Mounting instructions

Junction box X series

OBO
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Junction box X series
Mounting instructions

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1 About these instructions

1.1 Target group

These instructions are intended for the following target groups:

– Electrically trained specialists charged with mounting junction boxes.

1.2 Relevance of these instructions

These instructions are based on the standards valid at the time of compilation (September 2024).

All the documents supplied with the product must be stored in an easily accessible location, so as to be available when information is required.

We will not accept any warranty claims for damage caused through non-observance of these instructions.

Any images are intended merely as examples. Processing results may look different.

If not otherwise shown or indicated, the mounting steps are identical for all the junction boxes of the X series.

1.3 Types of warning information

⚠ **WARNING**	**Type of risk!** Shows a possibly risky situation. If the situation is not avoided, then death or serious injury may result.
⚠ **CAUTION**	**Type of risk!** Shows a risky situation. If the safety instruction is not observed, then medium or minor injuries may occur.
ATTENTION	**Type of risk!** Shows a hazardous situation. If the safety instruction is not observed, then damage to the product or the surroundings may occur.

Note! *Indicates important information or assistance.*

1.4 Basic standards and regulations

– DIN VDE 0606-1 VDE 0606-1:2000-10 Connecting materials up to 690 V; Installation boxes for accommodation of equipment and/or connecting terminals

– DIN EN 60670-22 VDE 0606-22:2007 (EN 60670-22:2006) Boxes and enclosures for electrical accessories for household and similar fixed electrical installations – Part 22: Particular requirements for connecting boxes and enclosures

1.5 Applicable documents

– EU declaration of conformity

– ÖVE symbol approval

2 Intended use

The X series is a series of robust junction boxes made of polycarbonate in various sizes and equipment variants. It is intended for use in environments with high impact loads and in strongly corrosive environments. The X series is suitable for interior and exterior areas and can be used in industrial environments at temperatures between –25 °C and 65 °C.

The X series is not designed for any other purpose than the one described here. If the X series is used for another purpose, any liability, warranty or damage claims shall be rendered null and void.

Note! *When used in unprotected external areas, we recommend protecting the junction box against direct weathering influences (e.g. through snow, wind, rain or sun).*

3 Safety

3.1 General safety information

Observe the following general safety information:

– Follow applicable working, accident and environmental protection regulations

– Never work on parts through which power is flowing. Switch off the power before starting mounting.

– Only use tools which have been tested and are suitable for electrical technology.

– Wear personal protective equipment.

4 Product overview

4.1 Product presentation
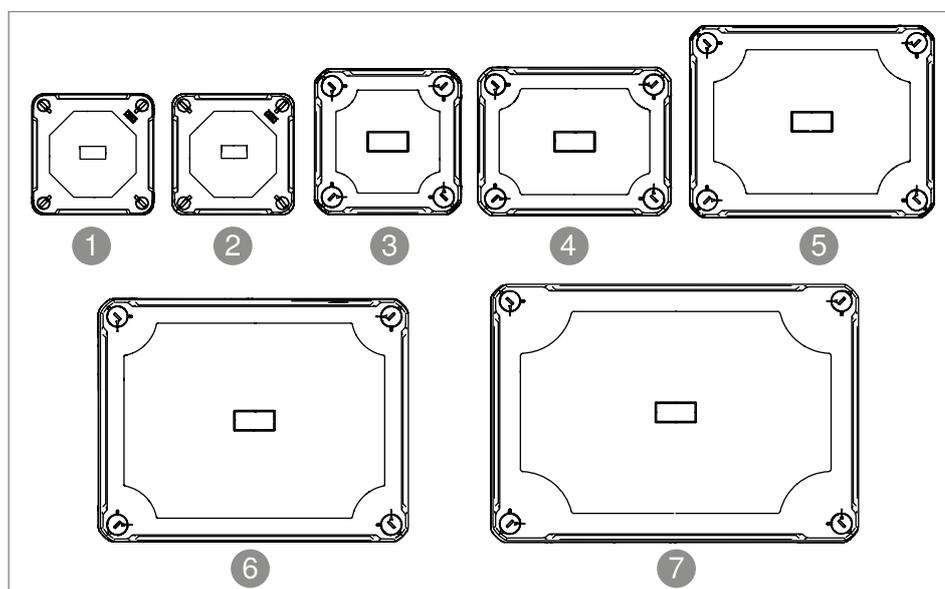
Figure 1: Different junction box sizes

Item	Type	Dimensions	Number of knockout entries	Diameter of the side knockout entry	Number of pre-mark-ings for drill holes
1	X01	95 x 95 x 60 mm	7	20 mm	0
2	X02	95 x 95 x 72 mm	7	20 mm	0
3	X04	114 x 114 x 78 mm	7	20 mm / 25 mm	0
4	X06	150 x 116 x 86 mm	8	20 mm / 25 mm	0
5	X10	190 x 150 x 125 mm	10 + 1 (M20/25) the rear side	20 mm / 25 mm / 32 mm	6
6	X16	240 x 191 x 125 mm	10 + 2 (M20/25/32) the rear side	25 mm / 32 mm / 40 mm	6
7	X25	286 x 202 x 125 mm	10 + 2 (M20/25/32) the rear side	25 mm / 40 mm / 50 mm	6

Tab. 1: Different junction box sizes

4.2 Product details
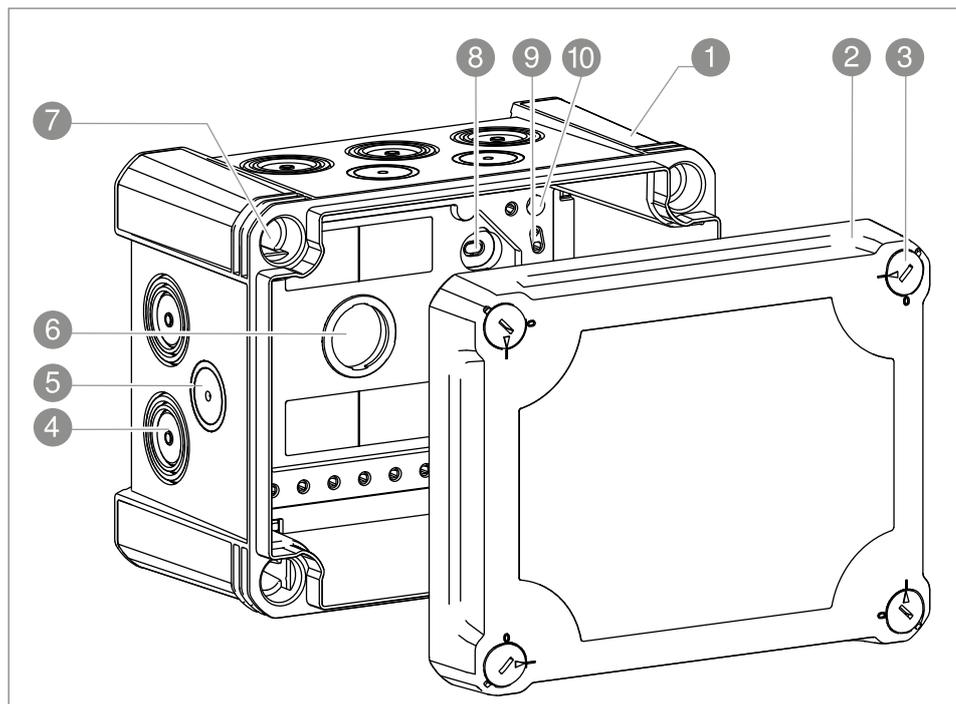
Figure 2: Junction box components

Item	Designation	Function
1	Junction box	Combination of cable
2	Cover	Protection against environmental factors
3	Plastic screw	Fastening of the cover on the junction box
4	Knockout entry in various diameters	Creation of cable entries
5	Pre-marking with guide hole	Orientation for stepped drill to drill holes for cable entries
6	Recess	Fastening of the terminal strip KL-T 02-06 (only with X04, X06, X10)
7	Corner hole	Fastening of the cover with a plastic screw, option of wall mounting through the corner holes
8	Marking for drill	Option of wall mounting through the rear panel
9	Threaded hole	Fastening of the hat profile rails using screws
10	Recess for the support foot for hat profile rail, type 46277	Stable hold for the hat profile rail, type 46277

