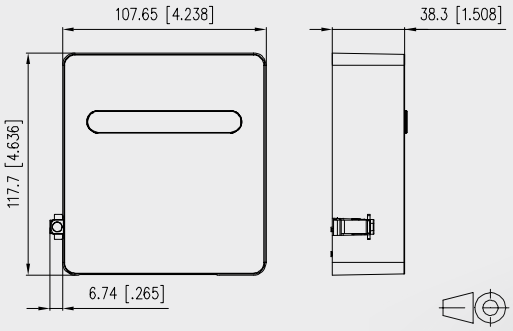
Copper Components

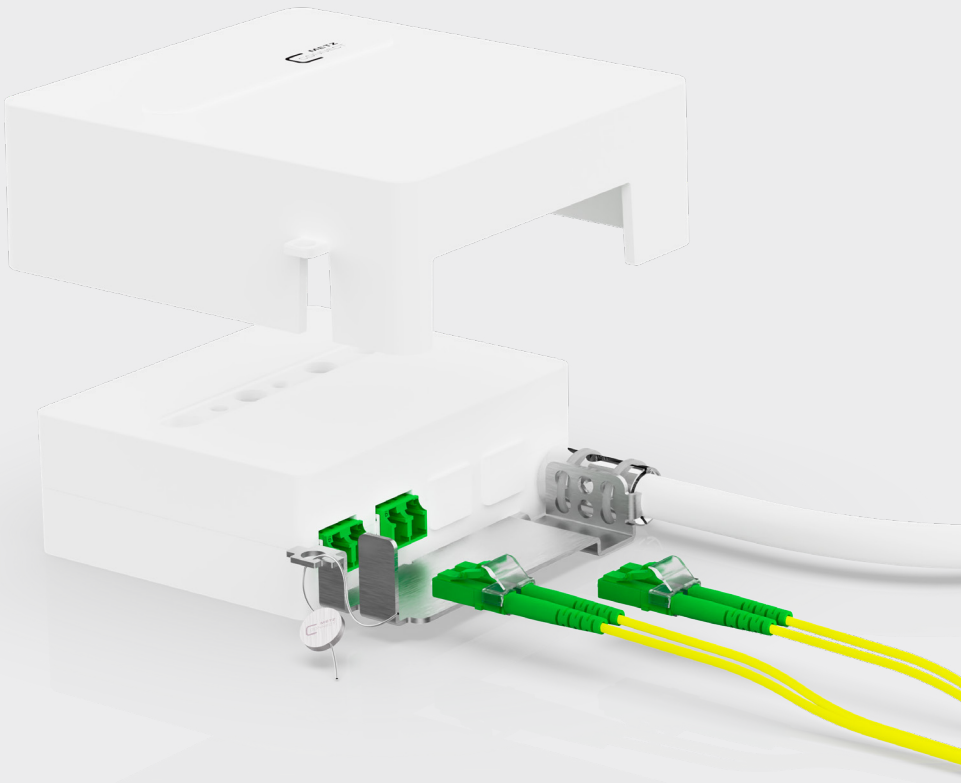
For a smooth data flow in the building

	BEZEICHNUNG	METZ CONNECT	PROVIDER	INSTALLATEUR
	Ethernet installation cable MC GC1300 pro22 Cat.7_A S/FTP 4P LSHF-FR 500 m Fire performance: class D_{ca} s2 d2 a1, suitable for 10 Gigabit Ethernet	simplex 1308427B34141 duplex 1308427B34143		●
	Flush-mounted wall outlet with one or two RJ45 jacks E-DAT $C6_A$ UP LSA+ Suitable for up to 10 Gigabit Ethernet, pure white	1 x RJ45 130C371002-I 2 x RJ45 130C381002-I		●
	Surface-mounted wall outlet with one or two RJ45 jacks E-DAT $C6_A$ AP LSA+ Suitable for up to 10 Gigabit Ethernet, pure white	1 x RJ45 130C370002-I 2 x RJ45 130C380002-I		●
	Network connection unit for DIN rails Mounting for installation in the switch cabinet REGplus incl. $C6_A$module 180°M Suitable for up to 10 Gigabit Ethernet	130B117003-E		●
	Module AP housing 6/12/16, unequipped Module housing surface-mounted unequipped for single modules in a module design, pure white	130861-0602-E 130861-1202-E 130861-1602-E		●
	Multimedia distributor 12; 16; 24 Port Module frame empty to hold data, KOAX- and fiber optic modules, mounting types: module	130927-1200-E 130927-1600-E 130927-2400-E		●
	$C6_A$modul 24 Port 180°M 1 RU 19 inch 1 RU module frame incl. 24 single modules $C6_A$modul 180° suitable for 10 Gigabit Ethernet	130B11P0-E		●

