

English

**icotek**<sup>®</sup>  
smart cable management.



Product catalogue 31


# Cable management systems

A company of the icotek group

## smart cable management.

Ideas move the world – this has been our motto under which we have been developing innovative cable management systems since 1995. From our headquarters in Eschach, Germany, we produce our smart cable management solutions and distribute them in more than 60 countries. We are a strong and reliable partner for the industry together with our subsidiaries in Europe and North America as well as our global representatives. Globally leading companies from various sectors rely on our know-how and our innovative strength. Numerous patents and certifications are both an incentive and aspiration for us.

## Product groups

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# 1 Cable entry systems for cables with connectors



Product group 1 includes all split cable entry systems in round and rectangular versions. Cables with and without preassembled connectors with a maximum diameter of 75 mm can thus be inserted. The split frame and slit grommets alleviate the need to cut and re-wire pre-terminated cables. Therefore, cable warranties are unaffected.

By closing the upper and lower part of the frame a high contact pressure on the cable grommets and lines is achieved. In most cases, the lines are strain

relieved according to EN 62444 and immediately sealed with IP54 to IP66 / IP68 / UL type 4X (depending on type).

icotek also offers split and non-split brush plates for cable pass-through, based on rectangular and round standard cut-outs – a very cost-effective solution if sealing with IP54 is not required.





# ProductFinder

Product	IP54	IP66	IP68	UL TYPE 12	UL TYPE 4X	Strain relief	Cable Ø mm min   max	Max. no. of cables	Page
KEL-ER	■	■		■	■	■	1 - 35	10	9 - 15
KEL-ER-E	■	■		■		■	1 - 16	5	17
KEL-U	■			■		■	1 - 35	40	8
KEL-E	■			■		■	1 - 16	20	8 - 12
KEL	■			■		■	1 - 35	48	18 - 27
KEL 16/24 Extensions	■					■	1 - 35	120	26 - 27
KEL-FG-A/B	■					■	1 - 35	40	28 - 29
KEL-FG-E	■					■	1 - 16	20	30
KEL-FL	■					■	1 - 16 + flat cables	13	32
KEL 183	■			■		■	1 - 75	16	35
KEL-JUMBO	■			■		■	16 - 65	2	36
KVT-ER	■	■	■	■	■	■	1 - 35	4	40 - 41
KVT	■			■		■	1 - 35	16	42 - 44
KVT-SNAP	■					■	1 - 35	16	45
KVT-W90	■					■	1 - 35	16	46
KVT 80	■			■		■	1 - 35	24	44
KEL-QUICK	■			■			1 - 15	40	56 - 57
QVT	■						1 - 15	16	60
QVT-CLICK	■						1 - 15	8	61
KEL-QTA	■						1 - 15	18	64 - 65
KEL-QTE	■						1 - 15	2	65
KEL-BES / KEL-BES-S							max. 33		68 - 69

# 1.11 Split cable entry frames for the KT grommet system



The patented cable entry system enables the user to enter, seal and provide strain relief for cables with and without connectors.

The key feature of icotek's patented system is the split frame and slit grommets which provide quick, convenient and cost effective routing of pre-terminated and multi-conductor cables, hoses or conduits. The split frame and slit grommets alleviate the need to cut and re-wire pre-terminated cables.

Therefore, cable warranties are unaffected. Cables, pipes and conduits with various diameters can be routed due to large variety of slit grommets. When assembled correctly, the slit grommets are held tightly within the frame. Correctly sizing the grommet to the cable diameter ensures a high degree of protection (up to IP66 / UL type 4X) and provides strain relief.

**Split system**

**Secure and tight connection**

**Warranty on pre-terminated cables remains**

**Fast and easy assembly**

**Many cut-outs according to industrial standard dimensions**

**Integrated strain relief according to EN 62444**

**High cable density, wide variety in cable grommets**

## Product range



## Chapter content 1.11

1.11



**Split cable entry frames**  
for cable diameters up to 35 mm  
KEL-ER 24 / KEL-ER 16 / KEL-ER 10 / KEL-ER-B

9 - 14



**Split cable entry frames**  
for cable diameters up to 16 mm  
KEL-ER-E5 / KEL-ER-E4 / KEL-ER-E3 / KEL-ER-E2

17



**Split cable entry frames**  
for cable diameters up to 35 mm  
KEL-U 24 / KEL-U 16 / KEL-U 10 / KEL-U-B

8 - 14



**Split cable entry frames**  
for cable diameters up to 17 mm  
KEL-E5 / KEL-E4 / KEL-E3 / KEL-E2

16



**Centrally split cable entry frames**  
for cable diameters up to 35 mm  
KEL 24 / KEL 16 / KEL 10 / KEL-B

18 - 21



**Extended split cable entry frames**  
for cable diameters up to 35 mm  
KEL 24-E / KEL 24-MT / KEL 24-2MT  
KEL 16-E / KEL 16-MT / KEL 16-2MT

22 - 27



**Split flange enclosure**  
for cable diameters up to 35 mm  
KEL-FG-A / KEL-FG-B /  
KEL-FG-E5 / KEL-FG-E3 / KEL-FG-E2

28 - 30



**Snap mounting frames**  
for installation of KEL-U / KEL frames  
KEL-SNAP 24 / KEL-SNAP 16 / KEL-SNAP 10 /  
KEL-SNAP-B / KEL-SNAP 24-E / KEL-SNAP 24-MT

31



**Split cable entry frames for flat cables**  
& round cables up to 16 mm in diameter  
KEL-FL / FT

32 - 33



**Split cable entry frames**  
for cable diameters up to 75 mm  
KEL 183 / KEL 183-E / KTMB 183

34 - 35



**Split cable entry frames**  
for cable diameters up to 65 mm  
KEL-JUMBO / KTF

36 - 37



**Grommets and plugs**  
for cables with/without connectors,  
cable diameter range 1 - 35 mm  
KT small / KT large / KT-DPF / KTMB / DT / ST /  
KT Service Box

47 - 53

# KEL-U 24

## Cable entry frames



**IP54**



Also available with stainless steel screws (V2A).



Also available with threaded bushings.



Slit KT grommets

### Product description

Split cable entry system for routing cables with connectors providing an IP54 / up to UL type 12 rating. Routing, sealing and providing strain relief for cable diameters from 1 to 35 mm. The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-U 24 frame matches exactly the cut-out dimensions for 24-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. A flat rubber gasket is included in the shipment.

### Advantages & benefits

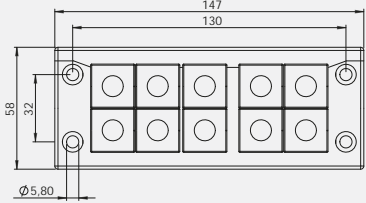

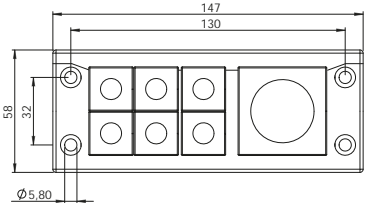
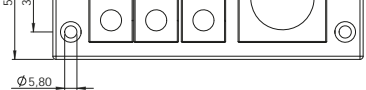
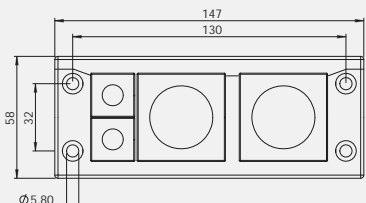

- Fast and easy assembly
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 112 mm / page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
KDR Base plates	164 - 177
FP Flange plates	178 - 183
MP Module plates	174 - 175
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL-U 24 10	54241	10 -	10
	KEL-U 24 10 with V2A screws	54241.200	10 -	10
	KEL-U 24 7	54247	6 1	10
	KEL-U 24 7 with V2A screws	54247.200	6 1	10
	KEL-U 24 4	54244	2 2	10
	KEL-U 24 4 with V2A screws	54244.200	2 2	10



# KEL-ER 24

## Cable entry frames



V2A anti-corrosive



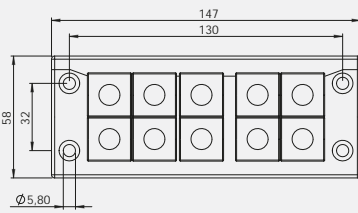
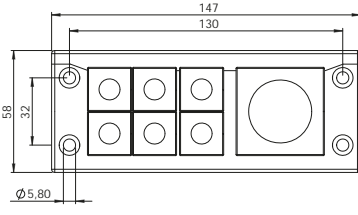
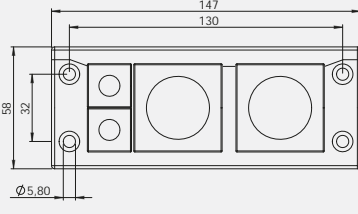
Also available with threaded bushings.



Slit KT grommets



1.11

Description	Type	Order No.	Grommets small   large	PU
	KEL-ER 24 10	48241	10 -	10
	KEL-ER 24 10 with V2A screws	48241.200	10 -	10
	KEL-ER 24 7	48247	6 1	10
	KEL-ER 24 7 with V2A screws	48247.200	6 1	10
	KEL-ER 24 4	48244	2 2	10
	KEL-ER 24 4 with V2A screws	48244.200	2 2	10

### Product description

Split cable entry system for routing and sealing cables with connectors, providing an IP66 / up to UL type 4X rating and strain relief for cable diameters from 1 to 16 mm (KT 1 - 15) and 16 to 35 mm (KT 16 - 34).

The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-ER 24 frame matches exactly the dimensions for 24-pin standard industrial connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66, with gasket and correct selection of single grommets (certified acc. to EN 60529)
UL type rating	UL type 4X (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 112 mm / page 218 - 219
Frame depth	17 mm

### Accessories

KT Cable grommets	48 - 50
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL-U 16

## Cable entry frames



**IP54**



Slit KT grommets



V2A anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. Routing, sealing and providing strain relief for cable diameters from 1 to 35 mm. The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-U 16 frame matches exactly the cut-out dimensions for 16-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. A flat rubber gasket is included in the shipment.

### Advantages & benefits

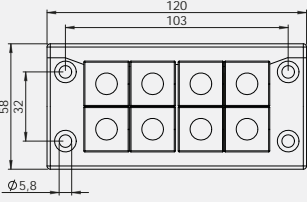
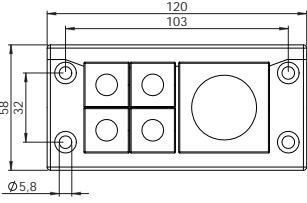
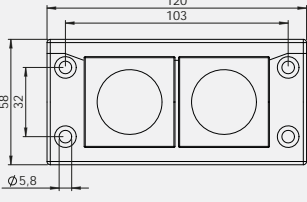
- Fast and easy assembly
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 86 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
KDR Base plates	164 - 177
FP Flange plates	178 - 183
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL-U 16 8	54168	8 -	10
	KEL-U 16 8 with V2A screws	54168.200	8 -	10
	KEL-U 16 5	54165	4 1	10
	KEL-U 16 5 with V2A screws	54165.200	4 1	10
	KEL-U 16 2	54162	- 2	10
	KEL-U 16 2 with V2A screws	54162.200	- 2	10

# KEL-ER 16

## Cable entry frames

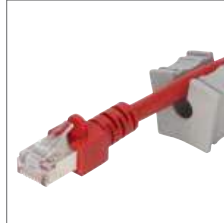


V2A anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.

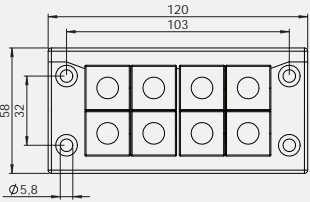
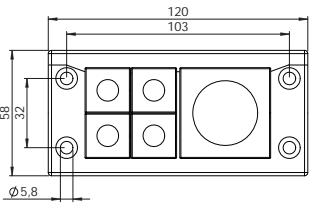
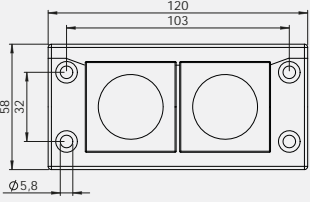


Slit KT grommets



**IP66**

1.11

Description	Type	Order No.	Grommets small   large	PU
	KEL-ER 16 8	48168	8 -	10
	KEL-ER 16 8 with V2A screws	48168.200	8 -	10
	KEL-ER 16 5	48165	4 1	10
	KEL-ER 16 5 with V2A screws	48165.200	4 1	10
	KEL-ER 16 2	48162	- 2	10
	KEL-ER 16 2 with V2A screws	48162.200	- 2	10

### Product description

Split cable entry system for routing and sealing cables with connectors, providing an IP66 / up to UL type 4X rating and strain relief for cable diameters from 1 to 16 mm (KT 1 - 15) and 16 to 35 mm (KT 16 - 34).

The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-ER 16 frame matches exactly the cut-out dimensions for 16-pin standard industrial connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66, with gasket and correct selection of single grommets (certified acc. to EN 60529)
UL type rating	UL type 4X (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 86 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

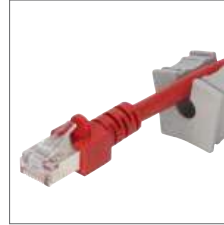
KT Cable grommets	48 - 50
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL-U 10

## Cable entry frames



**IP54**



Slit KT grommets



V2A anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. Routing, sealing and providing strain relief for cable diameters from 1 to 35 mm. The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-U 10 frame matches exactly the cut-out dimensions for 10-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. A flat rubber gasket is included in the shipment.

### Advantages & benefits

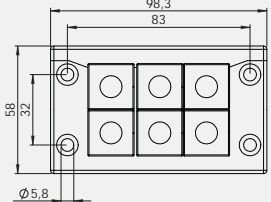
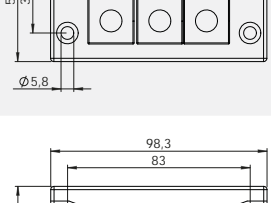
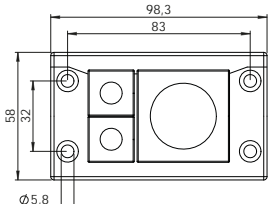
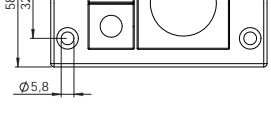
- Fast and easy assembly
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 65 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL-U 10 6	54216	6 -	10
	KEL-U 10 6 with V2A screws	54216.200	6 -	10
	KEL-U 10 3	54212	2 1	10
	KEL-U 10 3 with V2A screws	54212.200	2 1	10



# KEL-ER 10

## Cable entry frames



V2A  
anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.

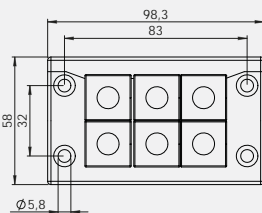
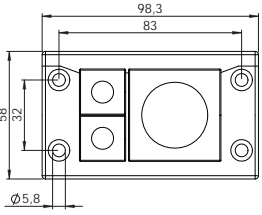


Slit KT grommets



**IP66**

1.11

Description	Type	Order No.	Grommets small   large	PU
	KEL-ER 10 6	48216	6 -	10
	KEL-ER 10 6 with V2A screws	48216.200	6 -	10
	KEL-ER 10 3	48212	2 1	10
	KEL-ER 10 3 with V2A screws	48212.200	2 1	10

### Product description

Split cable entry system for routing and sealing cables with connectors, providing an IP66 / up to UL type 4X rating and strain relief for cable diameters from 1 to 16 mm (KT 1 - 15) and 16 to 35 mm (KT 16 - 34).

The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-ER 10 frame matches exactly the cut-out dimensions for 10-pin standard industrial connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66, with gasket and correct selection of single grommets (certified acc. to EN 60529)
UL type rating	UL type 4X (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36 / 46 × 65 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

KT Cable grommets	48 - 50
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL-U-B

## Cable entry frames



**IP54**



Slit KT grommets



V2A anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. Routing, sealing and providing strain relief for cable diameters from 1 to 35 mm.

The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-U-B frame matches exactly the cut-out dimensions of 46 × 46 mm measuring instruments. A flat rubber gasket is included in the shipment.

### Advantages & benefits

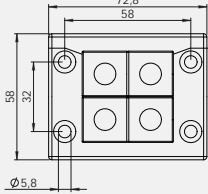
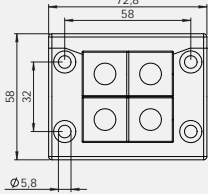
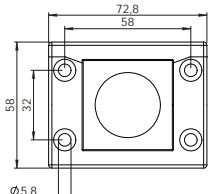
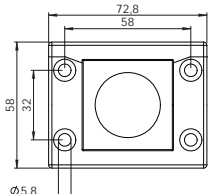
- Fast and easy assembly
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	46 × 46 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
FP Flange plates	178 - 183
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL-U-B4	54204	4 -	10
	KEL-U-B4 with V2A screws	54204.200	4 -	10
	KEL-U-B1	54206	- 1	10
	KEL-U-B1 with V2A screws	54206.200	- 1	10

# KEL-ER-B

## Cable entry frames

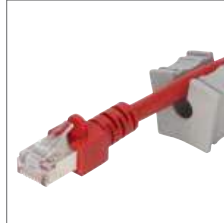


V2A anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.



Slit KT grommets



1.11

Description	Type	Order No.	Grommets small   large	PU
	KEL-ER-B4	48204	4 -	10
	KEL-ER-B4 with V2A screws	48204.200	4 -	10
	KEL-ER-B1	48206	- 1	10
	KEL-ER-B1 with V2A screws	48206.200	- 1	10

### Product description

Split cable entry system for routing and sealing cables with connectors, providing an IP66 / up to UL type 4X rating and strain relief for cable diameters from 1 to 16 mm (KT 1 - 15) and 16 to 35 mm (KT 16 - 34).

The new cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. The KEL-ER-B frame matches exactly the cut-out dimensions of 46 × 46 mm measuring instruments. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Small cut-out, high cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66, with gasket and correct selection of single grommets (certified acc. to EN 60529)
UL type rating	UL type 4X (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	46 × 46 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

KT Cable grommets	48 - 50
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL-E

## Compact cable entry frames

1.11



**IP54**



Slit KT grommets



V2A anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. Routing, sealing and providing strain relief for cable diameters from 1 to 17 mm. The KEL-E version is particularly suited for flat connectors. The small frame is ideal for applications with limited space.

A flat rubber gasket is included in the shipment.

### Advantages & benefits

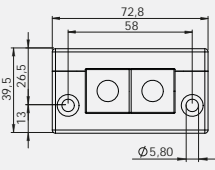
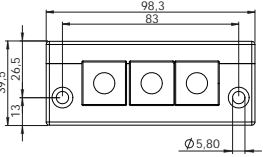
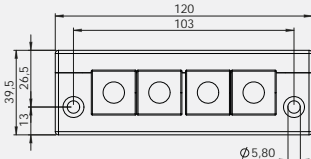
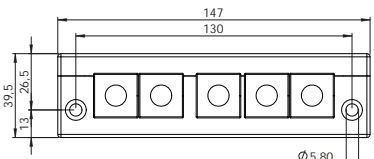
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Space saving shape
- Optimal for D-Sub connectors
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm

### Accessories

Cable grommets	48 - 51
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Cut-out [mm]	Grommets small   large	PU
	KEL-E2	42249	43 × 24	2 -	10
	KEL-E2 with V2A screws	42249.200	43 × 24	2 -	10
	KEL-E3	42258	65 × 24	3 -	10
	KEL-E3 with V2A screws	42258.200	65 × 24	3 -	10
	KEL-E4	42259	86 × 24	4 -	10
	KEL-E4 with V2A screws	42259.200	86 × 24	4 -	10
	KEL-E5	42250	112 × 24	5 -	10
	KEL-E5 with V2A screws	42250.200	112 × 24	5 -	10



# KEL-ER-E

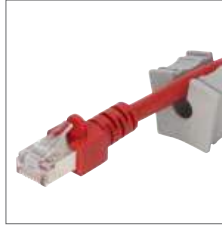
## Compact cable entry frames



V2A anti-corrosive



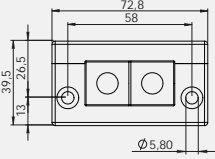
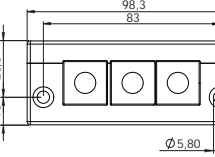
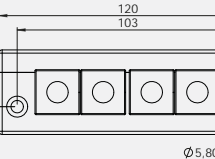
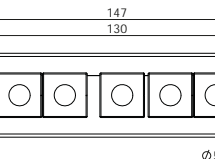
Also available with threaded bushings.



Slit KT grommets



1.11

Description	Type	Order No.	Cut-out [mm]	Grommets small   large	PU
	KEL-ER-E2	48249	43 × 24	2 -	10
	KEL-ER-E2 with V2A screws	48249.200	43 × 24	2 -	10
	KEL-ER-E3	48258	65 × 24	3 -	10
	KEL-ER-E3 with V2A screws	48258.200	65 × 24	3 -	10
	KEL-ER-E4	48259	86 × 24	4 -	10
	KEL-ER-E4 with V2A screws	48259.200	86 × 24	4 -	10
	KEL-ER-E5	48250	112 × 24	5 -	10
	KEL-ER-E5 with V2A screws	48250.200	112 × 24	5 -	10

### Product description

Split cable entry system for routing and sealing cables with connectors, providing an IP66 / up to UL type 12 rating and strain relief for cable diameters from 1 to 16 mm (KT 1 - 15). It is particularly suited for flat connectors. The small frame is ideal for applications with limited space.

The cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Strain relief according to EN 62444
- Space saving shape
- Optimal for D-Sub connectors
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66, with gasket and correct selection of single grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm

### Accessories

KT Cable grommets	48 - 50
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL 24

## Cable entry frames



Slit KT grommets



V2A anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Centrally split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. The slit grommet matching the cable diameter is placed around the cable and inserted into the cable entry frame. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The split cable entry frame KEL 24 matches exactly the cut-out dimensions of 24-pin standard industrial connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 112 mm / Page 218 - 219
Frame depth	17 mm

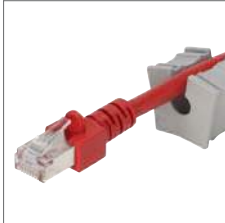
### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
KDR Base plates	164 - 177
FP Flange plates	178 - 183
MP Module plates	174 - 175
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL 24 10	42241	10 -	10
	KEL 24 10 with V2A screws	42241.200	10 -	10
	KEL 24 7	42247	6 1	10
	KEL 24 7 with V2A screws	42247.200	6 1	10
	KEL 24 5	42248	5 -	10
	KEL 24 5 with V2A screws	42248.200	5 -	10
	KEL 24 4	42244	2 2	10
	KEL 24 4 with V2A screws	42244.200	2 2	10

# KEL 16

## Cable entry frames



Slit KT grommets



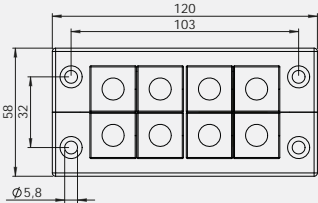
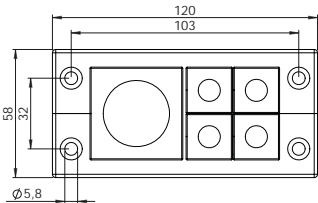
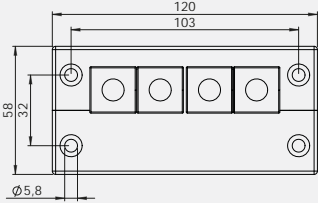
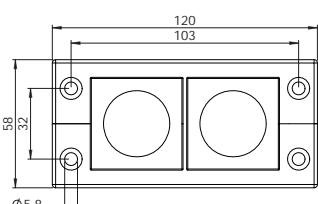
Also available with stainless steel screws (V2A).



Also available with threaded bushings.



1.11

Description	Type	Order No.	Grommets small   large	PU
	KEL 16 8	42168	8 -	10
	KEL 16 8 with V2A screws	42168.200	8 -	10
	KEL 16 5	42165	4 1	10
	KEL 16 5 with V2A screws	42165.200	4 1	10
	KEL 16 4	42164	4 -	10
	KEL 16 4 with V2A screws	42164.200	4 -	10
	KEL 16 2	42162	- 2	10
	KEL 16 2 with V2A screws	42162.200	- 2	10

### Product description

Centrally split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. The slit grommet matching the cable diameter is placed around the cable and inserted into the cable entry frame. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The split cable entry frame KEL 16 matches exactly the cut-out dimensions of 16-pin standard industrial connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 86 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
KDR Base plates	164 - 177
FP Flange plates	178 - 183
ST Plugs	53

# KEL 10

## Cable entry frames



Slit KT grommets



Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Centrally split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. The slit grommet matching the cable diameter is placed around the cable and inserted into the cable entry frame. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The split cable entry frame KEL 10 matches exactly the cut-out dimensions of 10-pin standard industrial connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

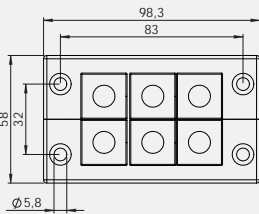
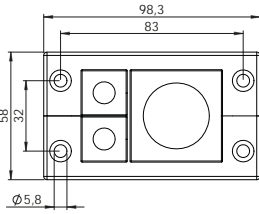
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36/46 × 65 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL 10 6	42216	6 -	10
	KEL 10 6 with V2A screws	42216.200	6 -	10
	KEL 10 3	42212	2 1	10
	KEL 10 3 with V2A screws	42212.200	2 1	10



# KEL-B

## Cable entry frames



Slit KT grommets



V2A  
anti-corrosive

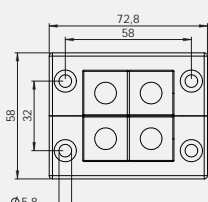
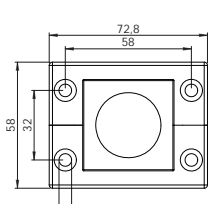
Also available with stainless steel screws (V2A).



Also available with threaded bushings.



1.11

Description	Type	Order No.	Grommets small   large	PU
	KEL-B4	42204	4 -	10
	KEL-B4 with V2A screws	42204.200	4 -	10
	KEL-B1	42206	- 1	10
	KEL-B1 with V2A screws	42206.200	- 1	10

### Product description

Centrally split cable entry system for routing cables with connectors, providing an IP54 / up to UL type 12 rating. The slit grommet matching the cable diameter is placed around the cable and inserted into the cable entry frame. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The split cable entry frame KEL-B matches exactly the cut-out dimensions of 46 × 46 mm measuring instruments. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Space saving shape
- Small cut-out, high cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	46 × 46 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
FP Flange plates	178 - 183
ST Plugs	53

# KEL 24-E

## Extended cable entry frames



**IP54**



Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

The cable entry frame KEL 24-E offers a larger frame size for routing a greater amount of cables, pipes or conduits.

The KEL24-E series are KEL 24 frames extended with an additional middle frame for routing additional cables. Thus allowing a quick, easy and cost effective routing solution for up to 60 cables.

A flat rubber gasket is included in the shipment.

### Advantages & benefits

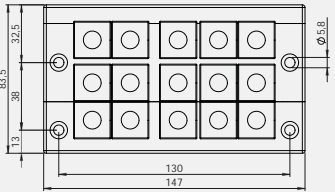
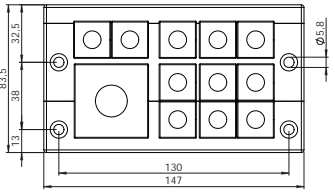
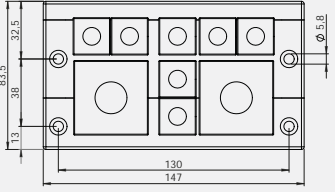
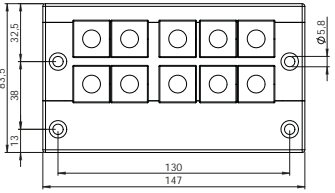
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
Temperature Properties	- 40°C to + 140°C (static)
Cut-out dimensions	66 × 112 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

KEL-SNAP Mounting frames	31
Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL 24 15-E	42209	15 -	1
	KEL 24 15-E with V2A screws	42209.200	15 -	1
	KEL 24 12-E	42208	11 1	1
	KEL 24 12-E with V2A screws	42208.200	11 1	1
	KEL 24 9-E	42207	7 2	1
	KEL 24 9-E with V2A screws	42207.200	7 2	1
	KEL 24 10-E	49056	10 -	1
	KEL 24 10-E with V2A screws	49056.200	10 -	1

# KEL 24-MT

## Extended cable entry frames



V2A anti-corrosive  
Also available with stainless steel screws (V2A).

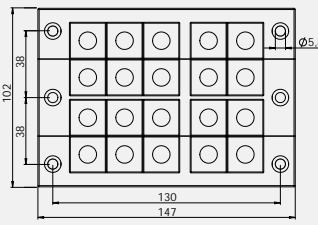
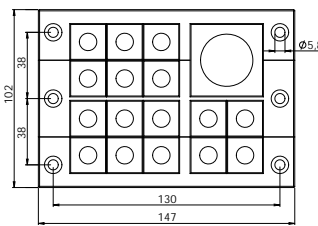
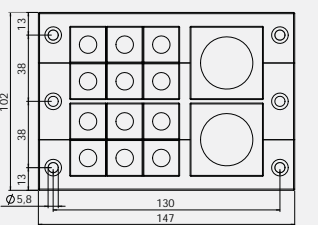
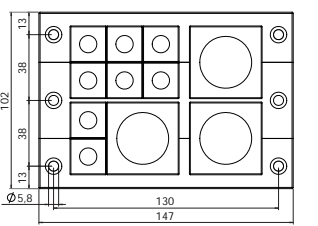
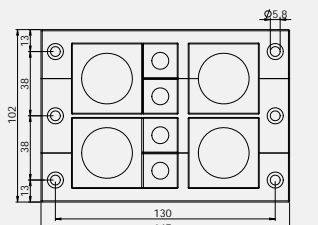


Also available with threaded bushings.



IP54

1.11

Description	Type	Order No.	Grommets small   large	PU
	KEL 24 20-MT	42232	20 -	1
	KEL 24 20-MT with V2A screws	42232.200	20 -	1
	KEL 24 17-MT	42224	16 1	1
	KEL 24 17-MT with V2A screws	42224.200	16 1	1
	KEL 24 14-MT	42225	12 2	1
	KEL 24 14-MT with V2A screws	42225.200	12 2	1
	KEL 24 11-MT	42222	8 3	1
	KEL 24 11-MT with V2A screws	42222.200	8 3	1
	KEL 24 8-MT	42221	4 4	1
	KEL 24 8-MT with V2A screws	42221.200	4 4	1

### Product description

The cable entry frame KEL 24-MT provides additional cable routing possibilities.

The KEL 24-MT series are KEL frames extended with an additional middle frame for routing additional cables. Thus allowing the quick, easy and cost effective routing solution for up to 80 cables.

A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Temperature Properties	-40°C to +140°C (static)
Cut-out dimensions	82 × 112 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

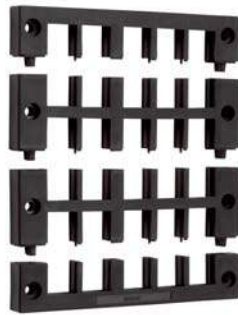
KEL-SNAP Mounting frames	31
Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL 24-2MT

## Extended cable entry frames



**IP54**



V2A anti-corrosive  
Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

The KEL 24-2MT is our largest frame providing the ability to route and seal up to 120 cables.

The cable entry frames KEL 24-2MT series are KEL frames extended with two additional middle frames for routing additional cables. Thus allowing the quick, easy and cost effective routing solution for up to 120 cables. A flat rubber gasket is included in the shipment.

### Advantages & benefits

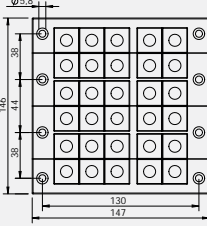
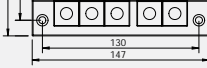
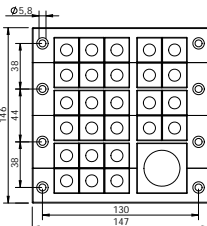
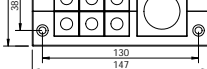
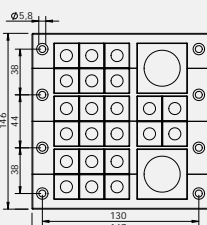
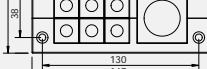
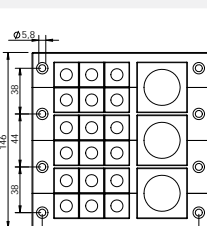
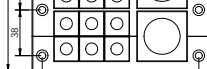
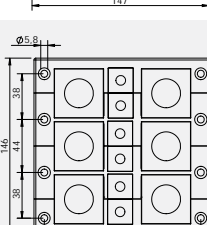

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Temperature	-40°C to +140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	126 × 112 mm / Page 218 - 219
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL 24 30-2MT	42234	30 -	1
	KEL 24 30-2MT with V2A screws	42234.200	30 -	1
	KEL 24 27-2MT	42233	26 1	1
	KEL 24 27-2MT with V2A screws	42233.200	26 1	1
	KEL 24 24-2MT	42227	22 2	1
	KEL 24 24-2MT with V2A screws	42227.200	22 2	1
	KEL 24 21-2MT	42226	18 3	1
	KEL 24 21-2MT with V2A screws	42226.200	18 3	1
	KEL 24 12-2MT	42223	6 6	1
	KEL 24 12-2MT with V2A screws	42223.200	6 6	1

# KEL 16-E

## Extended cable entry frames



V2A anti-corrosive

Also available with stainless steel screws (V2A).

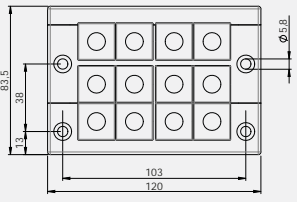
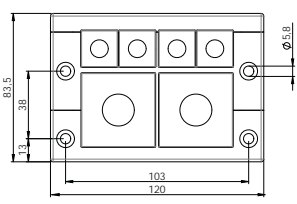


Also available with threaded bushings.



**IP54**

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Description	Type	Order No.	Grommets small   large	PU
	KEL 16 12-E	42141	12 -	1
	KEL 16 12-E with V2A screws	42141.200	12 -	1
	KEL 16 6-E	42140	4 2	1
	KEL 16 6-E with V2A screws	42140.200	4 2	1

### Product description

The cable entry frame KEL 16-E offers a larger frame size for routing a greater amount of cables, pipes or conduits.

The KEL16-E series are KEL 16 frames extended with an additional middle frame for routing additional cables. Thus allowing a quick, easy and cost effective routing solution for up to 48 cables.

A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
Temperature Properties	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	66 × 86 mm
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL 16-MT

## Extended cable entry frames



**IP54**



Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

The cable entry frame KEL 16-MT provides additional cable routing possibilities.

The KEL 16-MT series are KEL 16 frames extended with an additional middle frame for routing additional cables. Thus allowing the quick, easy and cost effective routing solution for up to 64 cables.

A flat rubber gasket is included in the shipment.

### Advantages & benefits

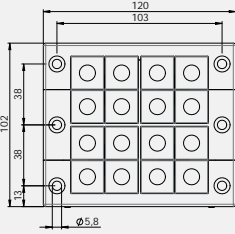
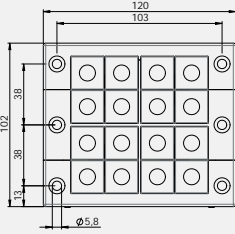
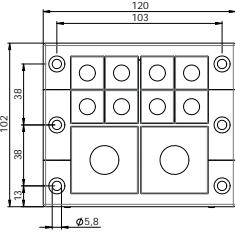
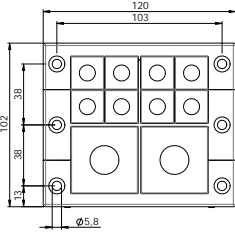
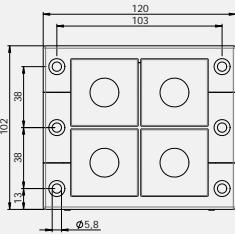
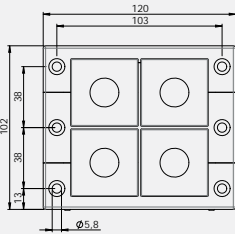
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Temperature	-40°C to +140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	82 × 86 mm
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL 16 16-MT	42145	16 -	1
	KEL 16 16-MT with V2A screws	42145.200	16 -	1
	KEL 16 10-MT	42144	8 2	1
	KEL 16 10-MT with V2A screws	42144.200	8 2	1
	KEL 16 4-MT	42143	- 4	1
	KEL 16 4-MT with V2A screws	42143.200	- 4	1



# KEL 16-2MT

## Extended cable entry frames



V2A anti-corrosive

Also available with stainless steel screws (V2A).

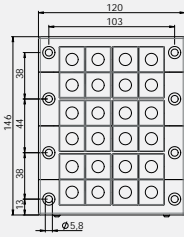
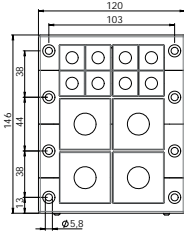
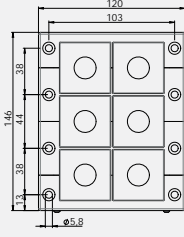


Also available with threaded bushings.



IP54

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Description	Type	Order No.	Grommets small   large	PU
	KEL 16 24-2MT	42149	24 -	1
	KEL 16 24-2MT with V2A screws	42149.200	24 -	1
	KEL 16 12-2MT	42148	8 4	1
	KEL 16 12-2MT with V2A screws	42148.200	8 4	1
	KEL 16 6-2MT	42147	- 6	1
	KEL 16 6-2MT with V2A screws	42147.200	- 6	1

### Product description

The KEL 16-2MT is our largest frame providing the ability to route and seal up to 96 cables.

The cable entry frames KEL 16-2MT series are KEL 16 frames extended with two additional middle frames for routing additional cables. Thus allowing the quick, easy and cost effective routing solution for up to 96 cables. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

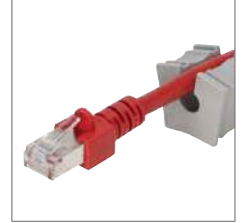
Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Temperature	-40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	126 × 86 mm
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL-FG-A

Flange enclosures for cable entry



Slit KT grommets

## Product description

The cable entry frames KEL-FG-A are suited for installation, sealing and strain relief of cables with connectors and conduits at an angle of 90° to the cabinet, enclosure or machine wall. The KEL-FG-A frame matches exactly the cut-out dimensions for 24-pin standard industrial connectors. A flat rubber gasket is included in the shipment.

## Advantages & benefits

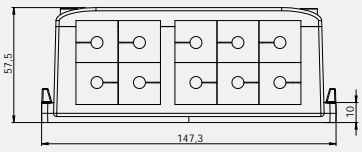
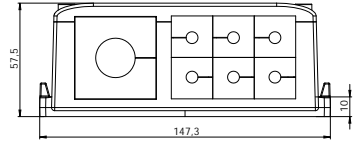
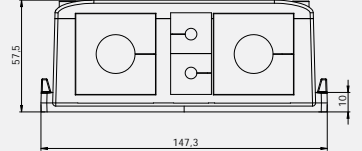
- Installation at an angle of 90° to the wall
- Mechanical protection of cable directly at the place of entry
- Protection against water spray and drips
- Warranty on pre-terminated cables remains
- Strain relief according to EN 62444
- High stability, vibration resistant

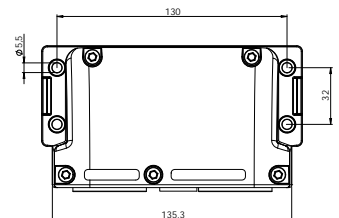
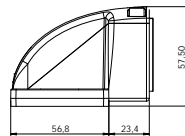
## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36 × 112 mm, Page 218 - 219

## Accessories

Cable grommets	48 - 52
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL-FG-A10	42320	10 -	1
	KEL-FG-A10 with V2A screws	42320.200	10 -	1
	KEL-FG-A7	42322	6 1	1
	KEL-FG-A7 with V2A screws	42322.200	6 1	1
	KEL-FG-A4	42324	2 2	1
	KEL-FG-A4 with V2A screws	42324.200	2 2	1



# KEL-FG-B

## Flange enclosures for cable entry



V2A anti-corrosive



Slit KT grommets

Also available with stainless steel screws (V2A).



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Description	Type	Order No.	Grommets small   large	PU
	KEL-FG-B4	42330	4 -	1
	KEL-FG-B4 with V2A screws	42330.200	4 -	1
	KEL-FG-B1	42332	- 1	1
	KEL-FG-B1 with V2A screws	42332.200	- 1	1

### Product description

The cable entry frames KEL-FG-B are suited for installation, sealing and strain relief of cables with connectors and conduits at an angle of 90° to the cabinet, enclosure or machine wall. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Installation at an angle of 90° to the wall
- Mechanical protection of cable directly at the place of entry
- Protection against water spray and drips
- Warranty on pre-terminated cables remains
- Space saving shape
- Strain relief according to EN 62444
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	46 x 36 mm, Page 218 - 219

### Accessories

Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# KEL-FG-E

Flange enclosures  
for cable entry



Slit KT grommets

## Product description

The cable entry frames KEL-FG-E are suited for installation, sealing and strain relief of cables with connectors and conduits at an angle of 90° to the cabinet, enclosure or machine wall.

The KEL-FG-E version is particularly suited for flat connectors. The small frame is ideal for applications with limited space. A flat rubber gasket is included in the shipment.

## Advantages & benefits

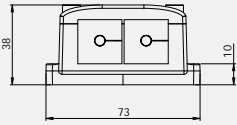
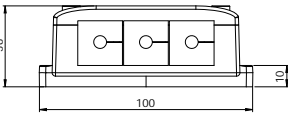
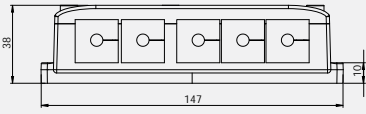
- Installation at an angle of 90° to the wall
- Mechanical protection of cable directly at the place of entry
- Protection against water spray and drips
- Warranty on pre-terminated cables remains
- Space saving shape
- Optimal for D-Sub connectors
- Strain relief according to EN 62444
- High stability, vibration resistant

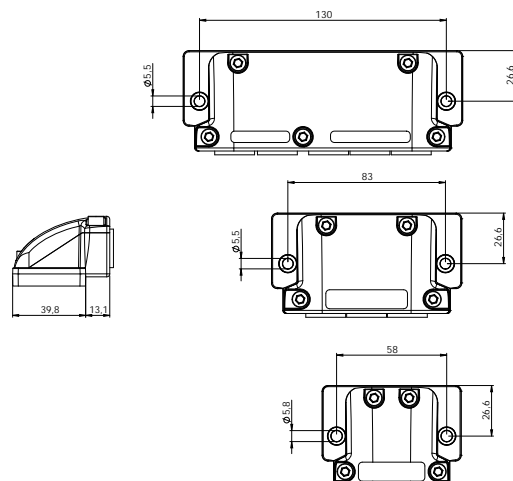
## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	E2: 43 × 24 mm E3: 65 × 24 mm E5: 112 × 24 mm

## Accessories

Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets small   large	PU
	KEL-FG-E2	42333	2 -	5
	KEL-FG-E2 with V2A screws	42333.200	2 -	5
	KEL-FG-E3	42334	3 -	5
	KEL-FG-E3 with V2A screws	42334.200	3 -	5
	KEL-FG-E5	42336	5 -	5
	KEL-FG-E5 with V2A screws	42336.200	5 -	5



# KEL-SNAP

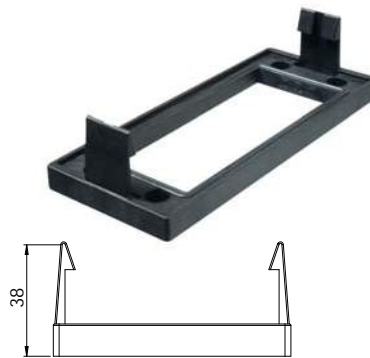
## Snap mounting frames



Integrated circular sealing (IP54)



Blank plate BPK-SNAP, see page 186



1.11

1.21

Description	Type	Order No.	Fits for	Cut-out [mm]	PU
	KEL-SNAP-B	42038	KEL-B KEL-U-B KEL-QUICK-B	46 × 38	10
	KEL-SNAP 10	42039	KEL 10 KEL-U 10 KEL-QUICK 10	46 × 65	10
	KEL-SNAP 16	42040	KEL 16 KEL-U 16 KEL-QUICK 16	46 × 85	10
	KEL-SNAP 24	42042	KEL 24 KEL-U 24 KEL-FG-A KEL-QUICK 24	46 × 112	10
	KEL-SNAP 24-E	42044	KEL 24-E	71 × 112	1
	KEL-SNAP 24-MT	42046	KEL 24-MT	89 × 112	1

## Product description

The patented KEL-SNAP frame provides a quick assembly of the KEL / KEL-U / KEL-QUICK system when necessary. Control panels, cabinets or machines can be equipped with the KEL-SNAP frame at delivery, allowing a simple push in of the KEL frame when routing the cables and conduits. Perfect for enclosures that are maintenance intensive or for an install at a later date.

A cut-out of 46 mm also can be chosen instead of 36 mm. Thus prefabricated multi-pin connectors can be used.

## Advantages & benefits

- Upon disassembly (e.g. maintenance) screwing and unscrewing of KEL frame is not necessary
- Previously assembled KEL frames are quickly and easily attached
- Integrated gasket
- Drilling template identical to KEL frame (except KEL-SNAP-B)

## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	See Page 218 - 219

## Accessories

KEL Cable entry frames	18 - 27
KEL-U Cable entry frames	8 - 14
KEL-FG Flange enclosure	28 - 30
KEL-QUICK Cable entry frames	56 - 57
MP Module plates	174 - 175
BPK-SNAP Blank plates	186
ST Plugs	53

# KEL-FL

## Cable entry frames for flat cables



1.11

### Product description

The KEL-FL range enables simple, fast and flexible cable routing and sealing of flat wires, e.g. in lift construction.

Innovative construction of the grommets compensates for manufacturing inconsistencies in flat cables. Split KT grommets can be utilised to additionally route round cables with connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

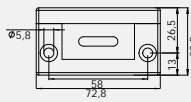
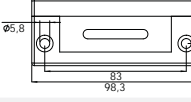
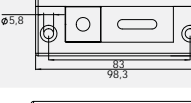
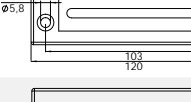
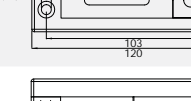
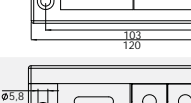
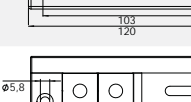
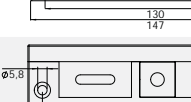
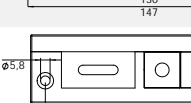
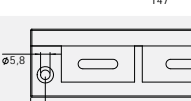
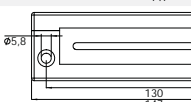

- Routing of flat cables in combination with pre-terminated round cables by using a single KEL-FL cable entry frame
- Space saving shape

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Drilling template	See Page 218 - 219
Frame depth	17 mm

### Accessories

KT Cable grommets, small	48 - 49
KTMB/KT-DPF Cable grommets, small	51
FT Cable grommets, flat	33
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Cut-out [mm]	Grommets KT   FT	PU
	KEL-FL A	46100	43 × 24	0× KT 1× FT-1	10
	KEL-FL B	46105	65 × 24	0× KT 1× FT-2	10
	KEL-FL C	46110	65 × 24	1× KT 1× FT-1	10
	KEL-FL D	46115	86 × 24	0× KT 1× FT-3	10
	KEL-FL E	46120	86 × 24	1× KT 1× FT-2	10
	KEL-FL F	46125	86 × 24	0× KT 2× FT-1	10
	KEL-FL G	46130	86 × 24	2× KT 1× FT-1	10
	KEL-FL H	46135	112 × 24	2× KT 1× FT-2	10
	KEL-FL I	46140	112 × 24	1× KT 2× FT-1	10
	KEL-FL J	46145	112 × 24	3× KT 1× FT-1	10
	KEL-FL K	46150	112 × 24	1× FT-1 1× FT-2	10
	KEL-FL L	46155	112 × 24	1× FT-4	10



# FT Grommets for flat cables



**IP54**

1.11

Description	Type	Order No.	Clamping range	PU
	FT-1 0	46201	Blank grommet	5
	FT-1 A	46210	Width: 19 - 23 mm Thickness: 5.5 - 6 mm	5
	FT-1 B	46211	Width: 28 - 33 mm Thickness: 5.5 - 6 mm	5
	FT-1 C	46212	Width: 24 - 30 mm Thickness: 8.5 - 9 mm	5
	FT-1 E	46214	Width: 19 - 24 mm Thickness: 6.5 - 7 mm	5
	FT-1 F	46215	Width: 28 - 33 mm Thickness: 9 - 9.5 mm	5
	FT-2 0	46202	Blank grommet	5
	FT-2 A	46250	Width: 32.5 - 38 mm Thickness: 5 - 5.5 mm	5
	FT-2 B	46251	Width: 45 - 50.5 mm Thickness: 6 - 6.5 mm	5
	FT-2 C	46252	Width: 47 - 52 mm Thickness: 9.5 - 10 mm	5
	FT-2 F	46255	Width: 38 - 43 mm Thickness: 12.5 - 13 mm	5
	FT-2 G	46256	Width: 49 - 54 mm Thickness: 5 - 6 mm	5
	FT-3 0	46203	Blank grommet	5
	FT-3 A	46300	Width: 72 - 77 mm Thickness: 5 - 5.5 mm	5
	FT-4 0	46204	Blank grommet	5
	FT-4 A	46330	Width: 85 - 99 mm Thickness: 4.2 - 5.2 mm	5

## Product description

FT grommets are used to route flat cables, e.g. in lift construction. Suitable for cable entry frames KEL-FL.

Innovative construction of the grommets compensates for manufacturing inconsistencies in flat cables.

## Advantages & benefits

- Routing of flat cables with various dimensions

## Specifications

Material	Elastomer
Flame class	UL94-V0, self-extinguishing
IP rating	IP54
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free

## Compatible with

KEL-FL Cable entry frames 32

# KEL 183 | KEL 183-E

Cable entry frames for supply cables



**IP54**



1.11

## Product description

The split cable entry frame KEL 183 enables the user to route cables and tubes with a diameter of up to 75 mm (depending on the frame type) and to seal them in accordance with IP54 / up to UL type 12.

For cables up to 35 mm the cable grommets KT can be used. With these split cable grommets, pre-terminated cables can be routed.

For cables up to 75 mm we have created the grommets KTMB for KEL 183. Those are not split and have a defined area for pushing the cable through.

A flat rubber gasket is included in the shipment.

## Advantages & benefits

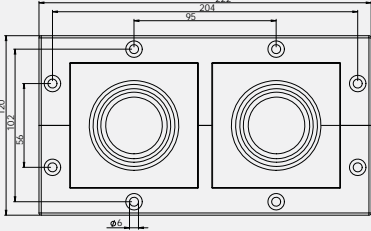
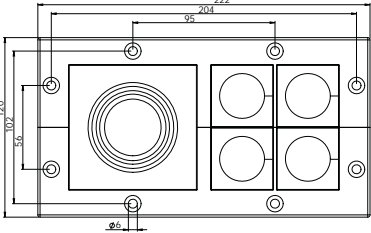
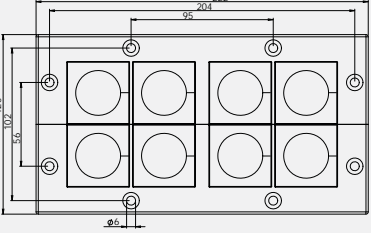
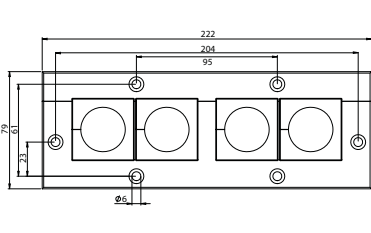
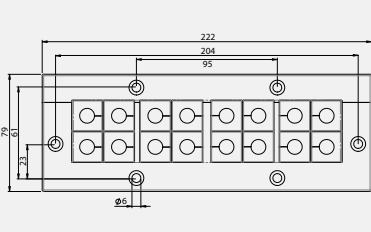





- Installation of cables up to 75 mm
- Grommets allow rigid cables to be properly positioned and oriented during the installation process
- Retrofits, repairs and maintenance can be done much more easily and quickly

## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54 with gasket and correct selection of the cables
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	See page 218 - 219
Frame depth	17 mm

## Accessories

KTMB 183 Cable grommets	35
Cable grommets	48 - 52
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

Description	Type	Order No.	Grommets KT KT 183   KT large	PU
	KEL 183 2	47200	2 -	1
	KEL 183 2 with V2A screws	47200.200	2 -	1
	KEL 183 5	47220	1 4	1
	KEL 183 5 with V2A screws	47220.200	1 4	1
	KEL 183 8	47240	- 8	1
	KEL 183 8 with V2A screws	47240.200	- 8	1
	KEL 183-E4	47250	- 4	1
	KEL 183-E4 with V2A screws	47250.200	- 4	1
	KEL 183-E16	47255	16 KT small	1
	KEL 183-E16 with V2A screws	47255.200	16 KT small	1

# KTMB 183

## Grommets for KEL 183



1.11

Type	Order No.	Clamping range	PU
KTMB-O	41410	Blank grommet	1
KTMB-P	41415	34 - 44 mm	1
KTMB-Q	41420	44 - 54 mm	1
KTMB-R	41425	54 - 64 mm	1
KTMB-S	41430	64 - 75 mm	1

### Product description

The grommets KTMB-P to KTMB-S are suitable for cable diameters up to 75 mm. These grommets can be used with the KEL 183 cable entry frames.

These multi-range grommets are not split and have a defined area for pushing the cable through.

The blank grommet KTMB-O can accept cable sizes within a specified range. The membrane of the KTMB-O can be pierced or cut (cable diameter minus 10 mm) for cables up to 55mm in diameter.

### Specifications

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free

### Compatible with

KEL 183 Cable entry frames 34

# KEL-JUMBO

Cable entry frames for supply cables



**IP54**



Also available with stainless steel screws (V2A).

1.11

## Product description

The KEL-JUMBO cable entry system for installation of cables and conduits with a diameter of up to 65 mm, especially suited for supply cables.

The innovative grommet design with the flex-membrane provides flexing and adjustment of the position for larger and more rigid cables.

We recommend round cut-outs, which can be made using standard punching tools.

Suggested cut-out: cable diameter +15 - 20%. A flat rubber gasket is included in the shipment.

## Advantages & benefits

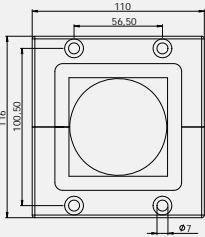
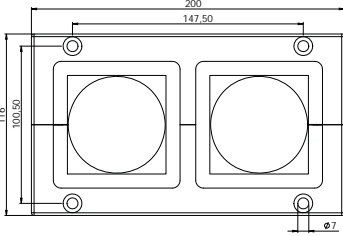
- Installation of cables up to 65 mm
- KTF grommets allow flexing and adjustment of the cable position
- Retrofitting and maintenance can be carried out easily and quickly
- Strain relief according to EN 62444

## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	Round, cable diameter +15%
Frame depth	35 mm

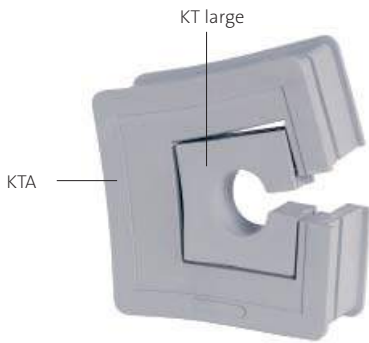
## Accessories

KTF Cable grommets	37
KDR-ESR Base plates	164 - 167
KDR2 Split base plates	168 - 169
MP Module plates	174 - 175

Description	Type	Order No.	Dimensions length   width   height	PU
	KEL-JUMBO 1	42360	110 × 116 × 35 mm	1
	KEL-JUMBO 1 with V2A screws	42360.200	110 × 116 × 35 mm	1
	KEL-JUMBO 2	42350	200 × 116 × 35 mm	1
	KEL-JUMBO 2 with V2A screws	42350.200	200 × 116 × 35 mm	1

# KTF

## Grommets for KEL-JUMBO



1.11

Type	Order No.	Clamping range	PU
KTF 00	42371	Blank grommet	1
KTA	42370	Adapter grommet for KT large	1
KTF 34	42376	33 - 36 mm	1
KTF 38	42379	37 - 40 mm	1
KTF 42	42382	41 - 44 mm	1
KTF 46	42385	45 - 48 mm	1
KTF 50	42388	48 - 52 mm	1
KTF 54	42391	53 - 56 mm	1
KTF 58	42394	56 - 60 mm	1
KTF 62	42397	61 - 65 mm	1

### Product description

The grommets KTF are suitable for cable diameters up to 65 mm.

Suitable for KEL-JUMBO cable entry frames.

Cables with a comparatively smaller diameter can be utilised with KEL-JUMBO frames by using an adapter grommet.

### Specifications

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free

### Compatible with

KEL-JUMBO Cable entry frames 36

### Accessories

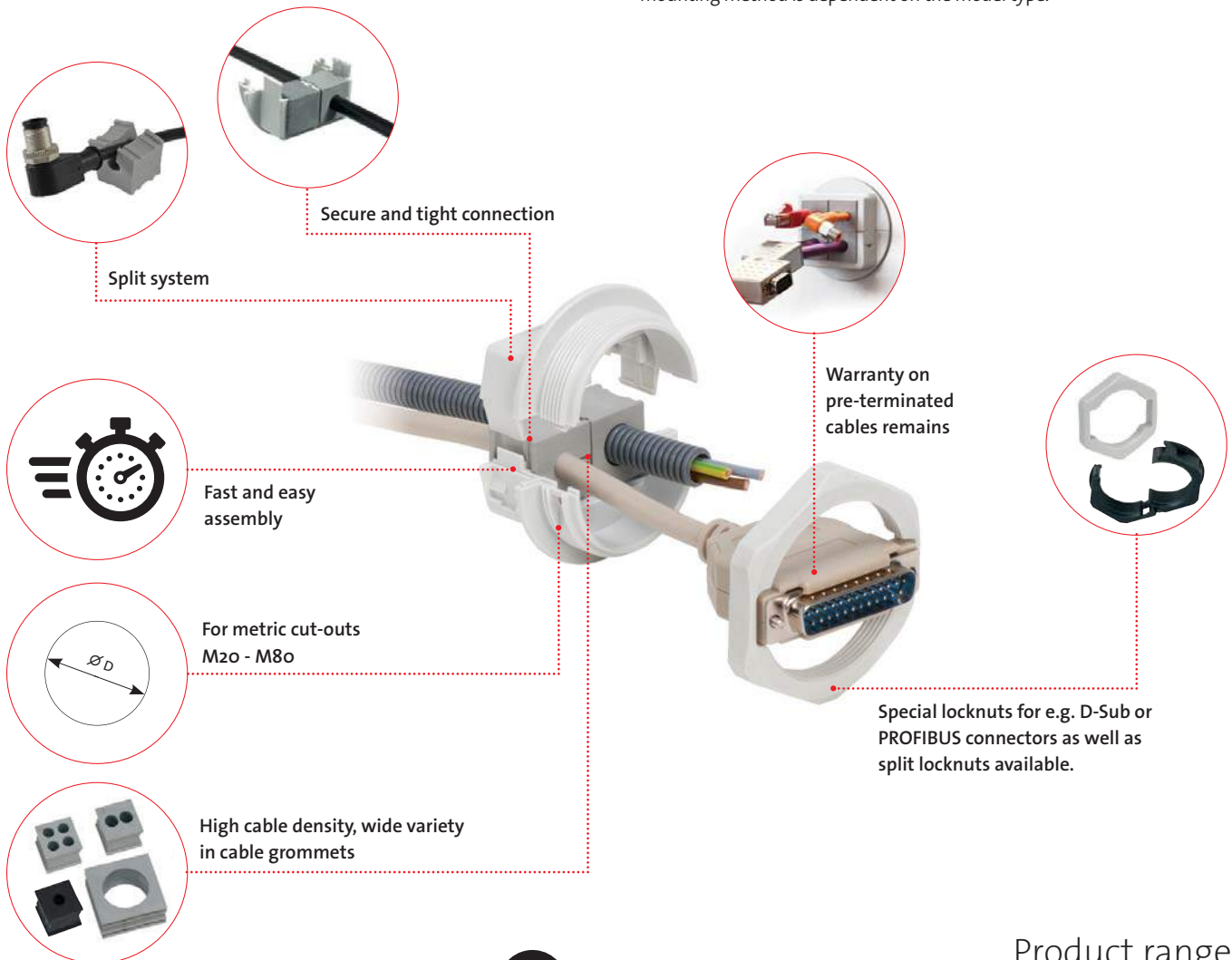
KT Cable grommets, large 50

# 1.12 Split cable glands for the KT grommet system



By using split cable glands by icotek cables with or without connectors or complete cable harnesses with diameters from 1 to 35 mm can be quickly routed into enclosures, cabinets or machines and be sealed with up to IP66/ IP68 / UL type 4X rated ingress protection.

The split system of the KVT cable glands enables quick and easy assembly which is great for retrofitting and maintenance. The cable is placed into the slit grommet which is set into one of the gland halves. Depending on the size of the cable gland one, two or four separate grommets can be installed. The two gland halves can be easily snapped together without the need of tools. The routed lines are securely sealed and held inside the grommets. To mount the cable glands either snap it into the round metric standard cut-out (sizes available from M20 to M80) or screw it with a hexagonal locknut. The mounting method is dependent on the model type.