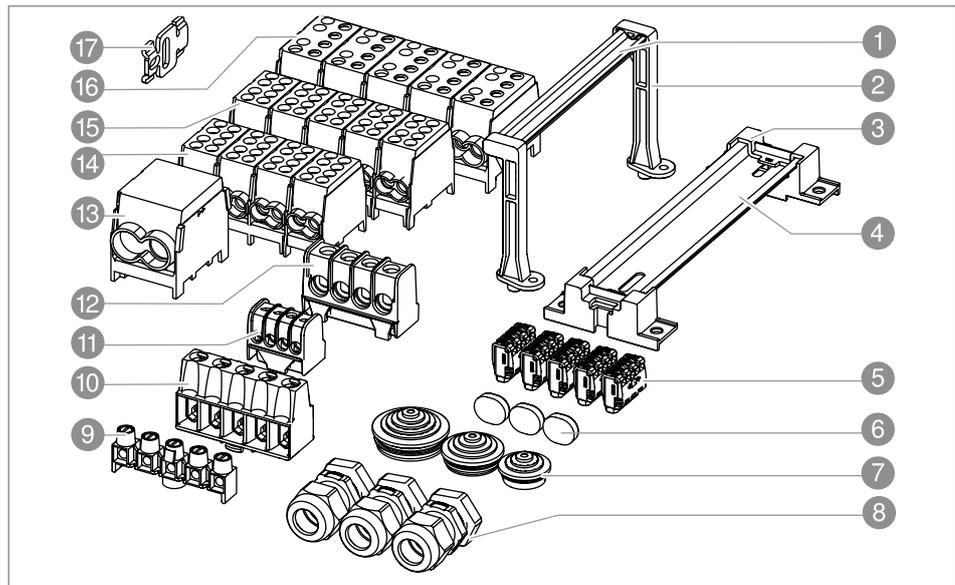**Tab. 2:** Product details and functions

4.3   Accessories

Figure 3: Accessories

Item	Designation	X01	X02	X04	X06	X10	X16	X25
1	Hat profile rail type 46277, 15 x 5 mm					✓	✓	✓
2	Support for hat profile rail, type 46277					✓	✓	✓
3	Support for hat profile rail, type 2069				✓	✓	✓	✓
4	Hat profile rail type 2069, 35 x 7.5 mm	✓	✓	✓	✓	✓	✓	✓
5	Screwless terminals, type 61 525 FL	✓	✓	✓	✓	✓	✓	✓
6	Screw cover caps	✓	✓	✓	✓	✓	✓	✓
7	Plug-in seals (various diameters)	✓	✓	✓	✓	✓	✓	✓
8	Cable gland V-TEC VM (various diameters)	✓	✓	✓	✓	✓	✓	✓
9	Terminal strip, type 689	✓	✓					
10	Terminal strip type KL-T 02-06			✓	✓	✓		
11	Terminal strip type KL-T 06-16					✓	✓	✓
12	Terminal strip type KL-T 16-35							✓
13	Main cable junction terminal (HLAK), 1-pole							✓
14	Main cable junction terminal (HLAK), 4-pole				✓	✓	✓	✓
15	Main cable junction terminal (HLAK), 5-pole					✓	✓	✓
16	Main cable junction terminal (HLAK), 5-pole						✓	✓
17	Fastening strap	✓	✓	✓	✓	✓	✓	✓

Tab. 3: Accessories and its use options

4.4 Junction box sets with accessories

4.4.1 Junction box variants

Bezeichnung	X01	X02	X04	X06	X10	X16	X25
Junction box	2005000	2005004	2005008	2005012	2005016	2005020	2005024
With 3x V-TEC VM cable gland and locknut 116	2005030	2005032	2005034				
With transparent cover	2005050	2005054	2005058	2005062	2005066	2005070	2005074
With transparent cover and hat profile rail, type 2069				2005092	2005096	2005100	2005104
Black	2005110	2005114	2005118	2005122	2005126	2005130	2005134
Black, with red cover	2005140	2005144	2005148	2005152	2005156	2005160	2005164
With terminal strip	(Type 689) 2005190	(Type 689) 2005194	(Type KL-T 02-06) 2005198	(Type KL-T 02-06) 2005202	(Type KL-T 06-16) 2005206	(Type KL-T 06-16) 2005210	(Type KL-T 16-35) 2005214
With terminal strip, with 3x V-TEC VM cable gland and locknut 116	(M20) 2005220	(M20) 2005222	(M25) 2005224	(M25) 2005226			
With 3x V-TEC VM cable gland and locknut 116, with 5x screwless terminals 61 525 FL	(M20) 2005240	(M20) 2005244	(M25) 2005248				
With main cable junction terminal (HLAK)				(Type 2080424) 2005304	(Type 2080516) 2005308	(Type 2080516 2080518) 2005312/ 2005316	(Type 2080518 2080147 2080149) 2005320/ 2005324

Tab. 4: Article numbers for junction boxes

4.4.2 Empty housing variants

	X01	X02	X04	X06	X10	X16	X25
Junction box	2005450	2005454	2005458	2005462	2005466	2005470	2005474
With hat profile rail 2069				2005490	2005494	2005498	2005502
With transparent cover	2005520	2005524	2005528	2005532	2005536	2005540	2005544
With transparent cover, with hat profile rail, type 2069				2005560	2005564	2005568	2005572
Black	2005590	2005594	2005598	2005602	2005606	2005610	2005614

Tab. 5: Article numbers for empty housings

4.4.3 Terminal strip sets variants

	X01	X02	X04	X06	X10	X16	X25
Junction box				2008951	2008935	2008932	2008939

5 Mounting

ATTENTION	**Danger of breakage when mounting cold junction boxes!** If the temperature of the junction box is below –5 °C, the plastic becomes stiff and may break during processing. Only process junction boxes at material temperatures above –5 °C. Let cold junction boxes acclimatise at room temperature before mounting.

5.1 Opening and closing the junction box
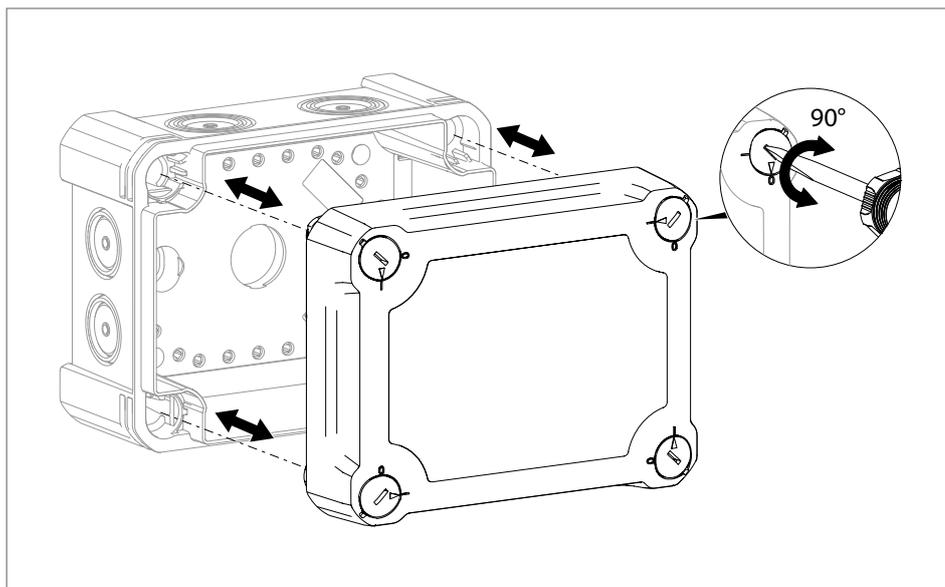

Figure 4: Opening and closing the junction box

1. Open the junction box. Turn the plastic screws in the corners through 90° to the 0 position.

2. Remove the cover.

3. Close the junction box. Perform steps 1 and 2 in the reverse order.

Note! *For first closing, the plastic screws of the junction boxes X01 and X02 can simply be pressed into the corner holes using a thumb. A screwdriver is not required*