	BEZEICHNUNG	METZ CONNECT	PROVIDER	INSTALLATEUR
	**KOAX connector for installation in module AP housing** **KOAX modul F-socket/F-socket** Coax connector with adapter in module design, suitable for module applications. For installation in module AP housing and network socket	130898-01-I		●
	**C6$_A$modul 180° Jack** Modular Cat.6$_A$ connector unit RJ45 for 10 Gigabit-Ethernet. For installation in module AP housing and network socket.	130B11-E		●
	**Patch cords Cat.6$_A$ AWG 26 0.5 m** Suitable for 10 Gigabit Ethernet, available in various colours and lengths from 0.5 up to 20 m	1308450588-E		●
	**Patch cords Cat.6 Ultraflex500 VoIP AWG 26 0.3 m** Especially suitable for unshielded and shielded Class E$_A$ systems, available in white, grey and black and lengths from 0.3 to 20 m	130E405032-E		●
	**RJ45 connector suitable for field assembly** **C6$_A$ RJ45 field plug pro** Direct connection, e.g. access point camera, suitable for 10 Gigabit Ethernet	130E405032-E		●

Building transfer point





OpDAT APL

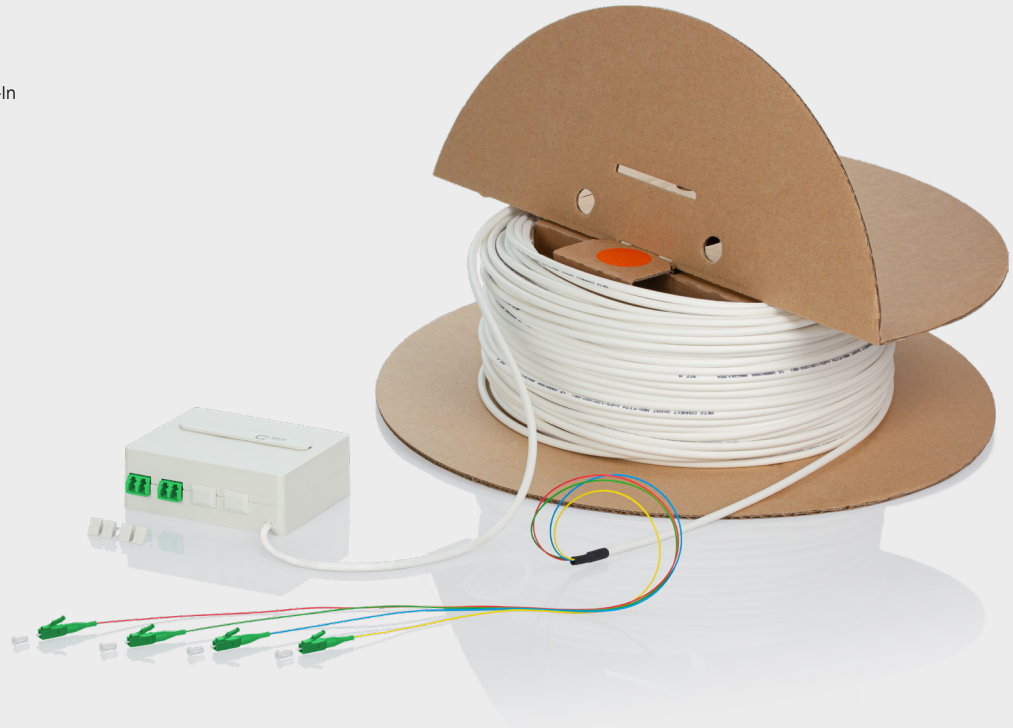
PART NUMBER	COLOR	VARIANT 1	VARIANT 2
1501597G02HC	pure white RAL 9010	2 x LC-D APC (OS2)	Surface mount
1501597G04HC	pure white RAL 9010	4 x LC-D APC (OS2)	Surface mount
1501591H04HC	pure white RAL 9010	4 x SC-S APC (OS2)	Surface mount

Main features

- compact termination point in minimalist design
- accommodates microducts with a diameter of up to 10 mm
- suitable for up to 2 x LC Duplex, 4 x SC Simplex or 4 x E2000 Simplex adapters
- sealable and tamper-proof due to safety screw
- prepared for splicing incoming fibers to pigtails
- all singlemode adapters are equipped with laser shutters
- unused openings are sealed with blind plugs
- splice tray incl. Shrink splice protection
- easy installation due to foldable and removable splice tray
- space for fiber reserve available
- mountable as surface mount housing
- break-out latches for vertical and horizontal and horizontal mounting on DIN rail systems
- dimensions (W x H x D): 108 x 118 x 39 mm

