



FireBox

Fire-tested connections



Building Connections

OBO
BETTERMANN

Maintaining the functionality of electrical systems



The maintenance of the electrical supply is required in any structure in which large numbers of people congregate, for example, hospitals, hotels, underground railway systems or tunnels. The maintenance of electrical functionality exists when the current flow is not interrupted during a fire. This allows, for example, emergency lighting, ventilation and fire alarm systems to continue working and emergency and escape routes to remain usable. The longer these technical systems work, the greater the chances of rescue.

A key component in the installation of systems that maintain the electrical functionality is the connection and branching of safety cables in appropriate junction boxes. OBO Bettermann developed the FireBox for this purpose. As with all the OBO systems for the electrical installation of cable systems that maintain the electrical function, the FireBox is tested according to DIN 4102 Part 12. As a part of the systems that maintain the electrical functionality, it helps to ensure that safety-relevant systems function reliably over a defined period of time in the event of fire.





30 minutes: Maintenance of the electrical functionality for safe evacuation and rescue

The first 30 minutes after the start of a fire play an important role in the evacuation of a building. During this period, OBO systems for the maintenance of electrical functionality E30 maintain the flow of energy for:

- Emergency lighting
- Lifts with fire control
- Fire alarm systems
- Alarm systems and acoustic systems
- Natural smoke extraction systems

60/90 minutes: Maintenance of the electrical function for fire-fighting

To support fire-fighting operations, it is imperative that certain technical equipment is supplied with power for up to 90 minutes after a fire breaks out. For example, OBO systems for the maintenance of electrical function E60 and E90 ensure:

- Pressure increase systems for fire water supply
- Mechanical smoke extraction systems
- Smoke protection pressure systems
- Fire brigade lifts
- Emergency power supply systems

How to maintain electrical functionality

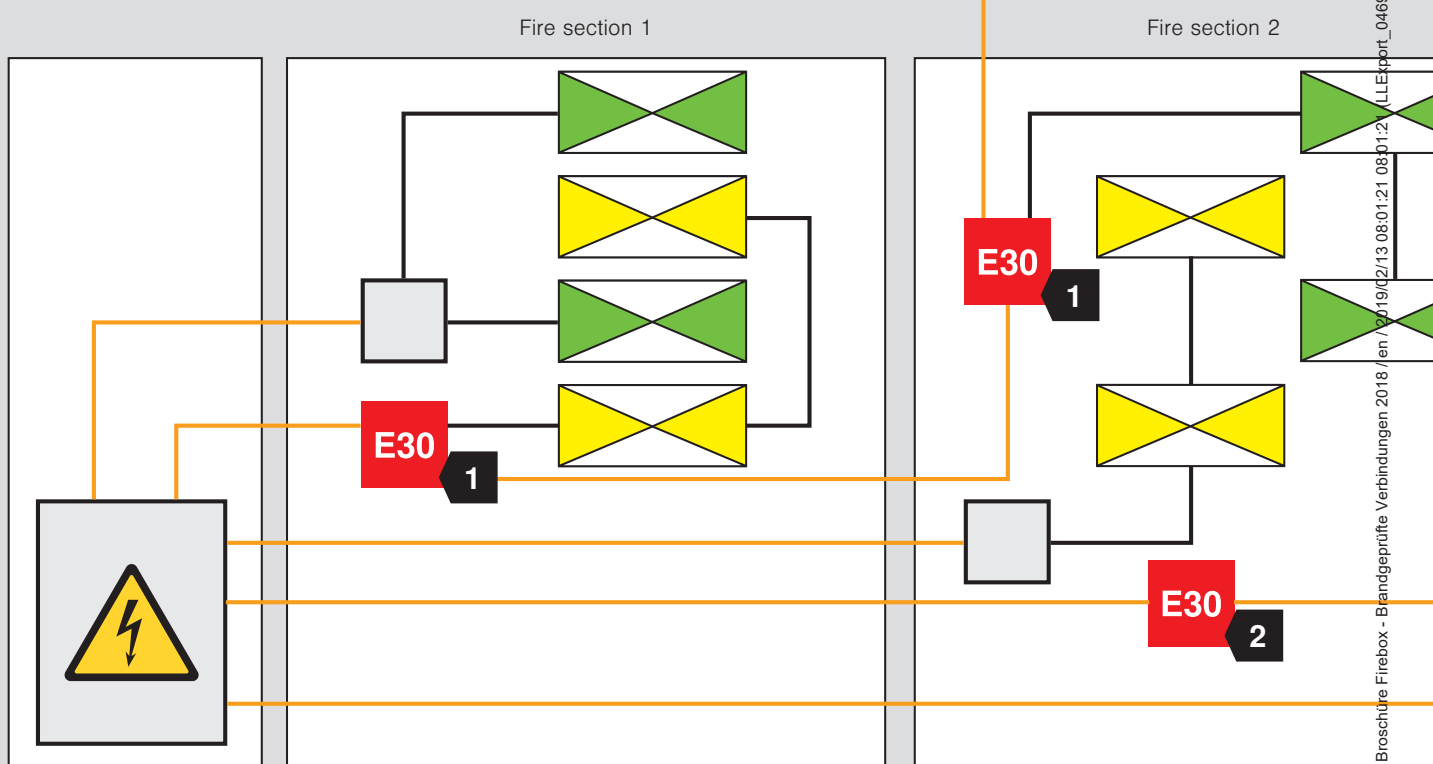


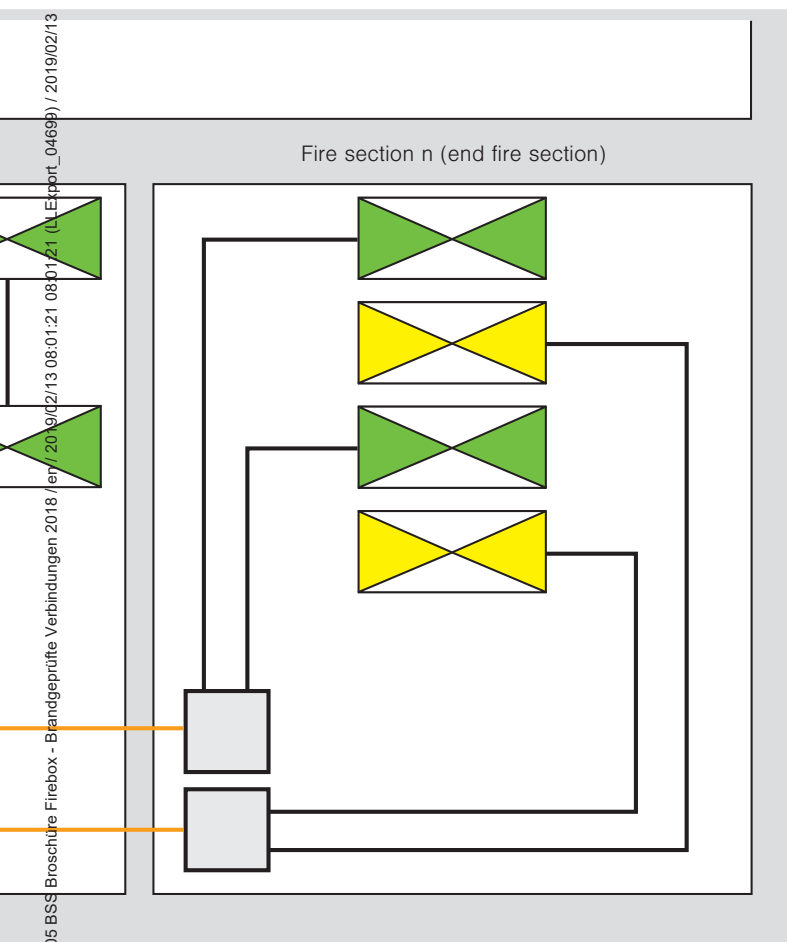
If fire alarm systems are installed in the building, it is possible to waive cabling that maintains the electrical functionality class E30 in certain areas. These include, for example, branch cables to fire alarms located in a fire section. Here, routing of E30 cables to the first fire alarm is sufficient. If the fire alarm system was created with loop technology, then no E30 safety cables at all are required. If cables fail during a fire, the system detects interruptions and automatically switches the signal paths.