5.2 Creating a cable entry

### 5.2.1 Opening a knockout entry
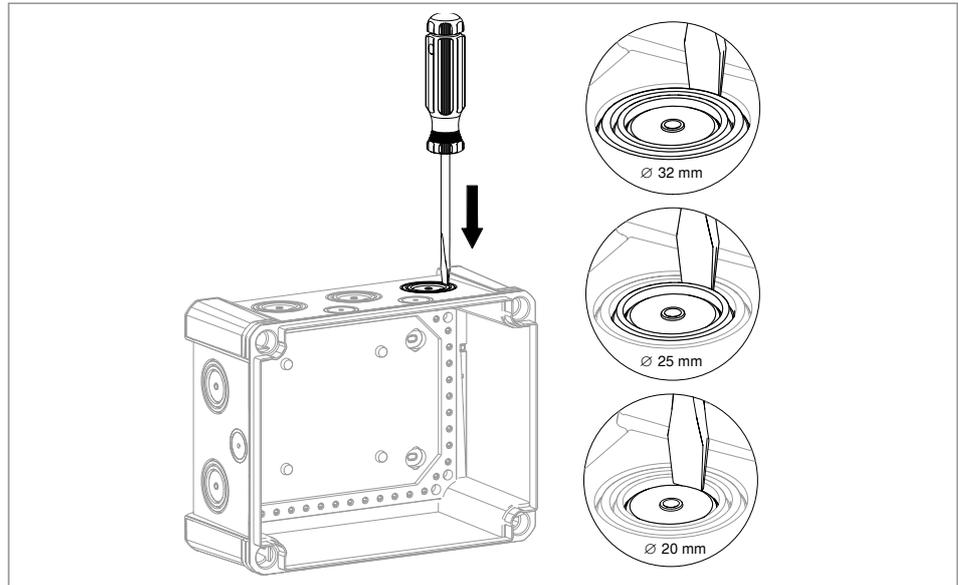
Figure 5: Opening a knockout entry

1. Apply a slotted screwdriver at the marking for the desired diameter in the knockout entry.

2. Break out the knockout entry with a hard knock against the rear of the screwdriver.

5.2.2 Drilling a hole in the pre-marking

Note! *The X10, X16 and X25 junction boxes possess pre-markings (in addition to the break-out entries). The pre-markings serve as an orientation aid, in order to drill further holes for cable entries using a stepped drill.*
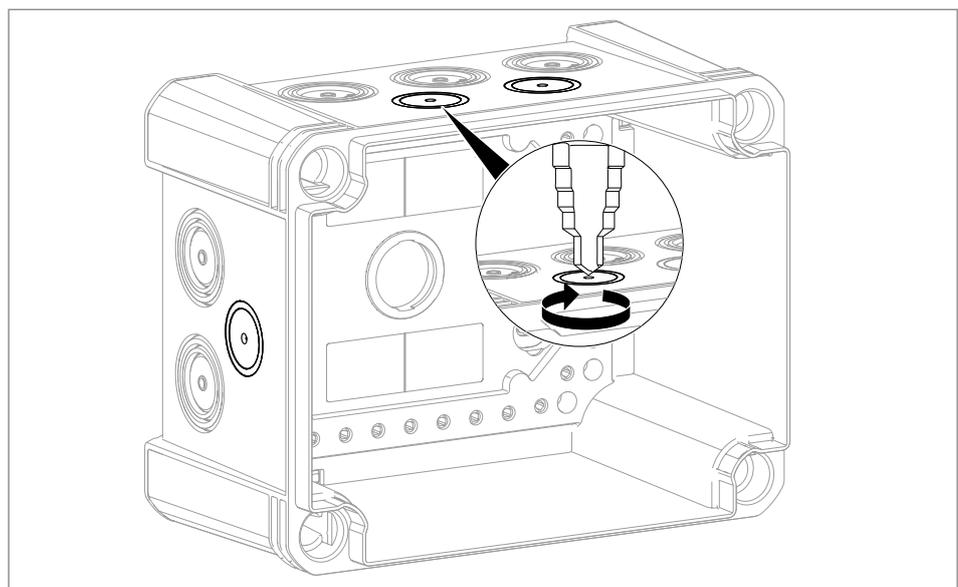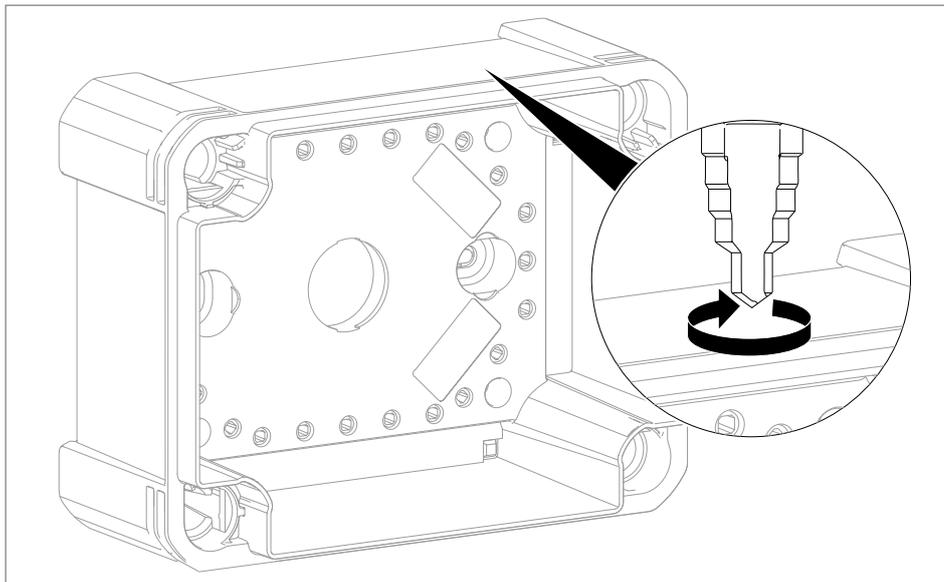