Flat entry point with a cable drum

Figure: variant Plug-In



Configurator

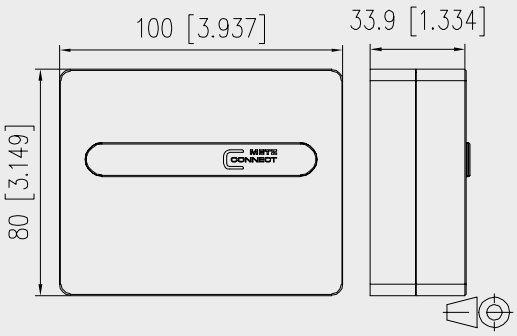
OpDAT VADT

PART NUMBER	COLOR	LENGTH	VARIANT
150C049HK0030E	white	30 m	Wall outlet with 4 x LC APC – Variant Splice
150C049HK0050E	white	50 m	Wall outlet with 4 x LC APC – Variant Splice
150C049HK00A0E	white	100 m	Wall outlet with 4 x LC APC – Variant Splice
150C049HKK530G	white	30 m	Wall outlet 4 x LC APC both sides incl. IP50 Feeding aid + Mounting kit – Variant Plug-In
150C049HKK550G	white	50 m	Wall outlet 4 x LC APC both sides incl. IP50 Feeding aid + Mounting kit – Variant Plug-In
150C049HKK5A0G	white	100 m	Wall outlet 4 x LC APC both sides incl. IP50 Feeding aid + Mounting kit – Variant Plug-In

Main features

- compact fiber optic connection unit for surface mounting on flush-mounted or cavity wall outlets
- equipped with LC APC adapters including laser protection
- for the connection of up to four fiber optic patch cables (SM, 9/125μm, OS2)
- ready to mount, pre-terminated with mini breakout cable compact (inner cable)
- lengths between 10 and 100 m
- fixing material included in delivery
- splice variant: with an open cable end for splicing to a distributor
- plug-in variant: with SC, LC or E2000 plugs for a direct plug connection. To protect the fanout, bubble wrap or a pull-in aid with IP50 are available
- for cable details see p.20
- color of cover parts pure white RAL 9010
- further variants on request

Flat entry point without a cable drum



OpDAT ADT

PART NUMBER	COLOR	VARIANT
1501107G01HC	white	Wall outlet VIK for 2 x LC APC
1501107G02HC	white	Wall outlet VIK for 4 x LC APC

Main features

- compact fiber optic walloutlet for surface mounting on flush-mounted or cavity wall outlets. Also suitable for DIN rail mounting in the switch cabinet.
- equipped with LC APC adapters including laser protection
- prepared for connecting of VIK with compact mini breakout cable (interior cable) or FITH cable
- cover is removable without tools
- color of cover parts pure white RAL 9010
- fixing material included in delivery
- further variants on request
- access protection prevents the patch cords from being pulled out by completely covering the connectors

Pre-terminated installation cable (VIK)

