








LIGHTNING RODS & ACCESSORY MATERIAL



catalogue 36





USED SYMBOLS	
	<ul style="list-style-type: none">■ It complies with the maximum protection radii established in the current standards.
	<ul style="list-style-type: none">■ Non electronic air terminal, it does not contain any consumable element, total electrical continuity guaranteed.
	<ul style="list-style-type: none">■ Tested at the High Voltage Electro-technical Laboratory, LABELEC®.
	<ul style="list-style-type: none">■ ESE lightning air terminal, no external power supply required. Will not expel any type of residual emission into the environment.
	<ul style="list-style-type: none">■ Product certificate issued by the certifying institution, Bureau Veritas International.

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1. ¿WHO ARE WE?



The **INGESCO**[®] brand has been distinguished since 1973 for quality and leadership in **design, manufacture and installation of lightning protection systems** (lightning rods, meshes and surge protectors) and the **devices for lightning and storm prevention** and early warning.

Our manufacturing division relies on the reinforcement of the **LABELEC Electrotechnical Laboratory** in order to carry out the research and tests which permit our R&D department to advance the design of more efficient lightning rods and prevention devices.

In addition, **LABELEC** verifies the quality of all our products by submitting them to rigorous and severe electrical tests, including the most extreme environmental and corrosive conditions.



Our group is guaranteed by **36 years of experience**, with the execution of almost **40,000 lightning protection facilities** in Spain in all types of construction, and by a clear wager of the **research and development of new technological solutions** to the challenges faced by lightning protection.



From this permanent effort for the technical renovation and the quality, appear products such as **INGESCO**[®] **PDC, PDC-E** and **Stream** Lightning Rods, in regards to prevention we offer the **Lightning Location System**, in real time, or the **IPSO** series of lightning detectors in their different applications.

The quality of our lightning rods has been recognised by their corresponding product certificates, granted by the **Bureau Veritas International** certification organisation, which also guarantees the **ISO 9001:2008** quality certificate given to our production and marketing processes.



INSPECTION ENTITY :

The **QUIBAC Inspection Entity** is a **conformity assessment agency (Type C)**, accredited by **ENAC (Accreditation n°41/EI069)** for lightning rod facilities. QUIBAC, accredited as an Inspection Entity, performs an unbiased and objective evaluation of any protection system at all required stages: **Design and Engineering Management, Installation, Periodic Inspections.**



2. ¿WHAT DO WE OFFER?



DESIGN, MANUFACTURING & INSTALLATION :

INGESCO® offers an integral lightning and surge protection and prevention service. Our offers encompass **the initial** protection and prevention systems **design** to the **manufacture, installation and start up** of the equipment. This allows us to provide concrete solutions to the specific needs of our clients.

Our Technical Office know in depth the national and international application norms and regulations (norms **UNE 21186, NFC 17102, EN 50164** and **EN 62305**) and the latest available technology, and can advise and design the protection project most adequate for your needs.

INGESCO® makes available to his clients the following tools:

- **INGESCO SOFTWARE DESIGN.** An online program for calculating the protection level required according to the needs of the project. Also, the program can be used to aid in the elaboration of the study on blueprints through the use of tools such as: Installation guide, protection volume in CAD format... (www.ingesco.com/estudios)
- **Product Catalog in PRESTO/FIEBDC format.** This catalog contains the necessary information to elaborate calculation logs and estimates through expenditure items, price schedule and technical information, among others. (www.ingesco.com/estudios)

Investment products and **solutions to made to fit** are the currency which paves our way.

QUALITY SYSTEMS :

All the **INGESCO**® products are submitted to strict quality checks before entering the market. This effort has been recognised with, already in 2004, **ISO 9001:2000 certification**, a guarantee of quality in the processes of our products and services.

PERSONALISED ATTENTION :

INGESCO® offers immediate replies to your consultations. We offer for your disposition our qualified technical and personnel infrastructure which will provide the best assessment of lightning and surge protection and prevention.



AREAS COVERED :

- **LIGHTNING PROTECTION**
 - Air terminals
 - Grounding systems
 - Meshed systems (Faraday's cage)
- **PREVENTION**
 - Lightning detectors of the IPSO series
 - Lightning location systems (SLR)
- **INTERNAL PROTECTION**
 - Transient voltage protector devices

