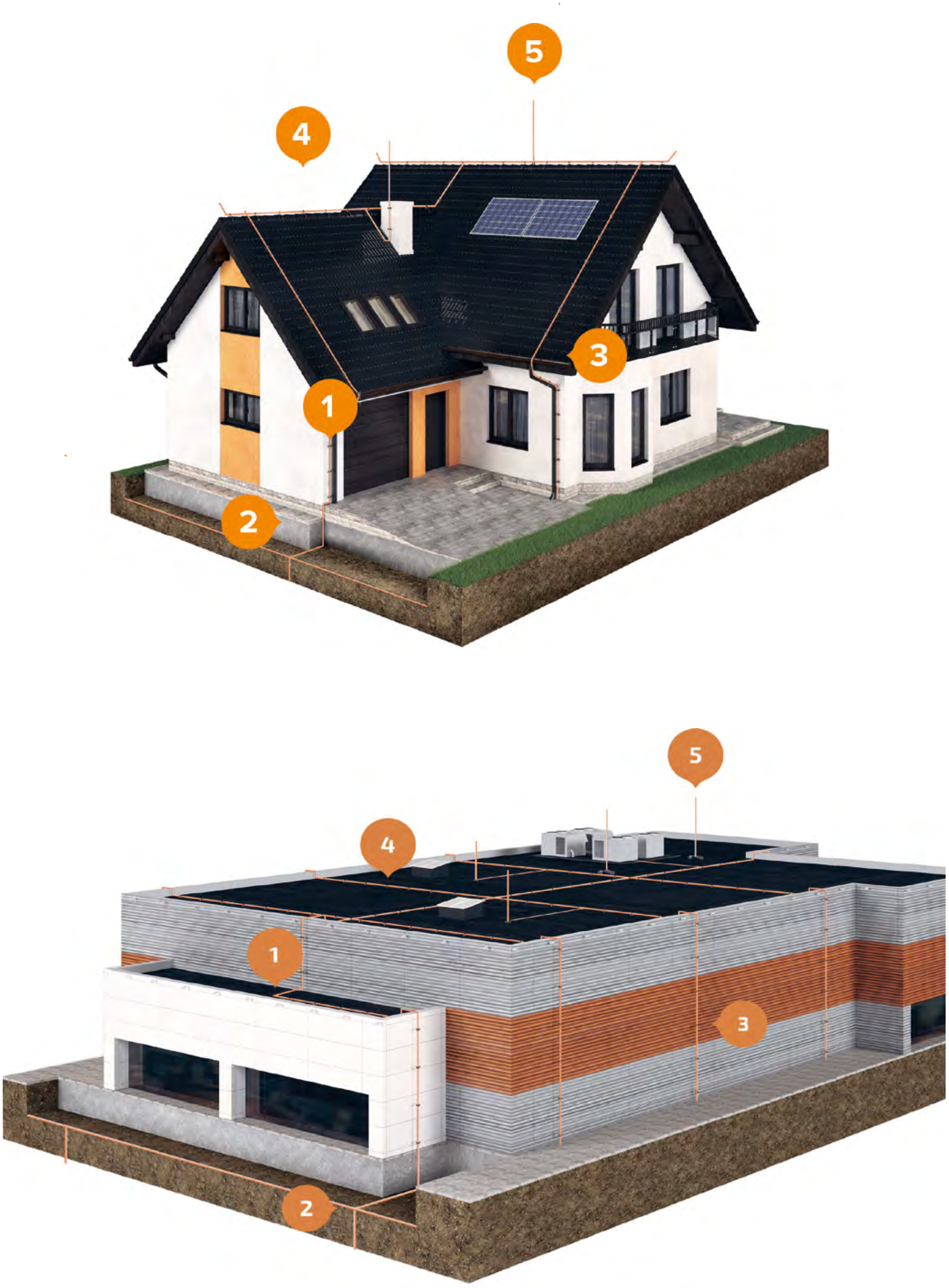
GROMTOR

LIGHTNING PROTECTION / EARTHING

CATALOGUE 2025

www.gromtor.com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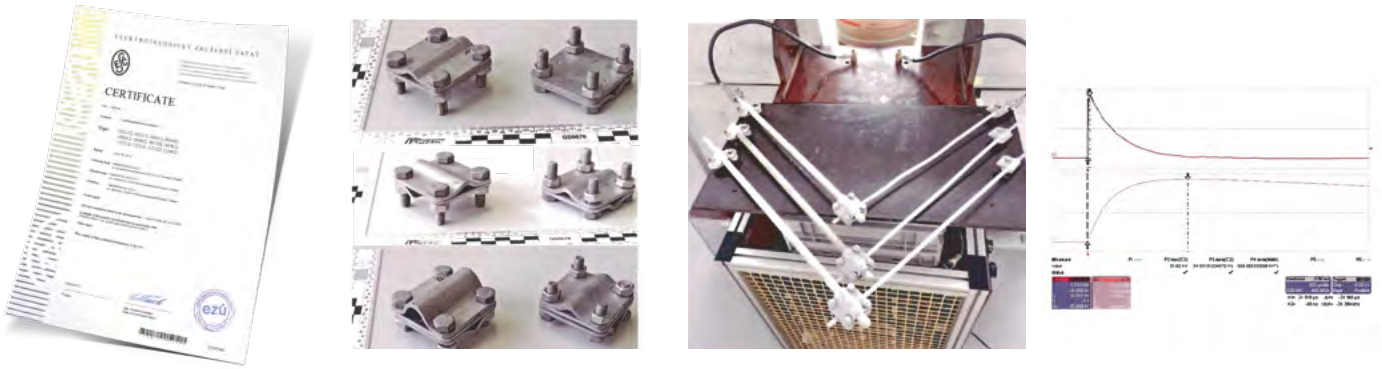
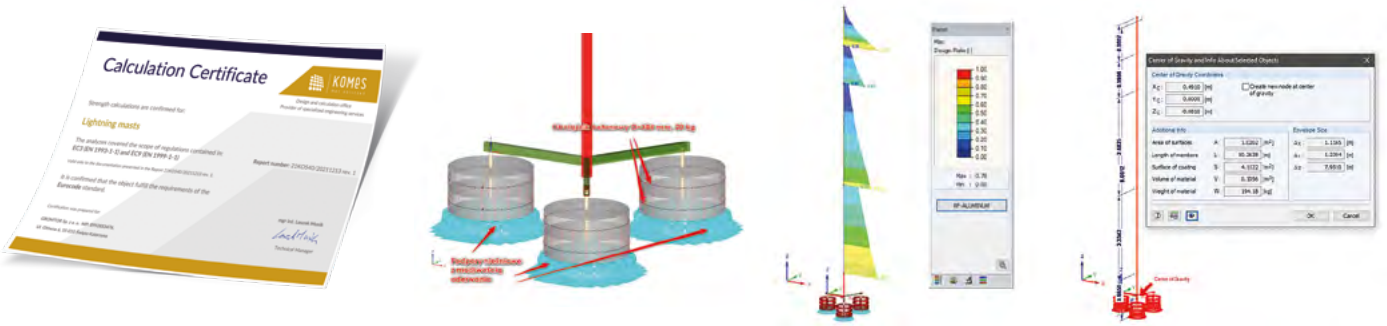
Our products meet European standards.

Lightning connectors tested according to IEC 62561-1 for current carrying capacity and corrosion.



The resistance of the air-termination rods was confirmed by studies taking into account the maximum wind load in accordance with EN 1991-1-4.



Insulated conductors with high-voltage insulation have been tested in accordance with IEC 62651-8 standard. Reputable research institutes have confirmed guaranteed insulation distances of 750 mm and 900 mm, as well as the highest current strength class H_2, which makes it possible to install in all classes of lightning protection.

LIGHTNING PROTECTION SYSTEMS

GROMTOR is a Polish manufacturer of lightning protection systems. We operate in the domestic market and have customers in most European countries, providing the highest quality services. We follow LPS trends and continuously develop our products to meet market requirements.

We have a strong customer-oriented approach and ensure immediate responses. Our openness and experience are appreciated by both major contractors involved in significant investments and private investors building one of the most important things in their lives — their own home.

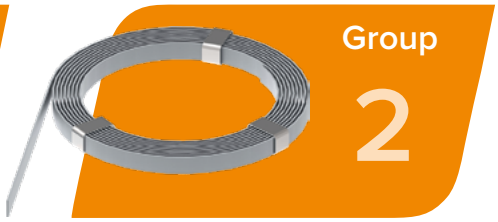
We maintain efficient and high-quality services and can offer custom-made items according to specific technical requirements. We provide a wide range of technical support, including risk assessment and full LPS design preparation.

GROMTOR is a team of experienced professionals, including salespeople, designers, engineers, production staff, and warehouse workers, who thoroughly understand market needs. Working in a young, dynamic company motivates us to persistently develop and improve our skills.

CHECK OUT OUR CATALOGUE

Clamps and connectors

Earthing system and equipotential bonding

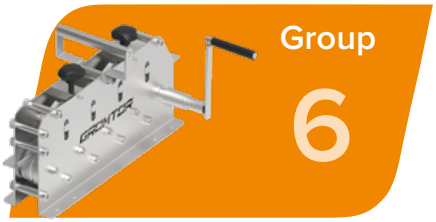


Vertical holders for conductors

Horizontal holders for conductors

Air-termination rods and insulated systems

Accessories for lightning protection systems



Product Code Description

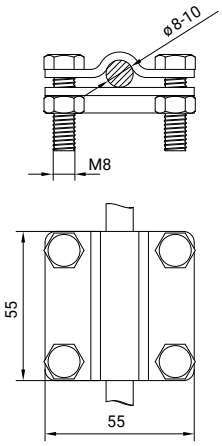
1	011	12
Group	Product number	Material

Material			
12	StZn	OG	Hot dip galvanized steel
13	Inox V2A	V2A	Stainless steel V2A
14	Cu	Cu	Copper
15	Inox V4A	V4A	Stainless steel V4A
16	StCu	MI	Copper plated steel
17	Alu	AL	Aluminum
18	Pl	PL	Plastic
19			Other

Cross-connector L-55 for wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	55x55	4 pcs. M8x25	101112
wire Ø(8-10)mm	Inox V2A			101113
wire Ø(8-10)mm	Inox V4A			101115
wire Ø(8-10)mm	Cu			101114

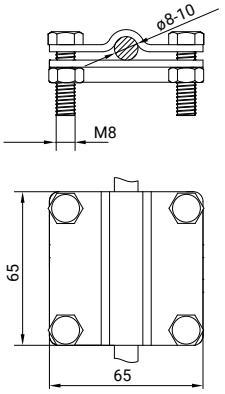
- Application: cross and T-type connection of wire.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Cross-connector L-65 for wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	65x65	4 pcs. M8x25	101212
wire Ø(8-10)mm	Inox V2A			101213
wire Ø(8-10)mm	Inox V4A			101215
wire Ø(8-10)mm	Cu			101214

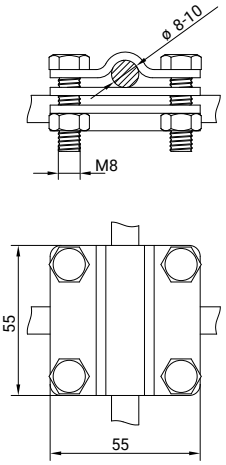
- Application: cross and T-type connection of wire.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



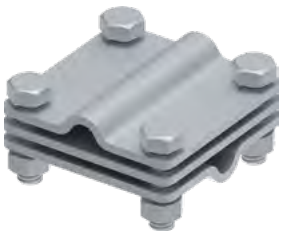
Cross-connector L-55 with intermediate plate for wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	55x55	4 pcs. M8x25	101312
wire Ø(8-10)mm	Inox V2A			101313
wire Ø(8-10)mm	Inox V4A			101315
wire Ø(8-10)mm	Cu			101314

- Application: cross and T-type connection of wire.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

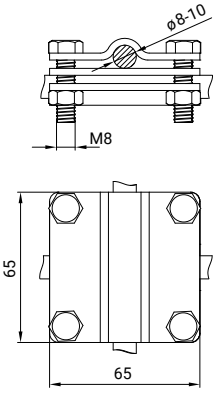


Cross-connector L-65 with intermediate plate for wire



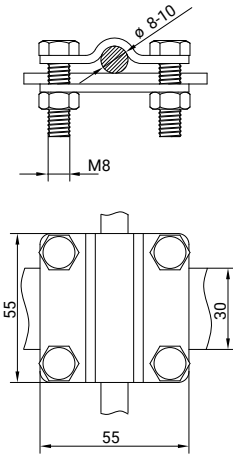
Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	65x65	4 pcs. M8x25	101412
wire Ø(8-10)mm	Inox V2A			101413
wire Ø(8-10)mm	Inox V4A			101415
wire Ø(8-10)mm	Cu			101414

- Application: cross and T-type connection of wire.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



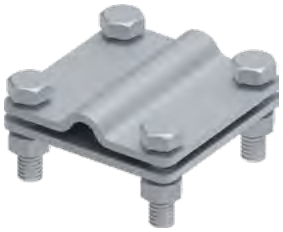
Cross-connector L-55 for wire and flat conductor

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 30 mm	StZn	55x55	4 pcs. M8x25	101512
wire Ø(8-10)mm flat conductor ≤ 30 mm	Inox V2A			101513
wire Ø(8-10)mm flat conductor ≤ 30 mm	Inox V4A			101515
wire Ø(8-10)mm flat conductor ≤ 30 mm	Cu			101514

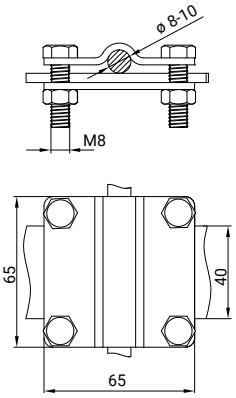


- Application: cross and T-type connection of wire and flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Cross-connector L-65 for wire and flat conductor

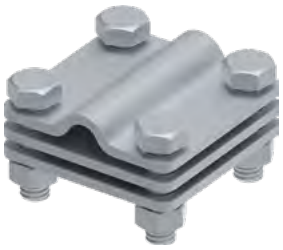


Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 40 mm	StZn	65x65	4 pcs. M8x25	101612
wire Ø(8-10)mm flat conductor ≤ 40 mm	Inox V2A			101613
wire Ø(8-10)mm flat conductor ≤ 40 mm	Inox V4A			101615
wire Ø(8-10)mm flat conductor ≤ 40 mm	Cu			101614

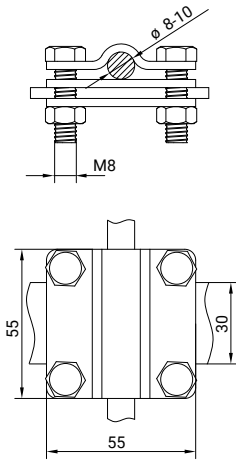


- Application: cross and T-type connection of wire and flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Cross-connector L-55 with intermediate plate for wire and flat conductor

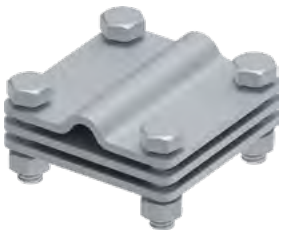


Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 30 mm	StZn	55x55	4 pcs. M8x25	101712
wire Ø(8-10)mm flat conductor ≤ 30 mm	Inox V2A			101713
wire Ø(8-10)mm flat conductor ≤ 30 mm	Inox V4A			101715
wire Ø(8-10)mm flat conductor ≤ 30 mm	Cu			101714

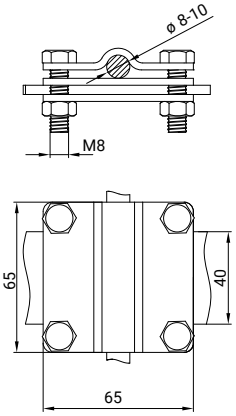


- Application: cross and T-type connection of wire and flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Cross-connector L-65 with intermediate plate for wire and flat conductor

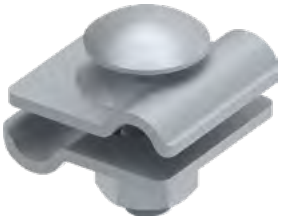


Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 40 mm	StZn	65x65	4 pcs. M8x25	101812
wire Ø(8-10)mm flat conductor ≤ 40 mm	Inox V2A			101813
wire Ø(8-10)mm flat conductor ≤ 40 mm	Inox V4A			101815
wire Ø(8-10)mm flat conductor ≤ 40 mm	Cu			101814



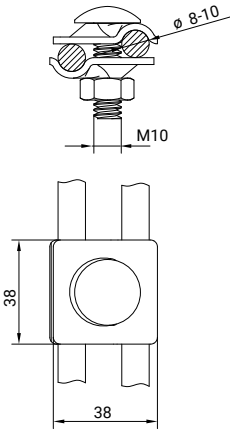
- Application: cross and T-type connection of wire and flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Universal connector for wire



Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	38x38	M10x30	102112
wire Ø(8-10)mm	Inox V2A			102113
wire Ø(8-10)mm	Inox V4A			102115
wire Ø(8-10)mm	Cu			102114
wire Ø(8-10)mm	Alu			102117

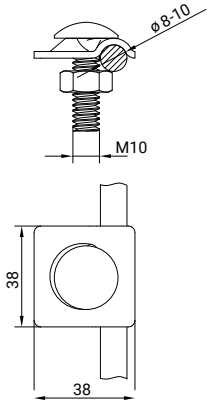
- Application: cross, parallel and T-type connection of wire.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Clamp for wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	38x38	M10x30	102212

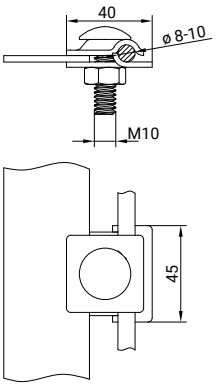
- Application: connection of wire and metal structure.



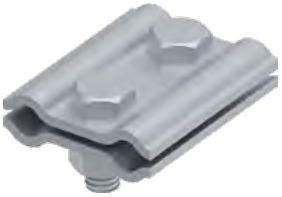
Connector for sheet metal and wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm, sheet metal ≤ 5 mm	StZn	45x40	M10x30	103112
wire Ø(8-10)mm, sheet metal ≤ 5 mm	Inox V2A			103113
wire Ø(8-10)mm, sheet metal ≤ 5 mm	Cu			103114
wire Ø(8-10)mm, sheet metal ≤ 5 mm	Alu			103117

- Application: parallel connection of wire and sheet metal up to 5mm thick.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

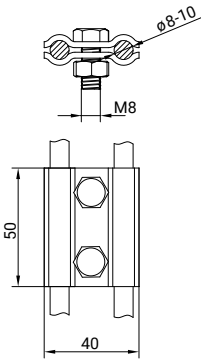


Through connector for wire



Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	50x40	2 pcs. M8x20	104112
wire Ø(8-10)mm	Inox V2A			104113
wire Ø(8-10)mm	Cu			104114
wire Ø(8-10)mm	Alu			104117

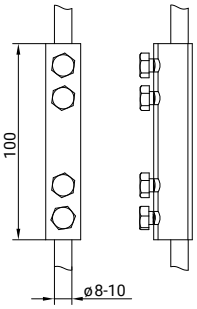
- Application: parallel or through connection of wire.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Through-pipe connector for wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	100	4 pcs. M6x10	105112
wire Ø(8-10)mm	Inox V2A			105113
wire Ø(8-10)mm	Cu			105114

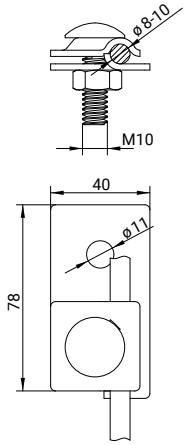
- Application: through connection of wire.



Single-screw control connector with mounting hole

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor	StZn	78x40	M10x30	106112
wire Ø(8-10)mm flat conductor	Inox V2A			106113
wire Ø(8-10)mm flat conductor	Cu			106114

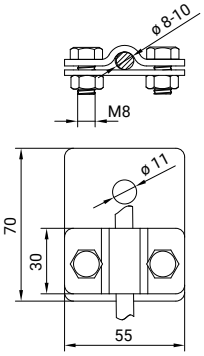
- Application: control connection of wire and flat conductor.



Two-screw control connector with mounting hole

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor	StZn	70x55	2 pcs. M8x25	107112
wire Ø(8-10)mm flat conductor	Inox V2A			107113
wire Ø(8-10)mm flat conductor	Cu			107114

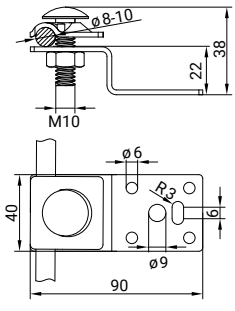
- Application: control connection of wire and flat conductor.



Connection clamp for wire and sheet metal

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm sheet metal	StZn	90x40x38	M10x30	108112
wire Ø(8-10)mm sheet metal	Inox V2A			108113
wire Ø(8-10)mm sheet metal	Alu			108117

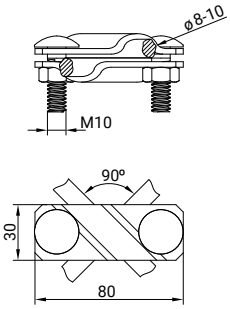
- Application: connection of wire and metal structure or sheet.



Diagonal connector for wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	StZn	80x30	2 pcs. M10x30	109112
wire Ø(8-10)mm	Inox V2A			109113

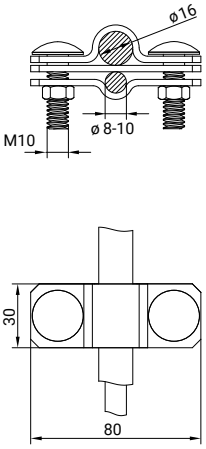
- Application: cross connection of wire.



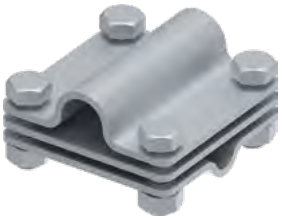
Through connector for wire, flat conductor and rod Ø16mm

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 40 mm	StZn	80x30	2 pcs. M10x30	110112
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 40 mm	Inox V2A			110113

- Application: parallel connection of wire, rod and flat conductor.

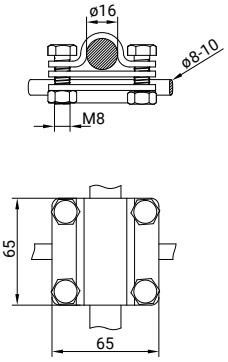


Cross-connector L-65 for wire, flat conductor and rod Ø16mm

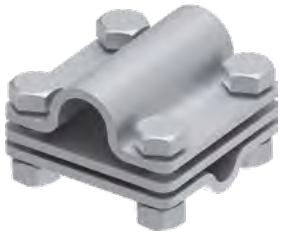


Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 40 mm	StZn	65x65	4 pcs. M8x25	111112
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 40 mm	Inox V2A			111113
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 40 mm	Cu			111114

- Application: parallel and cross connection of wire, rod and flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

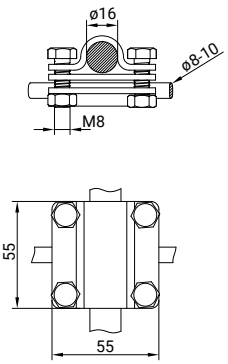


Cross-connector L-55 for wire, flat conductor and rod Ø16mm

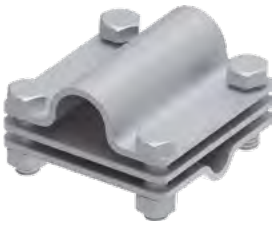


Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 30 mm	StZn	55x55	4 pcs. M8x25	111212
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 30 mm	Inox V2A			111213
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 30 mm	Cu			111214

- Application: parallel and cross connection of wire, rod and flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

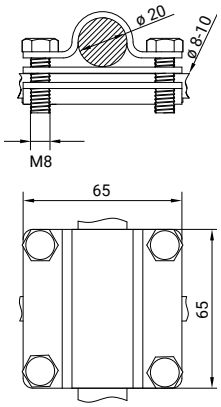


Cross-connector L-65 for wire, flat conductor and rod Ø20mm



Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / rod Ø20 mm flat conductor ≤ 40 mm	StZn	65x65	4 pcs. M8x25	111312
wire Ø(8-10)mm / rod Ø20 mm flat conductor ≤ 40 mm	Inox V2A			111313
wire Ø(8-10)mm / rod Ø20 mm flat conductor ≤ 40 mm	Cu			111314

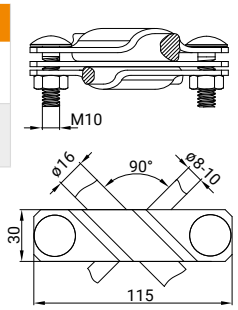
- Application: parallel and cross connection of wire, rod and flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Diagonal connector for wire, flat conductor and rod Ø16mm

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 40 mm	StZn	115x30	2 pcs. M10x30	112212
wire Ø(8-10)mm / rod Ø16 mm flat conductor ≤ 40 mm	Inox V4A			112215

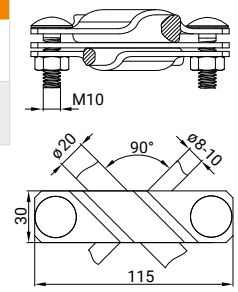
- Application: cross connection of wire, rod and flat conductor.



Diagonal connector for wire, flat conductor and rod Ø20mm

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / rod Ø20 mm flat conductor ≤ 40 mm	StZn	115x30	2 pcs. M10x30	112112
wire Ø(8-10)mm / rod Ø20 mm flat conductor ≤ 40 mm	Inox V4A			112115

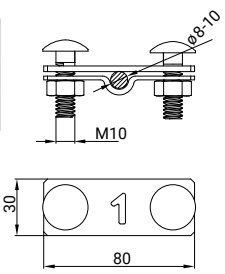
- Application: cross connection of wire, rod and flat conductor.