Configurator

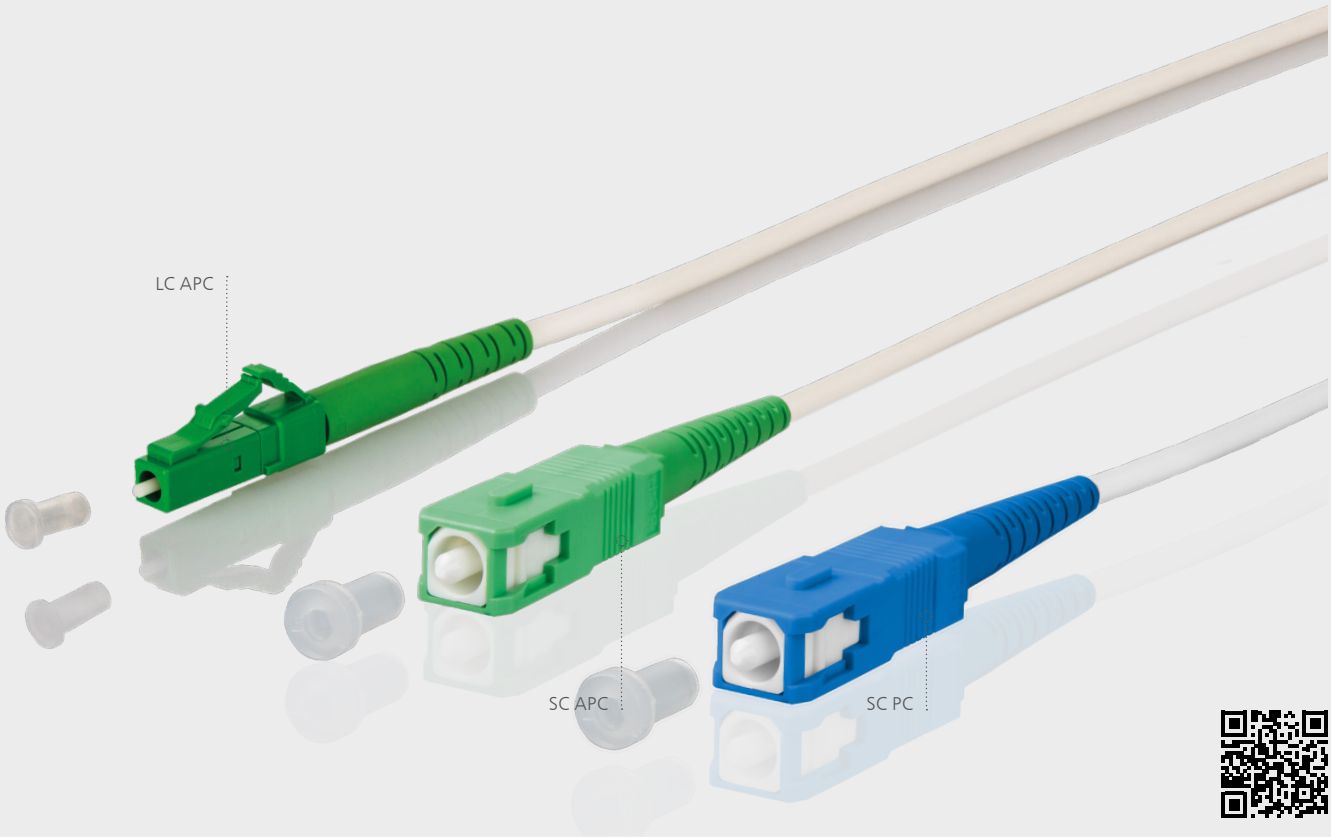
OpDAT VIK C

PART NUMBER	COLOR	LENGTH	VARIANT
152C049KK2030E	white	30 m	4 x LC APC / 4 x LC APC
152C049KK2050E	white	50 m	4 x LC APC / 4 x LC APC
152C049KK2080E	white	80 m	4 x LC APC / 4 x LC APC

Main features

- pre-terminated installation cables (VIK) with mini break-out cables compact are equipped fiber optic (FO) cables equipped with connectors on one or both sides. These are individually manufactured by hand under the highest quality requirements at METZ CONNECT in Blumberg.
- they enable a quick and easy to install point-to-point connection between the house and flat entry point
- suitable for indoor use. For outdoor installation, e.g. between 2 buildings, we recommend VIKs with an universal cable (see page 19)
- with four SM fibers, for more details about the cable, see page 20
- assembled with LC APC connectors
- available as cable ring or on wooden spool (depending on length and cable type)
- for further variants, see the cable configurator below: www.metz-connect.com/configurator

Patch cords



Configurator

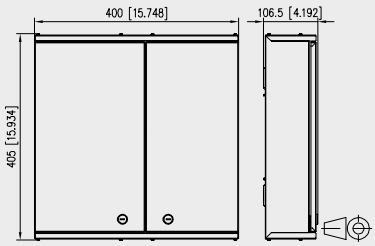
OpDAT PK

PART NUMBER	COLOR	LENGTH	VARIANT
151P7JAJA10E			LC APC/ LC APC
151P7EAJA10E	white	1.0 m	LC APC/ SC APC
151P7EOJA10E			LC APC/ LC APC
151P7JAJA20E			LC APC/ LC APC
151P7EAJA20E	white	2.0 m	LC APC/ SC APC
151P7EOJA20E			LC APC/ LC APC
151P7JAJA30E			LC APC/ LC APC
151P7EAJA30E	white	3.0 m	LC APC/ LC APC
151P7EOJA30E			LC APC/ SC UPC

Main features

- simplex patch cords with LC APC connectors at both ends
- for connecting the building transfer point or the network terminal device
- single mode fiber OS2, E9/125 μm insensitive to bending in accordance with IEC 60793-2-50 type B6_a and B6_b and G.657.A2, compatible with G.652.D
- outer diameter: 2.8 mm
- color: white
- cable sheath is halogen-free with low smoke emission LSHF-FR (Low smoke, halogen free, flame retardant)
- 100 % tested for insertion loss and return loss
- all patch cords are provided with a serial number
- for further variants, see the cable configurator below: www.metz-connect.com/configurator
- available in different lengths (between 0.2 and 20 m)