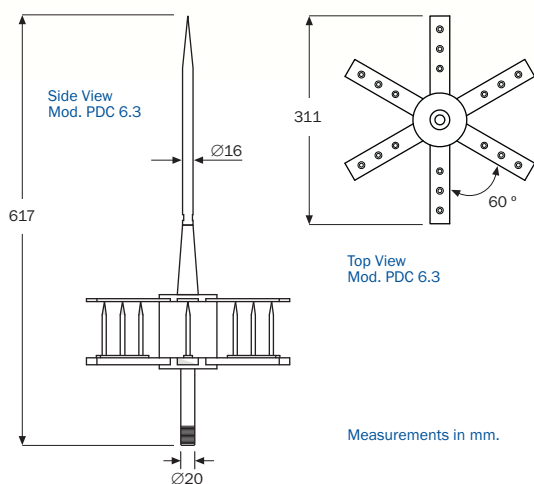


3. PROTECTION LINE: 3.1 AIR TERMINALS

INGESCO® PDC LIGHTNING RODS



Photo Mod. PDC 6.3
(Ref. 101008)



DESCRIPTION :

- Lightning rod with non-electronic **ESE** (Early Streamer Emission) system, standardized according norms UNE 21.186 and NFC 17.102.
- Adaptable to all types of buildings.
- Complies with the requirements set forth in the standards:
 - UNE 21.186
 - EN 50.164/1
 - NFC 17.102
 - EN 62.305
- Product certification num. ES020609 issued by the certification entity Bureau Veritas International.
- Made of AISI 316 stainless steel and epoxy resin.
- 100 % EFFICIENCY, maximum durability.
- Does not need an external power supply.
- Guarantee of electrical continuity and operation after lightning strike, in any atmospheric conditions.



MODELS / PROTECTION LEVELS :

	PDC 3.1	PDC 3.3	PDC 4.3	PDC 5.3	PDC 6.3	PDC 6.4
INGESCO Lightning Rod Model						
Reference	101000	101001	101003	101005	101008	101009
Weight	2.100 gr	3.000 gr	3.200 gr	3.450 gr	3.650 gr	4.200 gr
Δt	15 μs	25 μs	34 μs	43 μs	54 μs	60 μs
LEVEL I	35 m	45 m	54 m	63 m	74 m	80 m
LEVEL II	43 m	54 m	63 m	72 m	83 m	89 m
LEVEL III	54 m	65 m	74 m	84 m	95 m	102 m
LEVEL IV	63 m	75 m	85 m	95 m	106 m	113 m

Protection radii calculated according to: Norm UNE 21.186 & NFC 17.102 (These radii of protection have been calculated according to an altitude difference of 20 m between the end of the lightning rods and the considered horizontal plane).

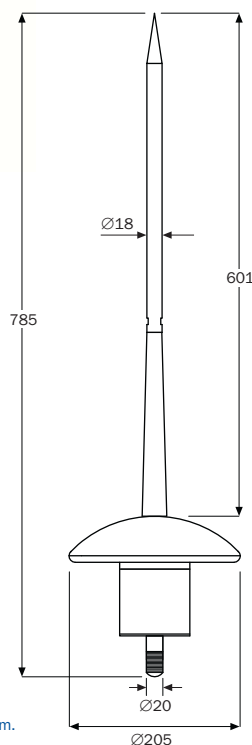
AIR TERMINALS

3.1 AIR TERMINALS

INGESCO® PDC STREAM LIGHTNING RODS



Photo Mod. PDC STREAM



Measurements in mm.

DESCRIPTION :

- Lightning rod with electronic **ESE** (Early Streamer Emission) system, standardized according norms UNE 21.186 and NFC 17.102.
- Adaptable to all types of buildings.
- Complies with the requirements set forth in the standards:
 - UNE 21.186
 - EN 50.164/1
 - NFC 17.102
 - EN 62.305
- Product certification num. ES020609 issued by the certification entity Bureau Veritas International.
- Made of AISI 316 stainless steel.
- 100 % EFFICIENCY, maximum durability.
- Does not need an external power supply.
- Guarantee of electrical continuity and operation after lightning strike, in any atmospheric conditions.



MODELS / PROTECTION LEVELS :

MODEL	STREAM-15	STREAM-30	STREAM-45	STREAM-60
<i>Reference</i>	102020	102021	102022	102023
<i>Weight</i>	5.550 gr.	5.540 gr.	5.530 gr.	5.520 gr.
Δt	15 μs	30 μs	45 μs	60 μs
LEVEL I	35 m	50 m	65 m	80 m
LEVEL II	43 m	59 m	74 m	89 m
LEVEL III	54 m	70 m	86 m	102 m
LEVEL IV	63 m	81 m	97 m	113 m

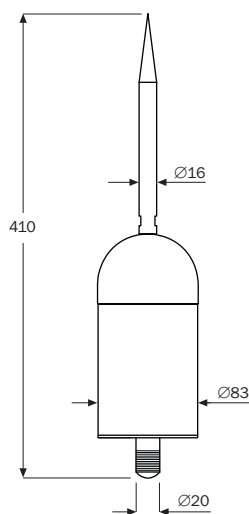
Protection radii calculated according to: Norm UNE 21.186 & NFC 17.102 (These radii of protection have been calculated according to an altitude difference of 20 m between the end of the lightning rods and the considered horizontal plane).