## Product range





## Chapter content 1.12

**NEW ▶**



IP66

IP68



**Split cable glands**  
M25 - M63, for cable diameters up to 35 mm

KVT-ER

40 - 41



IP54

**Split cable glands**  
M20 - M80, for cable diameters up to 35 mm

KVT / KVT 80 / KVT-SNAP / KVT-W90

42 - 46



IP66

IP54

IP68

**Grommets and plugs**  
for cables with/without connectors,  
cable diameter range 1 - 35 mm

KT small / KT large / KT-DPF / KTMB / DT /  
ST / KT ServiceBox

47 - 53

1.12

# KVT-ER

## Split cable glands



Certified protection class  
IP65/IP66/IP67/IP68



Slit KT grommets

### Product description

KVT-ER are split cable glands for routing and sealing cables with and without connectors, conduits or pneumatic hoses with diameters from 1 to 16 mm (KT 1 - 15) and 16 to 35 mm (KT 16 - 34).

Due to the injected gasket and if single-hole grommets are used, the KVT-ER provides certified protection ratings IP65/IP66/IP67/IP68.

The KVT-ER sizes are based on metric standard cut-outs M25, M32, M50 and M63. Hexagonal locknuts are included in the shipment.

For assembly, we recommend to tighten the cover lid screws with max. 2 N m.

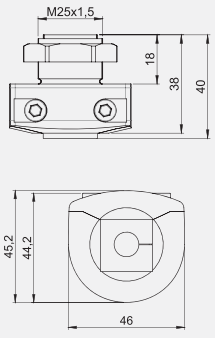
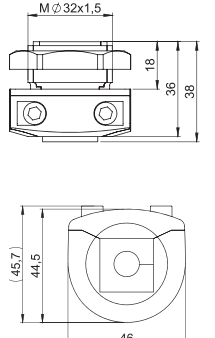
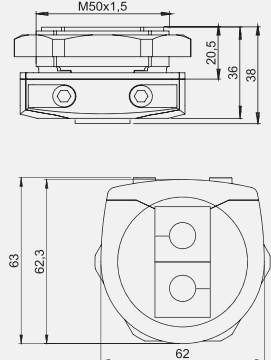
### Locknuts

Locknuts with special cut-outs are available separately.



**KGM-SUB-D9** fits D-Sub 9 connectors  
(Required wall cut-out:  $\varnothing$  36 mm, PU: 10)  
■ Order No. 45106

**KGM-SUB-D25** fits SUB-D25 connectors  
(Required wall cut-out:  $\varnothing$  50 - 54 mm, PU:10)  
■ Order No. 45110

Description	Type	Order No.	Grommets KT small   large	Thread Thread length	PU
	KVT-ER 25*	45450	1 -	M25 × 1.5 Length: 18 mm	10
	KVT-ER 32	45452	1 -	M32 × 1.5 Length: 18 mm	10
	KVT-ER 50 2	45454	2 -	M50 × 1.5 Length: 20.5 mm	5

\* Max. cable diameter of 15 mm

# KVT-ER

## Split cable glands



Injected elastomer gasket



Slit KT grommets



1.12

Description	Type	Order No.	Grommets KT small   large	Thread Thread length	PU
	KVT-ER 63 1	45455	- 1	M63 x 1.5 Length: 20.5 mm	5
	KVT-ER 63 4	45456	4 -	M63 x 1.5 Length: 20.5 mm	5

### Advantages & benefits

- Certified protection class IP65/IP66/IP67/IP68 according to EN 60529
- Very high strain relief according to EN 62444
- Warranty of pre-terminated cables remains
- Retrofits, repairs and maintenance can be done easily and quickly
- High cable density
- Suitable for metric cut-outs
- Hexagonal nut included in the delivery
- Anti-corrosive V2A stainless steel screws
- Very robust housing, vibration resistant
- Modern design

### Specifications

Material	Frame: Polypropylene (PP) Injected gasket: Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	IP65/IP66/IP67/IP68, if correctly assembled with single grommets (certified acc. to EN 60529)
Temperature Properties	- 40°C to + 110°C (static)
Cut-out dimension	Halogen-free, silicone-free Metric sizes

### Accessories

KT Cable grommets	48 - 50
KVT-EMC Brackets	141
Locknuts	188 - 189
ST Plugs	53

# KVT

## Split cable glands



### Product description

KVT is a circular split frame for quick and easy installation and sealing of cables with connectors or complete cable harnesses.

Polyamide locknuts as well as a sealing ring are included in the shipment.

For routing D-Sub, DVI or PROFIBUS connectors in combination with the split cable glands KVT, special locknuts with cut-outs are required.

### Locknuts

Locknuts with special cut-outs are available separately. The cut-out dimensions are listed on page 189.



**KGM-SUB-D9** fits D-Sub 9 connectors  
(Required wall cut-out:  $\varnothing$  36 mm, PU: 10)  
 Order No. 45105  Order No. 45106

**KGM-PB** fits DVI and PROFIBUS connectors  
(Required wall cut-out:  $\varnothing$  42 mm, PU: 10)  
 Order No. 45107  Order No. 45109

**KGM-SUB-D25** fits SUB-D25 connectors  
(Required wall cut-out:  $\varnothing$  50 - 54 mm, PU: 10)  
 Order No. 45108  Order No. 45110



Type GMT: Split locknut, p. 188

Description	Type	Order No.	Grommets small   large	Thread Thread length	PU
	KVT 20**	<input type="checkbox"/> 45034 <input checked="" type="checkbox"/> 45024	1 -	M20 × 1.5 Length: 14 mm	10
	KVT 25***	<input type="checkbox"/> 45035 <input checked="" type="checkbox"/> 45025	1 -	M25 × 1.5 Length: 14 mm	10
	KVT 32	<input type="checkbox"/> 45036 <input checked="" type="checkbox"/> 45026	1 -	M32 × 1.5 Length: 14 mm	10
	KVT 32 + KGM-SUB-D9	<input type="checkbox"/> 45037 <input checked="" type="checkbox"/> 45027	1 -	M32 × 1.5 Length: 14 mm	10
	KVT 40	<input type="checkbox"/> 45203 <input checked="" type="checkbox"/> 45028	1 -	M40 × 1.5 Length: 14 mm	10
	KVT 40 + KGM-PB	<input type="checkbox"/> 45205 <input checked="" type="checkbox"/> 45029	1 -	M40 × 1.5 Length: 14 mm	10

\* Only valid for grey product types \*\* Max. cable diameter of 11 mm | \*\*\* Max. cable diameter of 15 mm

# KVT

## Split cable glands



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Description	Type	Order No.	Grommets small   large	Thread Thread length	PU
	KVT 50 2	<span style="color: grey;">■</span> 45204 <span style="color: black;">■</span> 45030	2 -	M50 × 1.5 Length: 14 mm	5
	KVT 50 2 + KGM-SUB-D25	<span style="color: grey;">■</span> 45206 <span style="color: black;">■</span> 45031	2 -	M50 × 1.5 Length: 14 mm	5
	KVT 63 1	<span style="color: grey;">■</span> 45212 <span style="color: black;">■</span> 45112	- 1	M63 × 1.5 Length: 14 mm	5
	KVT 63 4	<span style="color: grey;">■</span> 45215 <span style="color: black;">■</span> 45115	4 -	M63 × 1.5 Length: 14 mm	5

\* Only valid for grey product types

### Advantages & benefits

- Insertion of pre-terminated cables
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Suitable for metric cut-outs
- Locknut is included



### Specifications

Material	Polycarbonate (PC)
Colour	<span style="color: grey;">■</span> grey (similar RAL 7035) <span style="color: black;">■</span> black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 30°C to + 100°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric sizes

### Accessories

Cable grommets	48 - 52
KVT-EMC Brackets	141
Locknuts	188 - 189
ST Plugs	53

# KVT 80

Split cable glands for front mounting



**IP54**



## Product description

The KVT 80 split cable glands are designed for routing and sealing cables with connectors. By assembling the two frame halves with the screws provided, the grommets provide sufficient pressure on the routed cables to obtain a high degree of strain relief. The KVT 80 can be fitted to a wall thickness from 1.5 mm to 10 mm. A flat rubber gasket is included in the shipment.

## Advantages & benefits

- Insertion of pre-terminated cables
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Fast and easy mounting from the front side
- Strain relief according to EN 62444

## Note

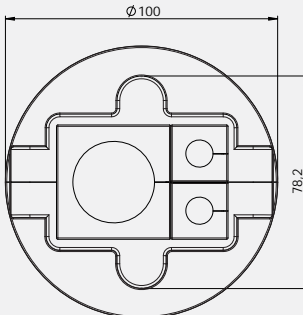
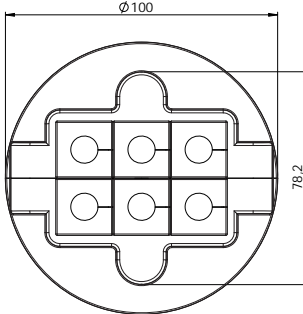
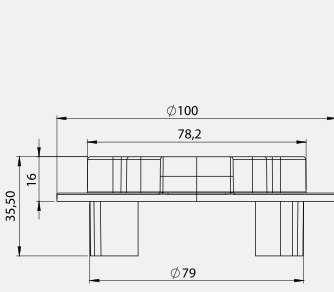
When mounting the KVT 80 on sheet metal, we recommend the following torque values:  
 1.5 mm sheet = 1 N m | 2 - 10 mm sheet = 1.5 N m

## Specifications

Material	Polycarbonate (PC)
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input checked="" type="checkbox"/> black
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 30°C to + 100°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	80 mm in diameter

## Accessories

Cable grommets	48 - 52
ST Plugs	53

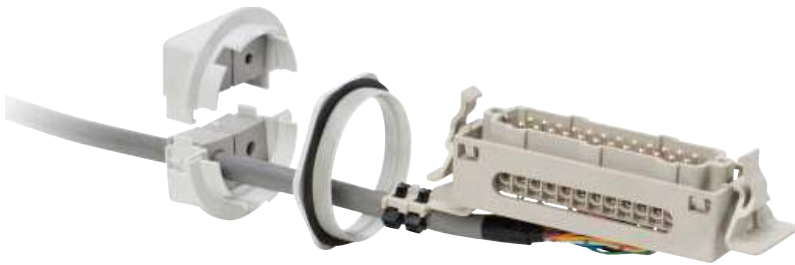
Description	Type	Order No.	Grommets KT small   large	PU
	KVT 80 3	<input type="checkbox"/> 45236 <input checked="" type="checkbox"/> 45239	2 1	1
	KVT 80 6	<input type="checkbox"/> 45237 <input checked="" type="checkbox"/> 45238	6 -	1
				

\*Only valid for grey product types



# KVT-SNAP

## Split pluggable cable glands


**IP54**

1.12

Description	Type	Order No.	Grommets small   large	Thread Thread length	PU
	KVT-SNAP 32	45130	1 -	M32 × 1.5 Length: 11 mm	10
	KVT-SNAP 40	45134	1 -	M40 × 1.5 Length: 11 mm	10
	KVT-SNAP 63 4	45152	4 -	M63 × 1.5 Length: 11 mm	5
	KVT-SNAP 63 1	45154	- 1	M63 × 1.5 Length: 11 mm	5
	KGM 32	■ 52275 ■ 52285	PA	M32 × 1.5	10
	KGM 40	■ 52276 ■ 52286	PA	M40 × 1.5	10
	KGM 63	■ 52278 ■ 52288	PA	M63 × 1.5	5

### Product description

KVT is a circular split frame for quick and easy installation of cables with connectors or complete cable harnesses.

By using the model KVT-SNAP, cables can be routed through thick walls (> 5 mm) e.g. into cast terminal boxes without the use of tools. Polyamide locknuts as well as a sealing ring are included in the shipment.

### Assembly

- The snap ring is screwed into metric thread or tapped into the cut-out (it can also be fastened with a locknut)
- Once the snap ring is affixed to the housing the equipped KVT is simply pushed into it. Fast and easy installation!

### Specifications

Material	Polycarbonate (PC)
Colour	■ grey (similar RAL 7035)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Temperature	- 30°C to + 100°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric cut-outs

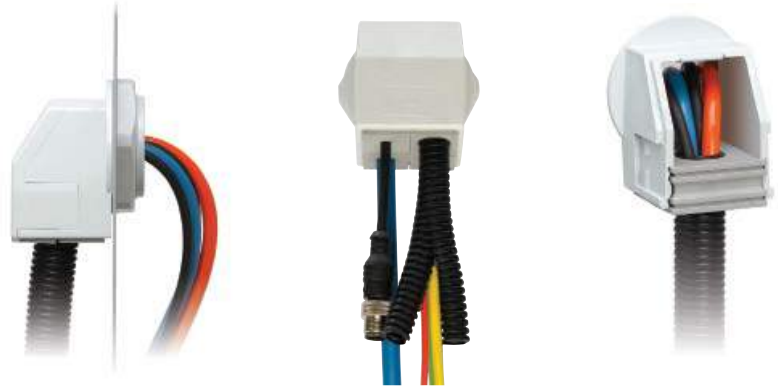
### Accessories

Cable grommets	48 - 52
KVT-EMC Brackets	141
KGM Locknuts	188 - 189
ST Plugs	53

\* Only valid for grey product types

# KVT-W90

## Split cable glands



1.12

### Product description

The split KVT-W90 cable glands are used to insert and seal pre-terminated cables and conduits at a 90° angle.

In particular, the KVT 50-W90 is perfectly suited to hold corrugated or smooth hoses. A large number of cable entry grommets is available to the user.

Polyamide standard locknuts as well as a sealing ring are included in the shipment. Split locknuts can be ordered separately.

### Advantages & benefits

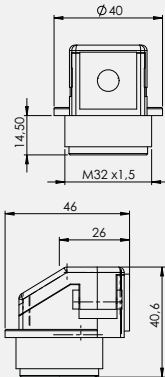

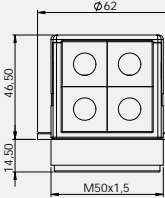
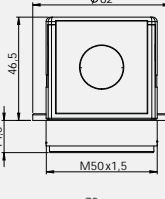
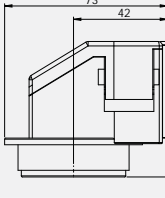
- Installation at an angle of 90° to the cabinet
- Insertion of pre-terminated cables and conduits
- Warranty on pre-terminated cables remains
- Suitable for metric cut-outs

### Specifications

Material	Polycarbonate (PC)
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input checked="" type="checkbox"/> black
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Temperature Properties	- 30°C to + 100°C (static)
Cut-out dimension	Halogen-free, silicone-free Metric cut-outs

### Accessories

Cable grommets	48 - 52
KVT-EMC Brackets	141
KGM Locknuts	188 - 189
ST Plugs	53

Description	Type	Order No. with locknut	Grommets small   large	Thread Thread length	PU
	KVT 32-W90	<input type="checkbox"/> 45404 <input checked="" type="checkbox"/> 45406	1 -	M32 x 1.5 Length: 115 mm	10
	GMT 32	<input checked="" type="checkbox"/> 31120	-	M32 x 1.5	10
	KVT 50 4-W90	<input type="checkbox"/> 45424 <input checked="" type="checkbox"/> 45426	4 -	M50 x 1.5 Length: 115 mm	5
	KVT 50 1-W90	<input type="checkbox"/> 45414 <input checked="" type="checkbox"/> 45416	- 1	M50 x 1.5 Length: 115 mm	5
	GMT 50	<input checked="" type="checkbox"/> 31140	-	M50 x 1.5	10

\*Only valid for grey product types

# KT ServiceBox

## Service box for cable grommets



1.1

### Product description

**Convenient - everything available right away!**

The KT ServiceBox is perfect for installations and service calls. It ensures your KT grommets are readily available.

**Order No. 88001**

### Content\*

#### Cable grommets, small:

- 110 KT for cables 1 - 17 mm
- 10 BTK blank grommets
- 10 KTMB multi-range grommets
- 2 KT-DPF mutli-range grommets
- 8 KT-ASI for ASI-Bus cables

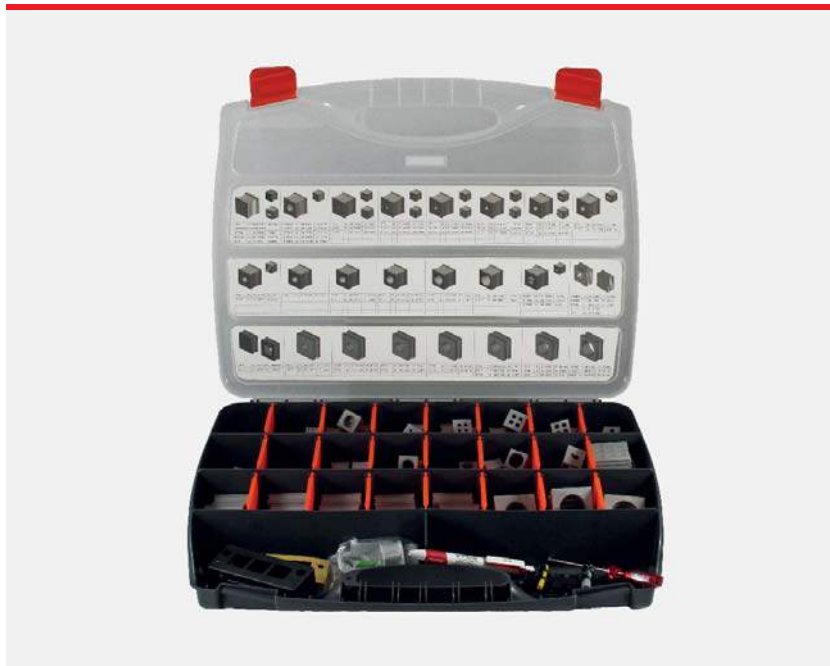
#### Cable grommets, large:

- 25 KT for cables 16 - 35 mm
- 4 BTG blank grommets / ATG adapter grommets
- 3 KTMB multi-range grommets
- 2 DT multi-membrane grommets
- 2 KT-DPF multi-range grommets

#### Accessories:

- 2 KEL-U cable entry frames
- 1 KVT split cable gland
- 1 KZL strain relief plate
  
- 1 Cable template

\* Subject to alterations



### KMS Cable template



The correct size of the KT grommets can easily be determined by using the cable template (material: stainless steel V2A).

- Determining the diameter of the cable using the cable template
- Selecting the KT grommets according to the data on the cable template

Cable templates can also be ordered separately. **Order-No. 39800**

# KT

## Grommets, small, single



1.1

IP54 IP66 IP68



### Product description

Cable grommets KT small are used with the cable entry frames & cable glands of product groups 1.11 & 1.12.

The model range KT small is designed for cable diameters from 1 to 17 mm.

### Assembly note

When installing the grommets, the flat side should be facing the middle of the frame. This allows the flat sides of adjacent grommets to match up and provide a secure seal.

### Pressure compensation element PCE 12

Pressure compensation element PCE 12 to avoid water condensation in highly sealed enclosures. For use in cable grommets KT 12 in combination with cable entry frames KEL-ER or cable glands KVT-ER.

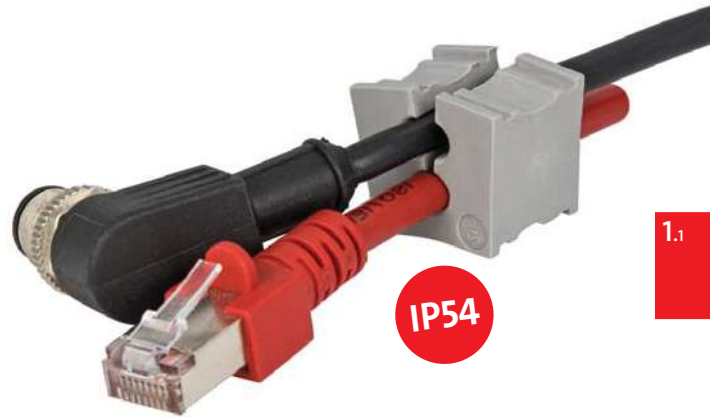


Description	Type	Order No grey	Order No black	Clamping range	PU
	BTK	41251	41351	Blank grommet	10
BTK	KT 1	39941	39943	1 - 2 mm	10
	KT 2	39934	41302	2 - 3 mm	10
	KT 3	41203	41303	3 - 4 mm	10
	KT 4	41204	41304	4 - 5 mm	10
	KT 5	41205	41305	5 - 6 mm	10
KT round	KT 6	41206	41306	6 - 7 mm	10
	KT 7	41207	41307	7 - 8 mm	10
	KT 8	41208	41308	8 - 9 mm	10
	KT 9	41209	41309	9 - 10 mm	10
	KT 10	41210	41310	10 - 11 mm	10
	KT 11	41211	41311	11 - 12 mm	10
	KT 12	41212	41312	12 - 13 mm	10
	KT 13	41213	41313	13 - 14 mm	10
	KT 14	41214	41314	14 - 15 mm	10
	KT 15	41215	41315	15 - 16 mm	10
	KTs 16	39901	39912	16 mm	10
	KTs 17	39900	39913	17 mm	10
Pressure compensation element PCE 12					
NEW	PCE 12 with KT 12	99192	99194	-	5
NEW	PCE 12	99190		-	5

\*Only valid for grey product types

# KT

## Grommets, small, multi & special grommets



1.1

Description	Type	Order No grey	Order No black	Clamping range	PU
KT 2 x	KT 2 1	39942	39944	2x ø 1 mm	10
	KT 2 2	39935	39936	2x ø 2 mm	10
	KT 2 3	39939	39940	2x ø 3 mm	10
	KT 2 4	39906	39907	2x ø 4 mm	10
KT 4 x	KT 2 5	41200	39904	2x ø 5 mm	10
	KT 2 6	41201	39905	2x ø 6 mm	10
	KT 2 7	41202	39916	2x ø 7 mm	10
	KT 2 8	39917	39918	2x ø 8 mm	10
KT ASI2 r	KT 4 2	39937	39938	4x ø 2 mm	10
	KT 4 3	39914	39915	4x ø 3 mm	10
	KT 4 4	39909	39911	4x ø 4 mm	10
KT ASI2 ll	KT 4 5	39908	39910	4x ø 5 mm	10
	KT 4 6	39932	39933	4x ø 6 mm	10
KT oval	KT-ASI	39902	39903	1 ASI-cable	10
	KT-ASI2 r	39922	39924	2 ASI-cables	10
	KT-ASI2 ll	39921	39923	2 ASI-cables	10
KT S1	KT oval	39930	-	approx. 8 x 4 mm	10
	KT tele	39931	-		10
KT tele1	KT tele	39929	-	Telephone cable	10
	KT tele1	41257	-	Data cable RJ12	10
KT tele2	KT tele2	41258	-	Data cable RJ10 / RJ45	10

\*Only valid for grey product types

### Specifications KT grey

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	KT round, single: up to IP66/IP68 KT round, multi: IP54 KT special, multi: IP54
UL type rating	up to UL type 4X (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free

### Specifications KT black

Material	Elastomer
Flame class	UL94-HB
IP rating	KT round, single: up to IP66/IP68 KT round, multi: IP54 KT special, multi: IP54
Temperature	- 30°C to + 90°C (static)
Properties	Higher chemical resistance

### Specifications PCE 12

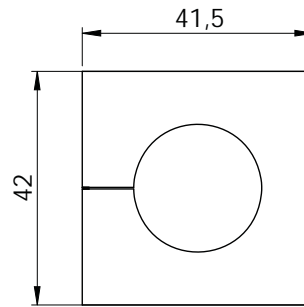
Material	Polyamide 6
	Membrane: Polyacrylate
IP rating	IP65
Temperature	- 30°C to + 90°C (static)
Air flow	ΔP = 70 mbar, min. 50 l/h

### Accessories

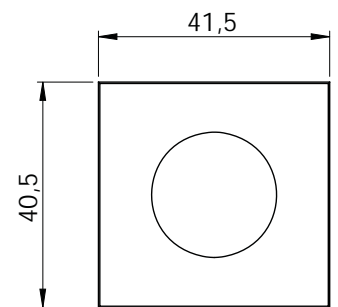
ST Plugs 53

# KT

## Grommets, large



KT / KT-DPF large



KTMB large

### Product description

Cable grommets KT large accept a wide range of cable diameters from 16 to 35 mm. They are used with the cable entry frames & cable glands of product groups 1.11 & 1.12.




ATG adapter grommets provide the possibility to hold a small KT grommet to reduce the clamping range down to 1 mm.

#### Specifications KT grey

**Material** Elastomer  
**Flame class** UL94-Vo, self-extinguishing  
**IP rating** KT round, single: up to IP66/IP68  
 ATG/BTG: IP54  
**UL type rating** up to UL type 4X (acc. to UL 50E)  
**Temperature** - 40°C to + 90°C (static)  
**Properties** Halogen-free, silicone-free

#### Specifications KT black

**Material** Elastomer  
**Flame class** UL94-HB  
**IP rating** KT round, single: up to IP66/IP68  
 ATG/BTG: IP54  
**Temperature** - 30°C to + 90°C (static)  
**Properties** Higher chemical resistance

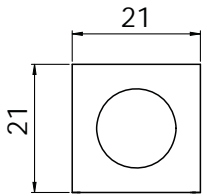
Description	Type	Order No. grey	Order No. black	Clamping range	PU
	ATG	41253	41353	Adapter grommet	10
	BTG	41252	41352	Blank grommet or 5 - 20 mm	10
	KT 16	41216	41316	16 - 17 mm	10
	KT 17	41217	41317	17 - 18 mm	10
	KT 18	41218	41318	18 - 19 mm	10
	KT 19	41219	41319	19 - 20 mm	10
	KT 20	41220	41320	20 - 21 mm	10
	KT 21	41221	41321	21 - 22 mm	10
	KT 22	41222	41322	22 - 23 mm	10
	KT 23	41223	41323	23 - 24 mm	10
	KT 24	41224	41324	24 - 25 mm	10
	KT 25	41225	41325	25 - 26 mm	10
	KT 26	41226	41326	26 - 27 mm	10
	KT 27	41227	41327	27 - 28 mm	10
	KT 28	41228	41328	28 - 29 mm	10
	KT 29	41229	41329	29 - 30 mm	10
	KT 30	41230	41330	30 - 31 mm	10
	KT 31	41231	41331	31 - 32 mm	10
	KT 32	41232	41332	32 - 33 mm	10
	KT 33	41233	41333	33 - 34 mm	10
	KT 34	41234	41334	34 - 35 mm	10

\*Only valid for grey product types



# KT-DPF | KTMB

## Grommets, multi-range



KT-DPF / KTMB small



KT-DPF-B



1.1

Description	Type	Order No.	Size KT	Clamping range	PU													
 KT-DPF-A	■ 41260 ■ 41360	41260	KT small	3 - 12 mm	10													
						■ 41261 ■ 41361	41261	KT large	4 - 18 mm	10								
 KT-DPF-C	■ 41262 ■ 41362	41262	KT large	14 - 26 mm	10													
						 KTMB-D   Cross section KTMB	■ 41432 ■ 41434 ■ 41436 ■ 41438 ■ 41440	41432	KT small	2.5 - 6.5 mm	10							
 KTMB-G   KTMB-H   KTMB-I   KTMB-K	41434	KT small	4 - 7.5 mm	10														
					41436							KT small	6.5 - 10 mm	10				
															41438	KT small	9.5 - 13 mm	10
						41460	KT large	13 - 18 mm	10									
41465	KT large	18 - 23 mm	10															
				41470	KT large					23 - 28 mm	10							
												41475	KT large	28 - 33 mm	10			
																41480	KT large	2x 13 - 18 mm

### Product description

The KT-DPF / KTMB grommets accept a wide range of cable diameters. A great benefit when the exact cable diameter is not known in advance. The KTMB grommets are not split and therefore only usable for cables without connectors. Cutting of KT-DPF grommets: Cable diameter less 20%.

### ■ Specifications grey

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free

### ■ Specifications black

Material	Elastomer
Flame class	UL94-HB
IP rating	IP54
Temperature	- 30°C to + 90°C (static)
Properties	Higher chemical resistance

### KMS Cable template

The correct size of the KT grommets can easily be determined by using the stainless steel cable template.

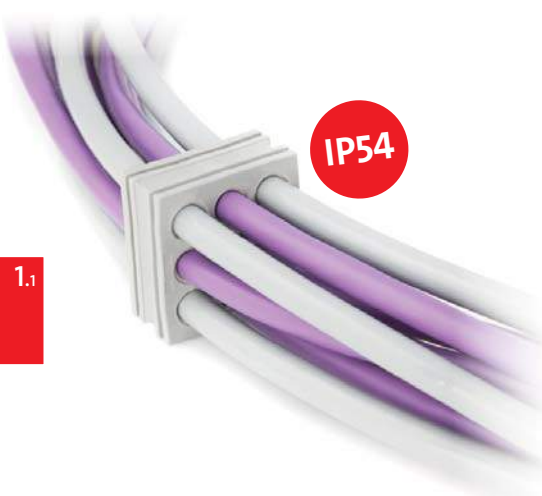
- Determining the diameter of the cable using the cable template
- Selecting the KT grommets according to the data on the cable template

**Order No. 39800**


\*Only valid for grey product types

# DT

## Membrane cable grommets



1.1

### Product description

The DT cable grommets are designed for cables without preassembled connectors. A large number of cables can be routed utilising minimal space.

DT 1 - DT 5 grommets are designed to fit in KT large grommet spaces. DT 7 & DT 8 grommets are designed to fit in KT small grommet spaces.

The DT grommets are also perfectly suitable for the assembly of subsequently terminated cable harnesses.

### Advantages & benefits

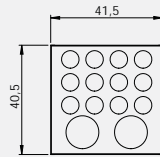
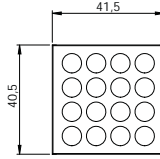
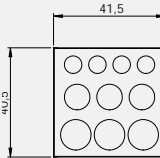
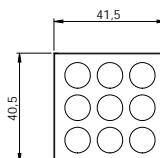
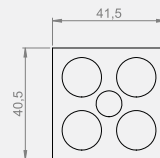


- Combination of routing pre-terminated cables and cables without connectors with one cable entry frame
- Enables sub-assembly of cable harnesses
- High cable density

### Specifications

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free

### Accessories

ST-B Plugs 85

Description	Type	Order No.	Number of cables	PU
	DT 1	41500	12× max. 6.5 mm 2× max. 12.2 mm	10
	DT 2	41510	16× max. 7.1 mm	10
	DT 3	41520	4× max. 6.5 mm 3× max. 9.5 mm 3× max. 11.3 mm	10
	DT 4	41530	9× max. 9.5 mm	10
	DT 5	<b>NEW</b> 41540	4× max. 14.5 mm 1× max. 9.5 mm	10
	DT 7	<b>NEW</b> 41550	4× max. 6 mm	10
	DT 8	<b>NEW</b> 41552	2× max. 7 mm 2× max. 4 mm	10

# ST Plugs for cable grommets



1.1

1.2

Description	Type	Order No.	Diameter D	Length L	PU
	ST 1	42900	1 mm	25 mm	25
	ST 2	42909	2 mm	25 mm	25
	ST 3	42901	3 mm	25 mm	25
	ST 4	42908	4 mm	25 mm	25
	ST 5	42906	5 mm	25 mm	25
	ST 6	42903	6 mm	25 mm	25
	ST 7	42905	7 mm	25 mm	25
	ST 8	42899	8 mm	20 mm	25
	ST 9	42897	9 mm	20 mm	25
	ST 10	42895	10 mm	20 mm	25
	ST 11	42893	11 mm	20 mm	25
	ST 12	42891	12 mm	20 mm	25
	ST 13	42889	13 mm	20 mm	25
	ST 14	42887	14 mm	20 mm	25
	ST 15	42885	15 mm	20 mm	25
	ST 16	42883	16 mm	20 mm	25
	ST 17	42881	17 mm	20 mm	25
ST ASI	42877	-	25 mm	25	

## Product description

Plugs are used to close either KT or QT grommets which are not equipped with cables. IP ratings of the grommets remain.

Perfect for applications where cables have been removed or might be routed at a later stage.

## Advantages & benefits

- Sealing unused cable grommets

## Specifications

Material	Polyamide (PA), white
Flame class	UL94-Vo, self-extinguishing
IP rating	IP rating of grommets remains
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 120°C
Properties	Halogen-free, silicone-free

## Compatible with

KT Cable grommets	48 - 50
QT Cable grommets	66

# 1.21 Split cable entry frames for the QT grommet system



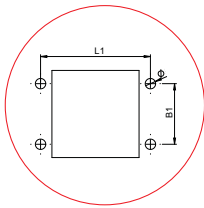
With the new version of the compact, split cable entry system KEL-QUICK icotek released a highly efficient and cost-effective possibility for pass-through and IP54 sealing of cables with or without connectors, conduits and pneumatic hoses.

Slit cable grommets of the QT series are used for routing lines with diameters of 1 - 15 mm within the KEL-QUICK. In addition, there are multi-hole grommets for up to 4 lines per slot and special grommets e.g. for ASI cables.

The cable entry system KEL-QUICK is an outstanding alternative to cable glands. Especially for applications that do not necessarily require standard-compliant strain relief acc. to EN 62444, the KEL-QUICK is the perfect solution.

After equipping the frame with the cables or hoses, the cover lid of the KEL-QUICK is simply snapped onto the frame. A fast and easy assembly is the biggest benefit when using the QUICK series - and when used with the KEL-SNAP frame, mounting without the need of tools is possible.

1.21



Cut-outs according to industrial standard dimensions



Warranty on pre-terminated cables remains



High cable density, wide variety



Fast and easy assembly

Split system

## Product range



KEL-QUICK

KEL-QUICK-E

## Chapter content 1.21



**Split cable entry frames**  
for cable diameters up to 15 mm

KEL-QUICK 24 / KEL-QUICK 16 /  
KEL-QUICK 10 / KEL-QUICK-B

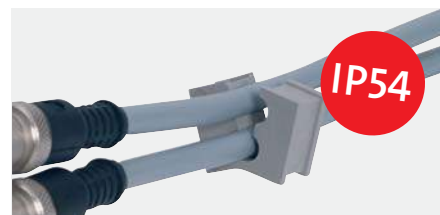
**56**



**Split cable entry frames, single row**  
for cable diameters up to 15 mm

KEL-QUICK-E5 / KEL-QUICK-E4 /  
KEL-QUICK-E3 / KEL-QUICK-E2

**57**



**Grommets**  
for cables with/without connectors,  
cable diameter range 1 - 15 mm

QT / QT ServiceBox

**66 - 67**

# KEL-QUICK

Cable entry frames for quick assembly



IP54



Cover lid is simply snapped onto the frame.



Tool-free mounting with KEL-SNAP frame.



Slit QT grommets

## Product description

The KEL-QUICK range is a compact system to route and seal pre-terminated cables as well as conduits or pneumatic hoses utilising split QT grommets. After populating the entry frame with QT grommets and cables, the cover lid is snapped onto the frame without using tools. The KEL-QUICK frames match exactly the cut-out dimensions for 24-, 16- and 10-pin standard industrial connectors. The KEL-QUICK-B matches cut-out dimensions of 36×46 mm. KEL-QUICK frames can either be screw mounted or simply snapped into the KEL-SNAP frame. A flat rubber gasket is included in the shipment.

## Advantages & benefits

- Fast and easy assembly and when used with the KEL-SNAP frame, mounting without tools possible
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets

## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Drilling template	See Page 218 - 219
Frame depth	17 mm

## Accessories

QT Cable grommets	66
KEL-SNAP Mounting frames	31
KEL-EMC Cable collectors	138 - 140
KDR Base plates	164 - 177
FP Flange plates	178 - 183
MP Module plates	174 - 175
ST Plugs	53

Description	Type	Order No.	Cut-out [mm]	Grommets	PU
	KEL-QUICK 24 10	42410	36 × 112	10 QT	10
	KEL-QUICK 16 8	42418	36 × 86	8 QT	10
	KEL-QUICK 10 6	42420	36 × 65	6 QT	10
	KEL-QUICK-B4	42434	36 × 46	4 QT	10



# KEL-QUICK-E

## Cable entry frames for quick assembly



Cover lid is simply snapped onto the frame.



Slit QT grommets



IP54

1.21

Description	Type	Order No.	Cut-out [mm]	Grommets	PU
	KEL-QUICK-E5	42424	24 × 112	5 QT	10
	KEL-QUICK-E4	42423	24 × 86	4 QT	10
	KEL-QUICK-E3	42422	24 × 65	3 QT	10
	KEL-QUICK-E2	42421	24 × 43	2 QT	10

### Product description

The KEL-QUICK-E range is a compact single row system to route and seal pre-terminated cables as well as conduits or pneumatic hoses utilising split QT grommets. The KEL-QUICK-E version is particularly suited for flat connectors. The small frame is ideal for applications with limited space.

After populating the entry frame with QT grommets and cables, the cover lid is snapped onto the frame without using tools. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Fast and easy assembly by locking the frame without tools
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free
Drilling template	See Page 218 - 219
Frame depth	17 mm

### Accessories

QT Cable grommets	66
KEL-EMC Cable collectors	138 - 140
ST Plugs	53

# 1.22 Split cable glands for the QT grommet system

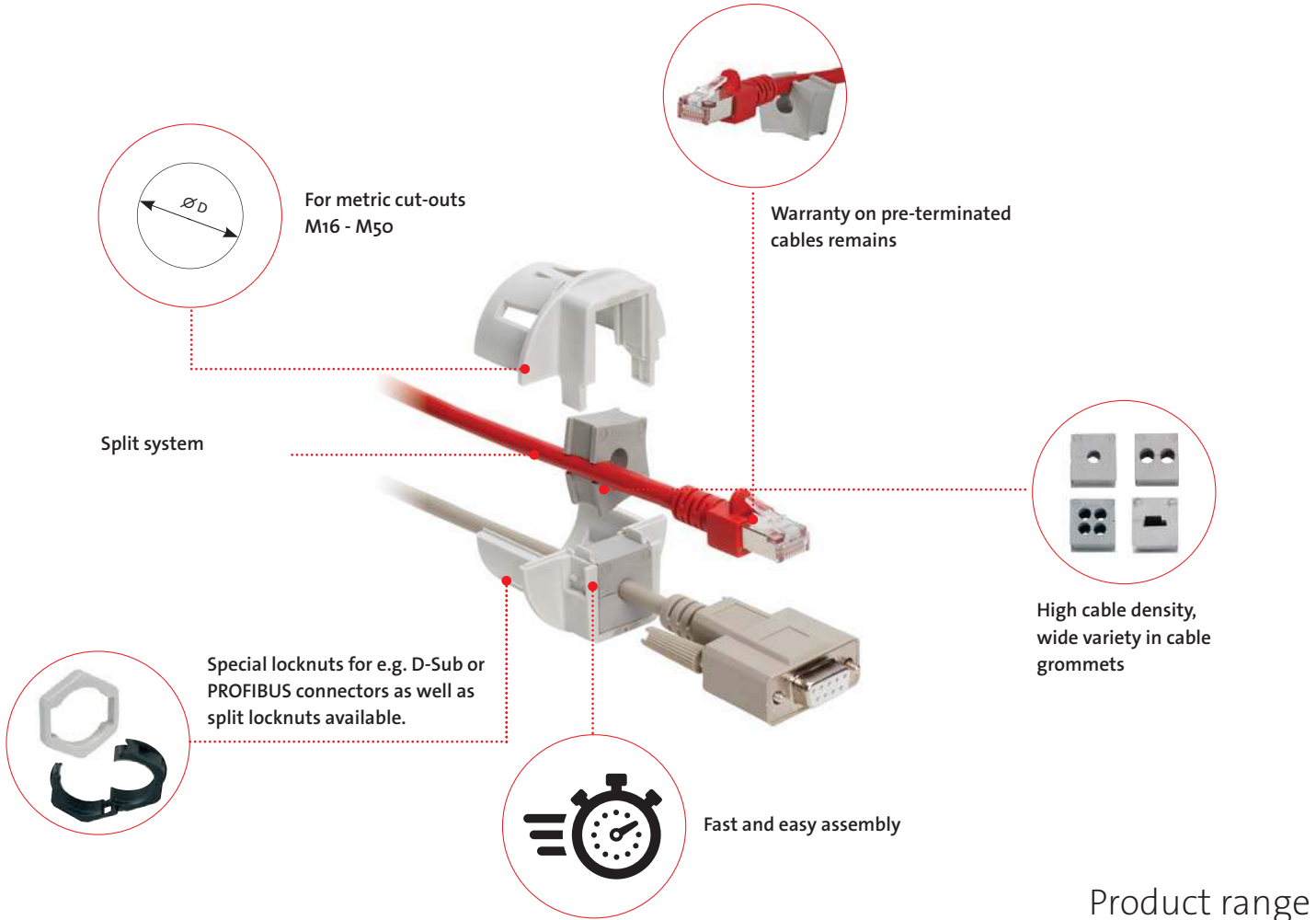


By using split QVT cable glands by icotek cables with or without connectors or complete cable harnesses with diameters from 1 to 15 mm can be quickly routed into enclosures, cabinets or machines and be sealed with IP54 rated ingress protection.

two gland halves can be easily snapped together without the need of tools. The routed lines are securely sealed and held inside the grommets. To mount the cable glands either snap it into the round metric standard cut-out (sizes available from M16 to M50) or screw it with a hexagonal locknut. The mounting method is dependent on the model type.

The split system of the QVT cable glands enables quick and easy assembly which is great for retrofitting and maintenance. The cable is placed into the slit grommet which is set into one of the gland halves. Depending on the size of the cable gland one, two or four separate grommets can be installed. The

1.22



## Product range



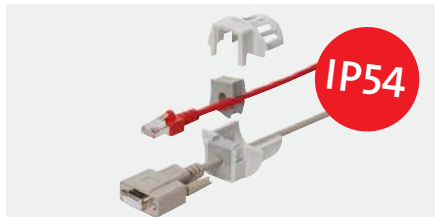
## Chapter content 1.22



**Split cable glands**  
M16 - M50, for cable diameters up to 15 mm

QVT

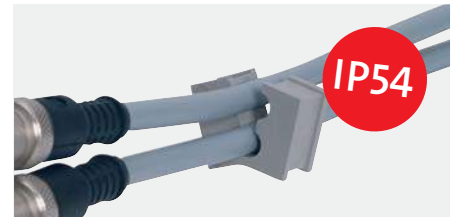
**60**



**Split pluggable cable glands**  
M20 - M40, for cable diameters up to 15 mm

QVT-CLICK

**61**



**Grommets**  
for cables with/without connectors,  
cable diameter range 1 - 15 mm

QT / QT ServiceBox

**66 - 67**

# QVT

## Split cable glands



### Product description

QVT is a circular split frame for quick and easy installation of pre-terminated cables or complete cable harnesses. Because of its extremely compact design, the QVT range is especially suitable for small machines, devices and instruments.

Polyamide locknuts as well as a sealing ring are included in the shipment.

### Advantages & benefits

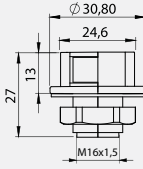
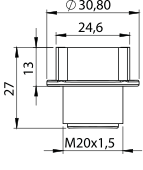
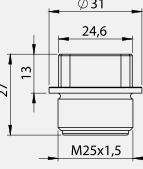
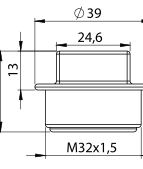
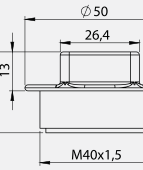
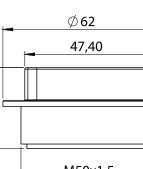
- Compact design
- Routing of pre-terminated cables
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Suitable for metric hole sizes
- Locknut is included

### Specifications

Material	Polycarbonate (PC)
Colour	grey (similar RAL 7035)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 30°C to + 100°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric sizes

### Accessories

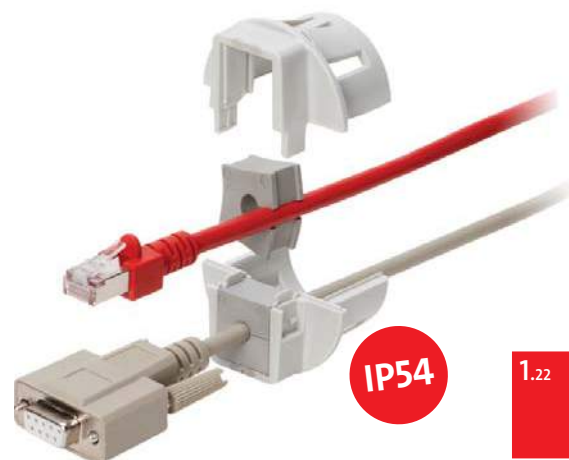
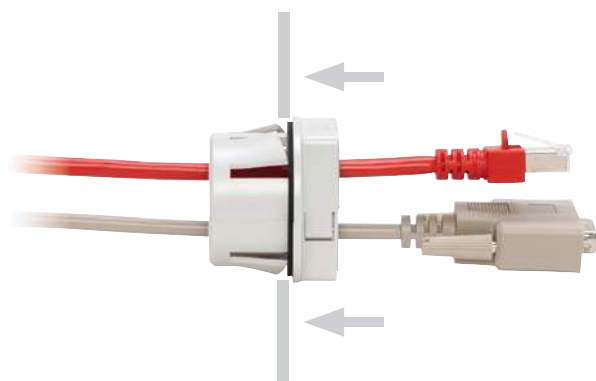
QT Cable grommets	66
KVT-EMC Brackets	141
KGM Locknuts	188 - 189
ST Plugs	53

Description	Type	Order No.	Cable Grommets	Thread Thread length	PU
	QVT 16*	45692	1 × QT	M16 × 1.5 Length: 13 mm	10
	QVT 20	45695	1 × QT	M20 × 1.5 Length: 13 mm	10
	QVT 25	45702	1 × QT	M25 × 1.5 Length: 13 mm	10
	QVT 32	45711	1 × QT	M32 × 1.5 Length: 13 mm	10
	QVT 40 2	45715	2 × QT	M40 × 1.5 Length: 13 mm	10
	QVT 50 4	45722	4 × QT	M50 × 1.5 Length: 13 mm	10

\* Max. cable diameter of 10 mm

# QVT-CLICK

## Split pluggable cable glands



### Product description

QVT-CLICK is a circular split frame for quick and easy installation of pre-terminated cables or complete cable harnesses. The QVT-CLICK can be assembled without tools from the front side of the enclosure wall. Because of its extremely compact design, the QVT-CLICK range is especially suitable for small machines, devices and instruments. A sealing ring is included in the shipment.

The QVT-CLICK Tool for quick and easy mounting.  
**Order No. 61435** (PU: 1)



### Advantages & benefits

- Fast and easy mounting from the front side
- Compact design
- Routing of pre-terminated cables
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Warranty on pre-terminated cables remains
- Fast and easy assembly
- For wall thickness 1.5 - 2.5 mm

### Specifications

Material	Polycarbonate (PC)
Colour	grey (similar RAL 7035)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature Properties	- 30°C to + 100°C (static) Halogen-free, silicone-free

### Accessories

QT Cable grommets	66
QVT-CLICK Tool	Order No. 61435
ST Plugs	53

Description	Type	Order No.	Cable Grommets	Cut-out* diameter	PU
	QVT-CLICK 25	45730	1 × QT	25.5 mm	10
	QVT-CLICK 32	45732	1 × QT	32.5 mm	10
	QVT-CLICK 40 2	45734	2 × QT	40.5mm	10
	QVT-CLICK Tool	61435	Mounting tool		1

\*Please consider any paint layers or powder coatings!

# 1.23 Split cable entry plates for the QT grommet system



KEL-QTA are puggable and split IP54 cable entry plates for wall thicknesses from 1,5 to 4 mm. icotek offers several versions for rectangular standard cut-outs as well as for round metric cut-outs. The QTA system offers a large size variety.

Slit cable grommets of the QT series are used for routing pre-connectorised lines with diameters of 1 - 15 mm within the KEL-QTA. In addition, there are multi-hole grommets for up to 4 lines per slot and special grommets e.g. for ASI cables.

KEL-QTA enable cable routing with or without preassembled connectors. Some types offer a combination of membranes for cable pass-through and the QT grommet system.

1.23

**For metric cut-outs M20 - M50**

**Warranty on pre-terminated cables remains**

**High cable density, wide variety in cable grommets**

**Fast and easy assembly**

**Cut-outs according to industrial standard dimensions**

**Split system**

## Product range



KEL-QTA 24/10/-B

KEL-QTA 32/50

KEL-QTE 20



## Chapter content 1.23



**Split cable entry plates**  
pluggable, for cable diameters up to 15 mm

KEL-QTA 24 / KEL-QTA 10 / KEL-QTA-B /  
KEL-QTA round

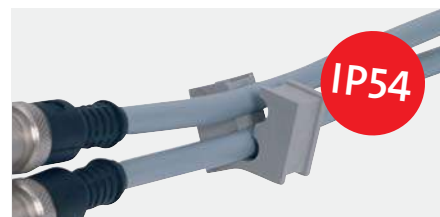
**64**



**Split cable entry plates**  
pluggable, for cable diameters up to 5.2 mm

KEL-QTE

**65**



**Grommets**  
for cables with/without connectors,  
cable diameter range 1 - 15 mm

QT / QT ServiceBox

**66 - 67**

# KEL-QTA

## Split cable entry plates



### Product description

The KEL-QTA easily routes pre-terminated cables, multi-conductors, hoses or conduits without using any tools for assembly.

### Advantages & benefits

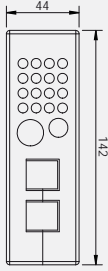
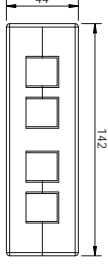
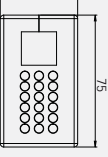
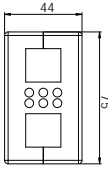
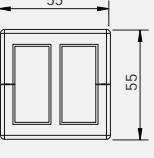
- Quick assembly without tools
- High cable density by using multi-position grommets
- Simple assembly and disassembly in case of change or service
- Routing of cables with and without connectors in a high density
- Suitable for standard industrial connector cut-outs

### Specifications

**Material** Elastomer  
**Flame class** UL94-Vo, self-extinguishing  
**IP rating** IP54, with correct selection of the cable grommets QT  
**Temperature** - 40°C to + 90°C (static)  
**Properties** Halogen-free, silicone-free  
**Type A:** For wall thickness 1.5 - 2.5 mm  
**Type B:** For wall thickness 2.8 - 4 mm

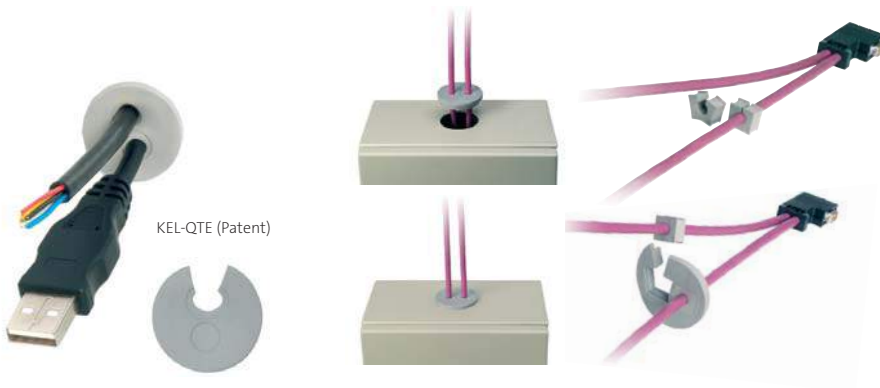
### Accessories

QT Cable grommets 66  
 ST-B Plugs 85  
 FP Flange plates 178 - 183

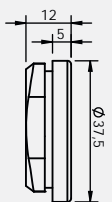
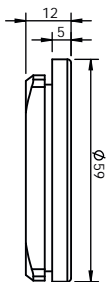

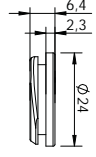
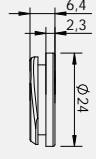
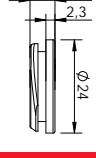
Description	Type	Order No. Type A	Order No. Type B	Cut-out [mm]	Cables	PU
	KEL-QTA 24 2 -DP 18	43642	43643	112 × 36	pre-terminated 2 × 1 - 15 mm without connector 16 × max. 7 mm 1 × max. 12 mm 1 × max. 16 mm	10
	KEL-QTA 24 4	43644	43645	112 × 36	pre-terminated 4 × 1 - 15 mm	10
	KEL-QTA 10 1 -DP 18	43655	43658	65 × 36	pre-terminated 1 × 1 - 15 mm without connector 18 × max. 5 mm	10
	KEL-QTA 10 2 -DP 6	43656	43659	65 × 36	pre-terminated 2 × 1 - 15 mm without connector 6 × max. 5 mm	10
	KEL-QTA-B4	43660	-	46 × 46	pre-terminated 4 × 1 - 15 mm	10

# KEL-QTA | KEL-QTE

## Split cable entry plates



1.23

Description	Type	Order No. Type A	Order No. Type B	Cut-out [mm]	Cables		PU
					pre-terminated	non-pre-term.	
	KEL-QTA 32	43632	43636	∅ 32	1x 1 - 15 mm	-	10
	KEL-QTA 50	43622	43626	∅ 50	2x 1 - 15 mm	-	10
	KEL-QTE 20 2.5	43412	-	∅ 20	1x 2.6 - 3.2 mm	1x max. 5.2 mm	10
	KEL-QTE 20 3	43413	-	∅ 20	1x 3.1 - 3.8 mm	1x max. 5.2 mm	10
	KEL-QTE 20 4	43414	-	∅ 20	1x 3.8 - 4.8 mm	1x max. 5.2 mm	10
	KEL-QTE 20 5	43415	-	∅ 20	1x 4.7 - 5.6 mm	1x max. 5.2 mm	10

### Product description

The KEL-QTA easily routes pre-terminated cables, multi-conductors, hoses or conduits without using any tools for assembly.

### Advantages & benefits

- Fast and easy assembly without tools
- Increased cable density by using multi-position grommets
- Simple assembly and disassembly in case of change or service
- Routing of cables with and without connectors in a high density

### Specifications

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating (QTA)	IP54, with correct selection of the cable grommets (QT single)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric sizes

Type A: For wall thickness 1.5 - 2.5 mm  
 Type B: For wall thickness 2.8 - 4 mm

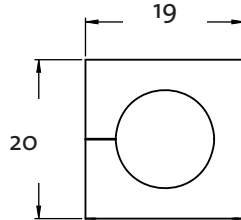
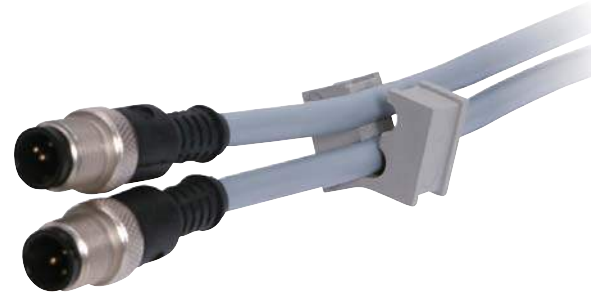
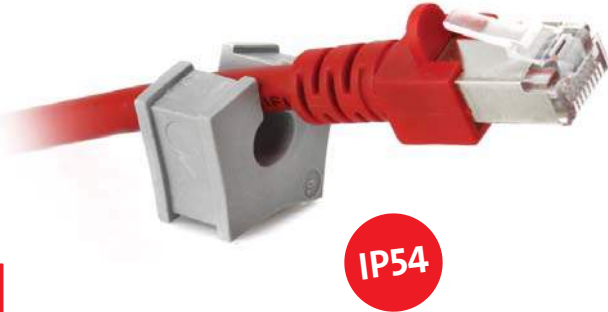
### Accessories

QT Cable grommets	66
ST Plugs	53

# QT

## Cable grommets

1.2



### Product description

The QT range supports cable diameters from 1 to 15 mm. They are used with cable entry frames and cable glands of product groups 1.21, 1.22 & 1.23.

### Assembly note

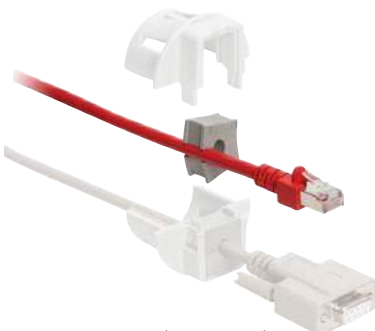
When installing the grommets, the flat side should be facing the middle of the frame. This allows the flat sides of adjacent grommets to match up and provide a secure seal.

### Specifications

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54
Temperature	- 40°C to+ 90°C (static)
Properties	Halogen-free, silicone-free

### Accessories

ST Plugs 53



QT grommet in combination with QVT-CLICK

Description	Type	Order No. grey	Clamping range	PU
	QT B	42540	Blank grommet	10
	QT 1	42501	1 - 2 mm	10
	QT 2	42502	2 - 3 mm	10
	QT 3	42503	3 - 4 mm	10
	QT 4	42504	4 - 5 mm	10
	QT 5	42505	5 - 6 mm	10
	QT 6	42506	6 - 7 mm	10
	QT 7	42507	7 - 8 mm	10
	QT 8	42508	8 - 9 mm	10
	QT 9	42509	9 - 10 mm	10
	QT 10	42510	10 - 11 mm	10
	QT 11	42511	11 - 12 mm	10
	QT 12	42512	12 - 13 mm	10
	QT 13	42513	13 - 14 mm	10
	QT 14	42514	14 - 15 mm	10
	QT-ASI 1	42573	1x ASI-cable	10
	QT-ASI 2	42574	2x ASI-cable	10
	QT tele	42575	Telephone cable	10
	QT 2 3	42566	2x ø 3 mm	10
	QT 2 4	42568	2x ø 4 mm	10
	QT 2 5	42570	2x ø 5 mm	10
	QT 2 x	42571	2x ø 5.5 mm	10
	QT 2 6	42572	2x ø 6 mm	10
	QT 2 6.5	42576	2x ø 6.5 mm	10
	QT 2 7	42578	2x ø 7 mm	10
	QT 4 x	42580	4x ø 3 mm	10
	QT 4 4	42582	4x ø 4 mm	10
	QT 4 4.5	42583	4x ø 4.5 mm	10
	QT 4 5	42584	4x ø 5 mm	10
	QT 4 5.5	42585	4x ø 5.5 mm	10
	QT 4 6	42586	4x ø 6 mm	10

# QT ServiceBox

Service box for cable grommets



1.2

## Product description

**Convenient - everything available right away!**

The QT ServiceBox is perfect for installations and service calls. It ensures your QT grommets are readily available.

**Order No. 88005**

## Content\*

### Cable grommets:

- 210 QT for cables 1 - 15 mm
- 10 QTB blank grommets

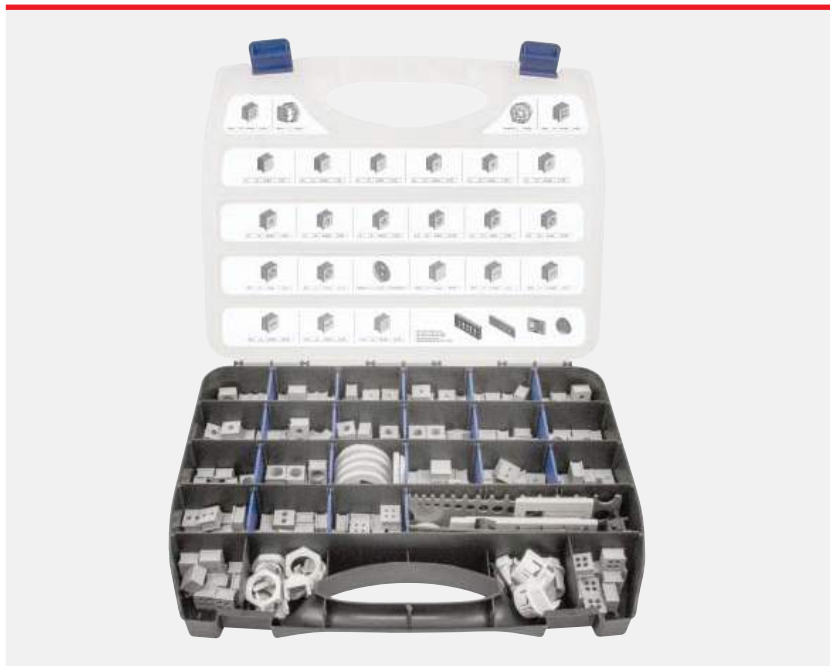
### Cable entry components:

- 5 KEL-QTA 50 A cable entry plates
- 1 KEL-QTA 32 A cable entry plate
- 1 KEL-QTA 24|2-DP 18 A cable entry plate
- 1 KEL-QTA 10|1-DP 18 A cable entry plate
- 1 KEL-QUICK 24|10 cable entry frame
- 1 QVT 25 split cable gland
- 1 QVT-CLICK 32 split cable gland

### Accessories:

- 1 Cable template

\* Subject to alterations



## KMS Cable template



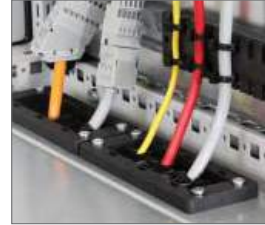
The correct size of the QT grommets can easily be determined by using the cable template

- Determining the diameter of the cable using the cable template
- Selecting the QT grommets according to the data on the cable template

Cable templates can also be ordered separately. **Order-No. 39800**

# KEL-BES

## Brush plate for cable pass-through



Suitable for control panel construction ...



... as well as for energy and building technology.