Wall-mounted distributor (Multi-family dwelling) OpDAT WV



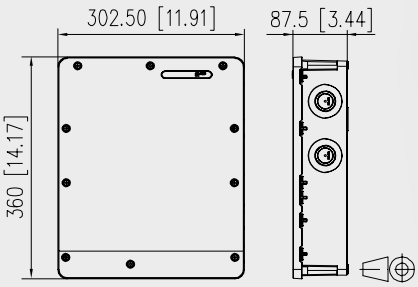
OpDAT WV

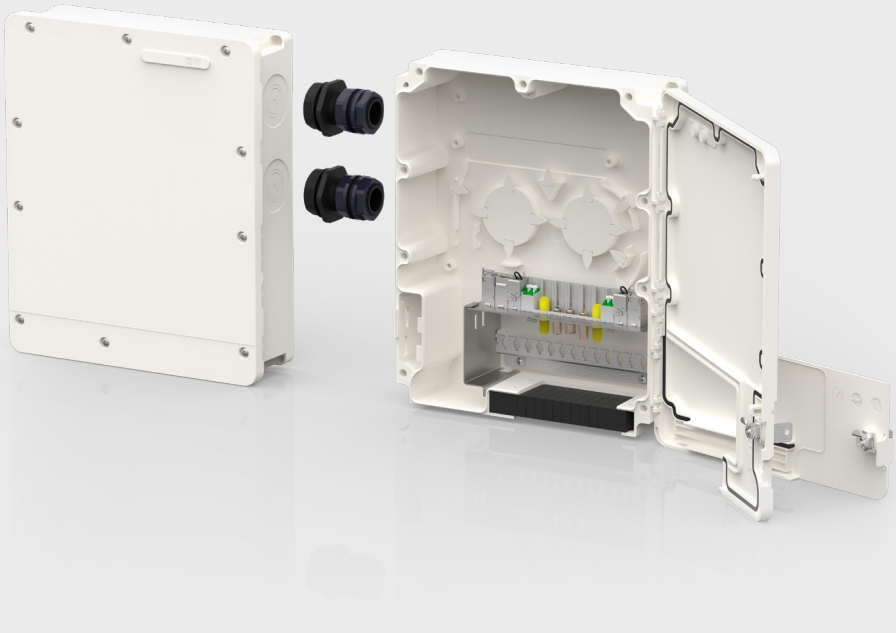
PART NUMBER	VARIANT
1503397A06-C	6 x LC-Q APC
1503397A12-C	12 x LC-QAPC
1503397A18-C	18 x LC-Q APC
1503397A24-C	24 x LC-Q APC
1503397A30-C	30 x LC-Q APC

Main features

- up to 5 single circuit splice tray blocks with 6 splice trays each enable the fibers of each individual residential unit to be placed and spliced separately
- each splice tray is equipped with 4 pigtails each. The pigtails are placed down and ready to splice.
- each LC-Q adapter is directly assigned to a splice tray and therefore a residential unit
- the innovative cable catch provides secure strain relief for the incoming cables
- in the patch area, incoming patch cords can be safely routed and inserted through a foam cable feeding from top to bottom
- alternatively, a pre-assembled cable can be screwed in and caught between the building transfer point and the wall-mounted distributor
- wall-mounted distributor size M
- labeling fields in the doors

Multifunctional distributor OpDAT MV





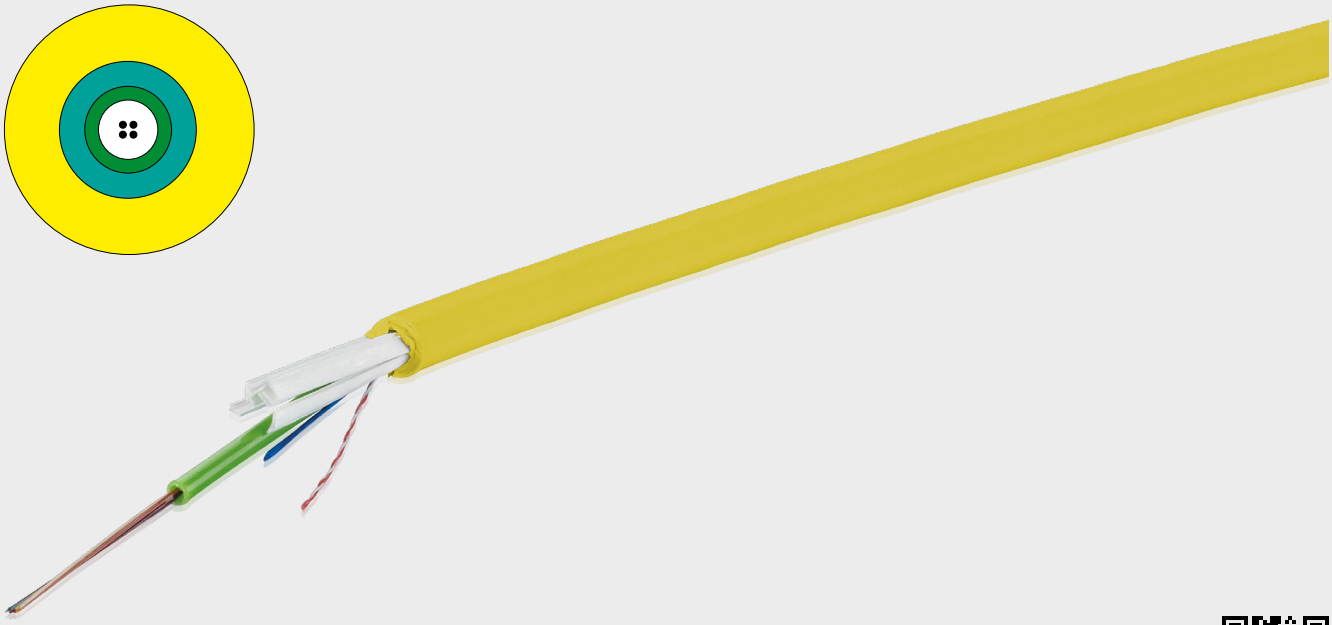
OpDAT MV

PART NUMBER	VARIANT 1	VARIANT 2
1503600RJ00-E	unequipped, IP54	12 x Modulausschnitte IP54
15036C97609-E	equipped, IP54	9 x LC-D APC splice IP54
15036C97612-E	equipped, IP54	12 x LC-D APC splice IP54