If cables of the fire alarm system are run through monitored areas into a final fire section, then there is no need for E30 cabling. If the bridged fire sections are not monitored, then safety cables with maintenance of electrical functionality class E30 must be installed.

The exceptions described above have no influence on the supply of safety-relevant electrical systems with the maintenance of electrical functionality classes E60 and E90. The higher-level classes must be given the appropriate safety cables.

Cable routing with the maintenance of electrical functionality: Example of a safety lighting system





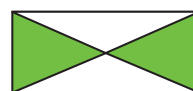
Main safety power distributor



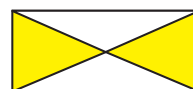
Junction box with maintenance of functionality to E30 (incl. fuse)



Junction box



Safety lamp with escape route pictogram



Safety lamp



Standard cable



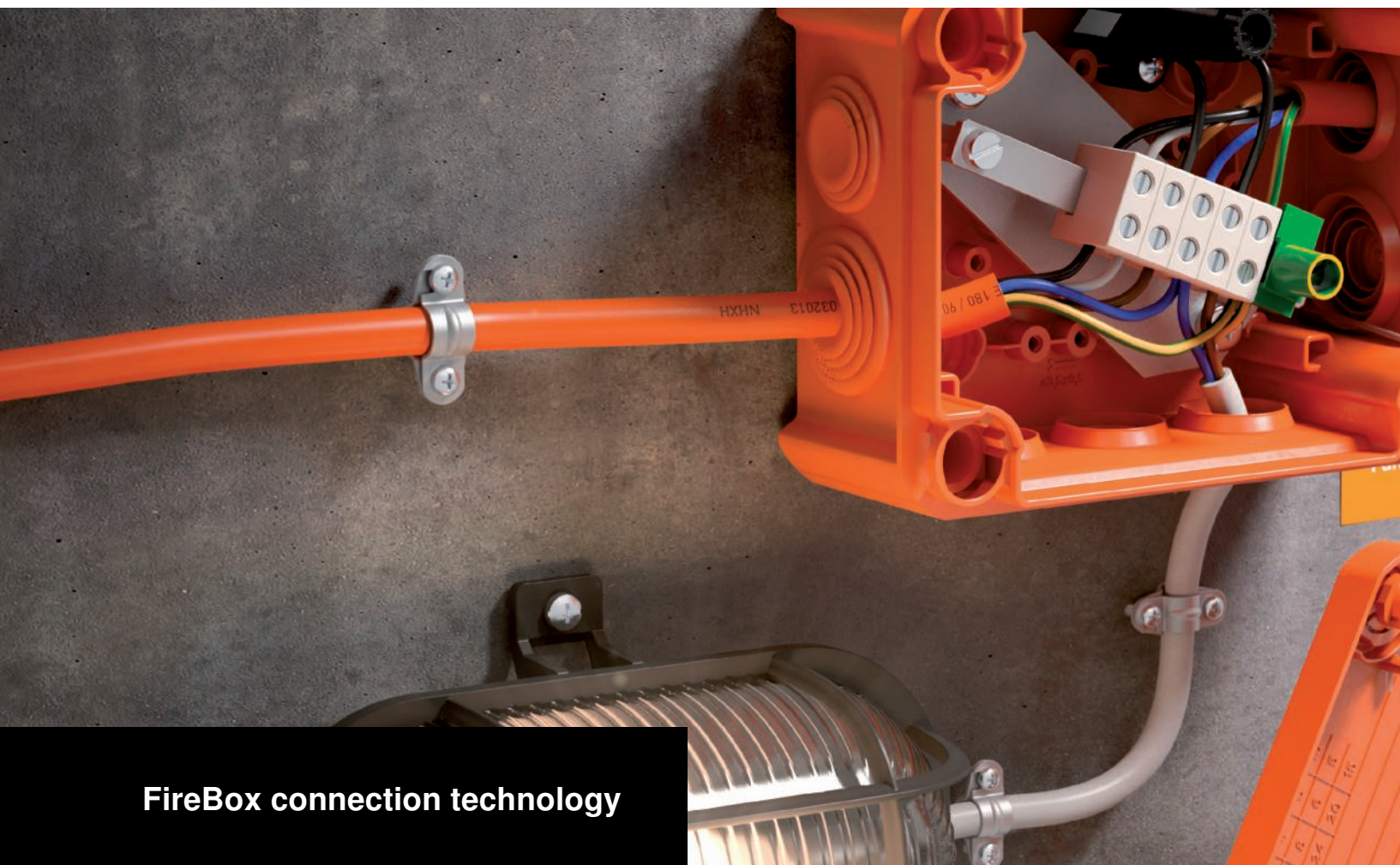
Cable with maintenance of functionality to E30