Figure 6: Drilling a hole in the pre-marking

1. Apply the stepped drill in the guide hole of the pre-marking and drill
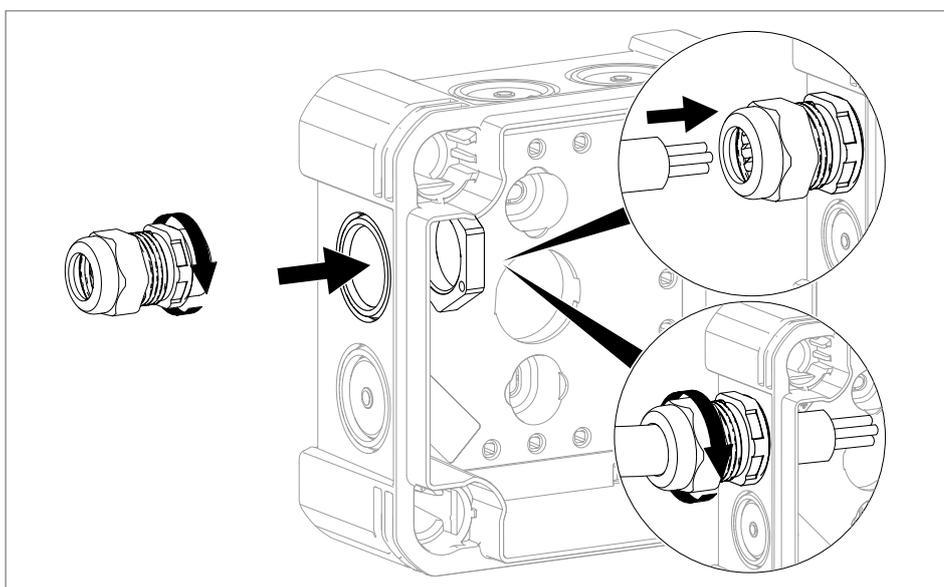
the hole to the desired size.

5.2.3   Drilling a hole in a closed side wall

Figure 7:   Drilling the hole in a closed junction box

1. Using the stepped drill, drill the hole to the desired size.

5.2.4   Mounting the cable gland

Figure 8:   Mounting the cable gland

1. Place the cable gland in the hole in the side wall from outside.

2. Turn the cable gland into the hole of the locknut in the junction box.

3. Insert the cable into the junction box through the cable gland and screw it tight with the sleeve at the head of the cable gland.

5.2.5 Inserting the plug-in seal
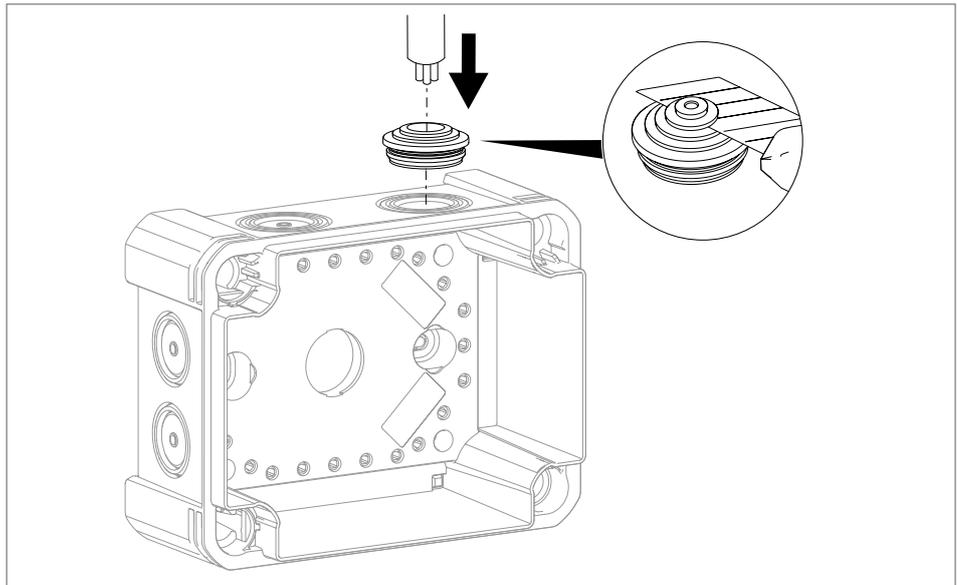
Figure 9: Stepped cutting of the plug-in seal

1. Push the plug-in seal in the hole in the junction box.

2. Using a knife, cut off the plug-in seal to the necessary cable diameter.

3. Insert the cable in the plug-in seal.

5.3 Mounting terminal strips

Note! *The terminal strips type 689 and type KL-T 02-06 can be inserted in the junction box without tools or additional accessories. All other terminal strips must be mounted on the matching hat profile rails.*
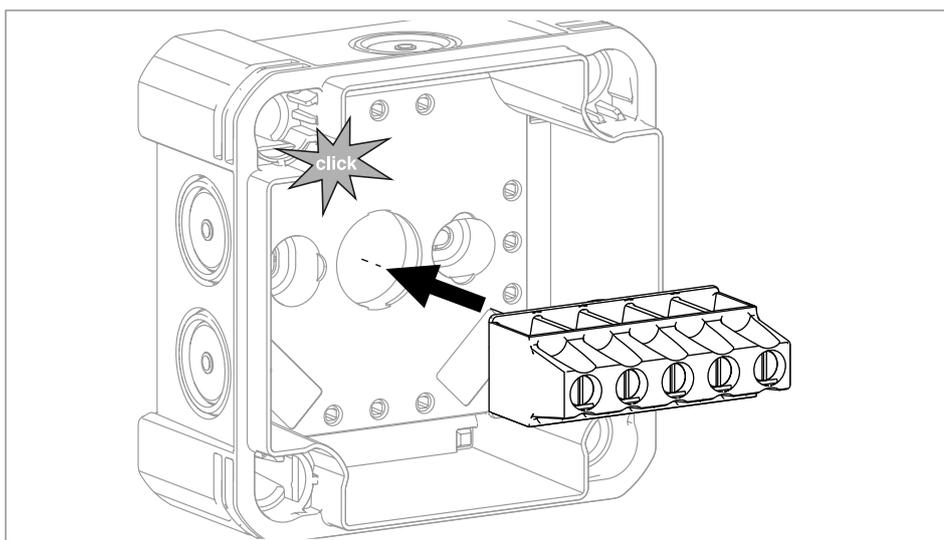
5.3.1 Inserting the terminal strip, type 689
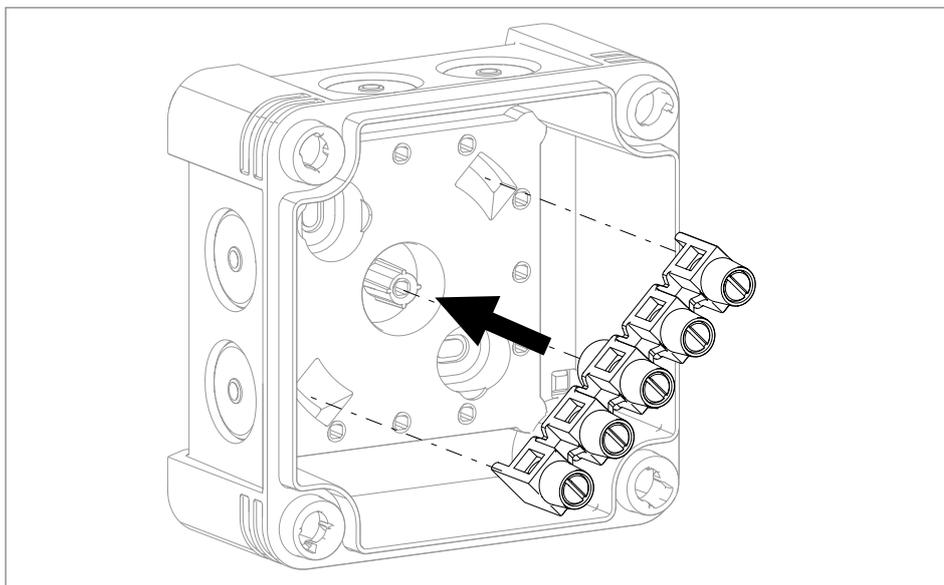
Figure 10: Insert the terminal strip, type 689, in the junction box

1. Insert the terminal strip, type 689, in the junction box, so that the feet of the terminal strip engage in the diagonal recesses.