1.3

### Product description

Brush plates KEL-BES for routing cables into server racks, control panels and electrical enclosures. KEL-BES is also an ideal solution for entry and exit of cables that are routed inside raised floors, e.g. in computer centres. The brush plates can either be mounted via screws or via expanding rivets.

The KEL-BES plates match exactly the cut-out dimensions for 10-, 16- or 24-pin standard industrial connectors.

### Advantages & benefits

- Fast and easy assembly (optional without screws)
- Versatile utilisation
- Allows reduced airflow while filtering out dust, hair and larger particulate matter
- Visual screening
- Protects cables against wear due to sharp edges of the cut-out

### Specifications

Material      **Frame, rectangular: Polyamide (PA)**  
                   **(Flame class UL94-Vo)**  
                   **Brushes: Polyamide (PA)**  
                   **Brush profile: sheet steel, zinc plated**

Temperature    **- 20°C to + 90°C**

Properties        **Halogen-free, silicone-free**

Frame depth    **10 mm**

### Accessories

KEL-EMC-PF Cable collectors    139

Description	Type	Order No.	Cut-out	PU
	KEL-BES 24	51515	36 x 112 mm	10
	KEL-BES 16	51510	36 x 86 mm	10
	KEL-BES 10	51505	36 x 65 mm	10
	Expanding rivets	99153	For wall thickness 1-4 mm	100



# KEL-BES-S

## Split brush plate for cable pass-through



Screw mounting or mounting via expanding rivets possible.



Round version with M50 thread for locknut or snap-in mounting.



Description	Type	Order No.	Cut-out	PU
	KEL-BES-S 24  <b>NEW</b> KEL-BES-S 24 with expanding rivets	51522  51522.002	36 x 112 mm  36 x 112 mm	10  10
	KEL-BES-S 16  <b>NEW</b> KEL-BES-S 16 with expanding rivets	51521  51521.002	36 x 86 mm  36 x 86 mm	10  10
	KEL-BES-S 10  <b>NEW</b> KEL-BES-S 10 with expanding rivets	51520  51520.002	36 x 65 mm  36 x 65 mm	10  10
	Expanding rivets	99153	For wall thickness 1-4 mm	100
	KEL-BES-S 50	51540	M50 x 1.5 Snap-in function for wall thickness 1 - 2.5 mm	10
	KEL-BES-S 32	51538	M32 x 1.5 Snap-in function for wall thickness 1 - 2.5 mm	10

### Product description

Split brush plates KEL-BES-S for routing cables into server racks, control panels and electrical enclosures. The brush plates can either be mounted via screws or via expanding rivets. Due to the split frame the KEL-BES-S can also be subsequently installed around the routed cables. The KEL-BES-S frames match exactly the cut-out dimensions for 10-, 16- or 24-pin standard industrial connectors.

For round metric cut-outs M32/M50 icotek offers the split KEL-BES-S 32/50. It can be either directly snapped into the cut-out or screwed with a locknut.

### Advantages & benefits

- Fast and easy assembly (optional without screws)
- Subsequent assembly possible
- Versatile utilisation
- Allows reduced airflow while filtering out dust, hair and larger particulate matter
- Visual screening
- Protects cables against wear due to sharp edges of the cut-out

### Specifications

Material	Frame, rectangular: Polyamide (PA) Frame, round: Polycarbonate (PC) (Flame class UL94-Vo) Brushes: Polyamide (PA) Brush profile: sheet steel, zinc plated
Temperature Properties	- 20°C to + 90°C
Frame depth	10 mm
Properties	Halogen-free, silicone-free

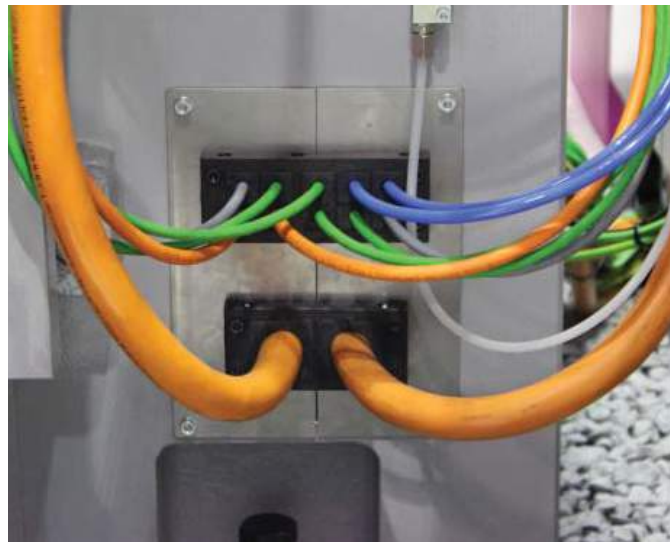
### Accessories

KEL-EMC-PF Cable collectors 139

## Typical applications

Cable entry systems for pre-terminated cables

1.1



**KEL-U 24|10** - Page 8 / **KEL-U 16|2** - Page 10

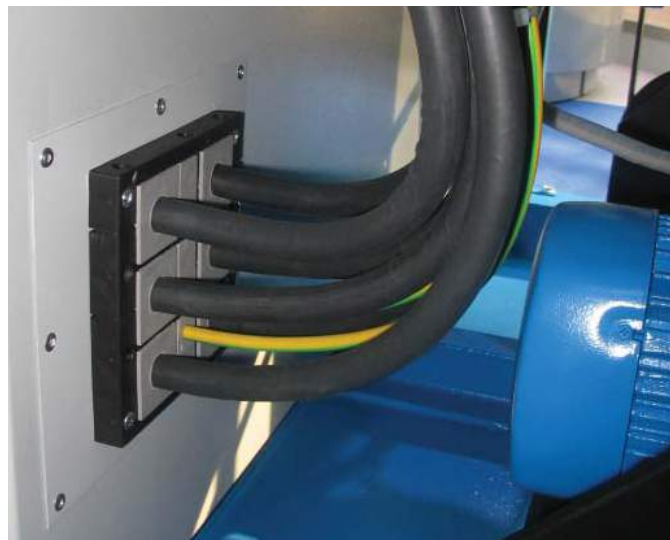
Routing of 12 cables with various diameters (some of them assembled with connectors) into the body of a grinding machine.

1.2



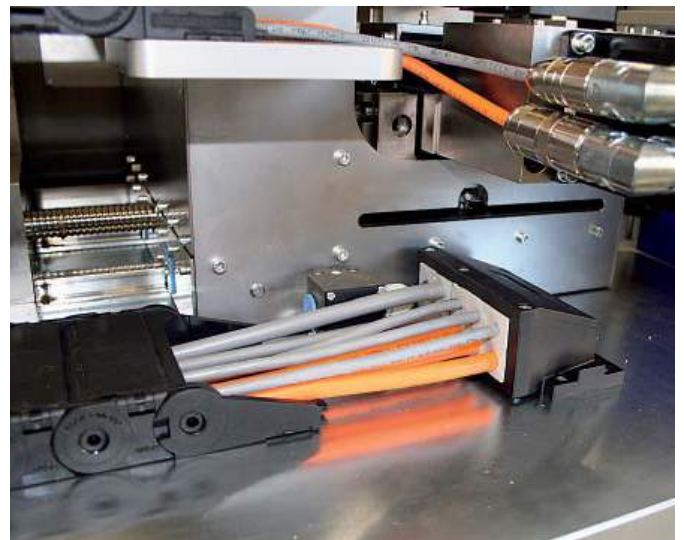
**KEL 16|8** - Page 10

Routing of several pre-terminated lines into the electrical enclosure of a tension measuring machine.



**KEL 24|12-2MT** - Page 24

Routing of 6 large cables up to 35 mm with one cable entry frame.



**KEL-FG A10** - Page 28

Used in combination with drag chains to provide strain relief and compact, high density cable entry into an integrated switch cabinet.



**KEL-JUMBO 2** - Page 36 / **KEL 24|x** - Page 18  
Routing of conduits and large cables between vehicle body and chassis



**KVT 50-W90** - Page 46  
Low profile 90 degree routing of a terminated cable from a control panel into the machine



**KEL-QUICK-B4** - Page 56  
Routing of cables with connectors into a control panel / IPC



**KEL-QUICK 24|10** - Page 56 / **KEL-SNAP 24** - Page 31  
Routing of corrugated conduits into an external enclosure of a construction machine. Tool-free mounting/unmounting with snap frame



# 2 Cable entry systems for cables without connectors



For routing cables without connectors icotek offers a wide range of products with a lot of advantages and benefits in comparison to conventional cable glands.

The compact, slim and innovative design of the membrane-based cable entry plates offer a professional appearance and high ingress protection ratings up to IP68 / UL type 4X.

Due to high cable densities especially suitable for applications where a lot of cables have to be entered through a small space.

For routing rigid large diameter cables icotek offers highly flexible conical cable entry grommets with high protection ratings.



# ProductFinder

Product	IP54	IP64	IP65	IP66	IP68	UL TYPE 12	UL TYPE 4X	Strain relief	Cable Ø mm min   max	Max. no. of cables	Page
KEL-DPU 24	■	■	■	■	■	■	■	■	3.2 - 20.5	32	76 - 77
KEL-DPZ 24	■	■	■	■		■		■	1.5 - 22	119	78 - 79
KEL-DPZ-B	■	■	■	■		■		■	3.2 - 22	25	80
KEL-DPZ-E	■	■	■	■		■		■	3.2 - 12	21	81
KEL-DPZ-KL	■	■	■			■		■	3.2 - 22	72	84
KEL-DPZ round	■	■	■	■	■	■	■	■	1.5 - 22.2	78	82 - 83
KEL-DP 24	■	■				■			max. 16.1	48	86
KEL-DP-E	■	■				■			max. 12.1	21	87
KEL-DP round	■	■	■			■			max. 22.5	35	88 - 89
KEL-DPF	■	■	■	■	■	■	■	■	3 - 70	1	92
KEL-JUMBO flex	■					■		■	27 - 68	1	94
KEL-ULTRA flex	■	■	■	■		■		■	25 - 115	1	93

Further details on certifications and technical specifications can be found on the product pages.

# 2.1 Cable entry plates for cables without connectors



**High cable density**

**Fast and easy, partially tool-free assembly**

**Compact, space-saving design**

**IP64 to IP68 rated protection, double cable sealing on front and back side (KEL-DPU / KEL-DPZ)**

**Many cut-outs acc. to industrial standard dimensions**

**For metric cut-outs M25 - M63 (KEL-DPZ / KEL-DP round)**

**Flexible clamping range**

## Product range



2.1



## Chapter content 2.1



Cable entry plates  
screw/snap-in mounting, high strain relief

KEL-DPU 24

76 - 77



Cable entry plates  
screw mounting, strain relief

KEL-DPZ 24

78 - 79



Cable entry plates  
screw mounting, strain relief

KEL-DPZ-B

80



Cable entry plates  
screw mounting, strain relief

KEL-DPZ-E

81



Cable entry plates, round  
with thread and locknut M32 - M63,  
strain relief

KEL-DPZ round

82 - 83



Cable entry plates  
screw mounting, strain relief

KEL-DPZ-KL

84



Cable entry plates  
plug-in mounting

KEL-DP 24

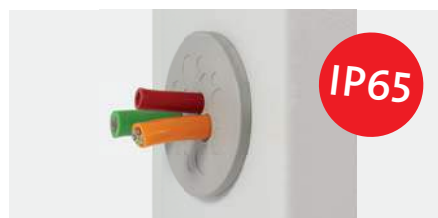
86 - 87



Cable entry plates  
plug-in mounting

KEL-DP-E

86 - 87



Cable entry plates, round  
plug-in mounting, M25 - M50

KEL-DP round

88 - 89



Plugs for membranes

ST-B

85

2.1

# KEL-DPU 24

Heavy-duty cable entry plates with high strain relief



**IP66** **IP68**



Also available in black.



Also available with threaded bushings.



Tool-free assembly possible due to snap-in function

## Product description

2.1

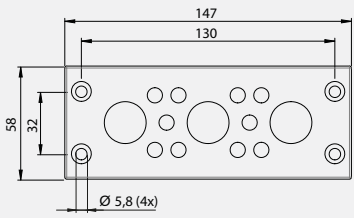
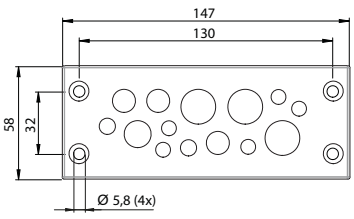
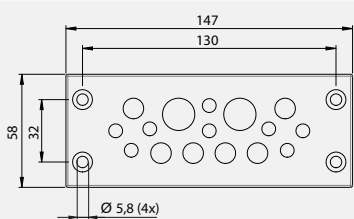
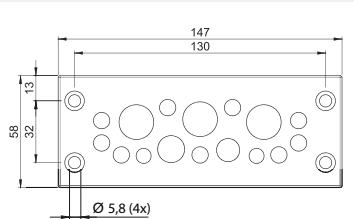
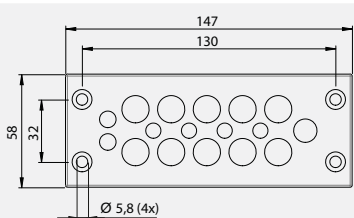
KEL-DPU entry plates are designed to route and seal cables without connectors (from 3.2 mm to 20.5 mm in diameter) in limited space with IP66 / IP68\*\* / up to UL type 4X ratings.

The KEL-DPU is particularly characterised by its solid robust frame and the increased strain relief of the routed cables.

The KEL-DPU 24 matches exactly the cut-out dimensions of 24-pin standard industrial connectors. For optional screw assembly just pierce the membranes on the integrated screw holes with the screw itself.

The assembly of the KEL-DPU with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane and push the cables through.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

Description	Type	Order No.	Number of cables	PU
	KEL-DPU 24 13	■ 43940 ■ 50940	10x 3.2 - 6.3 mm 3x 16 - 20.5 mm	10
	KEL-DPU 24 14	■ 43944 ■ 50944	5x 3.2 - 6.3 mm 2x 4 - 7.5 mm 3x 5.5 - 10.5 mm 1x 8 - 12.5 mm 3x 12 - 16.2 mm	10
	KEL-DPU 24 16	■ 43936 ■ 50936	8x 3.2 - 5.5 mm 6x 5 - 8.5 mm 2x 9.5 - 14.5 mm	10
	KEL-DPU 24 16-1	■ 43932 ■ 50932	2x 3.2 - 6.3 mm 9x 4 - 7.5 mm 1x 5.5 - 10.5 mm 1x 8 - 12.5 mm 3x 12 - 16.2 mm	10
	KEL-DPU 24 17	■ 43934 ■ 50934	4x 3.2 - 6.3 mm 2x 4 - 7.5 mm 1x 5.5 - 10.5 mm 10x 8 - 12.5 mm	10

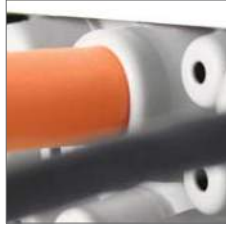
\* Only valid for grey product types | \*\* IP68 only when screw mounted

# KEL-DPU 24

## Heavy-duty cable entry plates with high strain relief



Membrane on front



Conical shape on back provides additional sealing and strain relief



Resistant against industrial detergents (ECOLAB certified)



Description	Type	Order No.	Number of cables	PU
	KEL-DPU 24 20	<ul style="list-style-type: none"> <li>■ 43938</li> <li>■ 50938</li> </ul>	<ul style="list-style-type: none"> <li>12× 3.2 - 5.5 mm</li> <li>8× 5 - 10.5 mm</li> </ul>	10
	KEL-DPU 24 21	<ul style="list-style-type: none"> <li>■ 43930</li> <li>■ 50930</li> </ul>	<ul style="list-style-type: none"> <li>1× 3.2 - 6.3 mm</li> <li>14× 4 - 7.5 mm</li> <li>4× 5.5 - 10.5 mm</li> <li>2× 8 - 12.5 mm</li> </ul>	10
	KEL-DPU 24 32	<ul style="list-style-type: none"> <li>■ 43942</li> <li>■ 50942</li> </ul>	32× 3.2 - 6.3 mm	10

\* Only valid for grey product types | \*\* IP68 only when screw mounted

### Advantages & benefits

- Snap or screw mounting possible
- High strength & stability
- High strain relief
- Fast and easy assembly
- High cable density
- Dual cable sealing with IP66/IP68\*\*/up to UL type 4X
- Hygienic design - free of dirt-collecting recesses

2.1

### Specifications

Material	Frame: Polypropylene (PP) Sealing plate: Elastomer
Colour	■ grey (similar RAL 7035) ■ black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66/IP67/IP68 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E) UL type 4X (acc. to UL 50E)
Temperature Properties	- 40°C to + 90°C (static) Halogen-free, silicone-free
Cut-out dimensions	36 × 112 mm / page 218 - 219
Plate depth	14 mm
For wall thickness (snap-in mounting)	1.5 - 2 mm

### Accessories

ST-B Plugs	85
KEL-EMC-PF Cable collectors	139
FP Flanged plates	178 - 183

# KEL-DPZ 24

## Cable entry plates



Also available in black.



Also available with threaded bushings.



Membrane on front

### Product description

2.1

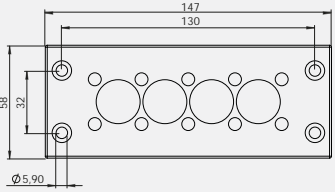
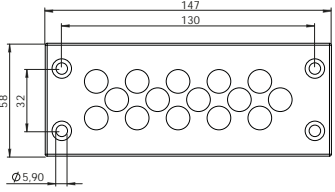
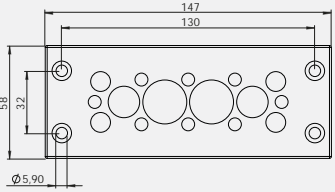
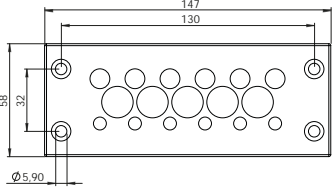
KEL-DPZ entry plates are designed to route and seal up to 121 cables without connectors or fibre optics (from 1.5 mm to 22 mm in diameter) in limited space.

The KEL-DPZ products are a cost and time saving alternative to traditional cable glands.

The assembly of the KEL-DPZ 24 with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through. The KEL-DPZ 24 provides strain relief and protection up to IP66 / UL type 12.

The size DPZ 24 matches exactly the cut-out dimensions of 24-pin standard industrial connectors.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

Description	Type	Order No.	Number of cables	PU
	KEL-DPZ 24 14	■ 43700 ■ 50700	10× 3.2 - 6.5 mm 4× 16 - 22 mm	10
	KEL-DPZ 24 15	■ 43720 ■ 50720	15× 7.2 - 12 mm	10
	KEL-DPZ 24 16	■ 43725 ■ 50725	8× 3.2 - 6.5 mm 4× 5 - 9.7 mm 2× 9 - 16.2 mm 2× 16 - 22 mm	10
	KEL-DPZ 24 17	■ 43705 ■ 50705	6× 3.2 - 6.5 mm 6× 5 - 10.2 mm 5× 9 - 16.2 mm	10

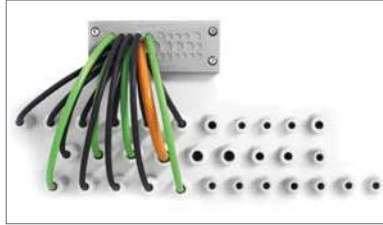
\* Only valid for grey product types

# KEL-DPZ 24

## Cable entry plates



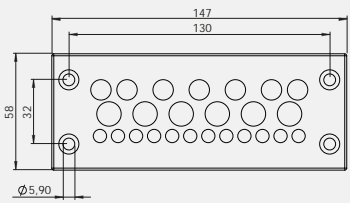
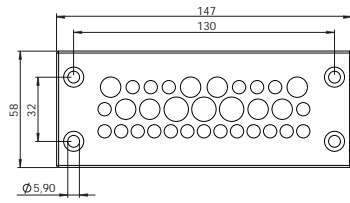
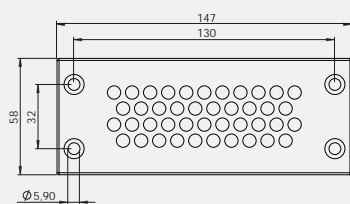
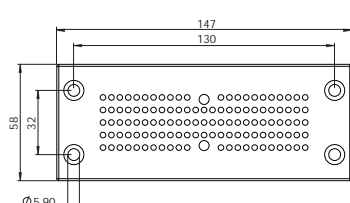
Conical shape on back provides additional sealing and strain relief



High cable density



**IP66**

Description	Type	Order No.	Number of cables	PU
	KEL-DPZ 24 25	<span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; border: 1px solid black; margin-right: 5px;"></span> 43710 <span style="display: inline-block; width: 10px; height: 10px; background-color: #333333; border: 1px solid black; margin-right: 5px;"></span> 50710	12× 3.2 - 6.5 mm 7× 4.8 - 9.7 mm 6× 7.5 - 12 mm	10
	KEL-DPZ 24 32	<span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; border: 1px solid black; margin-right: 5px;"></span> 43730 <span style="display: inline-block; width: 10px; height: 10px; background-color: #333333; border: 1px solid black; margin-right: 5px;"></span> 50730	21× 3.2 - 6.5 mm 8× 5 - 10.2 mm 3× 7.5 - 12 mm	10
	KEL-DPZ 24 42	<span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; border: 1px solid black; margin-right: 5px;"></span> 43715 <span style="display: inline-block; width: 10px; height: 10px; background-color: #333333; border: 1px solid black; margin-right: 5px;"></span> 50715	42× 3.2 - 6.5 mm	10
	KEL-DPZ 24 121	<span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; border: 1px solid black; margin-right: 5px;"></span> 43735 <span style="display: inline-block; width: 10px; height: 10px; background-color: #333333; border: 1px solid black; margin-right: 5px;"></span> 50735	119× 1.5 - 2.6 mm 2× 2.5 - 5 mm	10

### Advantages & benefits

- Fast and easy assembly
- High cable density
- Dual sealing acc. to IP65/IP66/UL type 12
- Automatic sealing and strain relief for the cable
- Hygienic design

### Specifications

Material	Frame: Polyamide (PA)
Colour	Sealing plate: Elastomer
Flame class	■ grey (similar RAL 7035)
IP rating	■ black
UL type rating	UL94-Vo, self-extinguishing
Temperature	IP65/IP66 (certified acc. to EN 60529)
Properties	UL type 12 (acc. to UL 50E)
Cut-out dimensions	- 40°C to + 90°C (static)
Plate depth	Halogen-free, silicone-free
	36 × 112 mm / page 218 - 219
	14 mm

### Accessories

ST-B Plugs	85
KEL-EMC-PF Cable collectors	139
FP Flanged plates	178 - 183

\* Only valid for grey product types.

# KEL-DPZ-B

## Cable entry plates



**IP66**



Also available in black.



Also available with threaded bushings.



Membrane on front

### Product description

2.1

The KEL-DPZ-B entry plates are designed for routing cables without connectors.

The assembly of the KEL-DPZ-B with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane and push the cables through. The KEL-DPZ-B provides strain relief and protection IP66 / UL type 12.

With an area of only 46 × 46 mm, up to 25 cables can be easily routed and sealed.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

### Advantages & benefits

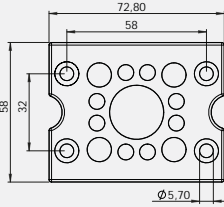
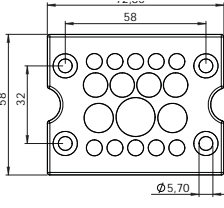
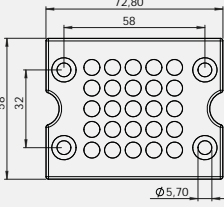
- Space saving shape
- Dual sealing of cables acc. to IP66/UL type 12
- High cable density
- Fast and easy assembly
- Hygienic design

### Specifications

Material	<b>Frame: Polyamide (PA)</b>
	<b>Sealing plate: Elastomer</b>
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input type="checkbox"/> black
Flame class	<b>UL94-Vo, self-extinguishing</b>
IP rating	<b>IP66 (certified acc. to EN 60529)</b>
UL type rating	<b>UL type 12 (acc. to UL 50E)</b>
Temperature	<b>- 40°C to + 90°C (static)</b>
Properties	<b>Halogen-free, silicone-free</b>
Cut-out dimensions	<b>46 × 46 mm / page 218 - 219</b>
Plate depth	<b>10 mm</b>

### Accessories

ST-B Plugs	85
FP Flanged plates	178 - 183

Description	Type	Order No.	Number of cables	PU
	KEL-DPZ-B 13	<input type="checkbox"/> 43794 <input type="checkbox"/> 50794	8 × 3.2 - 6.5 mm 4 × 5 - 10.2 mm 1 × 16 - 22 mm	10
	KEL-DPZ-B 17	<input type="checkbox"/> 43796 <input type="checkbox"/> 50796	10 × 3.2 - 6.5 mm 4 × 5 - 10.2 mm 2 × 7.5 - 12 mm 1 × 9 - 16.2 mm	10
	KEL-DPZ-B 25	<input type="checkbox"/> 43798 <input type="checkbox"/> 50798	25 × 3.2 - 6.5 mm	10

\* Only valid for grey product types



# KEL-DPZ-E

## Cable entry plates

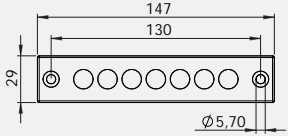
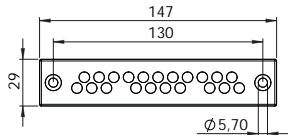


Conical shape on back provides additional sealing and strain relief



Also available in black.



Description	Type	Order No.	Number of cables	PU
	KEL-DPZ-E 112 7	<span style="display: inline-block; width: 10px; height: 10px; background-color: #ccc; border: 1px solid #000;"></span> 43780 <span style="display: inline-block; width: 10px; height: 10px; background-color: #000; border: 1px solid #000;"></span> 50780	7 × 7.5 - 12 mm	10
	KEL-DPZ-E 112 21	<span style="display: inline-block; width: 10px; height: 10px; background-color: #ccc; border: 1px solid #000;"></span> 43790 <span style="display: inline-block; width: 10px; height: 10px; background-color: #000; border: 1px solid #000;"></span> 50790	21 × 3.2 - 6.5 mm	10

\* Only valid for grey product types

## Product description

KEL-DPZ-E is designed for routing cables without connectors without connectors in very small space.

The assembly of the KEL-DPZ-E with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through. The KEL-DPZ-E provides strain relief and protection IP66 / UL type 12.

With an area of only 18 × 112 mm, up to 21 cables can be easily routed and sealed.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

## Advantages & benefits

- Space saving shape
- Dual sealing of cables acc. to IP66/UL type 12
- High cable density
- Fast and easy assembly
- Hygienic design

## Specifications

Material	Frame: Polyamide (PA) Sealing plate: Elastomer
Colour	<span style="display: inline-block; width: 10px; height: 10px; background-color: #ccc; border: 1px solid #000;"></span> grey (similar RAL 7035) <span style="display: inline-block; width: 10px; height: 10px; background-color: #000; border: 1px solid #000;"></span> black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	18 × 112 mm / page 218 - 219
Plate depth	14 mm

## Accessories

ST-B Plugs	85
KEL-EMC-PF Cable collectors	139

# KEL-DPZ round Cable entry plates



**IP66** **IP68**



Also available in black.



Membrane on front



Conical shape on back provides additional sealing and strain relief

## Product description

2.1

KEL-DPZ entry plates are designed to route and seal cables without connectors or fibre optics (from 1.5 mm to 22 mm in diameter) in limited space.

The assembly of the KEL-DPZ round with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through. The KEL-DPZ round provides strain relief and protection IP66 / IP68 / UL type 4X.

The round versions of the KEL-DPZ series have a thread to fit in metric cut-outs from M32 to M63. Thus cut-outs for metric cable glands can be used.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

Type	Order No.	Number of cables	Thread metric	External diameter	Mounting height	PU
KEL-DPZ 32 4	■ 43732	3× 3.2 - 6.5 mm 1× 7.2 - 12.5 mm	M32 × 1.5	44 mm	8 mm	10
	■ 50732					
KEL-DPZ 32 4-2	■ 43733	4× 5 - 9.5 mm	M32 × 1.5	44 mm	8 mm	10
	■ 50733					
KEL-DPZ 32 7	■ 43734	7× 3.2 - 6.5 mm	M32 × 1.5	44 mm	8 mm	10
	■ 50734					
KEL-DPZ 40 8	■ 43741	4× 3.2 - 6.5 mm 4× 5 - 10.2 mm	M40 × 1.5	52 mm	8 mm	10
	■ 50741					
KEL-DPZ 50 8	■ 43750	5× 5 - 10.2 mm 3× 7.2 - 12.5 mm	M50 × 1.5	62 mm	8 mm	10
	■ 50750					
KEL-DPZ 50 10	■ 43751	7× 3.2 - 6.5 mm 2× 5 - 10.2 mm 1× 16 - 22.2 mm	M50 × 1.5	62 mm	8 mm	10
	■ 50751					
KEL-DPZ 50 12	■ 43752	4× 3.2 - 6.5 mm 8× 5 - 10.2 mm	M50 × 1.5	62 mm	8 mm	10
	■ 50752					

\* Only valid for grey product types

# KEL-DPZ round Cable entry plates



**IP66** **IP68**

Type	Order No.	Number of cables	Thread metric	External diameter	Mounting height	PU
KEL-DPZ 50 19	<span style="background-color: #cccccc; border: 1px solid black; padding: 2px;">43758</span> <span style="background-color: #333333; border: 1px solid black; padding: 2px;">50758</span>	19× 3.2 - 6.5 mm	M50 × 1.5	62 mm	8 mm	10
KEL-DPZ 50 78	<span style="background-color: #cccccc; border: 1px solid black; padding: 2px;">43756</span> <span style="background-color: #333333; border: 1px solid black; padding: 2px;">50756</span>	76× 1.5 - 2.6 mm 2× 2.5 - 5 mm	M50 × 1.5	62 mm	8 mm	10
KEL-DPZ 63 9	<span style="background-color: #cccccc; border: 1px solid black; padding: 2px;">43760</span> <span style="background-color: #333333; border: 1px solid black; padding: 2px;">50760</span>	1× 3.2 - 6.5 mm 3× 5 - 10.2 mm 4× 9 - 16.2 mm 1× 16 - 22.2 mm	M63 × 1.5	75 mm	8 mm	10
KEL-DPZ 63 13	<span style="background-color: #cccccc; border: 1px solid black; padding: 2px;">43761</span> <span style="background-color: #333333; border: 1px solid black; padding: 2px;">50761</span>	4× 3.2 - 6.5 mm 4× 5 - 10.2 mm 5× 9 - 16.2 mm	M63 × 1.5	75 mm	8 mm	10
KEL-DPZ 63 14	<span style="background-color: #cccccc; border: 1px solid black; padding: 2px;">43762</span> <span style="background-color: #333333; border: 1px solid black; padding: 2px;">50762</span>	14× 5 - 10.2 mm	M63 × 1.5	75 mm	8 mm	10
KEL-DPZ 63 35	<span style="background-color: #cccccc; border: 1px solid black; padding: 2px;">43763</span> <span style="background-color: #333333; border: 1px solid black; padding: 2px;">50763</span>	35× 3.2 - 6.5 mm	M63 × 1.5	75 mm	8 mm	10

\* Only valid for grey product types

## Advantages & benefits

- Quick and easy tool-free assembly
- High cable density
- Automatic sealing and strain relief for the cable
- Suitable for metric cut-outs
- Polyamide locknuts are included in the shipment
- Dual sealing of cables acc. to IP66 /IP68 / up to UL type 4X
- Hygienic design - free of dirt-collecting recesses

2.1

## Specifications

Material	Thread frame: Polyamide (PA)
Colour	Sealing plate: Elastomer <span style="background-color: #cccccc; border: 1px solid black; padding: 2px;"> </span> grey (similar RAL 7035) <span style="background-color: #333333; border: 1px solid black; padding: 2px;"> </span> black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66/IP67/IP68 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E) UL type 4X (acc. to UL 50E)
Temperature Properties	- 40°C to + 90°C (static)
Cut-out dim.	Halogen-free, silicone-free
Thread length	Metric sizes
Plate depth	14 mm
	8 mm

## Accessories

ST-B Plugs	85
FP Flanged plates	178 - 183
MP Module plates	174 - 175

# KEL-DPZ-KL

## Cable entry plates



**IP65**



Also available in black.



Membrane on front



Conical shape on back provides additional sealing and strain relief

## Product description

The cable entry plate KEL-DPZ-KL is designed for routing up to 72 cables without connectors.

The assembly of the KEL-DPZ-KL with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through. The KEL-DPZ-KL provides strain relief and protection IP65 / UL type 12.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

The KEL-DPZ-KL matches on terminal boxes KL by Rittal.

## Advantages & benefits

- Space saving shape
- Dual sealing of cables acc. to IP65/UL type 12
- High cable density
- Fast and easy assembly
- Hygienic design

## Specifications

Material	Frame: Stainless steel V2A, moulded with elastomer Sealing plate: Elastomer Screws: Stainless steel V2A
Colour	■ grey (similar RAL 7035) ■ black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP65 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	192 × 62 mm
Plate depth	4 mm

Description	Type	Order No.	Number of cables	PU
	KEL-DPZ-KL 72	■ 43675.001	42× 3.2 - 6.5 mm 21× 5 - 10.2 mm 6× 9 - 16.2 mm 3× 16 - 22 mm	1
		■ 43675.101		

\* Only valid for grey product types

## Accessories

ST-B Plugs 85

# ST-B

## Plugs for membranes



Type	Order No.	Diameter D1	Diameter D2	Length L	PU
ST-B 6	42806	8 mm	6 mm	16 mm	25
ST-B 10	42810	12 mm	10 mm	16 mm	25
ST-B 12	42812	15 mm	12 mm	16 mm	25
ST-B 16	42816	19 mm	16 mm	16 mm	25
ST-B 22	42822	25 mm	22 mm	21 mm	25
Assortment ST-B Plugs	42801	5× ST-B 6   5× ST-B 10   2× ST-B 12   1× ST-B 16   1× ST-B 22			

### Product description

Plugs ST-B are used to seal already pierced membranes in various cable entry plates (KEL-DPU / KEL-DPZ / KEL-DP / KEL-QTA-DP) and DT grommets.

Perfect for applications where cables have been removed.

The IP rating of the cable entry plate remains.

### Advantages & benefits

- Sealing of pierced cable entry membranes which are no longer in use

### Specifications

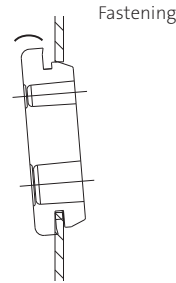
Material	Polyamide (PA), white
Flame class	UL94-Vo, self-extinguishing
Temperature	- 40°C to + 120°C
Properties	Halogen-free, silicone-free

### Compatible with

KEL-DPU Cable entry plates	76 - 77
KEL-DPZ Cable entry plates	78 - 84
KEL-DP Cable entry plates	86 - 89
DT Cable entry grommets	52
KEL-QTA-DP Cable entry plates	64

# KEL-DP 24

## Cable entry plates



Also available in black.

### Product description

KEL-DP entry plates are designed for routing cables without connectors. The KEL-DP products are a cost saving alternative to traditional cable glands. Simply make a small hole in the thin membrane and push the cables through. The KEL-DP 24 provides protection IP64 / UL Type 12.

A special rib ensures a centred fit in the cut-outs. ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

### Advantages & benefits

- Fast and easy assembly, no tools required
- Very good strain relief on the cable bundle
- High cable density
- Cost-effective
- Hygienic design – free of dirt-collecting recesses
- For wall thickness 1.5 - 4 mm

### Specifications

Material	Elastomer
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input type="checkbox"/> black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP64 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	36 × 112 mm
Plate depth	5 mm
Type A:	For wall thickness 1.5 - 2.5 mm
Type B:	For wall thickness 2.8 - 4 mm

### Accessories

ST-B Plugs	85
FP Flanged plates	178 - 183

Description	Type	Order No. Type A	Order No. Type B	Number of cables	PU
	KEL-DP 24 12	<input type="checkbox"/> 43508 <input type="checkbox"/> 50508	–	12× max. 15 mm	10
	KEL-DP 24 14	<input type="checkbox"/> 43512 <input type="checkbox"/> 50512	<input type="checkbox"/> 43522 <input type="checkbox"/> 50522	14× max. 12.1 mm	10
	KEL-DP 24 17	<input type="checkbox"/> 43514 <input type="checkbox"/> 50514	<input type="checkbox"/> 43523 <input type="checkbox"/> 50523	5× max. 10.5 mm 12× max. 12.6 mm	10
	KEL-DP 24 18	<input type="checkbox"/> 43515 <input type="checkbox"/> 50515	<input type="checkbox"/> 43528 <input type="checkbox"/> 50528	4× max. 6.5 mm 5× max. 10.5 mm 5× max. 12.6 mm 4× max. 16.1 mm	10
	KEL-DP 24 19	<input type="checkbox"/> 43516 <input type="checkbox"/> 50516	<input type="checkbox"/> 43524 <input type="checkbox"/> 50524	12× max. 6.5 mm 7× max. 12.1 mm	10
	KEL-DP 24 26	<input type="checkbox"/> 43518 <input type="checkbox"/> 50518	<input type="checkbox"/> 43525 <input type="checkbox"/> 50525	16× max. 6.5 mm 4× max. 12.1 mm 4× max. 16.1 mm 2× ASI-cables	10
	KEL-DP 24 42	<input type="checkbox"/> 43511 <input type="checkbox"/> 50511	<input type="checkbox"/> 43521 <input type="checkbox"/> 50521	12× max. 7.2 mm 17× max. 6.4 mm 12× max. 5 mm 1× max. 4.7 mm	10
	KEL-DP 24 48	<input type="checkbox"/> 43519 <input type="checkbox"/> 50519	<input type="checkbox"/> 43526 <input type="checkbox"/> 50526	48x max. 6.5 mm	10
	KEL-DP 24 50	<input type="checkbox"/> 43520 <input type="checkbox"/> 50520	<input type="checkbox"/> 43527 <input type="checkbox"/> 50527	33x max. 5.3 mm 9× max. 6.4 mm 8× max. 8.3 mm	10

\* Only valid for grey product types



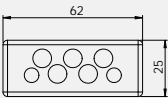
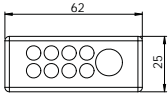
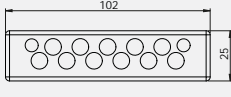
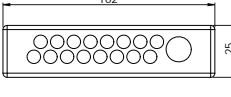
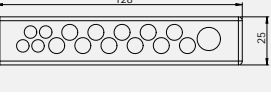
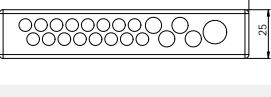
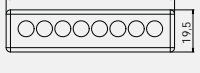
# KEL-DP-E

## Cable entry plates



Also available in black.



Description	Type	Order No.	Cut-out [mm]	Number of cables	PU
	KEL-DP-E 46 7	<input type="checkbox"/> 43585 <input checked="" type="checkbox"/> 50585	46 × 18	5× max. 8.3 mm 2× max. 6.5 mm	10
	KEL-DP-E 46 9	<input type="checkbox"/> 43587 <input checked="" type="checkbox"/> 50587	46 × 18	8× max. 6.5 mm 1× max. 12.1 mm	10
	KEL-DP-E 86 13	<input type="checkbox"/> 43581 <input checked="" type="checkbox"/> 50581	85 × 18	11× max. 8.3 mm 2× max. 6.5 mm	10
	KEL-DP-E 86 17	<input type="checkbox"/> 43583 <input checked="" type="checkbox"/> 50583	85 × 18	16× max. 6.5 mm 1× max. 12.1 mm	10
	KEL-DP-E 112 16	<input type="checkbox"/> 43576 <input checked="" type="checkbox"/> 50576	112 × 18	4× max. 6.5 mm 11× max. 8.3 mm 1× max. 12.1 mm	10
	KEL-DP-E 112 21	<input type="checkbox"/> 43578 <input checked="" type="checkbox"/> 50578	112 × 18	16× max. 6.5 mm 4× max. 8.3 mm 1× max. 12.1 mm	10
	KEL-DP-S 69 8	<input type="checkbox"/> 43591 <input checked="" type="checkbox"/> 50591	69 × 10 Edge radii R2	8× max. 7.5 mm	10

\* Only valid for grey product types

## Product description

KEL-DP-E entry plates are designed for routing cables without connectors. The KEL-DP products are a cost saving alternative to traditional cable glands.

Simply make a small hole in the thin membrane and push the cables through. The KEL-DP-E provides protection IP64 / UL Type 12.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

A special rib ensures a centred fit in the cut-outs.

## Advantages & benefits

- Fast and easy assembly, no tools required
- High cable density
- Very good strain relief on the cable bundle
- Cost-effective
- Hygienic design – free of dirt-collecting recesses
- For wall thickness 1.5 - 2.5 mm

## Specifications

Material	Elastomer
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input checked="" type="checkbox"/> black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP64 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Plate depth	5 mm

## Accessories

ST-B Plugs 85

# KEL-DP round

## Cable entry plates



Also available in black.



Membrane on front



Special fixing ribs ensure a centred fit.

### Product description

KEL-DP entry plates are designed for routing cables without connectors.

The KEL-DP products are a cost saving alternative to traditional cable glands.

Simply make a small hole in the thin membrane and push the cables through. The KEL-DP round provides protection IP65 / UL Type 12.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

A special rib ensures a centred fit in the cut-outs.

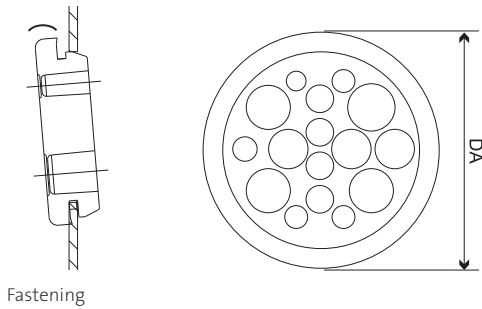
### Advantages & benefits

- Fast and easy assembly, no tools required
- High cable density
- Very good strain relief on the cable bundle
- Cost-effective
- For wall thickness 1.5 - 4 mm
- Hygienic design - free of dirt-collecting recesses

Type	Order No. Type A	Order No. Type B	Number of cables	Cut-out	External diameter DA	PU
KEL-DP 25 4	43533 50533	—	4× max. 8 mm	∅ 25 mm	32 mm	10
KEL-DP 25 6	43531 50531	—	4× max. 5.2 mm 2× max. 9.4 mm	∅ 25 mm	32 mm	10
KEL-DP 32 10	43532 50532	43560 50560	6× max. 5.2 mm 2× max. 6.4 mm 2× max. 9.4 mm	∅ 32 mm	38 mm	10
KEL-DP 40 9	43536	43561	8× max. 9.5 mm 1× max. 11.3 mm	∅ 40 mm	50 mm	10
KEL-DP 40 16	43537	43563	2× max. 5.3 mm 10× max. 6.3 mm 2× max. 9.5 mm 2× max. 11.3 mm	∅ 40 mm	50 mm	10
KEL-DP 40 17	43538	43565	1× max. 4 mm 16× max. 7.2 mm	∅ 40 mm	50 mm	10

\* Only valid for grey product types

# KEL-DP round Cable entry plates



Type	Order No. Type A	Order No. Type B	Number of cables	Cut-out	External diameter DA	PU
KEL-DP 50 9	■ 43554 ■ 50554	■ 43568 ■ 50568	5× max. 7 mm 4× max. 18 mm	∅ 50 mm	60 mm	10
KEL-DP 50 11	■ 43555 ■ 50555	■ 43569 ■ 50569	7× max. 7.2 mm 3× max. 11.2 mm 1× max. 22.5 mm	∅ 50 mm	60 mm	10
KEL-DP 50 12	■ 43551 ■ 50551	■ 43562 ■ 50562	10× max. 9.2 mm 2× max. 11.2 mm	∅ 50 mm	60 mm	10
KEL-DP 50 16	■ 43550 ■ 50550	■ 43564 ■ 50564	4× max. 5.3 mm 5× max. 6.3 mm 3× max. 9.5 mm 4× max. 11.3 mm	∅ 50 mm	60 mm	10
KEL-DP 50 18	■ 43553 ■ 50553	■ 43567 ■ 50567	2× max. 4 mm 2× max. 6 mm 4× max. 7.2 mm 5× max. 9.4 mm 5× max. 12 mm	∅ 50 mm	60 mm	10
KEL-DP 50 20	■ 43552 ■ 50552	■ 43566 ■ 50566	16× max. 6.3 mm 4× max. 9.3 mm	∅ 50 mm	60 mm	10
KEL-DP 50 35	■ 43556 ■ 50556	■ 43570 ■ 50570	35× max. 5.2 mm	∅ 50 mm	60 mm	10

## Specifications

Material	Elastomer
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input type="checkbox"/> black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP65 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	Metric sizes
Plate depth	5 mm
Type A:	For wall thickness 1.5 - 2.5 mm
Type B:	For wall thickness 2.8 - 4 mm

## Accessories

ST-B Plugs	85
FP Flange plates	178 - 183

\* Only valid for grey product types

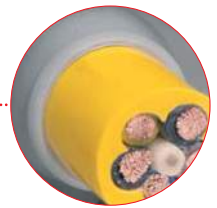
# 2.2 Flexible cable entry grommets for cables without connectors



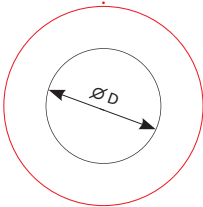
Fast and easy, partially tool-free assembly



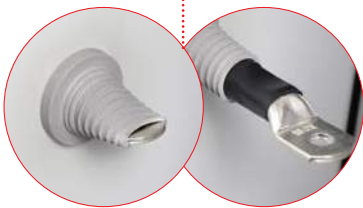
High flexibility when routing rigid cables



Up to IP66/IP68 rated protection



For metric cut-outs M25 - M85 (KEL-DPF)



Due to high elasticity also suitable for routing preassembled cable lugs/terminals.

Compact, space-saving design

## Product range



KEL-DPF



KEL-ULTRA flex



KEL-JUMBO flex

## Chapter content 2.2



**Cable entry grommets**  
M25 - M85, for cable diameters  
up to 70 mm

KEL-DPF

**92**



**Cable entry grommets**  
screw mounting, for cable diameters  
up to 115 mm

KEL-ULTRA flex

**93**



**Cable entry grommets**  
screw mounting, for cable diameters  
up to 68 mm

KEL-JUMBO flex

**94**

# KEL-DPF

## Cable entry grommets



### Product description

The KEL-DPF was developed particularly for routing large or unknown sizes of cables into a switch cabinet or machine (max. cable diameter 70 mm). Due to the flexibility and unique pyramid shape, cable entry and flexible positioning is much easier compared to using conventional cable glands. Also perfect for bundling or restraining large cables.

Cutting of DPF grommets:  
Cable diameter less 25%. The corresponding diameters are marked on the grommet.

It is recommended that additional strain relief be provided for cables as part of the installation.

### Advantages & benefits

- Quick and tool-free assembly
- It is possible to install rigid cables at angles
- Suitable for metric cut-outs
- Polyamide locknuts are included in the shipment

### Specifications

Material	Thread frame: Polyamide (PA) Pyramid: Elastomer
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input type="checkbox"/> black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66/ IP68 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E) UL type 4X (acc. to UL 50E)
Temperature Properties	- 40°C to + 90°C (static) Halogen-free, silicone-free
Thread length	14 mm
Cut-out dimensions	Metric sizes

### Accessories

FP Flanged plates	178 - 183
MP Module plates	174 - 175

Type	Order No.	Thread metric	External diameter	Clamping range	PU
KEL-DPF 25 3-12	<input type="checkbox"/> 42652	M25 × 1.5	39 mm	3 - 12 mm	5
	<input type="checkbox"/> 50652				
KEL-DPF 32 6-18	<input type="checkbox"/> 42653	M32 × 1.5	46 mm	6 - 18 mm	5
	<input type="checkbox"/> 50653				
KEL-DPF 40 12-27	<input type="checkbox"/> 42654	M40 × 1.5	54 mm	12 - 27 mm	5
	<input type="checkbox"/> 50654				
KEL-DPF 50 22-36	<input type="checkbox"/> 42655	M50 × 1.5	64 mm	22 - 36 mm	5
	<input type="checkbox"/> 50655				
KEL-DPF 63 27-50	<input type="checkbox"/> 42656	M63 × 1.5	77 mm	27 - 50 mm	5
	<input type="checkbox"/> 50656				
KEL-DPF 75 39-60	<input type="checkbox"/> 42657	M75 × 1.5	89 mm	39 - 60 mm	1
	<input type="checkbox"/> 50657				
KEL-DPF 85 48-70	<input type="checkbox"/> 42658	M85 × 2	99 mm	48 - 70 mm	1
	<input type="checkbox"/> 50658				

### Wrenches

for M75/M85 plastic locknuts

For mounting the new KEL-DPF sizes we offer suitable wrenches with widths for M75 and M85 plastic locknuts. Material: aluminium

M75: Order No.61436 | M85: Order No. 61437 | PU: 1



\* Only valid for grey product types



# KEL-ULTRA flex

## Cable entry grommets



Type	Order No.	Sealing range	PU
KEL-ULTRA flex 1 incl. fixing screws	42630	25 - max. 90 mm cable diameter	1
KEL-ULTRA flex 2 incl. fixing screws	42631	75 - max. 115 mm cable diameter	1

### Product description

The KEL-ULTRA flex is designed as a cable entry grommet for any large cable or conduit that is difficult to manage. The KEL-ULTRA flex comes in two sizes and is ideal for routing and sealing cables and conduits with a diameter from 25 to 115 mm. Due to the high flexibility of the elastomer pyramid, inserting large, thick cables with KEL-ULTRA flex is easier than using standard cable glands.

After inserting the cable or conduit, the KEL-ULTRA flex is quickly and easily mounted with the metal ring and screws. This ring enables a circular fixing and sealing of the grommet at the enclosure wall. The ring is supplied with each KEL-ULTRA flex. Cutting of grommets: Cable diameter less 25%. It is recommended that additional strain relief be provided for cables as part of the installation.

### Advantages & benefits

- Quick assembly
- Grommets allow easy orientation and seal of rigid cables
- IP66 / up to UL type 12 rating

### Specifications

Material	Pyramid: Elastomer Fixing metal ring: Steel, zinc-plated Blind plate: Steel, zinc-plated
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66, when fastened with 8 screws (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Round, Ø-cable +30%, max. Ø 140 mm

### Accessories

MP Module plates	174 - 175
BPM Blank plates	185

# KEL-JUMBO flex

## Cable entry grommets



**IP54**



### Product description

The KEL-JUMBO flex is a flexible cable entry grommet for cables without connectors with a diameter range from 27 - 68 mm.

They are ideal for the routing supply cables into the switch cabinets.

Cutting of KEL-JUMBO flex grommets:  
Cable diameter less 25%. The corresponding diameters are marked on the grommet.

It is recommended that additional strain relief be provided for cables as part of the installation.

### Advantages & benefits

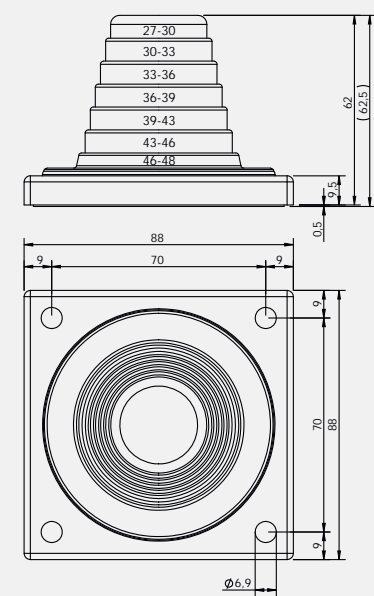
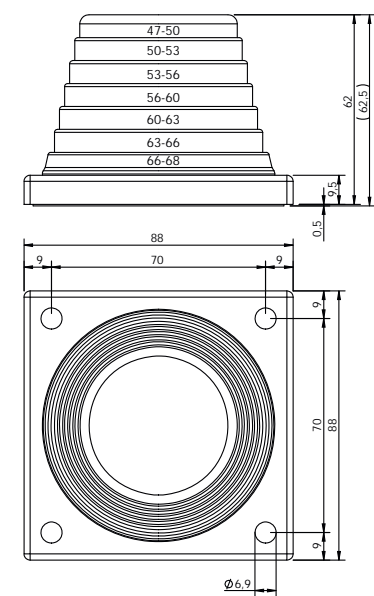
- Quick assembly
- Grommets allow dynamic and flexible movement of rigid cables
- Compact installation area (88 × 88 mm)

### Specifications

Material	Frame: Polyamide (PA) Pyramid: Elastomer
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 90°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	Round, $\phi$ -cable +20%

### Accessories

MP Module plates	174 - 175
BP Blank plates	184 - 186

Description	Type	Order No.	Clamping range	PU
	KEL-JUMBO flex 27-48	42614	27 - 48 mm	1
	KEL-JUMBO flex 47-68	42616	47 - 68 mm	1

## Typical applications

### Cable entry plates for cables without connectors



KEL-DPZ 24|x - Page 78 - 80

Routing of numerous cables with varying cable diameter sizes into a machine control cabinet. IP65 sealing is achieved. Additional membranes are available for future routing.



KEL-DPZ 24|25 - Page 79

Routing of a large number of cables into the enclosure of a checkweigher. High cable density in a small space.



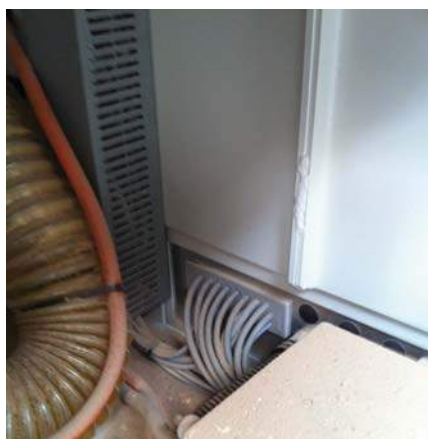
KEL-DPZ-B25 - Page 80

Entering of cable bundle in a small space with high IP66 rating.



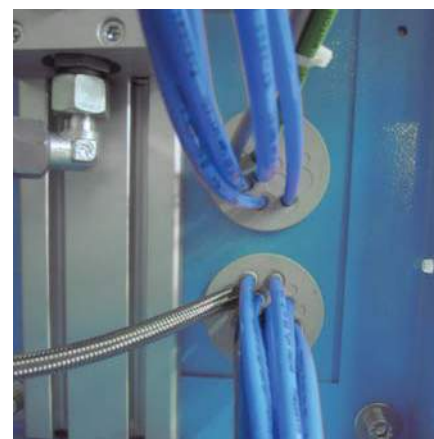
KEL-DPZ-B25 - Page 80 / KEL 24|7 - Page 18

Combination of split and push-through-systems for the routing of cables in an integrated switch cabinet. Additional grommets and membranes are available for future routing.



KEL-DP 24|50 - Page 86

Entering a large number of cables without connectors through a small space.



KEL-DP 50|16 - Page 89

Routing of cables, conduits and pipes with a single cable entry plate.

# 3 Strain relief & cable management



By using icotek strain relief systems the user can quickly assemble, organise and provide strain relief for cables according to EN 62444.

The systems can be used for organising and securing cables in machines, switch cabinets, enclosures and dynamic drag chains. Due to the wide variety of mounting requirements, options range from DIN rail snap-mount, C-rail to screw mount.

The strain relief plates are available in several sizes. The cable density can be greatly increased by using spacers for multilayer mounting.

Securing the cables is done quickly and inexpensively with standard cable ties. The shape of the strain relief securely holds cable tie and cable.

3

High cable density, multilayer mounting possible

Fast and easy, partially tool-free mounting

Wide mounting type variety: DIN rail / C-rail snap mount, screw mount

Available in various sizes

Secure hold of the cable ties and cables, strain relief acc. to EN 62444

## Product range



KZL SF|ZL ZL ZL-AB ZL o3 o4 o5 DH KLB / KBH

## Chapter content 3



Strain relief plates  
for screw mount

ZL

98



Strain relief plates  
for screw mount, with bushings

ZL-AB / ZL-MS

99



Strain relief plates  
for screw mount, for various cable diameters

ZL 03 | 04 | 05

100



Strain relief plates  
for 35 mm DIN rail / C-rail snap mount

KZL

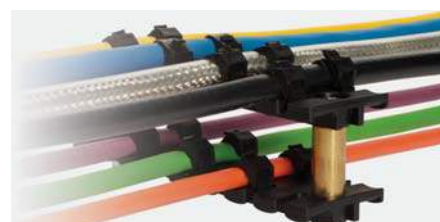
101



Strain relief plates  
for 35 mm DIN rail snap mount

SF|ZL

102



Spacers  
for multilayer mounting of strain relief  
plates

DH

103



Hook-and-loop cable ties  
re-usable

KLKB / KLB

104



Holder for hook-and-loop cable ties  
various mounting types

KBH

105



# ZL

## Strain relief plates for screw assembly



### Product description

The strain relief plate ZL is used for static or dynamic applications for organising and securing cables on machines, control panels or drag chains.

The design of the strain relief unit provides secure strain relief according to EN 62444. Mount of the cables or pneumatic tubing is easily done using cable ties.

**3** For multilayer installation please use DH spacers, see Page 89.

### Advantages & benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options

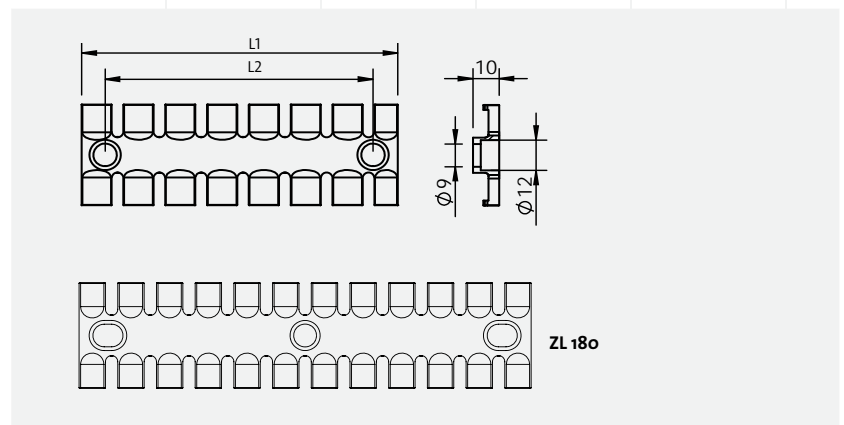
### Specifications

Material **Polyamide (PA)**  
 Flame class **UL94-Vo, self-extinguishing**  
 Temperature **- 40°C to + 140°C (static)**  
 Properties **Halogen-free, silicone-free**

### Accessories

DH Spacers 103  
 ZL|SB-EMC Shield plates 145

Type	Order No.	Length L1	Length L2	No. of teeth	PU
ZL 39	32222	38.5 mm	19.5 mm	3	10
ZL 60	32224	59.5 mm	43.5 mm	4	10
ZL 70	32226	69.1 mm	43.5 mm	5	10
ZL 87	32228	86.5 mm	68 mm	6	10
ZL 103	32230	102.5 mm	84 mm	7	10
ZL 121	32232	121 mm	102.5 mm	8	10
ZL 140	32234	139.5 mm	121 mm	9	10
ZL 180	32236	180 mm	157 mm	12	10

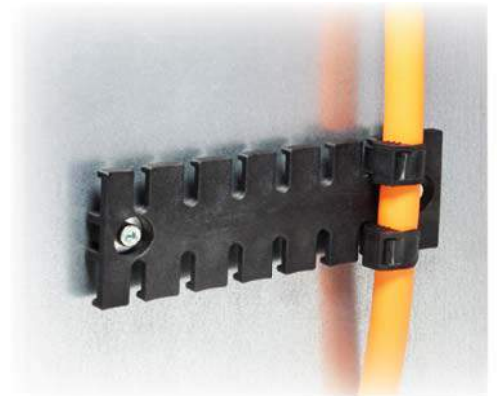
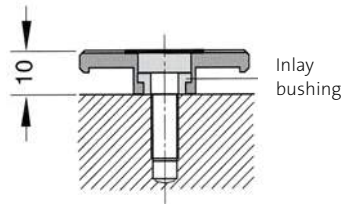


# ZL-AB | ZL-MS

## Strain relief plates for screw assembly



Inlay bushings also available in brass.



Type	Order No. for M4 screws	Order No. for M5 screws	Order No. for M6 screws	Length L1	Length L2	No. of teeth	PU
ZL 39 AB ZL 39 MS	32270	32280 32360	32290	38.5 mm	19.5 mm	3	10
ZL 60 AB ZL 60 MS	32271	32281 32361	32291	59.5 mm	43.5 mm	4	10
ZL 70 AB ZL 70 MS	32272	32282 32362	32292	69.1 mm	43.5 mm	5	10
ZL 87 AB ZL 87 MS	32273	32283 32363	32293	86.5 mm	68 mm	6	10
ZL 103 AB ZL 103 MS	32275	32284 32364	32294	102.5 mm	84 mm	7	10
ZL 121 AB ZL 121 MS	32277	32285 32365	32295	121 mm	102.5 mm	8	10
ZL 140 AB ZL 140 MS	32274	32286 32366	32296	139.5 mm	121 mm	9	10
ZL 180 AB ZL 180 MS	32276	32287 32367	32297	180 mm	157 mm	12	10

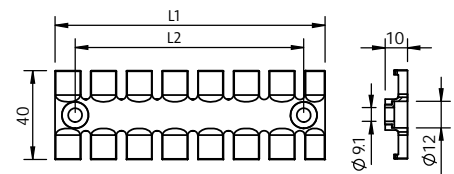
### Product description

The strain relief plate ZL-AB / ZL-MS is used for static or dynamic applications for organising and securing cables on machines, control panels or drag chains.