Extension and branching



Extension



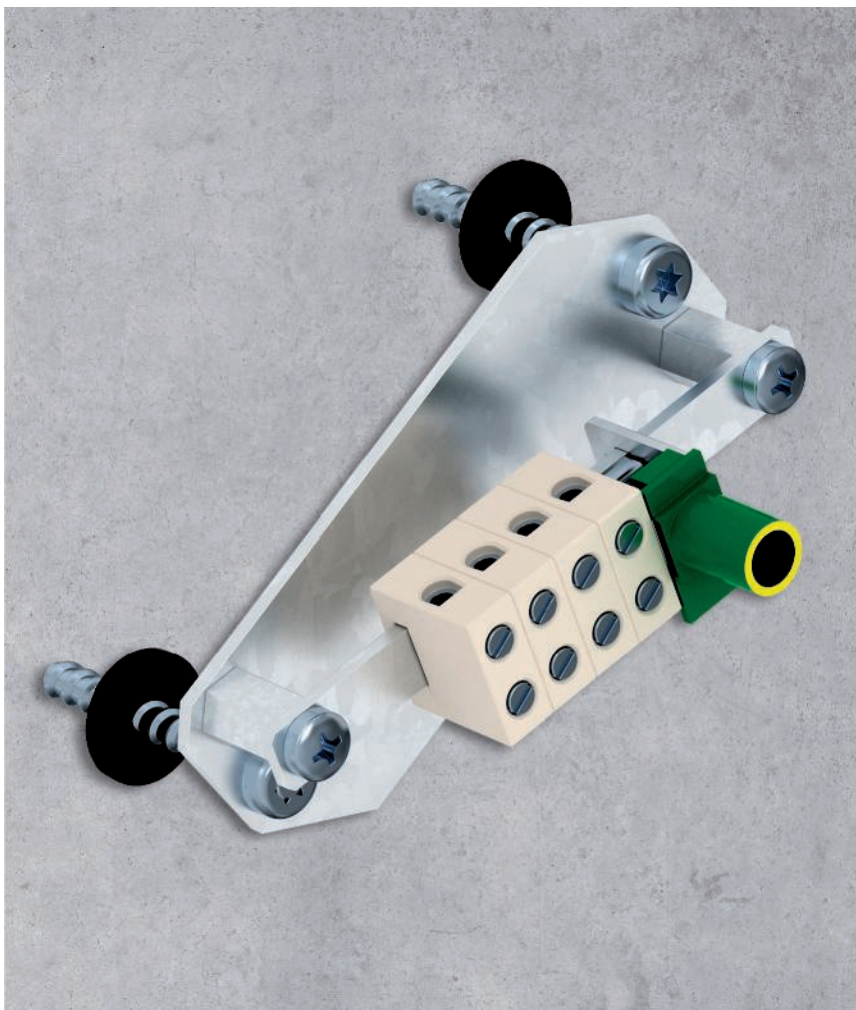
FireBox connection technology



Junction boxes of the FireBox series are available for connecting and branching safety cables. The heart of the FireBox is the high temperature-resistant ceramic connection terminal. The housing of the terminal block is made of ceramic materials. It is the basis for a secure mechanical and electrical connection. In combination with the thermoplastic housing, the ceramic connection terminal forms a system with fire protection testing. The connection unit offers clamping ranges from 0.5 mm² to 16 mm² copper cross-section. Boxes with soft plug-in seals or closed variants are available.

The protective conductor terminal is connected to the support clamp, meaning that covers of the metal parts are not required. The FireBox is tested and approved as a connection socket for maintenance of electrical functionality to DIN 4102 Part 12 with the classes E30, E60 and E90. A separate fuse holder allows protection of a branch.

Cable-specific routing variant to DIN 4102 Part 12



Approved data Clamping capacity of the ceramic terminals

	0.5 mm ²	1.5 mm ²	2.5 mm ²	4 mm ²	6 mm ²	10 mm ²	16 mm ²
4 mm ²	≡ 6 ≡	≡ 4 ≡	≡ 2 ≡	≡ 2 ≡	-	-	-
6 mm ²	≡ 8 ≡	≡ 6 ≡	≡ 2 ≡	≡ 2 ≡	≡ 2 ≡	-	-
10 mm ²	-	≡ 8 ≡	≡ 6 ≡	≡ 4 ≡	≡ 2 ≡	≡ 2 ≡	-
16 mm ²	-	≡ 10 ≡	≡ 8 ≡	≡ 4 ≡	≡ 4 ≡	≡ 2 ≡	≡ 2 ≡

The data in the general construction test certificates of the materials testing office of North Rhine-Westphalia, Erwitte, applies.

Various material properties

The FireBox stands out through a range of positive material properties, which make it particularly robust and reduce damage to people and property to a minimum in the event of fire.

The FireBox:

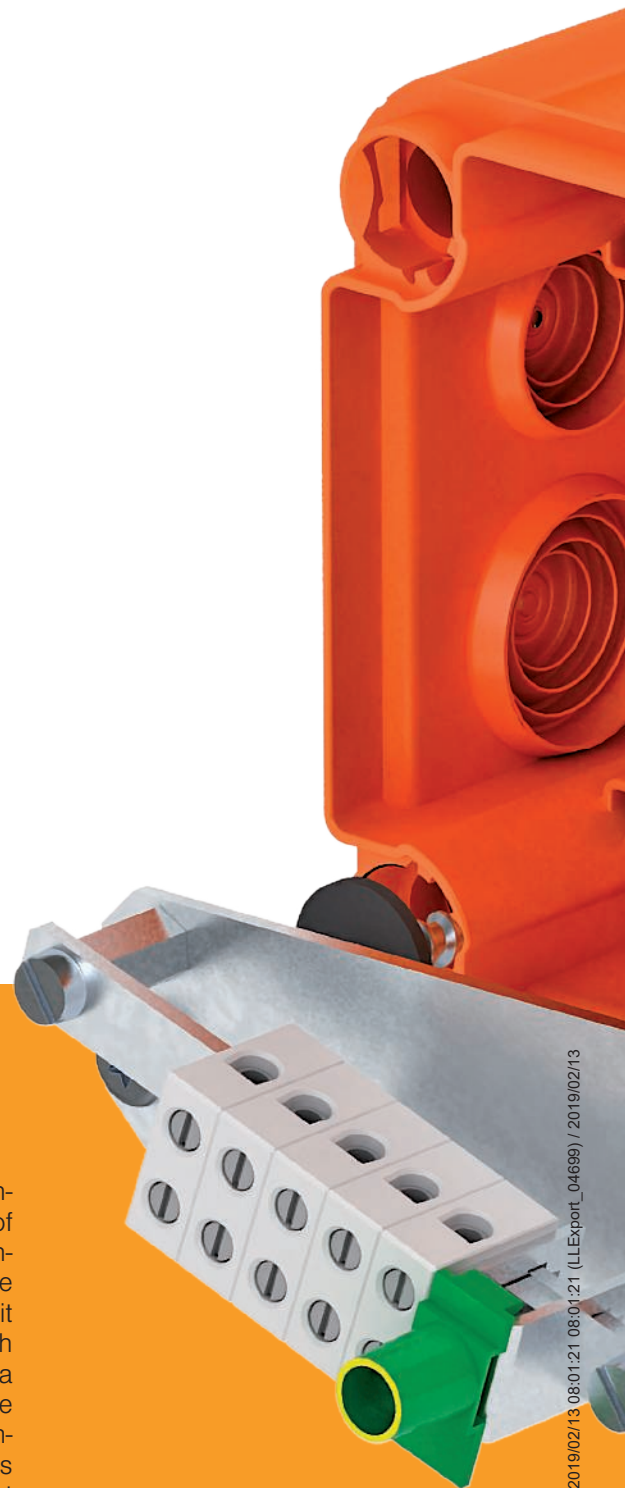
- 1** Has a protection rating up to IP66
- 2** Impact resistance to IK10
- 3** Made of halogen-free thermoplastic
- 4** Connection unit made of high temperature-resistant ceramic