3.1 AIR TERMINALS

INGESCO® PDC-E LIGHTNING RODS



Photo Mod. PDC-E



Measurements in mm.

DESCRIPTION :

- Lightning rod with electronic **ESE** (Early Streamer Emission) system, standardized according norms UNE 21.186 and NFC 17.102.
- Adaptable to all types of buildings.
- Complies with the requirements set forth in the standards:
 - UNE 21.186
 - EN 50.164/1
 - NFC 17.102
 - EN 62.305
- Product certification num. ES020609 issued by the certification entity Bureau Veritas International.
- Made of AISI 316 stainless steel.
- 100 % EFFICIENCY, maximum durability.
- Does not need an external power supply.
- Guarantee of electrical continuity and operation after lightning strike, in any atmospheric conditions.



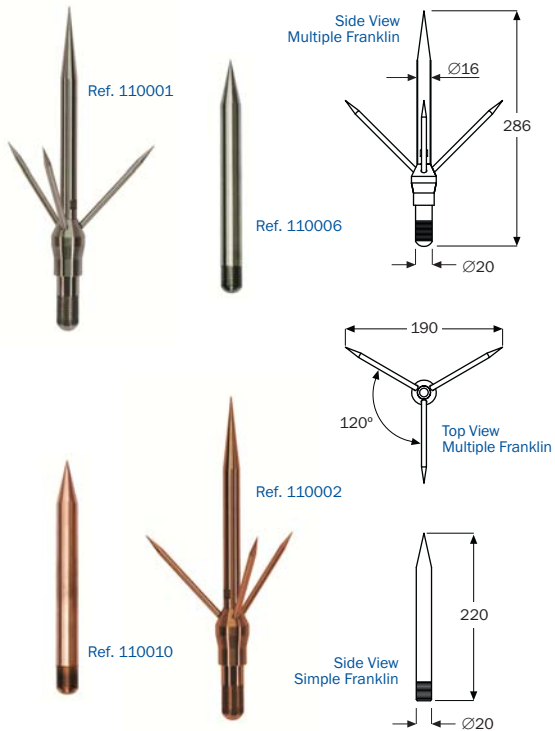
MODELS / PROTECTION LEVELS :

MODEL	PDC-E 15	PDC-E 30	PDC-E 45	PDC-E 60
<i>Reference</i>	102000	102001	102002	102003
<i>Weight</i>	3.850 gr.	3.840 gr.	3.830 gr.	3.820 gr.
Δt	15 μs	30 μs	45 μs	60 μs
LEVEL I	35 m	50 m	65 m	80 m
LEVEL II	43 m	59 m	74 m	89 m
LEVEL III	54 m	70 m	86 m	102 m
LEVEL IV	63 m	81 m	97 m	113 m

Protection radii calculated according to: Norm UNE 21.186 & NFC 17.102 (These radii of protection have been calculated according to an altitude difference of 20 m between the end of the lightning rods and the considered horizontal plane).

3.1 AIR TERMINALS

FRANKLIN LIGHTNING RODS



DESCRIPTION :

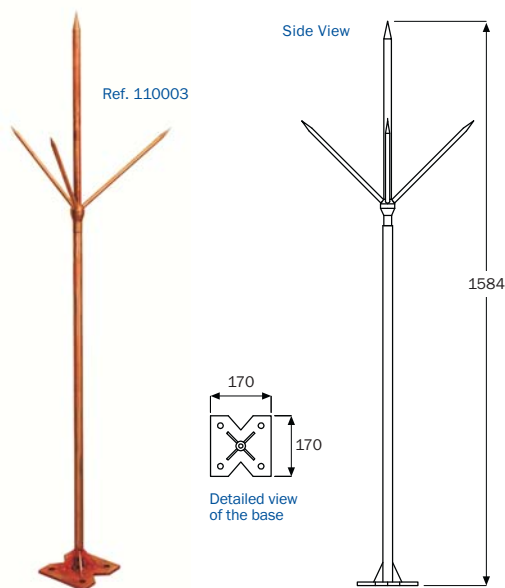
- External protection of structures against lightning.
- Complies with the requirements set forth in the standards:
 - EN 62.305
- Made of AISI 316 stainless steel or copper.
- Note: Consult for special measurements.



MODELS :

SIMPLE FRANKLIN - STAINLESS STEEL	<i>Ref. 110006</i>	465
SIMPLE FRANKLIN - COPPER	<i>Ref. 110010</i>	520
MULTIPLE FRANKLIN - STAINLESS STEEL	<i>Ref. 110001</i>	570
MULTIPLE FRANKLIN - COPPER	<i>Ref. 110002</i>	635

SPECIAL SET FRANKLIN + SUPPORT



DESCRIPTION :

- Set made up of Franklin air terminal plus flat support base, for external protection of structures against lightning.
- Complies with the requirements set forth in the standards:
 - EN 62.305
- Made of copperplated steel.