By using aluminium / brass nuts for the screw holes, a better fit of the strain relief plate is achieved, even in high vibration environments.

### Advantages & benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options



### Specifications

Material	ZL: Polyamide (PA) Bushing: ■ Aluminium (ZL-AB) ■ Brass (ZL-MS)
Flame class	UL94-Vo, self-extinguishing
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free

### Accessories

ZL|SB-EMC Shield plates 145



# ZL 03 | 04 | 05

## Strain relief plates for screw assembly



### Product description

Strain relief plates ZL feature different comb widths. Thus providing a multi-purpose product for various cable sizes.

The design of the strain relief unit provides secure strain relief according to EN 62444. Mount of the cables or pneumatic tubing is easily done using cable ties.

Type	Order No.	Length L1	Length L2	No. of teeth	PU
ZL 03	32112	63.4 mm	42 mm	4 7	10
ZL 04	32114	95 mm	74.5 mm	6 11	10
ZL 05	32116	119 mm	108 mm	7 13	10

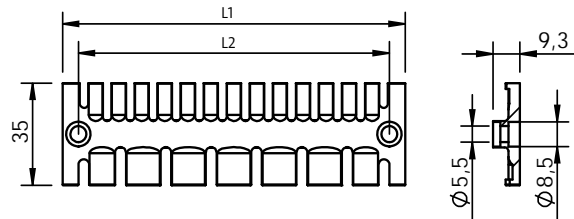
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### Advantages & benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free

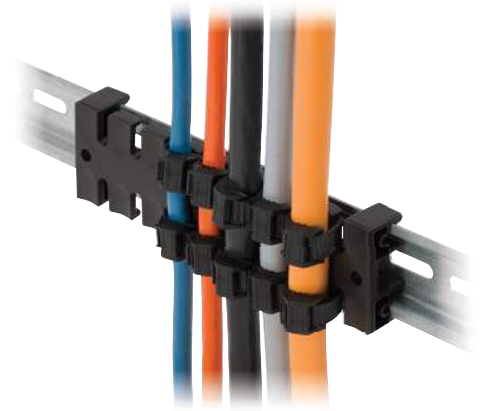


### Accessories

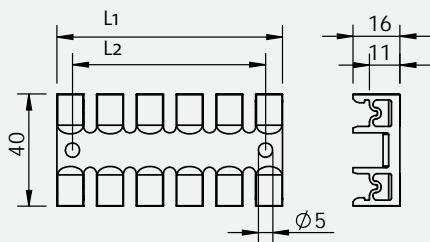
DH Spacers 103

## KZL

### Strain relief plates for mounting rails



Typ	Best.Nr.	Length L1	Length L2	No. of teeth	VE
KZL 11	32250	11.5 mm	–	1	10
KZL 39	32260	38.5 mm	28.3 mm	3	10
KZL 80	32262	79.5 mm	68 mm	6	10
KZL 140	32264	139.5 mm	128.1 mm	9	10



### Product description

The strain relief plate KZL is used for static or dynamic applications for organising and securing cables on machines, control panels or drag chains.

The design of the strain relief unit provides secure strain relief according to EN 62444. Mount of the cables or pneumatic tubing is easily done using cable ties.

KZL Strain relief plates can be mounted on 30 mm DIN rails (C-rails) and 35 mm DIN rails.

### Advantages & benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free

# SF|ZL

Strain relief plates for 35 mm DIN rail



## Product description

The strain relief plate SF|ZL is used for assembly on 35 mm DIN rails. It can be used for strain relief of cables and conduits.

The SF|ZL range is based upon the strain relief plate ZL, which is mounted on snap feet for 35 mm DIN rails.

3

## Advantages & benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options

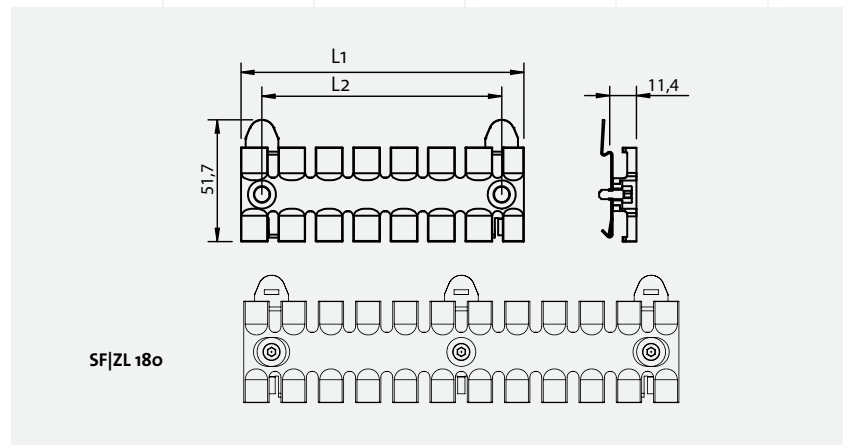
## Specifications

Material	ZL: Polyamide (PA) SF-foot: Spring steel
Flame class	UL94-Vo, self-extinguishing
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free

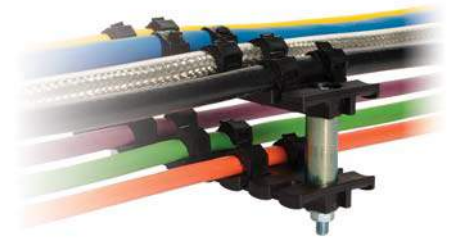
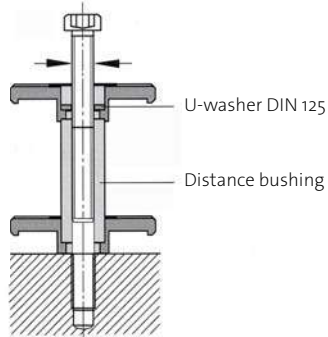
## Accessories

ZL|SB-EMC Shield plates 145

Type	Order No.	Length L1	Length L2	No. of teeth	PU
SF ZL 39	32351	38.5 mm	19.5 mm	3	10
SF ZL 60	32352	59.5 mm	43.5 mm	4	10
SF ZL 70	32353	69.1 mm	43.5 mm	5	10
SF ZL 87	32354	86.5 mm	68 mm	6	10
SF ZL 103	32355	102.5 mm	84 mm	7	10
SF ZL 121	32356	121 mm	102.5 mm	8	10
SF ZL 140	32357	139.5 mm	121 mm	9	10
SF ZL 180	32358	180 mm	157 mm	12	10



# DH Spacers



Type	Order No.	Fits with	Length	Diameter		PU
				inner	outer	
DH 30	32251	ZL 03   04   05	30 mm	5.2 mm	8.5 mm	10
DH 32	32252	ZL	32 mm	6.2 mm	12 mm	10

## Product description

Due to DH spacers strain relief plates can be mounted in multi-layers to achieve an increase of the cable density.

## Advantages & benefits

- Increase of cable density

## Specifications

Material **Aluminium**

## Compatible with

ZL Strain relief plates 98  
ZL 03|04|05 Strain relief plates 100

# KLKB / KLB

## Hook-and-loop cable ties



### Product description

Cable ties with hook-and-loop fasteners are a more and more common fixing mode for cables. They are used instead of standard cable ties, because they can be easily closed and opened several times. The soft material is gentle on cables, especially where vibrations are present.

Hook-and-loop cable ties are available individually (KLKB) in four different sizes or as a continuous roll (KLB) in four different sizes.

3



### Advantages

- Reusable
- Adaptable
- The cable tie material is gentle on cables, especially if there are vibrations

### Specifications

Material **Polypropylene + Velours PA**  
 Colour **black**  
 Flame class **UL94-V2**  
 Temperature **- 30°C to + 80°C**

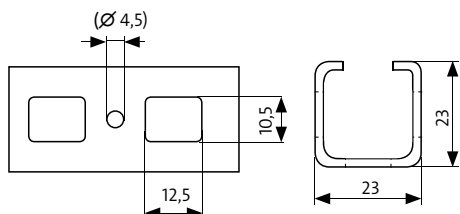
### Accessories

KBH Holder for hook-and-loop fastener 105

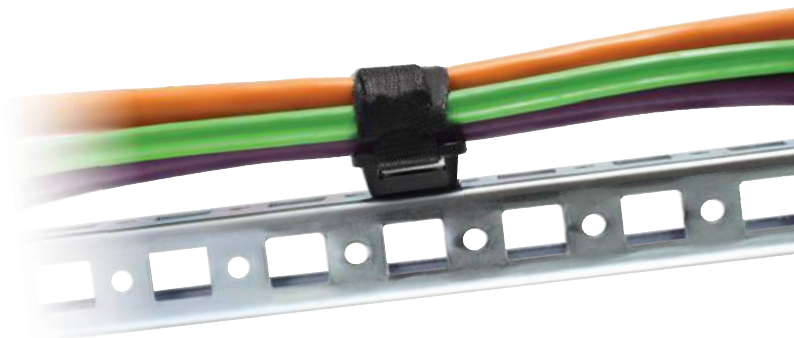
Type	Size [mm]			Order No.	PU
	L	W1	W2		
KLKB 200 × 7 bk	200	13	7	61021	100
KLKB 200 × 7 bk on reel (750 pcs.)	200	13	7	61025	1
KLKB 200 × 13 bk	200	20	13	61022	100
KLKB 200 × 13 bk on reel (750 pcs.)	200	20	13	61026	1
KLKB 230 × 13 bk	230	20	13	61023	100
KLKB 230 × 13 bk on reel (650 pcs.)	230	20	13	61027	1
KLKB 300 × 17 bk	300	25	17	61024	100
KLKB 300 × 17 bk on reel (500 pcs.)	300	25	17	61028	1
KLB 10 bk			10	61011	25 m
KLB 15 bk			15	61012	25 m
KLB 20 bk			20	61013	25 m
KLB 25 bk			25	61014	25 m






# KBH

## Holder for hook-and-loop fastener



23 × 23 mm mounting rail



Description	Type	Order No.	fits KLKB   KLB	Compatible with	PU
<b>Holder for hook-and-loop fastener, screwable</b>					
	KBH-S	■ 61019	KLKB 200 × 7 KLKB 200 × 13 KLB 10	23 × 23 mm mounting rail	100
	KBH-SB	■ 61002	KLKB 200 × 7	universal	100
<b>Holder for hook-and-loop fastener, pluggable</b>					
	KBH-R	■ 61018	KLKB 200 × 7 KLKB 200 × 13 KLB 10	23 × 23 mm mounting rail	100
	KBH-RBA nc	□ 61003	KLKB 200 × 7	drill-hole ∅ 6 mm	100
	KBH-RBB	■ 61004	KLKB 200 × 7	drill-hole ∅ 6.5 mm	100

\* Only KBH-S / KBH-R

### Product description

These holders can be used in combination with cable ties with hook-and-loop fastener KLKB and hook-and-loop tape KLB.

Large variety of holders provides unique and numerous mounting possibilities.

### Advantages

- Assembly within seconds
- Secure hold
- Flexible usage

### Specifications KBH-S / KBH-R

Material	Polyamide (PA)
Colour	■ black
Flame class	UL94-Vo, self-extinguishing
Temperature	- 40°C to + 110°C
Properties	Halogen-free, silicone-free

### Specifications KBH-SB / KBH-RBA

Material	Polyamide (PA)
Colour	■ black (KBH-SB) □ nc (KBH-RBA)
Flame class	UL94-V2
Temperature	- 40°C to + 85°C (short-term to 110°C)

### Specifications KBH-RBB

Material	Polyamide (PA)
Colour	■ black
Temperature	- 40°C to + 120°C

### Compatible with

KLKB / KLB Cable ties with  
hook-and-loop fastener 104

# 4.1 EMC cable shield earthing

## Shield clamps & earthing components

RoHS compliant Made in Germany

For process measurement and control equipment an increasingly higher level of protection against failure is required. Earthing of the cable shields is very important. The area where the cable shield is connected to the enclosure earth is a critical point. It is very important that the connection has a low resistance.

icotek EMC products therefore provide a good solution. The SKL shield clamps offer a large contact area to the cable shield (see figure A). In comparison to conventional shield brackets (see figure B) an up to 50% higher

contact area can be achieved when using the SKL line. The specified clamping range can be exceeded up to 10%.

In high frequency fields, the SKL shield clamps provide low resistance. Effective range up to 1,000 MHz below 120 Ohms and 10 kHz to 100 MHz significant below 20 Ohms.

**MSKL type with large clamping range**

**Available in various sizes**

**High cable density possible**

**Vibration resistance and twist protection due to solid rivets**

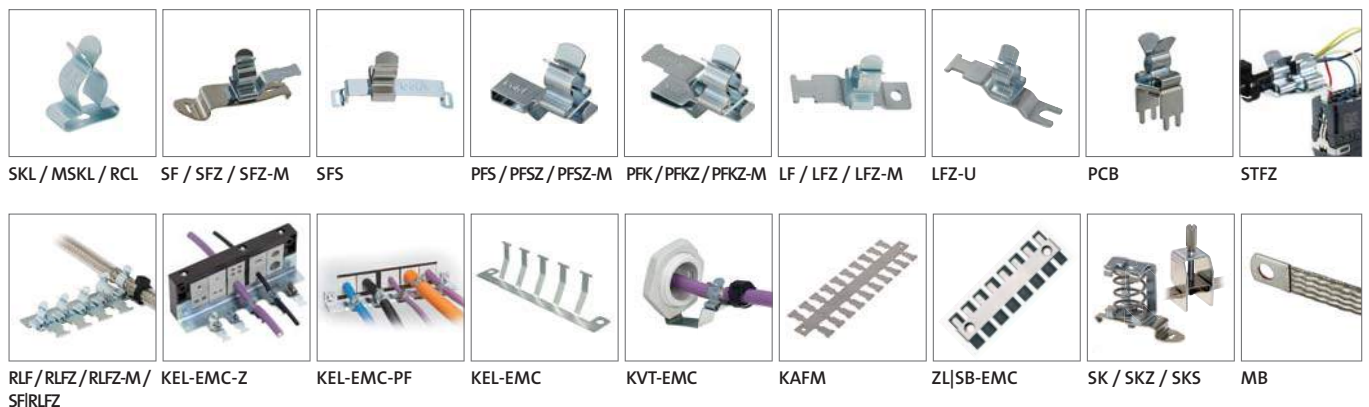
**Wide variety in mounting types: DIN rail / C-rail snap mount, screw mount, ...**

**Large contact area to the cable shield. Shield and cable strands won't be squeezed**

**Secure hold for cable ties and cables, strain relief acc. to EN 62444**

**A: B:**

### Product range





## Chapter content 4.1



Shield clamps with large clamping range  
various mounting types

MSKL

**108 - 109**



Shield clamps, single

SKL / RCL|SKL

**110**



Shield clamps  
for 35 mm DIN rail snap mount

SFZ|SKL / SF|SKL / SFS|SKL

**111 - 115**



Shield clamps  
for 10 x 3 mm bus bar snap mount

PFSZ|SKL / PFS|SKL / PFSZ2|SKL / PFS2|SKL  
PFS|SCL

**114 - 119**



Shield clamps  
for screw mount & C-rails

LFZ|SKL / LFZ-U|SKL / LF|SKL

**120 - 122**



Shield clamps  
pluggable on sheet metal

PFKZ|SKL / PFK|SKL  
PFKZ2|SKL / PFK2|SKL

**124 - 127**



Shield clamps  
for printed circuit boards

PCB|SKL

**128**



Shield clamps  
for decentralised bus modules

STFZ|SKL / STFZ2|SKL / STFZ-U|SKL /  
STFZ-SP|SKL / STFZ2-SP|SKL

**129 - 131**



Assortment of SKL shield clamps

EMC ServiceBox multi  
EMC ServiceBox

**132 - 133**



EMC Shield clamp assemblies

RLFZ(-M) - clamp assembly for screw mount  
SC|RLFZ(-M) - clamp assembly for C-rails  
SF|RLFZ - clamp assembly for DIN-rails  
RLF - clamp assembly  
without strain relief

**134 - 137**



EMC cable assemblies  
as accessories for cable entry components

KEL-EMC-Z / KEL-EMC-PF / KEL-EMC /  
KVT-EMC

**138 - 141**



Shield brackets  
various mounting types

SK / SKZ / SKS

**142 - 143**



EMC strain relief plates  
various mounting types

KAFM

**144**



Shield plates  
as accessories for ZL strain relief plates

ZL|SB-EMC

**145**



Earthing tapes

MB

**146 - 147**

# MSKL

EMC Shield clamps with large clamping range



**MSKL 3-12**  
Cable shielding for diameters 3 - 12 mm with only one clamp size.



LFZ-M|MSKL



SF|MSKL

## Product description

The shield clamps MSKL are easy to use and effective in earthing single cable shields.

Due to its special design the clamping ranges of the MSKL are very large while the dimensions are comparatively small. (Example: MSKL 3-12, assembled with a 12 mm cable shield: width 26.25 mm).

### MSKL, single

Single shield clamps can be individually attached via rivets.

### LFZ-M|MSKL & LF|MSKL

LFZ-M|MSKL and LF|MSKL shield clamps can be attached on sheet metal (e.g. mounting plates) using M4 screws. The type LFZ-M|MSKL allows cables to be secured with a cable tie. Strain relief in accordance with EN 62444 is achieved.

### SFZ-M|MSKL & SF|MSKL

SFZ-M|MSKL and SF|MSKL shield clamps can be easily attached by snapping them onto 35 mm DIN rails. The type SFZ-M|MSKL allows cables to be secured with a cable tie. Strain relief in accordance with EN 62444 is achieved.

Type	Order No.	Clamping range [mm]	Dimensions L x W x H [mm]	Mounting type	PU
MSKL, single, for riveting:					
MSKL 3-12	37600	3 - 12 mm	8 x 15.1 x 20.5	Rivet, Fixing hole 3.2 mm	50
MSKL 8-18	37602	8 - 18 mm	8 x 20 x 27	Rivet, Fixing hole 3.2 mm	50

MSKL for screw mounting (M4):



LFZ-M|MSKL



LF|MSKL

LFZ-M MSKL 3-12 with strain relief	37612	3 - 12 mm	46.3 x 15.1 x 26	Screw, Fixing hole 4.2 mm	10
LFZ-M MSKL 8-18 with strain relief	37614	8 - 18 mm	46.3 x 20 x 32	Screw, Fixing hole 4.2 mm	10
LF MSKL 3-12	37608	3 - 12 mm	24 x 15.1 x 26	Screw, Fixing hole 4.2 mm	10
LF MSKL 8-18	37610	8 - 18 mm	24 x 20 x 32	Screw, Fixing hole 4.2 mm	10

MSKL for snap mounting on 35 mm DIN rail shape H:

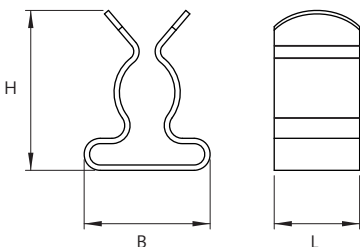


SFZ-M|MSKL



SF|MSKL

SFZ-M MSKL 3-12 with strain relief	37620	3 - 12 mm	60.5 x 15.1 x 26	35 mm, DIN rail shape H	10
SFZ-M MSKL 8-18 with strain relief	37622	8 - 18 mm	60.5 x 20 x 32	35 mm, DIN rail shape H	10
SF MSKL 3-12	37616	3 - 12 mm	50.5 x 15.1 x 26	35 mm, DIN rail shape H	10
SF MSKL 8-18	37618	8 - 18 mm	50.5 x 20 x 32	35 mm, DIN rail shape H	10



# MSKL

## EMC Shield clamps with large clamping range





PFSZ-M|MSKL



PFKZ-M|MSKL



Type	Order No.	Clamping range [mm]	Dimensions L x W x H [mm]	Mounting type	PU
<p>MSKL for snap mounting on 10 x 3 mm bus bars:</p>  <p>PFSZ-M MSKL</p>					
PFSZ-M MSKL 3-12 with strain relief	37630	3 - 12 mm	38 x 15.1 x 28.7	10 x 3 mm Bus bar	10
PFSZ-M MSKL 8-18 with strain relief	37632	8 - 18 mm	38 x 20 x 34.9	10 x 3 mm Bus bar	10
Bus bar 10 x 3 mm	36100		1000 x 10 x 3*		1
<p>MSKL for plugging on sheet metal edges:</p>  <p>PFKZ-M MSKL</p>					
PFKZ-A-M MSKL 3-12 with strain relief	37640	3 - 12 mm	38 x 15.1 x 28.8	sheet edges, thickness 1.5 - 2 mm	10
PFKZ-A-M MSKL 8-18 with strain relief	37642	8 - 18 mm	38 x 20 x 35	sheet edges, thickness 1.5 - 2 mm	10
PFKZ-B-M MSKL 3-12 with strain relief	37650	3 - 12 mm	38 x 15.1 x 28.8	sheet edges, thickness 2 - 3 mm	10
PFKZ-B-M MSKL 8-18 with strain relief	37652	8 - 18 mm	38 x 20 x 35	sheet edges, thickness 2 - 3 mm	10

\* Other lengths available on request

### PFSZ-M|MSKL

PFSZ-M|MSKL shield clamps can be easily attached by snapping them onto 10 x 3 mm bus bars. The design allows cables to be secured with a cable tie. Strain relief in accordance with EN 62444 is achieved.

### PFKZ-M|MSKL

PFKZ-M|MSKL shield clamps are used where a screw connection is either not possible or wanted. The PFKZ-M|MSKL is simply clamped on the sheet. The claws provide a secure grip, even in case of vibrations. The design allows cables to be secured with a cable tie. Strain relief in accordance with EN 62444 is achieved.

## Advantages & benefits

- Large clamping areas, therefore less product sizes needed to cover a large cable diameter range
- Space-saving design, even when fully assembled
- Large contact area
- Simple mounting, easy assembly
- Partially with integrated strain relief
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

## Specifications

### Material

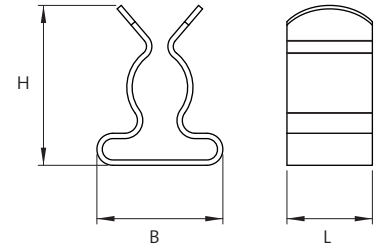
MSKL-clamp	Spring steel, zinc plated
LF/LFZ-M-foot	Sheet steel, galvanically zinc plated
SF/SFZ-M/PFSZ-M/	
PFKZ-M-foot	Spring steel

## Accessories

KEL-EMC-PF Bracket	139
MF Supports for bus bars	187

# SKL | RCL|SKL

EMC Shield clamps, single  
EMC Shield clamps on cable lugs



## Product description

SKL shield clamps are easy to use and effective in earthing single cable shields.

Shield clamps can be easily attached via rivet.

## Advantages & benefits

- Large contact area
- Easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free
- Designed for high density applications

## Specifications

**Material**  
SKL-clamp      Spring steel, zinc plated

Type	Order No.	Clamping range [mm]	Dimensions L x B x H [mm]	Fixing hole	PU
MSKL 3-12	37600	3 - 12 mm	8 x 15.1 x 20.5	3.2 mm	50
MSKL 8-18	37602	8 - 18 mm	8 x 20 x 27	3.2 mm	50
SKL 1.5-3	36200	1.5 - 3 mm	8 x 11.8 x 13	3.1 mm	50
SKL 3-6	36202	3 - 6 mm	8 x 11.8 x 13.6	3.1 mm	50
SKL 6-8	36204	6 - 8 mm	8 x 11.8 x 15	3.1 mm	50
SKL 8-11	36205	8 - 11 mm	8 x 14 x 20	3.1 mm	50
SKL 11-17	36206	11 - 17 mm	8 x 21 x 27.5	3.1 mm	50
SKL 17-22	36207	17 - 22 mm	8 x 26.5 x 34.5	3.1 mm	50
SKL 22-30	36208	22 - 30 mm	8 x 35 x 39.5	3.1 mm	50
SKL 30-38	36209	30 - 38 mm	11 x 48.3 x 54.7	5.2 mm	5
SKL 38-48	36213	38 - 48 mm	13 x 55 x 67	2 x 5.2 mm Hole spacing: 9.2 mm	5

Type	Order No.	Shield diameter	PU
<b>NEW</b> RCL 0.5-1.5mm² SKL 1.5-3	36296.1	1.5 - 3 mm	25
RCL 0.5-1.5mm² MSKL 3-12	36296.2	3 - 12 mm	25
RCL 1.0-2.5mm² SKL 1.5-3	36297.1	1.5 - 3 mm	25
RCL 1.0-2.5mm² MSKL 3-12	36297.2	3 - 12 mm	25
RCL 4-6mm² SKL 1.5-3	36298.1	1.5 - 3 mm	25
RCL 4-6mm² MSKL 3-12	36298.2	3 - 12 mm	25



# SFZ|SKL

## EMC Shield clamps for 35 mm DIN rail



Type	Order No.	Shield diameter	PU
SFZ-M MSKL 3-12	37620	3 - 12 mm	10
SFZ-M MSKL 8-18	37622	8 - 18 mm	10
SFZ SKL 1.5-3	36850	1.5 - 3 mm	10
SFZ SKL 3-6	36855	3 - 6 mm	10
SFZ SKL 6-8	36860	6 - 8 mm	10
SFZ SKL 8-11	36865	8 - 11 mm	10
SFZ SKL 11-17	36870	11 - 17 mm	10
SFZ SKL 17-22	36875	17 - 22 mm	10
SFZ SKL 22-30	36880	22 - 30 mm	10
SFZ SKL 30-38	<b>NEW</b> 36885	30 - 38 mm	10

### Product description

The shield clamps SFZ|SKL are easy to use and effective in earthing single cable shields in combination with strain relief.

Cables are secured with a cable tie. Strain relief in accordance with EN 62444 is achieved.

For assembly on 35 mm DIN rails.

### Advantages & benefits

- Simple and tool-free mounting, easy assembly
- Shock and vibration resistant, maintenance free
- Strain relief of the cable and earthing in a single device
- Large contact area
- The spring design requires no adjustments and will permanently maintain contact to the cable shield

4.1

### Specifications

#### Material

SKL-clamp      Spring steel, zinc plated  
SF- / SFZ-foot      Spring steel



# SF|SKL

## EMC Shield clamps for 35 mm DIN rail



SF|SKL



SF|SKL 38-48



### Product description

The shield clamps SF|SKL are easy to use and effective in earthing single cable shields.

For assembly on 35 mm DIN rails.

### Advantages & benefits

- Large contact area
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free

4.1

### Specifications

<b>Material</b>	
SKL-clamp	Spring steel, zinc plated
SF-foot	Spring steel

Type	Order No.	Shield diameter	PU
SF MSKL 3-12	37616	3 - 12 mm	10
SF MSKL 8-18	37618	8 - 18 mm	10
SF SKL 1.5-3	36243	1.5 - 3 mm	10
SF SKL 3-6	36244	3 - 6 mm	10
SF SKL 6-8	36245	6 - 8 mm	10
SF SKL 8-11	36246	8 - 11 mm	10
SF SKL 11-17	36247	11 - 17 mm	10
SF SKL 17-22	36248	17 - 22 mm	10
SF SKL 22-30	36249	22 - 30 mm	10
SF SKL 30-38	36250	30 - 38 mm	10
SF SKL 38-48	36252	38 - 48 mm	10
SF single M4	36230	Snap foot, single with screw thread M4	10
SF single M5	36221	Snap foot, single with screw thread M5	10



SF single

## SFS|SKL

### EMC Shield clamps for 35 mm DIN rail



Type	Order No.	Shield diameter	PU
SFS SKL 1.5-3	36810	1.5 - 3 mm	10
SFS SKL 3-6	36815	3 - 6 mm	10
SFS SKL 6-8	36820	6 - 8 mm	10
SFS single	36229	Snap foot single	10

### Product description

Comparable with type SF|SKL, the SFS|SKL shield clamps are easily mounted on 35 mm DIN-rails.

The staggered arrangement of SFS|SKL maximises space utilisation. Suitable for applications that require EMC shielding close to connection points or controller inputs.

### Advantages & benefits

- Designed for high density applications
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Large contact area
- Shock and vibration resistant, maintenance free

### Specifications

#### Material

SKL-clamp **Spring steel, zinc plated**  
SFS-foot **Spring steel**

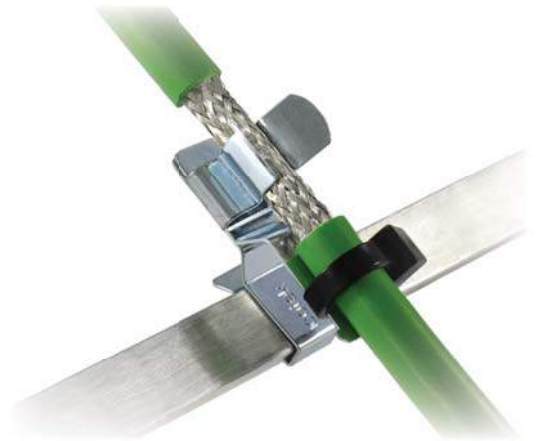


SFS single



# PFSZ|SKL

## EMC Shield clamps for bus bar



### Product description

Comparable with the PFS|SKL range, the PFSZ|SKL shield clamps are easy to use and effective in earthing single cable shields. They are used for mounting on 10 x 3 mm bus bars.

The PFSZ range provides the possibility to fix the cable with a cable tie. Strain relief in accordance with EN 62444 is achieved.

### Advantages & benefits

- Integrated strain relief
- Large contact area
- Simple and tool – free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

Type	Order No.	Shield diameter	PU
PFSZ-M MSKL 3-12	37630	3 - 12 mm	10
PFSZ-M MSKL 8-18	37632	8 - 18 mm	10
PFSZ SKL 1.5-3	36787.1	1.5 - 3 mm	10
PFSZ SKL 3-6	36787.2	3 - 6 mm	10
PFSZ SKL 6-8	36787.3	6 - 8 mm	10
PFSZ SKL 8-11	36787.4	8 - 11 mm	10
Bus bar 10 x 3 mm	36100	10 x 3 x 1000 mm*	1

\* Other lengths available on request

### Specifications

**Material**

- SKL-clamp      **Spring steel, zinc plated**
- PFSZ-foot     **Spring steel**
- Bus bar        **Cu, tin plated, current load 140 A**

### Accessories

- KEL-EMC-PF Bracket      139
- MF Supports for bus bars    187

4.1

# PFS|SKL

## EMC Shield clamps for bus bar



Type	Order No.	Shield diameter	PU
PFS SKL 1.5-3	36786.1	1.5 - 3 mm	10
PFS SKL 3-6	36786.2	3 - 6 mm	10
PFS SKL 6-8	36786.3	6 - 8 mm	10
PFS SKL 8-11	36786.4	8 - 11 mm	10
PFS SKL 11-17	36786.5	11 - 17 mm	10
PFS SKL 17-22	36786.6	17 - 22 mm	10
Bus bar 10 × 3 mm	36100	10 × 3 × 1000 mm*	1

\* Other lengths available on request

### Product description

PFS|SKL shield clamps are easy to use and effective in earthing single cable shields.

The PFS|SKL is mounted by snapping on a 10 × 3 mm bus bar.

### Advantages & benefits

- Large contact area
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free
- Designed for high density applications

4.1

### Specifications

#### Material

SKL-clamp	Spring steel, zinc plated
PFS-foot	Spring steel
Bus bar	Cu, tin plated, current load 140 A

### Accessories

KEL-EMC-PF Bracket	139
MF Supports for bus bars	187

# PFS|SCL

EMC Shield clamps for bus bar



## Product description

The range of shield clamps PFS|SCL are designed for a quick and easy mounting by snapping onto 10x3 mm bus bars. The very slim shape is ideal for applications with limited space.

Type	Order No.	Shield diameter	PU
PFS SCL 1.5 - 3	36611	1.5 - 3.0 mm	10
PFS SCL 3 - 6	36612	3.0 - 6.0 mm	10

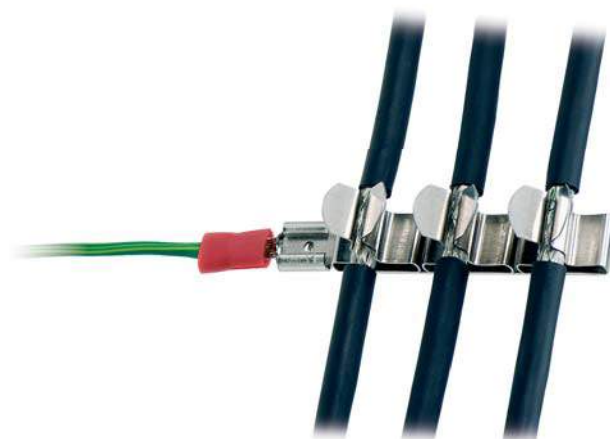
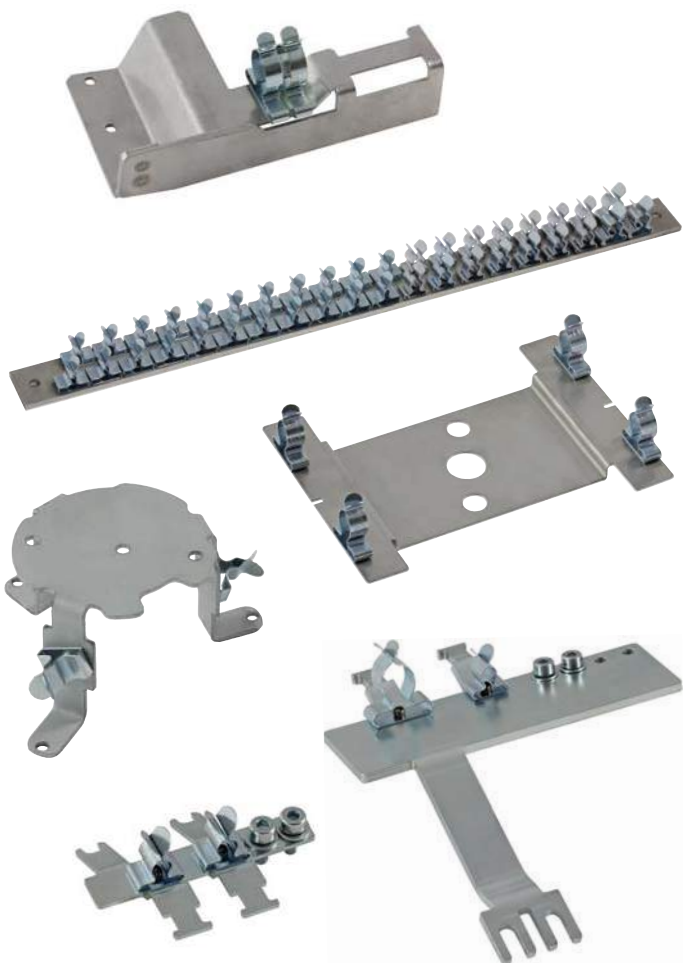
## Advantages & benefits

- Extremely slim shape
- Large contact area
- Simple and tool-free assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Cost effective solution

## Specifications

**Material** Spring steel, zinc-plated

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### Product description

In addition to our standard product offering we offer customised solutions for your application – even for small quantities!

A wide range of standard clamp assemblies are already available (see pages 134 - 137).

If a standard EMC clamp assembly is not practicable in your case, a custom designed carrier for shield clamps can be supplied.

We look forward to sharing our ideas and custom EMC solutions with you.

### Advantages & benefits

- Supply of custom designed carriers for SKL shield clamps
- Cost-effective even for small quantities
- Available for a wide range of cable diameters



# PFSZ2|SKL

## EMC Shield clamps for bus bar, double



### Product description

Comparable with the PFS2|SKL range, the PFSZ2|SKL shield clamps are easy to use and effective in earthing single cable shields. They are used for mounting on 10 x 3 mm bus bars.

The PFSZ2 range provides possibility to fix the cables with cable ties. Strain relief in accordance with EN 62444 is achieved.

### Advantages & benefits

- Integrated strain relief
- Large contact area
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

### Specifications

**Material**

SKL-clamp      **Spring steel, zinc plated**  
 PFSZ2-foot    **Spring steel**  
 Bus bar        **Cu, tin plated, current load 140 A**

### Accessories

MF Supports for bus bars    187

Type	Shield diameter Pos. 1	Shield diameter Pos. 2	Order No.	PU
PFSZ2 SKL 01	blank	1.5 - 3 mm	36789.01	10
PFSZ2 SKL 02	blank	3 - 6 mm	36789.02	10
PFSZ2 SKL 03	blank	6 - 8 mm	36789.03	10
PFSZ2 SKL 04	blank	8 - 11 mm	36789.04	10
PFSZ2 SKL 10	1.5 - 3 mm	blank	36789.10	10
PFSZ2 SKL 11	1.5 - 3 mm	1.5 - 3 mm	36789.11	10
PFSZ2 SKL 12	1.5 - 3 mm	3 - 6 mm	36789.12	10
PFSZ2 SKL 13	1.5 - 3 mm	6 - 8 mm	36789.13	10
PFSZ2 SKL 14	1.5 - 3 mm	8 - 11 mm	36789.14	10
PFSZ2 SKL 20	3 - 6 mm	blank	36789.20	10
PFSZ2 SKL 21	3 - 6 mm	1.5 - 3 mm	36789.21	10
PFSZ2 SKL 22	3 - 6 mm	3 - 6 mm	36789.22	10
PFSZ2 SKL 23	3 - 6 mm	6 - 8 mm	36789.23	10
PFSZ2 SKL 24	3 - 6 mm	8 - 11 mm	36789.24	10
PFSZ2 SKL 30	6 - 8 mm	blank	36789.30	10
PFSZ2 SKL 31	6 - 8 mm	1.5 - 3 mm	36789.31	10
PFSZ2 SKL 32	6 - 8 mm	3 - 6 mm	36789.32	10
PFSZ2 SKL 33	6 - 8 mm	6 - 8 mm	36789.33	10
PFSZ2 SKL 34	6 - 8 mm	8 - 11 mm	36789.34	10
PFSZ2 SKL 40	8 - 11 mm	blank	36789.40	10
PFSZ2 SKL 41	8 - 11 mm	1.5 - 3 mm	36789.41	10
PFSZ2 SKL 42	8 - 11 mm	3 - 6 mm	36789.42	10
PFSZ2 SKL 43	8 - 11 mm	6 - 8 mm	36789.43	10
Bus bar 10 x 3 mm	10 x 3 x 1000 mm*		36100	1

\* Other lengths available on request

# PFS2|SKL

## EMC Shield clamps for bus bar, double



Type	Shield diameter Pos. 1	Shield diameter Pos. 2	Order No.	PU
PFS2 SKL 01	blank	1.5 - 3 mm	36788.01	10
PFS2 SKL 02	blank	3 - 6 mm	36788.02	10
PFS2 SKL 03	blank	6 - 8 mm	36788.03	10
PFS2 SKL 04	blank	8 - 11 mm	36788.04	10
PFS2 SKL 10	1.5 - 3 mm	blank	36788.10	10
PFS2 SKL 11	1.5 - 3 mm	1.5 - 3 mm	36788.11	10
PFS2 SKL 12	1.5 - 3 mm	3 - 6 mm	36788.12	10
PFS2 SKL 13	1.5 - 3 mm	6 - 8 mm	36788.13	10
PFS2 SKL 14	1.5 - 3 mm	8 - 11 mm	36788.14	10
PFS2 SKL 20	3 - 6 mm	blank	36788.20	10
PFS2 SKL 21	3 - 6 mm	1.5 - 3 mm	36788.21	10
PFS2 SKL 22	3 - 6 mm	3 - 6 mm	36788.22	10
PFS2 SKL 23	3 - 6 mm	6 - 8 mm	36788.23	10
PFS2 SKL 24	3 - 6 mm	8 - 11 mm	36788.24	10
PFS2 SKL 30	6 - 8 mm	blank	36788.30	10
PFS2 SKL 31	6 - 8 mm	1.5 - 3 mm	36788.31	10
PFS2 SKL 32	6 - 8 mm	3 - 6 mm	36788.32	10
PFS2 SKL 33	6 - 8 mm	6 - 8 mm	36788.33	10
PFS2 SKL 34	6 - 8 mm	8 - 11 mm	36788.34	10
PFS2 SKL 40	8 - 11 mm	blank	36788.40	10
PFS2 SKL 41	8 - 11 mm	1.5 - 3 mm	36788.41	10
PFS2 SKL 42	8 - 11 mm	3 - 6 mm	36788.42	10
PFS2 SKL 43	8 - 11 mm	6 - 8 mm	36788.43	10
Bus bar 10 × 3 mm	10 × 3 × 1000 mm*		36100	1

\* Other lengths available on request

## Product description

PFS2|SKL shield clamps are easy to use and effective in earthing 2 single cables.

The PFS2|SKL is mounted by snapping on a 10 × 3 mm bus bar.

## Advantages & benefits

- Large contact area
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free
- Designed for high density applications

## Specifications

### Material

SKL-clamp	Spring steel, zinc plated
PFS2-foot	Spring steel
Bus bar	Cu, tin plated, current load 140 A

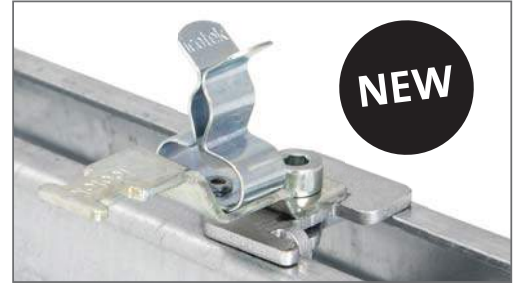
## Accessories

MF Supports for bus bars 187



# LFZ|SKL

## EMC Shield clamps for screw assembly



Type SC: Mounted on screw-foot for DIN-rail shape C\*

### Product description

LFZ|SKL shield clamps are easy to use and effective in earthing single cable shields.

Cables are secured with a cable tie. Strain relief in accordance with EN 62444 is achieved.

LFZ|SKL shield clamps are easily attached to mounting plates via screw or via mounting foot on 30 mm C-rails.

### Advantages & benefits

- Integrated strain relief
- Large contact area
- Simple assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

### Specifications

**Material**

- SKL-clamp     **Spring steel, zinc plated**
- LFZ-foot     **Sheet steel, galvanically zinc plated**  
**Fixing hole 4.2 mm for screw M4**
- SC-foot     **Sheet steel, galvanically zinc plated**

Type	Order No. for direct mounting	Order No. for C-rails*	Shield diameter	Fixing hole	PU
LFZ-M MSKL 3-12	37612	37612.100	3 - 12 mm	4.2 mm	10
LFZ-M MSKL 8-18	37614	37614.100	8 - 18 mm	4.2 mm	10
LFZ SKL 1.5-3	36910	36910.100	1.5 - 3 mm	4.2 mm	10
LFZ SKL 3-6	36915	36915.100	3 - 6 mm	4.2 mm	10
LFZ SKL 6-8	36920	36920.100	6 - 8 mm	4.2 mm	10
LFZ SKL 8-11	36925	36925.100	8 - 11 mm	4.2 mm	10
LFZ SKL 11-17	36930	36930.100	11 - 17 mm	4.2 mm	10
LFZ SKL 17-22	36935	36935.100	17 - 22 mm	4.2 mm	10
LFZ SKL 22-30	36940	36940.100	22 - 30 mm	4.2 mm	10
<b>NEW</b> LFZ SKL 30-38	36941	36941.100	30 - 38 mm	4.2 mm	10

\*Available from November 2018

4.1

# LFZ-U|SKL

## EMC Shield clamps for screw assembly



Type	Order No.	Shield diameter	Fixing hole	PU
<b>LFZ-U SKL for M4 screws:</b>				
LFZ-U4 SKL 1.5-3	36886.1	1.5 - 3 mm	4.2 mm	10
LFZ-U4 SKL 3-6	36886.2	3 - 6 mm	4.2 mm	10
LFZ-U4 SKL 6-8	36886.3	6 - 8 mm	4.2 mm	10
LFZ-U4 SKL 8-11	36886.4	8 - 11 mm	4.2 mm	10
<b>LFZ-U SKL for M5 screws:</b>				
LFZ-U5 SKL 1.5-3	36887.1	1.5 - 3 mm	5.2 mm	10
LFZ-U5 SKL 3-6	36887.2	3 - 6 mm	5.2 mm	10
LFZ-U5 SKL 6-8	36887.3	6 - 8 mm	5.2 mm	10
LFZ-U5 SKL 8-11	36887.4	8 - 11 mm	5.2 mm	10

### Product description

LFZ-U|SKL shield clamps are used, where the shield of single cables must be connected to the earth potential.

LFZ-U|SKL shield clamps are easy to use and effective in earthing single cable shields. Cables are secured with a cable tie. Strain relief in accordance with EN 62444 is achieved.

Shield clamps are easily attached to mounting plates via screw. The shield clamp LFZ-U|SKL is available for M4 or M5 screws. During assembly it is sufficient to loosen the existing screw slightly to be able to slide the clamp underneath before re-tightening the screw.

4.1

### Advantages & benefits

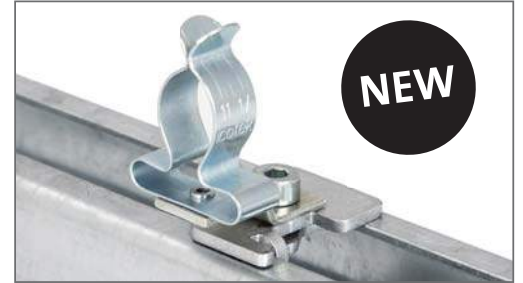
- Integrated strain relief
- Large contact area
- Simple and quick assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

### Specifications

<b>Material</b>	
SKL-clamp	Spring steel, zinc plated
LFZ-foot	Sheet steel, galvanically zinc plated
	Fixing hole 4.2 mm / 5.2 mm for screw M4 / M5

# LF|SKL

## EMC Shield clamps for screw assembly



Type SC: Mounted on screw-foot for DIN-rail shape C\*

### Product description

LF|SKL shield clamps are easy to use and effective in earthing single cable shields.

Shield clamps are easily attached to mounting plates via screw or via mounting foot on 30 mm C-rails.

### Advantages & benefits

- Large contact area
- Simple assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free
- Designed for high density applications

### Specifications

**Material**

- SKL-clamp     **Spring steel, zinc plated**
- LF-foot       **Sheet steel, galvanically zinc plated**
- Fixing hole 4.2 mm for screw M4**
- SC-foot       **Sheet steel, galvanically zinc plated**

Type	Order No. for direct mounting	Order No. for C-rails*	Shield diameter	Fixing hole	PU
LF MSKL 3-12	37608	37608.100	3 - 12 mm	4.2 mm	10
LF MSKL 8-18	37610	37610.100	8 - 18 mm	4.2 mm	10
LF SKL 1.5-3	36251	36251.100	1.5 - 3 mm	4.2 mm	10
LF SKL 3-6	36253	36253.100	3 - 6 mm	4.2 mm	10
LF SKL 6-8	36255	36255.100	6 - 8 mm	4.2 mm	10
LF SKL 8-11	36256	36256.100	8 - 11 mm	4.2 mm	10
LF SKL 11-17	36257	36257.100	11 - 17 mm	4.2 mm	10
LF SKL 17-22	36258	36258.100	17 - 22 mm	4.2 mm	10
LF SKL 22-30	36259	36259.100	22 - 30 mm	4.2 mm	10

\*Available from November 2018

# EMC Test results



## Leakage and Impedance

All icotek shield clamps have been tested utilising various frequency ranges and in all tests there was minimal leakage resistance.

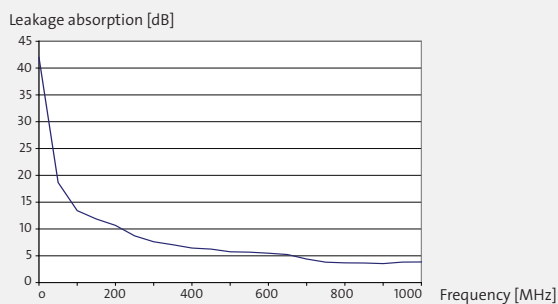
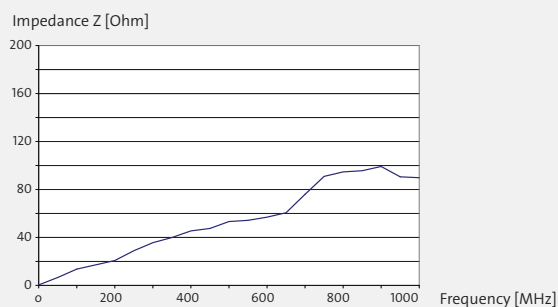
icotek EMC shield clamps are proven to absorb electromagnetic interferences.

- Electrical impedance values:
- from 10 kHz to 100 MHz under 20 Ohm
  - up to 1.000 MHz under 120 Ohm

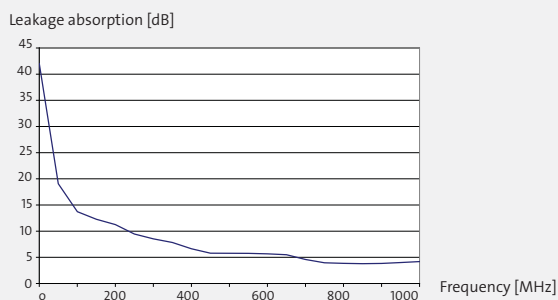
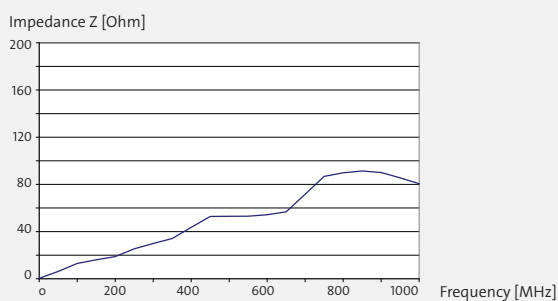
The unique design of icotek shield clamps effectively reduce high frequency interferences.

4.1

LF|SKL 8-11



SF|SKL 6-8



## Contact area

The SKL shield clamps offer a large contact area to the cable shield (see figure A).

In comparison to conventional shield clamps, an up to 50% higher contact area is achieved when using the SKL product line.

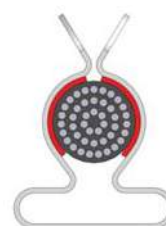


Figure A: SKL-line

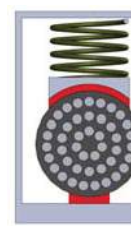
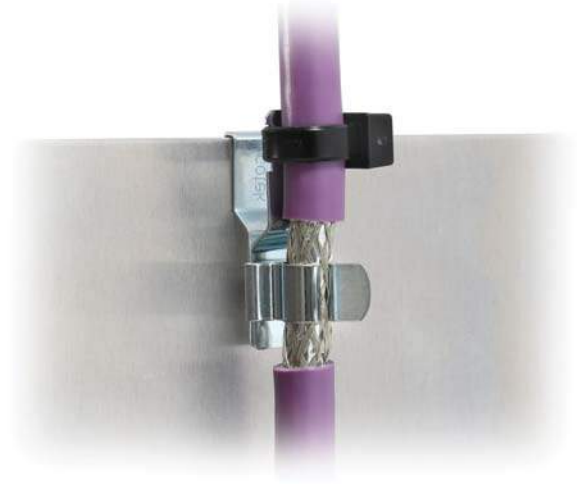


Figure B: Conventional systems

# PFKZ|SKL

EMC Shield clamps, pluggable



## Product description

Comparable with the PFK|SKL range, the PFKZ|SKL shield clamps are easy to use and effective in earthing single cable shields. The PFKZ range provides possibility to affix the cable with a cable tie. Strain relief in accordance with EN 62444 is achieved.

PFKZ|SKL clamps are used where a screw connection is either not possible or wanted. The PFKZ|SKL is simply clamped on the sheet. The claws provide a secure grip, even in case of vibrations.

## Advantages & benefits

- Integrated strain relief
- Large contact area
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

## Specifications

### Material

SKL-clamp     **Spring steel, zinc plated**  
 PFKZ-foot    **Spring steel**

Type A:        **For wall/sheet thickness 1.5 - 2 mm**  
 Type B:        **For wall/sheet thickness 2 - 3 mm**

Type	Order No.	Shield diameter	PU
<b>PFKZ SKL - Type A (for wall/sheet thickness 1.5 - 2 mm)</b>			
PFKZ-A-M MSKL 3-12	37640	3 - 12 mm	10
PFKZ-A-M MSKL 8-18	37642	8 - 18 mm	10
<b>PFKZ SKL - Type B (for wall/sheet thickness 2 - 3 mm)</b>			
PFKZ-B-M MSKL 3-12	37650	3 - 12 mm	10
PFKZ-B-M MSKL 8-18	37652	8 - 18 mm	10
PFKZ-B SKL 1.5-3	36779.1	1.5 - 3 mm	10
PFKZ-A SKL 3-6	36779.2	3 - 6 mm	10
PFKZ-A SKL 6-8	36779.3	6 - 8 mm	10
PFKZ-A SKL 8-11	36779.4	8 - 11 mm	10
PFKZ-B SKL 1.5-3	36783.1	1.5 - 3 mm	10
PFKZ-B SKL 3-6	36783.2	3 - 6 mm	10
PFKZ-B SKL 6-8	36783.3	6 - 8 mm	10
PFKZ-B SKL 8-11	36783.4	8 - 11 mm	10

# PFK|SKL

## EMC Shield clamps, pluggable



Secure grip on metal sheets due to mounting claws



Type	Order No.	Shield diameter	PU
<b>PFK SKL - Type A (for wall/sheet thickness 1.5 - 2 mm):</b>			
PFK-A SKL 1.5-3	36778.1	1.5 - 3 mm	10
PFK-A SKL 3-6	36778.2	3 - 6 mm	10
PFK-A SKL 6-8	36778.3	6 - 8 mm	10
PFK-A SKL 8-11	36778.4	8 - 11 mm	10
<b>PFK SKL - Type B (for wall/sheet thickness 2 - 3 mm):</b>			
PFK-B SKL 1.5-3	36782.1	1.5 - 3 mm	10
PFK-B SKL 3-6	36782.2	3 - 6 mm	10
PFK-B SKL 6-8	36782.3	6 - 8 mm	10
PFK-B SKL 8-11	36782.4	8 - 11 mm	10

### Product description

PFK|SKL shield clamps are easy to use and effective in earthing single cable shields.

PFK|SKL clamps are used where a screw connection is either not possible or wanted. The PFK|SKL is simply clamped on the sheet. The claws provide a secure grip, even in case of vibrations.

### Advantages & benefits

- Large contact area
- Simple and tool-free mounting, easy assembly
- Shock and vibration resistant, maintenance free
- The spring design requires no adjustments and will permanently maintain contact to the cable shield

### Specifications

<b>Material</b>	
SKL-clamp	Spring steel, zinc plated
PFK-foot	Spring steel

Type A:	For wall/sheet thickness 1.5 - 2 mm
Type B:	For wall/sheet thickness 2 - 3 mm



# PFKZ2|SKL

## EMC Shield clamps, pluggable, double



Secure grip on metal sheets due to mounting claws

### Product description

Comparable with the PFK2|SKL range, the PFKZ2|SKL shield clamps are easy to use and effective in earthing 2 single cable shields. The PFKZ range provides the possibility to affix the cable with a cable tie. Strain relief in accordance with EN 62444 is achieved.

PFKZ2|SKL clamps are used where a screw connection is either not possible or wanted. The PFKZ2|SKL is simply clamped on the sheet. The claws provide a secure grip, even in case of vibrations.

4.1

### Advantages & benefits

- Integrated strain relief
- Large contact area
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free
- Designed for high density applications

### Specifications

**Material**

SKL-clamp      **Spring steel, zinc plated**  
 PFKZ2-foot    **Spring steel**

Type A:      **For wall/sheet thickness 1.5 - 2 mm**  
 Type B:      **For wall/sheet thickness 2 - 3 mm**

Type A	Order No. Type A	Type B	Order No. Type B	Shield diameter Pos.1	Shield diameter Pos. 2	PU
Sheet thickness 1.5-2 mm:		Sheet thickness 2-3 mm:				
PFKZ2-A SKL 01	36781.01	PFKZ2-B SKL 01	36785.01	blank	1.5 - 3 mm	10
PFKZ2-A SKL 02	36781.02	PFKZ2-B SKL 02	36785.02	blank	3 - 6 mm	10
PFKZ2-A SKL 03	36781.03	PFKZ2-B SKL 03	36785.03	blank	6 - 8 mm	10
PFKZ2-A SKL 04	36781.04	PFKZ2-B SKL 04	36785.04	blank	8 - 11 mm	10
PFKZ2-A SKL 10	36781.10	PFKZ2-B SKL 10	36785.10	1.5 - 3 mm	blank	10
PFKZ2-A SKL 11	36781.11	PFKZ2-B SKL 11	36785.11	1.5 - 3 mm	1.5 - 3 mm	10
PFKZ2-A SKL 12	36781.12	PFKZ2-B SKL 12	36785.12	1.5 - 3 mm	3 - 6 mm	10
PFKZ2-A SKL 13	36781.13	PFKZ2-B SKL 13	36785.13	1.5 - 3 mm	6 - 8 mm	10
PFKZ2-A SKL 14	36781.14	PFKZ2-B SKL 14	36785.14	1.5 - 3 mm	8 - 11 mm	10
PFKZ2-A SKL 20	36781.20	PFKZ2-B SKL 20	36785.20	3 - 6 mm	blank	10
PFKZ2-A SKL 21	36781.21	PFKZ2-B SKL 21	36785.21	3 - 6 mm	1.5 - 3 mm	10
PFKZ2-A SKL 22	36781.22	PFKZ2-B SKL 22	36785.22	3 - 6 mm	3 - 6 mm	10
PFKZ2-A SKL 23	36781.23	PFKZ2-B SKL 23	36785.23	3 - 6 mm	6 - 8 mm	10
PFKZ2-A SKL 24	36781.24	PFKZ2-B SKL 24	36785.24	3 - 6 mm	8 - 11 mm	10
PFKZ2-A SKL 30	36781.30	PFKZ2-B SKL 30	36785.30	6 - 8 mm	blank	10
PFKZ2-A SKL 31	36781.31	PFKZ2-B SKL 31	36785.31	6 - 8 mm	1.5 - 3 mm	10
PFKZ2-A SKL 32	36781.32	PFKZ2-B SKL 32	36785.32	6 - 8 mm	3 - 6 mm	10
PFKZ2-A SKL 33	36781.33	PFKZ2-B SKL 33	36785.33	6 - 8 mm	6 - 8 mm	10
PFKZ2-A SKL 34	36781.34	PFKZ2-B SKL 34	36785.34	6 - 8 mm	8 - 11 mm	10
PFKZ2-A SKL 40	36781.40	PFKZ2-B SKL 40	36785.40	8 - 11 mm	blank	10
PFKZ2-A SKL 41	36781.41	PFKZ2-B SKL 41	36785.41	8 - 11 mm	1.5 - 3 mm	10
PFKZ2-A SKL 42	36781.42	PFKZ2-B SKL 42	36785.42	8 - 11 mm	3 - 6 mm	10
PFKZ2-A SKL 43	36781.43	PFKZ2-B SKL 43	36785.43	8 - 11 mm	6 - 8 mm	10

# PFK2|SKL

## EMC Shield clamps, pluggable, double



Type A	Order No. Type A	Type B	Order No. Type B	Shield diameter Pos. 1	Shield diameter Pos. 2	PU
Sheet thickness 1.5 - 2 mm:		Sheet thickness 2 - 3 mm:				
PFK2-A SKL 01	36780.01	PFK2-B SKL 01	36784.01	blank	1.5 - 3 mm	10
PFK2-A SKL 02	36780.02	PFK2-B SKL 02	36784.02	blank	3 - 6 mm	10
PFK2-A SKL 03	36780.03	PFK2-B SKL 03	36784.03	blank	6 - 8 mm	10
PFK2-A SKL 04	36780.04	PFK2-B SKL 04	36784.04	blank	8 - 11 mm	10
PFK2-A SKL 10	36780.10	PFK2-B SKL 10	36784.10	1.5 - 3 mm	blank	10
PFK2-A SKL 11	36780.11	PFK2-B SKL 11	36784.11	1.5 - 3 mm	1.5 - 3 mm	10
PFK2-A SKL 12	36780.12	PFK2-B SKL 12	36784.12	1.5 - 3 mm	3 - 6 mm	10
PFK2-A SKL 13	36780.13	PFK2-B SKL 13	36784.13	1.5 - 3 mm	6 - 8 mm	10
PFK2-A SKL 14	36780.14	PFK2-B SKL 14	36784.14	1.5 - 3 mm	8 - 11 mm	10
PFK2-A SKL 20	36780.20	PFK2-B SKL 20	36784.20	3 - 6 mm	blank	10
PFK2-A SKL 21	36780.21	PFK2-B SKL 21	36784.21	3 - 6 mm	1.5 - 3 mm	10
PFK2-A SKL 22	36780.22	PFK2-B SKL 22	36784.22	3 - 6 mm	3 - 6 mm	10
PFK2-A SKL 23	36780.23	PFK2-B SKL 23	36784.23	3 - 6 mm	6 - 8 mm	10
PFK2-A SKL 24	36780.24	PFK2-B SKL 24	36784.24	3 - 6 mm	8 - 11 mm	10
PFK2-A SKL 30	36780.30	PFK2-B SKL 30	36784.30	6 - 8 mm	blank	10
PFK2-A SKL 31	36780.31	PFK2-B SKL 31	36784.31	6 - 8 mm	1.5 - 3 mm	10
PFK2-A SKL 32	36780.32	PFK2-B SKL 32	36784.32	6 - 8 mm	3 - 6 mm	10
PFK2-A SKL 33	36780.33	PFK2-B SKL 33	36784.33	6 - 8 mm	6 - 8 mm	10
PFK2-A SKL 34	36780.34	PFK2-B SKL 34	36784.34	6 - 8 mm	8 - 11 mm	10
PFK2-A SKL 40	36780.40	PFK2-B SKL 40	36784.40	8 - 11 mm	blank	10
PFK2-A SKL 41	36780.41	PFK2-B SKL 41	36784.41	8 - 11 mm	1.5 - 3 mm	10
PFK2-A SKL 42	36780.42	PFK2-B SKL 42	36784.42	8 - 11 mm	3 - 6 mm	10
PFK2-A SKL 43	36780.43	PFK2-B SKL 43	36784.43	8 - 11 mm	6 - 8 mm	10

### Product description

PFK2|SKL shield clamps are easy to use and effective in earthing 2 single cable shields.