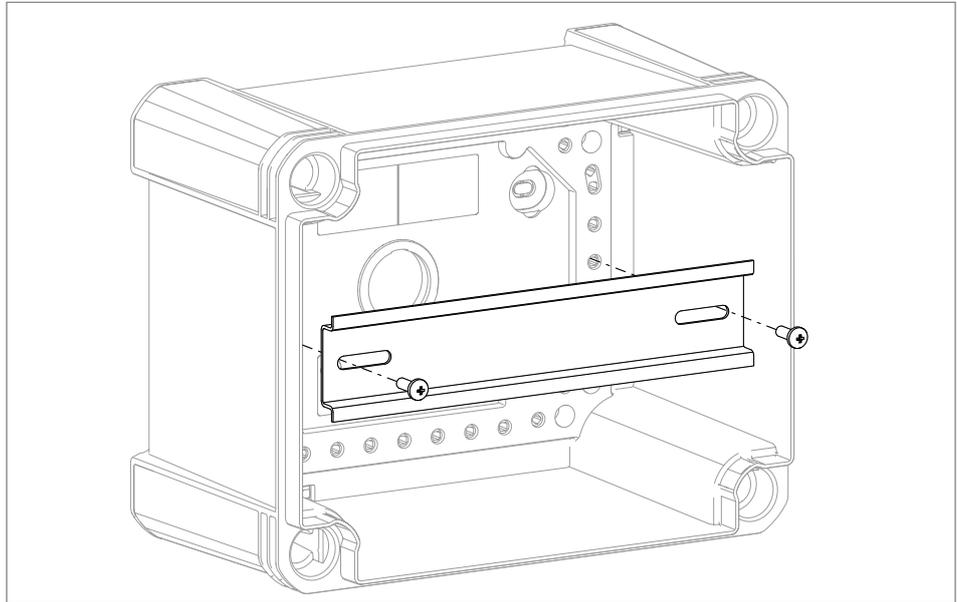### 5.3.2 Inserting the terminal strip, type KL-T 02-06

Figure 11: Insert the terminal strip, type KL-T 02-06, in the junction box

1. Plug the terminal strip, type KL-T 02-06, into the round recess in the middle of the junction box.

2. Note! The terminal strip engages with an audible click. In the mounted state, it can be rotated around its own access.

### 5.3.3 Mounting the hat profile rail without supports

The hat profile rail, type 2069, can be mounted in the junction boxes X06, X10, X16 and X25 either with or without supports in the junction box. With the X01, X02 and X04 junction boxes, the hat profile rail, type 2069, is always mounted without a support.

Figure 12: Inserting the hat profile, type 2069, without a support in the junction box
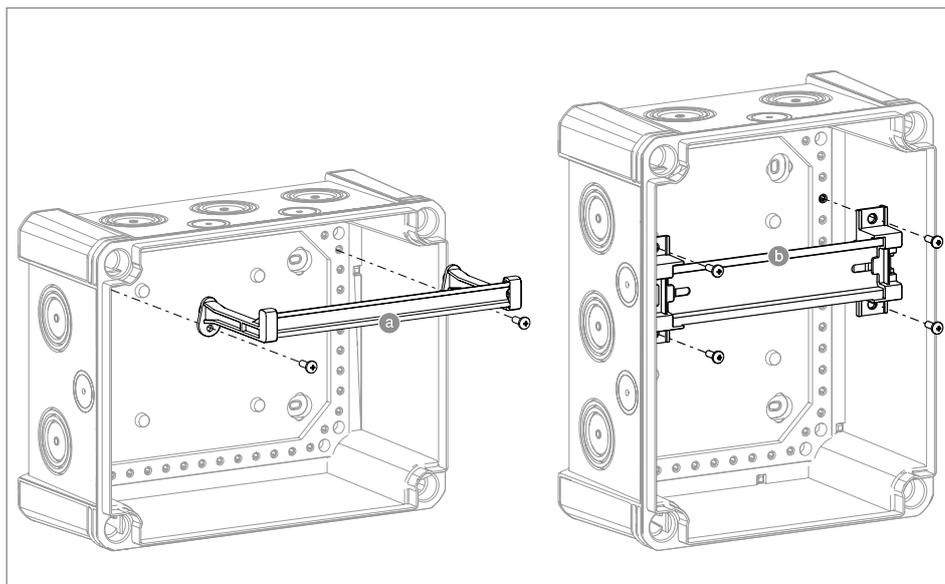
1. Screw the hat profile rail type 2069 tight to the base of the junction box using two fastening screws.

5.3.4 Mounting the hat profile rail with supports
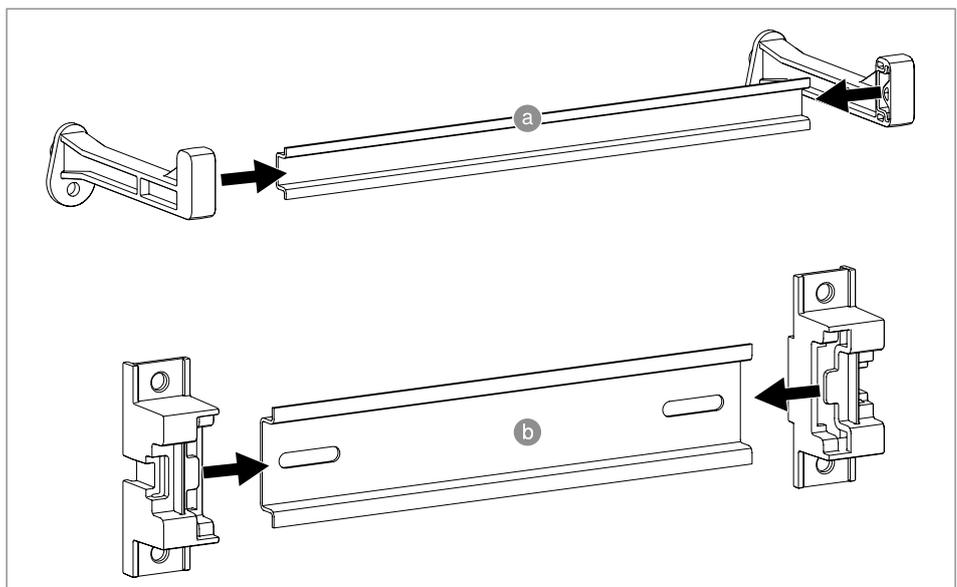
Figure 13: Push the hat profile rail type 46277 A and type 2069 B into the support

1. Push the hat profile rail into the support.

Figure 14: Mount the hat profile rail, type 46277 A and type 2069 B , in the junction box

2. Using the supplied screws, screw the support to the interior of the junction box.

5.3.5 Mounting the terminal strip type KL-T 06 and HLAK on a hat profile rail
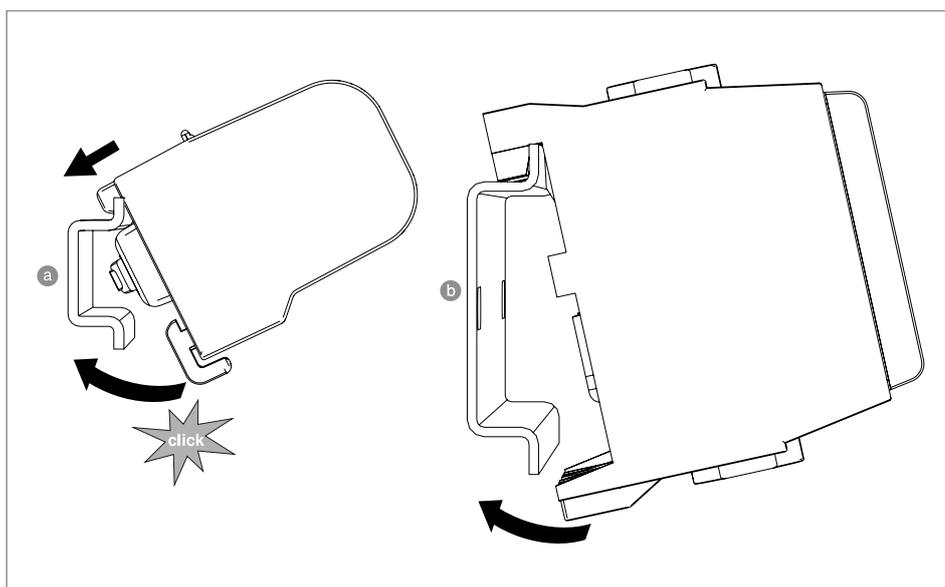
Figure 15: Mounting the terminal strip KL-T 06 and hat profile rail 46277 A and HLAK on hat profile rail 2069 B