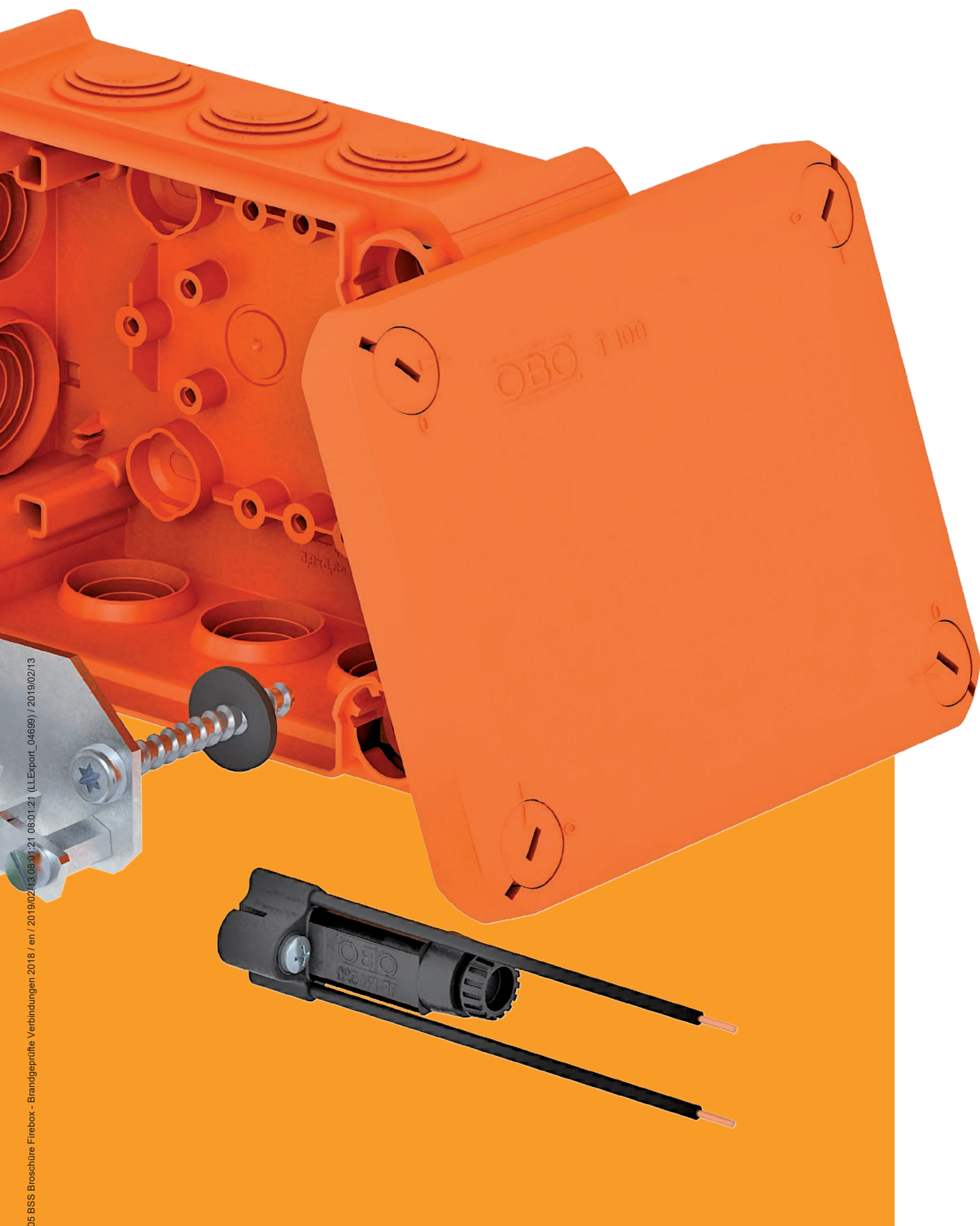


The IP protection rating according to DIN EN 60529 (VDE 0470 Part 1) specifies how far a component is protected against contact and foreign bodies and the ingress of water. The IP66 protection rating means, on the one hand, that dangerous parts in the distributor box are not accessible with a wire and that the FireBox is dust-proof. On the other, the box guarantees protection against strong water jets.



The IK code to DIN EN 50102 indicates the protection rating of housings against external mechanical loads. It is made up of the code letters IK and a two-digit number from 00 to 10. Each group of numbers stands for a load energy value in joules (J). The IK code always applies to the complete housing, which guarantees the protection of resources against the damaging effects of mechanical loads. The housings are tested by knocking them with different testing hammers.





Approximately 95% of all deaths during fires are caused by smoke poisoning!



HALOGEN
FREE

Halogen freedom

Estimates suggest that around 95% of fire victims die not due to the immediate effects of the fire, but of poisoning from the smoke. In addition, the corrosive fire gases created during fires cause immense damage to property and can permanently damage the structure of a building. Therefore, halogen-free installation systems should or must always be used in public areas (emergency routes, lifts, etc.).

The chemical composition of these halogen-free systems is designed in such a way that, in the case of fire, they produce less hazardous (toxic/corrosive) gases, which could combine with extinguishing agents to form hydrochloric acid. In the sense of the

standard DIN VDE 0472, this means that materials are considered halogen-free when "the proportions of the halogens chlorine, bromine and iodine are $\leq 0.2\%$ for chlorine and $\leq 0.1\%$ for fluorine". OBO Bettermann offers a wide range of halogen-free products that reduce the risk of harm to people and property to a minimum in case of fire.

Thermoplastics are plastics that can be shaped within a specific temperature range. This process is reversible, in other words, thermoplastics can theoretically be cooled and then melted down again any number of times. Another unique advantage of thermoplastics is that they can be welded.

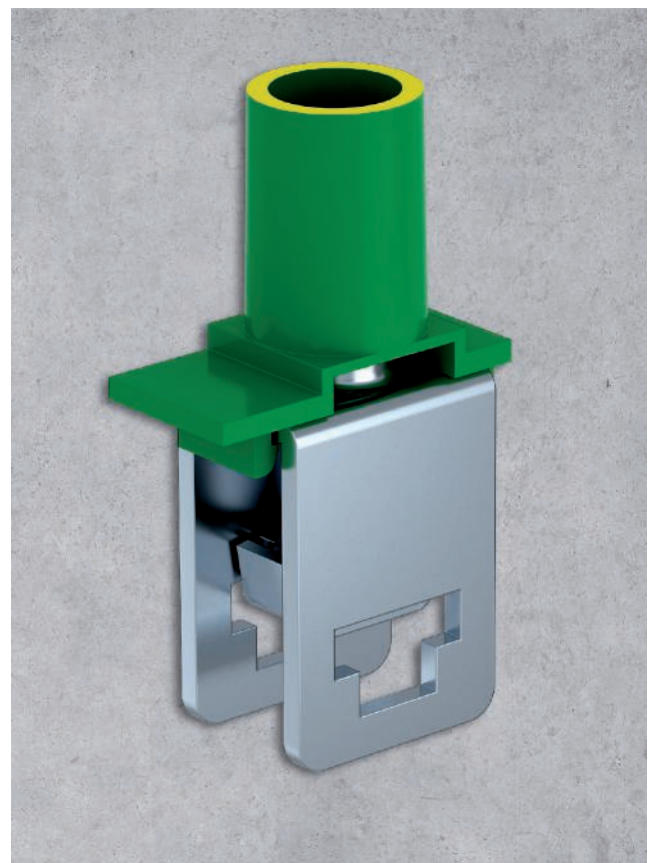
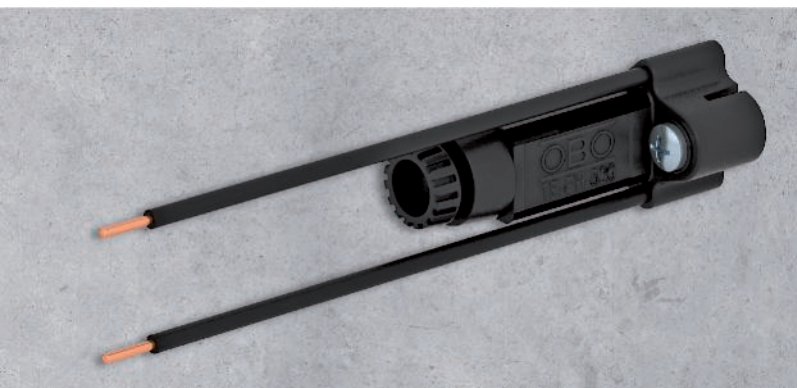
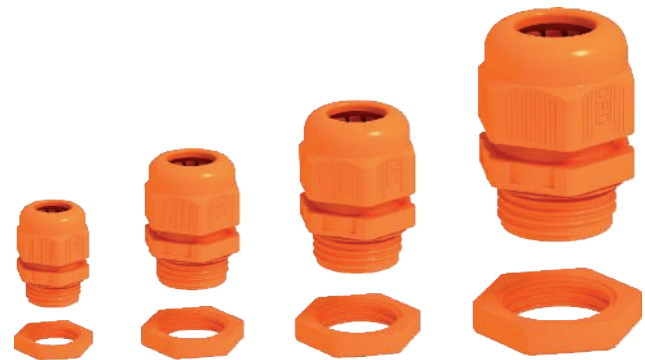