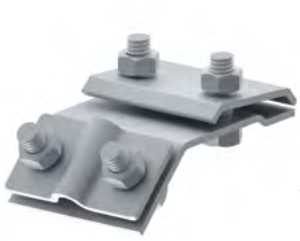
Marking connection clamp

Description	Material	Size [mm]	Screw	Code
wire Ø8	Alu	80x30	2 pcs. M10x30	109917
wire Ø8	Cu			109914

- Application: numbering of the control connector, when ordering, it is necessary to specify the numbering for embossing.

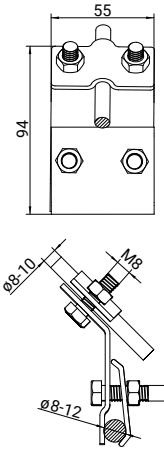


Four-screw gutter connector for wire

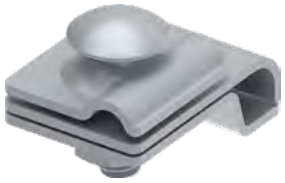


Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / gutter	StZn	94x55	2 pcs. M8x25	113112
wire Ø(8-10)mm / gutter	Inox V2A			113113
wire Ø(8-10)mm / gutter	Cu		2 pcs. M8x20	113114

- Application: connection of wire and gutter.

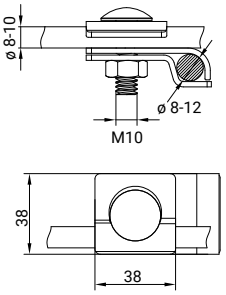


Single-screw gutter connector for wire



Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / gutter	StZn	38x38	M10x35	114112
wire Ø(8-10)mm / gutter	Inox V2A			114113
wire Ø(8-10)mm / gutter	Cu			114114
wire Ø(8-10)mm / gutter	Alu			114117

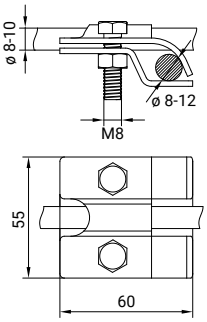
- Application: connection of wire and gutter.



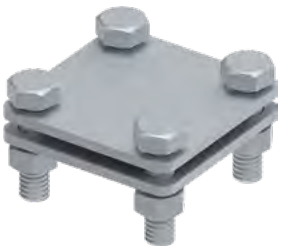
Two-screw gutter connector for wire

Description	Material	Size [mm]	Screw	code
wire Ø(8-10)mm / gutter	StZn	60x55	2 pcs. M8x25	114212
wire Ø(8-10)mm / gutter	Inox V2A			114213
wire Ø(8-10)mm / gutter	Cu			114214

- Application: connection of wire and gutter.

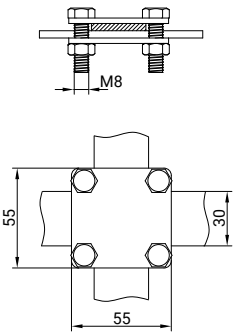


Cross-connector L-55 for flat conductor

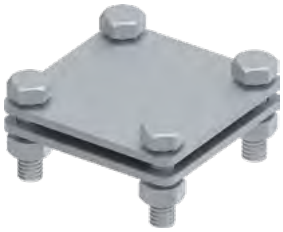


Description	Material	Size [mm]	Screw	code
flat conductor ≤ 30 mm	StZn	55x55	4 pcs. M8x25	115112
flat conductor ≤ 30 mm	Inox V4A			115115
flat conductor ≤ 30 mm	Cu			115114

- Application: cross and T-type connection of flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

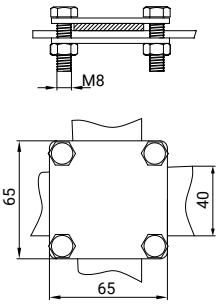


Cross-connector L-65 for flat conductor

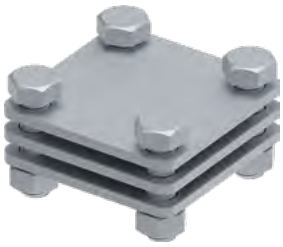


Description	Material	Size [mm]	Screw	Code
flat conductor ≤ 40 mm	StZn	65x65	4 pcs. M8x25	115212
flat conductor ≤ 40 mm	Inox V4A			115215
flat conductor ≤ 40 mm	Cu			115214

- Application: cross and T-type connection of flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

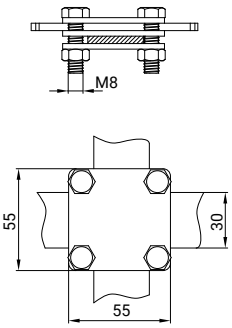


Cross-connector L-55 with intermediate plate for flat conductor

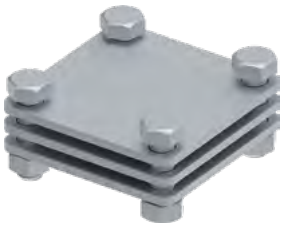


Description	Material	Size [mm]	Screw	Code
flat conductor ≤ 30 mm	StZn	55x55	4 pcs. M8x25	116112
flat conductor ≤ 30 mm	Inox V4A			116115
flat conductor ≤ 30 mm	Cu			116114

- Application: cross and T-type connection of flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

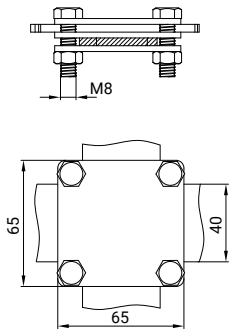


Cross-connector L-65 with intermediate plate for flat conductor



Description	Material	Size [mm]	Screw	Code
flat conductor ≤ 40 mm	StZn	65x65	4 pcs. M8x25	116212
flat conductor ≤ 40 mm	Inox V4A			116215
flat conductor ≤ 40 mm	Cu			116214

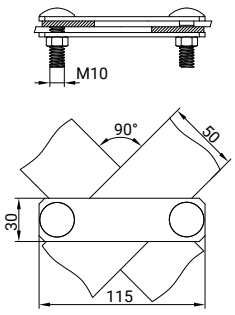
- Application: cross and T-type connection of flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



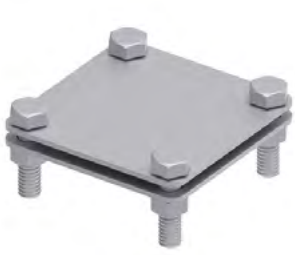
Diagonal connector for flat conductor

Description	Material	Size [mm]	Screw	Code
flat conductor ≤ 50 mm	StZn	115x30	2 pcs. M10x30	117112
flat conductor ≤ 50 mm	Inox V2A			117113
flat conductor ≤ 50 mm	Inox V4A			117115

- Application: cross connection of flat conductor.

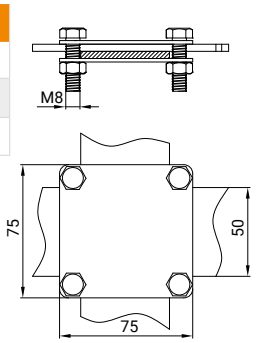


Cross-connector L-75 for flat conductor

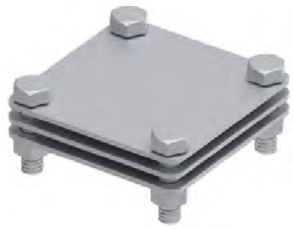


Description	Material	Size [mm]	Screw	code
flat conductor ≤ 50 mm	StZn	75x75	4 pcs. M8x25	115312
flat conductor ≤ 50 mm	Inox V4A			115315
flat conductor ≤ 50 mm	Cu			115314

- Application: cross and T-type connection of flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

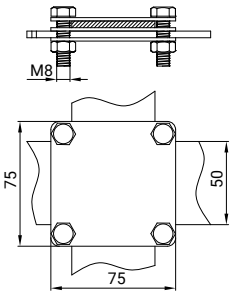


Cross-connector L-75 with intermediate plate for flat conductor



Description	Material	Size [mm]	Screw	code
flat conductor ≤ 50 mm	StZn	75x75	4 pcs. M8x25	116312
flat conductor ≤ 50 mm	Inox V4A			116315
flat conductor ≤ 50 mm	Cu			116314

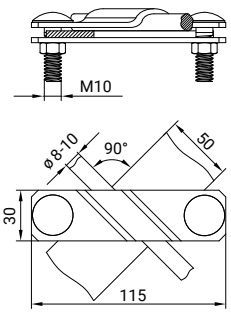
- Application: cross and T-type connection of flat conductor.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Diagonal connector for flat conductor and wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 50 mm	StZn	115x30	2 pcs. M10x30	118112
wire Ø(8-10)mm flat conductor ≤ 50 mm	Inox V2A			118113
wire Ø(8-10)mm flat conductor ≤ 50 mm	Inox V4A			118115

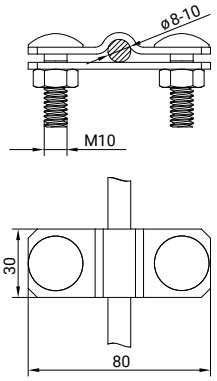
- Application: cross connection of flat conductor and wire.



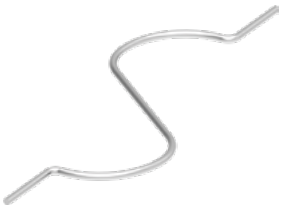
Through connector for wire and flat conductor

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 40 mm	StZn	80x30	2 pcs. M10x30	118212
wire Ø(8-10)mm flat conductor ≤ 40 mm	Inox V2A			118213

- Application: through connection of wire and flat conductor.

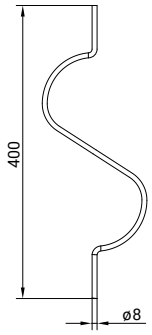


Compensation connection



Description	Size [mm]	Material	Code
wire Ø8 mm	400	Alu	109018

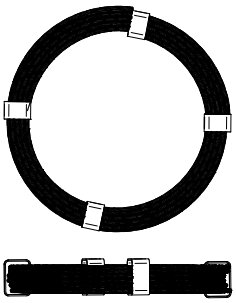
- Application: reduces the effect of thermal expansion of lightning protection wire when temperature changes.
- It is recommended to use a connection every 30 meters of lightning protection wire section.



Aldrey lightning protection rope

Description	Size [mm]	Material	Code
cross-section 50 mm²	19x1,8	Alu	109118

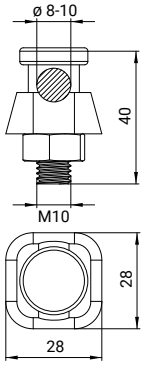
- Application: Raised horizontal lightning protection rope. Mounted on supporting air-termination rod.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



KS screw

Description	Material	Size [mm]	Screw	code
wire Ø(8-10)mm	electrogalvanised	28x28x40	M10x25	125112
wire Ø(8-10)mm	nickel-plated			125115

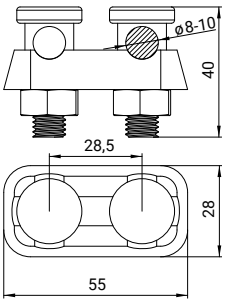
- Application: through connection of wire



KS double screw

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm	electrogalvanised	55x28x40	2 pcs. M10x25	126112
wire Ø(8-10)mm	nickel-plated			126115

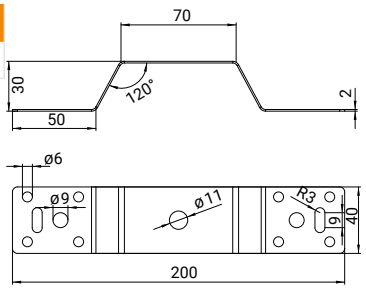
- Application: cross, through and T-type connection of wire.



Bridge connector

Description	Size [mm]	Material	Code
wire Ø(8-10)mm	200x40	Alu	109217

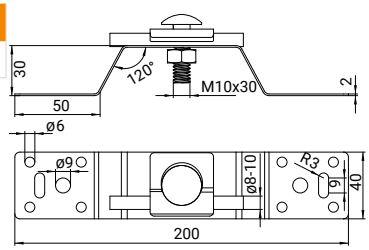
- Application: galvanic connection of steel sheets.



Bridge universal connector

Description	Size [mm]	Material	Code
wire Ø(8-10)mm	200x40	Alu	109317

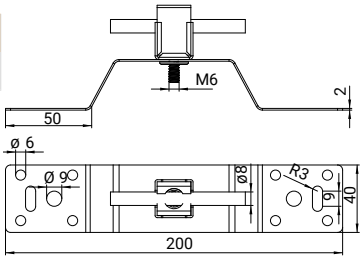
- Application: galvanic connection of steel sheets.



Bridge click connector

Description	Size [mm]	Material	Code
wire Ø8 mm	200x40	Alu/Inox	109417

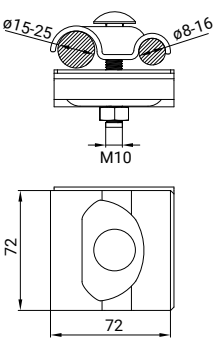
- Application: galvanic connection of steel sheets.



Connection clamp for rebar

Description	Material	Size [mm]	Screw	Code
Rod Ø(8-16)/rebar Ø(15-25)	StZn	72x72	M10x35	122112

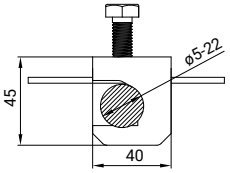
- Application: cross connection of wire and reinforcing bar.

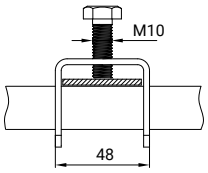


Cross-connector for rebar and flat conductor

Description	Material	Size [mm]	Screw	Code
flat conductor ≤ 40 mm rebar Ø(5-22)mm	StZn	48x40x45	M10x30	119112
flat conductor ≤ 40 mm rebar Ø(5-22)mm	Inox V2A			119113

- Application: cross connection of flat conductor and reinforcing bar.

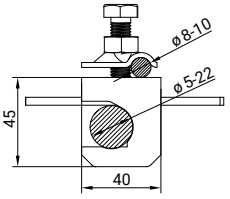


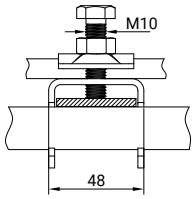


Cross-connector for rebar, wire and flat conductor

Description	Material	Size [mm]	Screw	Code
flat conductor ≤ 40 mm wire Ø(8-10)mm / rebar Ø(5-22)mm	StZn	48x48x45	M10x40	120112
flat conductor ≤ 40 mm wire Ø(8-10)mm / rebar Ø(5-22)mm	Inox V4A			120115

- Application: cross connection of flat conductor, wire and reinforcing bar.

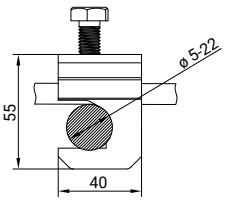


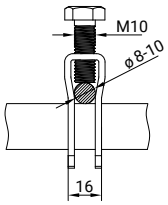


Cross-connector for rebar and wire

Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm rebar Ø(5-22)mm	StZn	16x40x55	M10x35	121112
wire Ø(8-10)mm rebar Ø(5-22)mm	Inox V4A			121115

- Application: cross connection of wire and reinforcing bar.

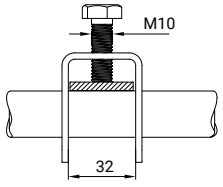


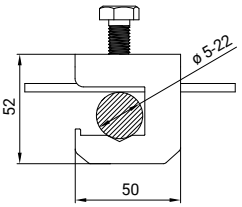


Cross-connector for rebar, wire and flat conductor, corrugated

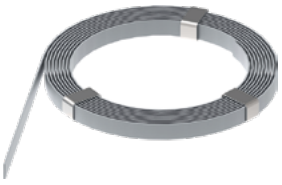
Description	Material	Size [mm]	Screw	Code
wire Ø(8-10)mm / rebar Ø(5-22)mm / flat conductor ≤ 30 mm	StZn	32x50x52	M10x35	123112
wire Ø(8-10)mm / rebar Ø(5-22)mm / flat conductor ≤ 30 mm	Inox V4A			123115

- Application: cross connection of flat conductor, wire and reinforcing bar.

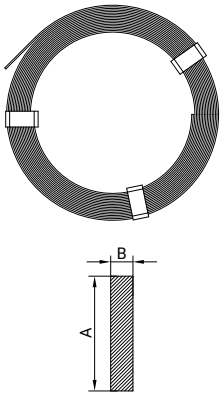




Hot dip galvanized steel flat conductor

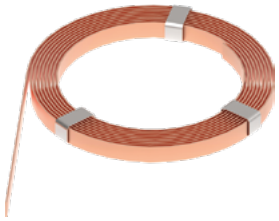


Size AxB [mm]	[kg]/[m]	Material	Code
25x3	50/84	StZn	225312
25x4	50/63	StZn	225412
30x3	50/69	StZn	230312
30x3,5	50/60	StZn	233512
30x3,5	25/30	StZn	293512
30x4	50/52	StZn	230412
40x4	50/39	StZn	240412
40x4	25/19,5	StZn	290412
50x4	50/31	StZn	250412
50x4	25/15,5	StZn	259412

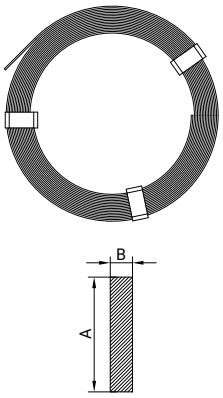


- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc layer is compatible with PN-EN ISO 1461: 500 g/m^2.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Copper plated steel flat conductor

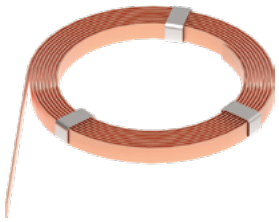


Size AxB [mm]	[kg]/[m]	Material	Code
25x4	25/30	StCu	225416
30x4	27,5/30	StCu	230416
40x4	27/20	StCu	240416
40x5	33/20	StCu	245416
50x4	50/31,5	StCu	250416

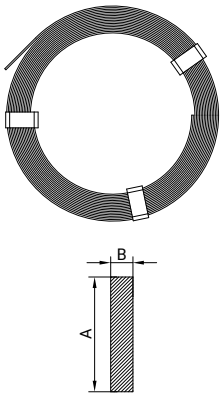


- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of copper layer: 500 g/m^2.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Copper flat conductor



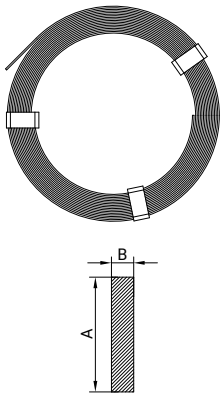
Size AxB [mm]	[kg]/[m]	Material	Code
20x4	50/70,5	Cu	220414
25x3	50/74,6	Cu	225314
25x4	50/56,2	Cu	225414
30x4	50/50	Cu	230414
40x4	50/35	Cu	240414
40x5	70/39,5	Cu	245414



- Application: lightning protection, earthing and equipotential bonding systems.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Stainless steel flat conductor

Size AxB [mm]	[kg]/[m]	Material	Code
30x3,5	50/60	Inox V2A	233513
30x4	50/52	Inox V2A	230413
40x4	50/40	Inox V2A	240413
30x3,5	50/60	Inox V4A	233515
30x4	50/52	Inox V4A	230415
40x4	50/40	Inox V4A	240415

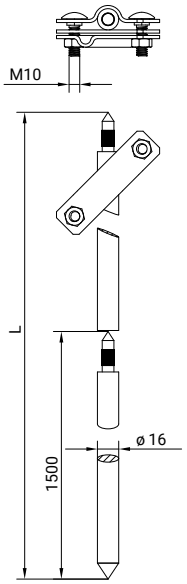


- Application: lightning protection, earthing and equipotential bonding systems.
- Recommended for places with a high risk of corrosion.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

Set of earthing rods Ø16 mm for quick assembly with diagonal connector

Description	Size [mm]	Material	Code
set of earthing rods	L-3000 / Ø16	StZn	231612
set of earthing rods	L-4500 / Ø16	StZn	232612
set of earthing rods	L-6000 / Ø16	StZn	233612
set of earthing rods	L-7500 / Ø16	StZn	234612

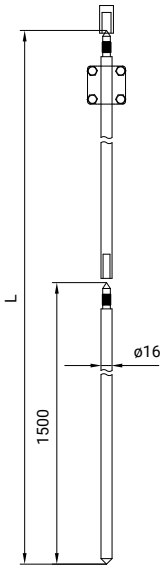
- Set of earthing rod = 216012 + 226612 + 112212.
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc layer in accordance with EN ISO 1461: ≤ 70 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Set of earthing rods Ø16 mm for quick assembly with cross-connector

Description	Size [mm]	Material	Code
set of earthing rod with head	L-3000 / Ø16	StZn	241612
set of earthing rod with head	L-4500 / Ø16	StZn	241712
set of earthing rod with head	L-6000 / Ø16	StZn	241812
set of earthing rod with head	L-7500 / Ø16	StZn	241912

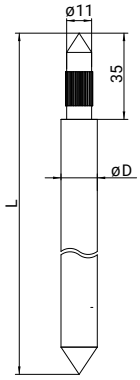
- Set of earthing rod = 216012 + 226612 + 111212 + 220411.
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc layer in accordance with EN ISO 1461: ≤ 70 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Earthing rod Ø16mm with sharp end, galvanised

Description	Size L/ØD [mm]	Material	Code
Earthing rod with sharp end	1200/16	StZn	225612
Earthing rod with sharp end	1500/16	StZn	226612
Earthing rod with sharp end	1500/18	StZn	218112

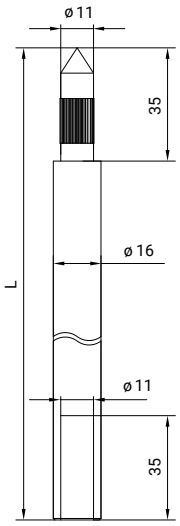
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc layer in accordance with EN ISO 1461: ≤ 70 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Earthing rod Ø16mm with pin, galvanized

Description	Size [mm]	Material	Code
earthing rod with pin	L-1200/Ø16	StZn	215012
earthing rod with pin	L-1500/Ø16	StZn	216012

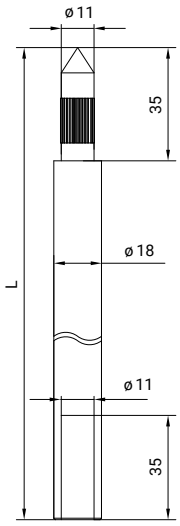
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc layer in accordance with EN ISO 1461: ≤ 70 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Earthing rod Ø18mm with pin, galvanized

Description	Size [mm]	Material	Code
earthing rod with pin	L-1500/Ø18	StZn	218012

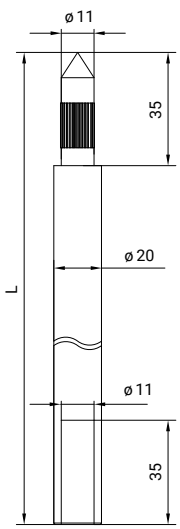
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc layer in accordance with EN ISO 1461: ≤ 70 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Earthing rod Ø20mm with pin, galvanized

Description	Size [mm]	Material	Code
earthing rod with pin	L-1000/Ø20	StZn	221012
earthing rod with pin	L-1500/Ø20	StZn	220012

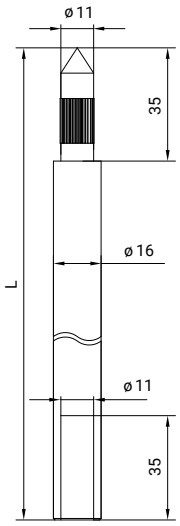
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc layer in accordance with EN ISO 1461: ≤ 70 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Earthing rod Ø16mm with pin, stainless steel

Description	Size [mm]	Material	Code
earthing rod with pin	L-1200/Ø16	Inox V4A	215015
earthing rod with pin	L-1500/Ø16	Inox V4A	216015

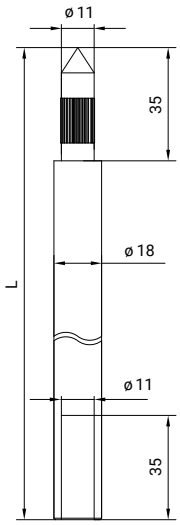
- Application: lightning protection, earthing and equipotential bonding systems.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Earthing rod Ø18mm with pin, stainless steel

Description	Size [mm]	Material	Code
earthing rod with pin	L-1500/Ø18	Inox V4A	218015

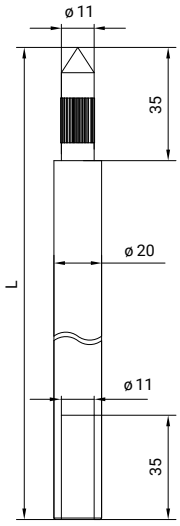
- Application: lightning protection, earthing and equipotential bonding systems.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Earthing rod Ø20mm with pin, stainless steel

Description	Size [mm]	Material	Code
earthing rod with pin	L-1000/Ø20	Inox V4A	221015
earthing rod with pin	L-1500/Ø20	Inox V4A	220015

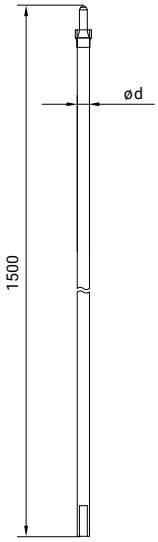
- Application: lightning protection, earthing and equipotential bonding systems.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Forged copper plated steel earthing rod with pin

Description	Size Ød [mm]	Material	Code
earthing rod with pin	14,2	StCu	214916
earthing rod with pin	16	StCu	215916
earthing rod with pin	17,2	StCu	216916

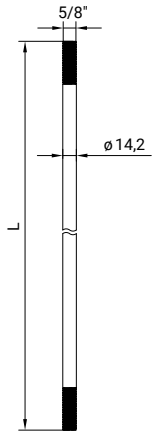
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of copper layer: ≤ 250 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Copper plated steel earthing rod with thread 5/8”

Description	Size L [mm]/[in]	Material	Code
earthing rod with thread	1500/5/8"	StCu	214216

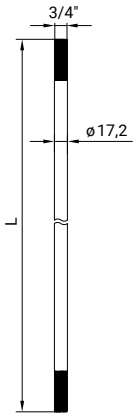
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of copper layer: ≤ 250 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Copper plated steel earthing rod with thread 3/4”

Description	Size L [mm]/[in]	Material	Code
earthing rod with thread	1500/3/4"	StCu	217216

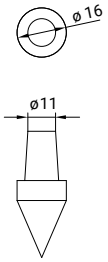
- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of copper layer: ≤ 250 micrometers (µm).
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Spike for earthing rod

Description	Size [mm]	Material	Code
spike for earthing rod	16	StZn	216512
spike for earthing rod	16	Inox V4A	216515
spike for earthing rod	18	StZn	218512
spike for earthing rod	18	Inox V4A	218515
spike for earthing rod	20	StZn	220512
spike for earthing rod	20	Inox V4A	220515

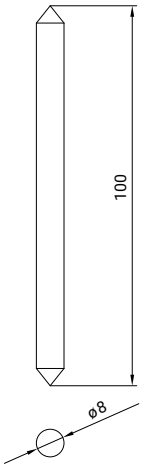
- Application: tip for earthing rod with pin.