1. Set one side of the terminal strip on the hat profile rail.

2. Pull down the other side of the terminal strip.

5.4   Wall mounting

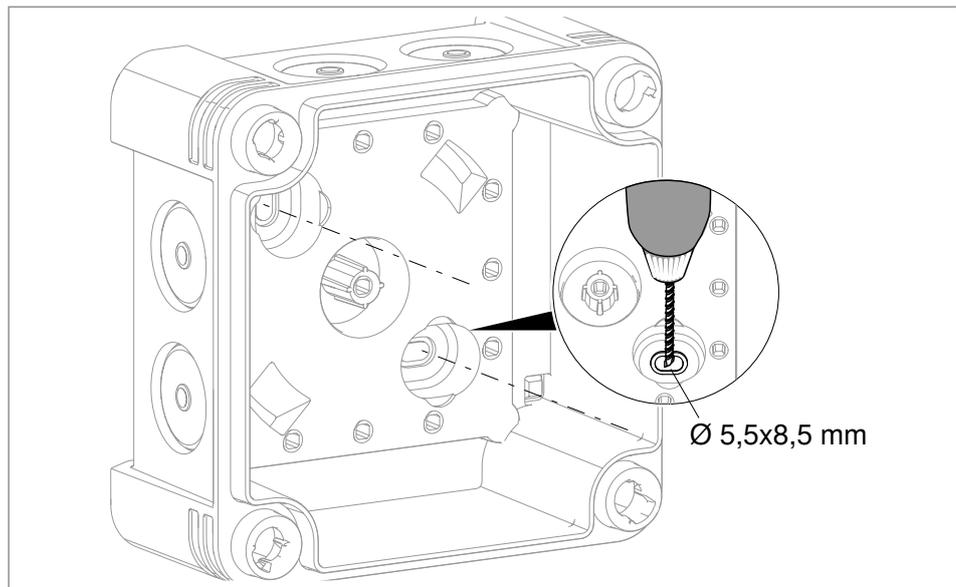| ATTENTION	**Danger of short circuits through insufficient insulation!** Open screw heads can transmit current from the junction box into the wall. Moisture can pass into the junction box through the holes in the rear panel. A short circuit might occur. Close screw holes in the junction box from the inside using screw cover caps.

Figure 16:   Drilling holes in the rear panel

1. Drill the holes in the markings in the rear panel.

2. Hold the junction box to the wall in the desired position and draw markings on the wall.

3. Drill holes in the wall according to the anchor size and insert the anchors.
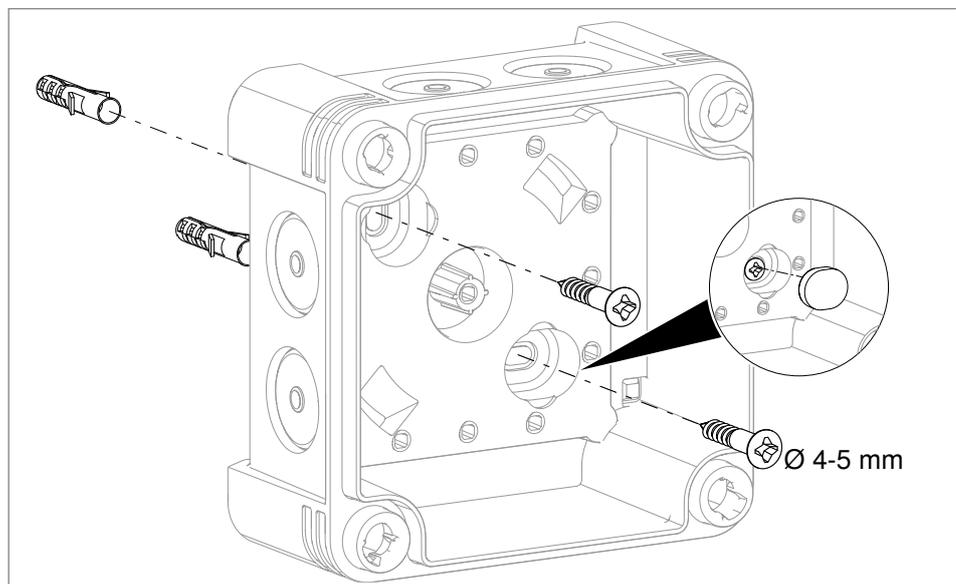
Figure 17:   Screwing the junction box to the wall

4. Screw the junction box with screws Ø 4-5 mm to the wall.

5. Cover screw heads with screw cover caps.

5.4.1 Mounting the junction box on the wall through the corner holes

Note! *This mounting variant is not possible with the X01 and X02 junction boxes.*

Note! *Use long screws, as the corner holes of the junction boxes are not directly flush with the wall.*

Ø 5,0 mm
x = 9 mm
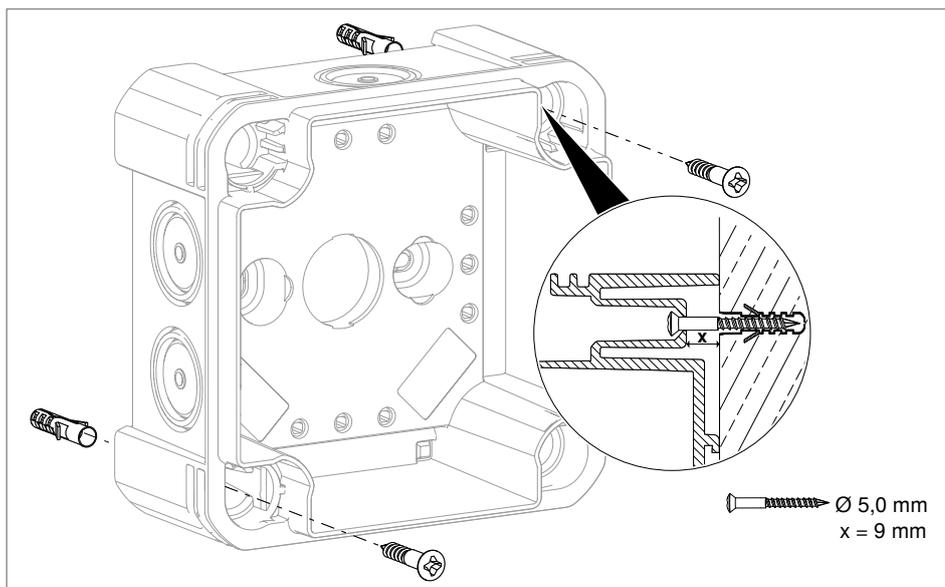
Figure 18: Screwing the junction box to the wall through corner holes

1. Hold the junction box without the cover to the wall in the desired position and draw markings on the wall through the corner holes.