PFK2|SKL clamps are used where a screw connection is either not possible or wanted. The PFK2|SKL is simply clamped on the sheet. The claws provide a secure grip, even in case of vibrations.

### Advantages & benefits

- Large contact area
- Simple and tool-free mounting, easy assembly
- Shock and vibration resistant, maintenance free
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications

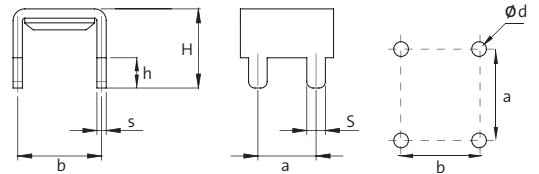
### Specifications

**Material**  
SKL-clamp Spring steel, zinc plated  
PFK2-foot Spring steel

Type A: For wall/sheet thickness 1.5 - 2 mm  
Type B: For wall/sheet thickness 2 - 3 mm

# PCB|SKL

EMC Shield clamps  
for printed circuit boards



## Product description

PCB|SKL shield clamps are easy to use and effective in earthing single cable shields.

PCB|SKL consist of SKL clamps, fixed on a soldering foot that enables assembly on printed circuit boards. There are various designs to choose from.

## Advantages & benefits

- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Large contact area

## Specifications

**Material**  
SKL-clamp     **Spring steel, zinc plated**  
PCB-foot     **Brass, tin plated**

Type	Order No.	Height H [mm]	Width s [mm]	Pin h [mm]	Pin S [mm]	Grid a x b [mm]	Drill-hole d [mm]	PU
PCB-4-V-6,8 SKL 1.5-3 (Clamping range 1.5 - 3 mm)	36650.1	6.8	0.8	2.6	1.6	7.2 x 5	Ø 1.8	10
PCB-4-V-6,8 SKL 3-6 (Clamping range 3 - 6 mm)	36650.2	6.8	0.8	2.6	1.6	7.2 x 5	Ø 1.8	10
PCB-4-V-6,8 SKL 6-8 (Clamping range 6 - 8 mm)	36650.3	6.8	0.8	2.6	1.6	7.2 x 5	Ø 1.8	10
PCB-4-V-12,5 SKL 1.5-3 (Clamping range 1.5 - 3 mm)	36656.1	12.5	1	4	1.6	10.1 x 5	Ø 1.8	10
PCB-4-V-12,5 SKL 3-6 (Clamping range 3 - 6 mm)	36656.2	12.5	1	4	1.6	10.1 x 5	Ø 1.8	10
PCB-4-V-12,5 SKL 6-8 (Clamping range 6 - 8 mm)	36656.3	12.5	1	4	1.6	10.1 x 5	Ø 1.8	10
<b>NEW</b> PCB-ET-4-V-4,1 SKL 3-6 (Clamping range 3 - 6 mm)	36653.1	17.5	0.3	2.6	1.6	5 x 7.2	Ø 1.8	25

4.1

# STFZ|SKL

## EMC Terminal clamp for peripheral modules



STFZ-SP|SKL



STFZ-U|SKL



STFZ|SKL

## Application terminal clamp

### STFZ|SKL

- Bosch Rexroth  
IP20 Inline Module
  - PHOENIX CONTACT  
All terminals of the INLINE range.  
The terminals 1.4 and 2.4 must not be used for signal I/O.
  - Pilz  
All PSSu-Modules with shield terminals 13 and 23
  - Siemens  
All terminals of the ET200s range.  
Terminals 4 and 8 must not be used for signal I/O.
  - TURCK  
For terminals of the BL20 I/O system.
  - VIPA SLIO  
All terminals of the SLIO range. Terminals 4+8 must not be used for signal I/O.
  - WAGO  
All terminals of the WAGO I/O Systems 750.  
Terminals 4 and 8 must not be used for signal I/O.
  - Rockwell Automation / Allen-Bradley  
Series 1734
- Further manufacturers upon request.

### STFZ-U|SKL

- BECKHOFF  
EL 3122, ES 3122, ES 9100, ES 9410, KL 1114, KS 2134

### STFZ-SP|SKL

- Siemens  
SIMATIC ET 200SP

## Product description

The EMC terminal clamps STFZ|SKL combine the functions strain relief, cable guidance and earthing of signal cables. Available in two versions for 1 or 2 lines.

The STFZ2|SKL is used for analogue I/O modules using two actuators / sensors.

The STFZ EMC terminal clamp is compatible to bus modules listed on the left side.

For the SIMATIC ET 200SP module by Siemens icotek has developed a special terminal clamp STFZ-SP for 1 or 2 lines.

## Product description

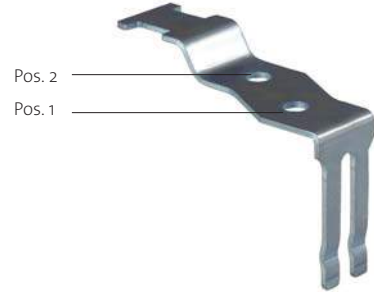
STFZ I/O Insert Tool for quick and easy mounting of STFZ terminal clamps.

Order No. 61430



# STFZ | STFZ2

EMC Terminal clamp, single and double for various brands



## Product description

The STFZ|SKL EMC terminal clamp provides strain relief, cable guidance and earthing for decentralised bus modules (see compatibility table page 129).

The STFZ2|SKL is used for analogue I/O modules using two actuators / sensors.

The EMC shield clamps as listed below are available to mount:

SKL 1.5-3 | SKL 3-6 | SKL 6-8

## Advantages & benefits

- Earthing of signal cables close to the terminal
- Strain relief and cable management directly on the bus module

## Specifications

<b>Material</b>	
SKL-clamp	Spring steel, zinc plated
STFZ-foot	Spring steel

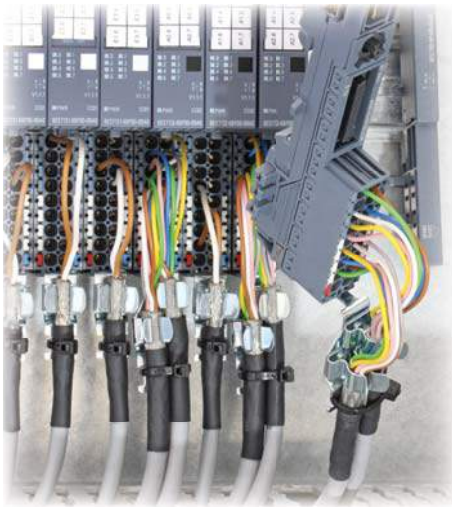
## Accessories

STFZ I/O Insert Tool 129

Type	Shield diameter Pos. 1	Shield diameter Pos. 2	Order No.	PU
<b>STFZ SKL with one shield clamp:</b>				
STFZ SKL 1.5-3	1.5 - 3 mm	-	37510.1	10
STFZ SKL 3-6	3 - 6 mm	-	37510.2	10
STFZ SKL 6-8	6 - 8 mm	-	37510.3	10
<b>STFZ2 SKL with two shield clamps:</b>				
STFZ2 01	blank	1.5 - 3 mm	37505.01	10
STFZ2 02	blank	3 - 6 mm	37505.02	10
STFZ2 03	blank	6 - 8 mm	37505.03	10
STFZ2 10	1.5 - 3 mm	blank	37505.10	10
STFZ2 11	1.5 - 3 mm	1.5 - 3 mm	37505.11	10
STFZ2 12	1.5 - 3 mm	3 - 6 mm	37505.12	10
STFZ2 13	1.5 - 3 mm	6 - 8 mm	37505.13	10
STFZ2 20	3 - 6 mm	blank	37505.20	10
STFZ2 21	3 - 6 mm	1.5 - 3 mm	37505.21	10
STFZ2 22	3 - 6 mm	3 - 6 mm	37505.22	10
STFZ2 23	3 - 6 mm	6 - 8 mm	37505.23	10
STFZ2 30	6 - 8 mm	blank	37505.30	10
STFZ2 31	6 - 8 mm	1.5 - 3 mm	37505.31	10
STFZ2 32	6 - 8 mm	3 - 6 mm	37505.32	10
STFZ2 33	6 - 8 mm	6 - 8 mm	37505.33	10

# STFZ-U | STFZ-SP | STFZ2-SP

## EMC Terminal clamp, single and double for Siemens & Beckhoff modules



Type	Shield diameter Pos. 1	Shield diameter Pos. 2	Order No.	PU
<b>STFZ-SP SKL / STFZ-U SKL with one shield clamp:</b>				
STFZ-SP SKL 1.5-3	1.5 - 3 mm	-	37512.1	10
STFZ-U SKL 1.5-3	1.5 - 3 mm	-	37514.1	10
STFZ-SP SKL 3-6	3 - 6 mm	-	37512.2	10
STFZ-U SKL 3-6	3 - 6 mm	-	37514.2	10
STFZ-SP SKL 6-8	6 - 8 mm	-	37512.3	10
STFZ-U SKL 6-8	6 - 8 mm	-	37514.3	10
<b>STFZ2-SP with two shield clamps:</b>				
STFZ2-SP 01	blank	1.5 - 3 mm	37507.01	10
STFZ2-SP 02	blank	3 - 6 mm	37507.02	10
STFZ2-SP 03	blank	6 - 8 mm	37507.03	10
STFZ2-SP 10	1.5 - 3 mm	blank	37507.10	10
STFZ2-SP 11	1.5 - 3 mm	1.5 - 3 mm	37507.11	10
STFZ2-SP 12	1.5 - 3 mm	3 - 6 mm	37507.12	10
STFZ2-SP 13	1.5 - 3 mm	6 - 8 mm	37507.13	10
STFZ2-SP 20	3 - 6 mm	blank	37507.20	10
STFZ2-SP 21	3 - 6 mm	1.5 - 3 mm	37507.21	10
STFZ2-SP 22	3 - 6 mm	3 - 6 mm	37507.22	10
STFZ2-SP 23	3 - 6 mm	6 - 8 mm	37507.23	10
STFZ2-SP 30	6 - 8 mm	blank	37507.30	10
STFZ2-SP 31	6 - 8 mm	1.5 - 3 mm	37507.31	10
STFZ2-SP 32	6 - 8 mm	3 - 6 mm	37507.32	10
STFZ2-SP 33	6 - 8 mm	6 - 8 mm	37507.33	10

### Product description

The STFZ-SP|SKL EMC terminal clamp provides strain relief, cable guidance and earthing for decentralised bus modules SIMATIC ET 200SP by Siemens. STFZ2-SP|SKL is a version for analogue I/O modules using two actuators / sensors. STFZ-U terminal clamps for various Beckhoff modules (see page 129).

The EMC shield clamps as listed below are available to mount:

SKL 1.5-3 | SKL 3-6 | SKL 6-8

### Advantages & benefits

- Earthing of signal cables close to the terminal
- Strain relief and cable management directly on the bus module

### Specifications

**Material**  
SKL-clamp Spring steel, zinc plated  
STFZ-SP-foot Spring steel

### Accessories

STFZ I/O Insert Tool 129



STFZ-U|SKL



# EMC ServiceBox *multi*

Service box with assorted MSKL shield clamp



## Product description

The suitable EMC clamp is always readily available!

The EMC ServiceBox multi is very universal, especially when the cable diameter is unknown in advance. With the new ServiceBox multi you always have the right size on hand.

The EMC ServiceBox multi is perfect for installations and service calls. Retrofitting and maintenance can be carried out easily and quickly.

Order No. 88006

## Content

<b>MSKL / SKL for TS35 DIN rails:</b>	
Type SFZ-M MSKL - sizes: 8 - 18 mm	10 × MSKL
Type SFZ-M MSKL - sizes: 3 - 12 mm	20 × MSKL
Type SFZ SKL - sizes: 1.5 - 3 mm	10 × SKL
<b>MSKL / SKL for assembly via screws:</b>	
Type LFZ-M MSKL - sizes: 8 - 18 mm	10 × MSKL
Type LFZ-M MSKL - sizes: 3 - 12 mm	20 × MSKL
Type LFZ SKL - sizes: 1.5 - 3 mm	10 × SKL
<b>MSKL for 10 × 3 mm bus bar:</b>	
Type PFSZ-M MSKL - sizes: 3 - 12 mm	10 × MSKL
<b>MSKL / SKL for clipping on metal sheets:</b>	
Type PFKZ-B-M MSKL - sizes: 1.5 - 8 mm	10 × MSKL
Type PFKZ-B SKL 22	2 × SKL
<b>SKL for decentralised bus modules:</b>	
Type STFZ SKL - sizes: 3 - 8 mm	6 × SKL
<b>SKL for clipping on metal sheets</b>	
Typ PFKZ-B SKL 1,5-3 mm	3 × SKL
Typ PFKZ-B SKL 3-6 mm	3 × SKL
Typ PFKZ-B SKL 6-8 mm	3 × SKL
<b>EMC - Accessories:</b>	
RLFZ - Clamp assembly	5 × SKL
	1 piece

90% of all cable shields are contacted



# EMC ServiceBox

## Service box with assorted SKL shield clamps



Exact gradations of the shield clamps



## Product description

The suitable EMC clamp is always readily available!

The EMC ServiceBox is perfect for installations and service calls. Retrofitting and maintenance can be carried out easily and quickly

Order No. 88002

## Content

### SKL for TS35 DIN rails:

Type SFZ SKL - sizes: 1.5 - 16 mm	15 × SKL
Type SFS SKL - sizes: 1.5 - 8 mm	6 × SKL
SFZ-M MSKL - sizes: 3-18 mm	4 × SKL

### SKL for assembly via screws:

Type LFZ SKL - sizes: 1.5 - 16 mm	21 × SKL
Type LFZ-U4 SKL - sizes: 1.5-11 mm	8 × SKL
Type LFZ-M MSKL - sizes: 3-18 mm	4 × SKL

### SKL for 10 × 3 bus bar:

Type PFSZ2 SKL 11	1 × SKL
Type PFSZ2 SKL 22	1 × SKL
Type PFSZ2 SKL 33	1 × SKL

### SKL for clipping on metal sheets:

Type PFSZ SKL - sizes: 1.5 - 11 mm	15 × SKL
Type PFSZ-M MSKL - sizes: 3-18 mm	4 × SKL

### SKL for decentralised bus modules:

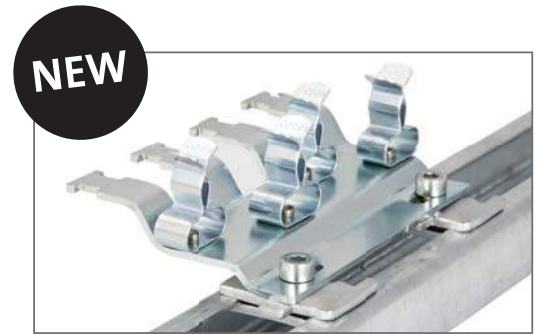
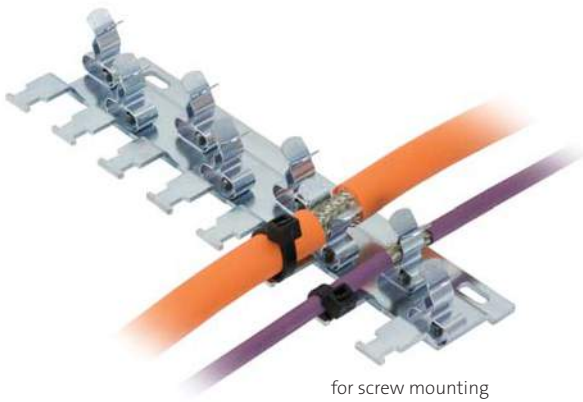
STFZ SKL - sizes: 3 - 6 mm	1 × SKL
STFZ2 SKL 23	1 × SKL

### SKL for Siemens module ET 200 SP:

STFZ-SP SKL - sizes: 3-6 mm	1 × SKL
STFZ2-SP SKL 23	1 × SKL

# RLFZ-M | SC|RLFZ-M

EMC Clamp assembly with strain relief and a large clamping range



Type SC: Mounted on screw-foot for DIN-rail shape C\*

## Product description

The RLFZ-M range is a further development of the EMC clamp assembly which enables earthing and strain relief of up to 12 cable shields from 3-12 mm using only one shield clamp size.

There are 10 different carriers available which can be easily user configured with up to 12 MSKL 3-12 shield clamps.

## Advantages & benefits

- Easy storage due to large clamping range 3-12 mm
- Designed for high density applications
- Possibility to configure custom specific EMC clamp assemblies
- Separate strain relief and EMC shield earthing
- Online design tool for EMC Clamp assembly on [www.icotek.com](http://www.icotek.com)

## Specifications

### Material

MSKL-clamp	Spring steel, zinc plated
RLFZ-M-foot	Sheet steel, galvanically zinc plated
SC-foot	Sheet steel, galvanically zinc plated

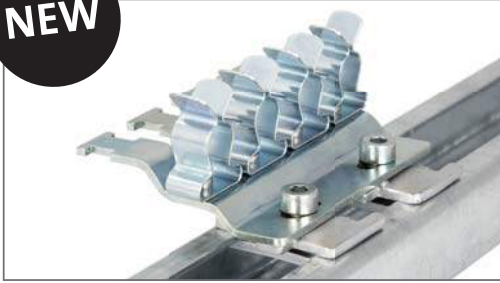
Type	Order No. for direct mounting	Order No. for C-rails*	Number of shield clamps	Length	Width	PU
RLFZ-M (x3)	38070.002	38070.100	3× MSKL 3-12	52 mm	54.1 mm	1
RLFZ-M (x4)	38071.002	38071.100	4× MSKL 3-12	73 mm	54.1 mm	1
RLFZ-M (x5)	38072.002	38072.100	5× MSKL 3-12	94 mm	54.1 mm	1
RLFZ-M (x6)	38073.002	38073.100	6× MSKL 3-12	115 mm	54.1 mm	1
RLFZ-M (x7)	38074.002	38074.100	7× MSKL 3-12	136 mm	54.1 mm	1
RLFZ-M (x8)	38075.002	38075.100	8× MSKL 3-12	157 mm	54.1 mm	1
RLFZ-M (x9)	38076.002	38076.100	9× MSKL 3-12	178 mm	54.1 mm	1
RLFZ-M (x10)	38077.002	38077.100	10× MSKL 3-12	199 mm	54.1 mm	1
RLFZ-M (x11)	38078.002	38078.100	11× MSKL 3-12	220 mm	54.1 mm	1
RLFZ-M (x12)	38079.002	38079.100	12× MSKL 3-12	241 mm	54.1 mm	1

\*Available from November 2018

# RLFZ | SC|RLFZ

## EMC Clamp assembly with strain relief

**NEW**



Type SC: Mounted on screw-foot for DIN-rail shape C\*



Type	Order No. for direct mounting	Order No. for C-rails*	Number of shield clamps	Length	Width	PU
RLFZ (x3)	38005	38005.100	3× SKL	41.2 mm	44.4 mm	1
RLFZ (x4)	38010	38010.100	4× SKL	56.8 mm	44.4 mm	1
RLFZ (x5)	38015	38015.100	5× SKL	72.4 mm	44.4 mm	1
RLFZ (x6)	38020	38020.100	6× SKL	88 mm	44.4 mm	1
RLFZ (x7)	38025	38025.100	7× SKL	103.6 mm	44.4 mm	1
RLFZ (x8)	38030	38030.100	8× SKL	119.2 mm	44.4 mm	1
RLFZ (x9)	38035	38035.100	9× SKL	134.8 mm	44.4 mm	1
RLFZ (x10)	38040	38040.100	10× SKL	150.4 mm	44.4 mm	1
RLFZ (x11)	38045	38045.100	11× SKL	166 mm	44.4 mm	1
RLFZ (x12)	38050	38050.100	12× SKL	181.6 mm	44.4 mm	1

\*Available from November 2018

### Product description

The RLFZ range enables earthing and strain relief of up to 12 cables in a small space.

The combination of EMC shield earthing and strain relief is the key feature of this system.

There are 10 different carriers available which can be user configured with up to 12 SKL shield clamps.

The EMC shield clamps as listed below are available to mount:

SKL 1.5-3 | SKL 3-6 | SKL 6-8 | SKL 8-11

### Advantages & benefits

- Designed for high density applications
- Possibility to configure custom specific EMC clamp assemblies
- Separate strain relief and EMC shield earthing
- Online design tool for EMC Clamp assembly

### Specifications

#### Material

SKL-clamp	Spring steel, zinc plated
RLFZ-foot	Carbon steel, galvanically zinc plated
SC-foot	Carbon steel, galvanically zinc plated

# SF|RLFZ

## EMC Clamp assembly for 35 mm DIN rail



### Product description

The SF|RLFZ range is based upon the RLFZ clamp assembly, which is mounted on snap feet for 35 mm DIN rails shape H.

There are 10 different carriers available, which can be user configured with up to 12 SKL shield clamps.

The EMC shield clamps as listed below are available to mount:

SKL 1-5-3 | SKL 3-6 | SKL 6-8 | SKL 8-11

### Advantages & benefits

- Designed for high density applications
- Possibility to configure custom specific EMC clamp assemblies
- Separate strain relief and EMC shield earthing
- Simple and tool-free mounting, easy assembly

### Specifications

**Material**

SKL-clamp

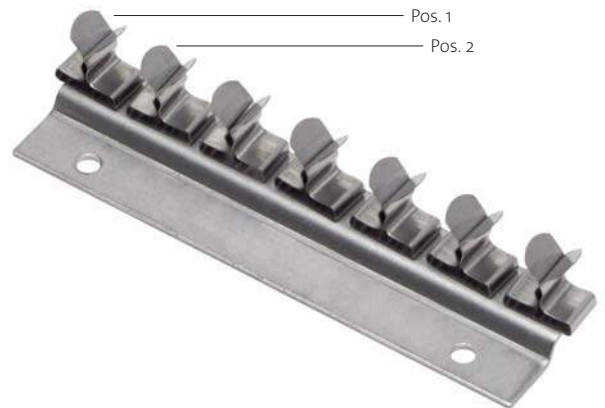
Spring steel, zinc plated

RLFZ-foot

Sheet steel, galvanically zinc plated

Type	Order No. (unfitted)	Number of shield clamps	Length	Width	PU
SF RLFZ (x3)	38105	3× SKL	41.2 mm	70.7 mm	1
SF RLFZ (x4)	38110	4× SKL	56.8 mm	70.7 mm	1
SF RLFZ (x5)	38115	5× SKL	72.4 mm	70.7 mm	1
SF RLFZ (x6)	38120	6× SKL	88 mm	70.7 mm	1
SF RLFZ (x7)	38125	7× SKL	103.6 mm	70.7 mm	1
SF RLFZ (x8)	38130	8× SKL	119.2 mm	70.7 mm	1
SF RLFZ (x9)	38135	9× SKL	134.8 mm	70.7 mm	1
SF RLFZ (x10)	38140	10× SKL	150.4 mm	70.7 mm	1
SF RLFZ (x11)	38145	11× SKL	166 mm	70.7 mm	1
SF RLFZ (x12)	38150	12× SKL	181.6 mm	70.7 mm	1

# RLF EMC Clamp assembly



Type	Order No. (unfitted)	Number of shield clamps	Length	Width	PU
RLF (x3)	36965	3× SKL	46.2 mm	24 mm	1
RLF (x4)	36984	4× SKL	60.8 mm	24 mm	1
RLF (x5)	36958	5× SKL	72.4 mm	24 mm	1
RLF (x6)	36952	6× SKL	88 mm	24 mm	1
RLF (x7)	36963	7× SKL	103.6 mm	24 mm	1
RLF (x8)	36953	8× SKL	119.2 mm	24 mm	1
RLF (x9)	36985	9× SKL	140.8 mm	24 mm	1
RLF (x10)	36954	10× SKL	150.4 mm	24 mm	1
RLF (x11)	36955	11× SKL	166 mm	24 mm	1
RLF (x12)	36962	12× SKL	181.6 mm	24 mm	1

## Product description

Comparable with the RLFZ clamp assembly, just without strain relief.

There are 10 different carriers available which can be user configured with up to 12 SKL shield clamps.

The EMC shield clamps as listed below are available to mount:

SKL 1.5-3 | SKL 3-6 | SKL 6-8 | SKL 8-11

## Advantages & benefits

- Designed for high density applications
- Possibility to configure custom specific EMC clamp assemblies
- Online design tool for EMC Clamp assembly

## Specifications

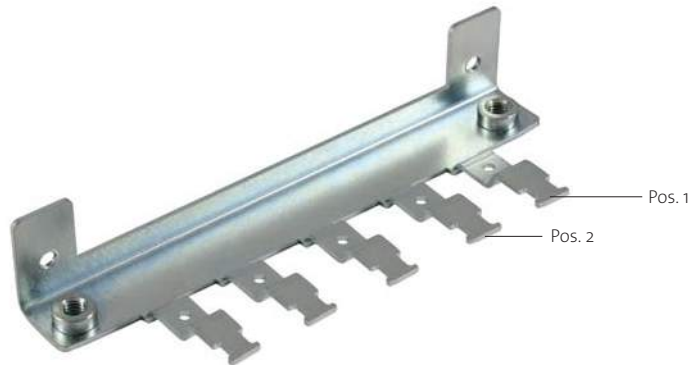
### Material

SKL-clamp    **Spring steel, zinc plated**  
RLF-foot    **Stainless steel**



# KEL-EMC-Z

## Cable assembly with strain relief



### Product description

Cable entry, EMC shield earthing and strain relief – all in one location!

Cables pass through the KEL cable entry frame and lead directly to the EMC clamps and strain relief.

Simply insert the cable shield into the shield clamp and secure the cable jacket to the strain relief. Two separate functions (according to regulations) carried out quickly and easily!

Custom configurations are available for shield clamps up to 16 mm in diameter with minimal order quantities and lead time.

4.1

### Advantages & benefits

- Large surface contact between cable shield and housing, especially on conductive coated surfaces
- Sealing by outer cable jacket – EMC earthing by cable shield (in acc. with regulations)
- Easily combines cable routing, EMC and strain relief due to the use of the same mounting holes
- Available without SKL shield clamps if only additional strain relief is required
- Mounting hole for earthing tape or PE connection

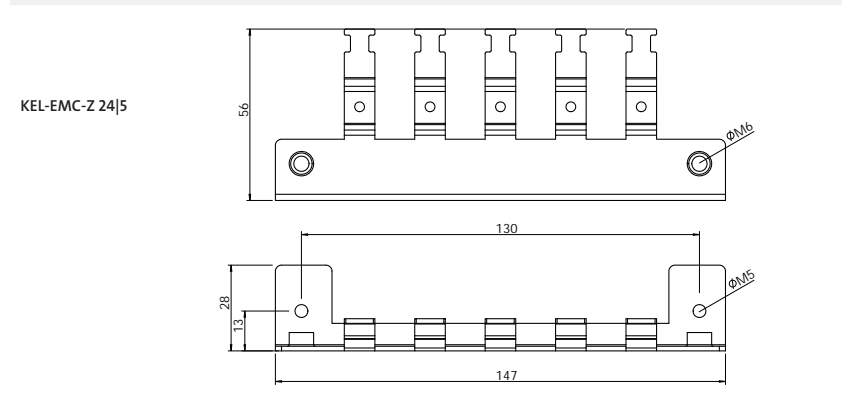
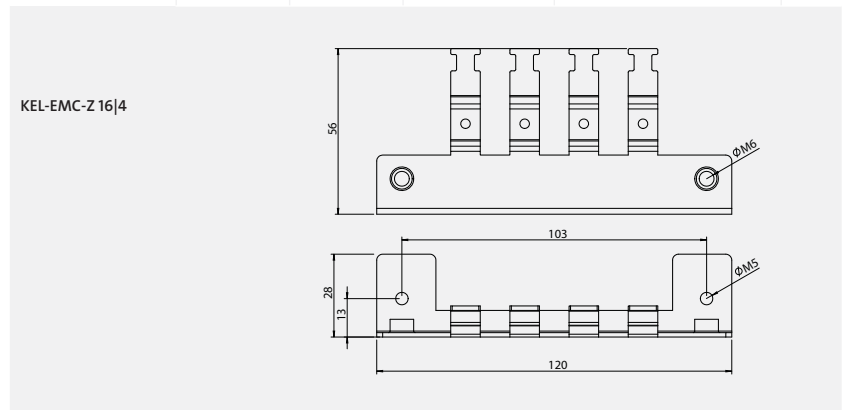
### Specifications

Material Sheet steel, zinc plated

### Compatible with

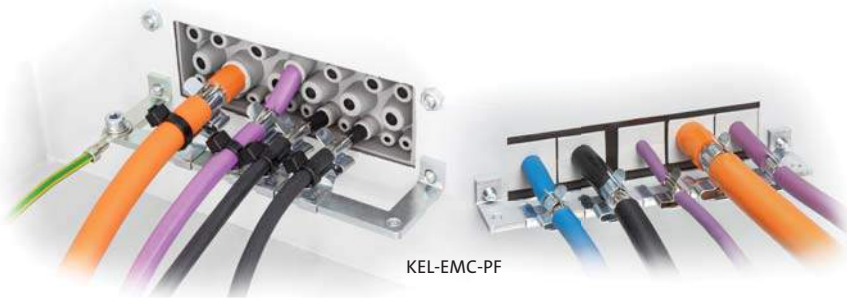
KEL-U Cable entry frames	8 - 14
KEL-ER Cable entry frames	9 - 14
KEL Cable entry frames	18 - 21
KEL-QUICK Cable entry frames	56 - 57

Type	Order No.	No. of teeth	Fastening	Fits with	PU
KEL-EMC-Z 16 4	36525	4	long side	KEL-(ER-)E4 KEL 16 x KEL-U 16 x KEL-ER 16 x KEL-QUICK 16	1
KEL-EMC-Z 24 5	36527	5	long side	KEL-(ER-)E5 KEL 24 x KEL-U 24 x KEL-ER 24 x KEL-QUICK 24	1

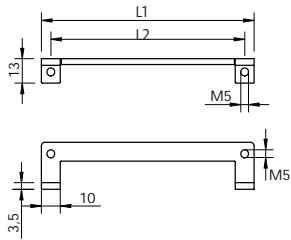


# KEL-EMC-PF

## Cable assembly, bracket version



KEL-EMC-PF



KEL-EMC-PFM



### Product description

The EMC bracket combined with the matching PFS|SKL EMC shield clamp is perfect in conjunction with the KEL cable entry frame for alleviating interferences due to shields.

The EMC clamp is assembled inside the control panel. For this process the fixing screws for the assembly of the KEL frame on the panel are used. A female screw thread M5 is already integrated in the KEL-EMC-PF(M) bracket.

Depending on the cable diameter, the corresponding PFS|SKL EMC shield clamp can be snapped onto the EMC bracket.

### Advantages & benefits

- Supports a wide range of cable and wire sizes
- Large surface contact of the cable shield
- Permanent spring pressure on the cable shield
- Fast and easy assembly

### Specifications

Material **Sheet steel, galvanically zinc plated**

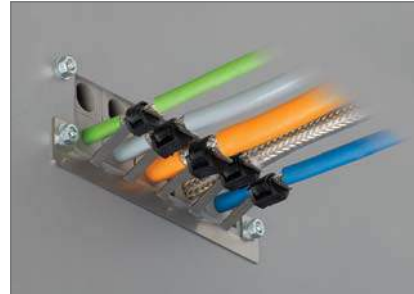
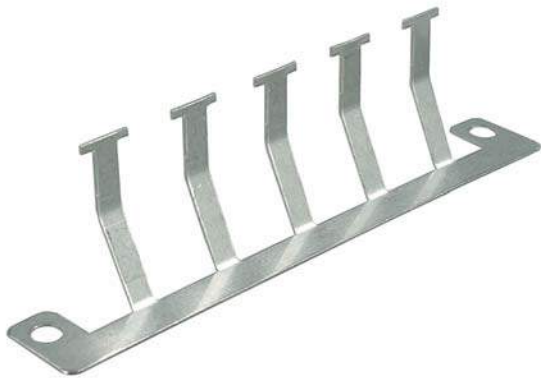
### Compatible with

KEL-U Cable entry frames	8 - 14
KEL-ER Cable entry frames	9 - 14
KEL Cable entry frames	18 - 21
KEL 183 Cable entry frames	34
KEL-QUICK Cable entry frames	56 - 57
KEL-BES Brush frames	68
KEL-DPU Cable entry plates	76 - 77
KEL-DPZ Cable entry plates	78 - 84
PFSZ SKL / PFSZ-M MSKL Shield clamps	114
PFS SKL Shield clamps	115

Type	Fits with	Order No.	Length L1	Length L2	PU
KEL-EMC-PFM 10	KEL(-U) 10 x KEL-QUICK 10 x KEL-ER 10 x	39184	93 mm	83 mm	1
KEL-EMC-PFM 16	KEL(-U) 16 x KEL-QUICK 16 x KEL-ER 16 x	39183	113 mm	103 mm	1
KEL-EMC-PFM 24	KEL(-U) 24 x KEL-QUICK 24 x KEL-ER 24 x KEL-DPZ 24 x	39181	140 mm	130 mm	1
KEL-EMC-PF B4	KEL(-ER)-E2 KEL-QUICK-E2 KEL(-U)-B KEL-QUICK-B KEL-ER-B	39150	68 mm	58 mm	1
KEL-EMC-PF 10	KEL(-ER)-E3 KEL-QUICK-E3 KEL(-U) 10 x KEL-QUICK 10 x KEL-ER 10 x	39160	93 mm	83 mm	1
KEL-EMC-PF 16	KEL(-ER)-E4 KEL-QUICK-E4 KEL(-U) 16 x KEL-QUICK 16 x KEL-ER 16 x	39170	113 mm	103 mm	1
KEL-EMC-PF 24	KEL(-ER)-E5 KEL-QUICK-E5 KEL(-U) 24 x KEL-QUICK 24 x KEL-ER 24 x KEL-DPZ 24 x KEL-DPZ-E	39180	140 mm	130 mm	1
KEL-EMC-PF 183	KEL 183 KEL 183-E	39190	200 mm	95 / 190 mm	1

# KEL-EMC

## Cable assembly



### Product description

Installation of pre-terminated cables without shield interruption.

### Advantages & benefits

- Direct, easy and quick contact to the enclosure
- Space saving, usable for up to 10 cables with the two row model
- Alternative to EMC cable glands, even for pre-terminated cables
- Low resistance shield contact

4.1

### Specifications

Material **Stainless steel**

### Compatible with

KEL-U Cable entry frames	8 - 14
KEL-ER Cable entry frames	9 - 14
KEL Cable entry frames	18 - 21
KEL-QUICK Cable entry frames	56 - 57
KEL-BES Brush frames	68

Type	Order No.	No. of teeth	Fastening	Fits with	PU
KEL-EMC-B	36520	2	long side	KEL-E2 KEL(-U)-B x KEL-ER-B x KEL-QUICK-B2   B4	5
KEL-EMC 10	36522	3	long side	KEL-E3 KEL(-U) 10 x KEL-ER 10 x	5
KEL-EMC 16 4	36524	4	long side	KEL-E4 KEL(-U) 16 x KEL-ER 16 x KEL-QUICK 16	5
KEL-EMC 24 5	36526	5	long side	KEL-E5 KEL(-U) 24 x KEL-ER 24 x KEL-QUICK 24	5
KEL-EMC F	39110	3	long side	KEL(-U)-B x KEL-ER-B x KEL(-U) 10 x KEL-ER 10 x KEL(-U) 16 x KEL-ER 16 x KEL(-U) 24 x KEL-ER 24 x	5

## KVT-EMC

### EMC bracket for cable glands



Type	Order No.	Shield diameter	PU
KVT-EMC-25 SKL 1.5-3	37180.1	1.5 - 3 mm	5
KVT-EMC-25 SKL 3-6	37180.2	3 - 6 mm	5
KVT-EMC-25 SKL 6-8	37180.3	6 - 8 mm	5
KVT-EMC-25 SKL 8-11	37180.4	8 - 11 mm	5
KVT-EMC-32 SKL 1.5-3	37181.1	1.5 - 3 mm	5
KVT-EMC-32 SKL 3-6	37181.2	3 - 6 mm	5
KVT-EMC-32 SKL 6-8	37181.3	6 - 8 mm	5
KVT-EMC-32 SKL 8-11	37181.4	8 - 11 mm	5

### Product description

The KVT-EMC brackets in combination with the split cable glands KVT and QVT combine routing, EMC shield earthing and strain relief. The connection to the earth potential is possible via the enclosure wall or an earthing tape.

Cables pass through the split cable glands and lead directly into the EMC clamps.

Separate functions (according to regulations) carried out quickly and easily!

### Advantages & benefits

- Simple and tool free assembly
- Large contact area
- Subsequent assembly possible
- Additional M5 hole for earthing tape

### Specifications

Material **Sheet steel, zinc plated**

### Compatible with

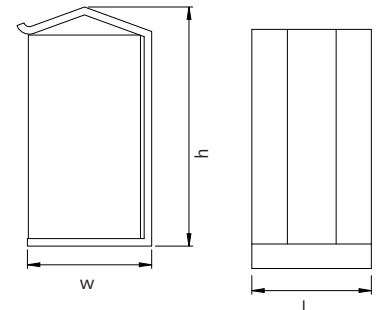
KVT Split cable glands 40 - 46  
QVT Split cable glands 60 - 61

# SK | SKZ

## EMC Shield brackets



Dimensions SK bracket (without mounting foot):



### Product description

SK shield brackets can be used where the shield of single cables has to be earthed.

SK shield brackets can be assembled on a mounting plate with screws, with SC-feet in DIN-rails shape C or with SF-feet on 35 mm DIN-rails shape H.

### Advantages & benefits

- Simple assembly on TS35 DIN rails and 10 × 3 mm bus bars
- Various sizes and possibilities for mounting

4.1



SC foot single for C-rail\* (PU: 10) Order No. 36220

SC-foot: space-saving design enables high cable density.

Mounting foot adjusts itself when tightening the screw.

NEW

### Specifications

Material	
SK-bracket	Sheet steel, galvanically zinc plated
SC-foot	Sheet steel, galvanically zinc plated
SF-foot	Spring steel

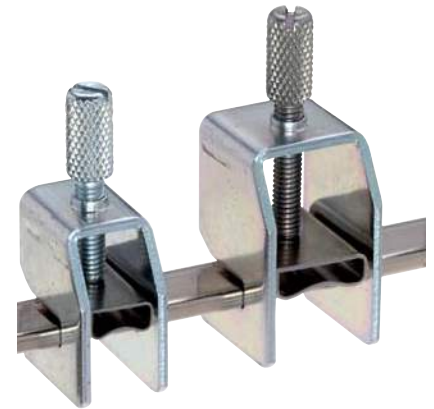
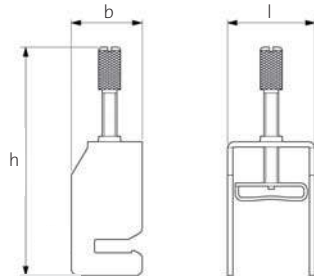
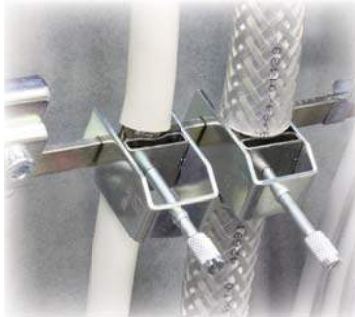
### Accessories




Bus bar 10 × 3 143

Description	Type	Order No.	Shield diameter	Dimensions l × w × h [mm]	PU
For direct mounting (M4-screw included):					
	NEW SKZ 3-8	36222	3 - 8 mm	30.5 × 12.8 × 31.8	10
	NEW SKZ 4-13.5	36224	4 - 13.5 mm	36 × 22 × 37.8	10
	SK 10-20	36226	10 - 20 mm	27 × 25 × 41	10
	SK 15-32	36228	15 - 32 mm	32 × 37 × 64	10
For 35 mm DIN-rail shape H:					
	NEW SF SKZ 3-8	36500	3 - 8 mm	30.5 × 12.8 × 31.8	10
	NEW SF SKZ 4-13.5	36502	4 - 13.5 mm	36 × 22 × 37.8	10
	SF SK 10-20	36504	10 - 20 mm	27 × 25 × 41	10
	SF SK 15-32	36506	15 - 32 mm	32 × 37 × 64	10
For 10 × 3 mm bus bar:					
	NEW SS SKZ 3-8	36235	3 - 8 mm	30.5 × 12.8 × 31.8	10
	NEW SS SKZ 4-13.5	36236	4 - 13.5 mm	36 × 22 × 37.8	10
	SS SK 10-20	36237	10 - 20 mm	27 × 25 × 41	10
	SS SK 15-32	36238	15 - 32 mm	32 × 37 × 64	10
For DIN-rail shape C (width of mouth: 16 mm):					
	NEW SC SKZ 3-8	36696	3 - 8 mm	30.5 × 12.8 × 31.8	10
	NEW SC SKZ 4-13.5	36700	4 - 13.5 mm	36 × 22 × 37.8	10
	SC SK 10-20	36704	10 - 20 mm	27 × 25 × 41	10
	SC SK 15-32	36708	15 - 32 mm	32 × 37 × 64	10

\*New type available from November 2018

# SKS EMC Shield brackets



Description	Type	Order No.	Shield diameter	Dimensions l × b × h [mm]	PU
	SKS 2-5	36282	2 - 5 mm	9 × 19.5 × 47	10
	SKS 3-8	36283	3 - 8 mm	12 × 19.5 × 49	10
	SKS 3-14	36284	3 - 14 mm	17.5 × 19.5 × 60	10
	SKS 3-20	36285	3 - 20 mm	24.5 × 19.5 × 75	10
	SKS 5-28	36286	5 - 28 mm	31 × 20 × 93	10
	SKS 20-35	36287	20 - 35 mm	41 × 20 × 107	10
	Bus bar 10 × 3 mm	36100		1000 × 10 × 3*	1

\* Other lengths available on request

## Product description

SKS shield brackets can be used where the shield of single cables has to be earthed.

SKS shield brackets can be assembled on 10 × 3 mm bus bars.

## Advantages & benefits

- One SKS shield bracket supports a wide range of cables
- Simple assembly on 10 × 3 mm bus bars

## Specifications

**Material** Sheet steel, galvanically zinc plated

## Accessories

MF Supports for bus bars 187

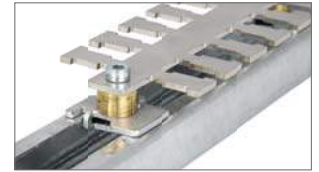


# KAFM-EMC

## EMC Strain relief plates



Type SF: Mounted on snap foot for DIN-rail shape H



Type SC: Mounted on screw-foot for DIN-rail shape C



Type SK: Mounted on screw-foot for DIN-rail shape H

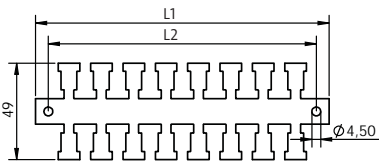


Type DH: Mounted on bushing for flexible fixation on bottom sheet

## Product description

The EMC strain relief plate KAFM is practical for earthing interferences on the cable shield.

The cable assembly can be assembled on a mounting plate with screws, with SC-feet on DIN-rails shape C or with SF-feet on 35 mm DIN-rails shape H.



4.1

## Specifications

Material **Stainless steel**



SC-foot with twist protection notch: space-saving design enables high cable density.

Mounting foot adjusts itself when tightening the screw.

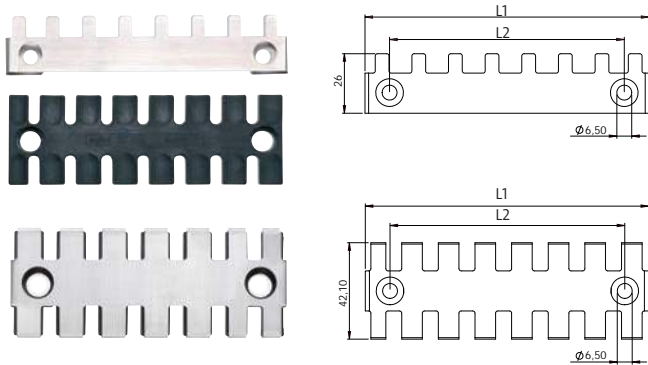
**NEW**

Type	Order No. Type SF	Order No. Type SK	Order No. Type SC	Order No. Type DH	Order No. loose rail	Length L1	Length L2	No. of teeth
KAFM 2	36442	36432	36412	36482	36422	50.5	37.5	2
KAFM 4	36444	36434	36414	36484	36424	83.5	70.5	4
KAFM 6	36446	36436	36416	36486	36426	116.5	103.5	6
KAFM 8	36448	36438	36418	36488	36428	149.5	136.5	8
KAFM 10	36450	36440	36400	36490	36430	182.5	169.5	10
KAFM 16	36452	36470	36465	36460	36530	281.5	268.5	16
KAFM 29	36454	36471	36466	36462	36540	494.5	481.5	29
KAFM 59	36458	36472	36467	36464	36550	990	978	59
KAFM 59 zinc plated	36459	-	-	-	36562	990	978	59
SF	36230	Snap foot loose, for 35 mm DIN-rail shape H						
SK	36232	Screw-foot loose, for 35 mm DIN-rail shape H						
SC*	36231	<b>NEW</b>	Screw-foot loose, for 30 mm DIN-rail shape C (width of mouth: 16 mm) with twist protection notch					
Bushing	36234	Distance bushing 8 mm high						
Screw	99017	M4 × 16 DIN 912						

\*New type available from November 2018

# ZL|SB-EMC

## Shield plate for ZL strain relief plates



Type	Model	Order No.	Fits with	Length L1	Length L2	PU
ZL 39 SB-EMC-1	single-row	36322	ZL 39	42 mm	19.5 mm	10
ZL 39 SB-EMC-2	double-row	37150	ZL 39	42 mm	19.5 mm	10
ZL 60 SB-EMC-1	single-row	36328	ZL 60	64 mm	43.5 mm	10
ZL 60 SB-EMC-2	double-row	37152	ZL 60	64 mm	43.5 mm	10
ZL 87 SB-EMC-1	single-row	36324	ZL 87	90 mm	68 mm	10
ZL 87 SB-EMC-2	double-row	37154	ZL 87	90 mm	68 mm	10
ZL 103 SB-EMC-1	single-row	36332	ZL 103	106 mm	84 mm	10
ZL 103 SB-EMC-2	double-row	37156	ZL 103	106 mm	84 mm	10
ZL 121 SB-EMC-1	single-row	36330	ZL 121	124 mm	102.5 mm	10
ZL 121 SB-EMC-2	double-row	37158	ZL 121	124 mm	102.5 mm	10
ZL 140 SB-EMC-1	single-row	36326	ZL 140	142 mm	121 mm	10
ZL 140 SB-EMC-2	double-row	37159	ZL 140	142 mm	121 mm	10

### Product description

The shield plates ZL|SB-EMC provide shield earthing in addition to strain relief.

Affix the corresponding shield plates to ZL strain relief plates. The shield plate contacts the cable shield with the earth potential.

The result is a secure low resistance connection between cable shield and earth.

ZL strain relief plates offered separately.

### Specifications

Material  
Shield plate **Stainless steel**

### Compatible with

SF|ZL Strain relief plates 102  
ZL Strain relief plates 98  
ZL-AB Strain relief plates 99

# MB

## Earthing tapes



### Product description

Manufactured with highly flexible E-Cu stranded wires with connecting end pads made of tinned copper strips.

The minimum transition and connecting resistance makes them perfectly suitable for use as earthing tapes.

Earthing Tapes are available with M6 or M8 connections and in some sizes with both connection sizes combined.

Type	Order No.	Length L [mm]	Cross-section mm <sup>2</sup>	Hole size	PU
MB 100 6 M6	32700	100	6	M6	1
MB 150 6 M6	32701	150	6	M6	1
MB 200 6 M6	32702	200	6	M6	1
MB 250 6 M6	32706	250	6	M6	1
MB 300 6 M6	32703	300	6	M6	1
MB 400 6 M6	32704	400	6	M6	1
MB 500 6 M6	32705	500	6	M6	1
MB 100 10 M6	32730	100	10	M6	1
MB 100 10 M8	32731	100	10	M8	1
MB 150 10 M8	32732	150	10	M8	1
MB 200 10 M6	32733	200	10	M6	1
MB 200 10 M8	32734	200	10	M8	1
MB 200 10 M6+M8	32741	200	10	M6 + M8	1
MB 250 10 M6+M8	32742	250	10	M6 + M8	1
MB 300 10 M6	32735	300	10	M6	1
MB 300 10 M8	32736	300	10	M8	1
MB 300 10 M6+M8	32743	300	10	M6 + M8	1
MB 400 10 M6	32737	400	10	M6	1
MB 400 10 M8	32738	400	10	M8	1
MB 500 10 M6	32739	500	10	M6	1
MB 100 16 M6	32760	100	16	M6	1
MB 100 16 M8	32761	100	16	M8	1
MB 150 16 M6	32762	150	16	M6	1
MB 150 16 M8	32763	150	16	M8	1
MB 200 16 M6	32764	200	16	M6	1
MB 200 16 M8	32765	200	16	M8	1

# MB Earthing tapes



Connecting end pads (copper)



Type	Order No.	Length L [mm]	Cross-section mm <sup>2</sup>	Hole size	PU
MB 200 16 M6+M8	32773	200	16	M6 + M8	1
MB 250 16 M8	32766	250	16	M8	1
MB 250 16 M6+M8	32774	250	16	M6 + M8	1
MB 300 16 M6	32767	300	16	M6	1
MB 300 16 M8	32768	300	16	M8	1
MB 300 16 M6+M8	32775	300	16	M6 + M8	1
MB 350 16 M8	32769	350	16	M8	1
MB 400 16 M8	32770	400	16	M8	1
MB 500 16 M8	32771	500	16	M8	1
MB 600 16 M8	32772	600	16	M8	1
MB 100 25 M10	32800	100	25	M10	1
MB 150 25 M10	32801	150	25	M10	1
MB 200 25 M8	32802	200	25	M8	1
MB 200 25 M10	32803	200	25	M10	1
MB 250 25 M8	32804	250	25	M8	1
MB 250 25 M10	32805	250	25	M10	1
MB 300 25 M8	32806	300	25	M8	1
MB 300 25 M10	32807	300	25	M10	1
MB 350 25 M10	32808	350	25	M10	1
MB 400 25 M8	32809	400	25	M8	1
MB 500 25 M8	32810	500	25	M8	1
MB 600 25 M8	32811	600	25	M8	1

## Advantages & benefits

- Available in a variety of lengths and cross-sections
- Cost-effective in comparison to PE conductors
- Low impedances

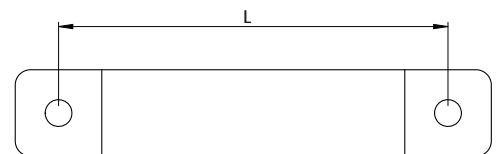
## Specifications

Material **Cu-ETP with connecting end pads**  
Pads made of tinned copper strips

## Current load

**Cross-section:** | **Current load:**

6 mm <sup>2</sup>	40-50 A
10 mm <sup>2</sup>	75-105 A
16 mm <sup>2</sup>	100-150 A
25 mm <sup>2</sup>	145-195 A
35 mm <sup>2</sup>	170-235 A



# 4.2 EMC cable entry systems

Solutions for conducted and field-bound disturbances

## EMC-KEL - The EMC cable gland alternative for the EMC KT grommet system

The industrial process technology demands increasing security against disturbances for electrical MCR facilities (measure, control, regulate). Special emphasis is being placed on the derivation of electromagnetic interference. A distinction is made between screening-related and field-related disturbances.

**Screening-related interference** is being transmitted directly from the source of interference to the cable shield of the supply or signal leads and then to the susceptible device. All capacitive and inductive influences of electrical or magnetic fields are called **field bound disturbances**.

The field bound disturbances are being transferred, for example as a cable's electromagnetic field from the source of interference to the susceptible device and received there, for instance, by a head acting as an antenna.

A large contact area of the cable shield for the derivation of the interference to a conductive housing wall combined with the shielding of the housing interior, generally offers a good solution for both types of interference.

In the case of screening as well as field bound disturbances, our cable entry system EMC-KEL offers an effective way to divert and block those disturbances and provides an economical alternative to expensive EMC cable glands.



▲ Space saving icotek solution:  
EMC cable entry frame  
EMC-KEL-U 24|10

◀ normal EMC cable glands

### Product range



EMC-KEL-U



EMC-KEL-E



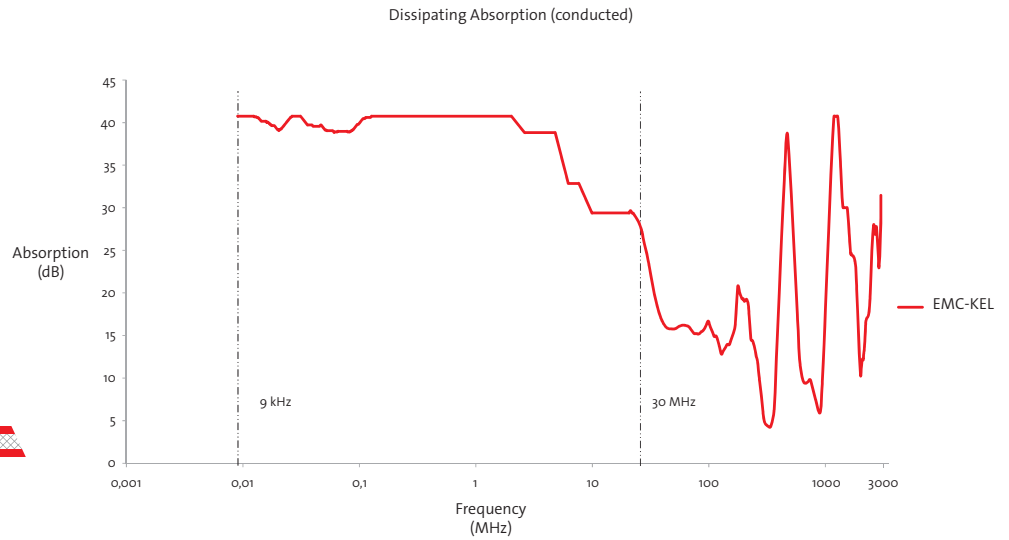
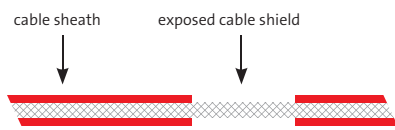
EMC-KT

# Test results

## Conducted and field-bound disturbances

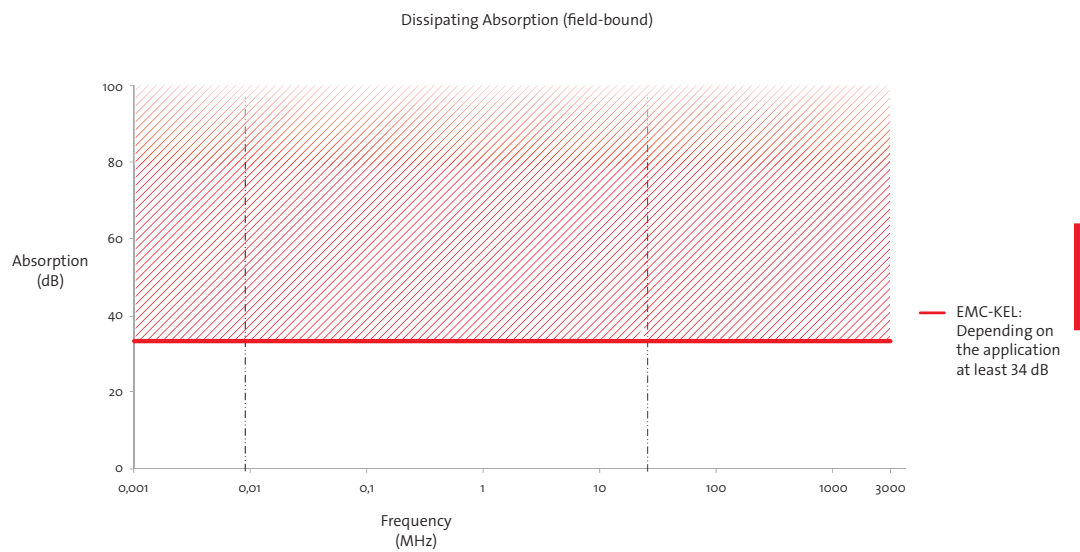
### Conducted disturbances

The EMC-KEL shows during cable-bound disruptions stable attenuation values up to 40 dB in the frequency ranges from 9 kHz to 30 MHz.



### Field-bound disturbances

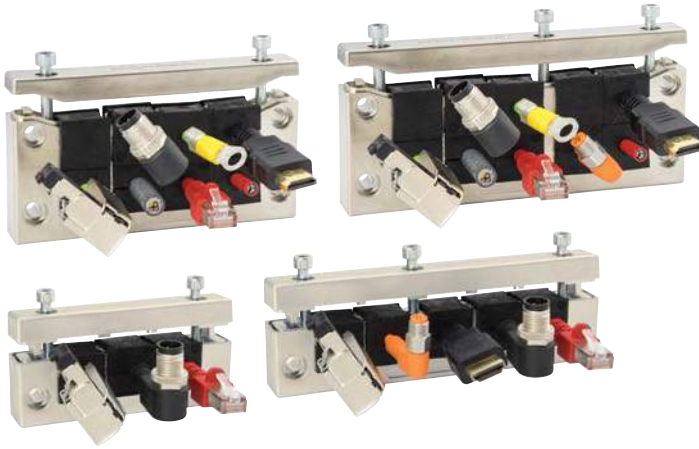
Regarding the field-bound disturbances and depending on the application, in the relevant frequency ranges up to 3 GHz constant measurements of at least 34 dB have been achieved. Below the attenuation range, the curve falls only at extreme high frequencies above 3 GHz.





# EMC-KEL

## EMC Cable entry frames



### Product description

The cable entry frames EMC-KEL-U and EMC-KEL-E are based on the icotek products KEL-U and KEL-E. Due to a conductive surface, faults in the cable shields on the control cabinet can be easily dissipated. Field bound disturbances are derived by the metallisation. Between the EMC-KEL and the metal wall a conductive flat gasket (included) is mounted. The flange surface on the metal wall must be free of paint!

### Advantages & Benefits

- Both conducted and field-bound disturbances can be reliably diverted
- Very attractive and scratch-resistant surface
- Contacting the cable shield over 360°
- Grommets made entirely from conductive elastomer
- High cable density
- Very good dissipation values
- Very good shielding effect with regard to EMC tightness

### Specifications

Material      **Polyamide, highly conductive coating**  
 Flame class   **UL 94 Vo**  
 Temperature   **-40°C to + 140°C**  
 Properties     **Halogen free, silicone free**  
 Frame depth   **17 mm**

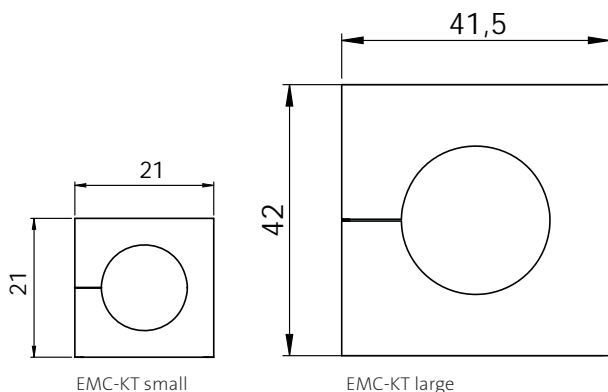
### Accessories

EMC-KT grommets      151

Type	Order No.	Cut-out	Grommets EMC-KT small   large	PU
EMC-KEL-U 24 10	99400	36 x 112 mm	10 -	1
EMC-KEL-U 24 4	99401	36 x 112 mm	2 2	1
EMC-KEL-U 16 8	99402	36 x 112 mm	8 -	1
EMC-KEL-E3	99420	24 x 65 mm	3 -	1
EMC-KEL-E5	99422	24 x 112 mm	5 -	1

# EMC-KT

## EMC grommets



Description	Type	Ordner No.	Clamping range	PU
EMC-KT small:	EMC-BTK	99473	blank grommet	5
EMC-BTK	EMC-KT 3	99460	3 - 4 mm	5
	EMC-KT 4	99461	4 - 5 mm	5
EMC-KT 5	EMC-KT 5	99462	5 - 6 mm	5
	EMC-KT 6	99463	6 - 7 mm	5
	EMC-KT 7	99464	7 - 8 mm	5
EMC-KT 8	EMC-KT 8	99465	8 - 9 mm	5
	EMC-KT 9	99466	9 - 10 mm	5
	EMC-KT 10	99467	10 - 11 mm	5
EMC-KT 12	EMC-KT 11	99468	11 - 12 mm	5
	EMC-KT 12	99469	12 - 13 mm	5
	EMC-KT 13	99470	13 - 14mm	5
EMC-KT large:	EMC-KT 14	99471	14 - 15 mm	5
	EMC-KT 15	99472	15 - 16 mm	5
EMC-BTG	EMC-BTG	99495	blank grommet	5
	EMC-KT 16	99475	16 - 17 mm	5
	EMC-KT 17	99476	17 - 18 mm	5
EMC-KT 23	EMC-KT 18	99477	18 - 19 mm	5
	EMC-KT 19	99478	19 - 20 mm	5
	EMC-KT 20	99479	20 - 21 mm	5
	EMC-KT 21	99480	21 - 22 mm	5
	EMC-KT 22	99481	22 - 23 mm	5
	EMC-KT 23	99482	23 - 24 mm	5
	EMC-KT 24	99483	24 - 25 mm	5

### Product description

The cable grommets type EMC-KT are made of a very conductive elastomer. Thus, faults are dissipated from the cable shield directly via the grommet, the frame and the flat gasket. This ensures full-area protection against field-bound interference!