Shank for embedding forged earthing rods

Description	Size [mm]	Material	Code
shank for earthing rods Ø14,2 mm	100	St	215119
shank for earthing rods Ø16 mm	100	St	215219
shank for earthing rods Ø17,2 mm	100	St	215319

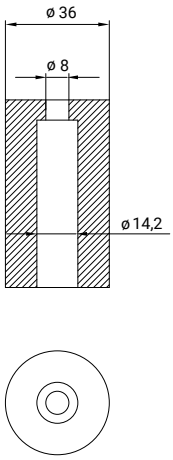
- Application: shank that transmits force from beater to earthing rod.



Shank stabilizer for embedding forged earthing rods

Description	Size Ød [mm]	Material	Code
shank stabilizer for earthing rod Ø14,2 mm	14,2	Other	218119
shank stabilizer for earthing rod Ø16 mm	16	Other	218219
shank stabilizer for earthing rod Ø17,2 mm	17,2	Other	218319

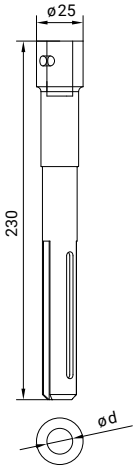
- Application: force transmission from the impact hammer to the earthing rod.



Forged earthing rod driver SDS-Max

Description	Size Ød [mm]	Material	Code
for earthing rod Ø14,2 mm	14,2	St	221411
for earthing rod Ø16 mm	16	St	221511
for earthing rod Ø17,2 mm	17,2	St	221611

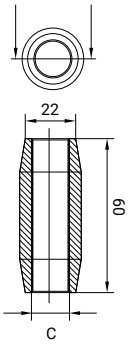
- Application: force transmission from the impact hammer to the earthing rod.



Earthing rod connector with thread

Description	Size C [in]	Material	Code
earthing rod connector	5/8"	CuZn	214319
earthing rod connector	3/4"	CuZn	217319

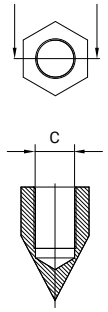
- Application: connecting sleeve for earthing rods with thread.



Spike for earthing rod with thread

Description	Size C [in]	Material	Code
spike for earthing rod	5/8"	St	214519
spike for earthing rod	3/4"	St	217519

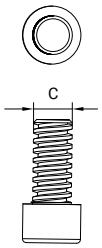
- Application: tip for earthing rod with thread.



Head for embedding earthing rod with thread

Description	Size C [in]	Material	Code
head for embedding	5/8"	St	214411
head for embedding	3/4"	St	217411

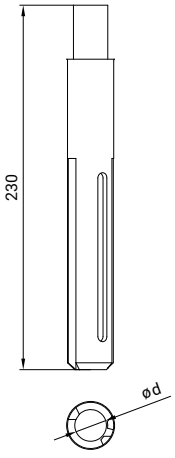
- Application: embedding earthing rods with thread.



Driver for earthing rods with thread

Description	Size [in]	Material	Code
beater for embedding	5/8" ; 3/4"	St	225411

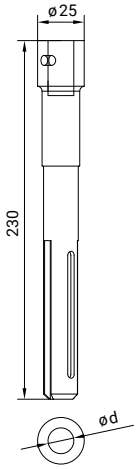
- Application: force transmission from the impact hammer to the earthing rod.



Earthing rod driver SDS-Max

Description	Size Ød [mm]	Material	Code
driver for earthing rod Ø16 mm	12	St 40CR	220411
driver for earthing rod Ø20 mm	13	St 40CR	222411

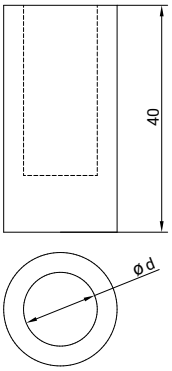
- Application: embedding earthing rods with use of vibration hammer.



MECH head for hammering earthing rods

Description	Size Ød [mm]	Material	Code
head for earthing rod Ø16 mm	12	StZn	220511
head for earthing rod Ø20 mm	13	StZn	222511

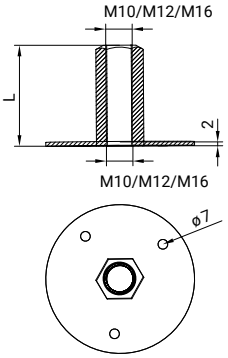
- Application: for hammering earthing rods with use of vibration hammer.



Fixed earthing terminal

Description	Size L [mm]	Material	Thread	Code
M10 thread both side	32	Inox V4A	M10/M10	291015
M10 and M12 thread	50	Inox V4A	M10/M12	291115
M16 thread both side	50	Inox V4A	M16/M16	291215

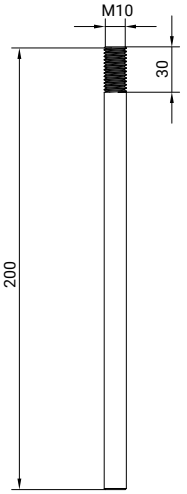
- Application: connection of lightning protection with reinforcing bars located in structure of the building.



Rod for fixed earthing terminal

Description	Size [mm]	Material	Code
rod with thread	M10x200	StZn	291312
rod with thread	M10x200	Inox V4A	291315
rope for earthing with connector	M16x200	Cu/Inox V4A	291319

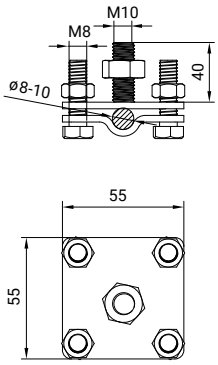
- Application: connection of lightning protection with reinforcing bars located in structure of the building.



Cross-connector for fixed earthing terminal L-55

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 30 mm	55x55	StZn	M10x40 4 pcs. M8x30	292012
wire Ø(8-10)mm flat conductor ≤ 30 mm		Inox V4A	M10x40 4 pcs. M8x30	292015

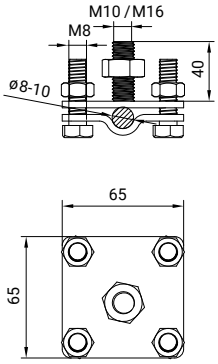
- Application: connection of lightning protection with reinforcing bars located in structure of the building.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Cross-connector for fixed earthing terminal L-65

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm flat conductor ≤ 40 mm	65x65	StZn	M10x40 4 pcs. M8x30	292112
wire Ø(8-10)mm flat conductor ≤ 40 mm		Inox V4A	M10x40 4 pcs. M8x30	292115
wire Ø(8-10)mm flat conductor ≤ 40 mm		Inox V4A	M16x40 4 pcs. M8x30	292215

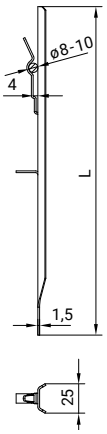
- Application: connection of lightning protection with reinforcing bars located in structure of the building.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Stabilisation bracket for wire and flat conductor

Description	Size L [mm]	Material	Code
wire Ø(8-10)mm flat conductor of thick ≤ 4 mm	280	StZn	292912

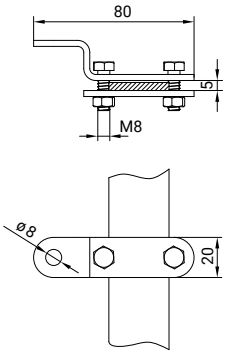
- Application: fixing flat conductor in the ground or concrete.



Holder for flat conductor with mounting hole

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 30 mm	80x20	StZn	2 pcs. M8x25	281012
flat conductor ≤ 30 mm	80x20	Cu	2 pcs. M8x25	281014
flat conductor ≤ 30 mm	80x20	Inox	2 pcs. M8x25	281015

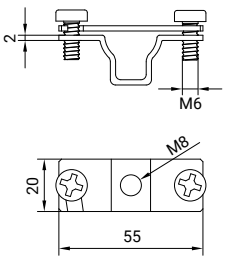
- Application: fixing flat conductor to a wall or metal structures.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Screw-on holder for flat conductor 30 mm

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 30 mm	55x20	StZn	2 pcs. M6x16	281112
flat conductor ≤ 30 mm		Cu	2 pcs. M6x16	281114
flat conductor ≤ 30 mm		Inox V4A	2 pcs. M6x16	281115

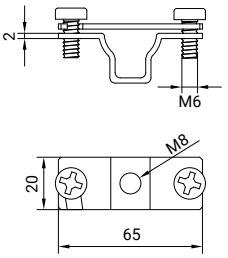
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Screw-on holder for flat conductor 40 mm

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 40 mm	65x20	StZn	2 pcs. M6x16	281212
flat conductor ≤ 40 mm		Cu	2 pcs. M6x16	281214
flat conductor ≤ 40 mm		Inox V4A	2 pcs. M6x16	281215

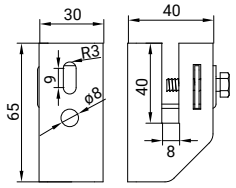
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



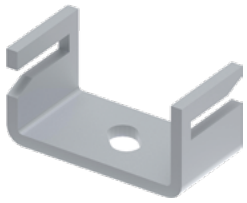
Holder for flat conductor 50 mm with pressure screw

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 50 mm	30x40x65	StZn	M8x30	283012
flat conductor ≤ 50 mm		Inox V2A	M8x30	283013

- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

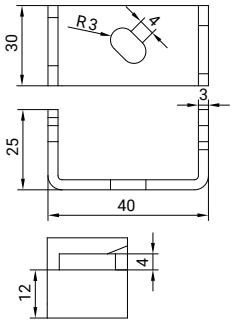


Turned-on holder for flat conductor 30x4 mm



Description	Size [mm]	Material	Code
flat conductor ≤ 30x4 mm	25x40x30	StZn	282112
flat conductor ≤ 30x4 mm		Cu	282114
flat conductor ≤ 30x4 mm		Inox V2A	282113
flat conductor ≤ 30x4 mm		Inox V4A	282115

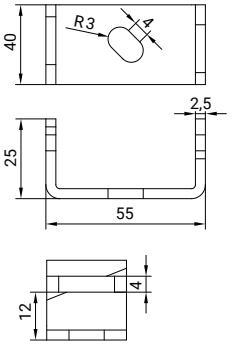
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Turned-on holder for flat conductor 50x4 mm

Description	Size [mm]	Material	Code
flat conductor ≤ 50x4 mm	25x55x30	StZn	282212
flat conductor ≤ 50x4 mm		Cu	282214
flat conductor ≤ 50x4 mm		Inox V2A	282213
flat conductor ≤ 50x4 mm		Inox V4A	282215

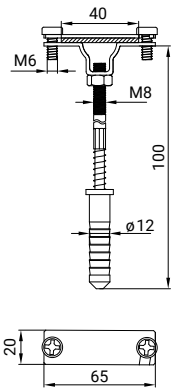
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for flat conductor 40 mm with expansion bolt L-100

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 40 mm pin 60 mm	100	StZn	2 pcs. M6x16	211112
flat conductor ≤ 40 mm pin 60 mm		Cu	2 pcs. M6x16	211114
flat conductor ≤ 40 mm pin 60 mm		Inox V4A	2 pcs. M6x16	211115

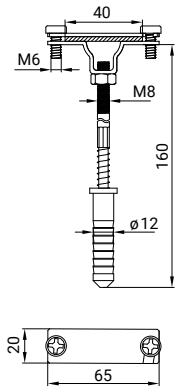
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for flat conductor 40 mm with expansion bolt L-160

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 40 mm pin 60 mm	160	StZn	2 pcs. M6x16	211312
flat conductor ≤ 40 mm pin 60 mm		Cu	2 pcs. M6x16	211314
flat conductor ≤ 40 mm pin 60 mm		Inox V4A	2 pcs. M6x16	211315

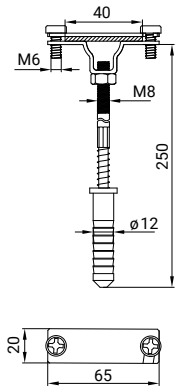
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for flat conductor 40 mm with expansion bolt L-250

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 40 mm pin 60 mm	250	StZn	2 pcs. M6x16	211412
flat conductor ≤ 40 mm pin 60 mm		Cu	2 pcs. M6x16	211414
flat conductor ≤ 40 mm pin 60 mm		Inox V4A	2 pcs. M6x16	211415

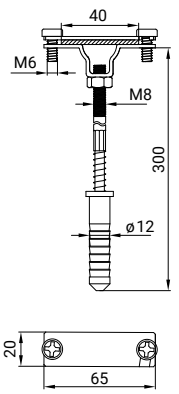
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for flat conductor 40 mm with expansion bolt L-330

Description	Size [mm]	Material	Screw	Code
flat conductor ≤ 40 mm pin 60 mm	330	StZn	2 pcs. M6x16	211512
flat conductor ≤ 40 mm pin 60 mm		Cu	2 pcs. M6x16	211514
flat conductor ≤ 40 mm pin 60 mm		Inox V4A	2 pcs. M6x16	211515

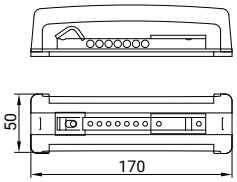
- Application: fixing flat conductor to a wall.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Local equipotential busbar

Description	Size [mm]	Material	Code
cable clamp 16 mm² - 7 pcs. cable clamp 50 mm² - 1 pcs. flat conductor ≤ 30 mm	170x50	StGl	283019

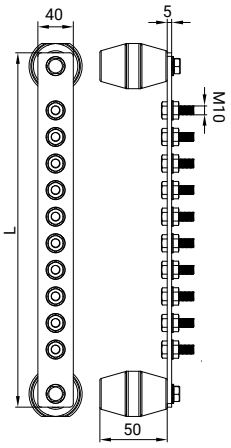
- Application: connecting wires in earthing and equipotential bonding systems.



Main equipotential busbar stainless

Description	Size L [mm]	Material	Code
number of connections 5 pcs. - M10x25	250	Inox V2A	292113
number of connections 6 pcs. - M10x25	280	Inox V2A	292213
number of connections 8 pcs. - M10x25	340	Inox V2A	292313
number of connections 10 pcs. - M10x25	400	Inox V2A	292413
number of connections 12 pcs. - M10x25	460	Inox V2A	292513
number of connections 14 pcs. - M10x25	520	Inox V2A	292613

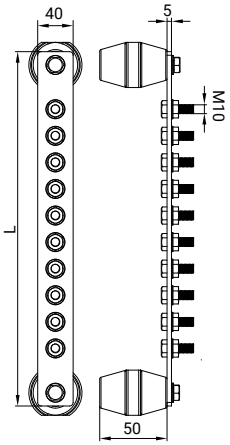
- Application: connecting wires in earthing and equipotential bonding systems.



Main equipotential busbar copper

Description	Size L [mm]	Material	Code
number of connections 5 pcs. - M10x25	250	Cu	292114
number of connections 6 pcs. - M10x25	280	Cu	292214
number of connections 8 pcs. - M10x25	340	Cu	292314
number of connections 10 pcs. - M10x25	400	Cu	292414
number of connections 12 pcs. - M10x25	460	Cu	292514
number of connections 14 pcs. - M10x25	520	Cu	292614

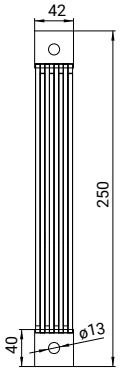
- Application: connecting wires in earthing and equipotential bonding systems.



Flexible conductor braid

Description	Size [mm²]	Material	Code
Connection and expansion strip	35	tin plated copper	293119
Connection and expansion strip	50	tin plated copper	294119

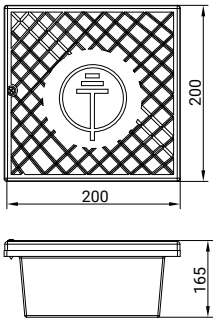
- Application: flexible and compensating connections in lightning protection and equipotential bonding systems.



Earthing inspection pit

Description	Size [mm]	Material	Code
inspection pit	200x200x165	PI	293018

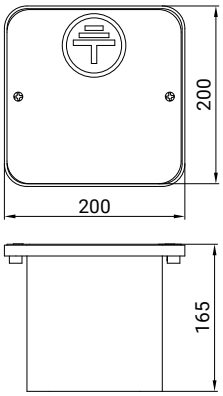
- Application: fixing control connectors in the ground.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



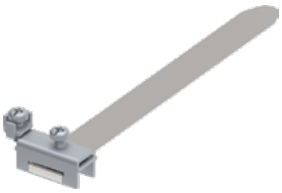
Heavy duty earthing inspection pit

Description	Size [mm]	Material	Code
inspection pit	200x200x165	PI	294018

- Application: fixing control connectors in the ground.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

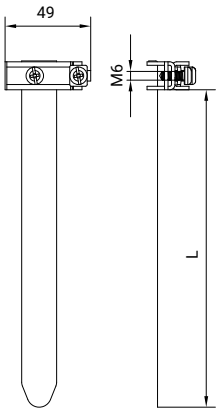


Earthing clamp

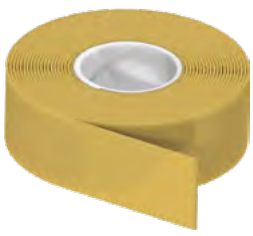


Description	Size L [mm]	Material	Screw	Code
for round profile Ø(16-54)mm	190	Inox	2 pcs. M6x10	294113
for round profile Ø(16-124)mm	410	Inox		294213
for round profile Ø(16-180)mm	585	Inox		294313

- Application: connection of grounding wires for equipotential bonding (connection of the installation to the terminal, maximum 2 wires 2.5 – 10 mm²).
- Meets the requirements of the IEC 62305 standard.

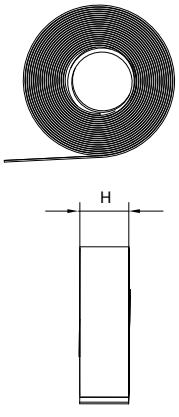


Anti-corrosion tape



Description	Size H [mm]	Material	Code
length 10 m	30	Other	295019
length 10 m	50	Other	295119

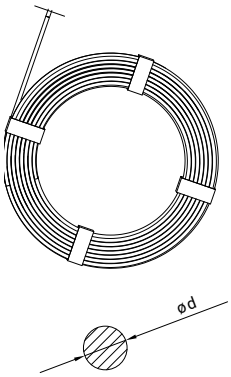
- Application: corrosion protection of flat conductors, ground connectors and earthing rods.



Aluminum wire conductor

Size Ød [mm]	[kg]/[m]	Material	Code
diameter Ø8	20/154	Alu	300817
diameter Ø8	20/154	Alu hard	320817
diameter Ø8	6,7/50	Alu	310817
diameter Ø10	20/100	Alu	301017

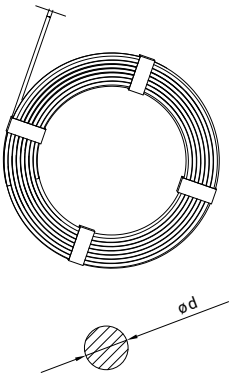
- Application: lightning protection, earthing and equipotential bonding systems.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



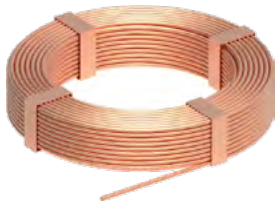
Hot dip galvanized steel wire conductor

Size Ød [mm]	[kg]/[m]	Material	Code
diameter Ø8	50/127	StZn	300812
diameter Ø8	25/63,5	StZn	390812
diameter Ø10	50/81	StZn	301012
diameter Ø10	25/40,5	StZn	391012

- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of zinc coating according to EN ISO 1461: 350 g/m².
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

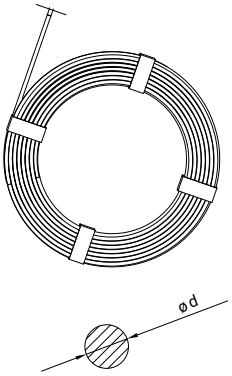


Copper plated steel wire conductor

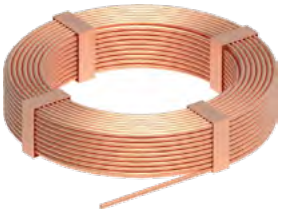


Size Ød [mm]	[kg]/[m]	Material	Code
diameter Ø8	25/62	StCu	300816
diameter Ø10	50/81	StCu	301016

- Application: lightning protection, earthing and equipotential bonding systems.
- Thickness of copper layer: 350 g/m².
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

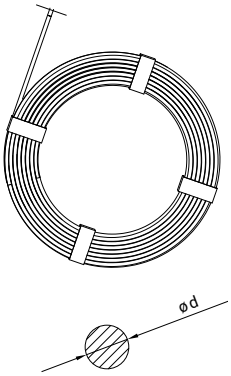


Copper wire conductor



Size Ød [mm]	[kg]/[m]	Material	Code
diameter Ø6	50/198	Cu	300614
diameter Ø8	50/112	Cu	300814
diameter Ø10	50/71,5	Cu	301014

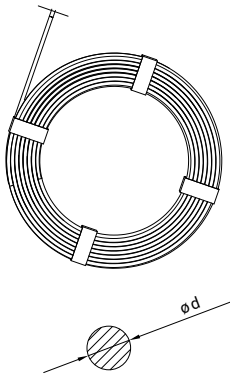
- Application: lightning protection, earthing and equipotential bonding systems.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Stainless steel wire conductor

Size Ød [mm]	[kg]/[m]	Material	Code
diameter Ø8	50/125	Inox V2A	300813
diameter Ø8	50/125	Inox V4A	300815
diameter Ø10	50/80	Inox V2A	301013
diameter Ø10	50/80	Inox V4A	301015
diameter Ø10	25/40	Inox V4A	301115

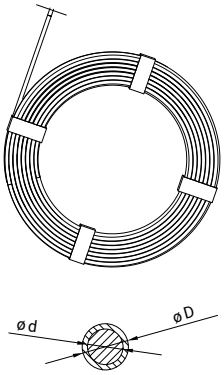
- Application: lightning protection, earthing and equipotential bonding systems.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Aluminum black PVC coated wire conductor

Size Ød/ØD [mm]	[kg]/[m]	Material	Code
diameter Ø8/Ø11	10/50	Alu/PVC	300818

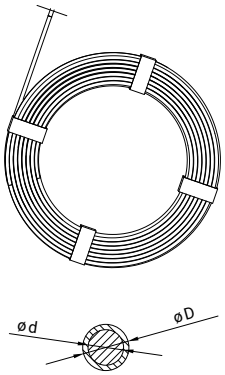
- Application: lightning protection, earthing and equipotential bonding systems.



Aluminum white PVC coated wire conductor

Size Ød/ØD [mm]	[kg]/[m]	Material	Code
diameter Ø8/Ø11	10/50	Alu/PVC	300918

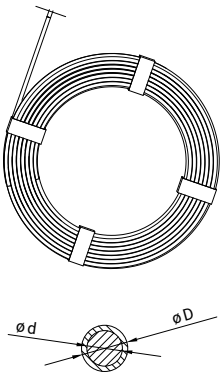
- Application: lightning protection, earthing and equipotential bonding systems.



Hot dip galvanized steel black PVC coated wire conductor

Size Ød/ØD [mm]	[kg]/[m]	Material	Code
diameter Ø10/Ø13	50/75	StZn/PVC	301018

- Application: lightning protection, earthing and equipotential bonding systems.

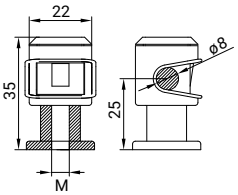


Plastic holder for wire Ø8 mm

Description	Size thread M	Colour	Material	Code
wire Ø8 mm	M6	light grey	PI	311118
wire Ø8 mm	M8	light grey	PI	311318

- Application: wire fixing.
- Weatherproof and UV resistant.