2. Drill holes in the wall according to the anchor size and insert the anchors.

3. Screw the junction box with screws Ø 5 mm on the wall (length screw shank = 9 mm).

5.4.2   Mounting the junction box on the wall using the fastening strap
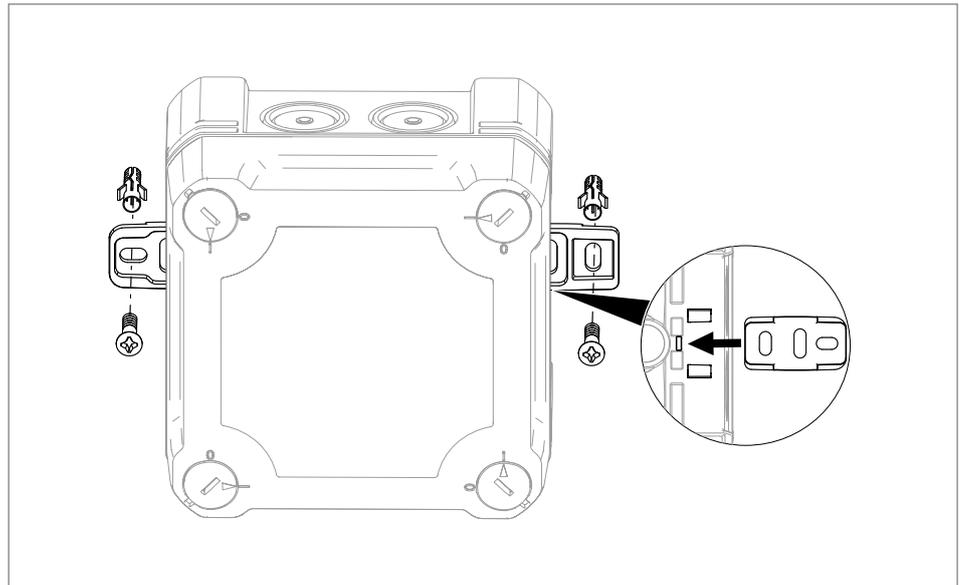
Figure 19:   Mounting the junction box on the wall using the fastening strap

1. Push the fastening strap into the guide holes on the rear panel of the junction box.

2. Hold the junction box to the wall and draw markings on the wall through the holes of the fastening strap.

3. Drill holes in the wall at the markings and insert the anchors.

4. Screw the junction box to the wall.

5.4.3   Connecting multiple junction boxes

Note!   *The fastening strap can also be used as a connector of two or more junction boxes.*
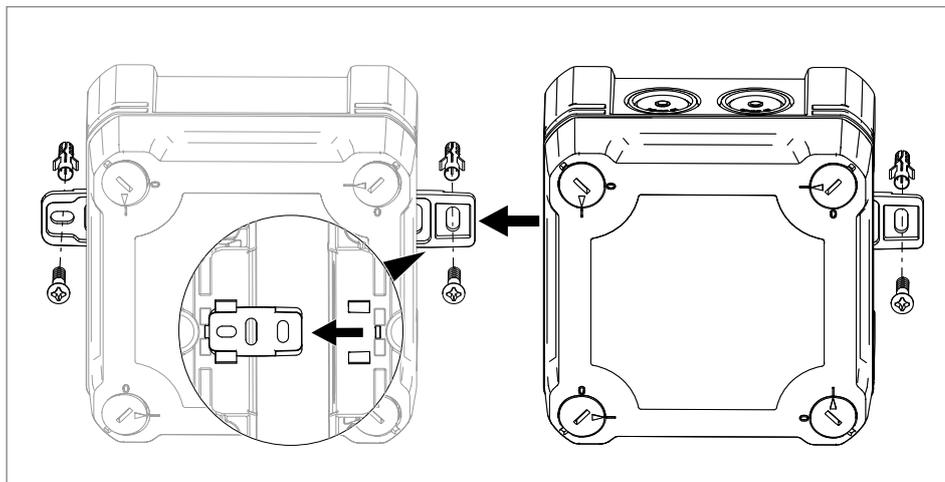
Figure 20:   Connecting junction boxes with the fastening strap

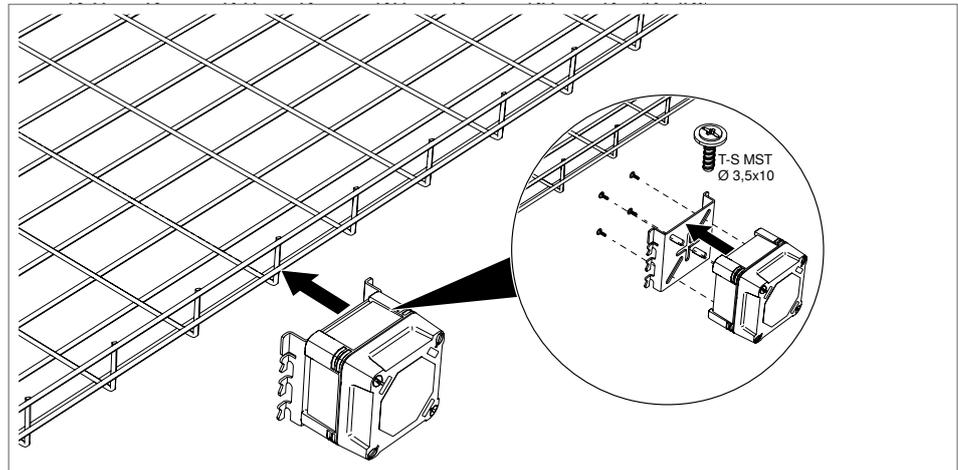1. Fasten the junction box on the wall („5.4.2 Mounting the junction box on the wall using the fastening strap" on page 20).

2. Push the second junction box onto the fastening strap of the first junction box.

3. Fasten the second junction box on the other side with a new fastening strap on the wall.

5.5   Mounting on cable support systems

Note!   *Various mounting plates are available for the different cable support systems. Mounting of additional mounting panels may deviate slightly from the mounting sequence shown here.*