Main features

- op to 24 fiber optic connectors or 12 module slots
- alternative: perforated sheet for flexible equipment
- stackable housings for more capacity
- single circuit cassettes for crimp or shrink splices
- space for up to 144 splices
- 12 x M12/M16 and 2 x M20/M25 cable inputs
- variable cable outputs for patch cables with different diameters
- IP54 version sealable and with two separate lockable doors
- IP65 variant for harsh environments
- mounting option for gas blockers and microducts
- strain relief for incoming and outgoing cables
- elegant design from METZ CONNECT
- plastic housing in white (RAL 9010)
- dimensions (W x H x D): 360 x 302.5 x 87.5 mm

Universal cable



Configurator

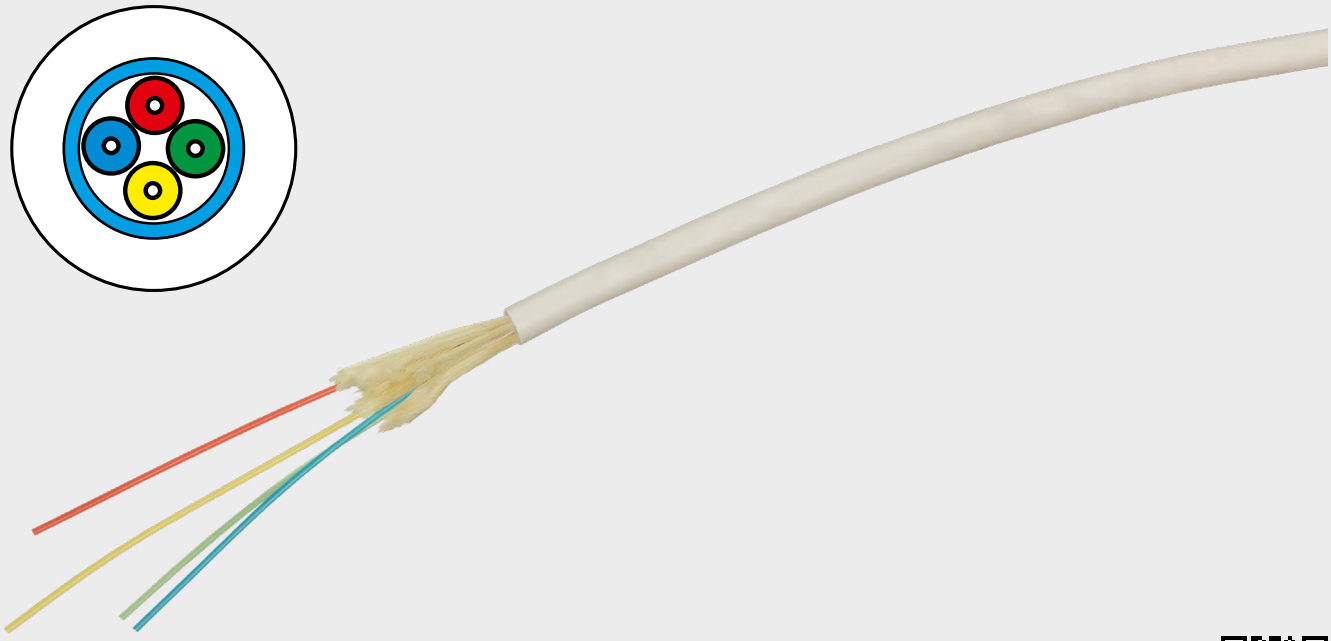
OpDAT universal cable

PART NUMBER	OUTER DIAMETER	NUMBER OF FIBERS	FIBER TYPE
150U0049E120M	7.3 mm	1 x 4	E9/125 µm (OS2)
150U0089E120M	7.3 mm	1 x 8	E9/125 µm (OS2)
150U0129E120M	7.3 mm	1 x 12	E9/125 µm (OS2)
150U0249E120M	11.2 mm	2 x 12	E9/125 µm (OS2)
150U0249E240M	11.2 mm	1 x 24	E9/125 µm (OS2)
150U0489E120M	11.2 mm	4 x 12	E9/125 µm (OS2)

Main features

- loose tube cable for outdoor use
- single mode fiber OS2, E9/125 µm, insensitive to bending in accordance with IEC 60793-2-50 type B6_a and B6_b and G.657.A1, compatible with G.652.D
- UV-resistant, metal-free, longitudinally watertight, guaranteed tensile strength and rodent-repellent
- strain relief: longitudinal watertight winding, Glass roving elements
- cable sheath: LSHF
- for pipe installation or direct buried installation in a suitable sand bed
- applicable standards: EN 50173-1, ISO 11801 2nd edition, IEC 60794-1, EN 187000
- fire performance: class E_{CA}
- for further variants, see the cable configurator below: www.metz-connect.com/configurator