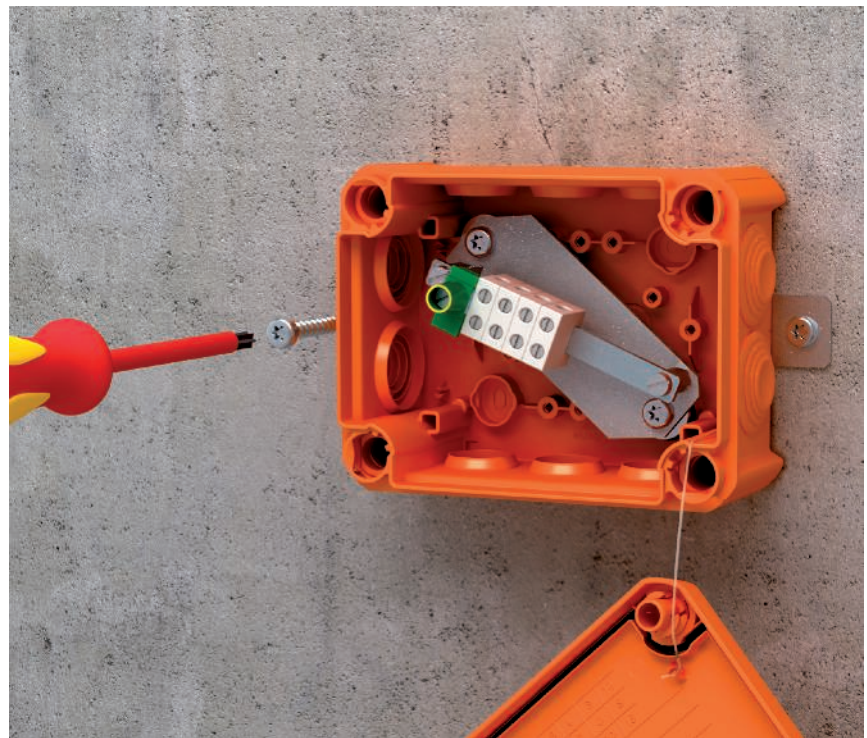
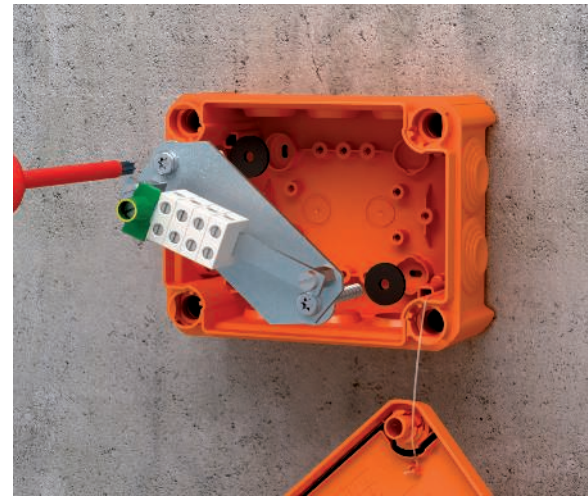
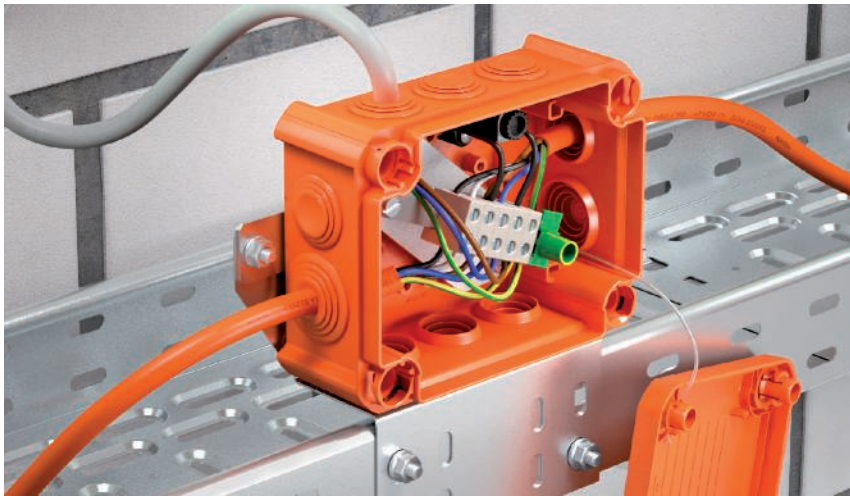
Mounting options

There are various fastening options available (internal and external fastening) for the FireBox, which all ensure a secure hold. An anchor suitable for the substrate must be used for mounting. In addition, a special angled mounting plate, stiffened through beading, means that fastening on cable trays is possible. The internal fastening takes place with suitable anchors with fire protection approval directly through the box body. In the case of external fastening, the anchoring is created through the external straps of a pre-mounted steel panel in the substrate.

Mounting directly on cable trays is suitable for safe installation of cables that maintain electrical functionality. Here, cables can be run into and out of the box in an uncomplicated manner and need not be bent over the side rail. The scope of delivery of the FireBox for internal and external fastening contains two fire protection anchors for fire protection fastening in concrete or masonry.

Besides the different options for installing the FireBox, cable insertion with different methods is also possible. Cables can be inserted or run out through elastic plug-in seals, which are already pre-mounted on the FireBox. The soft seals adjust themselves to the cable in a flexible manner and make it dust-proof and water-proof. In combination with the closed FireBox, cables can also be installed with a robust cable gland. The V-TEC cable gland offers high torsion protection over the entire clamping range, a high tightness level and strain relief and is available in the sizes M16 and M40 in a set with the matching locknut.