5.5.1   Mounting the junction box on mesh cable trays

Figure 21:   Mounting the junction box on mesh cable trays

1. Screw the junction box to the mounting plate using fastening pins T-S MST.

2. Engage the mounting panel in the mesh cable tray.

5.5.2   Mounting the junction box on cable trays

Mounting with mounting plate type MP WI KL

Figure 22:   Mounting the junction box on cable trays

1. Screw the junction box to the mounting plate using fastening pins T-S MST.

2. Engage the angled mounting panel in the cable tray. Then mount it with truss-head bold and combination nut FRSB 6x12.

Mounting with mounting plate type MP Uni

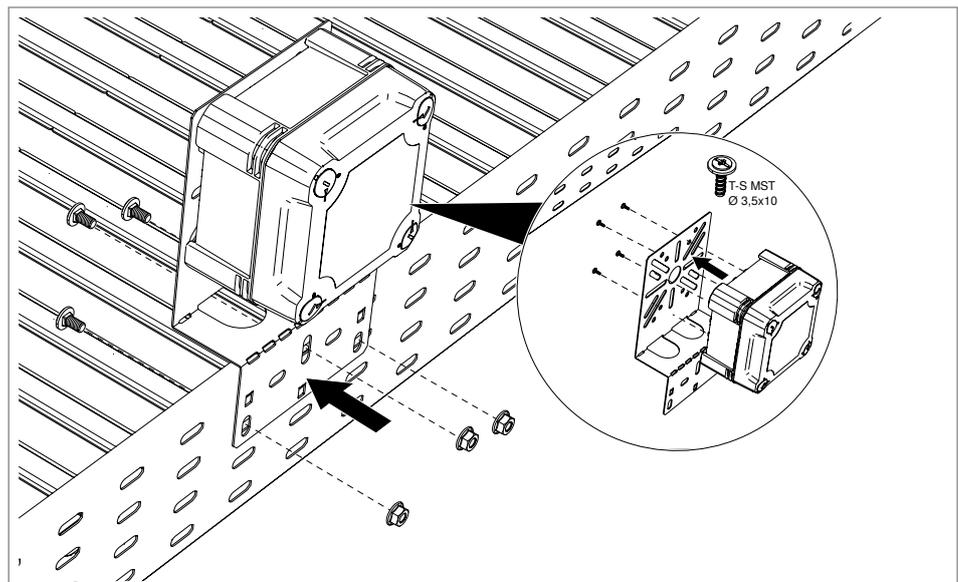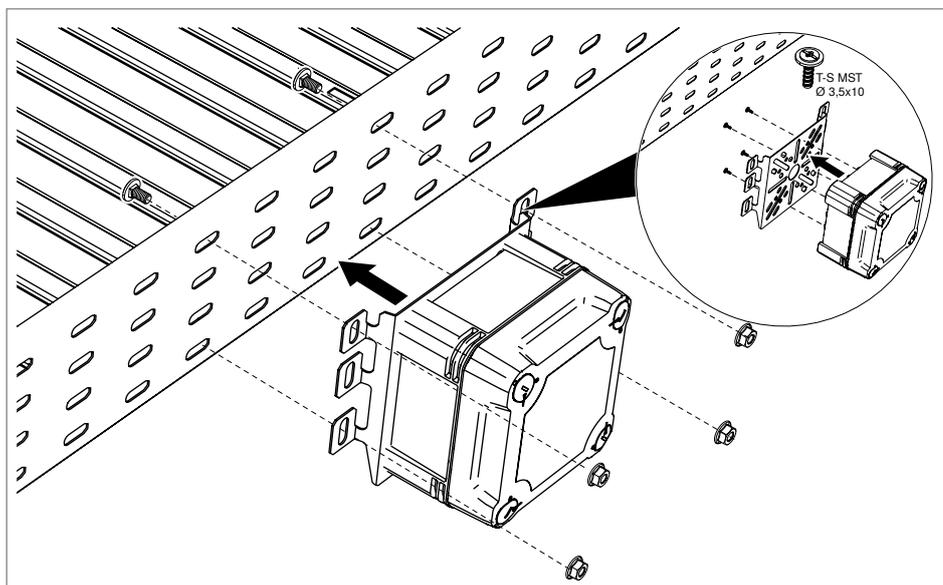**Figure 23:**   Mounting the junction box on cable trays

1. Screw the junction box to the mounting plate using fastening pins T-S MST.

2. Mount the mounting plate on the cable tray with truss-head bold and combination nut FRSB 6x12.

6   Maintenance

The junction boxes of the X series do not require special maintenance. However, it is wise to check the junction boxes regularly for cracks or other damage. This ensures the protection type and impact resistance and avoids short circuits.

7   Dismantling

Dismantling takes place in the reverse order to mounting. Dismantled junction boxes can be remounted at another location.

8   Disposal

Comply with the local waste disposal regulations.

– Residual metal: As scrap metal

– Plastic parts: As household waste

– Packaging: As household waste

9 Technical data

9.1 Type X01

Criterion	Data
Article No.	2005000 2005030 2005050 2005110 2005140 2005190 2005220 2005240 2005450 2005520 2005590
Dimensions	95 x 95 x 60 mm
Clear internal dimensions	85 x 85 x 45 mm
Protection rating	IP67, IK09 (temperature range from - 5° to + 60°)
Number of knockout entries	7
Diameter of knockout entries	20 mm
Number of pre-markings for drill holes	0
Use temperature	-25 °C to 65 °C
Weight	0,16 kg
Material	Polycarbonate

Tab. 6: Technical data type X01

9.2 Type X02

Criterion	Data
Article No.	2005004 2005032 2005054 2005114 2005144 2005194 2005222 2005244 2005454 2005524 2005594
Dimensions	95 x 95 x 72 mm
Clear internal dimensions	85 x 85 x 57 mm
Protection rating	IP67, IK09 (temperature range from - 5° to + 60°)
Number of knockout entries	7
Diameter of knockout entries	20 mm
Number of pre-markings for drill holes	0
Use temperature	-25 °C to 65 °C
Weight	0,178 kg
Material	Polycarbonate

Tab. 7: Technical data type X02

9.3 Type X04

Criterion	Data
Article No.	2005008 2005034 2005058 2005118 2005148 2005198 2005224 2005248 2005458 2005528 2005598
Dimensions	114 x 114 x 78 mm
Clear internal dimensions	102 x 102 x 60 mm
Protection rating	IP67, IK09 (temperature range from - 5° to + 60°)
Number of knockout entries	7
Diameter of knockout entries	20/25 mm
Number of pre-markings for drill holes	0
Use temperature	-25 °C to 65 °C
Weight	0,266 kg
Material	Polycarbonate

Tab. 8: Technical data type X04

9.4 Type X06

Criterion	Data
Article No.	2005012 2005062 2005092 2005122 2005152 2005202 2005226 2005304 2005462 2005490 2005532 2005560 2005602
Dimensions	150 x 116 x 86 mm
Clear internal dimensions	137 x 105 x 68 mm
Protection rating	IP67, IK09 (temperature range from - 5° to + 60°)
Number of knockout entries	8
Diameter of knockout entries	20 mm/25 mm
Number of pre-markings for drill holes	0
Use temperature	-25 °C to 65 °C
Weight	0,335 kg
Material	Polycarbonate

Tab. 9: Technical data type X06

9.5 Type X10

Criterion	Data
Article No.	2005016 2005066 2005096 2005126 2005156 2005206 2005308 2005466 2005494 2005536 2005564 2005606
Dimensions	190 x 150 x 125 mm
Clear internal dimensions	177 x 137 x 110 mm
Protection rating	IP67, IK09 (temperature range from - 5° to + 60°)
Number of knockout entries	10 + 1 (M20/25) on the rear side
Diameter of knockout entries	20 mm/25 mm/32 mm
Number of pre-markings for drill holes	6
Use temperature	-25 °C to 65 °C
Weight	0,592 kg
Material	Polycarbonate

Tab. 10: Technical data type X10

9.6 Typ X16

Criterion	Data
Article No.	2005020 2005070 2005100 2005130 5005160 2005210 2005312 2005316 2005470 2005498 2005568 2005610
Dimensions	240 x 191 x 125 mm
Clear internal dimensions	227 x 177x 110 mm
Protection rating	IP67, IK09 (temperature range from - 5° to + 60°)
Number of knockout entries	10 + 2 (M20/25/32) on the rear side
Diameter of knockout entries	25 mm/32 mm/40 mm
Number of pre-markings for drill holes	6
Use temperature	-25 °C to 65 °C
Weight	0,799 kg
Material	Polycarbonate

Tab. 11: Technical data type X16

9.7   Type X25

Criterion	Data
Article No.	2005024 2005074 2005104 2005134 2005164 2005214 2005320 2005324 2005474 2005502 2005544 2005572 2005614
Dimensions	286 x 202 x 125 mm
Clear internal dimensions	271 x 187 x 110 mm
Protection rating	IP67, IK09 (temperature range from - 5° to + 60°)
Number of knockout entries	10 + 2 (M20/25/32) on the rear side
Diameter of knockout entries	25 mm/40 mm/50 mm
Number of pre-markings for drill holes	6
Use temperature	-25 °C to 65 °C
Weight	0,965 kg
Material	Polycarbonate

Tab. 12: Technical data type X25

Building Connections

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