RAL 7047

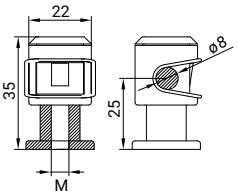


Plastic holder for wire Ø8 mm

Description	Size thread M	Colour	Material	Code
wire Ø8 mm	M6	brown	PI	310218
wire Ø8 mm	M8	brown	PI	310418

- Application: wire fixing.
- Weatherproof and UV resistant.

RAL 8004

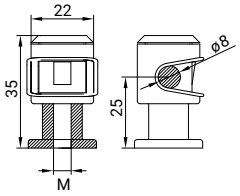


Plastic holder for wire Ø8 mm

Description	Size thread M	Colour	Material	Code
wire Ø8 mm	M6	grey	PI	310118
wire Ø8 mm	M8	grey	PI	310318

- Application: wire fixing.
- Weatherproof and UV resistant.

RAL 7016

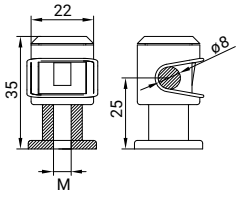


Plastic holder for wire Ø8 mm

Description	Size thread M	Colour	Material	Code
wire Ø8 mm	M6	brown-red	PI	311218
wire Ø8 mm	M8	brown-red	PI	311418

- Application: wire fixing.
- Weatherproof and UV resistant.

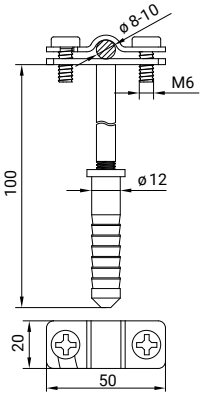
RAL 3011



Holder for wire with expansion bolt L-100

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm/pin 60 mm	100	StZn	2 pcs. M6x16	311112
wire Ø(8-10)mm/pin 60 mm		Inox		311113
wire Ø(8-10)mm/pin 60 mm		Cu		311114

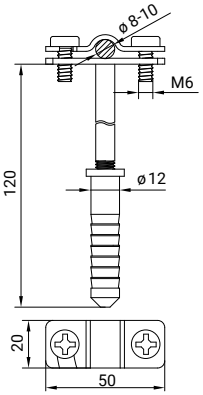
- Application: fixing wire to a wall.
- Quick installation.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for wire with expansion bolt L-120

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm/pin 60 mm	120	StZn	2 pcs. M6x16	311212
wire Ø(8-10)mm/pin 60 mm		Inox		311213
wire Ø(8-10)mm/pin 60 mm		Cu		311214

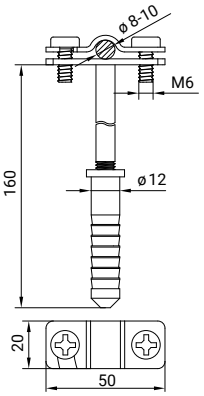
- Application: fixing wire to a wall.
- Quick installation.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for wire with expansion bolt L-160

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm/pin 60 mm	160	StZn	2 pcs. M6x16	311312
wire Ø(8-10)mm/pin 60 mm		Inox		311313
wire Ø(8-10)mm/pin 60 mm		Cu		311314

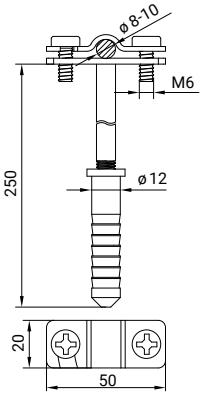
- Application: fixing wire to a wall.
- Quick installation.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for wire with expansion bolt L-250

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm/pin 60 mm	250	StZn	2 pcs. M6x16	311412
wire Ø(8-10)mm/pin 60 mm		Inox		311413
wire Ø(8-10)mm/pin 60 mm		Cu		311414

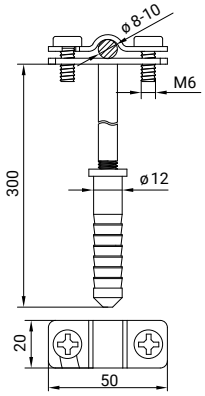
- Application: fixing wire to a wall.
- Quick installation.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for wire with expansion bolt L-300

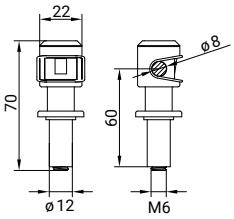
Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm/pin 60 mm	300	StZn	2 pcs. M6x16	311612
wire Ø(8-10)mm/pin 60 mm		Inox		311613
wire Ø(8-10)mm/pin 60 mm		Cu		311614

- Application: fixing wire to a wall.
- Quick installation.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Holder for wire Ø8 mm with rubber seal

Description	Size [mm]	Colour	Material	Screw	Code
wire Ø8 mm	70x22	light grey	Pl	M6x35	310018
wire Ø8 mm		brown	Pl		310718
wire Ø8 mm		grey	Pl		310818
wire Ø8 mm		brown-red	Pl		310918



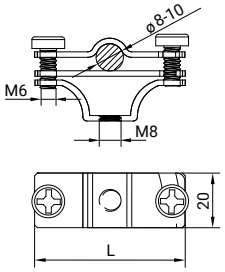
- Application: fixing wire to sheet metal.
- Weatherproof and UV resistant.
- Product available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

Screw-on holder for wire

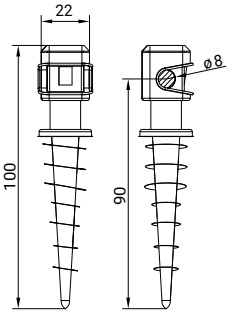
Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	55	StZn	2 pcs. M6x16	312012
wire Ø(8-10)mm	65	StZn	2 pcs. M6x16	312112

- Application: fixing wire to a wall.



Plastic holder for wire Ø8 mm screwed into polystyrene foam

Description	Size [mm]	Colour	Material	Code
wire Ø8 mm	100x22	grey	Pl	310518
wire Ø8 mm		brown-red	Pl	310618
wire Ø8 mm		brown	Pl	311718
wire Ø8 mm		light grey	Pl	311818



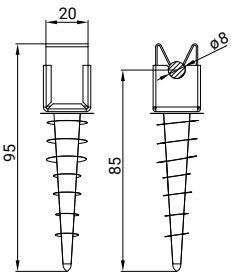
- Application: fixing wire to a wall, screwed directly into polystyrene foam.
- Weatherproof and UV resistant.
- Quick installation.
- Product available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

Click holder for wire Ø8 mm screwed into polystyrene foam

Description	Size [mm]	Material	Code
wire Ø8 mm	95x20	Inox	314113

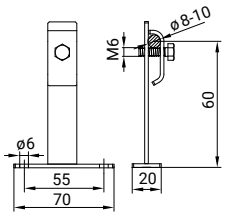
- Application: fixing wire to a wall, screwed directly into polystyrene foam.
- Weatherproof and UV resistant.
- Quick installation.



Holder for wire on base L-60

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	60	StZn	M6x25	313012
wire Ø(8-10)mm		Inox		313013

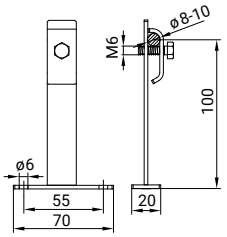
- Application: fixing wire to a wall or structure.



Holder for wire on base L-100

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	100	StZn	M6x25	313112
wire Ø(8-10)mm		Inox		313113

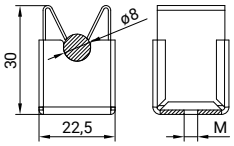
- Application: fixing wire to a wall or structure.



Click holder for wire Ø8 mm

Description	Size thread M	Colour	Material	Code
wire Ø8 mm	M6	silver	Inox	314013
wire Ø8 mm	M6	bricky	StCu	314016

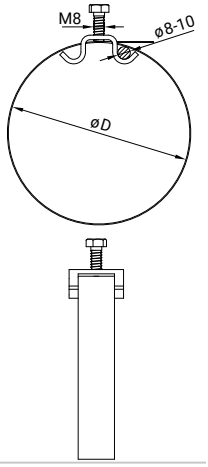
- Application: fixing wire to a wall.
- Quick installation.



Universal pipe clamp for wire

Description	Size ØD [mm]	Material	Screw	Code
wire Ø(8-10)mm	100	Inox	M8x20	315013
wire Ø(8-10)mm	160	Inox		315113
wire Ø(8-10)mm	300	Inox		315213
wire Ø(8-10)mm	100	Cu		315014

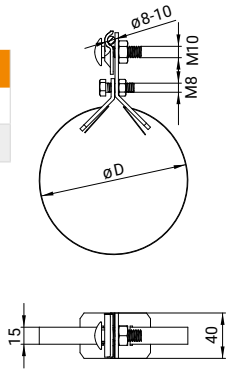
- Application: fixing wire to a drainpipe.



Universal pressure clamp

Description	Size ØD [mm]	Material	Screw	Code
wire Ø(8-10)mm	(80-130)	StZn/Inox	M10x30	316012
wire Ø(8-10)mm		Inox	M8x25	316013

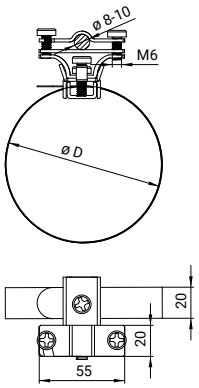
- Application: fixing wire to a drainpipe.



Universal equipotential clamp

Description	Size ØD [mm]	Material	Screw	Code
wire Ø(8-10)mm	(80-130)	StZn/Inox	4 pcs. M6x16	317012
wire Ø(8-10)mm		Inox		317013

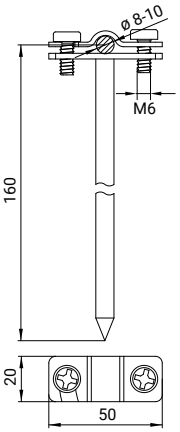
- Application: fixing wire to a drainpipe.



Holder for wire L-160, hammered

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	160	StZn	2 pcs. M6x16	312212

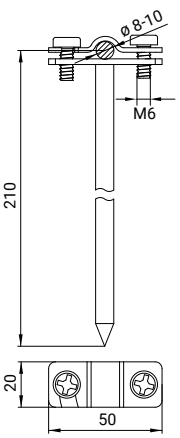
- Application: fixing wire to a wall



Holder for wire L-210, hammered

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	210	StZn	2 pcs. M6x16	312312

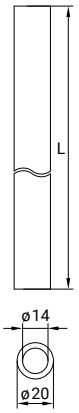
- Application: fixing wire to a wall



Lightning protection installation pipe Ø20 mm

Description	Size Ø [mm]	Material	Code
pipe length L-2000 mm	14/20	PI	316118
pipe length L-3000 mm		PI	316218
flexible connector length 160 mm		PI	316318
flexible straight connector length 75 mm		PI	316518

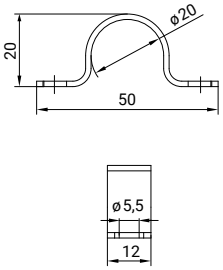
- Application: fixing wire inside the facade.
- Black polyethylene weatherproof and UV resistant pipe.



Holder for lightning protection installation pipe

Description	Size [mm]	Material	Code
pipe Ø20 mm	50x12x20	StZn	316112

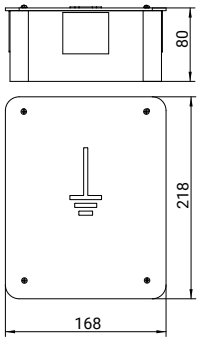
- Application: fixing pipe to a wall.



Test joint box - Type I

Description	Size [mm]	Material	Code
stainless steel cover	268x218x80	Inox/PI	317113
plastic cover - white		PI	317118

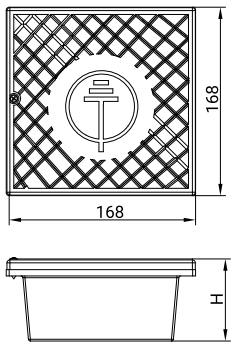
- Application: fixing control connector inside the facade.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Test joint box - Type II

Description	Size H [mm]	Colour	Material	Code
plastic cover	100	grey	PI	317218
plastic cover	100	white	PI	317318
plastic cover	55	grey	PI	317418
plastic cover	55	white	PI	317518

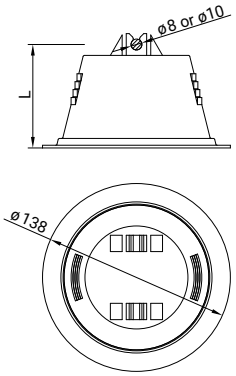
- Application: fixing control connector inside the facade.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Plastic holder with concrete for wire

Description	Size L [mm]	Material	Code
wire Ø8 mm, concrete bottom	70	Pl/concrete	401018
wire Ø8 mm, plastic bottom	70	Pl/concrete	401118
wire Ø10 mm, concrete bottom	70	Pl/concrete	401218
wire Ø10 mm, plastic bottom	70	Pl/concrete	401318
wire Ø8 mm, plastic bottom	110	Pl/concrete	401918

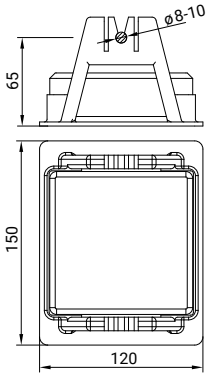
- Application: fixing wire on flat roofs.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Plastic holder H-65 with concrete for wire

Description	Size [mm]	Material	Code
wire Ø8-10 mm, plastic bottom	150x120x65	Pl/concrete	401818

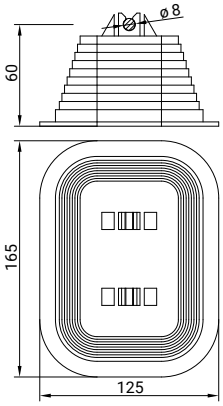
- Application: fixing wire on flat roofs.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Plastic holder H-60 with concrete for wire

Description	Size [mm]	Material	Code
wire Ø8 mm, plastic bottom	60	Pl/concrete	401418

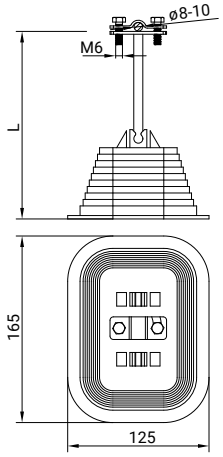
- Application: fixing wire on flat roofs.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



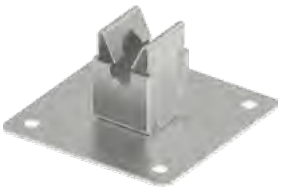
High plastic holder with concrete for wire

Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	120	Pl/StZn/concrete	2 pcs. M6x16	401518
wire Ø(8-10)mm	160	Pl/StZn/concrete		401718
wire Ø(8-10)mm	200	Pl/StZn/concrete		411718
wire Ø(8-10)mm	250	Pl/StZn/concrete		421718
wire Ø(8-10)mm	400	Pl/StZn/concrete		421818

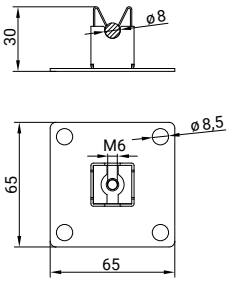
- Application: fixing wire on flat roofs covered for example with gravel.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Click holder for wire on metal base



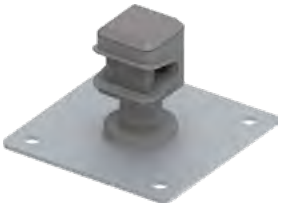
Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	65x65x30	StZn/Inox	M6x10	402012
wire Ø8 mm		Inox		402013
wire Ø8 mm		Cu		402014
wire Ø8 mm		lacquered		402019



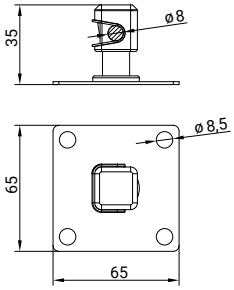
- Application: fixing wire on roofs covered with sheet metal.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Plastic holder for wire on metal base



Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	65x65x40	StZn/Pl	M6x10	402112
wire Ø8 mm		Inox/Pl		402113
wire Ø8 mm		Cu/Pl		402114
wire Ø8 mm		lacquered		402119

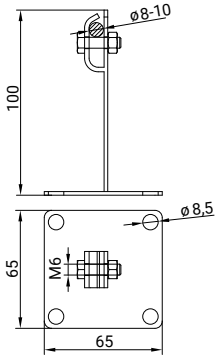


- Application: fixing wire on roofs covered with sheet metal.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

Holder for wire on metal base

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	65x65x100	StZn	M6x25	402212
wire Ø(8-10)mm		Inox		402213
wire Ø(8-10)mm		Cu		402214
wire Ø(8-10)mm		lacquered		402219

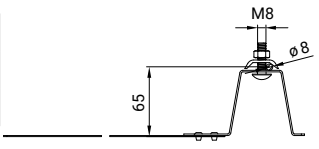


- Application: fixing wire on roofs covered with sheet metal.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

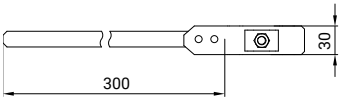
Holder for wire on flexible tape

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	300	Alu/Inox	M8x20	403117
wire Ø(8-10)mm	300	lacquered	M8x20	403119



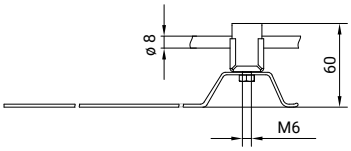
- Application: fixing wire on roofs with flat tiles.
- Lacquered version available in following RAL colors:

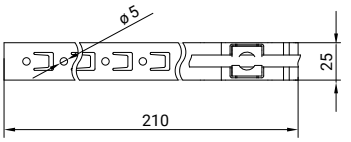
RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005



Click holder for wire L-210 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	210	StZn	M6x10	405012
wire Ø8 mm		Inox		405013
wire Ø8 mm		Cu		405014
wire Ø8 mm		lacquered		405019



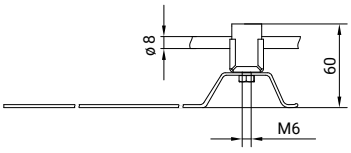


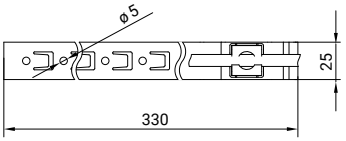
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Click holder for wire L-330 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	330	StZn	M6x10	405112
wire Ø8 mm		Inox		405113
wire Ø8 mm		Cu		405114
wire Ø8 mm		lacquered		405119



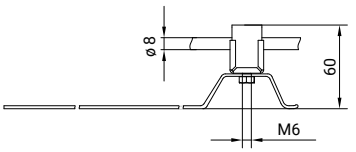


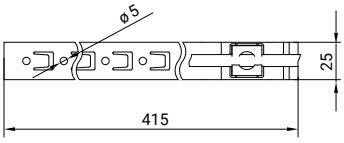
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Click holder for wire L-415 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	415	StZn	M6x10	405212
wire Ø8 mm		Inox		405213
wire Ø8 mm		Cu		405214
wire Ø8 mm		lacquered		405219



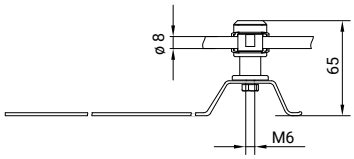


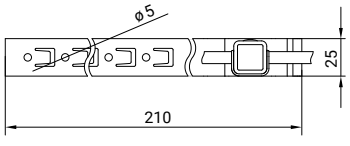
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Plastic holder for wire L-210 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	210	StZn	M6x10	405312
wire Ø8 mm		Inox		405313
wire Ø8 mm		Cu		405314
wire Ø8 mm		lacquered		405319



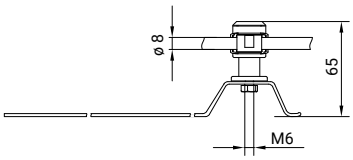


- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

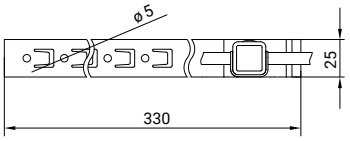
Plastic holder for wire L-330 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	330	StZn	M6x10	405412
wire Ø8 mm		Inox		405413
wire Ø8 mm		Cu		405414
wire Ø8 mm		lacquered		405419



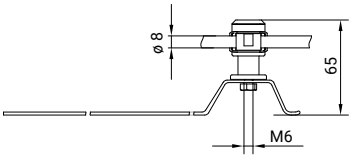
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016



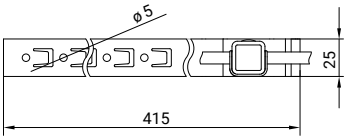
Plastic holder for wire L-415 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	415	StZn	M6x10	405512
wire Ø8 mm		Inox		405513
wire Ø8 mm		Cu		405514
wire Ø8 mm		lacquered		405519



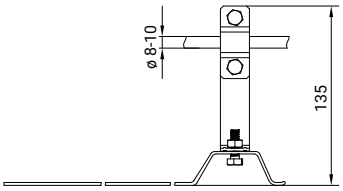
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016



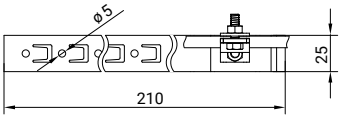
Holder for wire L-210 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	210	StZn	M6x10 2pcs. M6x16	405612
wire Ø(8-10)mm		Inox		405613
wire Ø(8-10)mm		Cu		405614
wire Ø(8-10)mm		lacquered		405619



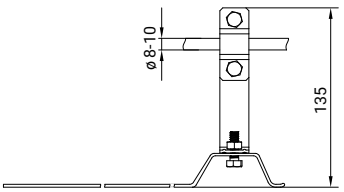
- Application: fixing wire on roofs covered with flat tiles.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005



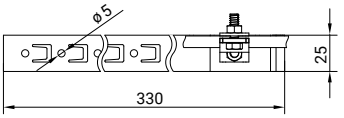
Holder for wire L-330 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	330	StZn	M6x10 2pcs. M6x16	405712
wire Ø(8-10)mm		Inox		405713
wire Ø(8-10)mm		Cu		405714
wire Ø(8-10)mm		lacquered		405719



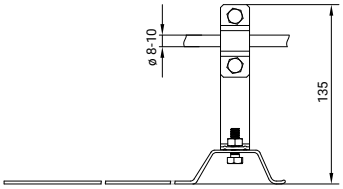
- Application: fixing wire on roofs covered with flat tiles.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005



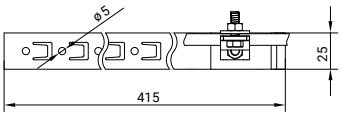
Holder for wire L-415 with tile hook

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	415	StZn	M6x10 2pcs. M6x16	405812
wire Ø(8-10)mm		Inox		405813
wire Ø(8-10)mm		Cu		405814
wire Ø(8-10)mm		lacquered		405819



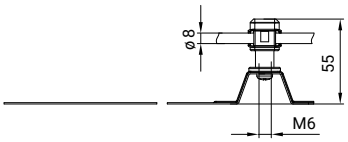
- Application: fixing wire on roofs covered with flat tiles.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005



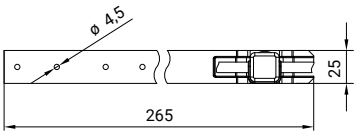
Plastic wire holder L-265 on tape

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	265	StZn/Pl	M6x10	403812
wire Ø8 mm		Inox/Pl		403813
wire Ø8 mm		lacquered		403819



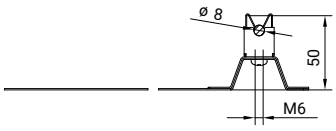
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005



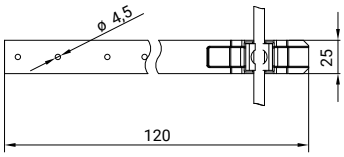
Click wire holder L-120 on tape

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	120	StZn	M6x10	403712
wire Ø8 mm		Inox		403713
wire Ø8 mm		lacquered		403719



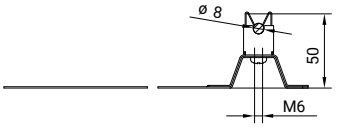
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005



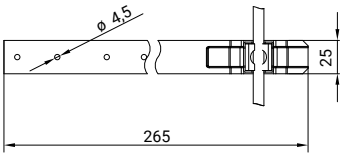
Click wire holder L-265 on tape

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	265	StZn	M6x10	413712
wire Ø8 mm		Inox		413713
wire Ø8 mm		lacquered		413719



- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

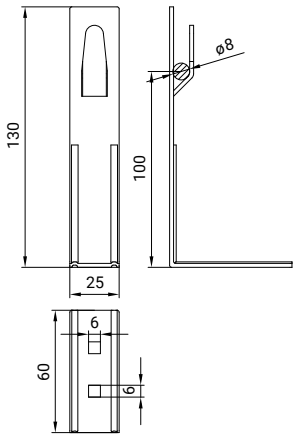


Angle holder for wire

Description	Size [mm]	Material	Code
wire Ø8 mm	60	StZn	413012
wire Ø8 mm	60	lacquered	413019
wire Ø8 mm	100	StZn	413112
wire Ø8 mm	100	lacquered	413119

- Application: fixing wire on diagonal roofs with trapezoidal steel sheets, metal tiles, or shingles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

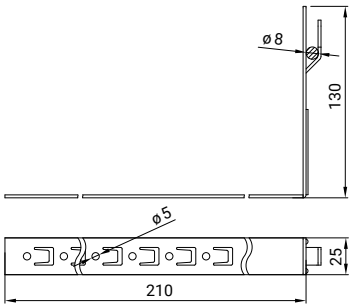


Press-on holder for wire L-210 with tile hook

Description	Size [mm]	Material	Code
wire Ø8 mm	210	StZn	415612
wire Ø8 mm		Inox	415613
wire Ø8 mm		Cu	415614
wire Ø8 mm		lacquered	415619

- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

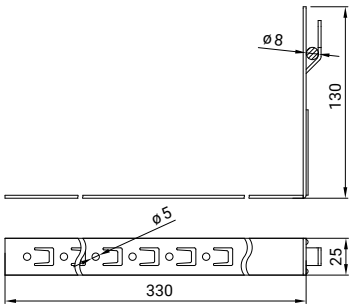


Press-on holder for wire L-330 with tile hook

Description	Size [mm]	Material	Code
wire Ø8 mm	330	StZn	415712
wire Ø8 mm		Inox	415713
wire Ø8 mm		Cu	415714
wire Ø8 mm		lacquered	415719

- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

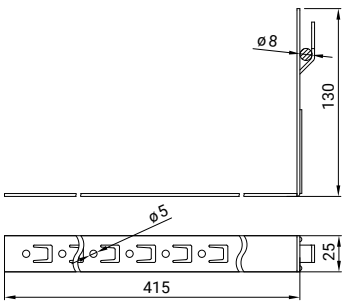


Press-on holder for wire L-415 with tile hook

Description	Size [mm]	Material	Code
wire Ø8 mm	415	StZn	415812
wire Ø8 mm		Inox	415813
wire Ø8 mm		Cu	415814
wire Ø8 mm		lacquered	415819

- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

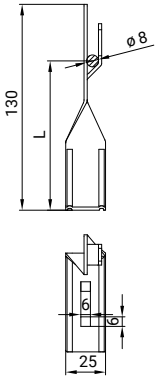


Twisted angle holder for wire

Description	Size L [mm]	Material	Code
wire Ø8 mm	60	StZn	413212
wire Ø8 mm	60	lacquered	413219
wire Ø8 mm	100	StZn	413312
wire Ø8 mm	100	lacquered	413319

- Application: fixing wire on diagonal roofs with trapezoidal steel sheets, metal tiles, or shingles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

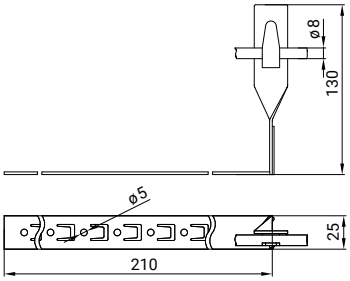


Twisted press-on holder for wire L-210 with tile hook

Description	Size [mm]	Material	Code
wire Ø8 mm	210	StZn	425612
wire Ø8 mm		Inox	425613
wire Ø8 mm		Cu	425614
wire Ø8 mm		lacquered	425619

- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

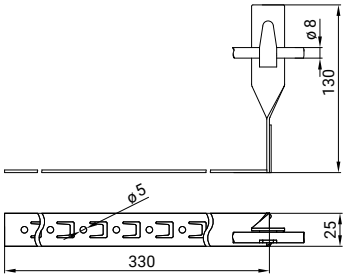


Twisted press-on holder for wire L-330 with tile hook

Description	Size [mm]	Material	Code
wire Ø8 mm	330	StZn	425712
wire Ø8 mm		Inox	425713
wire Ø8 mm		Cu	425714
wire Ø8 mm		lacquered	425719

- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

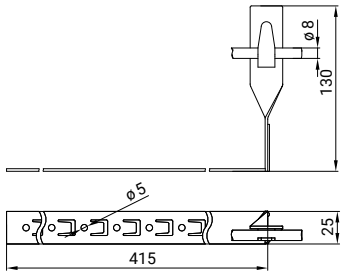


Twisted press-on holder for wire L-415 with tile hook

Description	Size [mm]	Material	Code
wire Ø8 mm	415	StZn	425812
wire Ø8 mm		Inox	425813
wire Ø8 mm		Cu	425814
wire Ø8 mm		lacquered	425819

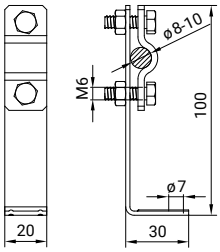
- Application: fixing wire on roofs covered with flat tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005



Screw-on holder for wire

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	100	StZn	M6x16	404012
wire Ø(8-10)mm		Inox		404013
wire Ø(8-10)mm		Cu		404014
wire Ø(8-10)mm		lacquered		404019

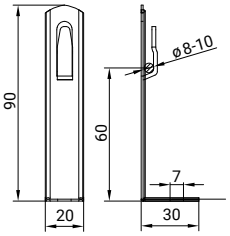


- Application: fixing wire on diagonal roofs with trapezoidal steel sheets, metal tiles, or shingles.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Press-on universal holder for wire L-60

Description	Size [mm]	Material	Code
wire Ø(8-10)mm	60	StZn	404112
wire Ø(8-10)mm		Inox	404113
wire Ø(8-10)mm		Cu	404114
wire Ø(8-10)mm		lacquered	404119

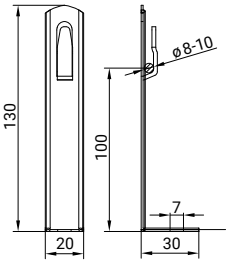


- Application: fixing wire on diagonal roofs with trapezoidal steel sheets, metal tiles, or shingles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Press-on universal holder for wire L-100

Description	Size [mm]	Material	Code
wire Ø(8-10)mm	100	StZn	414112
wire Ø(8-10)mm		Inox	414113
wire Ø(8-10)mm		Cu	414114
wire Ø(8-10)mm		lacquered	414119

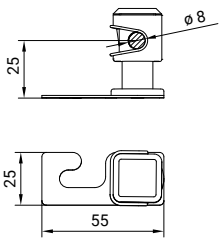


- Application: fixing wire on diagonal roofs with trapezoidal steel sheets, metal tiles, or shingles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Plastic holder for wire with hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	25	PI/Inox	M6x10	404218
wire Ø8 mm	25	lacquered	M6x10	404219

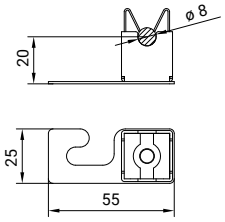


- Application: fixing wire on diagonal roofs with trapezoidal steel sheets, metal tiles, or shingles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

Click holder for wire with hook

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	20	Inox	M6x10	404313
wire Ø8 mm	20	lacquered	M6x10	404319

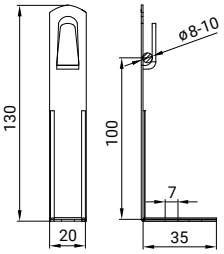


- Application: fixing wire on diagonal roof covered with trapezoidal steel tinware, tinware tiles or shingles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Press-on holder for wire on metal base

Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	60	StZn	M6x25	413012
wire Ø(8-10)mm	60	lacquered		413019
wire Ø(8-10)mm	100	StZn		413112
wire Ø(8-10)mm	100	lacquered		413119

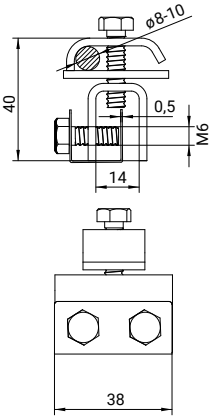


- Application: fixing wire on roofs covered with sheet metal.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

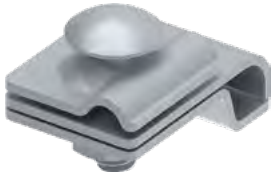
Seam holder for wire

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	40x38	StZn	M8x20	404912
wire Ø(8-10)mm		Inox	2 pcs. M6x16	404913
wire Ø(8-10)mm		Cu		404914

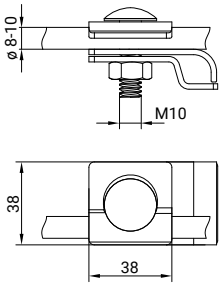


- Application: fixing wire to overlapping profiles of roofing sheets or structures.

Seam clamp for wire



Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	38x38	StZn	M10x35	404812
wire Ø(8-10)mm		Inox		404813
wire Ø(8-10)mm		Cu		404814
wire Ø(8-10)mm		Alu		404817

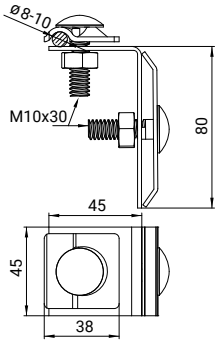


- Application: fixing wire to profiles of roofing sheets.

Edge seam holder for wire

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	80x45	StZn	2 pcs. M10x30	404412
wire Ø(8-10)mm		Inox		404413

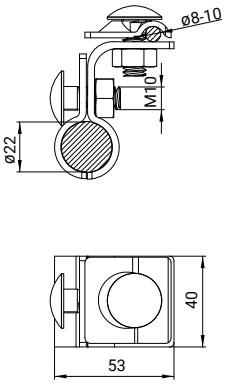
- Application: fixing wire to overlapping profiles of roofing sheets or structures.



Seam holder for wire, Kalzip type

Description	Size [mm]	Material	Screw	Code
wire Ø(8-10)mm	40x53	Alu	2 pcs. M10x30	404517

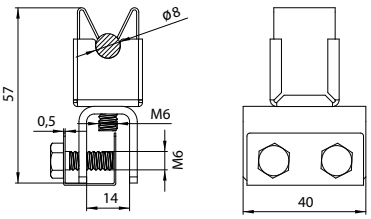
- Application: fixing wire to overlapping profiles of roofing Kalzip sheets.



Seam click holder for wire

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	57x40	StZn	3 pcs. M6x16	404612
wire Ø8 mm		Inox		404613
wire Ø8 mm		Cu		404614

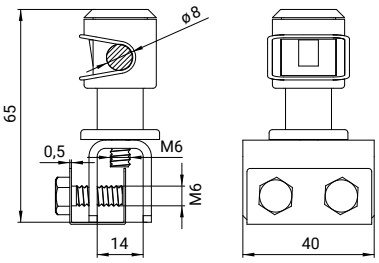
- Application: fixing wire to overlapping profiles of roofing sheets



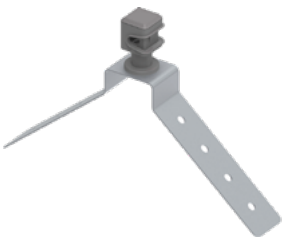
Seam plastic holder for wire

Description	Size [mm]	Material	Screw	Code
wire Ø8 mm	65x40	StZn/Pl	3 pcs. M6x16	404712
wire Ø8 mm		Inox		404713
wire Ø8 mm		Cu		404714

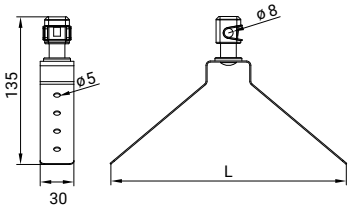
- Application: fixing wire to overlapping profiles of roofing sheets



Plastic holder for wire on gable



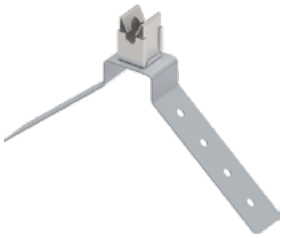
Description	Size L [mm]	Material	Screw	Code
wire Ø8 mm	(200-260)	StZn/Pl	M6x10	406012
wire Ø8 mm		Inox/Pl		406013
wire Ø8 mm		Cu/Pl		406014
wire Ø8 mm		lacquered		406019



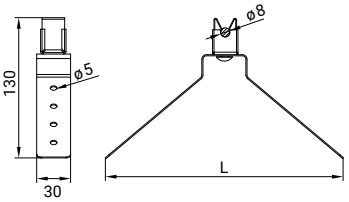
- Application: fixing wire on roofs covered with sheet metal.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

Click holder for wire on gable



Description	Size L [mm]	Material	Screw	Code
wire Ø8 mm	(200-260)	StZn/Inox	M6x10	406112
wire Ø8 mm		Inox		406113
wire Ø8 mm		Cu/Inox		406114
wire Ø8 mm		lacquered		406119

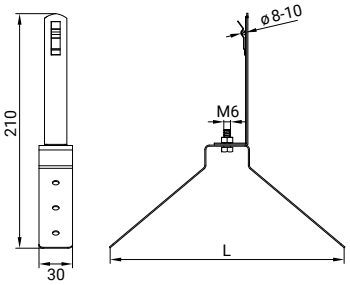


- Application: fixing wire on roofs covered with sheet metal.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Press-on holder for wire on gable

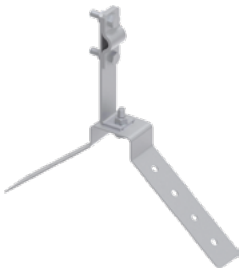
Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	(200-260)	StZn	M6x10	406212
wire Ø(8-10)mm		Inox		406213
wire Ø(8-10)mm		Cu		406214
wire Ø(8-10)mm		lacquered		406219



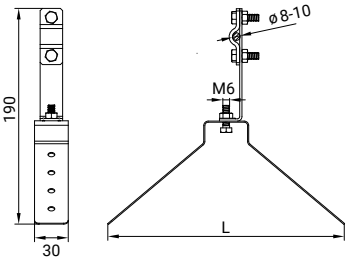
- Application: fixing wire on roofs covered with sheet metal.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Screw-on holder for wire on gable



Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	(200-260)	StZn	M6x10 2 pcs. M6x16	406312
wire Ø(8-10)mm		Inox		406313
wire Ø(8-10)mm		Cu		406314
wire Ø(8-10)mm		lacquered		406319

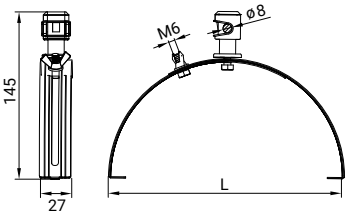


- Application: fixing wire on roofs covered with sheet metal.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Plastic holder for wire on ridge

Description	Size L [mm]	Material	Screw	Code
wire Ø8 mm	(200-280)	StZn/Pl	2 pcs. M6x16	407012
wire Ø8 mm		Inox/Pl		407013
wire Ø8 mm		Cu/Pl		407014
wire Ø8 mm		lacquered		407019

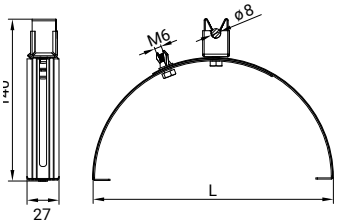


- Application: fixing wire on round roof peaks covered with tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

Click holder for wire on ridge

Description	Size L [mm]	Material	Screw	Code
wire Ø8 mm	(200-280)	StZn/Inox	2 pcs. M6x16	407112
wire Ø8 mm		Inox		407113
wire Ø8 mm		Cu/Inox		407114
wire Ø8 mm		lacquered		407119

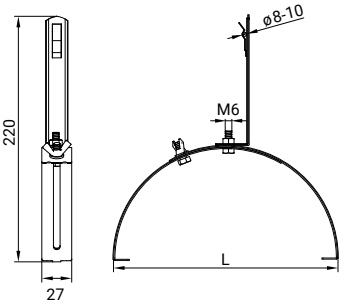


- Application: fixing wire on round roof peaks covered with tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Press-on holder for wire on ridge

Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	(200-280)	StZn	2 pcs. M6x16	407212
wire Ø(8-10)mm		Inox		407213
wire Ø(8-10)mm		Cu		407214
wire Ø(8-10)mm		lacquered		407219

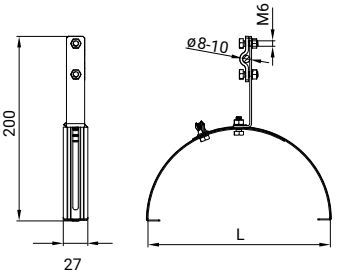


- Application: fixing wire on round roof peaks covered with tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Screw-on holder for wire on ridge

Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	(200-280)	StZn	4 pcs. M6x16	407312
wire Ø(8-10)mm		Inox		407313
wire Ø(8-10)mm		Cu		407314
wire Ø(8-10)mm		lacquered		407319

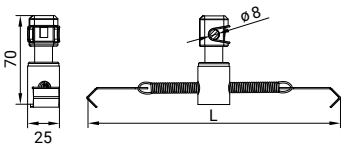


- Application: fixing wire on round roof peaks covered with tiles.
- Quick installation.
- Lacquered version available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016 RAL 8017 RAL 9005

Plastic holder for wire on ridge with spring

Description	Size L [mm]	Colour	Material	Screw	Code
wire Ø8 mm	(200-320)	light grey	Inox/Pl	M6x10	407413
wire Ø8 mm		brown-red	Inox/Pl		407513
wire Ø8 mm		grey	Inox/Pl		407713
wire Ø8 mm		brown	Inox/Pl		407813

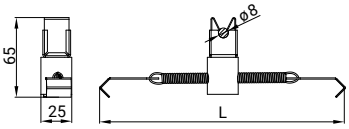


- Application: fixing wire on round roof peaks covered with tiles.
- Product available in following RAL colors:

RAL 7047 RAL 8004 RAL 3011 RAL 7016

Click holder for wire on ridge with spring

Description	Size L [mm]	Material	Screw	Code
wire Ø8 mm	(200-320)	Inox	M6x10	407913
wire Ø8 mm		lacquered		407919



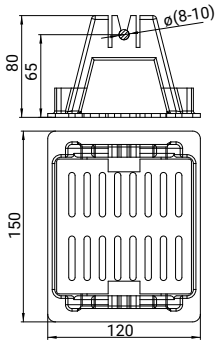
- Application: fixing wire on round roof peaks covered with tiles.
- Lacquered version available in following RAL colors:

RAL 3011 RAL 7016

Plastic holder for wire, to be glued

Description	Size [mm]	Material	Code
wire Ø8 mm	150x120x65	Pl	411818

- Application: fixing wire on roofs covered with roofing felt or membrane, suitable for bonding. Bonding with tapes 408118 or 408218.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.

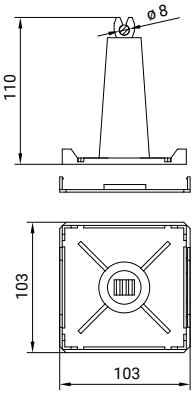


Holder for wire, to be glued

Description	Size [mm]	Colour	Material	Code
wire Ø8 mm	103x103x100	black	Pl	408018
wire Ø8 mm	103x103x100	grey	Pl	408418

- Application: fixing wire on roofs covered with roofing felt or membrane, suitable for bonding. Bonding with tapes 408118 or 408218.
- Meets the requirements of the IEC 62305 standard.
- Product available in following RAL colors:

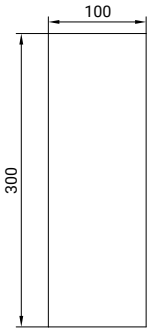
RAL 7047 RAL 9005



Adhesive tape

Description	Size [mm]	Material	Code
roofing felt tape	300x100	Other	408118
membrane tape	300x100	Other	408218

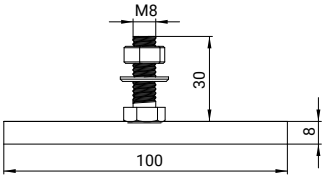
- Application: fixing plastic wire holders 408018 on roofs covered with roofing felt or membrane, suitable for gluing or welding.



Adapter for cable trays

Description	Size [mm]	Material	Code
cable trays	100	StZn	491312

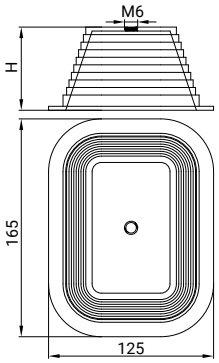
- Application: fixing cable trays on flat roofs.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Plastic holder H-60 with concrete for cable trays

Description	Size L [mm]	Material	Code
cable trays, plastic bottom	60	PI/concrete	491418

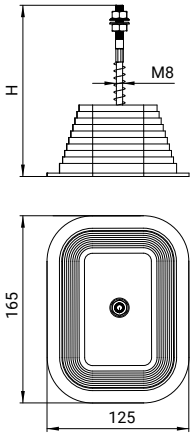
- Application: fixing cable trays on flat roofs.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with IEC 62561 standard.
- Meets the requirements of the IEC 62305 standard.



Plastic holder with concrete H-100mm for cable trays

Description	Size H [mm]	Material	Screw	Code
cable trays, plastic bottom	100	PI/concrete/ StZn	M8	491718

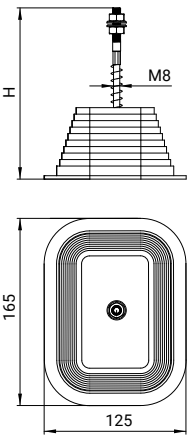
- Application: Fixing cable trays on flat roofs.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with standard: PN-EN 62561.
- Corresponds to the requirements of standard: EN 62305.



Plastic holder with concrete H-160mm for cable trays

Description	Size H [mm]	Material	Screw	Code
cable trays, plastic bottom	160	PI/concrete/ StZn	M8	491818

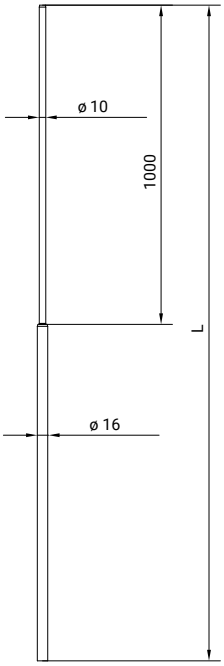
- Application: Fixing cable trays on flat roofs.
- Made of polyethylene, weatherproof and UV resistant.
- In accordance with standard: PN-EN 62561.
- Corresponds to the requirements of standard: EN 62305.



Air-termination rod Ø16 mm

Height L [mm]	Diameter Ø [mm]	Material	Code
1000	16	Alu	501017
1500	16/10	Alu	501517
2000	16/10	Alu	502017
2500	16/10	Alu	502517
3000	16/10	Alu	503017
3500	16/10	Alu	503517
4000	16/10	Alu	504017
4500	16/10	Alu	504517

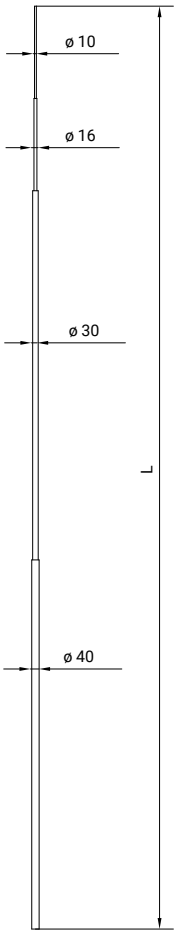
- Application: lightning protection of equipment and objects on the roof.
- Resistance to wind load in accordance with EN 1993-1-1 and EN 1999-1-1.
- Meets the requirements of the IEC 62305 standard.



Air-termination rod Ø40 mm

Height L [mm]	Diameter Ø [mm]	Material	Code
4000	40/30/16	Alu	514017
4500	40/30/16	Alu	514517
5000	40/30/16	Alu	515017
5500	40/30/16/10	Alu	515517
6000	40/30/16/10	Alu	516017
6500	40/30/16/10	Alu	516517
7000	40/30/16/10	Alu	517017
7500	40/30/16/10	Alu	517517
8000	40/30/16/10	Alu	518017

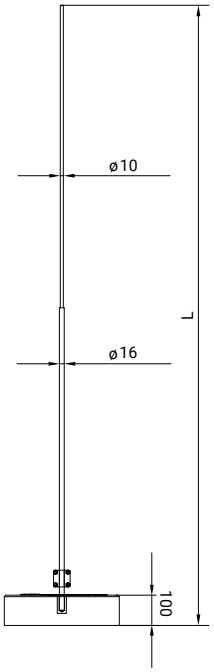
- Application: lightning protection of equipment and objects on the roof.
- Resistance to wind load in accordance with EN 1993-1-1 and EN 1999-1-1.
- Meets the requirements of the IEC 62305 standard.

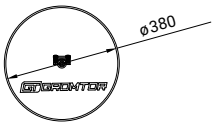


Air-termination rod Ø16 mm on conrete base

Height L [mm]	Diameter Ø [mm]	Material	Bases [pcs]	Code
1000	16	Alu/StZn/concrete	1	501019
1500	16/10	Alu/StZn/concrete	1	501519
2000	16/10	Alu/StZn/concrete	1	502019
2500	16/10	Alu/StZn/concrete	1	502519
3000	16/10	Alu/StZn/concrete	1	503019
3500	16/10	Alu/StZn/concrete	2	503519
4000	16/10	Alu/StZn/concrete	2	504019
4500	16/10	Alu/StZn/concrete	3	504519

- The set includes: air-termination rod, concrete base/bases, cross-connector 111212.
- Application: lightning protection of equipment and objects on the roof.
- Resistance to wind load in accordance with EN 1993-1-1 and EN 1999-1-1.
- Meets the requirements of the IEC 62305 standard.
- Under-pad 500119 is recommended to be ordered separatelly.

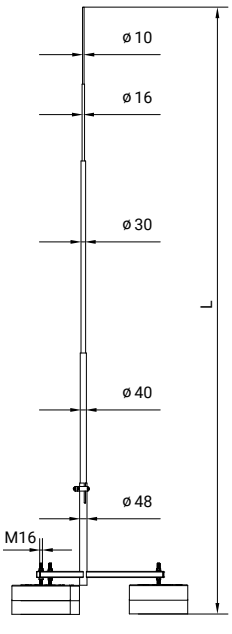


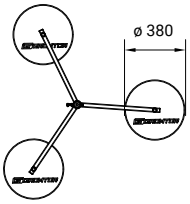


Air-termination rod Ø40 mm on tripod

Height L [mm]	Diameter Ø [mm]	Material	Screw	Bases [pcs]	Code
3000	40/30/16	Alu/StZn/concrete	3 pcs. M16x200	3x1	513019
3500	40/30/16	Alu/StZn/concrete		3x1	513519
4000	40/30/16	Alu/StZn/concrete		3x1	514019
4500	40/30/16	Alu/StZn/concrete		3x1	514519
5000	40/30/16	Alu/StZn/concrete		3x1	515019
5500	40/30/16/10	Alu/StZn/concrete		3x1	515519
6000	40/30/16/10	Alu/StZn/concrete		3x1	516019
6500	40/30/16/10	Alu/StZn/concrete		3x2	516519
7000	40/30/16/10	Alu/StZn/concrete		3x2	517019
7500	40/30/16/10	Alu/StZn/concrete		3x2	517519
8000	40/30/16/10	Alu/StZn/concrete		3x2	518019
9000	40/30/16/10	Alu/StZn/concrete		3x3	519019

- The set includes: air-termination rod, concrete base/bases, tripod, cross-connector 510212.
- Application: lightning protection of equipment and objects on the roof.
- Resistance to wind load in accordance with EN 1993-1-1 and EN 1999-1-1.
- Meets the requirements of the IEC 62305 standard.
- Under-pad 500119 is recommended to be ordered separatelly.