(LLEExport_04699) / 2019/02/13

15 BSS Broschüre Firebox - Brandgeprüfte Verbindungen 2018 / en / 2019/02/13 08:01:21 08:01:22

T:	Thermoplast	←	T
100:	Size	←	100
E:	Maintenance of the electrical supply	←	E
D:	Plug-in seal	←	D
6:	Nominal cross-section	←	6
5:	Number of terminals, including PE	←	5
_:	Internal fastening	←	_
A:	External fastening	←	A
F:	Fuse holder included	←	F
D:	Data cables	←	D
S:	Impact-resistant lid	←	S



Fire test OBO FireBox



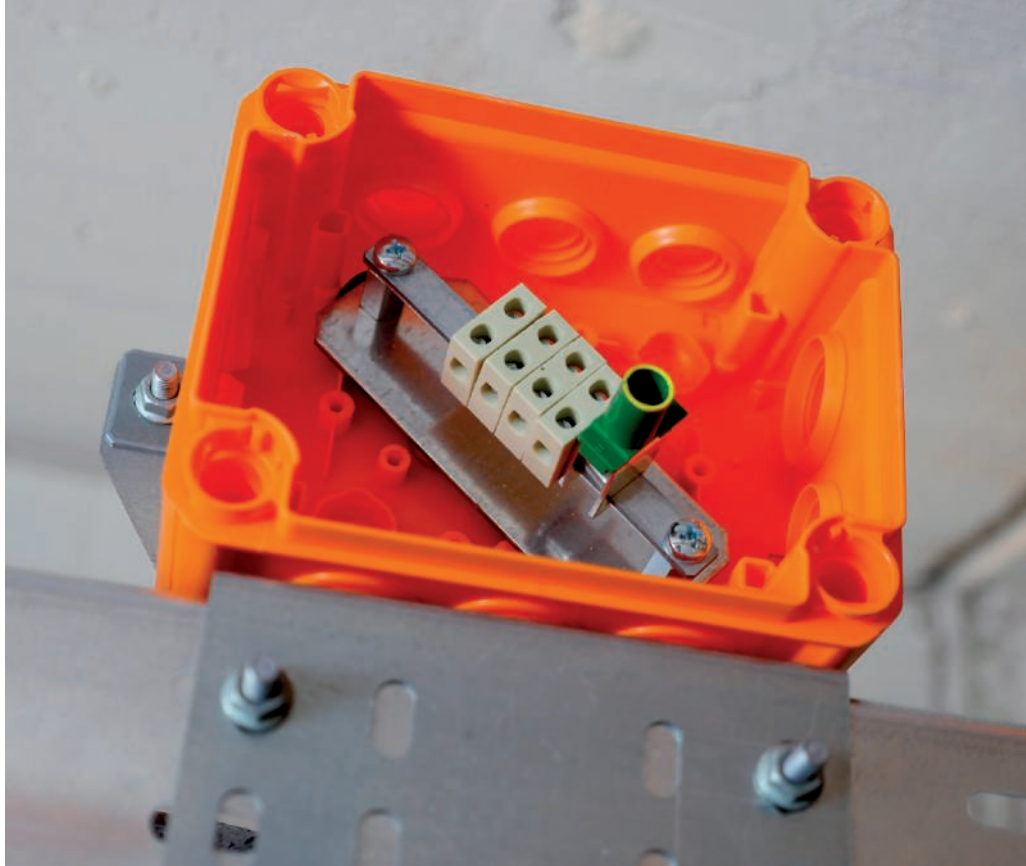
There can be no compromises with fire protection: In an emergency, every product used must function absolutely reliably and also comply with legal and construction regulations. As an OBO customer, you can rely on tested quality. Our fire protection experts subject every newly developed product to comprehensive tests in accredited testing institutes. In doing so, we orientate ourselves to national and international testing standards.

Independent testers inspect the results and assign the appropriate proofs of suitability, such as approvals, evaluations or test certificates, to our products. In the download area at www.obo-bettermann.com, you can view and download all the fire protection certificates of our products.

We like to make every effort when conducting our fire tests! When we test our cable support systems that maintain the electrical supply in a fire, we test the entire cable system, consisting of the routing systems and cables with the integrated function of maintaining the supply of electricity.



We subject the entire system to a practical test in a fire and test whether our products can withstand the temperatures of up to 1,000 °C. Often, we even carry out such fire tests in the development phase of a product. The results are then taken into account when further developing the product. In the end, we have absolutely safe and practical solutions, which meet the requirements of the market.



Time Fire room temperature

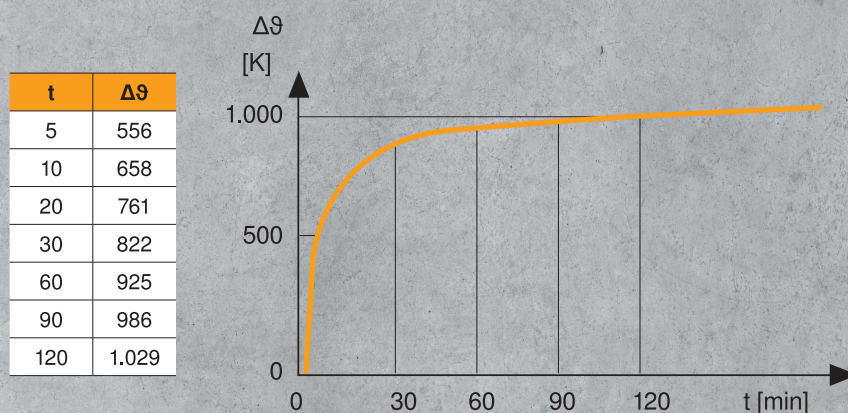
E30 840 °C

E60 945 °C

E90 1,000 °C

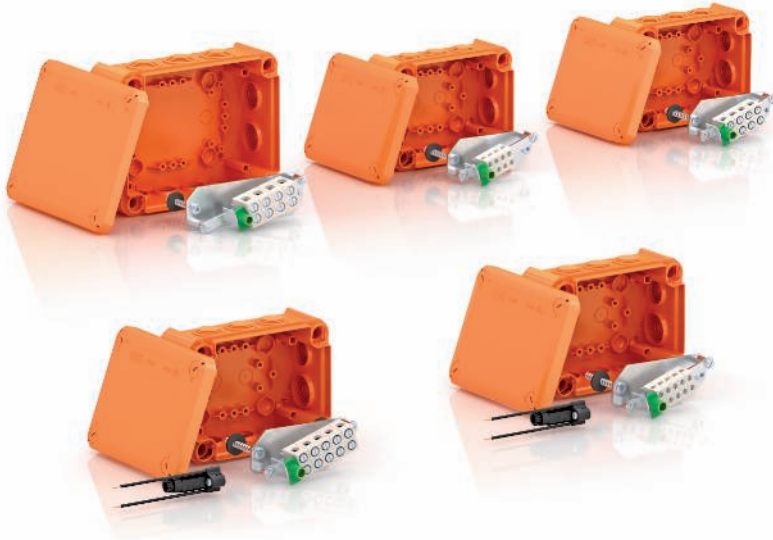


Standard temperature-time curve (ETK) according to ISO 834-1 and DIN 4102 Part 2 [10]