Mini breakout cable compact



Configurator

OpDAT MBO C

PART NUMBER	OUTER DIAMETER	NUMBER OF FIBERS	FIBER TYPE
150C0049D010M	4.5 mm	4 fibers	E9/125 µm (OS2)

Main features

- compact mini-breakout cable for indoor applications for horizontal and backbone cabling
- single mode fiber OS2, E9/125 µm insensitive to bending in accordance with IEC 60793-2-50 type B6_a and B6_b and G.657.A1, compatible with G.652.D
- with 4-colour solid buffers (Ø 0.9 mm) and aramid yarn for strain relief
- cable sheath is halogen-free with low smoke emission and self-extinguishing. LSHF-FR (“Low smoke, halogen free, flame retardant”).
- outer diameter: 4.5 mm
- color: white
- applicable standards: IEC 60794-2-20
- fire performance: class D_{CA}

FITH cable

Configurator

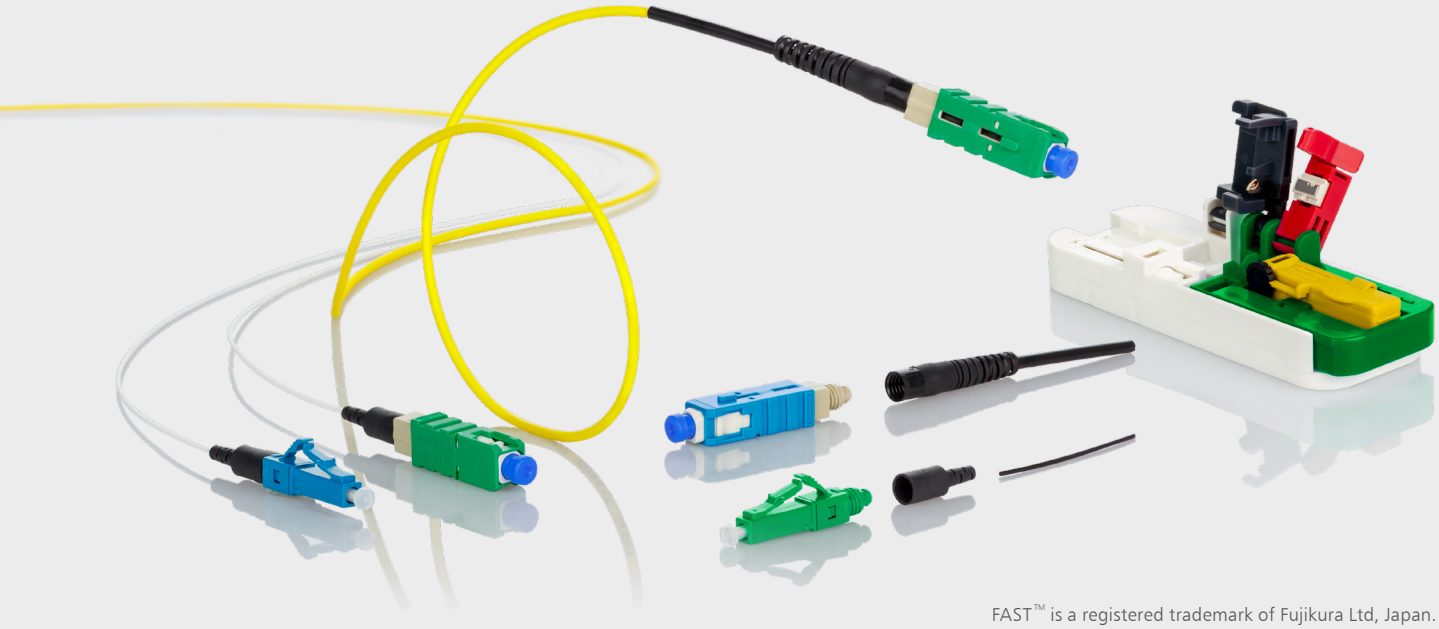
OpDAT FITH

PART NUMBER	OUTER DIAMETER	NUMBER OF FIBERS	FIBER TYPE
150F0049B040M	2,3 mm	4 fibers	SM9/125 µm (OS2)

Main features

- FITH cable for indoor applications
- for horizontal and backbone cabling
- single mode fiber OS2, SM9/125 µm, bend insensitive according to IEC 60793-2-50 type B6_a, ITU G.657.A compatible to ITU-T G.652.D
- with 4 colored fibers incl. secondary coating (Ø 0.25 mm) and aramid yarn for strain relief
- cable jacket halogen free with low smoke development and flame-extinguishing, LSHF (low smoke, halogen free)
- outer diameter 2.3 mm
- color: white
- applicable standards: IEC 60794-2-20
- fire behaviour: class $B2_{ca}$ s1a d0 a1 acc. to EN 50399 (classification according to EN 13501-6)

Connector suitable for field assembly



FAST™ is a registered trademark of Fujikura Ltd, Japan.