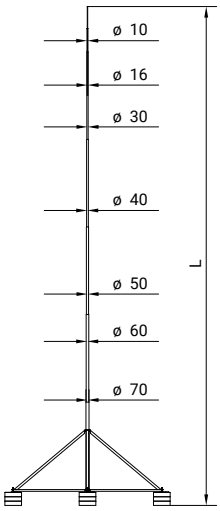


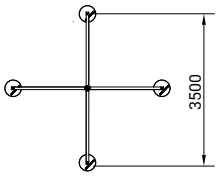


Air-termination rod on four-armed stand

Height L [mm]	Diameter Ø [mm]	Material	Bases [pcs]	Code
9000	50/40/30/16/10	Alu/StZn/concrete	4x2	511119
10000	50/40/30/16/10	Alu/StZn/concrete	4x2	511219
11000	60/50/40/30/16/10	Alu/StZn/concrete	4x2	511319
12000	70/60/50/40/30/16/10	Alu/StZn/concrete	4x2	511419
14000	70/60/50/40/30/16/10	Alu/StZn/concrete	4x3	511619

- Application: lightning protection of equipment and objects on the roof.
- Meets the requirements of the IEC 62305 standard.
- Under-pad 500119 is recommended to be ordered separatelly.

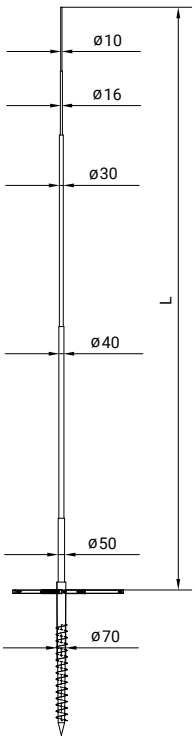


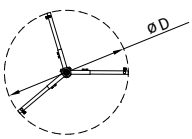


Free standing air-termination rod screwed into the ground

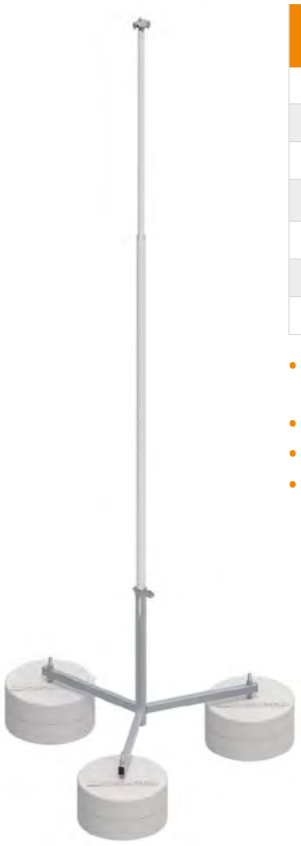
Height L [mm]	Size ØD [mm]	Diameter Ø [mm]	Material	Code
5000	1100	50/40/30/16/10	StZn/Alu	598112
6000		50/40/30/16/10	StZn/Alu	598212
7000		60/50/40/30/16/10	StZn/Alu	598312
8000		60/50/40/30/16/10	StZn/Alu	598412
9000		60/50/40/30/16/10	StZn/Alu	598512
10000		70/60/50/40/30/16/10	StZn/Alu	598612
11000		70/60/50/40/30/16/10	StZn/Alu	598712
12000		70/60/50/40/30/16/10	StZn/Alu	598812
14000		70/60/50/40/30/16/10	StZn/Alu	598912

- Application: lightning protection of equipment and objects located on the ground.
- Meets the requirements of the IEC 62305 standard.



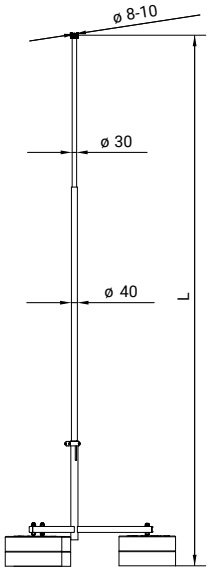


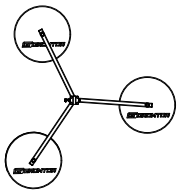
Supporting air-termination rod on tripod



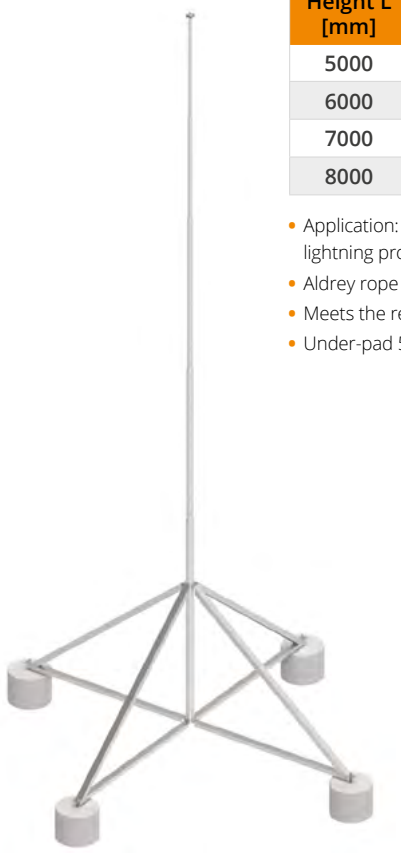
Height L [mm]	Diameter Ø [mm]	Material	Bases [pcs]	Code
3000	40/30	Alu/StZn/concrete	3x2	581119
3500	40/30	Alu/StZn/concrete	3x2	582119
4000	40/30	Alu/StZn/concrete	3x2	581219
4500	40/30	Alu/StZn/concrete	3x2	582219
5000	40/30	Alu/StZn/concrete	3x3	581319
5500	40/30	Alu/StZn/concrete	3x3	582319
6000	40/30	Alu/StZn/concrete	3x3	583319

- Application: lightning protection of equipment and objects on the roof using horizontal elevated lightning protection system in the form of Aldrey rope.
- Aldrey rope cross-connector included.
- Meets the requirements of the IEC 62305 standard.
- Under-pad 500119 is recommended to be ordered separatelly.



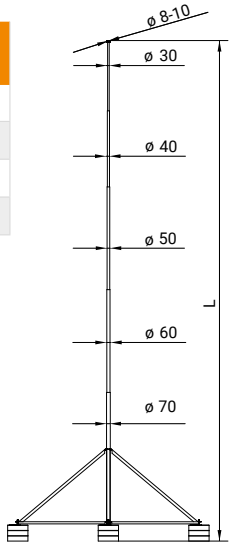


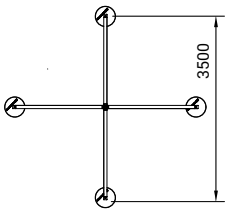
Supporting air-termination rod on four-armed stand



Height L [mm]	Diameter Ø [mm]	Material	Bases [pcs]	Code
5000	50/40/30	Alu/StZn/concrete	4x1	581619
6000	50/40/30	Alu/StZn/concrete	4x1	581719
7000	60/50/40/30	Alu/StZn/concrete	4x2	581819
8000	60/50/40/30	Alu/StZn/concrete	4x2	581919

- Application: lightning protection of equipment and objects on the roof using horizontal elevated lightning protection system in the form of Aldrey rope.
- Aldrey rope cross-connector included.
- Meets the requirements of the IEC 62305 standard.
- Under-pad 500119 is recommended to be ordered separatelly.

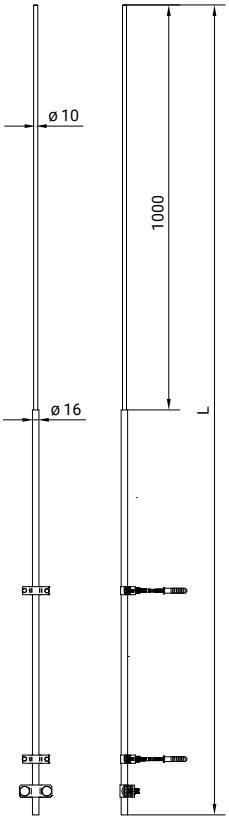




Air-termination rod set Ø16 mm

Height L [mm]	Diameter Ø [mm]	Material	Code
1000	16	Alu/StZn	501018
1500	16/10	Alu/StZn	501518
2000	16/10	Alu/StZn	502018
2500	16/10	Alu/StZn	502518
3000	16/10	Alu/StZn	503018
3500	16/10	Alu/StZn	503518
4000	16/10	Alu/StZn	504018
4500	16/10	Alu/StZn	504518

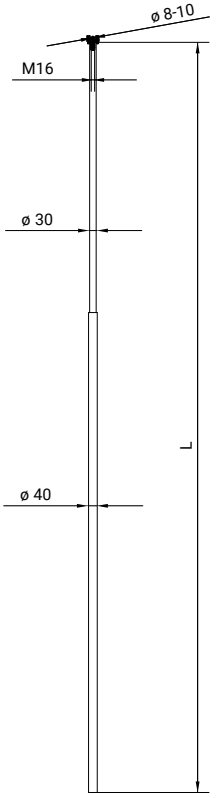
- Application: lightning protection of equipment and objects on the roof.
- Resistance to wind load in accordance with EN 1993-1-1 and EN 1999-1-1.
- Meets the requirements of the IEC 62305 standard.
- The set includes: rod, holders, cross-connector.



Supporting air-termination rod

Height L [mm]	Diameter Ø [mm]	Material	Code
2500	40/30	Alu/StZn	582517
3000	40/30	Alu/StZn	583017
4000	40/30	Alu/StZn	584017
5000	40/30	Alu/StZn	585017
6000	40/30	Alu/StZn	586017

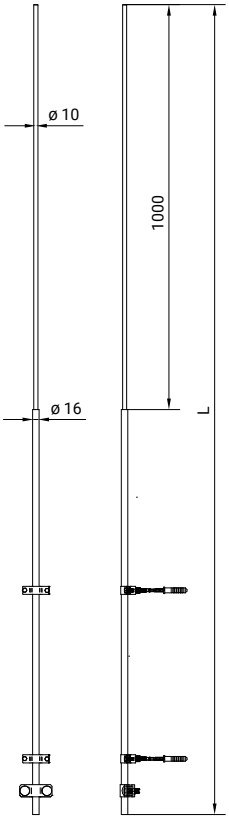
- Application: lightning protection of equipment and objects on the roof using horizontal elevated lightning protection system in the form of Aldrey rope.
- Aldrey rope cross-connector included.
- Meets the requirements of the IEC 62305 standard.



Copper plated air-termination rod set Ø16 mm

Height L [mm]	Diameter Ø [mm]	Material	Code
1000	16	StCu/Inox	501416
1500	16/10	StCu/Inox	501516
2000	16/10	StCu/Inox	501616

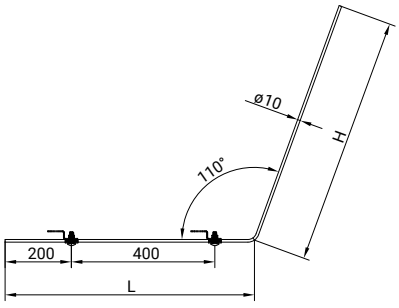
- Application: lightning protection of equipment and objects on the roof.
- Meets the requirements of the IEC 62305 standard.
- The set includes: rod, holders, cross-connector.



Air-termination rod Ø10 mm for photovoltaic

Length L / Height H - [mm]	Diameter Ø [mm]	Material	Code
750/750	10	Alu/StZn	580517
750/1250	10	Alu/StZn	581017

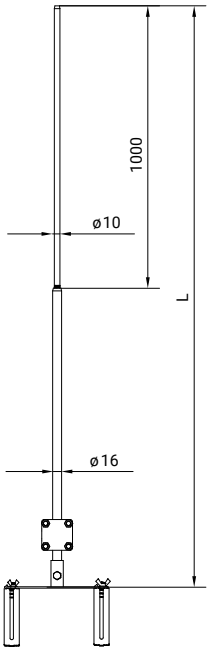
- Application: lightning protection of photovoltaic panels.
- Meets the requirements of the IEC 62305 standard.
- Air-termination rod holders included.



Air-termination rod on ridge stand

Size L [mm]	Diameter Ø [mm]	Material	Code
1000	16	Alu/StZn	516113
1500	16/10	Alu/StZn	516213
2000	16/10	Alu/StZn	516313
2500	16/10	Alu/StZn	516413
3000	16/10	Alu/StZn	516513

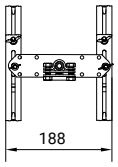
- Application: lightning protection of equipment and objects on the roof.
- Meets the requirements of the IEC 62305 standard.



Ridge stand for air-termintation rod

Description	Size [mm]	Material	Code
ridge stand	188	StZn	526113

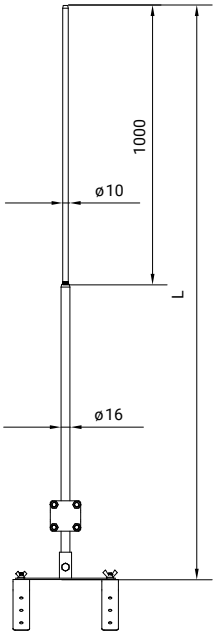
- Application: fixing air-termintation rod Ø16mm on ridge.



Air-termination rod on gable stand

Size L [mm]	Diameter Ø [mm]	Material	Code
1000	16	Alu/StZn	517113
1500	16/10	Alu/StZn	517213
2000	16/10	Alu/StZn	517313
2500	16/10	Alu/StZn	517413
3000	16/10	Alu/StZn	517513

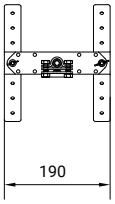
- Application: lightning protection of equipment and objects on the roof.
- Meets the requirements of the IEC 62305 standard.



Gable stand for air-termintation rod

Description	Size [mm]	Material	Code
gable stand	190	Alu/StZn	527113

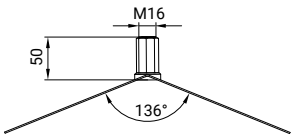
- Application: fixing air-termintation rod Ø16mm on gable

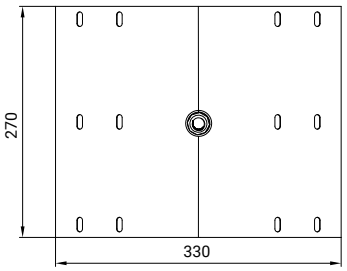


Gable metal stand for air-termintation rod

Description	Size [mm]	Material	Code
gable metal stand	270x300	Inox	511313

- Application: fixing air-termintation rod Ø16mm on gable

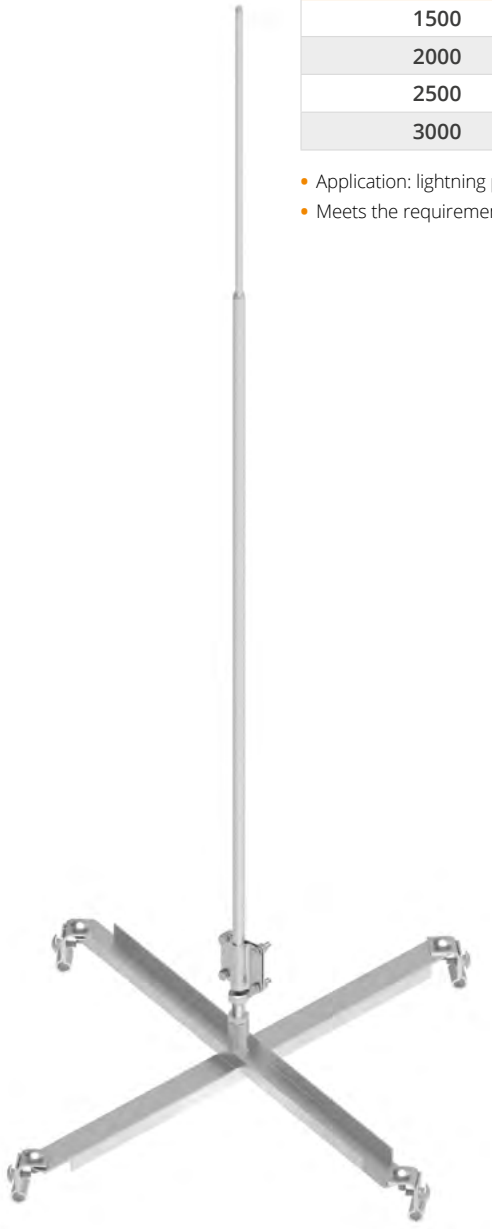


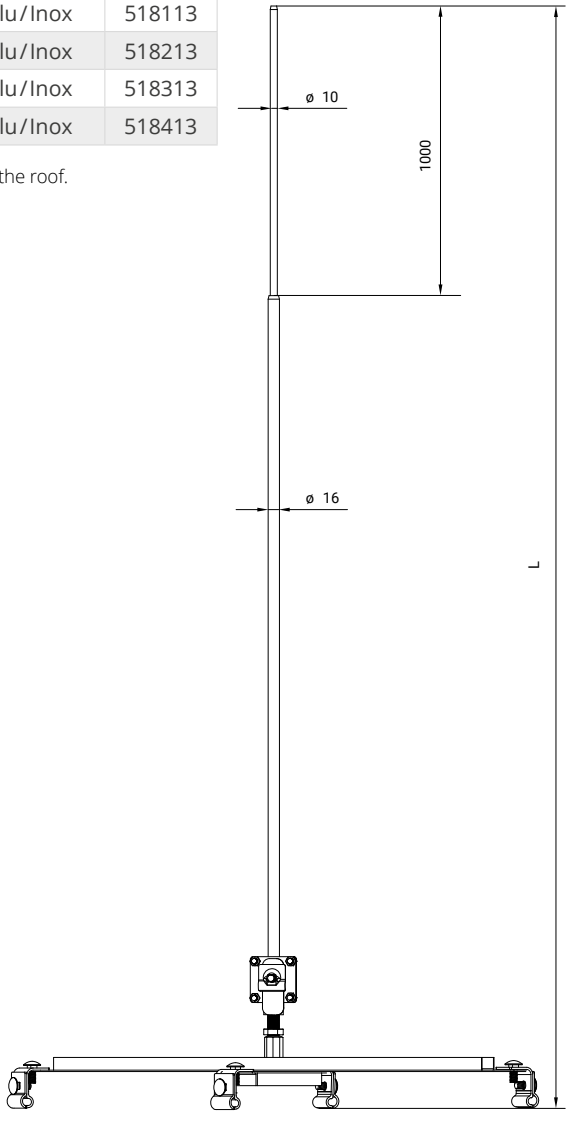


Air-termination rod on seam stand

Size L [mm]	Diameter Ø [mm]	Material	Code
1500	16/10	Alu/Inox	518113
2000	16/10	Alu/Inox	518213
2500	16/10	Alu/Inox	518313
3000	16/10	Alu/Inox	518413

- Application: lightning protection of equipment and objects on the roof.
- Meets the requirements of the IEC 62305 standard.

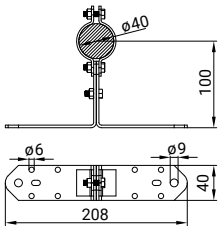




Holder for Ø40 mm air-termination rod

Description	Size [mm]	Material	Screw	Code
holder for air-termination rod Ø40 mm	100	StZn	3 pcs. M8x25	510312

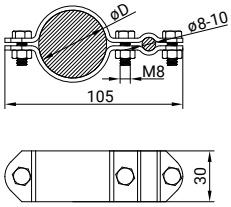
- Application: fixing air-termination rod to a wall or metal stucture.



Wire-to-air-termination rod/pipe connection clamp

Description	Diameter ØD [mm]	Material	Screw	Code
wire Ø(8-10)mm	40	StZn	3 pcs. M8x25	510212
wire Ø(8-10)mm	60	StZn		513212
wire Ø(8-10)mm	76	StZn		514212
wire Ø(8-10)mm	90	StZn		515212
wire Ø(8-10)mm	115	StZn		516212
wire Ø(8-10)mm	120	StZn		517212

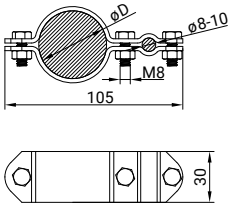
- Application: fixing wire to air-termination rod or pipe.



Wire-to-air-termination rod/pipe connection clamp

Description	Diameter ØD [mm]	Material	Screw	Code
wire Ø(8-10)mm	40	Inox	3 pcs. M8x25	510215
wire Ø(8-10)mm	60	Inox		513215
wire Ø(8-10)mm	76	Inox		514215
wire Ø(8-10)mm	90	Inox		515215
wire Ø(8-10)mm	115	Inox		516215
wire Ø(8-10)mm	120	Inox		517215

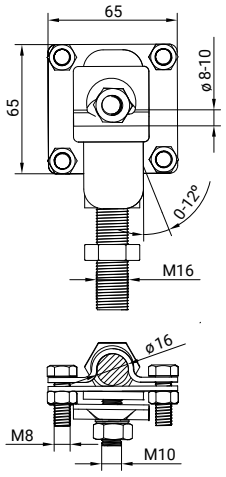
- Application: fixing wire to air-termination rod or pipe.



Stabilizer for Ø16 mm air-termination rod

Description	Material	Screw	Code
for Ø16 mm air-termiation rod with 1 concrete base	Inox	M16x50 M10x25	500013
for Ø16 mm air-termiation rod with 2 concrete bases	Inox	4 pcs. M8x25	501013

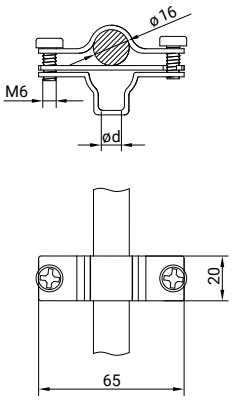
- Application: air-termination rod tilt adjustment (0 to 12°).



Holder for Ø16 mm air-termination rod

Description	Diameter d [mm]	Material	Screw	Code
holder for air-termination rod Ø16 mm	M8	StZn	2 pcs. M6x16	500112
holder for air-termination rod Ø16 mm	M8	Inox	2 pcs. M6x16	500113
holder for air-termination rod Ø16 mm	Ø7	StZn	2 pcs. M6x16	501112
holder for air-termination rod Ø16 mm	Ø7	Inox	2 pcs. M6x16	501113

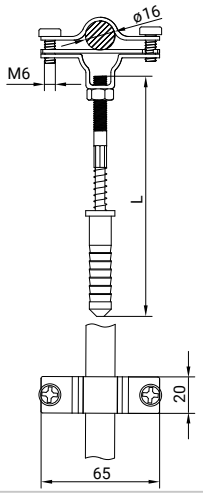
- Application: fixing air-termination rod to a wall or metal structure.



Holder for Ø16 mm air-termination rod with expansion bolt

Description	Size L [mm]	Material	Screw	Code
holder for air-termination rod Ø16 mm	100	Inox/StZn	2 pcs. M6x16	500213
holder for air-termination rod Ø16 mm	160	Inox/StZn		500313
holder for air-termination rod Ø16 mm	200	Inox/StZn		500413

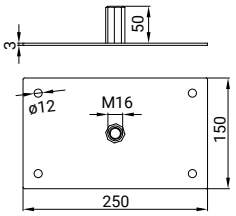
- Application: fixing air-termination rod to a wall or metal structure.



Metal stand for Ø16 mm air-termination rod

Description	Size [mm]	Material	Code
metal base with thread M16	250x150x50	StZn	511212
metal base with thread M16	250x150x50	Inox	511213

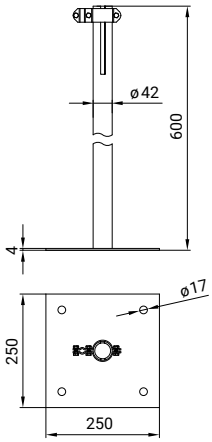
- Application: fixing air-termination rod on metal roof slopes.



Metal stand for Ø40 mm air-termination rod

Description	Size [mm]	Material	Screw	Code
metal base for air-termination rod Ø40 mm	250x250x600	StZn	3 pcs. M8x25	511112
metal base for air-termination rod Ø40 mm		Inox	3 pcs. M8x25	511113

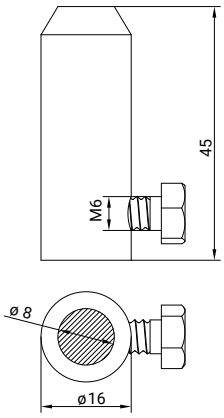
- Application: fixing air-termination rod on metal roof slopes.



Tip for Ø8 mm wire with screw

Description	Diameter Ø [mm]	Material	Screw	Code
wire Ø8 mm	16	Alu	M6x10	500917

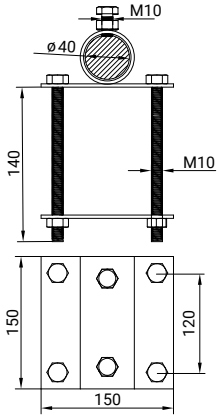
- Application: termination of wire.