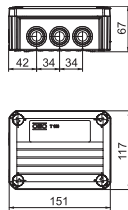
t: Time in minutes
 $\Delta\theta$: Temperature increase in kelvin

FireBox T, with plug-in seals and internal fastening



- Halogen-free
- With soft push-in seals
- Pre-mounted connection unit made from high temperature-resistant special ceramic
- Labelled protective conductor terminal
- Supplied with two MMS 6x50 fire protection screw ties
- Protection rating IP65
- Impact resistance class T100ED... IK08; T160ED... IK05
- Nominal cross-section 6/10/16 mm²
- Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute MPA NRW, Erwitte

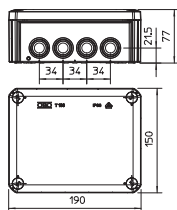
FireBox T100ED with plug-in seal and internal fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 4-5	4	5	8x M25 2x M32	1	34.600	7205529
T 100 ED 6-5	6	5	8x M25 2x M32	1	34.000	7205530
T 100 ED 10-5	10	5	8x M25 2x M32	1	35.900	7205533

PP Polypropylene

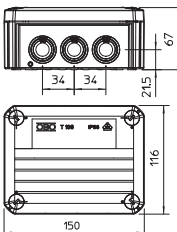
FireBox T160ED with internal fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-5	16	5	7x M25 5x M32	1	62.500	7205536

PP Polypropylene

FireBox T100ED with internal fastening and fuse holder



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 6-6 F	6	6	8x M25 2x M32	1	38.650	7205550
T 100 ED 10-6 F	10	6	8x M25 2x M32	1	38.650	7205553

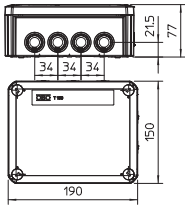
PP Polypropylene

FireBox T160ED with internal fastening and fuse holder



Type	Nominal cross-section mm²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-6 F	16	6	7x M25 5x M32	1	64.000	7205556

PP Polypropylene

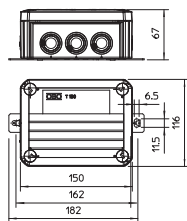


FireBox T, with plug-in seals and external fastening



- Fully mounted connection unit made from high temperature-resistant special ceramic
- Labelled protective conductor terminal
- External fastening
- Supplied with two MMS 6x50 fire protection screw ties
- Protection rating IP65
- Impact resistance class T100ED... IK08; T160ED... IK05
- Nominal cross-section 6/10/16 mm²
- Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute MPA NRW, Erwitte

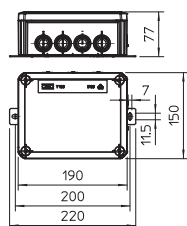
FireBox T100ED with external fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 6-5 A	6	5	8x M25 2x M32	1	38.500	7205540
T 100 ED 10-5 A	10	5	8x M25 2x M32	1	40.600	7205543

PP Polypropylene

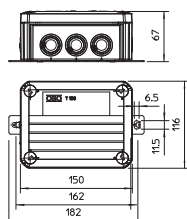
FireBox T160ED with external fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-5 A	16	5	7x M25 5x M32	1	60.000	7205546

PP Polypropylene

FireBox T100ED external fastening with fuse holder



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 6-6 AF	6	6	8x M25 2x M32	1	43.330	7205560
T 100 ED 10-6 AF	10	6	8x M25 2x M32	1	43.340	7205563

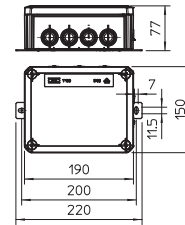
PP Polypropylene

FireBox T160ED with external fastening and fuse holder



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-6 AF	16	6	7x M25 5x M32	1	60.000	7205566

PP Polypropylene

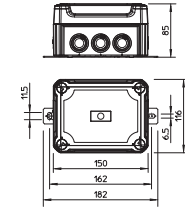


FireBox T100ED with external fastening and impact-proof cover



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T100ED 6-5 AS	6	5	8x M25 2x M32	1	44.500	7205620
T100ED 10-5 AS	10	5	8x M25 2x M32	1	46.600	7205623

PP/PC Polypropylene / polycarbonate

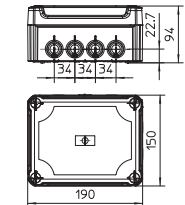


FireBox T160ED with external fastening and impact-proof cover



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T160ED 16-5 AS	16	5	7x M25 5x M32	1	65.000	7205626

PP/PC Polypropylene / polycarbonate

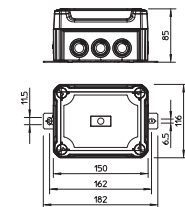


FireBox T100ED with external fastening, fuse holder and impact-proof cover



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T100ED 6-6 AFS	6	6	8x M25 2x M32	1	49.200	7205630
T100ED 10-6 AFS	10	6	8x M25 2x M32	1	49.300	7205633

PP/PC Polypropylene / polycarbonate





PP/PC Polypropylene / polycarbonate

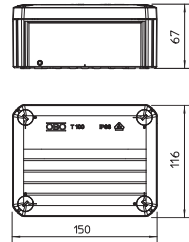



FireBox T, closed version



- Pre-mounted connection unit made from high temperature-resistant special ceramic
- Labelled protective conductor terminal
- Supplied with two MMS 6x50 fire protection screw ties
- Protection rating IP65
- Impact resistance class T100ED... IK08; T160ED... IK05
- Cable outlets with V-TEC glands
- Nominal cross-section 6/10/16 mm²
- Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute MPA NRW, Erwitte

FireBox T100E with internal fastening

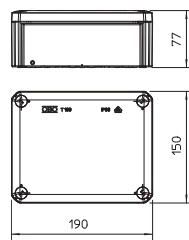



IP 65E30E90

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 E 4-5	4	5	—	1	27.400	7205510

PP Polypropylene

FireBox T160E with internal fastening

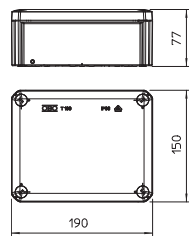



IP 65E30E90

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 E 10-5	10	5	—	1	48.700	7205524
T 160 E 16-5	16	5	—	1	53.800	7205528

PP Polypropylene

FireBox T160E for data technology with internal fastening



IP 65E30E90

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 E 4-8D	4	8	—	1	46.500	7205520

PP Polypropylene

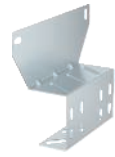
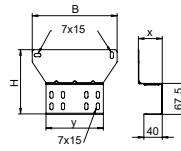
Mounting plate for FireBox T series

Type	Dimen- sion H mm	Dimen- sion B mm	Dimen- sion x mm	Dimen- sion y mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MP T610	141	185	52	125	1	23.600	7205480
MP T616	159	220	63	165	1	34.500	7205484

Sl Steel

DD Strip galvanised zinc/aluminium, Double Dip

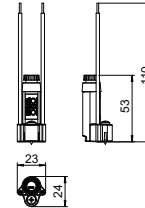
Mounting plate for the fastening of junction boxes of the FireBox T series (with external fastening) onto cable trays or cable ladders with a side height of 60 mm. The angled construction from sheet steel reinforced through crimps enables the secure mounting of cables that maintain electrical functionality, without having to bend the cable over the side rail.