### Assembly

When installing the grommets, the flat side should be facing the middle of the frame. This allows the flat sides of adjacent grommets to match up and provide a secure seal.

### Specifications

Material	Elastomer, conductive
Flame class	UL94-HB
Colour	black
Temperature	-30°C to +80°C
Properties	Halogen free, silicone free

### Accessories

ST Plugs 53

4.2

## Assembly possibilities

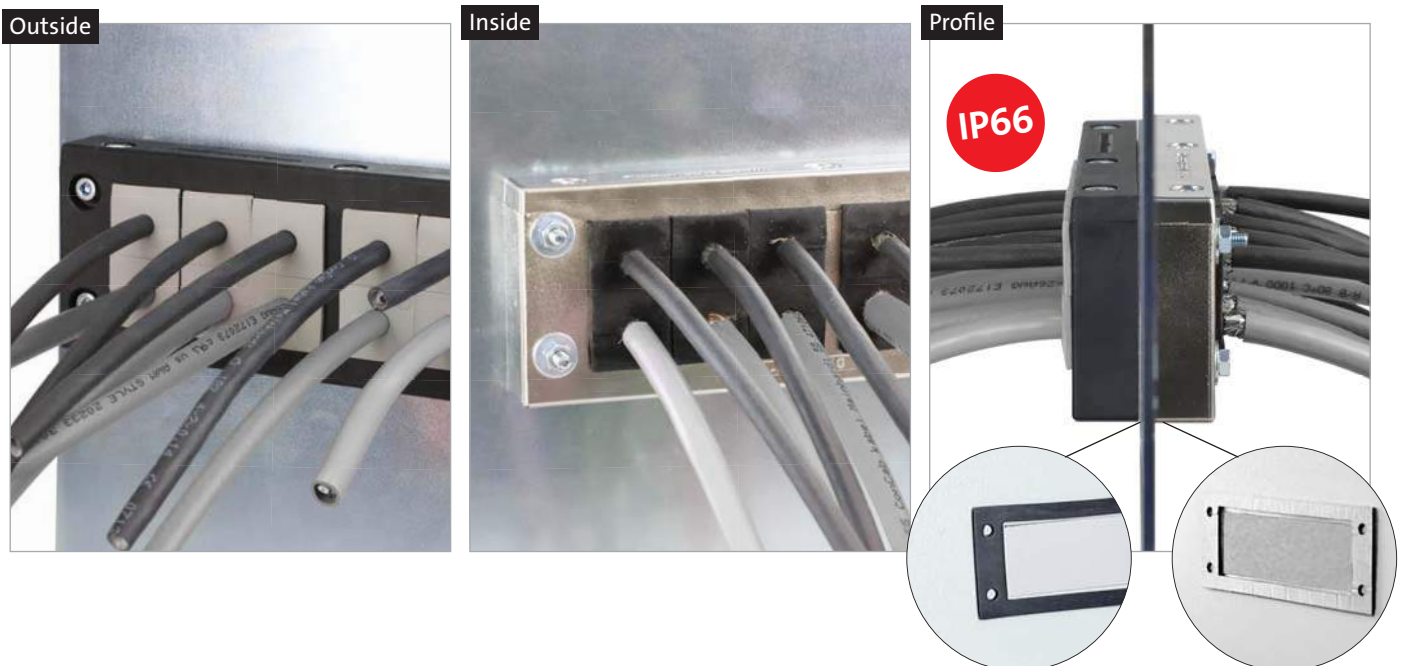
### Conducted and field-bound disturbances

The EMC cable entry frame (EMC-KEL) is screwed to the outside of the housing. The cable shield is exposed in the area of the cable grommets.



### Conducted and field-bound disturbances with strain relief and IP66

A cable entry frame (e.g., KEL-ER or KEL-U) is bolted to the outside of the housing. Inside the housing, the EMC cable entry frame (EMC-KEL) is mounted and the cable shield is exposed in the area of the cable grommets.

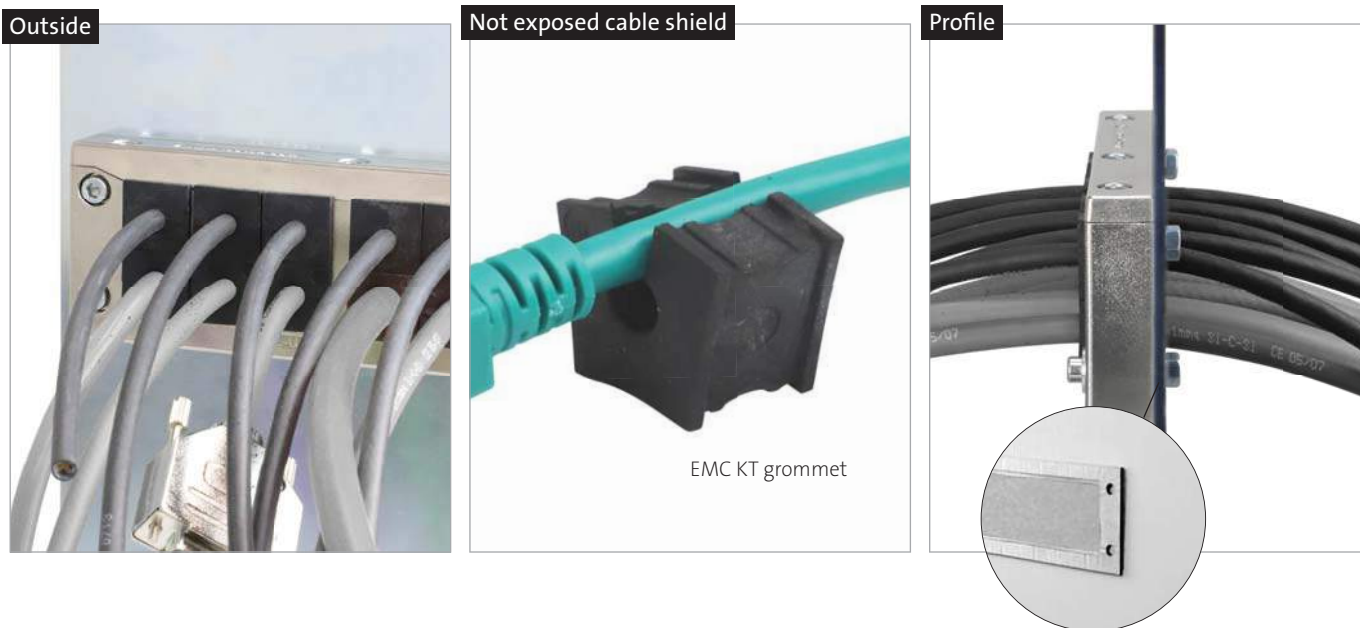


4.2

## Assembly possibilities

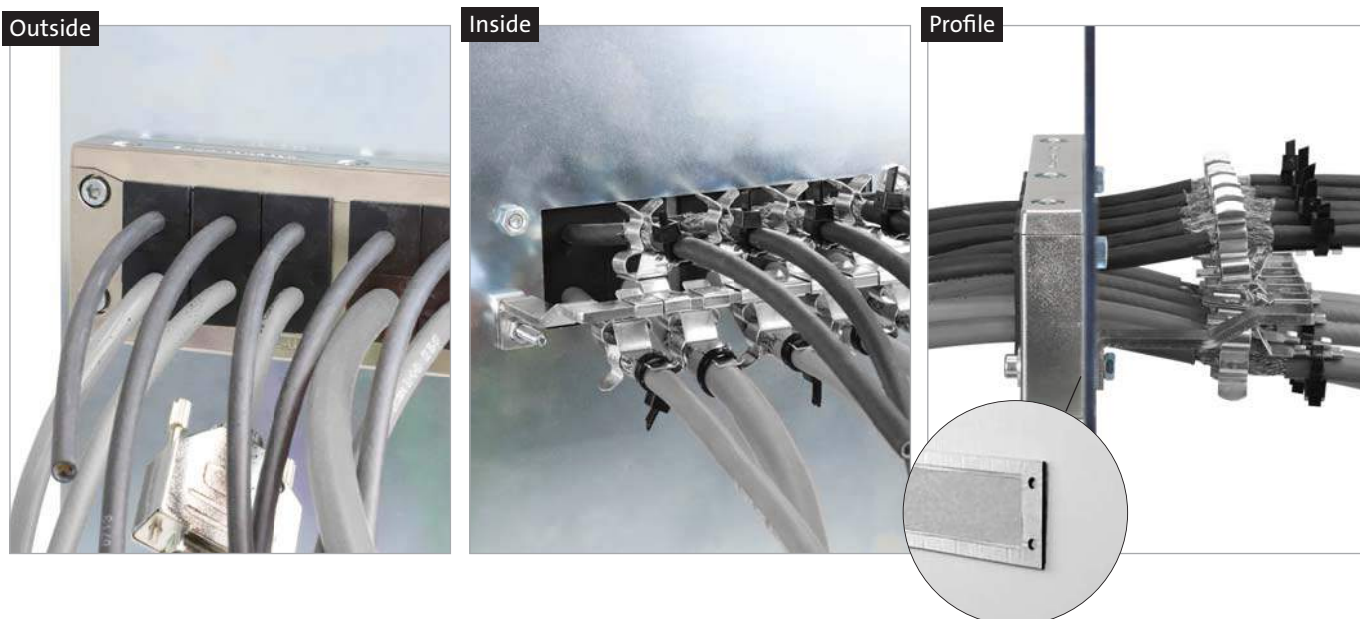
### Field-bound disturbances with strain relief

The EMC cable entry frame (EMC-KEL) is screwed to the outside of the housing.  
The cable shield is not exposed.



### Conducted and field-bound disturbances with strain relief

The EMC cable entry frame (EMC-KEL) is screwed to the outside of the housing.  
Inside the housing, the EMC bracket KEL-EMC-PFM is mounted and the exposed cable shield is placed.



# 5 CONFiX Cable conduit system



The 90° angled conduit fitting CONFiX FWS is perfect for installation of parallel corrugated cable protection conduits, e.g. in machines, control panels or control cabinets. The liftable cover is tightly fixed by a hinge to the mounting box. Therefore, the system is very easy to handle.

Corrugated conduits CONFiX WS for cable routing are used where cables have to be protected from mechanical damage or certain weather conditions.

In addition, icotek offers split corrugated conduits CONFiX WST for routing pre-terminated cables and corresponding conduit clips CONFiX SH.

## Advantages & benefits

### 1. Fast and easy assembly

The liftable cover of the bulkhead fitting CONFiX FWS is tightly fixed by a hinge to the mounting box. The system is therefore very easy to mount.

### 2. Easy to maintain

The split version of the corrugated conduits CONFiX WST offers the possibility of routing standard or pre-terminated cables in harsh environments.

### 3. Flexible

The corrugated conduits CONFiX WS can be used for various applications, depending on the material. UV resistant polyamide conduits for high mechanical requirements (indoor and outdoor use), polypropylene conduits with high resistance against acids / alkalis.

5

## CONFiX FWS Assembly

Installation of CONFiX FWS is quick and easy:

1. Use top screw(s) to mount the FWS
2. Insert conduit
3. Secure and complete installation with two side screws

1



Fix

2



Insert

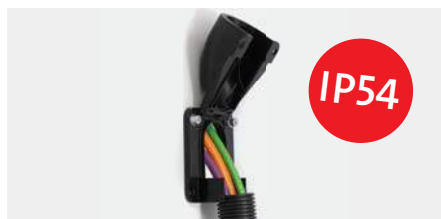
3



Lock



## Chapter content 5



**Bulkhead fittings, split** | IP54  
for conduit screw connections /  
direct conduit pickup

CONFiX FWS

**156 - 157**



**Corrugated conduits**  
NW 7.5 - NW 50

CONFiX WS

**158 - 159**



**Corrugated conduits, split**  
for cables with connectors  
NW 10 - NW 70

CONFiX WST

**160**



**Conduit clips**  
for split corrugated conduits CONFiX WST

CONFiX SH

**161**



# CONFIX FWS-A

Bulkhead fittings  
for conduit screw connections



Metric internal thread for  
conduit screw connections

## Product description

The 90° angled conduit fitting CONFiX FWS is for installation of parallel corrugated cable protection conduits, e.g. in machines, control panels or control cabinets.

The liftable cover is tightly fixed by a hinge. Therefore, the system is fast and easy to install.

CONFIX FWS is offered in the following versions:

CONFIX FWS-A with metric internal thread M16 to M50

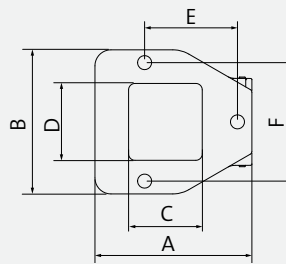
CONFIX FWS-B with a grooved conduit clip for types with sizes NW 13, 17, 23, 29, 37 and 50.

The available colours are grey (RAL 7011) and black (RAL 9005).

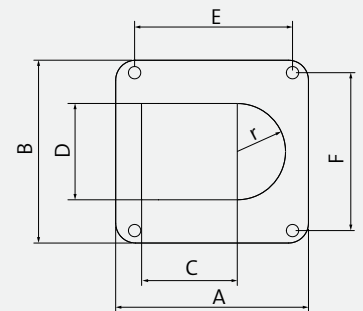
## Accessories

CONFIX WS conduits 158 - 159

Type	Internal Thread	Hole Ø [mm]	Size (A × B) [mm]	Cut-out (C × D) [mm]	Drill. Templ. (E × F) [mm]	Order No.	PU
CONFIX FWS-A 16	M16 × 1.5	3 × 4.3	49 × 45	22 × 22.6	29 × 37	■ 31381 ■ 31380	10
CONFIX FWS-A 20	M20 × 1.5	3 × 4.3	49 × 45	22 × 22.6	29 × 37	■ 31384 ■ 31383	10
CONFIX FWS-A 25	M25 × 1.5	3 × 6.6	67 × 63	37 × 28	41.5 × 51.5	■ 31387 ■ 31386	10
CONFIX FWS-A 32	M32 × 1.5	4 × 6.6	85.5 × 76	41.9 × 40 r = 20	64.5 × 64.5	■ 31390 ■ 31389	10
CONFIX FWS-A 40	M40 × 1.5	4 × 6.6	97 × 92	48.3 × 48.4 r = 24.2	79.5 × 79.5	■ 31393 ■ 31392	5
CONFIX FWS-A 50	M50 × 1.5	4 × 6.6	111.5 × 100.5	53 × 60.5 r = 30.25	87.5 × 87.5	■ 31396 ■ 31395	5



Size / Drilling template  
FWS-A 16 to 25



Size / Drilling template  
FWS-A 32 to 50

# CONFIX FWS-B

## Bulkhead fittings for direct conduit pickup



Grooved conduit clip



Fixed cover due to hinges

IP54



### Advantages & benefits

- Hinged cover
- Fast and easy installation
- Functional design
- Protection class IP54

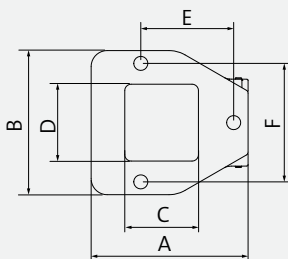
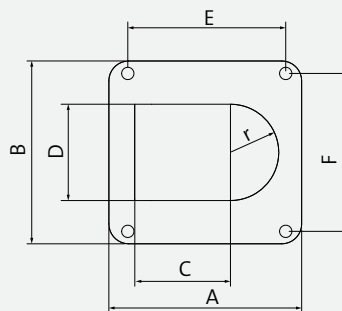
### Specifications

Material	Polycarbonate (PC)
Colour	<ul style="list-style-type: none"> <li>■ grey (RAL 7011)</li> <li>■ black (RAL 9005)</li> </ul>
IP rating	IP54
Flame class	UL94-Vo, self-extinguishing
Temperature	-30°C to +100°C (static)
Properties	Halogen free, silicone free

### Accessories

CONFIX WS conduits 158 - 159

Type	Dimension*	Hole Ø [mm]	Size (A × B) [mm]	Cut-out (C × D) [mm]	Drill. Templ. (E × F) [mm]	Order No.	PU
CONFIX FWS-B 11	NW 13	3 × 4.3	49 × 45	22 × 22.6	29 × 37	<ul style="list-style-type: none"> <li>■ 31411</li> <li>■ 31410</li> </ul>	10
CONFIX FWS-B 16	NW 17	3 × 4.3	49 × 45	22 × 22.6	29 × 37	<ul style="list-style-type: none"> <li>■ 31414</li> <li>■ 31413</li> </ul>	10
CONFIX FWS-B 21	NW 23	3 × 6.6	67 × 63	37 × 28	41.5 × 51.5	<ul style="list-style-type: none"> <li>■ 31417</li> <li>■ 31416</li> </ul>	10
CONFIX FWS-B 29	NW 29	4 × 6.6	85.5 × 76	41.9 × 40 r = 20	64.5 × 64.5	<ul style="list-style-type: none"> <li>■ 31420</li> <li>■ 31419</li> </ul>	10
CONFIX FWS-B 36	NW 37	4 × 6.6	97 × 92	48.3 × 48.4 r = 24.2	79.5 × 79.5	<ul style="list-style-type: none"> <li>■ 31423</li> <li>■ 31422</li> </ul>	5
CONFIX FWS-B 48	NW 50	4 × 6.6	111.5 × 100.5	53 × 60.5 r = 30.25	87.5 × 87.5	<ul style="list-style-type: none"> <li>■ 31426</li> <li>■ 31425</li> </ul>	5

Size / Drilling template  
FWS-B 11 to 21Size / Drilling template  
FWS-B 29 to 48

\* For parallel corrugated cable protection conduit with dimension (NW)

# CONFIX WS

## Corrugated conduits



Compatible with CONFiX FWS-B

### Product description

Parallel corrugated conduits for cable routing are used where cables have to be protected from mechanical damage or certain weather conditions.

icotek provides conduits in sizes NW 7.5, 8.5, 10, 13, 17, 23, 29, 37, and 50. Conduits from size NW 13 can be mounted with CONFiX FWS bulkhead fittings.

Parallel corrugated conduits are available in 3 different versions:

- **CONFIX WS-PA:** Polyamide conduit for high mechanical requirements (e.g. engine compartments, car bodies, construction machines, ship building, rail transportation technology, switch cabinets).  
→ Suitable for ground installation
- **CONFIX WS-PAL (light):** Polyamide conduit for high mechanical requirements  
→ Suitable for suspended installation
- **CONFIX WS-PP:** Polypropylene conduit for use in engine compartments, car bodies and for static installation at machinery and plant engineering.  
→ Advantages: Cost-effective, flame class UL94-V2, temperature resistant, resistant to chemicals

Type	External Ø	Internal Ø	Compatible with:	Order No.	PU (Length)
CONFIX WS-G-PA-NW 7.5	Ø 10 mm	Ø 6.7 mm	-	■ 31550	50 m
CONFIX WS-B-PA-NW 7.5	Ø 10 mm	Ø 6.7 mm	-	■ 31570	50 m
CONFIX WS-G-PA-NW 8.5	Ø 11.7 mm	Ø 8.4 mm	-	■ 31552	50 m
CONFIX WS-B-PA-NW 8.5	Ø 11.7 mm	Ø 8.4 mm	-	■ 31572	50 m
CONFIX WS-G-PA-NW 10	Ø 13 mm	Ø 9.9 mm	-	■ 31554	50 m
CONFIX WS-B-PA-NW 10	Ø 13 mm	Ø 9.9 mm	-	■ 31574	50 m
CONFIX WS-G-PA-NW 13	Ø 15.8 mm	Ø 12.7 mm	CONFIX FWS-B 11	■ 31556	50 m
CONFIX WS-B-PA-NW 13	Ø 15.8 mm	Ø 12.7 mm	CONFIX FWS-B 11	■ 31576	50 m
CONFIX WS-G-PA-NW 17	Ø 21.2 mm	Ø 16.6 mm	CONFIX FWS-B 16	■ 31558	50 m
CONFIX WS-B-PA-NW 17	Ø 21.2 mm	Ø 16.6 mm	CONFIX FWS-B 16	■ 31578	50 m
CONFIX WS-G-PA-NW 23	Ø 28.3 mm	Ø 23.2 mm	CONFIX FWS-B 21	■ 31560	50 m
CONFIX WS-B-PA-NW 23	Ø 28.3 mm	Ø 23.2 mm	CONFIX FWS-B 21	■ 31580	50 m
CONFIX WS-G-PA-NW 29	Ø 34.5 mm	Ø 29 mm	CONFIX FWS-B 29	■ 31562	25 m
CONFIX WS-B-PA-NW 29	Ø 34.5 mm	Ø 29 mm	CONFIX FWS-B 29	■ 31582	25 m
CONFIX WS-G-PA-NW 37	Ø 42.4 mm	Ø 36 mm	CONFIX FWS-B 36	■ 31564	25 m
CONFIX WS-B-PA-NW 37	Ø 42.4 mm	Ø 36 mm	CONFIX FWS-B 36	■ 31584	25 m
CONFIX WS-G-PA-NW 50	Ø 54 mm	Ø 47.7 mm	CONFIX FWS-B 48	■ 31566	25 m
CONFIX WS-B-PA-NW 50	Ø 54 mm	Ø 47.7 mm	CONFIX FWS-B 48	■ 31586	25 m

# CONFIX WS

## Corrugated conduits



Type	External Ø	Internal Ø	Compatible with:	Order No.	PU (Length)
CONFIX WS-B-PAL-NW 7.5	Ø 10 mm	Ø 6.7 mm	-	■ 31590	50 m
CONFIX WS-B-PAL-NW 8.5	Ø 11.5 mm	Ø 8.5 mm	-	■ 31592	50 m
CONFIX WS-B-PAL-NW 10	Ø 13.2 mm	Ø 10.1 mm	-	■ 31594	50 m
CONFIX WS-B-PAL-NW 13	Ø 16 mm	Ø 13 mm	CONFIX FWS-B 11	■ 31596	50 m
CONFIX WS-B-PAL-NW 17	Ø 21.2 mm	Ø 17.1 mm	CONFIX FWS-B 16	■ 31598	50 m
CONFIX WS-B-PAL-NW 23	Ø 28.4 mm	Ø 23.5 mm	CONFIX FWS-B 21	■ 31600	50 m
CONFIX WS-B-PAL-NW 29	Ø 34.5 mm	Ø 29.4 mm	CONFIX FWS-B 29	■ 31602	25 m
CONFIX WS-B-PAL-NW 37	Ø 42.2 mm	Ø 36.7 mm	CONFIX FWS-B 36	■ 31604	25 m
CONFIX WS-B-PAL-NW 50	Ø 54 mm	Ø 48.1 mm	CONFIX FWS-B 48	■ 31606	25 m
CONFIX WS-B-PP-NW 7.5	Ø 9.9 mm	Ø 6.9 mm	-	■ 31610	50 m
CONFIX WS-B-PP-NW 8.5	Ø 11.6 mm	Ø 8.5 mm	-	■ 31612	50 m
CONFIX WS-B-PP-NW 10	Ø 12.7 mm	Ø 10.1 mm	-	■ 31614	50 m
CONFIX WS-B-PP-NW 13	Ø 15.8 mm	Ø 12.9 mm	CONFIX FWS-B 11	■ 31616	50 m
CONFIX WS-B-PP-NW 17	Ø 21 mm	Ø 16.8 mm	CONFIX FWS-B 16	■ 31618	50 m
CONFIX WS-B-PP-NW 23	Ø 28 mm	Ø 23.7 mm	CONFIX FWS-B 21	■ 31620	50 m
CONFIX WS-B-PP-NW 29	Ø 33.9 mm	Ø 29.3 mm	CONFIX FWS-B 29	■ 31622	25 m
CONFIX WS-B-PP-NW 37	Ø 42 mm	Ø 36.7 mm	CONFIX FWS-B 36	■ 31624	25 m
CONFIX WS-B-PP-NW 50	Ø 53.6 mm	Ø 47.8 mm	CONFIX FWS-B 48	■ 31626	25 m

\* For parallel corrugated cable protection conduit with dimension (NW)

### Specifications WS-PA

Material Polyamide (PA)  
 Colour ■ black  
 ■ grey  
 Flame class UL94-HB  
 Temperature -40°C to +120°C  
 Properties Halogen free, UV resistant, according to EN ISO 8580

### Specifications WS-PAL

Material Polyamide (PA)  
 Colour ■ black  
 Flame class UL94-HB  
 Temperature -40°C to +120°C  
 Properties Halogen free, UV resistant according to EN ISO 8580

### Specifications WS-PP

Material Polypropylene (PP)  
 Colour ■ black  
 Flame class UL94-V2, self-extinguishing  
 Temperature -40°C to +135°C  
 Properties Halogen free, high resistance against acids / alkalis

### Compatible with

CONFIX FWS Bulkhead fitting 156 - 157

# CONFIX WST

## Split corrugated conduits



Individual lengths are possible!

### Product description

The CONFiX WST is a two piece corrugated conduit. Perfect for routing cables with or without connectors in rough environments.

In conjunction with e.g. KVT-W90, a high degree of flexibility is achieved. Numerous conduit sizes can be used thanks to the wide variety of split grommets offered (see KT grommets on pages 44 - 46).

**The length of the CONFiX WST split corrugated conduit can be customized to your application. All conduits are available by the meter (0.5 m steps).**

### Advantages & benefits

- Containing pre-terminated cables, warranty of cable remains
- Retrofitting and maintenance carried out easily and quickly

Type	Order No.	Internal diameter	External diameter	Compatible grommets	Dimensions	Ring length*
CONFIX WST NW 10	31200	8.7 mm	13.6 mm	KT 13	NW 10	50 m*
CONFIX WST NW 14	31210	12.5 mm	18.5 mm	KT 18	NW 14	50 m*
CONFIX WST NW 20	31220	19.5 mm	25.5 mm	KT 25	NW 20	50 m*
CONFIX WST NW 23	31230	24.2 mm	31 mm	KT 30	NW 23	50 m*
CONFIX WST NW 29	31235	27.3 mm	35.5 mm	KTMB-P	NW 29	25 m*
CONFIX WST NW 37	31240	31 mm	41.4 mm	KTMB-P	NW 37	25 m*
CONFIX WST NW 45	31250	42.7 mm	54 mm	KTMB-Q	NW 45	25 m*
CONFIX WST NW 70	31260	66.5 mm	79.8 mm	KTMB-S	NW 70	10 m*

\*All conduits are also available by the metre (0.5 m steps).

### Specifications

Material            Polypropylene, black  
 Flame class        UL94-HB  
 Temperature       - 40°C to + 105°C  
 Properties          UV resistant

### Compatible with

CONFIX SH Conduit clip                    161  
 Cable entry systems  
 for pre-terminated cables                8 - 69  
 Cable entry systems  
 for standard cables                         72 - 94

## CONFIX SH

### Conduit clips for WST



Type	Order No.	Suitable conduit	Fixing hole	Width [mm]	Height [mm]	PU
CONFIX SH 10	31300	NW 10	M3	18.5	21	10
CONFIX SH 14	31310	NW 14	M3	24	25.5	10
CONFIX SH 20	31320	NW 20	M5	35	36	10
CONFIX SH 23	31330	NW 23	M5	42	43.5	10
CONFIX SH 29	31335	NW 29	M5	48	48.5	10
CONFIX SH 37	31340	NW 37	M6	55	56.5	10
CONFIX SH 45	31350	NW 45	M6	67	68	10
CONFIX SH 70	31360	NW 70	M6	100	101	10

## Product description

CONFIX SH Conduit clips are a one-piece clamping system to provide secure mounting points for corrugated conduit systems.

The clips are secured to their mounting position through a central mounting point with a hexagonal counter-bore.

## Specifications

Material	Polyamide (PA), black
Flame class	UL94-V2, self-extinguishing
Temperature	- 40°C to + 140°C
Properties	Halogen free, silicone free

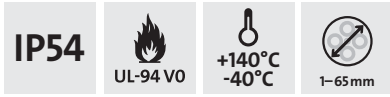
## Compatible with

CONFIX WST  
Split corrugated conduit 160



# 6 Enclosure accessories

## Gland plates, flange plates & accessories



### KDR - Enclosure gland plates

for dust-proof cable routing

Electronic enclosures which are used in industrial manufacturing processes have to be reliably protected against dirt and dust ingress. The conductivity of dust and dirt accumulations can otherwise lead to short circuits and their thermal insulation properties can cause overheating of single components. Machine downtime and, at worst, electric shock or fire accidents may be the result.

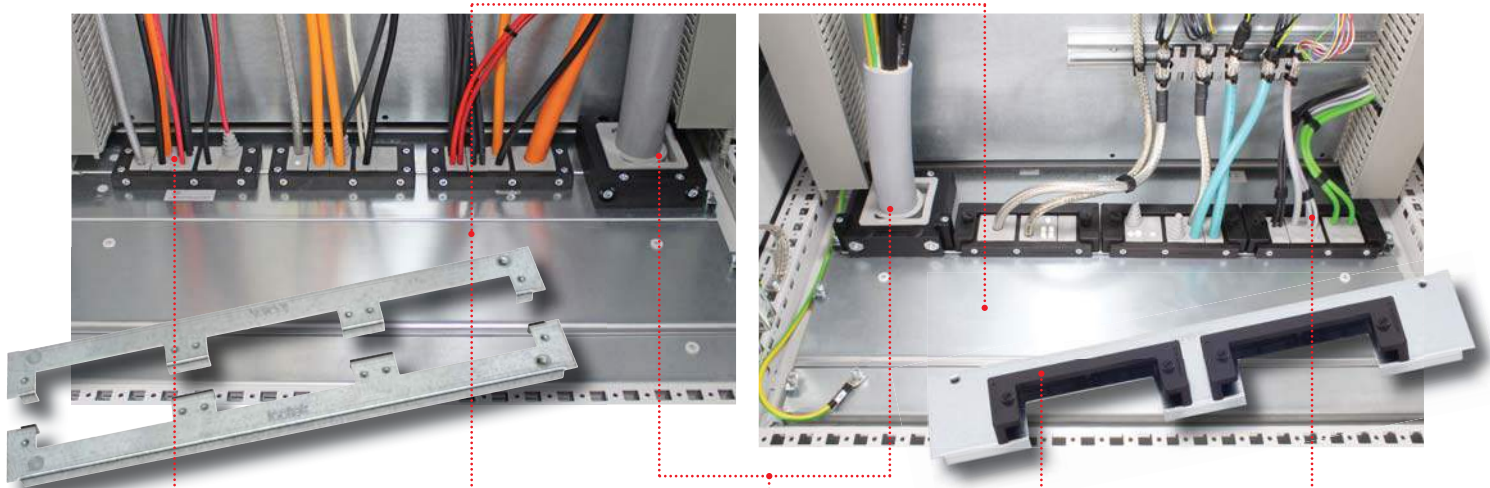
The base of an enclosure can be a weak point when cables and wires are not adequately sealed, and thus the protection of the enclosure cannot be maintained. Components for ventilation and air-conditioning generate an air flow which sucks the dust into the enclosure and spreads it. The icotek gland plates KDR-ESR and KDR 2 provide the perfect solution for such problems.

#### KDR 2

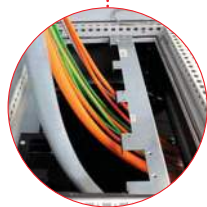
for centrally split KEL cable entry frames

#### KDR-ESR

for U-shaped split KEL-U cable entry frames



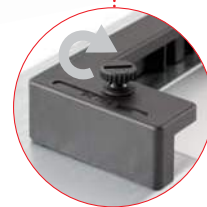
Routing of pre-terminated cables of up to 35 mm in diameter (KEL 24)



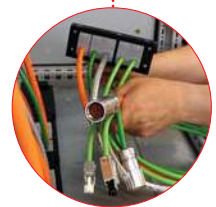
During assembly, almost the complete base of the enclosure can be used for installation of cables



Routing of supply lines with diameters up to 65 mm (KEL-JUMBO)



Fast and tool-free mounting of KEL-U cable entry frames



Routing of pre-terminated cables of up to 35 mm in diameter (KEL-U 24 / KEL-U 16)

Perfect for retrofitting without disconnecting the lines!

#### Other enclosure accessories



## Chapter content 6



**Rittal / Hoffman**  
Enclosure gland plates  
with slide frames for cable entry frames

KDR-ESR-VX25 / KDR-ESR-TS8 /  
KDR-ESR-HG2

**164 - 167**



**Rittal**  
Enclosure gland plates  
split, for cable entry frames

KDR 2-VX25 / KDR 2-TS8

**168 - 169**



**Rittal**  
Enclosure gland plates  
with brush grommets

KDR-BES-TS8

**170 - 171**



**Rittal / Hoffman / Others**  
Universal brush strip  
for enclosures

KDR-BES-U / KDR-BES-U-VX25 /  
KDR-BES-U-TS8 / KDR-BES-U-HG2

**172 - 173**



**Rittal / Lohmeier**  
Module plates  
for cable entry components

MP

**174 - 175**



**Rittal**  
Enclosure gland plates  
for MP module plates

KDR-BMP

**176 - 177**



**Rittal / Fibox**  
Flange plates for enclosures  
for cable entry components

FP-AE / FP-KL / FP-BG / FP-FL

**178 - 183**



**Blank plates**

BPK / BPK-RF / BPM / BPK-SNAP

**184 - 186**



**Supports**  
for DIN rails and bus bars

MF

**187**



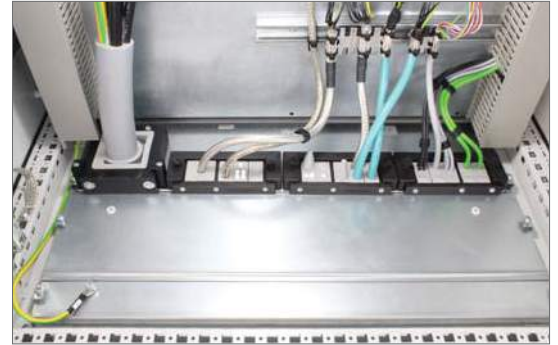
**Hexagonal Locknuts**  
M16 - M85

KGM / GM / GMT

**188 - 189**

# KDR-ESR-VX25 | KDR-ESR-TS8

Rittal enclosure gland plate with slide frames



## KDR-ESR Assembly

### Product description

The KDR-ESR is a one-piece plate to be assembled on enclosure bases. Slide frames for the KEL cable entry frames are already pre-assembled.

After installing all cables into the KEL frames, they are easily and quickly inserted into the slide frames and fixed. During maintenance, the KEL frames are removed without tools from the slide frames. Due to the combination KDR-ESR and KEL cable entry frames, a rating of IP54 is achieved (with correct selection of cable grommets). Slide frames which are no longer required, are closed with BPK-SNAP blank plates.

### Advantages & benefits

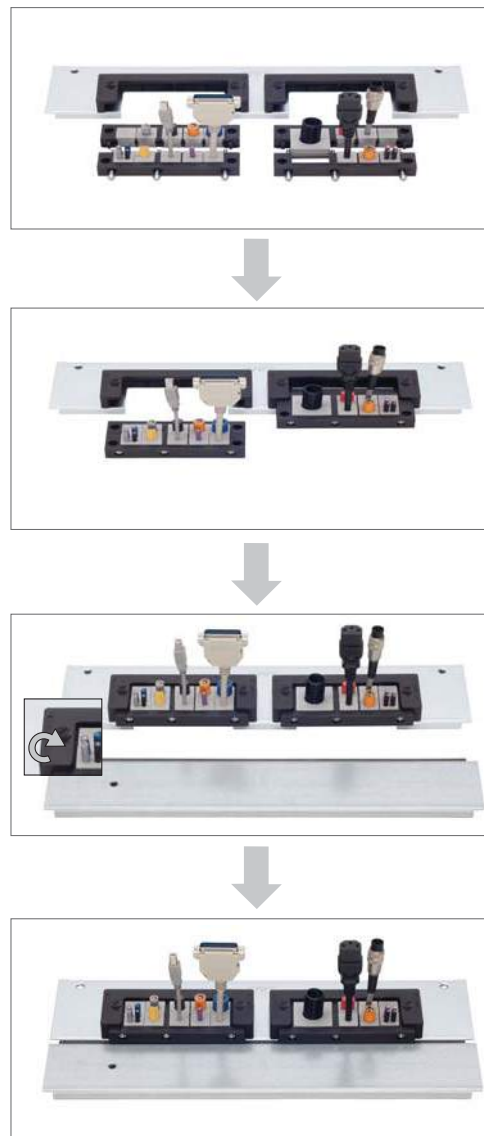
- Easy assembly and removal
- During assembly, almost the complete base of the enclosure can be used for installation of cables
- Even large connectors can be installed easily
- The gland plate KDR-ESR is designed for Rittal enclosures VX25 & TS 8. Other sizes can be supplied on request
- No additional sheet metal work required
- Retrofitting possible without disconnecting cables. Everything can be built around the cables

### Specifications

Material	Gland plate: Sheet steel, zinc-plated KDR-ESR Frame: Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable entry devices
Temperature Properties	- 40°C to + 90°C (static) Halogen free, silicone free

### Compatible with

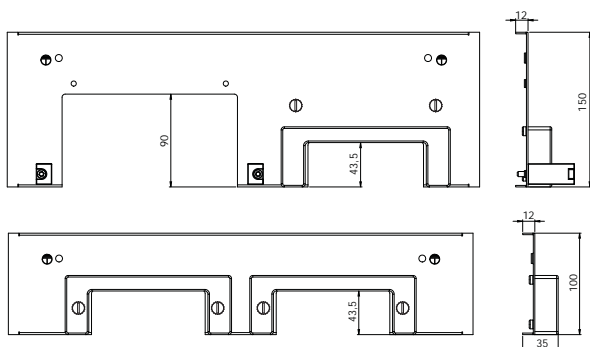
KEL(-U) 16 / 24 Cable entry frames	8 - 14
KEL-QUICK 16 / 24 Cable entry frames	56
KEL-JUMBO Cable entry frames	36
BPK-SNAP 16 / 24 Blank plates	186



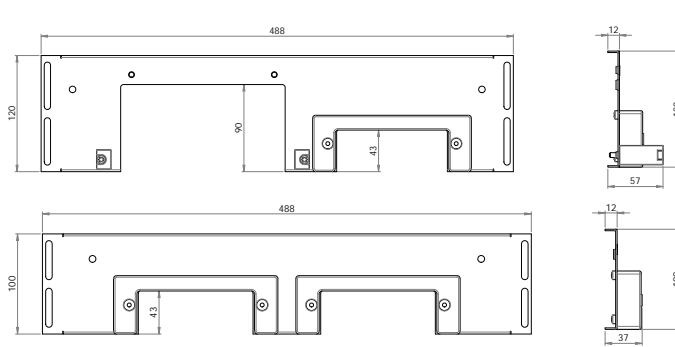
- 1 The gland plate is fixed in the enclosure floor. The KEL cable entry frames are fitted.
- 2 The KEL cable entry frames are screwed together after fitting.
- 3 Afterwards the KEL frames are pushed into the Slide frames and fixed with the knurled screws.
- 4 Finally, the middle gland plate which is part of the standard enclosure, moves together with the KDR-ESR plates.



## KDR-ESR-VX25 | KDR-ESR-TS8

Rittal enclosure gland plate  
with slide frames

KDR-ESR-TS8 for Rittal TS 8



KDR-ESR-VX25 for Rittal VX25

NEW	Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries				Order No.
					JUMBO 1	JUMBO 2	KEL(-U) 16 ...	KEL(-U) 24 ...	
<b>KDR-ESR for Rittal VX25:</b>									
	KDR-ESR-VX25-600	600 mm	488 mm	452 mm	-	-	-	2	44500
	KDR-ESR-VX25-600	600 mm	488 mm	452 mm	-	1	-	1	44501
	KDR-ESR-VX25-600	600 mm	488 mm	452 mm	1	-	2	-	44502
	KDR-ESR-VX25-800	800 mm	688 mm	652 mm	-	-	1	3	44503
	KDR-ESR-VX25-800	800 mm	688 mm	652 mm	1	-	1	2	44504
	KDR-ESR-VX25-800	800 mm	688 mm	652 mm	-	1	-	2	44505
	KDR-ESR-VX25-1000	1000 mm* with division bar	438 mm	402 mm	-	-	-	2	44506
	KDR-ESR-VX25-1000	1000 mm* with division bar	438 mm	402 mm	1	-	-	1	44507
	KDR-ESR-VX25-1000	1000 mm* with division bar	438 mm	402 mm	-	1	1	-	44508
	KDR-ESR-VX25-1200	1200 mm*	538 mm	502 mm	-	-	-	3	44509
	KDR-ESR-VX25-1200	1200 mm*	538 mm	502 mm	1	-	1	1	44510
	KDR-ESR-VX25-1200	1200 mm*	538 mm	502 mm	-	1	-	1	44511
<b>KDR-ESR for Rittal TS 8:</b>									
	KDR-ESR-TS8-600	600 mm	458 mm	435 mm	-	-	-	2	43079
	KDR-ESR-TS8-600	600 mm	458 mm	435 mm	-	1	-	1	43070
	KDR-ESR-TS8-600	600 mm	458 mm	435 mm	1	-	2	-	43071
	KDR-ESR-TS8-800	800 mm	658 mm	635 mm	-	-	1	3	43080
	KDR-ESR-TS8-800	800 mm	658 mm	635 mm	1	-	-	3	43072
	KDR-ESR-TS8-800	800 mm	658 mm	635 mm	-	1	-	2	43073
	KDR-ESR-TS8-1000	1000 mm without division bar	858 mm	835 mm	-	-	-	5	43081
	KDR-ESR-TS8-1000	1000 mm without division bar	858 mm	835 mm	1	-	-	4	43074
	KDR-ESR-TS8-1000	1000 mm without division bar	858 mm	835 mm	-	1	-	3	43075
	KDR-ESR-TS8-1000	1000 mm* with division bar	420 mm	398 mm	-	-	-	2	43082
	KDR-ESR-TS8-1000	1000 mm* with division bar	420 mm	398 mm	1	-	-	1	43076
	KDR-ESR-TS8-1000	1000 mm* with division bar	420 mm	398 mm	-	1	-	1	43077
	KDR-ESR-TS8-1200	1200 mm*	518 mm	495 mm	-	-	-	3	43083
	KDR-ESR-TS8-1200	1200 mm*	518 mm	495 mm	1	-	-	2	43078
	KDR-ESR-TS8-1200	1200 mm*	518 mm	495 mm	-	1	-	1	43084

\* in case both fields of the enclosure are equipped, 2 complete gland plates are necessary.



## KDR-ESR-HG2

Enclosure gland plate with slide frames for Hoffman PROLINE G2



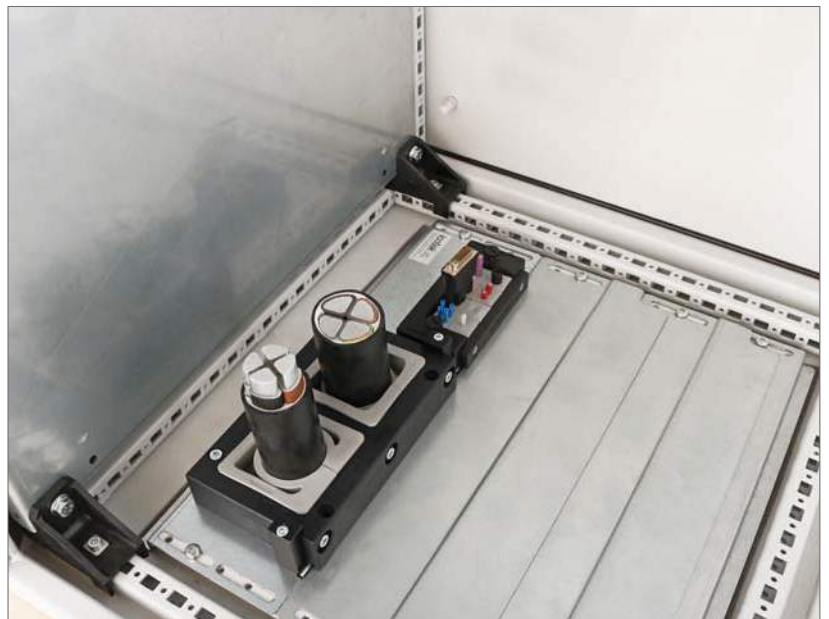
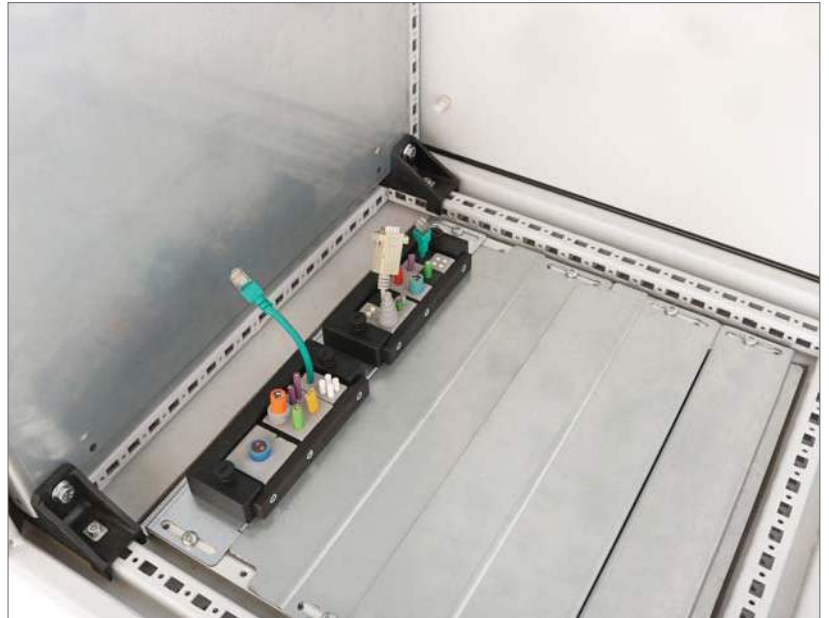
### Product description

The KDR-ESR-HG2 is a one-piece plate to be assembled on enclosure bases. Slide frames for the KEL cable entry frames are already pre-assembled.

After installing all cables into the KEL frames, they are easily and quickly inserted into the slide frames and fixed. During maintenance, the KEL frames are removed without tools from the slide frames and fixed. Due to the combination KDR-ESR-HG2 and KEL cable entry frames, a rating of IP54 is achieved (with correct selection of cable grommets). Slide frames which are no longer required, are closed with BPK-SNAP blank plates.

### Advantages & benefits

- Easy assembly and removal
- During assembly, almost the complete base of the enclosure can be used for installation of cables
- Even large connectors can be installed easily
- The gland plate KDR-ESR-HG2 is designed for Hoffman enclosures PROLINE G2. Other sizes can be supplied on request
- No additional sheet metal work required
- Retrofitting possible without disconnecting cables. Everything can be built around the cables



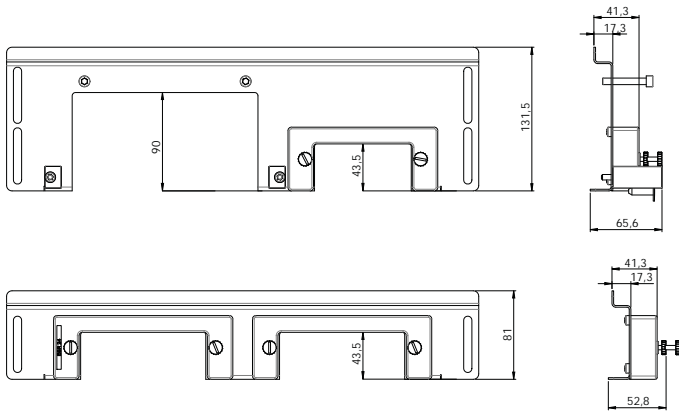
### Specifications

Material	Gland plate: Sheet steel, zinc-plated KDR-ESR Frame: Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable entry devices
Temperature	- 40°C to + 90°C (static)
Properties	Halogen free, silicone free

### Compatible with

KEL(-U) 16 / 24 Cable entry frames	8 - 14
KEL-QUICK 16 / 24 Cable entry frames	56
KEL-JUMBO Cable entry frames	36
BPK-SNAP 16 / 24 Blank plates	186

## KDR-ESR-HG2

Enclosure gland plate with slide frames  
for Hoffman PROLINE G2

Sealing tape  
**Order No. 42999 (L: 1 m)**  
**Order No. 42999.10000 (L: 10 m)**

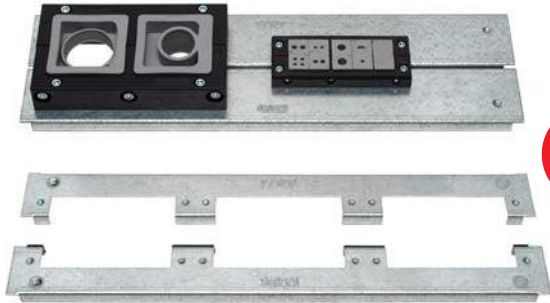
Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries			Order No.
				JUMBO 2	KEL(-U) 16 ...	KEL(-U) 24 ...	
KDR-ESR-HG2-600	600 mm / 1200 mm*	432 mm	368 mm	1	1	-	43250
KDR-ESR-HG2-600	600 mm / 1200 mm*	432 mm	368 mm	-	-	2	43251
KDR-ESR-HG2-800	800 mm	632 mm	568 mm	1	-	2	43252
KDR-ESR-HG2-800	800 mm	632 mm	568 mm	-	-	3	43253
KDR-ESR-HG2-1000	1000 mm	832 mm	768 mm	1	-	3	43254
KDR-ESR-HG2-1000	1000 mm	832 mm	768 mm	-	-	4	43255

\* in case both fields of the enclosure are equipped, 2 complete gland plates are necessary.



# KDR 2-VX25 | KDR 2-TS8

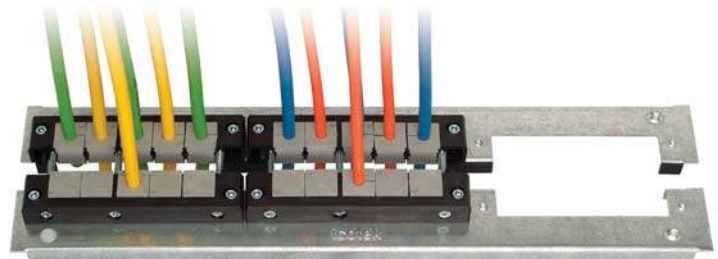
## Split Rittal enclosure gland plates



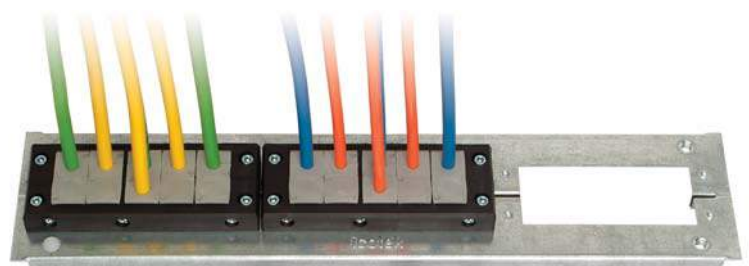
IP54



### KDR 2 Assembly



When the cable entry frames are assembled, the KDR gland plates move together for a tight, secure hold of the cable entry systems.



The frame parts with grommets have to be built up before final assembly, i.e. before screwing the system together.

Screwing of the cable entry frames tightens both parts of the split gland plate.

### Product description

Split, 2-part gland plates KDR 2 with pre-cut holes for KEL and KEL-JUMBO cable entry systems.

Integrated screw holes provide quick and easy installation of KEL frames.

### Advantages & benefits

- During assembly, almost the complete base of the enclosure can be used for installation of cables
- Even large connectors can be installed easily
- The gland plate KDR 2 is designed for Rittal enclosures TS 8 & VX25. Other sizes can be supplied on request
- Retrofitting is possible without disconnecting of cables. All can be installed around the cables.
- No additional sheet metal work required
- Cut-outs, which are no longer required, are covered with metal blank plates Type BPM

### Specifications

Material Sheet steel, zinc-plated

### Compatible with

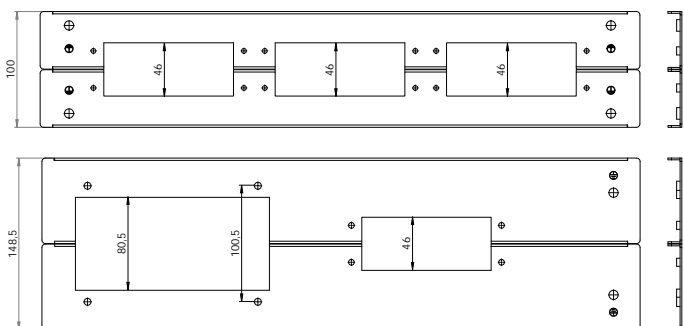
KEL 24 Cable entry frames	18
KEL-JUMBO Cable entry frames	36
BPM Blank plates metal	185

Sealing tape  
Order No. 42999 (L: 1 m)  
Order No. 42999.10000 (L: 10 m)

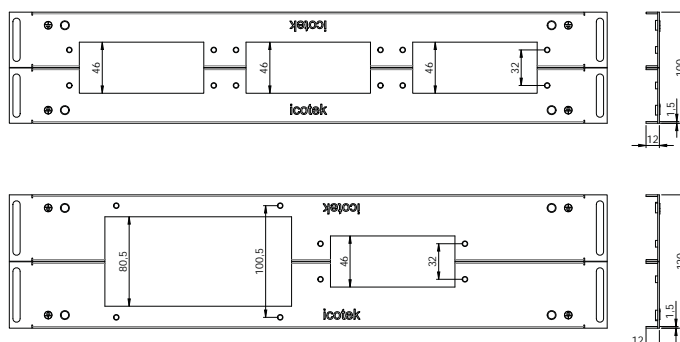


# KDR 2-VX25 | KDR 2-TS8

## Split Rittal enclosure gland plates



KDR 2-TS8 for Rittal TS 8



KDR 2-VX25 for Rittal VX25

NEW	Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries			Order No.
					JUMBO 1	JUMBO 2	KEL 24 ...	
<b>KDR 2 for Rittal VX25:</b>								
	KDR 2-VX25-600	600 mm	488 mm	452 mm	-	-	3	44400
	KDR 2-VX25-600	600 mm	488 mm	452 mm	1	-	2	44401
	KDR 2-VX25-600	600 mm	488 mm	452 mm	-	1	1	44402
	KDR 2-VX25-800	800 mm	688 mm	652 mm	-	-	4	44403
	KDR 2-VX25-800	800 mm	688 mm	652 mm	1	-	3	44404
	KDR 2-VX25-800	800 mm	688 mm	652 mm	-	1	2	44405
	KDR 2-VX25-1000	1000 mm* with division bar	438 mm	402 mm	-	-	2	44406
	KDR 2-VX25-1000	1000 mm* with division bar	438 mm	402 mm	1	-	1	44407
	KDR 2-VX25-1000	1000 mm* with division bar	438 mm	402 mm	-	1	1	44408
	KDR 2-VX25-1200	1200 mm*	538 mm	502 mm	-	-	3	44409
	KDR 2-VX25-1200	1200 mm*	538 mm	502 mm	1	-	2	44410
	KDR 2-VX25-1200	1200 mm*	538 mm	502 mm	-	1	1	44411
<b>KDR 2 for Rittal TS 8:</b>								
	KDR 2-TS8-600	600 mm	458 mm	435 mm	-	-	3	42924
	KDR 2-TS8-600	600 mm	458 mm	435 mm	1	-	2	42953
	KDR 2-TS8-600	600 mm	458 mm	435 mm	-	1	1	42941
	KDR 2-TS8-800	800 mm	658 mm	635 mm	-	-	4	42922
	KDR 2-TS8-800	800 mm	658 mm	635 mm	1	-	3	42954
	KDR 2-TS8-800	800 mm	658 mm	635 mm	-	1	2	42945
	KDR 2-TS8-1000	1000 mm without division bar	858 mm	835 mm	-	-	5	42923
	KDR 2-TS8-1000	1000 mm without division bar	858 mm	835 mm	1	-	4	42955
	KDR 2-TS8-1000	1000 mm without division bar	858 mm	835 mm	-	1	3	42952
	KDR 2-TS8-1000	1000 mm* with division bar	420 mm	398 mm	-	-	2	42958
	KDR 2-TS8-1000	1000 mm* with division bar	420 mm	398 mm	1	-	1	42957
	KDR 2-TS8-1000	1000 mm* with division bar	420 mm	398 mm	-	1	1	42959
	KDR 2-TS8-1200	1200 mm*	518 mm	495 mm	-	-	3	42920
	KDR 2-TS8-1200	1200 mm*	518 mm	495 mm	1	-	2	42956
	KDR 2-TS8-1200	1200 mm*	518 mm	495 mm	-	1	1	42943

\* in case both fields of the enclosure are equipped, 2 complete split gland plates are necessary.

## KDR-BES

Enclosure gland plate  
with brush grommets



For standard cut-outs:  
KEL-BES - see page 68

### KDR-BES Assembly

#### Product description

The new 2-piece enclosure gland plates KDR-BES are supplied with preassembled brush grommets.

The gland plates are installed with standard Rittal clips.

Depending on the maximum cable diameter to be routed, the 2 halves of the brush gland plate are aligned further or closer to each other.

The gland plates KDR-BES are perfect for protection of the enclosure interiors against dirt.

#### Advantages & benefits

- During assembly, almost the complete base of the enclosure can be used for installation of cables.
- Retrofitting is possible without disconnecting of cables. All can be installed around the cables.
- The gland plates KDR-BES are designed for Rittal enclosures TS 8. Other sizes can be supplied on request.



#### Specifications

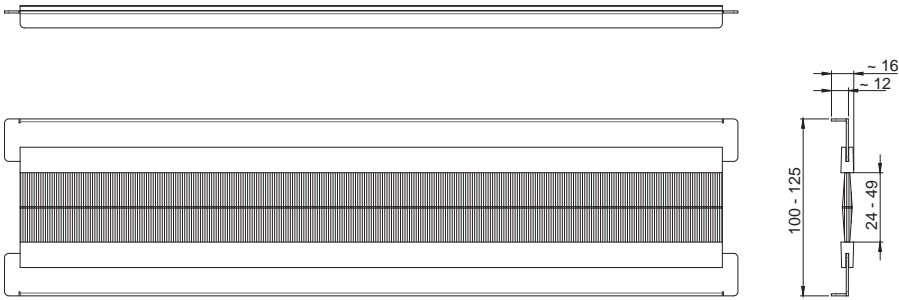
Material	Gland plate: Sheet steel, zinc-plated Brush grommets: Polyamide (PA)
Temperature Properties	- 20°C to + 90°C (static) Halogen free, silicone free

#### Accessories

ZL Strain relief plates      98 - 102

# KDR-BES

## Enclosure gland plate with brush grommets



Type	Enclosure type	Enclosure width	Total length gland plate	Sight size of base plate opening	Order No.
KDR-BES-TS 8-600	Rittal TS 8	600 mm	458 mm	435 mm	58000
KDR-BES-TS 8-800	Rittal TS 8	800 mm	658 mm	635 mm	58006
KDR-BES-TS 8-1000	Rittal TS 8	1000 mm without division bar	858 mm	835 mm	58012
KDR-BES-TS 8-1200	Rittal TS 8	1200 mm*	518 mm	495 mm	58018

\* in case both fields of the enclosure are equipped, 2 complete gland plates are necessary.

# KDR-BES-U

## Universal brush strip for enclosures



Edge protection trim (100m)  
Order No. 99152

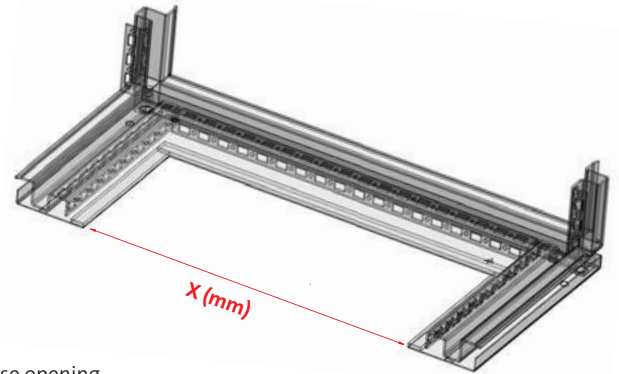
Brush strips in your required length (up to 1.500 mm)

### Product description

Cable pass-through brush strip for enclosure bases or individual cut-outs on cabinets, enclosures, panels, server racks or machine walls.