OpDAT FAST™ Hybrid

PART NUMBER	SCOPE OF DELIVERY		CABLE TYPE	CONNECTOR TYPE
	CONNECTOR KITS	ACCESSORIES		
1509QAJA010C-E	100	Cleaver set, fiber guide	0.25 + 0.9 mm	LC APC
1509QAJA002C-E	20	Cleaver set, fiber guide		
1509QAJA0010-E	10	–		
1509QKJA010C-E	100	Cleaver set, fiber guide Cable assembly set	2.0 + 3.0 mm	
1509QKJA002C-E	20	Cleaver set, fiber guide Cable assembly set		
1509QKJA0010-E	10	–		
1509QAEA010C-E	100	Cleaver set, fiber guide	0.25 + 0.9 mm	SC APC
1509QAEA002C-E	20	Cleaver set, fiber guide		
1509QAEA0010-E	10	–		
1509QKEA010C-E	100	Cleaver set, fiber guide Cable assembly set	2.0 + 3.0 mm	
1509QKEA002C-E	20	Cleaver set, fiber guide Cable assembly set		
1509QKEA0010-E	10	–		

Main features

- with hybrid technology for better and constant optical insertion damping values
- simple, easy to learn, fast and cost-effective mounting in less than two minutes
- available with connector types LC and SC for single mode (UPC and APC polish)
- connector kits for FO buffers with Ø 0.25 and Ø 0.9 mm
- connector kits for FO cables with Ø 2.0 and Ø 3.0 mm
- the connector can be assembled up to three times
- the separating device included in the scope of delivery (cleaver) provides a slanted cut, so that high return damping values are achieved.
- it is maintenance-free and can be used up to 200 times
- every OpDAT FAST™ hybrid connector has a serial number, so that traceability is ensured at all times

Interesting
Information

Terms and abbreviations

APL: Terminal point line technology (= APL)

APN: Switch point of the network operator in the house entry point (= APL)

ASG: Application-specific device, e.g. fiber optic modem at the subscriber interface

CO: Central office (= VST or POP)

CPE: Customer Premises Equipment: generic term for the devices on the customer's premises, such as ASG, ONT, ONU, IAD

DP: Distribution point: distribution point between the POP and HÜP, e.g. cable junction box, fiber optic ferrule

ENS: External network interface, describes the transition from the operator network to the apartment network and includes the fiber optic modem (ASG)

EPON: Ethernet via passive optical networks with transmission rates of 1.244 GBit/s, which are distributed among the subscribers via passive optical splitters

GPON: Gigabits via passive optical networks with transmission rates of 2.488 GBit/s, which are distributed among the subscribers via passive optical splitters

Gf-AP: Fiber optic terminal point of the network operator (= APN or APL)

Gf-GV: Fiber optic building distributor (= PV)

Gf-TA: Fiber optic subscriber outlet (=TS)

HÜP: Building transfer point of the network operator

IAD: Integrated Access Device: multifunctional device with router, WLAN-AP, switch, e.g. FRITZ!Box. The ASG can also be integrated into the IAD.

KVz: Cable junction box: distribution point, usually placed at the roadside

LC-APC: FO connectors with angled polish for optimal Return damping

ONT: Optical Network Termination: termination device in Ethernet point-to-point solutions on the customer's premises, e.g. fiber optic modem. Belongs to the network operator or service provider, converts the light signals into electrical signals and offers an RJ45 Ethernet interface and optionally a coax connection for TV signals.

ONU: Optical Network Unit: termination device in point-to-multi-point solutions on the customer's premises, comparable with ONT

OTO: Optical Terminal Outlet: subscriber interface

POP: Point of Presence: central interface of the network operator or (= VST or CO)

PON: Passive optical network

PPPoE: Point-to-Point Protocol over Ethernet

PV: Primary distributor as a building distributor (= Gf-GV)

SC-APC: FO connectors with angled polish for optimal Return damping

SkV: Secondary distributor: floor distributors in large multi-family dwellings

SM: Single mode fiber: 9/125 μm, OS2

TA: Subscriber connection, e.g. RJ-45 junction box for the terminal devices in the apartment

TS: Subscriber interface in a wall outlet or connecting the fiber optic modem, network termination point (= Gf-TA or OTO)

VST: Central exchange of the network operator

WDM: Wavelength division multiplexing in PON networks

WV: Apartment distributor: multimedia distributor in the apartment: from now on the cables go in a star shape to the RJ45 connections (TA) in the apartment from the feeder

Cabling: Connection cable from the central exchange of the network operator to the cable junction box

Drop cabling: Connection cable between the distribution point and house entry point of the network operator and between the primary distributor as a building distributor and subscriber interface in a wall outlet

Riser cabling: Connection cable between the primary distributor as a building distributor and secondary distributor

This information brochure provides general information on how to set up a fiber optic network in exemplary buildings. All information, descriptions and illustrations are non-binding and are not a substitute for precise planning by competent specialists on site. Individual case-specific features may lead to deviations from our planning proposals and specifications and restrictions in terms of feasibility.

Warranty claims cannot be derived from this

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