Fuse holder for FireBox T

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
TE-FH 520	1	1.800	7205570

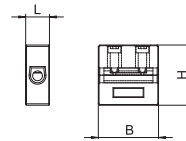
Fuse holder with bayonet lock for fine-wire fuse for dimensions Ø 5 x 20 mm. Connection wires that maintain electrical functionality with nominal cross-section 2.5 mm², ready-stripped. For mounting on one of the exposed domes in the junction box of the FireBox T series using the supplied screw.



Ceramic terminal

Type	Nominal cross- section mm²	Dimen- sion B mm	Dimen- sion H mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TK 04	0.5 - 4	21.5	21.5	8.5	5	0.880	7205700
TK 06	6	21.5	21.5	8.5	5	0.880	7205702
TK 10	10	24	24	12.5	5	1.840	7205704
TK 16	16	28	28	15	5	3.160	7205706

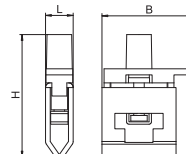
High temperature-resistant ceramic terminal for refitting of the FireBox T series.



Protective conductor terminal

Type	Nominal cross- section mm²	Dimen- sion B mm	Dimen- sion H mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TPE 04	4	19	26	6	5	0.400	7205708
TPE 25	25	23	42	12	5	1.440	7205710

Protective conductor terminal for retro-fitting the FireBox T series with green-yellow identification.



Cable gland with locknut as a set

Type	Thread	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
V-TEC VM20+ OR	M20 x 1.5	100	10	1.106	7205660
V-TEC VM25+ OR	M25 x 1.5	100	10	1.710	7205663
V-TEC VM32+ OR	M32 x 1.5	100	10	2.840	7205666
V-TEC VM40+ OR	M40 x 1.5	120	10	5.150	7205669

PA Polyamide

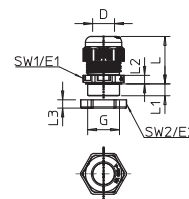
Robust cap nut cable gland with metric connecting thread to IEC 423, including pre-mounted locknut.

For high tightness requirements. Strain relief, wringing protection and tightness over the whole clamping area. Sealing ring made of polychloroprene/acrylonitrile butadiene rubber. Moulded shaped sealing lip on intermediate support, no connection thread sealing ring required.

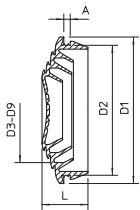
VDE-tested according to DIN EN 50262, protection rating IP68 at 5 bar for 1 hr.

For maintenance of electrical function according to DIN 4102 Part 12 in connection with the junction boxes of the FireBox T series.

Colour: Pastel orange.



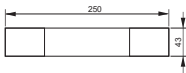
Plug-in seal for FireBox T series



Type	Size	For Ø	Pack. pcs	Weight kg/100 pcs.	Item No.
EDK 25 OR	M25	0 - 22	10	0.165	7205675
EDK 32 OR	M32	0 - 27	10	0.274	7205677
EDK 40 OR	M40	0 - 34	10	0.420	7205679

EVA Ethylene vinyl acetate
The soft plug-in seal can be cut back step by step to suit the relevant cable diameter.
Colour: Pastel orange.

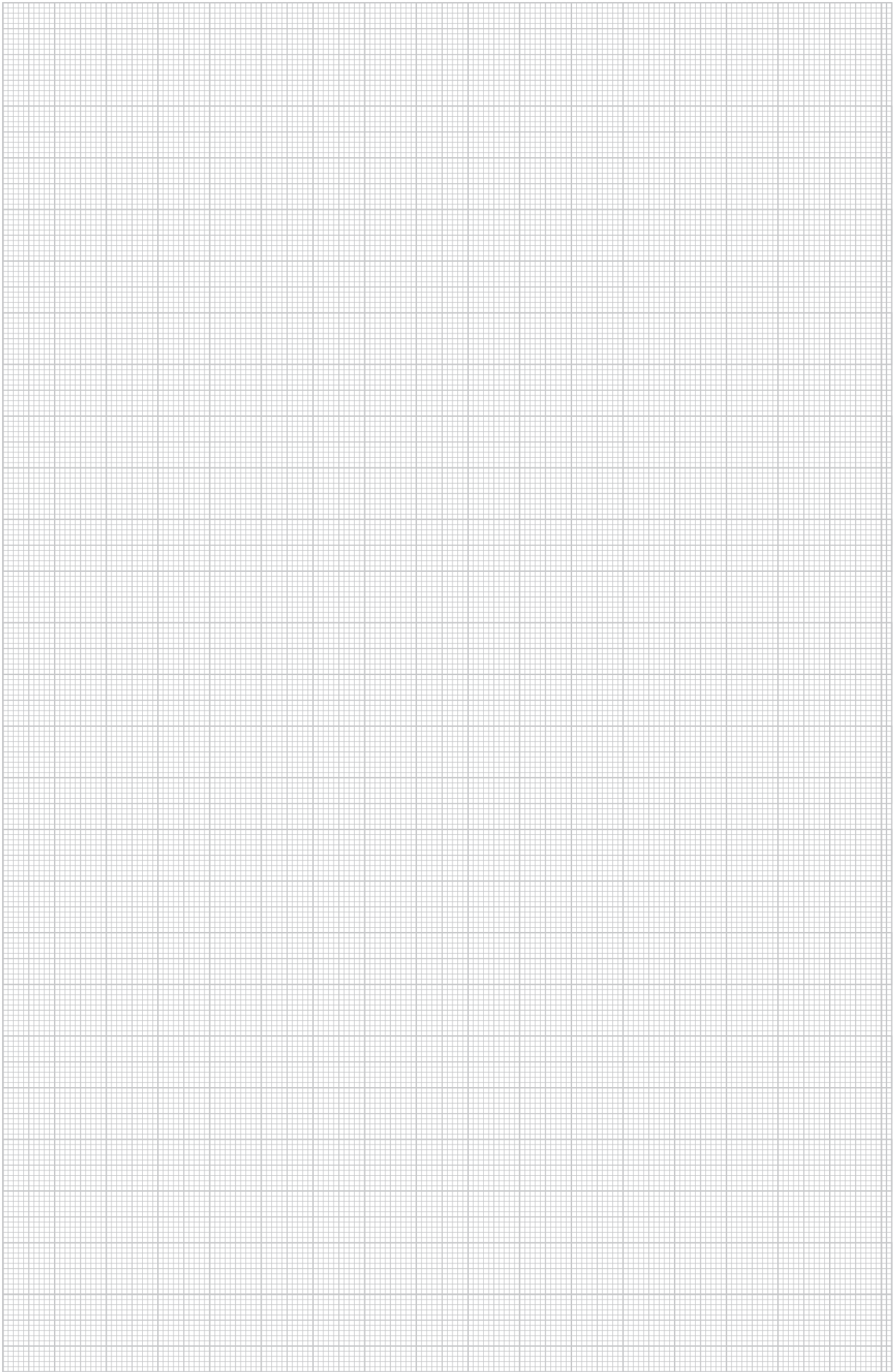
Identification plate for cable system



Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	German	10	0.600	7205423

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for maintenance of electrical function as required by DIN 4102 part 12.



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