Due to the innovative and universal clamp strip the brush can also be assembled in a 90° angle, e.g. on bent sheet metal. Suitable for wall thickness 1.5 - 2 mm or 2 - 3 mm. Brush may be removed from the profile at any time and remounted using other mounting options.

The KDR-BES-U brush strip is adaptable to almost any enclosure or cabinet type on the market. The standard gland plates included in the enclosure delivery can be used for assembly. They do not have to be changed!



X (mm) = sight size of base opening

Order numbers (ex.):

For sheet thickness 1.5 - 2 mm:  
X = 999 mm --> Order No. 58210.0999

NEW

For sheet thickness 2 - 3 mm:  
X = 999 mm --> Order No. 58225.0999

(X max. = 1500 mm)

Scope of delivery:  
1x KDR-BES-U (clamp strip + brush)

### Advantages & benefits

- Fast, simple and tool-free mounting
- Original enclosure gland plates can be used
- Three mounting types possible
- Brush may be remounted at any time using other mounting options
- Available in any custom length up to 1.500 mm

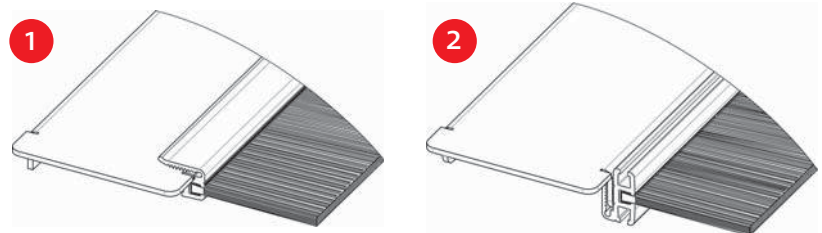
### Specifications

Material clamp strip	Aluminium
Material backing strips	Metal, galvanised
Material bristles	Polyamide (PA)
For sheet thickness	1.5 - 2 mm / 2 - 3 mm
Temperature	-20°C to +90°C
Properties	Halogen free, silicone free

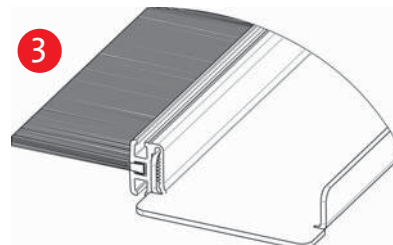
### Accessories

ZL Strain relief plates	98 - 102
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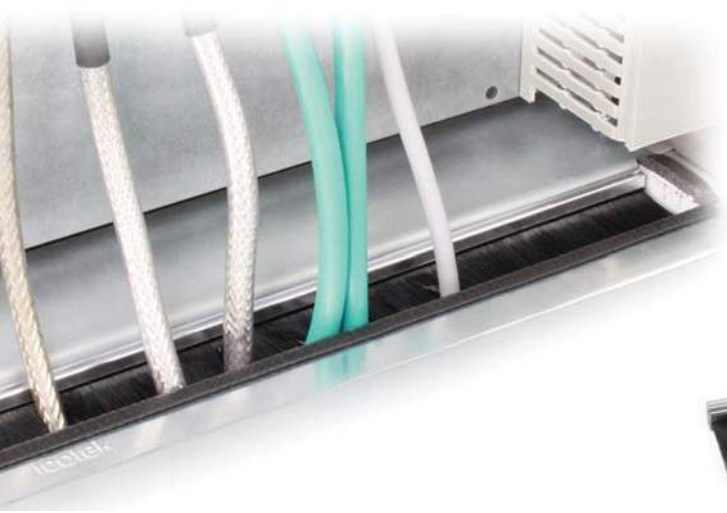
### KDR-BES-U mounting options



pure brush length: 34 mm







## KDR-BES-U

Brush strip for gland plates  
Rittal VX25/TS 8 & Hoffman PROLINE G2

Type	Enclosure type	Enclosure width	Brush strip length	Order no.	PU
<b>NEW</b> KDR-BES-U for Rittal VX25 enclosures					
KDR-BES-U-VX25-600	Rittal VX25	600 mm	452 mm	58225.0452	1
KDR-BES-U-VX25-800	Rittal VX25	800 mm	652 mm	58225.0652	1
KDR-BES-U-VX25-1000	Rittal VX25	1000 mm* with division bar	402 mm	58225.0402	1
KDR-BES-U-VX25-1200	Rittal VX25	1200 mm* with division bar	502 mm	58225.0502	1
KDR-BES-U for Rittal TS 8 enclosures					
KDR-BES-U-TS8-600	Rittal TS 8	600 mm	435 mm	58210.0435	1
KDR-BES-U-TS8-800	Rittal TS 8	800 mm	635 mm	58210.0635	1
KDR-BES-U-TS8-1000	Rittal TS 8	1000 mm* with division bar	397 mm	58210.0397	1
KDR-BES-U-TS8-1000	Rittal TS 8	1000 mm without division bar	835 mm	58210.0835	1
KDR-BES-U-TS8-1200	Rittal TS 8	1200 mm* with division bar	495 mm	58210.0495	1
KDR-BES-U for Hoffman PROLINE G2 enclosures					
KDR-BES-U-HG2-600	Hoffman PROLINE G2	600 mm / 1200 mm*	362 mm	58210.0362	1
KDR-BES-U-HG2-800	Hoffman PROLINE G2	800 mm	562 mm	58210.0562	1
KDR-BES-U-HG2-1000	Hoffman PROLINE G2	1000 mm	762 mm	58210.0762	1
Edge protection trim	universal	Clamping range 1-2 mm		99152	100 m

\* in case both fields of the enclosure are equipped, 2 complete gland plates are necessary.



# MP

## Module plates



### MP Applications

#### Product description

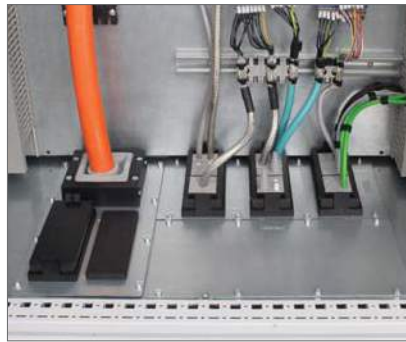
The module plates have cut-outs for fixing the KEL range cable entry systems KEL 24, KEL-U 24, KEL-QUICK 24, KEL-JUMBO, KEL-DPF, KEL-JUMBO flex and KEL-ULTRA flex.

The module plates can be installed on:

- Separation walls by Rittal
- closed enclosure bases and roofs (various manufacturers)
- Bases of Lohmeier enclosures
- Bases of Rittal enclosures via KDR-BMP gland plates

The module blank plate without cut-outs (Order No. 43882) is designed for closing unused cut-outs. This module plate can even be used for self-made cut-outs.

Module plates are supplied with a gasket.



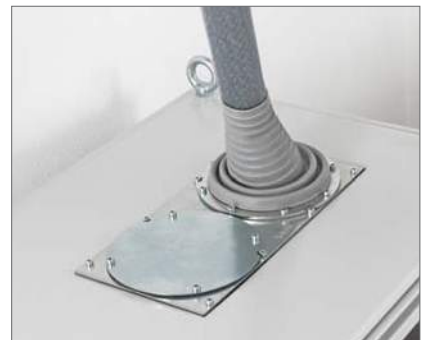
Cable routing via module plates in the base of a Rittal TS 8 enclosure. Mounting with icotek gland plate KDR BMP.



Cable routing through the divider panel of a Rittal TS 8 baying enclosure system via module plates.



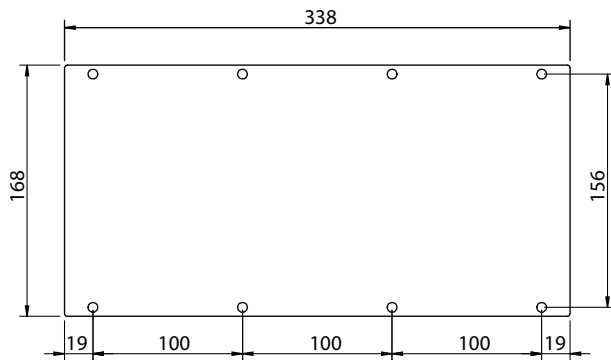
Routing of several cables with and without connectors through a closed enclosure roof via module plates. Cut-out size 314 x 144 mm.



Routing of a rigid supply line through a closed enclosure roof via module plates. Cut-out size 314 x 144 mm.

# MP

## Module plates



IP54

### Specifications

Material Sheet steel, zinc-plated  
Aluminium (Order No. 43883, 43899)  
Dimension 338 × 168 × 2 mm

### Compatible with

KEL 24 Cable entry frames	18
KEL-U 24 Cable entry frames	8
KEL-QUICK 24 Cable entry frames	56
KEL-SNAP snap frames	31
KEL-JUMBO Cable entry frames	36
KEL-DPF Cable entry grommets	92
KEL-JUMBO flex Cable entry ins.	94
KEL-ULTRA flex Cable entry ins.	93
Blank plates	184 - 186

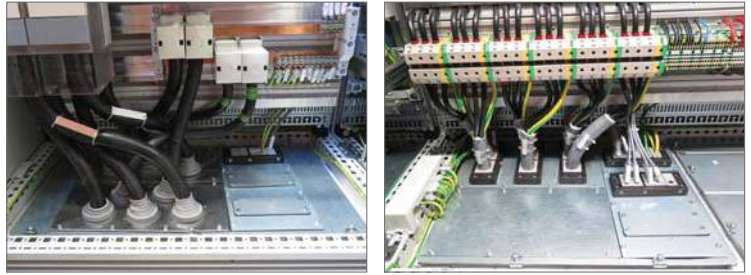
Description	Type	Order No.	Compatible with
	MP 0	43882	Module plate, blank
	MP 1	43891	3x KEL(-U/-QUICK) 24 x
	MP 2	43890	4x KEL(-U/-QUICK) 24 x
	MP 3	43886	1x KEL-JUMBO 1 1x KEL-JUMBO 2
	MP 4	43888	2x KEL-JUMBO 1
	MP 5	43887	2x KEL(-U/-QUICK) 24 x 1x KEL-JUMBO 1
	MP 6	43883	5x cut-out M50 for KEL-DPF or KEL-DPZ
	MP 7	43889	Cut-out 3x KEL-JUMBO flex
	MP 8	43894	Cut-out 2x KEL-ULTRA flex
	MP 10	43896	2x KEL(-U/-QUICK) 24 x 1x cut-out M63 for KEL-DPF or KEL-DPZ
	MP 11	43899	5x cut-out M63 for KEL-DPF or KEL-DPZ

NEW

NEW

# KDR-BMP

Enclosure gland plates for module plates



## Product description

The KDR-BMP gland plates are ideally suited for Rittal TS enclosures and can be used instead of the 3 piece standard gland plates. Rittal standard mounting clips are used for fixing the plate.

On KDR-BMP gland plates, our MP Module Plates MPO-MP8 can be easily mounted and used for installation of cable entry components.

## Advantages & benefits

- Very simple mounting
- No sheet metal work required

## Specifications

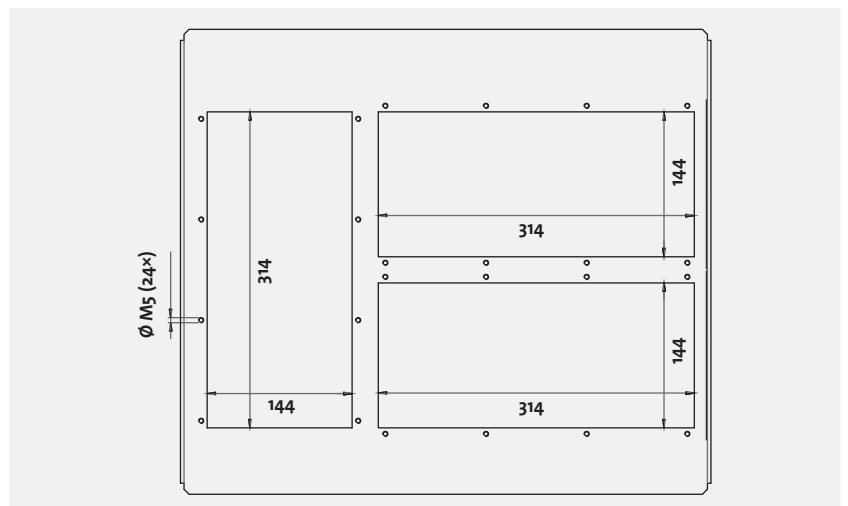
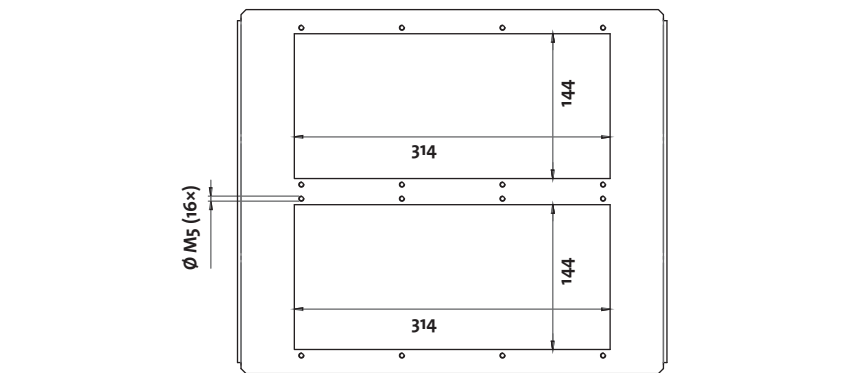
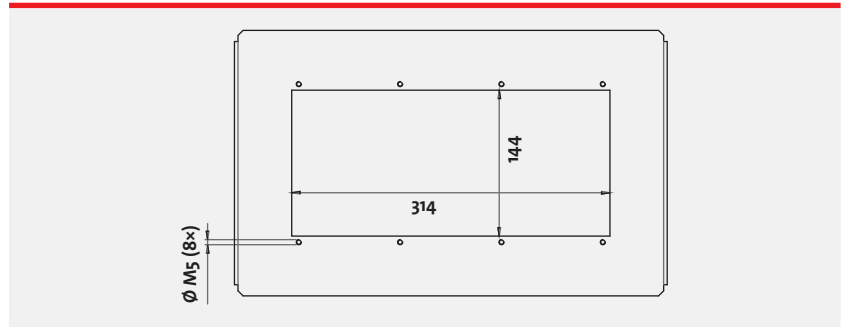
Material Sheet steel, zinc-plated  
 IP rating IP54, with gasket and correct selection of cable entry devices

6

## Compatible with

MP Module plates 174 - 175

Description



# KDR-BMP

## Enclosure gland plates for module plates



Type	Enclosure type	Enclosure width	Enclosure depth	No. of cut-outs for module plates	Order No.
KDR-BMP 600/400	TS 8	600 mm	400 mm	1	43300
KDR-BMP 600/500	TS 8	600 mm	500 mm	2	43302
KDR-BMP 600/600	TS 8	600 mm	600 mm	2	43304
KDR-BMP 800/400	TS 8	800 mm	400 mm	1	43306
KDR-BMP 800/500	TS 8	800 mm	500 mm	3	43308
KDR-BMP 800/600	TS 8	800 mm	600 mm	3	43310
KDR-BMP 1000/400	TS 8	1000 mm with division bar	400 mm	1	43312
KDR-BMP 1000/500	TS 8	1000 mm with division bar	500 mm	2	43314
KDR-BMP 1000/600	TS 8	1000 mm with division bar	600 mm	2	43316
KDR-BMP 1200/400	TS 8	1200 mm with division bar	400 mm	1	43318
KDR-BMP 1200/500	TS 8	1200 mm with division bar	500 mm	2 × 3	43320
KDR-BMP 1200/600 for left section	TS 8	1200 mm with division bar	600 mm	3	43322
KDR-BMP 1200/600 for right section	TS 8	1200 mm with division bar	600 mm	3	43324

# FP-AE

## Flange plates for compact enclosures



### Product description

We supply complete flange plates FP with 112 × 36 mm cut-outs for compact enclosures of the AE series. The cut-outs, as well as the drilling template, conform to the standard cut-outs for 24-pole industrial connectors.

All flange plates are RAL 7035 powder-coated. Please use the gaskets of the standard plates. Enclosures are supplied with gaskets and screws.

We recommend fastening the cable entry systems with a torque of 1.5 - 2.0 Nm.

### Advantages & benefits

- No expensive extra sheet metal work is required
- High cable density is achieved by using KEL, KEL-U, KEL-QUICK, KEL-DPU, KEL-DPZ or KEL-DP
- Reduce labour costs by using cable entry systems compared to the assembly of conventional cable glands

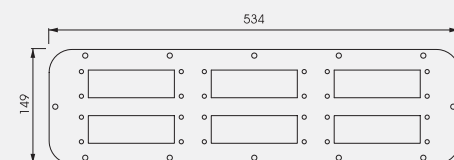
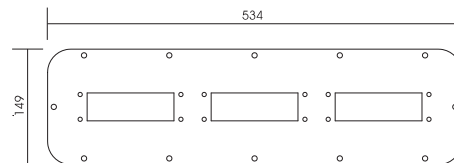
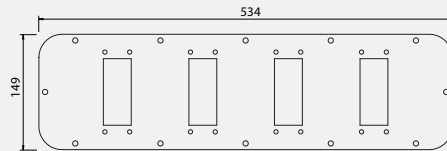
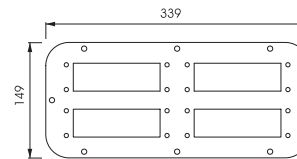
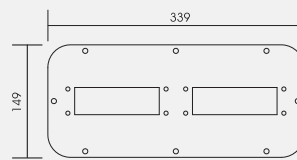
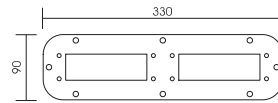
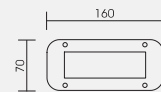
### Specifications

Material **Sheet steel, powder coated**

### Compatible with

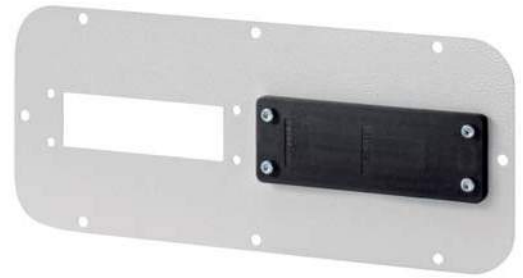
KEL Cable entry frames	18 - 19
KEL-U Cable entry frames	8 - 14
KEL-QUICK Cable entry frames	56 - 57
KEL-SNAP Mounting frames	31
KEL-QTA 24 Cable entry frames	63 - 65
KEL-DPU 24 Cable entry plates	76 - 77
KEL-DPZ 24 Cable entry plates	78 - 79
KEL-DP 24 Cable entry plates	86
KEL-BES	68
KEL-BES-S	69
Blank plates	184 - 186

Description



## FP-AE

## Flange plates for compact enclosures

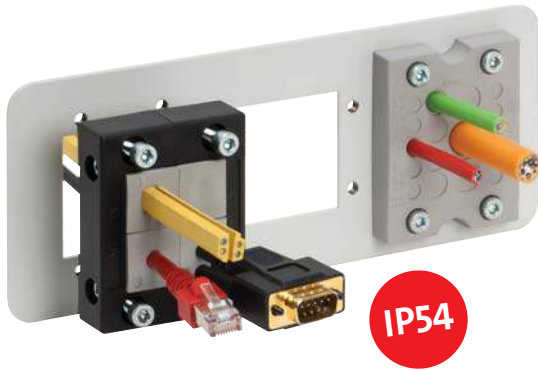


Type	Order No. RAL 7035	Compatible with: (Product Group 1)	Compatible with: (Product Group 2)	Size FP	Compatible with (e.g. for Rittal)
FP-AE 160 70 with 1 cut-out 36 x 112 mm	43836	KEL-QTA 24	KEL-DP 24	1	AE 1032 AE 1035
FP-AE-24 330 90 with 2 cut-outs 36 x 112 mm	43838	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	3	AE 1030 AE 1031 AE 1038 AE 1380
FP-AE-16 330 90 with 2 cut-outs 36 x 86 mm	43861	KEL 16   KEL-U 16 KEL-QUICK 16 KEL-BES 16 KEL-BES-S 16		3	
FP-AE 339 149 with 2 cut-outs 36 x 112 mm	43840	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	4	AE 1037 AE 1045 AE 1050 AE 1057 AE 1100 AE 1110 AE 1114 AE 1130 AE 1213 AE 1338 AE 1350
FP-AE 339 149 with 4 cut-outs 36 x 112 mm	43846	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	4	CS 9751.125 CS 9751.145 CS 9751.165 CS 9752.125 TP 6710 TP 6712 TP 6714 TP 6716
FP-AE 534 149 with 4 cut-outs 36 x 86 mm	43871	KEL 16   KEL-U 16 KEL-QUICK 16 KEL-SNAP 16 KEL-BES 16 KEL-BES-S 16		5	AE 1039 AE 1054 AE 1055 AE 1058 AE 1060 AE 1073 AE 1076 AE 1077 AE 1090 AE 1180 AE 1260 AE 1280 AE 1339 AE 1360 AE 1376 AE 1958 EL 1919 EL 1926
FP-AE 534 149 with 3 cut-outs 36 x 112 mm	43842	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	5	IN 1076.290
FP-AE 534 149 with 6 cut-outs 36 x 112 mm	43848	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	5	TP 6711 TP 67113 TP 6715 TP 6717



# FP-KL

## Flange plates for terminal boxes



IP54



IP65 cable entry plate for Rittal KL:  
KEL-DPZ-KL - see page 84

### Product description

The FP flange plates type KL, designed to fit the Rittal KL series terminal boxes, are installed in combination with a cable entry system for either pre-terminated or standard cables. FP flange plates are pre-cut, pre-drilled and painted for easy and quick installation of icotek cable routing products.

We recommend fastening the cable entry systems with a torque of 1.5 - 2.0 Nm.

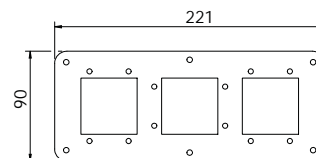
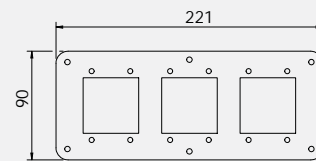
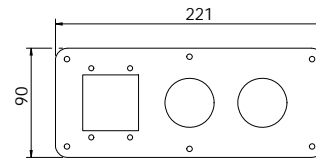
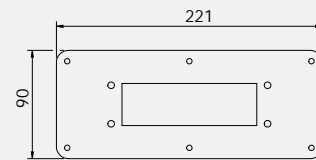
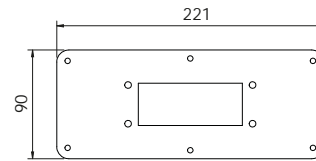
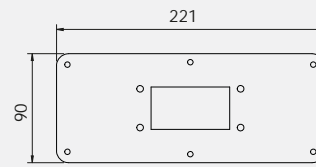
### Specifications

Material **Sheet steel, powder coated**

### Compatible with

KEL Cable entry frames	18 - 21
KEL-U Cable entry frames	8 - 14
KEL-QUICK Cable entry frames	56 - 57
KEL-SNAP Mounting frames	31
KEL-QTA 24 Cable entry frames	64
KEL-DPU Cable entry plates	76 - 77
KEL-DPZ Cable entry plates	78 - 84
KEL-DP 24 Cable entry plates	86
KEL-DPF Cable entry grommets	92
KEL-BES	68
KEL-BES-S	69
Blank plates	184 - 186

#### Description



## FP-KL

## Flange plates for terminal boxes



Type	Order No. RAL 7035	Flange plates compatible with	Size FP	Compatible with (e.g. for Rittal)
FP-KL 221x90 10 with 1 cut-out 36 x 65 mm	43853	KEL 10   KEL-U 10 KEL-QUICK 10 KEL-SNAP 10 KEL-BES 10 KEL-BES-S 10	2	Terminal boxes Type KL
FP-KL 221x90 16 with 1 cut-out 36 x 86 mm	43855	KEL 16   KEL-U 16 KEL-QUICK 16 KEL-SNAP 16 KEL-BES 16 KEL-BES-S 16	2	Terminal boxes Type KL
FP-KL 221x90 24 with 1 cut-out 36 x 112 mm	43834	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPU 24 KEL-DP 24 KEL-BES 24 KEL-BES-S 24	2	Terminal boxes Type KL
FP-KL 221x90 A with 3 cut-outs	43852	KEL-B   KEL-U-B KEL-QUICK-B KEL-SNAP-B KEL-DPZ-B KEL-DPZ 40 KEL-DPF 40	2	Terminal boxes Type KL
FP-KL 221x90 B with 3 cut-outs 46 x 46 mm	43854	Use with: 2× KEL-SNAP-B and 1× KEL-DPZ-B	2	Terminal boxes Type KL
FP-KL 221x90 C with 3 cut-outs 46 x 46 mm	43856	KEL-B   KEL-U-B KEL-QUICK-B KEL-DPZ-B	2	Terminal boxes Type KL

# FP-BG

## Flange plates for bus enclosures



### Product description

The FP flange plates type BG, designed to fit the Rittal BG series enclosures, have up to 3 cut-outs that match the dimensions of the standard cut-outs for the 24-pole industrial connectors. These flange plates are installed in combination with a cable entry system for either pre-terminated cables (KEL 24, KEL-U 24 or KEL-QUICK 24) or standard cables (KEL-DPZ 24, KEL-DPU 24 or KEL-DP 24).

We recommend fastening the cable entry systems with a torque of 1.5 - 2.0 Nm.

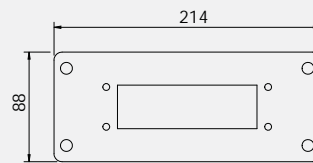
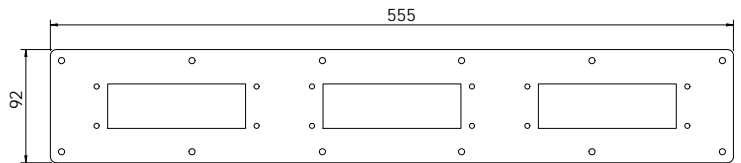
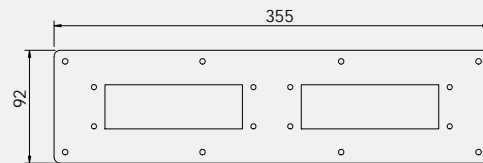
### Specifications

Material **Sheet steel, powder coated**

### Compatible with

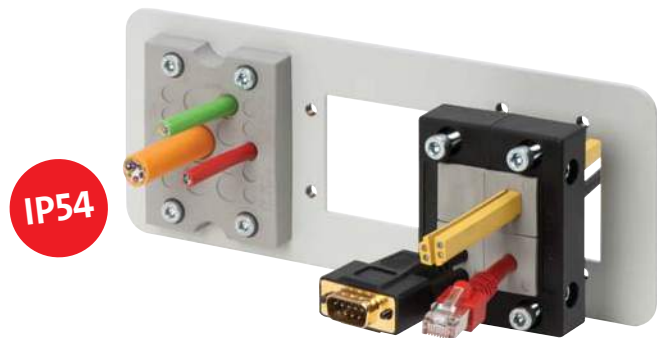
KEL 24 Cable entry frames	18
KEL-U 24 Cable entry frames	8
KEL-QUICK 24 Cable entry frames	56
KEL-SNAP Mounting frames	31
KEL-QTA 24 Cable entry frames	64
KEL-DPU 24 Cable entry plates	76 - 77
KEL-DPZ 24 Cable entry plates	78 - 79
KEL-DP 24 Cable entry plates	86
Blank plates	184 - 186

Description



## FP-BG

## Flange plates for bus enclosures



Type	Order No. RAL 7035	Flange plates compatible with	Size FP.	Compatible with (e.g. for Rittal)
FP-BG 355x92 with 2 cut-outs 36 x 112 mm	43866	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPU 24 KEL-DP 24 KEL-BES 24 KEL-BES-S 24	-	BG 1558.510
FP-BG 555x92 with 3 cut-outs 36 x 112 mm	43865	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPU 24 KEL-DP 24 KEL-BES 24 KEL-BES-S 24	6	BG 1050.900 BG 1559.510 IN 1510.280
FP-FL 21 with 1 cut-out 36 x 112 mm	43832	KEL 24   KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPU 24 KEL-DP 24 KEL-BES 24 KEL-BES-S 24	-	Fibox plates

# BPK

Blank plates, plastic



BPK-RF: Snap function, tool-free assembly



BPK: screwable

## Product description

BPK Blank plates seal cut-outs for standard 10-pole / 16-pole / 24-pole industrial connectors with IP rating up to IP64.

Plastic blank plates are available in two different versions:

- Type BPK: Blank plates for screw connection
- Type BPK-RF A: Blank plates for snapping into metal sheet plates up to a thickness from 1.5 to 3 mm

## Advantages & benefits

- Fast mounting of the blank plates BPK-RF range by snapping into the cut-out
- Integrated circular sealing (up to IP64)

## Specifications

Material	Polypropylene (PP)
Flame class	UL94-Vo
IP rating	BPK: IP64 BPK-RF A: IP54
Temperature	- 30°C to + 140°C (static)
Properties	Halogen free, silicone free

## Compatible with

FP Flange plates 178 - 183

Type	Order No.	Blank plate for KEL cut-out	Dimensions	PU
<b>BPK Blank plates for screw connection:</b>				
BPK-B	42010	KEL-B   KEL-U-B KEL-ER-B   KEL-QUICK-B	76 x 53 mm	10
BPK 10	42015	KEL 10   KEL-U 10 KEL-ER 10   KEL-QUICK 10	101 x 53 mm	10
BPK 16	42016	KEL 16   KEL-U 16 KEL-ER 16   KEL-QUICK 16	121 x 53 mm	10
BPK 24	42024	KEL 24   KEL-U 24 KEL-ER 24   KEL-QUICK 24 KEL-FG-A	148 x 53 mm	10
<b>BPK Blank plates for snapping into cut-outs:</b>				
BPK-B-RF A	42010.002	KEL-B   KEL-U-B KEL-QUICK-B	76 x 53 mm	10
BPK 10-RF A	42015.002	KEL 10   KEL-U 10 KEL-QUICK 10	101 x 53 mm	10
BPK 16-RF A	42016.002	KEL 16   KEL-U 16 KEL-QUICK 16	121 x 53 mm	10
BPK 24-RF A	42024.002	KEL 24   KEL-U 24 KEL-QUICK 24   KEL-FG-A	148 x 53 mm	10
BPK-JFX	42620	KEL-JUMBO flex	88 x 88 mm	5

# BPM

## Blank plates, metal



Type	Order No.	Blank plate for KEL cut-out	Dimensions	PU
BPM-E2	42048	KEL-E2   KEL-ER-E2 KEL-FG-E2   KEL-QUICK-E2	73 × 39.5 mm	10
BPM-E3	42049	KEL-E3   KEL-ER-E3 KEL-FG-E3   KEL-QUICK-E3	98 × 39.5 mm	10
BPM-E4	42050	KEL-E4   KEL-ER-E4 KEL-QUICK-E4	120 × 39.5 mm	10
BPM-E5	42051	KEL-E5   KEL-ER-E5 KEL-FG-E5   KEL-QUICK-E5	147 × 39.5 mm	10
BPM-B	42013	KEL-B   KEL-U-B   KEL-ER-B KEL-QUICK-B	75 × 58 mm	10
BPM 6 BPM 6 V2A	42011 41991	Standard 6-pin industrial connectors	90 × 52 mm	10
BPM 10 BPM 10 V2A	42014 41992	KEL 10   KEL-U 10   KEL-ER 10 KEL-QUICK 10	99 × 58 mm	10
BPM-FG-B	42012	KEL-FG-B	80 × 58 mm	10
BPM 16 BPM 16 V2A	42025 41994	KEL 16   KEL-U 16   KEL-ER 16 KEL-QUICK 16	118 × 56 mm	10
BPM 16-E	42023	KEL 16-E	120 × 87 mm	1
BPM 16-MT	42026	KEL 16-MT	120 × 102 mm	1
BPM 16-2MT	42031	KEL 16-2MT	120 × 146 mm	1
BPM 24 BPM 24 V2A	42027 41995	KEL 24   KEL-U 24   KEL-ER 24 KEL-QUICK 24	145 × 56 mm	10
BPM 24-E	42029	KEL 24-E	143 × 83 mm	1
BPM 24-MT	42028	KEL 24-MT	147 × 102 mm	1
BPM-JUMBO flex	42033	KEL-JUMBO flex	88 × 88 mm	1
BPM-JUMBO 1	42030	KEL-JUMBO 1	116 × 110 mm	1
BPM-JUMBO 2	42032	KEL-JUMBO 2	200 × 116 mm	1
BPM-ULTRA	42633	KEL-ULTRA flex	∅ 168 mm Width: 1.5 mm	1

## Product description

Blank plates to close cut-outs for standard 6-pole / 10-pole / 16-pole / 24-pole industrial connectors.

Blank plates are supplied with a gasket.

## Specifications

Material	Steel, zinc-plated
	Width 2 mm
IP rating	IP65

## Compatible with

KDR 2 Split gland plates	168 - 169
FP Flange plates	178 - 183
MP Module plates	174 - 175



# BPK-SNAP

Blank plates for KEL-SNAP frames



## Product description

Blank plate BPK-SNAP to close cut-outs of pre-assembled KEL-SNAP frames.

A snap frame can be closed, i.e. during transport to avoid entry of dust, as long as a KEL frame is not mounted.

The BPK-SNAP blank plate is simply snapped on the KEL frame. There is no tool needed to remove it.

BPK-SNAP 16 and BPK-SNAP 24 for closing cut-outs of the KEL-SNAP mounting frames and unused Slide frames of the KDR-ESR gland plates.

Type	Order No.	Blank plate compatible with	Dimensions l × b × h	PU
BPK-SNAP-B	42003	KEL-SNAP-B4	58 × 72.8 × 17 mm	10
BPK-SNAP 10	42004	KEL-SNAP 10	58 × 98.3 × 17 mm	10
BPK-SNAP 16	42007	KEL-SNAP 16	58 × 120 × 17 mm	10
BPK-SNAP 24	42017	KEL-SNAP 24	58 × 147 × 17 mm	10

## Specifications

Material	Polyethylene (PE)
Flame class	UL94-HB
IP rating	IP54
Temperature	- 40°C to + 80°C (static)
Properties	Silicone free

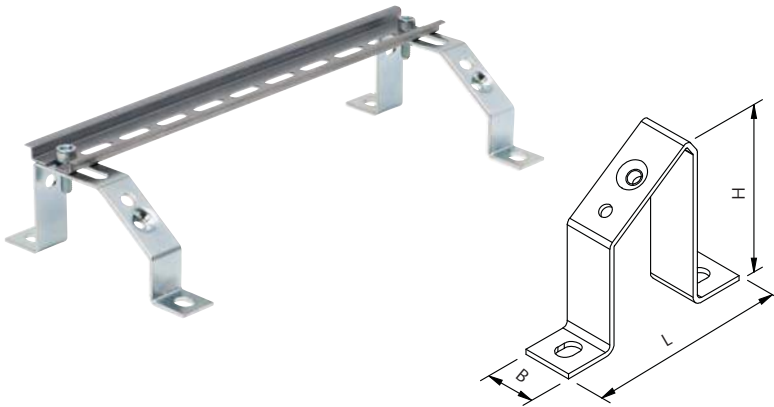
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## Compatible with

KEL-SNAP Mounting frames	31
KDR-ESR Gland plate with Slide frames	164 - 167

# MF

## Supports for DIN rails and bus bars



Description	Type	Version	Order No. without Clip	Order No. with Clip	Dimension [L x B x H]	PU
	MF-A49	Type A	36056	36058	80 x 20 x 49 mm	10
	MF-A68	Type A	36064	36066	80 x 20 x 68 mm	10
	MF-A88	Type A	36072	36074	80 x 20 x 88 mm	10
	MF-B20	Type B	36000	36002	80 x 20 x 20 mm	10
	MF-B30	Type B	36008	36010	80 x 20 x 30 mm	10
	MF-B50	Type B	36016	36018	80 x 20 x 50 mm	10
	MF-B90	Type B	36024	36026	80 x 20 x 90 mm	10
	MF-C40	Type C	36032	36034	40 x 18 x 40 mm	10
	MF-C53	Type C	36040	36042	40 x 18 x 53 mm	10
	MF-D49	Type D	36048	36050	120 x 20 x 49 mm	10
	Bus bar 10 x 3 mm	-	36100	-	10 x 3 x 1000 mm*	1

### Product description

There are 4 models of supports for mounting bus bars 10 x 3 mm or 35 mm DIN rails. Various supports are available to provide solutions for different conditions.

A mounting clip is used for fastening the bus bar to the supports. The support has M6 female screw threads to affix the mounting clip of the DIN rail with a M6 screw.

Mounting clip  
Order No. 36150

### Advantages & benefits

- Wide variety of supports with different sizes and designs
- Simple assembly of TS35 DIN rails and 10 x 3 mm bus bars
- Support type D provides possibility to affix 2 TS335 DIN rails

### Specifications

Material Sheet steel, galvanically zinc-plated

### Accessories

Bus bar Order No. 36100  
Mounting clip Order No. 36150

\* Other lengths available on request

# KGM | GMT

## Locknuts



Type KGM: Standard nut, plastic

### Product description

Hexagonal locknut with metric threads for attaching components together.

For routing SUB-D, DVI or PROFIBUS connectors in combination with the split cable glands KVT / QVT, special locknuts with suitable cut-outs are required:

**KGM-SUB-D9** fits D-Sub 9 connectors  
(Required wall cut-out:  $\varnothing$  36 mm)

**KGM-PB** fits DVI and PROFIBUS connectors  
(Required wall cut-out:  $\varnothing$  42 mm)

**KGM-SUB-D25** fits SUB-D25 connectors  
(Required wall cut-out:  $\varnothing$  50 - 54 mm)

Split hexagonal locknuts GMT for use in combination with split cable glands KVT/QVT whenever pre-terminated cables are routed inside cable protection conduits through a machine or cabinet wall. Suitable for split corrugated conduits CONFIX WST.

Thread	Type	Order No.	Material	Height [mm]	Wrench size	Diagonal [mm]	Cut-out a x b [mm]	PU
Type KGM: Standard nut, plastic								
M16 x 1.5	KGM 16	■ 52272	PA	4.3	SW 22.8	28.2	-	10
M20 x 1.5	KGM 20	■ 52273	PA	7	SW 26	28.2	-	10
		■ 52283						
M25 x 1.5	KGM 25	■ 52274	PA	7	SW 32	36	-	10
		■ 52284						
M32 x 1.5	KGM 32	■ 52275	PA	7	SW 41	46	-	10
		■ 52285						
M40 x 1.5	KGM 40	■ 52276	PA	7	SW 50	56	-	10
		■ 52286						
M50 x 1.5	KGM 50	■ 52277	PA	8.5	SW 60	66	-	10
		■ 52287						
M63 x 1.5	KGM 63	■ 52278	PA	8.5	SW 75	83	-	5
		■ 52288						
M75 x 1.5	KGM 75	■ 52289	PA	8.5	SW 85	93.1	-	5
		■ 52290						
M85 x 2	KGM 85	■ 52290	PA	10	SW 100	109.5	-	5

6



### Wrenches

for M75/M85 plastic locknuts

For mounting the new KEL-DPF sizes we offer suitable wrenches with widths for M75 and M85 plastic locknuts. Material: aluminium

M75: Order No. 61436 | M85: Order No. 61437 | PU: 1

# KGM | GMT

## Locknuts



Type KGM: SUB-D9, PB, SUB-D25



Type GMT: Split locknut



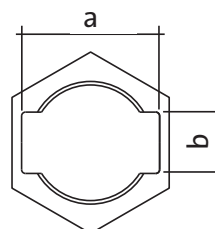
Thread	Type	Order No.	Material	Height [mm]	Wrench size	Diagonal [mm]	Cut-out a x b [mm]	PU
Type KGM: PB, SUB-D9, SUB-D25								
M32 × 1.5	KGM-SUB-D9	■ 45105	PC	7	SW 41	46	35 × 16	10
		■ 45106						
M40 × 1.5	KGM-PB	■ 45107	PC	8	SW 50	55	43 × 17	10
		■ 45109						
M50 × 1.5	KGM-SUB-D25	■ 45108	PC	8	SW 60	66	55 × 16	10
		■ 45110						
Type GMT: Split locknut								
M16 × 1.5	GMT 16	■ 31105	PA	8	SW 19	21	-	10
M20 × 1.5	GMT 20	■ 31110	PA	9	SW 27	29	-	10
M25 × 1.5	GMT 25	■ 31100	PA	9	SW 32	35	-	10
M32 × 1.5	GMT 32	■ 31120	PA	12	SW 40	44	-	10
M40 × 1.5	GMT 40	■ 31130	PA	15	SW 48	53	-	10
M50 × 1.5	GMT 50	■ 31140	PA	15	SW 63	69	-	10

## Specifications

Material	Polyamide (PA) / Polycarbonate (PC)
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input checked="" type="checkbox"/> black
Flame class	UL94-Vo, self-extinguishing
Temperature	- 30°C to + 120°C
Properties	Halogen free, silicone free

## Compatible with

KVT, KVT-SNAP, KVT-W90	
Split cable glands	38 - 42
QVT Split cable glands	52
KEL-DPZ Cable entry plates	77 - 78
KEL-DPF Cable entry grommets	92



# 7 ATEX Cable entry systems for potentially explosive atmospheres



## Directive 2014/34/EU (ATEX)

ATEX stands for "ATMosphères EXplosives" and is the short name for the European Directive 2014/34/EU, regulating the market launch of explosion protected electrical and non-electrical devices, components and protection systems. Since July 1, 2003 in effect, it applies to all new equipment and protective devices. The directive is aimed at manufacturers and importers in the 27 member states of the EU as well as the 4 EFTA member states and Turkey.

The ATEX directive applies to all electrical and non-electrical equipment and protective systems intended for use in potentially explosive atmospheres.

Moreover, the directive includes controlling, monitoring or regulating equipment which may be located outside of explosive atmospheres, but ensures the safe operation of devices and safety systems inside.

The ATEX directive applies to all explosive industrial atmospheres, including mining. The directive describes basic safety and health requirements for equipment and components intended for use in potentially explosive atmospheres. It describes procedures to demonstrate conformity with the directive. Depending on the risk area in which the product is used, (conformity assessment procedures) requirements and procedures for assessing fulfilment are different.

Since 2003, every new Ex device must be certified according to the EU Directive, labelled with the CE marking and the special marks for prevention of explosions. icotek has certified a wide variety of products.

All devices, components and protective systems intended for use in potentially explosive atmospheres, have to comply with the European Directive 2014/34/EU.

Please request directly from icotek the most current EU-type-examination certificate

### The ATEX directive 2014/34/EU regulates:

- Product approval
- Conformity procedure (consisting of EU type examination, quality control and EU declaration of conformity)
- CE marking of conformity for equipment and protective systems

### Important notice!

Only intended for fixed installation of cables!

The cable entry is only suitable for fixed installation of cables where strain and torsional loading on the cable is not possible.

Type	Gas	Dust
KEL / KEL-U	II 2G Ex e IIC Gb	II 2D Ex tb IIIA Db
KEL-FL		II 2D Ex tb IIIC Db
KEL-DPF		
KEL-DPZ round		
KEL-DPZ rectangular		
KEL-ER		
KEL-DPZ-KL		
KEL-DPU		



## Chapter content 7



**Split ATEX cable entry frames**  
for cable diameters up to 35 mm

KEL-ER 24 / KEL-ER 16 / KEL-ER 10 / KEL-ER-B /  
KEL-ER-E / KEL-U 24 / KEL-U 16 / KEL-U 10 /  
KEL-U-B / KEL-E

**192 - 195**



**Centrally split ATEX cable entry frames**  
for cable diameters up to 35 mm

KEL 24 / KEL 16 / KEL 10 / KEL-B

**196**



**Extended split ATEX cable entry frames**  
for cable diameters up to 35 mm

KEL 24-E / KEL 24-MT / KEL 24-2MT  
KEL 16-E / KEL 16-MT / KEL 16-2MT

**197 - 198**



**Split ATEX cable entry frames for flat cables**  
& round cables up to 16 mm in diameter

KEL-FL

**199**



**Split ATEX cable entry frames**  
for cable diameters up to 75 mm

KEL 183 / KEL 183-E

**200**



**Grommets and plugs**  
cable diameter range 2 - 75 mm

KT small / KT large / KT-DPF / KTMB /  
KTMB 183 / DT / FT / ST

**201 - 202**



**ATEX Cable entry plates**  
screw/snap-in mounting

KEL-DPU 24

**203**



**ATEX Cable entry plates**  
screw mounting

KEL-DPZ-KL / KEL-DPZ 24 / KEL-DPZ-B /  
KEL-DPZ-E

**204 - 205**



**ATEX Cable entry plates, round**  
M32 - M63

KEL-DPZ round

**206**



**ATEX Cable entry grommets**  
M25 - M75, for cable diameters up to 60 mm

KEL-DPF

**207**



# KEL-U ATEX

## Cable entry frames



**IP54**



Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Split cable entry system for routing cables with connectors providing an IP54 / up to NEMA type 12 rating. Routing and sealing for cable diameters from 1 to 35 mm. The new cable entry system is easy to install. Cable grommets are placed into compartments in the frame and are securely fixed to the frame during assembly. The KEL-U frames match exactly the cut-out dimensions for 24-, 16- and 10-pin standard industrial connectors. The KEL-U-B matches cut-out dimensions of 46x46 mm measuring instruments. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Fast and easy assembly
- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- High stability, vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

Type	Order No.	Cut-out	Grommets small   large	PU
KEL-U 24 10 ATEX	49455	36 × 112 mm	10 -	10
KEL-U 24 10 ATEX with V2A screws	49455.200	36 × 112 mm	10 -	10
KEL-U 24 7 ATEX	49456	36 × 112 mm	6 1	10
KEL-U 24 7 ATEX with V2A screws	49456.200	36 × 112 mm	6 1	10
KEL-U 24 4 ATEX	49457	36 × 112 mm	2 2	10
KEL-U 24 4 ATEX with V2A screws	49457.200	36 × 112 mm	2 2	10
KEL-U 16 8 ATEX	49458	36 × 86 mm	8 -	10
KEL-U 16 8 ATEX with V2A screws	49458.200	36 × 86 mm	8 -	10
KEL-U 16 5 ATEX	49459	36 × 86 mm	4 1	10
KEL-U 16 5 ATEX with V2A screws	49459.200	36 × 86 mm	4 1	10
KEL-U 16 2 ATEX	49460	36 × 86 mm	- 2	10
KEL-U 16 2 ATEX with V2A screws	49460.200	36 × 86 mm	- 2	10
KEL-U 10 6 ATEX	49461	36 × 65 mm	6 -	10
KEL-U 10 6 ATEX with V2A screws	49461.200	36 × 65 mm	6 -	10
KEL-U 10 3 ATEX	49462	36 × 65 mm	2 1	10
KEL-U 10 3 ATEX with V2A screws	49462.200	36 × 65 mm	2 1	10
KEL-U-B4 ATEX	49463	46 × 46 mm	4 -	10
KEL-U-B4 ATEX with V2A screws	49463.200	46 × 46 mm	4 -	10
KEL-U-B1 ATEX	49464	46 × 46 mm	- 1	10
KEL-U-B1 ATEX with V2A screws	49464.200	46 × 46 mm	- 1	10

### Accessories

Cable grommets 48 - 52



# KEL-ER ATEX Cable entry frames



V2A anti-corrosive  
Also available with stainless steel screws (V2A).



Also available with threaded bushings.



Type	Order No.	Cut-out	Grommets small   large	PU
KEL-ER 24 10 ATEX	49228	36 × 112 mm	10 -	10
KEL-ER 24 10 ATEX with V2A screws	49228.200	36 × 112 mm	10 -	10
KEL-ER 24 7 ATEX	49230	36 × 112 mm	6 1	10
KEL-ER 24 7 ATEX with V2A screws	49230.200	36 × 112 mm	6 1	10
KEL-ER 24 4 ATEX	49229	36 × 112 mm	2 2	10
KEL-ER 24 4 ATEX with V2A screws	49229.200	36 × 112 mm	2 2	10
KEL-ER 16 8 ATEX	49223	36 × 86 mm	8 -	10
KEL-ER 16 8 ATEX with V2A screws	49223.200	36 × 86 mm	8 -	10
KEL-ER 16 5 ATEX	49222	36 × 86 mm	4 1	10
KEL-ER 16 5 ATEX with V2A screws	49222.200	36 × 86 mm	4 1	10
KEL-ER 16 2 ATEX	49221	36 × 86 mm	- 2	10
KEL-ER 16 2 ATEX with V2A screws	49221.200	36 × 86 mm	- 2	10
KEL-ER 10 6 ATEX	49227	36 × 65 mm	6 -	10
KEL-ER 10 6 ATEX with V2A screws	49227.200	36 × 65 mm	6 -	10
KEL-ER 10 3 ATEX	49226	36 × 65 mm	2 1	10
KEL-ER 10 3 ATEX with V2A screws	49226.200	36 × 65 mm	2 1	10
KEL-ER-B4 ATEX	49224	46 × 46 mm	4 -	10
KEL-ER-B4 ATEX with V2A screws	49224.200	46 × 46 mm	4 -	10
KEL-ER-B1 ATEX	49225	46 × 46 mm	- 1	10
KEL-ER-B1 ATEX with V2A screws	49225.200	46 × 46 mm	- 1	10

## Product description

Split cable entry system for routing and sealing cables with connectors, providing an IP65 / up to NEMA type 4X rating and strain relief for cable diameters from 1 to 16 mm (KT 1 - 15) and 16 to 35 mm (KT 16 - 34). The new cable entry system is easy to install. Cable grommets are placed into compartments in the frame and are securely fixed to the frame during assembly. The KEL-ER frames match exactly the cut-out dimensions for 24-, 16- and 10-pin standard industrial connectors. The KEL-ER-B matches cut-out dimensions of 46×46 mm measuring instruments. A flat rubber gasket is included in the shipment.

## Advantages & benefits

- Warranty of pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Vibration resistant

## Specifications

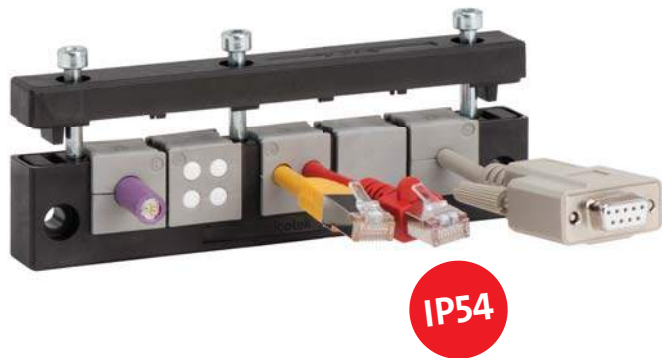
Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP65, with gasket and correct selection of single grommets (certified acc. to EN 60529)
NEMA type rating	NEMA type 4X (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

## Accessories

KT Cable grommets	48 - 50
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# KEL-E ATEX

## Cable entry frames



V2A anti-corrosive  
Also available with stainless steel screws (V2A).



Also available with threaded steel bushings.

### Product description

Split cable entry system for routing cables with connectors, providing an IP54 / up to NEMA type 12 rating. Routing, sealing and providing strain relief for cable diameters from 1 to 17 mm. The KEL-E version is particularly suited for flat connectors. The small frame is ideal for applications with limited space. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofitting and maintenance can be carried out easily and quickly
- Space saving shape
- Perfect for D-Sub connectors
- Vibration resistant

Type	Order No.	Cut-out	Grommets small   large	PU
KEL-E2 ATEX	49150	43 × 24 mm	2 -	10
KEL-E2 ATEX with V2A screws	49150.200	43 × 24 mm	2 -	10
KEL-E3 ATEX	49152	65 × 24 mm	3 -	10
KEL-E3 ATEX with V2A screws	49152.200	65 × 24 mm	3 -	10
KEL-E4 ATEX	49154	86 × 24 mm	4 -	10
KEL-E4 ATEX with V2A screws	49154.200	86 × 24 mm	4 -	10
KEL-E5 ATEX	49156	112 × 24 mm	5 -	10
KEL-E5 ATEX with V2A screws	49156.200	112 × 24 mm	5 -	10

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

### Accessories

Cable grommets 48 - 51



# KEL-ER-E ATEX Cable entry frames

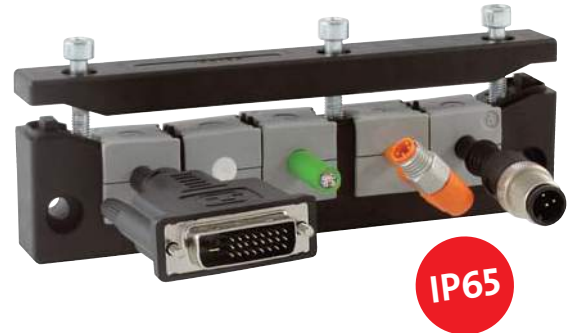


V2A  
anti-corrosive

Also available with stainless steel screws (V2A).



Also available with threaded bushings.



Type	Order No.	Cut-out	Grommets small   large	PU
KEL-ER-E2 ATEX	49470	43 × 24	2 -	10
KEL-ER-E2 ATEX with V2A screws	49470.200	43 × 24	2 -	10
KEL-ER-E3 ATEX	49471	65 × 24	3 -	10
KEL-ER-E3 ATEX with V2A screws	49471.200	65 × 24	3 -	10
KEL-ER-E4 ATEX	49472	86 × 24	4 -	10
KEL-ER-E4 ATEX with V2A screws	49472.200	86 × 24	4 -	10
KEL-ER-E5 ATEX	49473	112 × 24	5 -	10
KEL-ER-E5 ATEX with V2A screws	49473.200	112 × 24	5 -	10

## Product description

Split cable entry system for routing and sealing cables with connectors, providing an IP65 / up to NEMA type 12 rating for cable diameters from 1 to 16 mm (KT 1 - 15). It is particularly suited for flat connectors. The small frame is ideal for applications with limited space.

The cable entry system is easy to install. Cable grommets are placed into compartments in the frame and are securely fixed to the frame during assembly. A flat rubber gasket is included in the shipment.

## Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Space saving shape
- Optimal for D-Sub connectors
- Vibration resistant

## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP65, with gasket and correct selection of single grommets (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

## Accessories

KT Cable grommets	48
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# KEL ATEX

## Cable entry frames



Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

Centrally split cable entry system for routing cables with connectors, providing an IP54 / up to NEMA type 12 rating. The slitted grommet matching the cable diameter is placed around the cable and inserted into the cable entry frame. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The split cable entry frames KEL match exactly the cut-out dimensions of 24-/16-/10-pin standard industrial connectors. The KEL-B matches exactly the cut-out dimensions of 46x46 mm measuring instruments. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty of pre-terminated cables remains
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

### Accessories

Cable grommets	48 - 52
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Type	Order No.	Cut-out	Grommets small   large	PU
KEL 24 10 ATEX	49109	36 × 112 mm	10 -	10
KEL 24 10 ATEX with V2A screws	49109.200	36 × 112 mm	10 -	10
KEL 24 7 ATEX	49111	36 × 112 mm	6 1	10
KEL 24 7 ATEX with V2A screws	49111.200	36 × 112 mm	6 1	10
KEL 24 5 ATEX	49112	36 × 112 mm	5 -	10
KEL 24 5 ATEX with V2A screws	49112.200	36 × 112 mm	5 -	10
KEL 24 4 ATEX	49110	36 × 112 mm	2 2	10
KEL 24 4 ATEX with V2A screws	49110.200	36 × 112 mm	2 2	10
KEL 16 8 ATEX	49104	36 × 86 mm	8 -	10
KEL 16 8 ATEX with V2A screws	49104.200	36 × 86 mm	8 -	10
KEL 16 5 ATEX	49103	36 × 86 mm	4 1	10
KEL 16 5 ATEX with V2A screws	49103.200	36 × 86 mm	4 1	10
KEL 16 4 ATEX	49102	36 × 86 mm	4 -	10
KEL 16 4 ATEX with V2A screws	49102.200	36 × 86 mm	4 -	10
KEL 16 2 ATEX	49101	36 × 86 mm	- 2	10
KEL 16 2 ATEX with V2A screws	49101.200	36 × 86 mm	- 2	10
KEL 10 6 ATEX	49108	36 × 65 mm	6 -	10
KEL 10 6 ATEX with V2A screws	49108.200	36 × 65 mm	6 -	10
KEL 10 3 ATEX	49107	36 × 65 mm	2 1	10
KEL 10 3 ATEX with V2A screws	49107.200	36 × 65 mm	2 1	10
KEL-B4 ATEX	49105	46 × 46 mm	4 -	10
KEL-B4 ATEX with V2A screws	49105.200	46 × 46 mm	4 -	10
KEL-B1 ATEX	49106	46 × 46 mm	- 1	10
KEL-B1 ATEX with V2A screws	49106.200	46 × 46 mm	- 1	10



# KEL 24-E/-MT/-2MT ATEX Cable entry frames



V2A anti-corrosive



Also available with threaded steel bushings.



Type	Order No.	Cut-out	Grommets small   large	PU
KEL 24 15-E ATEX	49158	66 × 112 mm	15 -	1
KEL 24 15-E ATEX with V2A screws	49158.200	66 × 112 mm	15 -	1
KEL 24 12-E ATEX	49160	66 × 112 mm	11 1	1
KEL 24 12-E ATEX with V2A screws	49160.200	66 × 112 mm	11 1	1
KEL 24 9-E ATEX	49162	66 × 112 mm	7 2	1
KEL 24 9-E ATEX with V2A screws	49162.200	66 × 112 mm	7 2	1
KEL 24 10-E ATEX	49164	66 × 112 mm	10 -	1
KEL 24 10-E ATEX with V2A screws	49164.200	66 × 112 mm	10 -	1
KEL 24 20-MT ATEX	49166	82 × 112 mm	20 -	1
KEL 24 20-MT ATEX with V2A screws	49166.200	82 × 112 mm	20 -	1
KEL 24 17-MT ATEX	49168	82 × 112 mm	16 1	1
KEL 24 17-MT ATEX with V2A screws	49168.200	82 × 112 mm	16 1	1
KEL 24 14-MT ATEX	49170	82 × 112 mm	12 2	1
KEL 24 14-MT ATEX with V2A screws	49170.200	82 × 112 mm	12 2	1
KEL 24 11-MT ATEX	49172	82 × 112 mm	8 3	1
KEL 24 11-MT ATEX with V2A screws	49172.200	82 × 112 mm	8 3	1
KEL 24 8-MT ATEX	49174	82 × 112 mm	4 4	1
KEL 24 8-MT ATEX with V2A screws	49174.200	82 × 112 mm	4 4	1
KEL 24  30-2 MT ATEX	49176	126 × 112 mm	30 -	1
KEL 24  30-2 MT ATEX with V2A screws	49176.200	126 × 112 mm	30 -	1
KEL 24  27-2 MT ATEX	49178	126 × 112 mm	26 1	1
KEL 24  27-2 MT ATEX with V2A screws	49178.200	126 × 112 mm	26 1	1
KEL 24  24-2 MT ATEX	49180	126 × 112 mm	22 2	1
KEL 24  24-2 MT ATEX with V2A screws	49180.200	126 × 112 mm	22 2	1
KEL 24  21-2 MT ATEX	49182	126 × 112 mm	18 3	1
KEL 24  21-2 MT ATEX with V2A screws	49182.200	126 × 112 mm	18 3	1
KEL 24  12-2 MT ATEX	49184	126 × 112 mm	6 6	1
KEL 24  12-2 MT ATEX with V2A screws	49184.200	126 × 112 mm	6 6	1

## Product description

The cable entry frames KEL 24-E/-MT/-2MT series are KEL frames extended with one or two additional middle frames for routing additional cables.

Thus allowing the quick, easy and cost effective routing solution for up to 120 cables in hazardous areas.

A flat rubber gasket is included in the shipment.

## Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofitting and maintenance can be carried out easily and quickly
- High cable density
- Vibration resistant

## Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

## Accessories

Cable grommets	48 - 52
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# KEL 16-E/-MT/-2MT ATEX

## Cable entry frames



V2A anti-corrosive  
Also available with stainless steel screws (V2A).



Also available with threaded bushings.

### Product description

The cable entry frames KEL 16-E/-MT/-2MT series are KEL frames extended with one or two additional middle frames for routing additional cables.

Thus allowing the quick, easy and cost effective routing solution for up to 96 cables in hazardous areas.