Holder for Ø40 mm air-termination rod for profile

Description	Screw	Material	Code
holder for air-termination rod Ø40 mm rectangular profile ≤ 100 mm	2 pcs. M10x20	StZn	599812
holder for air-termination rod Ø40 mm rectangular profile ≤ 100 mm	4 pcs. M10x140	Inox	599813

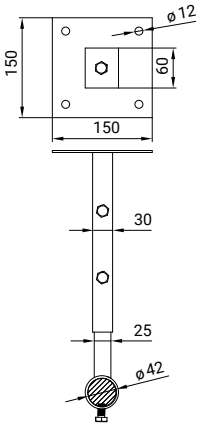
- Application: fixing air-termination rod to a rectangular profile.



Holder for Ø40 mm air-termination rod on adjustable stand

Description	Screw	Material	Code
holder for air-termination rod Ø40 mm adjustable stand 300-500 mm	3 pcs. M10x20	Inox	599613

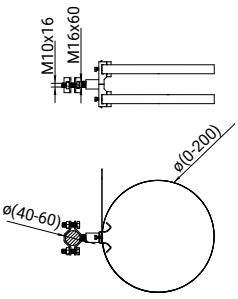
- Application: fixing air-termination rod to a wall.



Holder for Ø40 mm air-termination rod for pipes

Description	Screw	Material	Code
holder for Ø40 mm air-termination rod round profile ≤ 200 mm	M16×100 2 pcs. M10×40	Inox	599713

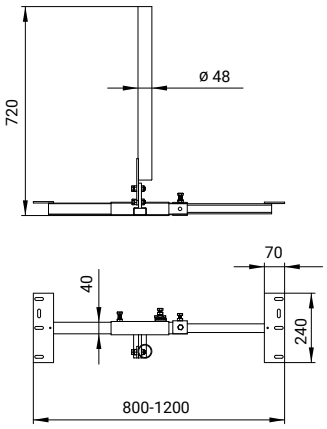
- Application: fixing air-termination rod to round profile.



Metal base for Ø40 mm air-termination rod for rafters

Description	Size [mm]	Material	Code
air-termination rod base for rafters	(800-1200)	StZn	510512

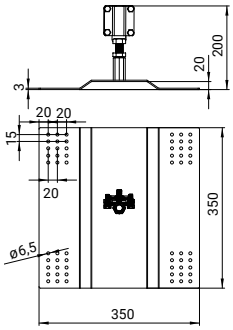
- Application: fixing air-termination rod on rafter.



Metal base for Ø16 mm air-termination rod for farmer's screws

Description	Size [mm]	Material	Code
air-termination rod base with M16 thread	350x350x200	InoxV2A	511513

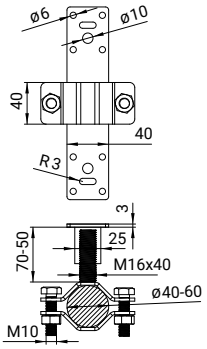
- Application: fixing air-termination rod on metal roof slopes.



Holder for Ø40-60 mm air-termination rod on rotating stand

Description	Diameter Ø [mm]	Material	Screw	Code
holder for air-termination rod	(40-60)	Inox	2 pcs. M10x40	510713

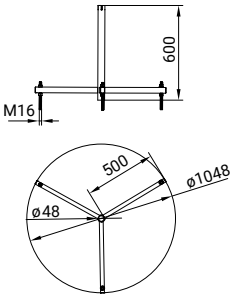
- Application: fixing air-termination rod to metal structures



Tripod for Ø40 mm air-termination rod

Description	Height [mm]	Material	Screw	Code
for air-termination rod Ø40 mm	600	StZn	3 pcs. M16x200	510112
for air-termination rod Ø40 mm	600	Inox		510113

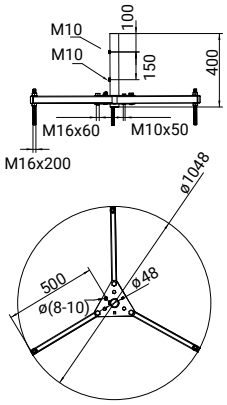
- Application: fixing air-termination rod on concrete bases.
- The set includes M16 screws for air-termination rod adjustment.



Foldable tripod for Ø40 mm air-termination rod

Description	Height [mm]	Material	Screw	Code
for Ø 40 mm air-termination rod	400	StZn	M10×50 3 pcs. M16×200 3 pcs. M16×60	530112
for Ø 40 mm air-termination rod	400	Inox		530113

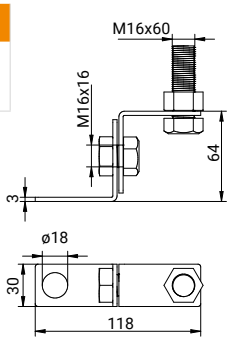
- Application: fixing air-termination rod on concrete bases.
- The set includes screws for installing the air-termination rod.
- Designed for portability and easy storage.



Angle regulator for tripod-mounted air-termination rods

Description	Material	Screw	Code
for Ø 40 mm air-termination rod on a tripod	Inox	M16x16 M16x60	511013

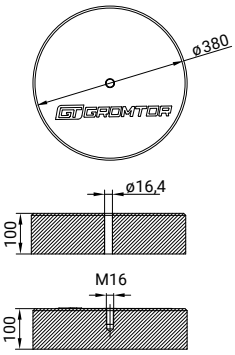
- Application: tilt adjustment of lightning protection air-termination rods mounted on a tripod.



Concrete base for air-termination rod

Description	Diameter Ø [mm]	Weight [kg]	Material	Code
concrete base with hole Ø16 mm	380	20	concrete	550019
concrete base with thread M16	380	20	concrete	500019

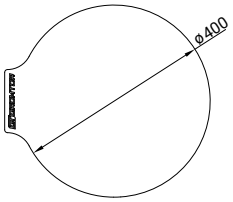
- Application: fixing air-termination rod or a stand (tripod and four-armed).
- The system allows stacking one concrete base on top of the other.



Concrete base under-pad

Description	Diameter Ø [mm]	Material	Code
for roofing felt and membrane	400	other	500119

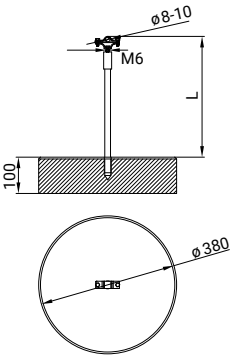
- Application: protection of roof surface under concrete base.



Separation rod for wire on a concrete base

Description	Size L [mm]	Material	Code
wire Ø(8-10)mm	500	StZn/GFK/concrete	592119
wire Ø(8-10)mm	750	StZn/GFK/concrete	592219
wire Ø(8-10)mm	1000	StZn/GFK/concrete	592319

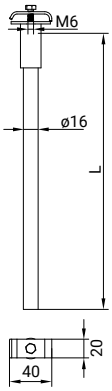
- Application: fixing wire over cable trays.



Separation rod Ø16 mm for wire

Description	Size L [mm]	Material	Screw	Code
wire Ø(8-10)mm	500	StZn/GFK	M8x20	590119
wire Ø(8-10)mm	750	StZn/GFK		590219
wire Ø(8-10)mm	1000	StZn/GFK		590319
wire Ø(8-10)mm	2000	StZn/GFK		590519

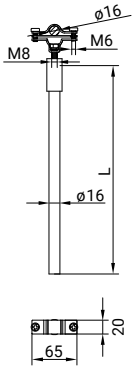
- Application: providing a separation distance of lightning protection system from the protected device.
- Made of fiberglass, UV resistant.



Separation rod Ø16 mm for air-termination rod

Description	Size L [mm]	Material	Screw	Code
for air-termination rod Ø16 mm	500	StZn/GFK	M8x20	591119
for air-termination rod Ø16 mm	750	StZn/GFK		591219
for air-termination rod Ø16 mm	1000	StZn/GFK		591319
for air-termination rod Ø16 mm	2000	StZn/GFK		591519

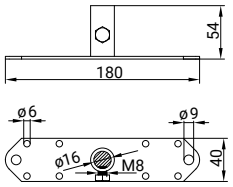
- Application: providing a separation distance of lightning protection system from the protected device.
- Made of fiberglass, UV resistant.



Holder for separation rod Ø16 mm

Description	Size [mm]	Material	Screw	Code
for separation rod Ø16 mm	180x40x54	StZn	M8x20	592012

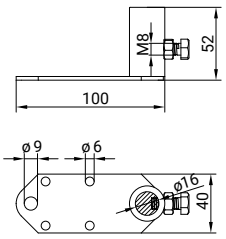
- Application: fixing separation rod to a wall or structure.



Small holder for separation rod Ø16 mm

Description	Size [mm]	Material	Screw	Code
for separation rod Ø16 mm	100x40x52	StZn	M8x20	592112

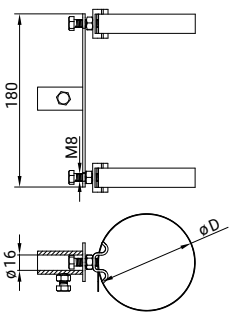
- Application: fixing separation rod to a wall or structure.



Pipe clamp for separation rod Ø16 mm

Description	Diameter ØD [mm]	Material	Screw	Code
for separation rod Ø16 mm	≤ 120	StZn	3 pcs. M8x20	593112
for separation rod Ø16 mm	≤ 200	StZn		593212
for separation rod Ø16 mm	≤ 300	StZn		593312

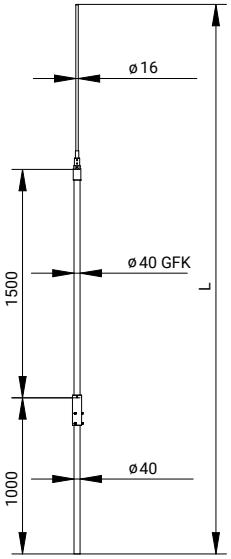
- Application: fixing separation rod to a round profile.



GTI isolated air-termination rod for high-voltage insulated cable

Height L [mm]	Diameter Ø [mm]	Material	Code
3000	40/16	GFK/Inox/Al	593019
3500	40/16	GFK/Inox/Al	593519
4000	40/16	GFK/Inox/Al	594019
4500	40/16	GFK/Inox/Al	594519

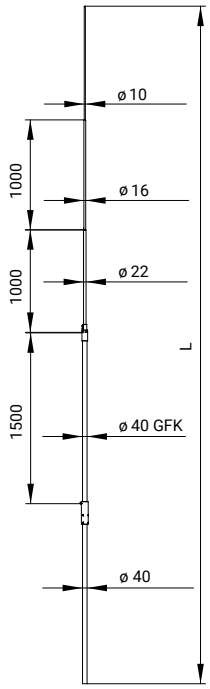
- Application: lightning protection of equipment and objects on the roof.
- Meets the requirements of the IEC 62561 standard.



GTI isolated air-termination rod for high-voltage insulated cable

Height L [mm]	Diameter Ø [mm]	Material	Code
5000	40/30/16/10	GFK/Inox/Al	565019
5500	40/30/16/10	GFK/Inox/Al	565519
6000	40/30/16/10	GFK/Inox/Al	566019
6500	40/30/16/10	GFK/Inox/Al	566519
7000	40/30/16/10	GFK/Inox/Al	567019
8000	40/30/16/10	GFK/Inox/Al	568019

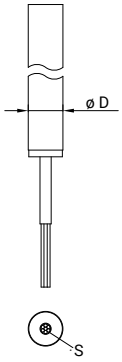
- Application: lightning protection of equipment and objects on the roof.
- Meets the requirements of the IEC 62561 standard.



Lightning protection cable covered with high voltage insulation 200kA – GTI GREY 75

Description	Diameter ØD [mm]	Section S [mm²]	Separation distance [mm]	Material	Code
GTI GREY 75	23	25	750	Cu	599119

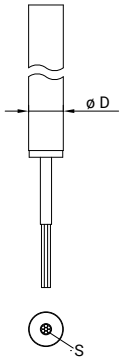
- Application: to improve the separation distance between the discharge conductor, and the protected electrical equipment.
- Meets the requirements of the IEC 62561 standard.
- The conductor's strength against the impact of a 200 kA lightning current – Class H_2.



Lightning protection cable covered with high voltage insulation 200kA – GTI 75

Description	Diameter ØD [mm]	Section S [mm²]	Separation distance [mm]	Material	Code
GTI 75	23	35	750	Cu	590019

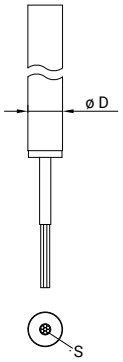
- Application: to improve the separation distance between the discharge conductor, and the protected electrical equipment.
- Meets the requirements of the IEC 62561 standard.
- The conductor's strength against the impact of a 200 kA lightning current – Class H_2.



Lightning protection cable covered with high voltage insulation 200kA – GTI PRO 90

Description	Diameter ØD [mm]	Section S [mm²]	Separation distance [mm]	Material	Code
GTI PRO 90	27	25	900	Cu	599019

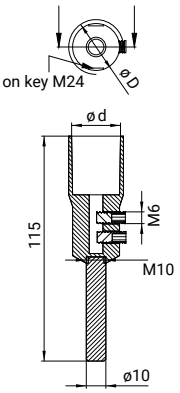
- Application: to improve the separation distance between the discharge conductor, and the protected electrical equipment.
- Meets the requirements of the IEC 62561 standard.
- The conductor's strength against the impact of a 200 kA lightning current – Class H_2.



Connector for the end of high-voltage insulated cable

Description	Diameter ØD [mm]	Material	Screw	Code
for GTI 75	23	Inox V4A	2 pcs. M6x8	590115
for GTI GREY 75	23	Inox V4A		591115
for GTI PRO 90	27	Inox V4A		599115

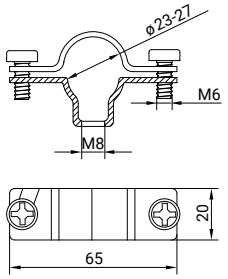
- Application: connection of high-voltage insulated wires to non-insulated wires (using connectors, for example 101413).
- Meets the requirements of the IEC 62561 standard.



Holder for high-voltage insulated cable

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23-27)	StZn	2 pcs. M6x16	590212
	(23-27)	Inox		590213

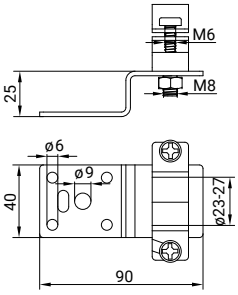
- Application: fixing high-voltage insulated cable to a wall or structure.



Holder for high-voltage insulated cable on metal base

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23-27)	StZn	M8x25	590312
	(23-27)	Inox	2 pcs. M6x16	590313

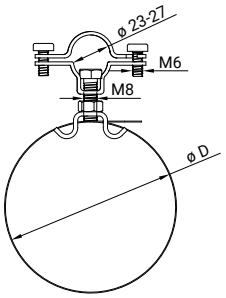
- Application: fixing high-voltage insulated cable to metal structure.



Clamp pipe for high-voltage insulated cable

Description	Diameter ØD [mm]	Material	Screw	Code
for high-voltage insulated cable	≤ 100	Inox/StZn	M8x25 2 pcs. M6x16	595013
	≤ 160	Inox/StZn		595113
	≤ 300	Inox/StZn		595213

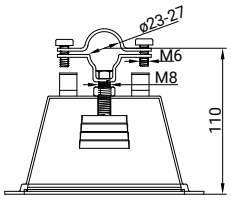
- Application: fixing high-voltage insulated cable to round profile.



Plastic holder with concrete for high-voltage insulated cable

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23-27)	Pl/StZn	M8x25 2 pcs. M6x16	590419

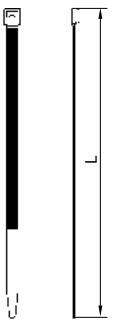
- Application: fixing high-voltage insulated cable on flat roofs.



Clip for fixing high-voltage insulated cable to air-termination rod

Description	Length [mm]	Material	Code
for high-voltage insulated cable	380	Pl	599918

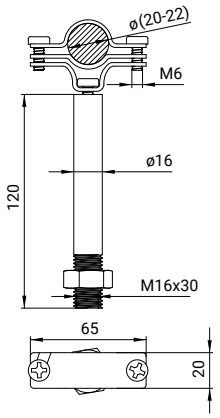
- Application: fixing high-voltage insulated cable to isolated air-termination rod.



Air-termination rod holder for high-voltage insulated cable with M16 thread

Description	Diameter Ø [mm]	Material	Code
for high-voltage insulated cable	(23-27)	Inox	594013

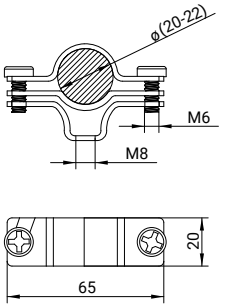
- Application: fixing high-voltage insulated cable to air-termination rod



Holder for high-voltage insulated cable for equipotential bonding

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23 - 27)	Inox	2 pcs. M6x16	591213

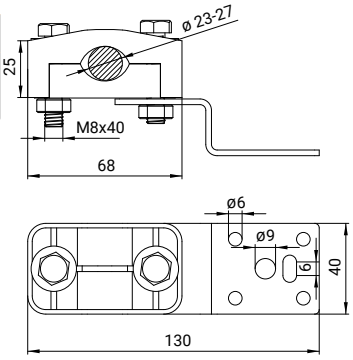
- Application: fixing high-voltage insulated cable to air-termination rod, to ensure equipotential bonding.



Plastic holder for high-voltage insulated cable on Inox base

Description	Diameter Ø [mm]	Material	Code
for high-voltage insulated cable	(23-27)	Inox/Pl	590513

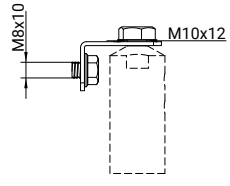
- Application: high-voltage insulated cable fixing.

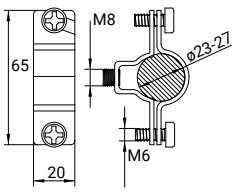


Adapter set for connecting multiple GTI conductors

Description	Diameter Ø [mm]	Material	Code
for high-voltage insulated cable	23-27	Inox	590813

- Application: fixing auxiliary high-voltage insulated cables to insulated air-termination rods.
- Meets the requirements of the IEC 62561 standard.

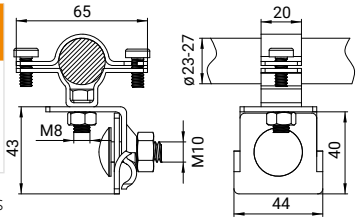




Seam holder for high-voltage insulated cable

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23 - 27)	Inox	M6x16 M10x30 2 pcs. M6x16	590413

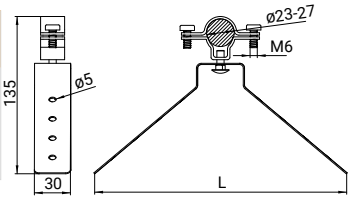
- Application: fixing high-voltage insulated cable to metal profiles and other metal structures



Holder for high-voltage insulated cable on gable

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23 - 27)	StZn	3 pcs. M6x16	590512

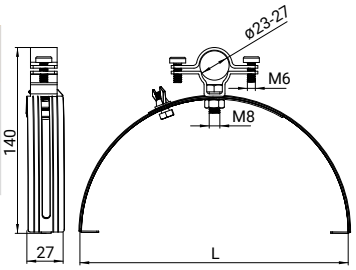
- Application: fixing high-voltage insulated cable on top of sheet metal roofs.
- Quick installation.



Holder for high-voltage insulated cable on ridge

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23 - 27)	StZn	4 pcs. M6x16	590612

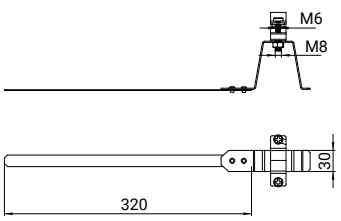
- Application: fixing high-voltage insulated cable on top of tile roofs.



Holder for high-voltage insulated cable on flexible tape

Description	Diameter Ø [mm]	Material	Screw	Code
for high-voltage insulated cable	(23 - 27)	StZn/Alu	3 pcs. M6x16	590712

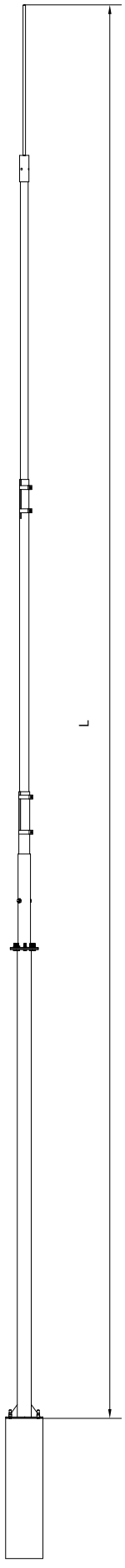
- Application: fixing high-voltage insulated cable on roof with flat tiles.



Free-standing air-termination rod on concrete foundation 6-12 m

Height L [mm]	Material	Code
6000	Inox/Alu/concrete	510618
7000	Inox/Alu/concrete	510718
8000	Inox/Alu/concrete	510818
9000	Inox/Alu/concrete	510918
10000	Inox/Alu/concrete	511018
11000	Inox/Alu/concrete	511118
12000	Inox/Alu/concrete	511218

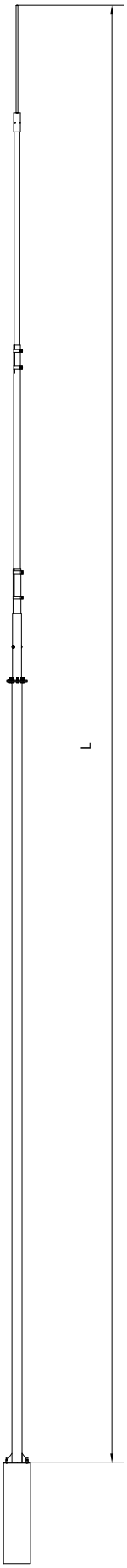
- The set includes: air-termination rod with concrete fundation and connection elements (screws, gbs clamps).
- Application: lightning protection of devices and objects located on the ground.
- Meets the requirements of the IEC 62305 standard.



Free-standing air-termination rod on concrete foundation 13-19 m

Height L [mm]	Material	Code
13000	Inox/Alu/concrete	511318
14000	Inox/Alu/concrete	511418
15000	Inox/Alu/concrete	511518
16000	Inox/Alu/concrete	511618
17000	Inox/Alu/concrete	511718
18000	Inox/Alu/concrete	511818
19000	Inox/Alu/concrete	511918

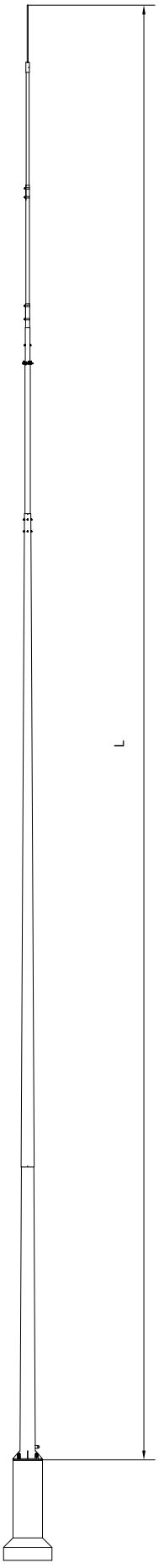
- The set includes: air-termination rod with concrete fundation and connection elements (screws, gbs clamps).
- Application: lightning protection of devices and objects located on the ground.
- Meets the requirements of the IEC 62305 standard.



Free-standing air-termination rod on concrete foundation 20-25 m

Height L [mm]	Material	Code
20000	Inox/Alu/concrete	512018
21000	Inox/Alu/concrete	512118
22000	Inox/Alu/concrete	512218
23000	Inox/Alu/concrete	512318
24000	Inox/Alu/concrete	512418
25000	Inox/Alu/concrete	512518

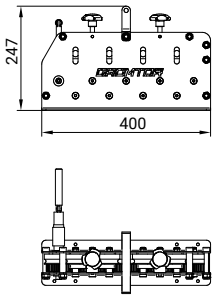
- The set includes: air-termination rod with concrete fundation and connection elements (screws, gbs clamps).
- Application: lightning protection of devices and objects located on the ground.
- Meets the requirements of the IEC 62305 standard.



Straightener for lightning protection conductors

Description	Material	Code
wire Ø(8-10)mm	StGl	600011
wire Ø(8-10)mm and flat conductor ≤ 50 mm	StGl	600111

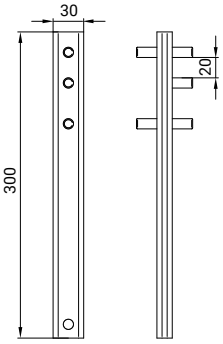
- Application: straightening of lightning protection conductors



Holder for straightening lightning protection conductors

Description	Size [mm]	Material	Code
wire Ø(8-10)mm and flat conductor ≤ 40 mm	300	StZn	600212

- Application: manual straightening of lightning protection conductors.
- Use two holders to straighten the wires.



Zinc in spray

Description	Capacity [ml]	Material	Code
zinc in spray	400	Other	600319

- Application: corrosion protection of metal parts.

Mounting adhesive

Description	Capacity [ml]	Material	Code
mounting adhesive	290	Other	600419

- Application: bonding of various materials (concrete, steel, PVC, etc., except PE, PP and teflon).

Mounting adhesive for roofing felt

Description	Weight [kg]	Material	Code
adhesive mass	10	Other	600519

- Application: for gluing holders on roofs covered with bitumen roofing felt.

Glue for PVC membrane

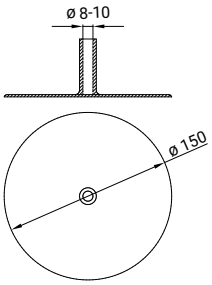
Description	Weight [kg]	Material	Code
glue for PVC membrane	5	Other	600619

- Application: bonding of holders on membrane roofs.