A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Warranty on pre-terminated cables remains
- Retrofitting and maintenance can be carried out easily and quickly
- High cable density
- Vibration resistant

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

Type	Order No.	Cut-out	Grommets small   large	PU
KEL 16 12-E ATEX	49538	66 × 86 mm	12 -	1
KEL 16 12-E ATEX with V2A screws	49538.200	66 × 86 mm	12 -	1
KEL 16 6-E ATEX	49539	66 × 86 mm	4 2	1
KEL 16 6-E ATEX with V2A screws	49539.200	66 × 86 mm	4 2	1
KEL 16 16-MT ATEX	49540	82 × 86 mm	16 -	1
KEL 16 16-MT ATEX with V2A screws	49540.200	82 × 86 mm	16 -	1
KEL 16 10-MT ATEX	49541	82 × 86 mm	8 2	1
KEL 16 10-MT ATEX with V2A screws	49541.200	82 × 86 mm	8 2	1
KEL 16 4-MT ATEX	49542	82 × 86 mm	- 4	1
KEL 16 4-MT ATEX with V2A screws	49542.200	82 × 86 mm	- 4	1
KEL 16 24-2 MT ATEX	49543	126 × 86 mm	24 -	1
KEL 16 24-2 MT ATEX with V2A screws	49543.200	126 × 86 mm	24 -	1
KEL 16 12-2 MT ATEX	49544	126 × 86 mm	8 4	1
KEL 16 12-2 MT ATEX with V2A screws	49544.200	126 × 86 mm	8 4	1
KEL 16 6-2 MT ATEX	49545	126 × 86 mm	- 6	1
KEL 16 6-2 MT ATEX with V2A screws	49545.200	126 × 86 mm	- 6	1

### Accessories

Cable grommets 48 - 52



# KEL-FL ATEX

## Cable entry frames for flat cables



Type	Order No.	Cut-out	Grommets KT   FT	PU
KEL-FL A ATEX	49479	43 × 24 mm	0 × KT 1 × FT-1	10
KEL-FL B ATEX	49480	65 × 24 mm	0 × KT 1 × FT-2	10
KEL-FL C ATEX	49481	65 × 24 mm	1 × KT 1 × FT-1	10
KEL-FL D ATEX	49482	86 × 24 mm	0 × KT 1 × FT-3	10
KEL-FL E ATEX	49483	86 × 24 mm	1 × KT 1 × FT-2	10
KEL-FL F ATEX	49484	86 × 24 mm	0 × KT 2 × FT-1	10
KEL-FL G ATEX	49485	86 × 24 mm	2 × KT 1 × FT-1	10
KEL-FL H ATEX	49486	112 × 24 mm	2 × KT 1 × FT-2	10
KEL-FL I ATEX	49487	112 × 24 mm	1 × KT 2 × FT-1	10
KEL-FL J ATEX	49488	112 × 24 mm	3 × KT 1 × FT-1	10
KEL-FL K ATEX	49489	112 × 24 mm	1 × FT-1 1 × FT-2	10
KEL-FL L ATEX	49490	112 × 24 mm	1 × FT-4	10

### Product description

The KEL-FL range enables simple, fast and flexible cable routing and sealing of flat wires, e.g. in lift construction.

Innovative construction of the grommets compensates for manufacturing inconsistencies in flat cables. Split KT grommets can be utilised to additionally route round cables with connectors. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Routing of flat cables in combination with pre-terminated round cables by using a single KEL-FL cable entry frame
- Space saving shape

### Specifications

Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

### Accessories

Cable grommets, small	48 - 51
FT Cable grommets, flat	33

# KEL 183 | KEL 183-E ATEX

## Cable entry frames



KEL 183

IP54



KEL 183-E

### Product description

The split cable entry frame KEL 183 enables the user to route cables and tubes with a diameter of up to 75 mm (depending on the frame type) and to seal them in accordance with IP54 / up to NEMA type 12.

For cables up to 35 mm the cable grommets KT can be used. With these split cable grommets, pre-terminated cables can be routed. For cables up to 75 mm we have created the grommets KTMB for KEL 183. Those are not split and have a defined area for pushing the cable through. A flat rubber gasket is included in the shipment.

### Advantages & benefits

- Installation of cables up to 75 mm in diameter
- Grommets allow rigid cables to be properly positioned and oriented during the installation process.
- Retrofits, repairs and maintenance can be done much more easily and quickly

### Specifications

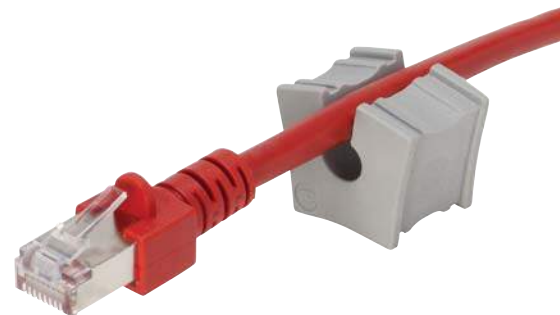
Material	Polyamide (PA)
Flame class	UL94-Vo, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Frame depth	17 mm

### Accessories

KTMB 183 Cable grommets	35
Cable grommets	48 - 52

Type	Order No.	Cut-out	Grommets KT 183   KT large	PU
KEL 183 2 ATEX	49496	180 x 80 mm	2 -	1
KEL 183 2 ATEX with V2A screws	49496.200	180 x 80 mm	2 -	1
KEL 183 5 ATEX	49497	180 x 80 mm	1 4	1
KEL 183 5 ATEX with V2A screws	49497.200	180 x 80 mm	1 4	1
KEL 183 8 ATEX	49498	180 x 80 mm	- 8	1
KEL 183 8 ATEX with V2A screws	49498.200	180 x 80 mm	- 8	1
KEL 183-E4 ATEX	49499	180 x 42 mm	- 4	1
KEL 183-E4 ATEX with V2A screws	49499.200	180 x 42 mm	- 4	1
KEL 183-E16 ATEX	49500	180 x 42 mm	16 KT small	1
KEL 183-E16 ATEX with V2A screws	49500.200	180 x 42 mm	16 KT small	1

# KT ATEX Cable grommets



Description	Type	Page	Clamping range
	BTK	48	Blank grommet
	KT 1 - KT 15	48	1 - 16 mm
	KTs 16 - KT 17	48	16 - 17 mm
	KT S1	49	
	KT oval	49	approx. 8 × 4 mm
	KT tele	49	Telephone cable
	KT tele1	49	Data cable RJ12
	KT tele2	49	Data cable RJ10 / RJ45
	KT 2 2 - KT 2 8	49	2 × ø 2 mm - 2 × ø 8 mm
	KT 4 2 - KT 4 6	49	4 × ø 2 mm - 4 × ø 6 mm
	KT-ASI	49	1 ASI-cable
	KT-ASI2 I	49	2 ASI-cables
	KT-ASI2 II	49	2 ASI-cables
	ATG	50	Adapter grommet
	BTG	50	Blank grommet
	KT 16 - KT 34	50	16 - 35 mm

## Product description

Cable grommets KT are used with the following ATEX cable entry frames:

KEL-U ATEX/KEL-ER ATEX/KEL ATEX (192 - 200)

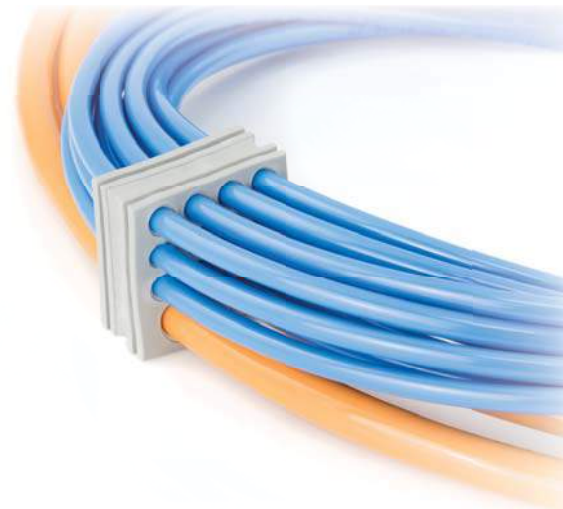
The model range KT is designed for cable diameters from 1 to 35 mm.

## Specifications

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free

# KT-DPF | KTMB | DT ATEX

## Cable grommets, multi-range



### Product description

The KTMB / KT-DPF grommets accept a wide range of cable diameters. A great benefit when the exact cable diameter is not known in advance. The KTMB grommets are not split and therefore only usable for cables without connectors. Cutting of KT-DPF grommets: Cable diameter less 20%.

The DT cable grommets are designed for cables without connectors. A large number of cables can be routed utilising minimal space. DT grommets are designed to fit in KT large grommet spaces.

### Advantages & benefits

- Combination of routing cables with and without connectors with one cable entry frame
- Enables sub-assembly of cable harnesses
- High cable density (DT)
- Grommets allow dynamic and flexible movement of rigid cables

### Specifications

Material	Elastomer
Flame class	UL94-Vo, self-extinguishing
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIA Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free

Description	Type	Page	Clamping range
	KT-DPF-A	51	3 - 12 mm
	KT-DPF-B	51	4 - 18 mm
	KT-DPF-C	51	14 - 26 mm
	KTMB-A	51	2.5 - 6.5 mm
	KTMB-B	51	4 - 7.5 mm
	KTMB-C	51	6.5 - 10 mm
	KTMB-D	51	9.5 - 13 mm
	KTMB-E	51	13 - 16 mm
	KTMB-G	51	13 - 18 mm
	KTMB-H	51	18 - 23 mm
	KTMB-I	51	23 - 28 mm
	KTMB-J	51	28 - 33 mm
	KTMB-K	51	2x 13 - 18 mm
		KTMB-O	35
KTMB-P		35	34 - 44 mm (KEL 183)
KTMB-Q		35	44 - 54 mm (KEL 183)
KTMB-R		35	54 - 64 mm (KEL 183)
KTMB-S		35	64 - 75 mm (KEL 183)
	DT 1	52	12x max. 6.5 mm 2x max. 12.2 mm
	DT 2	52	16x max. 7.1 mm
	DT 3	52	4x max. 6.5 mm 3x max. 9.5 mm 3x max. 11.3 mm
	DT 4	52	9x max. 9.5 mm
	DT5	52	4x max. 14.5 mm 1x max. 9.5 mm
	DT7	52	4x max. 6 mm
	DT8	52	2x max. 7 mm 2x max. 4 mm
	FT-1 x - FT-4 x	33	Flat cables (KEL-FT)



# KEL-DPU ATEX Cable entry plates



Membrane on front



Conical shape on back provides additional sealing



Tool-free assembly possible due to snap-in function



IP66

Type	Order No.	Cut-out	Number of cables	PU
KEL-DPU 24 13 ATEX	49513 49521	36 x 112 mm	10x 3.2 - 6.3 mm 3x 16 - 20.5 mm	10
KEL-DPU 24 14 ATEX	49514 49522	36 x 112 mm	5x 3.2 - 6.3 mm 2x 4 - 7.5 mm 3x 5.5 - 10.5 mm 1x 8 - 12.5 mm 3x 12 - 16.2 mm	10
KEL-DPU 24 16 ATEX	49516 49524	36 x 112 mm	8x 3.2 - 5.5 mm 6x 5 - 8.5 mm 2x 9.5 - 14.5 mm	10
KEL-DPU 24 16-1 ATEX	49515 49523	36 x 112 mm	2x 3.2 - 6.3 mm 9x 4 - 7.5 mm 1x 5.5 - 10.5 mm 1x 8 - 12.5 mm 3x 12 - 16.2 mm	10
KEL-DPU 24 17 ATEX	49517 49525	36 x 112 mm	4x 3.2 - 6.3 mm 2x 4 - 7.5 mm 1x 5.5 - 10.5 mm 10x 8 - 12.5 mm	10
KEL-DPU 24 20 ATEX	49518 49526	36 x 112 mm	12x 3.2 - 5.5 mm 8x 5 - 10.5 mm	10
KEL-DPU 24 21 ATEX	49519 49527	36 x 112 mm	1x 3.2 - 6.3 mm 14x 4 - 7.5 mm 4x 5.5 - 10.5 mm 2x 8 - 12.5 mm	10
KEL-DPU 24 32 ATEX	49520 49528	36 x 112 mm	32x 3.2 - 6.3 mm	10

\* Only valid for grey product types

## Product description

KEL-DPU entry plates are designed to route and seal cables without connectors (from 3.2 mm to 20.5 mm in diameter) in limited space with IP65 / IP66 / up to NEMA type 4X ratings. The KEL-DPU is particularly characterised by its robust frame.

The KEL-DPU 24 matches exactly the cut-out dimensions of 24-pin standard industrial connectors. For optional screw assembly just pierce the membranes on the screw holes with the screw itself. The assembly of the KEL-DPU with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane and push the cables through.

## Advantages & benefits

- Snap or screw mounting possible
- Very high stability
- Fast and easy assembly
- High cable density
- Dual cable sealing with IP65/IP66/up to NEMA type 4X
- Hygienic design - free of dirt-collecting recesses

## Specifications

Material	Frame: Polypropylene (PP) Sealing plate: Elastomer
Colour	■ grey (similar RAL 7035) ■ black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP65/IP66 (certified acc. to EN 60529)
NEMA type rating	NEMA type 4X (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free

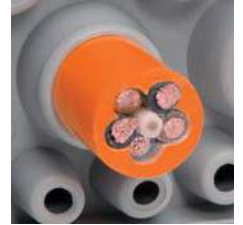


# KEL-DPZ-KL ATEX

## Cable entry plates



Membrane on front



Conical shape on back provides additional sealing.

### Product description

The cable entry plate KEL-DPZ-KL is designed for routing up to 72 cables without connectors.

The assembly of the KEL-DPZ-KL with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through. The KEL-DPZ-KL provides strain relief and protection IP65 / NEMA type 12.

The KEL-DPZ-KL matches on terminal boxes KL from Rittal.

### Advantages & benefits

- Space saving shape
- Dual sealing of cables according to IP65/NEMA type 12
- High cable density
- Fast and easy assembly
- Hygienic design

### Specifications

Material	Support: Stainless steel V2A, moulded with elastomer Sealing plate: Elastomer Screws: Stainless steel V2A
Colour	<input type="checkbox"/> grey (similar RAL 7035) <input checked="" type="checkbox"/> black
Flame class	UL94-Vo
IP rating	IP65 (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free

Type	Order No.	Cut-out	Number of cables	PU
KEL-DPZ-KL 72 ATEX	<input type="checkbox"/> 49556.001	192 × 62 mm	42x 3.2 - 6.5 mm	1
	<input checked="" type="checkbox"/> 49556.101		21x 5 - 10.2 mm	
			6x 9 - 16.2 mm 3x 16 - 22 mm	

\* Only valid for grey product types



# KEL-DPZ ATEX Cable entry plates



Membrane on front



Conical shape on back provides additional sealing.



Type	Order No.	Cut-out	Number of cables	PU
KEL-DPZ 24 14 ATEX	■ 49201	36 × 112 mm	10× 3.2 - 6.5 mm 4× 16 - 22 mm	10
	■ 49211			
KEL-DPZ 24 15 ATEX	■ 49205	36 × 112 mm	15× 7.2 - 12 mm	10
	■ 49215			
KEL-DPZ 24 16 ATEX	■ 49206	36 × 112 mm	8× 3.2 - 6.5 mm 4× 5 - 9.7 mm 2× 9 - 16.2 mm 2× 16 - 22 mm	10
	■ 49216			
KEL-DPZ 24 17 ATEX	■ 49202	36 × 112 mm	6× 3.2 - 6.5 mm 6× 5 - 10.2 mm 5× 9 - 16.2 mm	10
	■ 49212			
KEL-DPZ 24 25 ATEX	■ 49203	36 × 112 mm	12× 3.2 - 6.5 mm 7× 4.8 - 9.7 mm 6× 7.5 - 12 mm	10
	■ 49213			
KEL-DPZ 24 32 ATEX	■ 49207	36 × 112 mm	21× 3.2 - 6.5 mm 8× 5 - 10.2 mm 3× 7.5 - 12 mm	10
	■ 49217			
KEL-DPZ 24 42 ATEX	■ 49204	36 × 112 mm	42× 3.2 - 6.5 mm	10
	■ 49214			
KEL-DPZ 24 121 ATEX	■ 49208	36 × 112 mm	119× 1.5 - 2.6 mm 2× 2.5 - 5 mm	10
	■ 49218			
KEL-DPZ-B 13 ATEX	■ 49311	46 × 46 mm	8× 3.2 - 6.5 mm 4× 5 - 10.2 mm 1× 16 - 22 mm	10
	■ 49317			
KEL-DPZ-B 17 ATEX	■ 49312	46 × 46 mm	10× 3.2 - 6.5 mm 4× 5 - 10.2 mm 2× 7.5 - 12 mm 1× 9 - 16.2 mm	10
	■ 49318			
KEL-DPZ-B 25 ATEX	■ 49313	36 × 112 mm	25× 3.2 - 6.5 mm	10
	■ 49319			
KEL-DPZ-E 112 7 ATEX	■ 49301	18 × 112 mm	7× 7.5 - 12 mm	10
	■ 49306			
KEL-DPZ-E 112 21 ATEX	■ 49302	18 × 112 mm	21× 3.2 - 6.5 mm	10
	■ 49307			

\*Only valid for grey product types

## Product description

KEL-DPZ 24, KEL-DPZ-B and KEL-DPZ-E cable entry plates are designed to route and seal cables without connectors (from 1.5 mm to 22 mm in diameter) in limited space.

The assembly of the KEL-DPZ with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through and it's immediately sealed (IP65 / IP66).

## Advantages & benefits

- Assembly within seconds
- High cable density
- Dual sealing of cables according to IP65 / IP66
- Space saving shapes

## Specifications

Material	Frame: Polyamide (PA) Sealing plate: Elastomer
Colour	■ grey (similar RAL 7035) ■ black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP65/IP66 (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II zG Ex e IIC Gb II zD Ex tb IIIC Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free

# KEL-DPZ ATEX

## Cable entry plates, round



Membrane on front



Conical shape on back provides additional sealing

### Product description

KEL-DPZ round entry plates are designed to route and seal cables without connectors (from 1.5 mm to 22 mm in diameter) in limited space. The assembly of the KEL-DPZ with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through and it's immediately sealed with IP68.

The round versions of the KEL-DPZ series have a thread to fit in metric cut-outs from M32 to M63. Thus cut-outs for metric cable glands can be used.

### Advantages & benefits

- Assembly within seconds
- High cable density
- Dual sealing of cables according to IP68
- Suitable for metric cut-outs
- Polyamide locknuts are included in the shipment

### Specifications

Material	Thread frame: Polyamide (PA) Sealing plate: Elastomer
Colour	■ grey (similar RAL 7035) ■ black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66/IP67/IP68 (certified acc. to EN 60529)
NEMA type rating	NEMA type 4X (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Thread length	14 mm
Plate depth	8 mm

Type	Order No.	Number of cables	Thread metric	External diameter	PU
KEL-DPZ 32 4 ATEX	■ 49420 ■ 49440	3× 3.2 - 6.5 mm 1× 7.2 - 12.5 mm	M32 × 1.5	44 mm	10
KEL-DPZ 32 4-2 ATEX	■ 49421 ■ 49441	4× 5 - 9.5 mm	M32 × 1.5	44 mm	10
KEL-DPZ 32 7 ATEX	■ 49422 ■ 49442	7× 3.2 - 6.5 mm	M32 × 1.5	44 mm	10
KEL-DPZ 40 8 ATEX	■ 49423 ■ 49443	4× 3.2 - 6.5 mm 4× 5 - 10.2 mm	M40 × 1.5	52 mm	10
KEL-DPZ 50 8 ATEX	■ 49424 ■ 49444	5× 5 - 10.2 mm 3× 7.2 - 12.5 mm	M50 × 1.5	62 mm	10
KEL-DPZ 50 10 ATEX	■ 49425 ■ 49445	7× 3.2 - 6.5 mm 2× 5 - 10.2 mm 1× 16 - 22.2 mm	M50 × 1.5	62 mm	10
KEL-DPZ 50 12 ATEX	■ 49426 ■ 49446	4× 3.2 - 6.5 mm 8× 5 - 10.2 mm	M50 × 1.5	62 mm	10
KEL-DPZ 50 19 ATEX	■ 49428 ■ 49448	19× 3.2 - 6.5 mm	M50 × 1.5	62 mm	10
KEL-DPZ 50 78 ATEX	■ 49427 ■ 49447	76× 1.5 - 2.6 mm 2× 2.5 - 5 mm	M50 × 1.5	62 mm	10
KEL-DPZ 63 9 ATEX	■ 49429 ■ 49449	1× 3.2 - 6.5 mm 3× 5 - 10.2 mm 4× 9 - 16.2 mm 1× 16 - 22.2 mm	M63 × 1.5	75 mm	10
KEL-DPZ 63 13 ATEX	■ 49430 ■ 49450	4× 3.2 - 6.5 mm 4× 5 - 10.2 mm 5× 9 - 16.2 mm	M63 × 1.5	75 mm	10
KEL-DPZ 63 14 ATEX	■ 49432 ■ 49452	14× 5 - 10.2 mm	M63 × 1.5	75 mm	10
KEL-DPZ 63 35 ATEX	■ 49431 ■ 49451	35× 3.2 - 6.5 mm	M63 × 1.5	75 mm	10

\*Only valid for grey product types



# KEL-DPF ATEX Cable entry grommets



Type	Order No.	Thread metric	Clamping range	External dimension	PU
KEL-DPF 25 3-12 ATEX	■ 49401	M25 × 1.5	3 - 12 mm	39 mm	5
	■ 49410				
KEL-DPF 32 6-18 ATEX	■ 49402	M32 × 1.5	6 - 18 mm	46 mm	5
	■ 49411				
KEL-DPF 40 12-27 ATEX	■ 49403	M40 × 1.5	12 - 27 mm	54 mm	5
	■ 49412				
KEL-DPF 50 22-36 ATEX	■ 49404	M50 × 1.5	22 - 36 mm	64 mm	5
	■ 49413				
KEL-DPF 63 27-50 ATEX	■ 49405	M63 × 1.5	27 - 50 mm	77 mm	5
	■ 49414				
KEL-DPF 75 39-60 ATEX	■ 49534	M75 × 1.5	39 - 60 mm	89 mm	1
	■ 49535				
KEL-DPF 85 48-70 ATEX	■ 49536	M85 × 2	48 - 70 mm	99 mm	1
	■ 49537				

\*Only valid for grey product types

## Product description

The KEL-DPF was developed particularly for routing large or unknown sizes of cables into a switch cabinet or machine (max. cable diameter 70 mm). Due to the flexibility and unique pyramid shape, cable entry and flexible positioning is much easier compared to using conventional cable glands. Also perfect for bundling or restraining large cables.

### Cutting of DPF grommets:

Cable diameter less 25%. The corresponding diameters are marked on the grommet

It is recommended that additional strain relief be provided for cables as part of the installation.

## Advantages & benefits

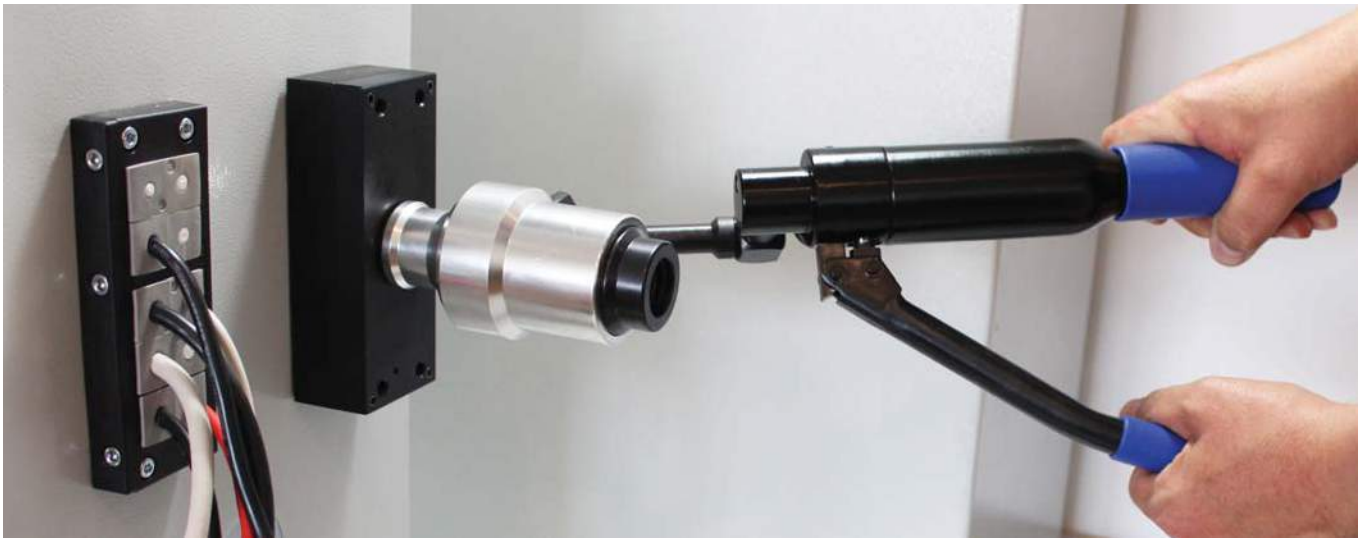
- Assembly within seconds
- It is possible to install rigid cables at angles
- Suitable for metric cut-outs
- Polyamide locknuts are included in the shipment

## Specifications

Material	Thread frame: Polyamide (PA) Pyramid: Elastomer
Colour	■ grey (similar RAL 7035) ■ black
Flame class	UL94-Vo, self-extinguishing
IP rating	IP66/IP67/IP68 (certified acc. to EN 60529)
NEMA type rating	NEMA type 12 (acc. to UL 50E)
Temperature	- 30°C to + 70°C (static)
Marking	II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
Test standard	EN 60079-0:2012 + A11:2013 EN 60079-7:2015 EN 60079-31:2014
Properties	Halogen-free, silicone-free
Thread length	14 mm

# 8 icotek TOOLS

## Punch drivers, knockout punches & useful tools



icotek now offers a small-sized hand hydraulic punch driver without a hose which allows quick and easy punching of rectangular, square or round holes. When you have to punch several holes, this hand hydraulic punch driver is much faster than manual wrench-style punches.

icotek also offers round knockout punches for cut-outs PG16, M16, M20, M25, M32, M40, M50, M63, M75 and M85. This self-centering knockout punches split slugs into 3 pieces for easy slug removal. For installation of pushbuttons and round switches icotek offers a 22.5 mm punch with integrated twist protection notch.

Among the round punches icotek also offers rectangular and square punches and dies, for cut-out sizes of 10-, 16-, and 24- multi-pin industrial connectors as well as for most icotek cable entry systems.



## Advantages & benefits ...

### 1. Maximum flexibility

Due to its high hydraulic force the compact, lightweight hand hydraulic punch driver makes it easy to punch holes into stainless V2A steel, mild steel, aluminium or plastics. The cylinder of the punch driver rotates 360° on 3 axes. Therefore, maximum flexibility even in hard-to-reach places is provided.

### 2. Multi-fold slug splitting

The special cutting geometry of the round punches reduces the cutting pressure and therefore the required effort. The punch splits slugs into several pieces for easy slug removal (type related).

### 3. Perfect for icotek cable entry components

The metric round, rectangular & square knockout punches can be used for industrial standard cut-outs of heavy multi-pin connectors and many icotek cable entry components.

## Chapter content 8



**Punch driver sets**  
Hand hydraulic punch driver  
& round knockout die set, metric

**210**



**Rectangular & square punches**  
for cut-outs of heavy multi-pin industrial  
connectors and many icotek cable entry  
components

**211**



**Round punches**  
for cut-outs PG 16, M16 - M85

**212**



**Helpful tools**  
Tools for assembly & cable management

**213**



## Punch driver sets

### Hand hydraulic punch driver & metric punches



### Product description

The compact, lightweight hand hydraulic punch driver makes it easy to punch holes into stainless V2A steel, mild steel, aluminium or plastics with a max. sheet thickness of 3 mm (V2A: 2 mm), due to its high hydraulic force. The cylinder of the punch driver rotates 360° on 3 axles, so maximum flexibility even in hard-to-reach places is provided.

The punch driver can be used with all icotek punches and also with punches of other manufacturers.

### Advantages & benefits

- Maximum flexibility due to 360° head rotation
- High hydraulic force (60 kN, 600 bar) for easy punching
- Compact, lightweight aluminium design (2 kg)
- Fast and easy operation
- Punch driver also suitable for punches by other manufacturers

### Specifications

Material	<b>Aluminium</b>
Punching force	<b>60 kN</b>
Operating pressure	<b>600 bar</b>

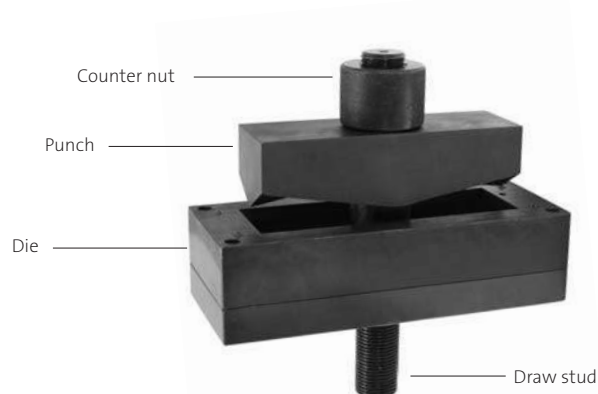
### Accessories

Round punches	212
Rectangular & square punches	211

Type	Scope of delivery	Order No.	PU
Punch driver set BASIC	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud Ø 9.5 mm (3/8" UNF) to Ø 19 mm (3/4" UNF), L: 110 mm 1 draw stud Ø 19 mm (3/4" UNF), L: 130 mm 1 spacer 1 tube lubricant 1 HSS co pilot drill (multi step drill) 1 robust plastic storage case	80000	1
Punch driver set PRO 16-32	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud Ø 9.5 mm (3/8" UNF) to Ø 19 mm (3/4" UNF), L: 110 mm 1 draw stud Ø 19 mm (3/4" UNF), L: 130 mm 1 spacer 1 tube lubricant 1 HSS co pilot drill (multi step drill) 1 each knockout punch M16   M20   M25   M32 1 robust plastic storage case	80005	1
Punch driver set PRO 16-63	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud Ø 9.5 mm (3/8" UNF) to Ø 19 mm (3/4" UNF), L: 110 mm 1 draw stud Ø 19 mm (3/4" UNF), L: 130 mm 1 spacer 1 tube lubricant 1 HSS co pilot drill (multi step drill) 1 each knockout punch M16   M20   M25   M32   M40   M50   M63 1 robust plastic storage case	80006	1

# Rectangular & square punches

sized for heavy multi-pin industrial connectors & icotek cable entry systems



Type	Cut-out size	Max. sheet thickness	For cut-out of connector	Order No.	PU
Punch 22x45	22 x 45 mm	2.5 mm		80059	1
Punch 92x92	92 x 92 mm	2.5 mm		80060	1
Punch 125x125	125 x 125 mm	2 mm		80063	1
Punch 66x112	66 x 112 mm	2.5 mm		80061	1
Punch E2	24 x 43 mm	2.5 mm		80055	1
Punch E3	24 x 65mm	2.5 mm		80056	1
Punch E4	24 x 86mm	2.5 mm		80057	1
Punch E5	24 x 112mm	2.5 mm		80058	1
Punch B	46 x 46 mm	3 mm		80050	1
Punch B for stainless steel V2A	46 x 46 mm	2 mm		80150	1
Punch 10	36 x 65 mm	3 mm	10-pin	80051	1
Punch 10 for stainless steel V2A	36 x 65 mm	2 mm	10-pin	80151	1
Punch 16	36 x 86 mm	3 mm	16-pin	80052	1
Punch 16 for stainless steel V2A	36 x 86 mm	2 mm	16-pin	80152	1
Punch 24	36 x 112 mm	3 mm	24-pin	80053	1
Punch 24 for stainless steel V2A	36 x 112 mm	2 mm	24-pin	80153	1
Punch 24-XL	46 x 112 mm	3 mm	24-pin	80054	1
Punch 24-XL for stainless steel V2A	46 x 112 mm	2 mm	24-pin	80154	1

## Product description

Rectangular and square punches and dies make it easy to punch holes into stainless steel (V2A versions), mild steel, aluminium or plastics with a max. sheet thickness of 3 mm (V2A: max. 2 mm). Available for cut-outs sizes of 10-, 16-, and 24-multi-pin heavy industrial connectors and also for numerous special cut-outs. Therefore, the punches are suitable for most icotek cable entry systems. Centre punches are integrated in the die for exact drilling of mounting holes.

The punches are for hydraulic operation only.

## Advantages & benefits

- Centre punches for exact drilling of mounting holes
- Robust plastic storage case
- Suitable for hand hydraulic punch driver by icotek and other manufacturers

## Specifications

Material **Steel, hardened and burnished**

## Scope of delivery

Punch, die and draw stud, robust plastic storage case

## Compatible with

Hydraulic punch driver 210

# Round punches

for cut-outs PG 16, M16 - M85



Multi-fold slug splitting



Punch set M16 - M63  
Order No. 80007

## Product description

Self-centering knockout punches for stainless steel (V2A versions), mild steel, aluminium and plastic walls with max. sheet thickness of 3 mm (V2A: max. 2 mm). Punches available for cut-outs PG 16, M16, M20, M25, M32, M40, M50, M63, M75 and M85. Cut-outs for icotek split cable glands and round cable entry plates can be punched.

The special cutting geometry of the punch reduces the cutting pressure and therefore the required effort. The punch splits slugs into several pieces (type related)\* for easy slug removal. For installation of round switches icotek offers a PG 16 punch with an integrated 3 mm twist protection notch.

The punches are designed for manual and hydraulic operation.

## Advantages & benefits

- Multiple splitting punches for easier slug removal / for easy punching
- Suitable with hand hydraulic punch driver by icotek or other manufacturers

## Specifications

Material **Steel, hardened and burnished**

## Scope of delivery

Punch and die (without draw stud)

## Compatible with

Hydraulic punch driver 210

Type	Cut-out diameter	Max. sheet thickness	Thread Ø	Order No.	PU
Punch M16	16.2 mm	2 mm	9.5 mm	80020	1
Punch M16** for stainless steel V2A	16.2 mm	2 mm	9.5 mm	80120	1
Punch M20	20.4 mm	2 mm	9.5 mm	80021	1
Punch M20** for stainless steel V2A	20.4 mm	2 mm	9.5 mm	80121	1
Punch M25	25.4 mm	2 mm	9.5 mm	80022	1
Punch M25** for stainless steel V2A	25.4 mm	2 mm	9.5 mm	80122	1
Punch M32	32.5 mm	3 mm	19 mm	80023	1
Punch M32 for stainless steel V2A	32.5 mm	2 mm	19 mm	80123	1
Punch M40	40.5 mm	3 mm	19 mm	80024	1
Punch M40 for stainless steel V2A	40.5 mm	2 mm	19 mm	80124	1
Punch M50	50.5 mm	3 mm	19 mm	80025	1
Punch M50 for stainless steel V2A	50.5 mm	2 mm	19 mm	80125	1
Punch M63	63.5 mm	3 mm	19 mm	80026	1
Punch M63 for stainless steel V2A	63.5 mm	2 mm	19 mm	80126	1
Punch M75	75.5 mm	2 mm	19 mm	80029	1
Punch M85	86 mm	2 mm	19 mm	80030	1
Punch PG 16	22.5 mm	3 mm	9.5 mm	80027	1
Punch PG 16 with twist protection notch	22.5 mm + 3 mm notch	3 mm	9.5 mm	80028	1
Punch PG 16 with twist protection notch, for stainless steel V2A	22.5 mm + 3 mm notch	2 mm	9.5 mm	80128	1
Draw stud	with adapter 11.1 x 19.0 mm for V2A punches M16 - M25			80210	1

\*Except punches M75/M85

\*\*Draw stud (Order No. 80210) is required.

## Useful tools for assembly & cable management

### KMS Cable template



The correct size of the KT grommets can easily be determined by using the cable template

- Determining the diameter of the cable using the cable template
- Selecting the KT grommets according to the data on the cable template

Order No. 39800 | PU: 1

### Wrenches for plastic locknuts M75/M85

For mounting the new KEL-DPF sizes we offer suitable wrenches with widths for M75 and M85 plastic locknuts. Material: aluminium

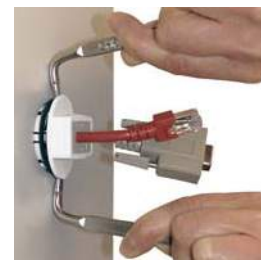
M75: Order No.61436 | M85: Order No. 61437 | PU: 1



### QVT-CLICK Tool Mounting tool

The QVT-CLICK Tool for quick and easy mounting of split cable glands QVT-CLICK (see page 61)

Order No. 61435 | PU: 1



### STFZ I/O Insert Tool Mounting tool

STFZ I/O Insert Tool for quick and easy mounting of STFZ terminal clamps (EMC shield clamps for peripheral modules, see page 129).

Order No. 61430 | PU: 1



# 9 Cable entry systems

with IFPS fire penetration seals acc. to EN 45545-3



**E45  
EI30**



Based on the standards EN 45545-3 and EN 1363-1 icotek cable entry systems have been tested on "E" and "EI" in vertical alignment using mounted IFPS fire penetration seals. All tested products have been successfully certified using only one layer of fire penetration seals.

icotek cable entry systems meet the classifications E45 and EI30!

## Fire resistance of fire barriers

The European railway standard for fire safety EN 45545-3 regulates the fire resistance of fire barriers. The requirements and measures defined in this part of the standard aim to protect passengers and staff in railway vehicles against onboard fire incidents.

Fire barriers can have different standards:

### The lowest standard „E“

Barrier against flames, preventing fissure formation. "E45", for example, means that the specimen can withstand the test for 45 minutes.

### The highest standard „EI“

Barrier against flames, preventing fissure formation and thermal insulation, which means that the temperature on the side facing away from the fire must not exceed 200° C (180° K above room temperature). "EI30", for example, means that the specimen can withstand the test for 30 minutes.

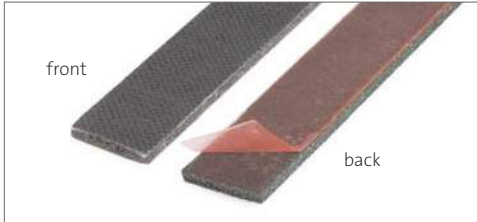
Fire penetration seals facing the fire side:





# Cable entry systems

with IFPS fire penetration seals  
according to EN 45545-3



Also available: IFPS fire penetration seal stripe,  
900 x 17 x 2.7 mm, self-adhesive  
Order No. 99303



Type	Order No.	Order No. with V2A screws	Cut-out	Grommets KT small   large	IP Ingress protection	PU
KEL-U 24 4-BS	99300.001	99300.201	36 × 112 mm	2 2	IP54	5
KEL-U 24 7-BS	99300.002	99300.202	36 × 112 mm	6 1	IP54	5
KEL-U 24 10-BS	99300.003	99300.203	36 × 112 mm	10 -	IP54	5
KEL-ER 24 4-BS	99300.004	99300.204	36 × 112 mm	2 2	IP66	5
KEL-ER 24 7-BS	99300.005	99300.205	36 × 112 mm	6 1	IP66	5
KEL-ER 24 10-BS	99300.006	99300.206	36 × 112 mm	10 -	IP66	5
KEL-U 16 2-BS	99301.001	99301.201	36 × 86 mm	- 2	IP54	5
KEL-U 16 5-BS	99301.002	99301.202	36 × 86 mm	4 1	IP54	5
KEL-U 16 8-BS	99301.003	99301.203	36 × 86 mm	8 -	IP54	5
KEL-ER 16 2-BS	99301.004	99301.204	36 × 86 mm	- 2	IP66	5
KEL-ER 16 5-BS	99301.005	99301.205	36 × 86 mm	4 1	IP66	5
KEL-ER 16 8-BS	99301.006	99301.206	36 × 86 mm	8 -	IP66	5
KEL-E5-BS	99302.001	99302.201	24 × 112 mm	5 -	IP54	5
KEL-ER-E5-BS	99302.002	99302.202	24 × 112 mm	5 -	IP66	5
KEL-DPU 24 13-BS gy	99300.010	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPU 24 14-BS gy	99300.011	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPU 24 16-BS gy	99300.012	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPU 24 16-1-BS gy	99300.013	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPU 24 17-BS gy	99300.014	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPU 24 20-BS gy	99300.015	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPU 24 21-BS gy	99300.016	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPU 24 32-BS gy	99300.017	-	36 × 112 mm	-	IP66 / IP68	5
KEL-DPZ 24 14-BS gy	99300.018	-	36 × 112 mm	-	IP66	5
KEL-DPZ 24 15-BS gy	99300.019	-	36 × 112 mm	-	IP66	5
KEL-DPZ 24 16-BS gy	99300.020	-	36 × 112 mm	-	IP66	5
KEL-DPZ 24 17-BS gy	99300.021	-	36 × 112 mm	-	IP66	5
KEL-DPZ 24 25-BS gy	99300.022	-	36 × 112 mm	-	IP66	5
KEL-DPZ 24 32-BS gy	99300.023	-	36 × 112 mm	-	IP66	5
KEL-DPZ 24 42-BS gy	99300.024	-	36 × 112 mm	-	IP66	5

## Product description

icotek cable entry frames and plates with fire penetration seals, approved for use in railway technology (meeting the standards EN 45545-2, EN 45545-3 and EN 1363-1).

The intumescent (foaming) IFPS fire penetration seals which are mounted at the backside of the cable entry components consist of expandable graphite and increase their volume by a multiple in case of a fire.

This creates a barrier which prevents a penetration of flames and high heat from one room into another for the longest possible period.

## Advantages & benefits

- Approved for use in railway technology (EN 45545-2, EN 45545-3 and EN 1363-1)
- Easy assembly
- High cable density
- Only one fire penetration seal per cable entry component required
- Large product variety
- Ingress protection up to IP66 / UL Type 4X
- High classifications E45 / EI30

## Specifications

Cable entry comp. See standard products (p. 8 - 67)  
 Fire penetration seal Intumescent (foaming)  
 Material Graphite (C)

## Scope of delivery

Each 1 cable entry frame / plate  
 + suitable fire penetration seal.

Suitable grommets are not included in the shipment and have to be ordered separately.





# Appendix

## Technical data and comments



### At a glance ...

Technical data and drilling templates at a glance.

IP rating according to IEC/EN 60529 and flammability classification according to UL94.

Reference list, abbreviations and certificates.



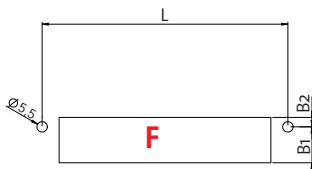
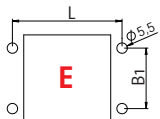
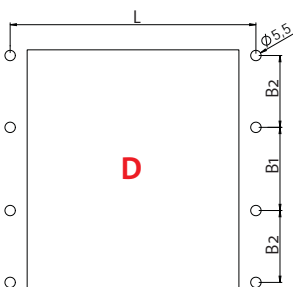
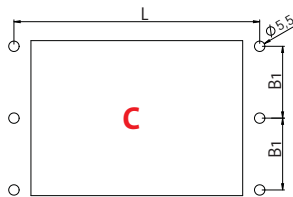
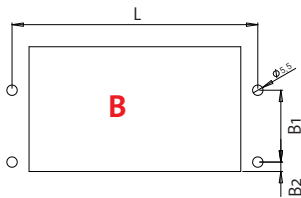
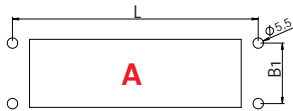
## Chapter content i

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# Technical data

## Drilling templates

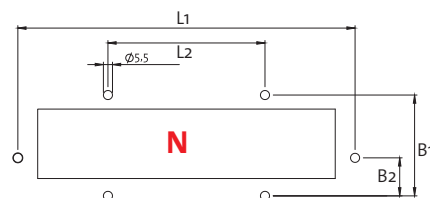
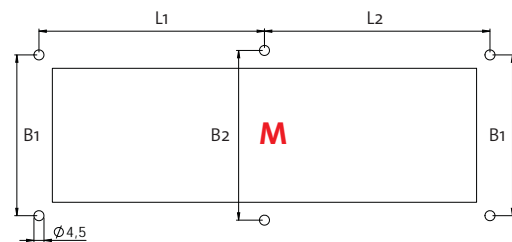
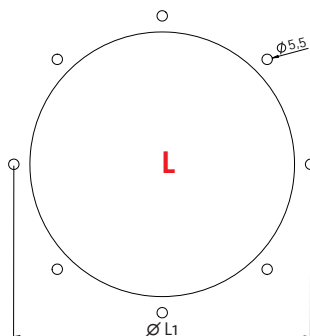
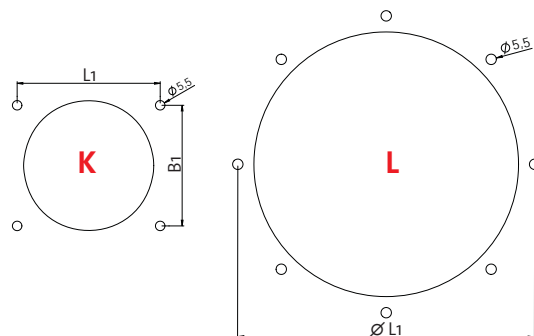
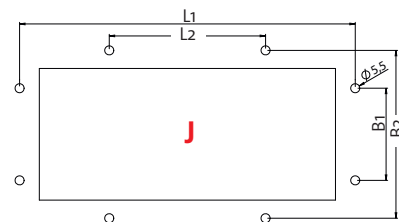
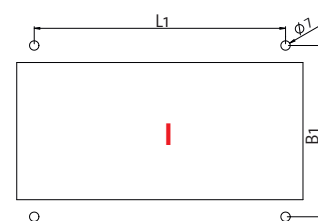
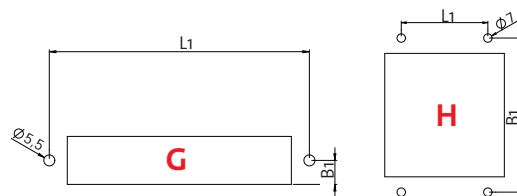


Type	Page	Cut-out type	Drilling template [mm]			Cut-out h × l [mm]
			L	B1	B2	
KEL(-U/-ER) 24 x KEL-FG A KEL-QUICK 24 10 KEL-BES(-S) 24 KEL-DPZ 24 x KEL-DPU 24 x	8 - 9 28 56 68-69 78 - 79 76 - 77	A	130	32	-	112 × 36
KEL-SNAP 24	31	A	130	32	-	max. 112 × 46
KEL(-U/-ER) 16 x KEL-QUICK 16 8 KEL-BES(-S) 16	10 - 11 56 68-69	A	103	32	-	86 × 36
KEL-SNAP 16	31	A	103	32	-	max. 86 × 46
KEL(-U/-ER) 10 x KEL-QUICK 10 6 KEL-SNAP 10 KEL-BES(-S) 10	12 - 13 56 31 68-69	A	83	32	-	65 × 36
KEL 24 x-E KEL 16 x-E	22 25	B	130 103	38	5	112 × 66 86 × 66
KEL 24 x-MT KEL 16 x-MT	23 26	C	130 103	38	-	112 × 82 86 × 82
KEL 24 x-2MT KEL 16 x-2MT	24 27	D	130 103	44	38	112 × 126 86 × 126
KEL(-U/-ER)-B KEL-DPZ-B	14 - 15 80	E	58	32	-	46 × 46
KEL-SNAP-B	31	E	56	32	-	38 × 46
KEL-FG B KEL-QUICK-B4	29 56	E	62.5 58	32	-	36 × 46
KEL(-ER)-E x KEL-QUICK-E KEL-FL x	16 - 17 57 32	F	E2: 58 E3: 83 E4: 103 E5: 130	19	5	E2: 43 × 24 E3: 65 × 24 E4: 86 × 24 E5: 112 × 24

# Technical data

## Drilling templates

Type	Page	Cut-out type	Drilling template [mm]				Cut-out h × l [mm]
			L1	L2	B1	B2	
KEL-DPZ-E	81	G	130	-	9	-	112 × 18
KEL-JUMBO 1	36	H	56.5	-	100.5	-	78 × 80.5
KEL-JUMBO 2	36	I	147.5	-	100.5	-	168 × 80.5
KEL 183	34	J	204	95	56	102	180 × 80
KEL 183-E	34	N	204	95	61	23	180 × 42
KEL-JUMBO flex	94	K	70	-	70	-	∅ 75.5
KEL-ULTRA flex	92	L	∅ 157	-	-	-	∅ 140
KEL-DPZ-KL	84	M	101	101	72	76	190 × 60



# Appendix

## Certificates



Product	IP rating						UL 50E rating		cURus	DNV-GL	EN45545-2	UV	ECOLAB	ATEX	RoHS	Flame class UL94		Halogen free
	IP54	IP64	IP65	IP66	IP67	IP68	12	4X								HL3	HB	
<b>Product group 1:</b>																		
KEL 24/16/10/-B	■						■		■	■	■	■	■	■			■	■
KEL 24-E/-MT/-2MT	■								■	■	■	■	■	■			■	■
KEL 16-E/-MT/-2MT	■									■	■	■	■	■			■	■
KEL-ER 24/16/10/-B	■	■	■	■			■	■	■	■	■	■	■	■			■	■
KEL-U 24/16/10/-B	■						■		■	■	■	■	■	■			■	■
KEL-E	■						■		■	■	■	■	■	■			■	■
KEL-ER-E	■	■	■	■			■	■	■	■	■	■	■	■			■	■
KEL-FG-A / -B	■						■	■	■	■	■	■	■	■			■	■
KEL-FG-E	■						■	■	■	■	■	■	■	■			■	■
KEL-SNAP	■						■		■	■	■	■	■	■			■	■
KVT-ER	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■	■
KVT gy	■						■		■	■	■	■	■	■			■	■
KVT bk	■						■		■	■	■	■	■	■			■	■
KVT 80 gy	■						■		■	■	■	■	■	■			■	■
KVT 80 bk	■						■		■	■	■	■	■	■			■	■
KVT-SNAP	■						■		■	■	■	■	■	■			■	■
KVT-W90 gy	■						■		■	■	■	■	■	■			■	■
KVT-W90 bk	■						■		■	■	■	■	■	■			■	■
KT small gy, single	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■	■
KT small bk, single	■	■	■	■	■	■				■	■	■	■	■	■	■		■
KT small gy, multi	■						■		■	■	■	■	■	■			■	■
KT small bk, multi	■									■	■	■	■	■	■	■		■
KT large gy	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■	■
KT large bk	■	■	■	■	■	■				■	■	■	■	■	■	■		■
KTMB small/ large	■						■		■	■	■	■	■	■			■	■
KT-DPF small gy	■						■		■	■	■	■	■	■			■	■
KT-DPF small bk	■									■	■	■	■	■	■	■		■
KT-DPF large gy	■						■		■	■	■	■	■	■			■	■
KT-DPF large bk	■									■	■	■	■	■	■	■		■
DT	■						■		■	■	■	■	■	■			■	■
ST							■		■	■	■	■	■	■			■	■
KEL-FL	■								■	■	■	■	■	■			■	■
FT	■								■	■	■	■	■	■			■	■
KEL 183	■						■		■	■	■	■	■	■			■	■
KEL 183-E	■									■	■	■	■	■				
KTMB 183	■						■		■	■	■	■	■	■			■	■
KEL-JUMBO 1 & 2	■						■		■	■	■	■	■	■			■	■
KTF	■						■		■	■	■	■	■	■			■	■
KEL-QUICK 24/16/10/-B/-E	■						■		■	■	■	■	■	■			■	■
QVT	■								■	■	■	■	■	■			■	■
QVT-CLICK	■									■	■	■	■	■			■	■
KEL-QTA 24/10/-B/round	■								■	■	■	■	■	■			■	■
KEL-QTE	■								■	■	■	■	■	■			■	■
QT	■								■	■	■	■	■	■			■	■
KEL-BES(-S) 24/16/10/round														■			■	■

# Appendix Certificates



















Product	IP rating						UL 50E rating		cURus	DNV-GL	EN45545-2	UV	ECOLAB	ATEX	RoHS	Flame class UL94		Halogen free
	IP54	IP64	IP65	IP66	IP67	IP68	12	4X								HL3	HB	
<b>Product group 2:</b>																		
KEL-DPU 24 gy	■	■	■	■	■	■	■	■	■		■	■	■	■	■		■	■
KEL-DPU 24 bk	■	■	■	■	■	■	■	■	■		■	■	■	■	■		■	■
KEL-DPZ 24 gy	■	■	■	■			■		■	■	■	■	■	■	■		■	■
KEL-DPZ 24 bk	■	■	■	■			■		■	■	■	■	■	■	■		■	■
KEL-DPZ-B gy	■	■	■	■			■		■	■	■	■	■	■	■		■	■
KEL-DPZ-B bk	■	■	■	■			■		■	■	■	■	■	■	■		■	■
KEL-DPZ-E gy	■	■	■	■			■		■	■	■	■	■	■	■		■	■
KEL-DPZ-E bk	■	■	■	■			■		■	■	■	■	■	■	■		■	■
KEL-DPZ-KL gy	■	■	■				■		■	■	■	■	■	■	■		■	■
KEL-DPZ-KL bk	■	■	■				■		■	■	■	■	■	■	■		■	■
KEL-DPZ round gy	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■
KEL-DPZ round bk	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■
KEL-DP 24 gy	■	■					■		■	■	■	■	■	■	■		■	■
KEL-DP 24 bk	■	■					■		■	■	■	■	■	■	■		■	■
KEL-DP-E gy	■	■					■		■	■	■	■	■	■	■		■	■
KEL-DP-E bk	■	■					■		■	■	■	■	■	■	■		■	■
KEL-DP round gy	■	■	■				■		■	■	■	■	■	■	■		■	■
KEL-DP round bk	■	■	■				■		■	■	■	■	■	■	■		■	■
ST-B							■		■					■			■	■
KEL-DPF gy	■	■	■	■		■		■	■		■	■	■	■	■		■	■
KEL-DPF bk	■	■	■	■		■		■	■		■	■	■	■	■		■	■
KEL-JUMBO flex	■						■		■		■	■	■	■	■		■	■
KEL-ULTRA flex	■	■	■	■			■		■		■	■	■	■	■		■	■
<b>Product group 3:</b>																		
KZL									■	■	■	■		■		■	■	
SF ZL									■	■	■	■		■		■	■	
ZL									■	■	■	■		■		■	■	
ZL-AB									■	■	■	■		■		■	■	
ZL 03 04 05									■	■	■	■		■		■	■	
<b>Product group 5:</b>																		
CONFIX FWS-A/-B gy	■													■		■	■	
CONFIX FWS-A/-B bk	■													■		■	■	
<b>Product group 6:</b>																		
KDR-ESR	■									■				■		■	■	
KDR2 / KDR-BMP / MP	■													■		■	■	
BPK	■	■					■	■						■		■	■	
BPK-RF	■						■	■						■		■	■	
BPM	■	■	■											■				
BPK-SNAP	■													■	■			
KGM								■						■		■	■	
KBH-S/KBH-R										■	■							





# Appendix

IP protection classes according to EN 60529

1st digit	Solid particle protection...		2nd digit	Liquid ingress protection...	
0		no protection	0		no protection
1		against any surface of the body > 50 mm	1		against dripping water (vertically falling drops)
2		against any surface of the body > 12.5 mm	2		against dripping water when tilted at 15°
3		against objects > 2.5 mm (tools)	3		against spraying water at any angle up to 60°
4		against objects > 1 mm (most wires)	4		against splashing water from any direction
5		Dust protected	5		against water jets from any direction
6		Dust tight	6		against powerful water jets from any direction by a nozzle
			7		Suitable for temporary immersion in water up to 1 m depth
			8		Suitable for continuous immersion in water*

\*specified by the manufacturer

## Appendix

### Flammability classification according to UL94



#### Flame class UL94-HB

Applying the horizontal burning test the material burns slowly. For parts with a thickness up to 3 mm the burning speed must not be faster than 3 inches/min and for parts with a thickness over 3 mm the burning speed must not be faster than 1.5 inches/mm.

Materials which burn faster are not UL certified.

#### Flame class UL94-V2

Applying the vertical burning test, the material must normally extinguish itself after 25 seconds or less, but max. after 30 seconds. The material may drop and cotton wool placed under the probe may inflame. The material must not glow longer than 60 seconds.

#### Flame class UL94-V1

Applying the vertical burning test, the material must normally extinguish itself after 25 seconds or less, but max. after 30 seconds. The material may drop and cotton wool placed under the probe may inflame. The material must not glow longer than 30 seconds.

#### Flame class UL94-V0

Applying the vertical burning test, the material must normally extinguish itself after 5 seconds or less, but max. after 10 seconds. The material may drop down, but cotton wool placed under the probe must not inflame. The material must not glow longer than 30 seconds.

## Appendix

### General reference notes



We provide all the information on chemical and physical properties of our products and technical advice to the best of our knowledge.

Please do your own examinations and tests to determine the practical suitability of the products for the usage intended.

Application, use and installation of the products is the customer's responsibility. Legal and regulatory provisions and any rights to third parties have to be observed.

Moreover our general terms and conditions, which can be requested from us, apply.

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31300	161	31626	159	32732	146	36208	110	36430	144	36780.04	127	36784.32	127	36789.1	118
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43563	88	43854	181	45110	189	47220	32	49154.200	194	49301	205	49470.200	195	50512	86
43564	89	43855	181	45112	43	47220.200	32	49156	194	49302	205	49471	195	50514	86
43565	88	43856	181	45115	43	47240	32	49156.200	194	49306	205	49471.200	195	50515	86
43566	89	43861	179	45130	45	47240.200	32	49158	197	49307	205	49472	195	50516	86
43567	89	43865	183	45134	45	47250	32	49158.200	197	49311	205	49472.200	195	50518	86
43568	89	43866	183	45152	45	47250.200	32	49160	197	49312	205	49473	195	50519	86
43569	89	43871	179	45154	45	47255	32	49160.200	197	49313	205	49473.200	195	50520	86
43570	89	43882	175	45203	42	47255.200	32	49162	197	49317	205	49479	199	50521	86
43576	87	43883	175	45204	43	48162	11	49162.200	197	49318	205	49480	199	50522	86
43578	87	43886	175	45205	42	48162.200	11	49164	197	49319	205	49481	199	50523	86
43581	87	43887	175	45206	43	48165	11	49164.200	197	49401	205	49482	199	50524	86
43583	87	43888	175	45212	43	48165.200	11	49166	197	49402	205	49483	199	50525	86
43585	87	43889	175	45215	43	48168	11	49166.200	197	49403	205	49484	199	50526	86
43587	87	43890	175	45236	44	48168.200	11	49168	197	49404	205	49485	199	50527	86
43591	87	43891	175	45237	44	48204	15	49168.200	197	49405	205	49486	199	50528	86
43622	65	43894	175	45238	44	48204.200	15	49170	197	49410	205	49487	199	50531	88
43626	65	43896	175	45239	44	48206	15	49170.200	197	49411	205	49488	199	50532	88
43632	65	43899	175	45404	46	48206.200	15	49172	197	49412	205	49489	199	50533	88
43636	65	43930	77	45406	46	48212	13	49172.200	197	49413	205	49490	199	50550	89
43642	64	43932	76	45414	46	48212.200	13	49174	197	49414	205	49496	200	50551	89
43643	64	43934	76	45416	46	48216	13	49174.200	197	49420	206	49496.200	200	50552	89
43644	64	43936	76	45424	46	48216.200	13	49176	197	49421	206	49497	200	50553	89
43645	64	43938	77	45426	46	48241	9	49176.200	197	49422	206	49497.200	200	50554	89
43655	64	43940	76	45450	40	48241.200	9	49178	197	49423	206	49498	200	50555	89
43656	64	43942	77	45452	40	48244	9	49178.200	197	49424	206	49498.200	200	50556	89
43658	64	43944	76	45454	40	48244.200	9	49180	197	49425	206	49499	200	50560	88
43659	64	44400	169	45455	41	48247	9	49180.200	197	49426	206	49499.200	200	50562	89
43660	64	44401	169	45456	41	48247.200	9	49182	197	49427	206	49500	200	50564	89
43675.001	84	44402	169	45692	60	48249	17	49182.200	197	49428	206	49500.200	200	50566	89
43675.101	84	44403	169	45695	60	48249.200	17	49184	197	49429	206	49513	203	50567	89
43700	78	44404	169	45702	60	48250	17	49184.200	197	49430	204	49514	203	50568	89
43705	78	44405	169	45711	60	48250.200	17	49201	205	49431	206	49515	203	50569	89
43710	79	44406	169	45715	60	48258	17	49202	205	49432	206	49516	203	50570	89
43715	79	44407	169	45722	60	48258.200	17	49203	205	49440	206	49517	203	50576	87











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#### icotek GmbH

Bischof-von-Lipp-Straße 1  
73569 Eschach | Germany  
Tel +49 7175 9 23 80-0  
Fax +49 7175 9 23 80-50  
info@icotek.com  
www.icotek.com

#### icotek (swiss) AG

Hauptstrasse 22  
9422 Staad (SG) | Switzerland  
Tel +41 71 858 23 23  
Fax +41 71 858 23 24  
info@icotek.ch  
www.icotek.ch

#### icotek SARL

130, rue des terres Bourdin  
69140 Rillieux-la-Pape | France  
Tél +33 4 81 91 97 65  
Fax +33 4 81 91 97 68  
info@icotek.fr  
www.icotek.fr

#### icotek Italia s.r.l.

Via 1° Maggio, 7  
20010 Buscate (MI) | Italia  
Tel +39 331 152 03 23  
Fax +39 331 152 06 30  
info@icotek-italia.it  
www.icotek-italia.it

#### icotek Corp.

130 South Jefferson Street,  
Ste LL150  
Chicago, IL 60661 | USA  
Phone +1 312.643.2315  
Fax +1 312.643.2314  
info@icotek-usa.com  
www.icotek-usa.com

#### icotek Limited

Unit C5, Broadoak Business Park  
Ashburton Road West,  
Trafford Park  
Manchester M17 1RW  
United Kingdom  
Phone +44 161 222 3454  
info@icotek.co.uk  
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#### icotek Elektronik Tic. Ltd. Şti.

Fevzi Çakmak Mah.,  
Bilginler Sok. No: 17/A-B  
34899 | Pendik, İstanbul | Türkiye  
Tel +90 216 396 59 59  
Fax +90 216 396 59 55  
info@icotek.com.tr  
www.icotek.com.tr

#### icotek Great China

Shanghai Office  
Kevin Zhang  
Tel +86 139 1840 6475  
info@icotek.cn  
www.icotek.cn