Gasket for lightning protection conductors

Description	Size Ø [mm]	Material	Code
wire Ø(8-10)mm, membrane PVC	150	Other	600719
wire Ø(8-10)mm, membrane TPO	150	Other	601719

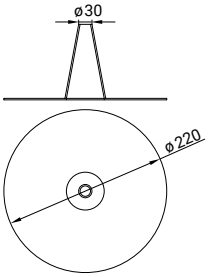
- Application: sealing of culverts on roof.



Gasket for flat conductor

Description	Size Ø [mm]	Material	Code
flat conductor ≤ 30 mm	220	Other	600819

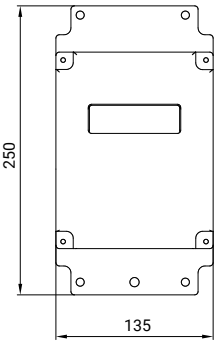
- Application: sealing of culverts on roof.



Counter of atmospheric discharges

Description	Weight [kg]	Material	Code
PLW-03a	0,5	Other	600919
PLW-02b	0,2	Other	601019

- Application: registration of atmospheric discharges in lightning protection fixing protected object.



Technical vaseline

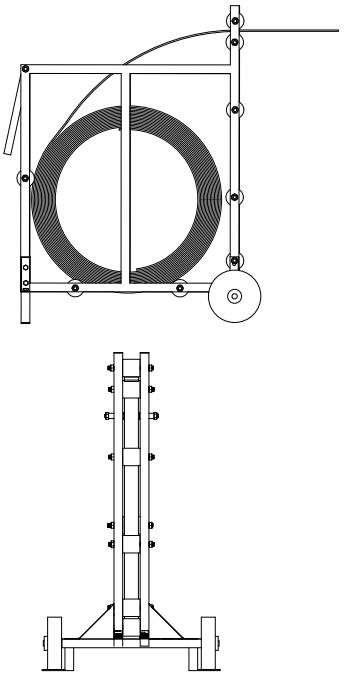
Description	Weight [kg]	Material	Code
technical vaseline	0,5	Other	601119

- Application: protection of screw connections.

Uncoiler for flat conductor up to 50 mm

Description	Material	Code
portable uncoiler	Inox	602013

- Application: auxiliary device for working with a rectifier (number 600011) for flat conductor with a width of up to 50 mm.



Mounting bracket for Ø40 mm air-termination rod

Opis	Materiał	Kod
sealing protection	Pl	602819

- Application: for sealing air-termination rod base mounted on the rafter
- After selecting the lacquered position, product can be selected in following RAL. colors:

RAL 3011 RAL 7016

1. Introduction

Storms are an untamed force of nature, awe-inspiring and fascinating, evoking both humility and fear. Despite numerous studies and technological advancements, it remains impossible to completely eliminate the destructive effects of lightning. Nevertheless, these phenomena still hold many mysteries and present a significant challenge for scientists. Based on current knowledge, regulations regarding the design and implementation of lightning protection systems have been developed, which, according to statistical studies, offer a very high level of protection against lightning strikes and legally safeguard investors and users of facilities in case of damage claims.

Table 1. Reliability of lightning protection.

Category of thunder protection	Maximum lightning peak value	Reliability of protection by PUM
	[kA]	[%]
I	200	98
II	150	95
III	100	90
IV	100	80

2. Lightning phenomena

Source: Lightning Protection and earlier methods of protection against atmospheric discharges, dr. Stefan Gierlotka.

Storms arise due to the movement of air masses with varying humidity and temperature. These movements create strong electric field intensities, which naturally lead to the equalization of potentials through lightning discharges. Lightning follows the path of least resistance. A tall building, surrounded by a strong electric field, can often be the target of a lightning strike. However, it has been observed that lightning frequently strikes lower, well-grounded objects. The structure, geological composition, and soil moisture all play important roles. Lightning strikes are more common in areas with watercourses, such as rivers and streams. According to observations, lightning tends to strike deciduous trees, such as poplars, willows, sycamores, mulberries, and ash trees, as they contain high levels of starch. Trees rich in nutrients, such as walnut, birch, fir, and spruce, have a higher resistance to lightning. It has been noted that lightning strikes brick towers more often than stone ones. The most resistant materials to lightning discharges are roofs made from rock slate, which is non-absorbent, and the mica within it increases its electrical resistivity. The crosses atop sacred buildings, which naturally accumulate electric charges, were historically protected by the placement of a rooster to scatter the electrostatic field. In Muslim countries, crescents were placed on the tops of temples, performing a similar function.

3. History-calendar

Source: https://www.wikiwand.com/pl/Urządzenie_piorunochronne

1746 – Benjamin Franklin, inventor of lightning protection in America, in Philadelphia.
1750 – Václav Prokop Diviš, inventor of lightning protection in Europe.
1760 – William Watson installs a lightning rod in London.
1783 – The installation of the first lightning protection system in Poland, in Rawicz, on the town hall building.
1784 – Father Józef Herman Osiński published the first textbook on Electrical Engineering, which also covered ways to protect life and property from lightning.

4. Legal basis

The implementation of lightning protection systems should comply with Polish standards outlined in the annex to the regulation on the technical conditions that buildings and their locations must meet. Other non-mandatory standards and regulations may be applied based on technical knowledge, as long as they do not conflict with mandatory rules. Industry guidelines and standards are also important.

Scope of standards for lightning protection:

EN 62305-1:2011 Lightning protection - **Part 1:** General requirements.

EN 62305-2:2012 Lightning protection - **Part 2:** Risk management.

EN 62305-3:2011 Lightning protection - **Part 3:** Physical damage to objects and danger to life.

EN 62305-4:2011 Lightning protection - **Part 4:** Electrical and electronic equipment in facilities.

HD 60364-5-54:2011 Low voltage electrical installations.
Part 5-54: Selection and fixing electrical equipment – Grounding systems and protective wires.

EN 50522:2011 Grounding of AC power plant s with a voltage higher than 1 kV.

Current standards for LPS components:

EN 62561-1:2012 (formerly EN 50164-1) Lightning protection system components (LPSC)
Part 1: Connection element requirements - English version.

EN 62561-2:2012 (formerly EN 50164-2) Lightning protection system components (LPSC)
Part 2: Wire and grounding rod requirements-English version.

EN 62561-3:2012 (formerly EN 50164-3) Lightning protection system components (LPSC)
Part 3: Insulation spark plugs requirements - English version.

EN 62561-4:2011 (formerly EN 50164-4) Lightning protection system components (LPSC)
Part 4: Holder requirements - English version.

EN 62561-5:2011 (formerly EN 50164-5) Lightning protection system components (LPSC)
Część 5: Requirements for ground inspection wells and their seals – English version.

EN 62561-6:2011 (formerly EN 50164-6) Lightning protection system components (LPSC)
Part 6: Lightning strike counters (LSC) requirements - English version.

EN 62561-7:2012 (formerly EN 50164-7) Lightning protection system components (LPSC)
Part 7: Requirements for substances that improve the quality of grounding - English version.

IEC 62561-8 2018 Part 8: Requirements for components of insulated lightning protection

5. Qualification of construction objects to the class of lightning protection

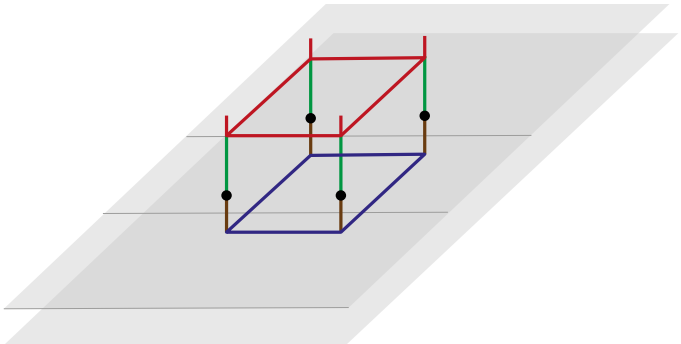
The only valid method for determining the class of lightning protection is to perform a risk analysis according to EN 62305-2. This process involves iterative calculations, using progressively higher reduction measures (including lightning protection classes), until the risk is reduced to below the tolerated threshold. Examples of how construction works qualify for a specific lightning protection class after the risk analysis calculations are provided below.

Table 2. Examples of object Lightning Protection Equipment Qualification to LPS classes.

LPS I	LPS III/ IV
Objects with explosive zones Air traffic control Intensive care facilities Factories and warehouses of explosives	Single and multi-family buildings, commercial Administrative buildings Garages Warehouses Office facilities Gastronomic facilities Exhibition halls Markets Closed sports facilities Swimming pools Cinemas, theatres, schools, kindergartens Museums and historical and cultural objects Production facilities
LPS II	
Buildings higher than 30 m Large hotels Care homes and nursing homes Hostels and accommodation Churches with a tower over 20 m Energy facilities Telecommunications facilities IT facilities Technical supervision centres	

6. Typical installation model

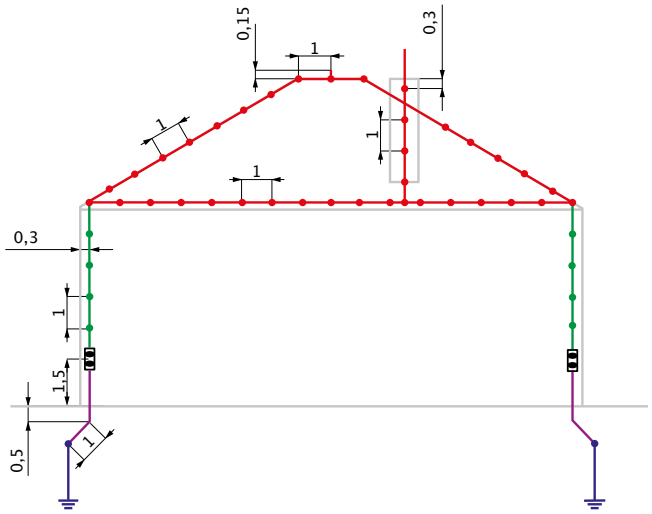
Horizontal reels (red) are designed to receive lightning discharges. Conductors (green) carry the lightning currents along the walls of the structure toward the grounding system. Control connectors (black) allow for disconnection of the installation for measurement purposes. Ground wires (brown) connect the control connectors to the grounding system. Grounding (navy blue) disperses the lightning currents into the earth.



Picture 1. Typical installation model.

7. Installation dimensions

The following are typical installation dimensions for a single-family residential building: horizontal leads and discharge wires made of Φ 8 wire, grounding wires made from FeZn 25x4 box, and Class A grounding rods with a diameter of Φ 20.



Picture 2. Installation dimensions for a single-family residential building

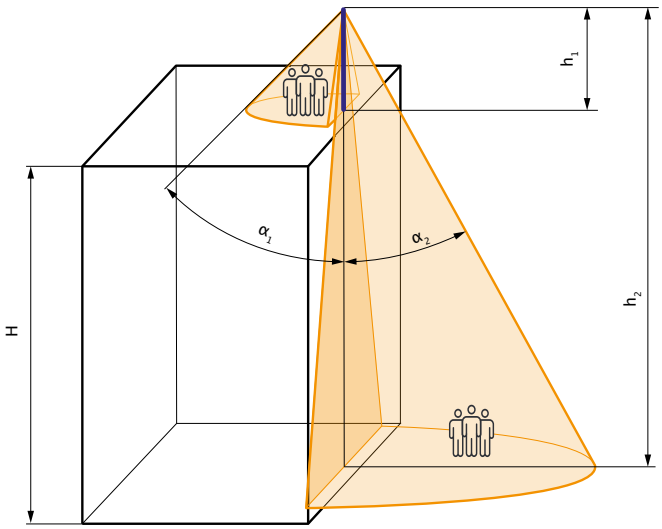
8. Methods for dimensioning protection zones

The rolling ball method is universally applicable in all cases where lightning protection devices and the ground can be relied upon during rolling. The mesh method is suitable for flat roof surfaces.

Table 3. Parameters in mesh and rolling ball methods.

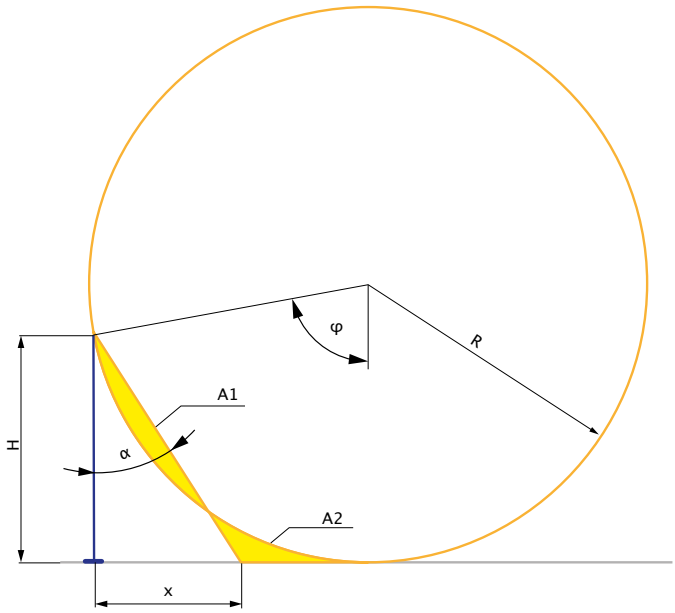
Lightning protection class LPS	Methods for dimensioning	
	Mesh	The rolling ball
	Mesh size [m]	Ball radius [m]
I	5 x 5	20
II	10 x 10	30
III	15 x 15	45
IV	20 x 20	60

The protective angle method is designed for simple structures, with a limitation on the height of the lightning protection from the reference plane. The reference plane is at the level of the building's horizontal slope or the ground, allowing the base of the cone to be supported, thereby forming a protective zone around its axis.



Picture 3. Protective steffs in the method of protective angle for different reference planes.

The protective angle is calculated based on the geometric assumptions of the mutual relationship of the zones using the rolling ball method. The protective angle corresponds to the volumes under and overestimated at a given height of the lightning protection device and a specific class of LPS.



Picture 4. The relationship between the rolling ball method and the protective angle.

$$A_1 = A_2$$

$$\alpha = arctan\left(\frac{x}{h}\right)$$

$$\varphi = arccos\left(1 - \frac{h}{R}\right)$$

$$\frac{x}{h} = \frac{R}{h} sin\varphi - \left(\frac{R}{h}\right)^2 (\varphi - sin\varphi)$$

A_1 – area overestimated in the protective angle method, underest imated in the roll ing ball method
A_2 – area undervalued in the protective angle method, overvalued in the rolling ball method
α – protective angle
R – radius of the ball
H – reference plane height
x – radius of base of cone defined by protective angle α

Table 4. GROMTOR CALC protective zone dimensioning calculator.

DATE	
Lightning protection class LPS III	III
Ball radius [m]	45
Height of lightning protection device [m]	15,0
Protective angle [°]	54,0
Height of protected object [m]	2,0
X-axis air-termination rod distance [m]	15,0
Y-axis air-termination rod distance [m]	12,0
DIMENSIONING OF PROTECTIVE ZONES IN 1 AIR-TERMINATION ROD SYSTEM	
Radius of protective zone - ROLLING BALL [m]	20,3
Radius of protective zone - PROTECTIVE angle [m]	17,9

ROLLING BALL PENETRATION FROM TOP IN A 4-AIR-TERMINATION ROD SYSTEM	
Depth of penetration	1,0
Height of protection zone [m]	14,0
ROLLING BALL SIDE PENETRATION IN A 4-AIR-TERMINATION ROD SYSTEM	
Max depth of penetration of the ball in the X-axis	0,8
Radius of protection zone -protective angle [m]	0,5
REDUCTION OF SHADOW AREA AT PV CELLS	
Air-termination rod diameter [mm]	40
Air-termination rod distance to PV module [m]	4,3

Table 5. Parameters in the protective angle method for selected heights of the reference plane.

H [m]	CLASS LPS I		CLASS LPS II		CLASS LPS III		CLASS LPS IV	
	Protective angle	Protective radius	Protective angle	Protective radius	Protective angle	Protective radius	Protective angle	Protective radius
	α [°]	[m]	α [°]	[m]	α [°]	[m]	α [°]	[m]
1	71	2,90	74	3,49	77	4,33	79	5,14
2	71	5,81	74	6,97	77	8,66	79	10,29
3	66	6,74	71	8,71	74	10,46	76	12,03
4	62	7,52	68	9,90	72	12,31	74	13,95
5	59	8,32	65	10,72	70	13,74	72	15,39
6	56	8,90	62	11,28	68	14,85	71	17,43
7	53	9,29	60	12,12	66	15,72	69	18,24
8	50	9,53	58	12,80	64	16,40	68	19,80
9	48	10,00	56	13,34	62	16,93	66	20,21
10	45	10,00	54	13,76	61	18,04	65	21,45
11	43	10,26	52	14,08	59	18,31	64	22,55
12	40	10,07	50	14,30	58	19,20	62	22,57
13	38	10,16	49	14,95	57	20,02	61	23,45
14	36	10,17	47	15,01	55	19,99	60	24,25
15	34	10,12	45	15,00	54	20,65	59	24,96
16	32	10,00	44	15,45	53	21,23	58	25,61
17	30	9,81	42	15,31	51	20,99	57	26,18
18	27	9,17	40	15,10	50	21,45	56	26,69
19	25	8,86	39	15,39	49	21,86	55	27,13
20	23	8,49	37	15,07	48	22,21	54	27,53
21			36	15,26	47	22,52	53	27,87
22			35	15,40	46	22,78	52	28,16
23			36	16,71	47	24,66	53	30,52
24			32	15,00	44	23,18	50	28,60
25			30	14,43	43	23,31	49	28,76
26			29	14,41	41	22,60	49	29,91
27			27	13,76	40	22,66	48	29,99
28			26	13,66	39	22,67	47	30,03
29			25	13,52	38	22,66	46	30,03
30			23	12,73	37	22,61	45	30,00
31					36	22,52	44	29,94
32					35	22,41	44	30,90
33					35	23,11	43	30,77
34					34	22,93	42	30,61
35					33	22,73	41	30,43
36					32	22,50	40	30,21
37					31	22,23	40	31,50
38					30	21,94	39	30,77
39					29	21,62	38	30,47
40					28	21,27	37	30,14
41					27	20,89	37	30,90
42					26	20,48	36	30,51
43					25	20,05	35	30,11
44					24	19,59	35	30,81
45					23	19,10	34	30,35
46							33	29,87
47							32	29,37
48							32	29,99
49							31	29,44
50							30	28,87
51							30	29,44
52							29	28,82
53							28	28,18
54							27	27,51
55							27	28,02
56							26	27,31
57							25	26,58
58							25	27,05
59							24	26,27
60							23	25,47

9. Isolation separation distance

In the case of lightning current flowing through a lightning rod located below the required separation distance from the protected object, an increase in electric field strength and a spark jump may occur. Therefore, maintaining the necessary separation intervals can help prevent a post-heat explosion.

The method for calculating the insulation gap involves counting the individual sections from the lightning element protecting the object (zone), through the mesh nodes of the lightning protection system, to the nearest wire returning to the ground. These sections are then multiplied by coefficients depending on the LPS class, the insulating material between the lead and the protected object, and the number of discharge wires.

$$s = \frac{k_i}{k_m} \times (k_{c1} \times l_1 + k_{c2} \times l_2 + \ldots + k_{cn} \times l_n)$$

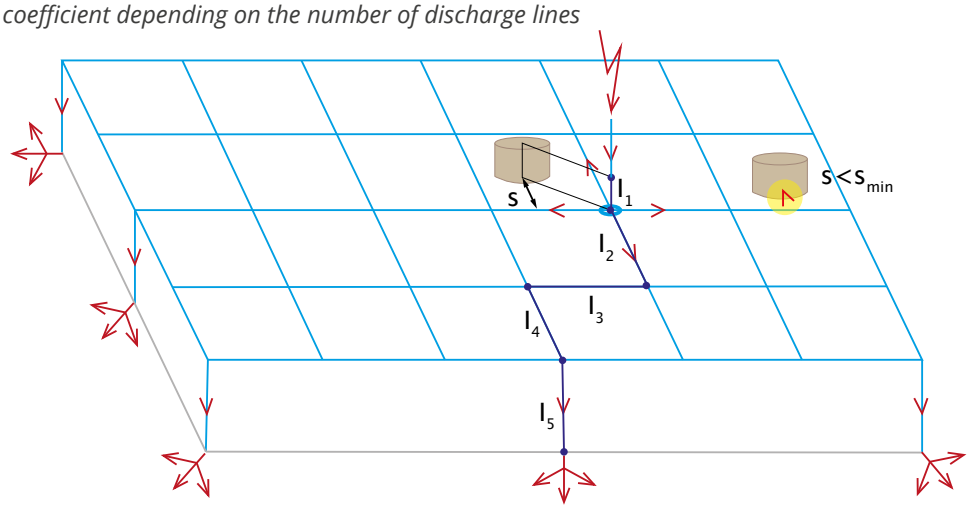
s – minimum separation distance to prevent spark jumps

l_i – the length of the i-th section on the road from the lightning element protecting the object to the nearest rod

k_i – LPs class dependent factor (0.1 -LPS I; 0.075-LPS II; 0.05-LPS III; 0.05-LPS IV)

k_m – coefficient depending on insulation material (1-Air; 0.5-concrete/brick)

k_c – coefficient depending on the number of discharge lines



Picture 5. Example of lightning protection system sections for insulation spacing calculation.

Table 6. GROMTOR CALC insulation spacing calculator.

LIGHTNING PROTECTION CLASS LPL					III
Episode number	Object 1	Object 2	Object 3	Object 4	Object 5
	Length [m]				
1	4,0	4,0	4,0	4,0	4,0
2	25,0	10,0	10,0	10,0	10,0
3	6,0	10,0	10,0	10,0	10,0
4	0,0	6,0	10,0	10,0	10,0
5	0,0	0,0	6,0	10,0	10,0
6	0,0	0,0	0,0	6,0	10,0
7	0,0	0,0	0,0	0,0	6,0
8	0,0	0,0	0,0	0,0	0,0
9	0,0	0,0	0,0	0,0	0,0
10	0,0	0,0	0,0	0,0	0,0
k_i	0,04	0,04	0,04	0,04	0,04
k_m	1	1	1	1	1
N_1	8	5	5	5	5
N_2	2	2	2	2	2
s_{min} [m]	0,72	0,49	0,54	0,58	0,60

10. Compatibility of materials

Lightning protection systems use materials such as hot-dip galvanized steel, stainless steel, copper, and aluminum. Joining elements made of different metals can cause corrosion, which is an inevitable process that returns them to the state in which they occur in ores. This corrosion can lead to interruptions in the continuity of the lightning protection system, reducing its effectiveness. The greater the potential difference between the electrochemical elements connected to each other, the faster the corrosion process occurs.

Table 7. A comparative table of possible metal compounds in a normal industrial atmosphere.

Type of metal		Al	Pb	Cu	Zn	Inox	FeZn
Aluminum	Al	+	+	-	+	+	+
Lead	Pb	+	+	+	+	+	+
Copper	Cu	-	+	+	-	+	-
Zinc	Zn	+	+	-	+	+	+
Stainless steel	Inox	+	+	+	+	+	+
Hot-dip galvanized	FeZn	+	+	-	+	+	+

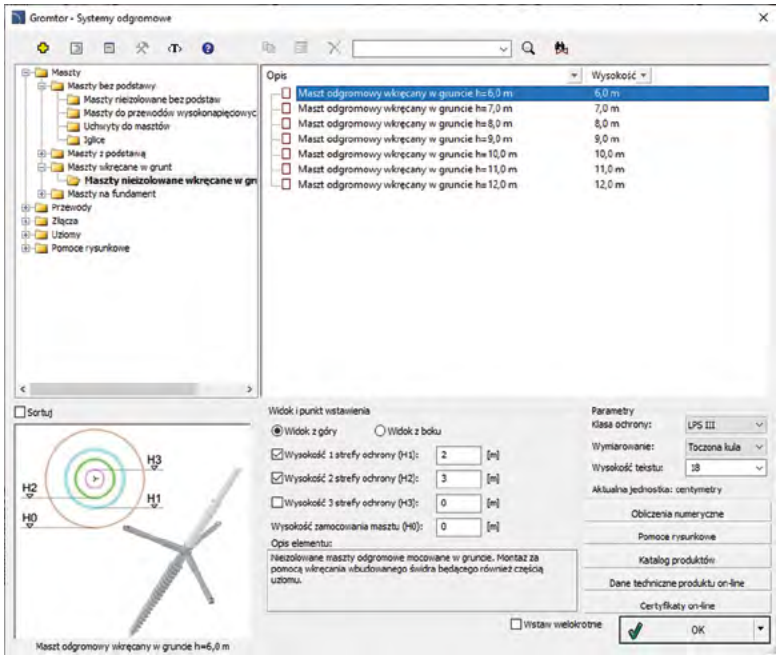
\+ - metal compounds possible

\- - metal compounds prohibited

11. Computer-aided design of lightning protection systems – GROMTOR CAD

This application is one of the few that has freed itself from reliance on manufacturer-specific product databases. It serves as a universal tool for designers, offering great transparency and simplicity in selecting components. It utilizes standard CAD program techniques and commands in a very intuitive way. The calculation modules help determine the necessary parameters. Graphical programming tools enhance the efficiency of your projects. An automatically generated material list can be exported to an Excel file, allowing for the final selection of products. The program includes a drawing library of typical elements and their associations with the lightning protection system.

Image 1. Window for selecting elements in GROMTOR CAD.



GROMTOR provides support to its customers through the implementation of the GROMTOR CAD program design proposals and formal-legal and technical projects for external lightning protection systems.

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