MODELS :

SPECIAL SET FRANKLIN + SUPPORT	<i>Ref. 110003</i>	5,50
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3.2 ACCESSORY MATERIAL

HEAD - MAST ADAPTOR PIECE



Ref. 111011

Ref. 111012

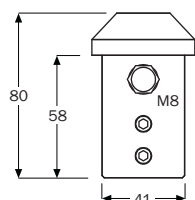
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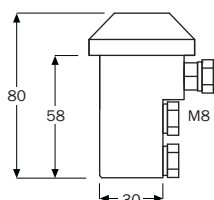
Ref. 111018

Ref. 111014

Ref. 111017



Front View Mod. 1 1/2" for Cable



Side View Mod. 1 1/2" for tape

DESCRIPTION :

- Necessary to connect the air terminal receiver to the mast.
- Facilitates the connection of the head to the conducting network. Available in two models: for connection to cable or rod conductive networks and for connection to 30x2mm tape conductive networks.
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/1
- Made of Cu/Zn alloy (brass).
- Stainless steel hardware.



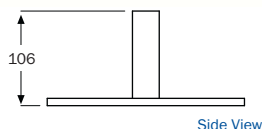
MODELS :

MODELS (according to mast's Ø)	Model for Cable		Model for Tape	
	Reference	Weight	Reference	Weight
1 1/4" inches	111011	640 gr.	111017	515 gr.
1 1/2" inches	111012	760 gr.	111014	705 gr.
2" inches	111013	1.290 gr.	111018	1.275 gr.

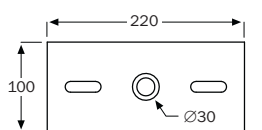
HORIZONTAL BASE FRANKLIN SUPPORT



Ref. 110008



Side View



Top View



Photo set made up of Franklin terminal + Support

DESCRIPTION :

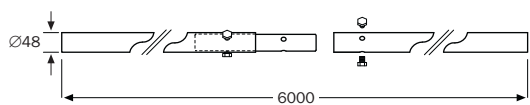
- Flat base support, for fixing Franklin air terminals on horizontal surfaces.
- Complies with the requirements set forth in the standards:
 - EN 62.305
- Made of stainless steel and hot galvanized steel.

MODELS :

HORIZONTAL BASE FRANKLIN SUPPORT	Ref. 110008	1.760 gr.
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3.2 ACCESSORY MATERIAL

MASTS



Telescopic mast of 6 m.

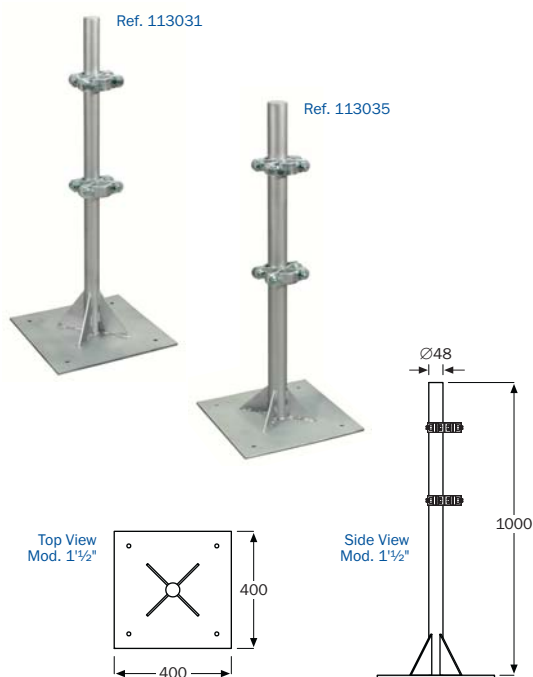
DESCRIPTION :

- 3 m Masts.
- 6 m Telescopic Masts (in two sections with M12 coupler).
- Models made of hot galvanized steel or stainless steel.

MODELS :

3 m. in 1 ¹ / ₄ " HOT GALVANIZED STEEL	Ref. 114052	7,75 kg.
3 m. in 1 ¹ / ₂ " HOT GALVANIZED STEEL	Ref. 114043	10,00 kg.
3 m. in 1 ¹ / ₂ " STAINLESS STEEL	Ref. 114045	9,00 kg.
6 m. in 1 ¹ / ₄ " HOT GALVANIZED STEEL	Ref. 114048	16,80 kg.
6 m. in 1 ¹ / ₂ " HOT GALVANIZED STEEL	Ref. 114041	23,00 kg.
6 m. in 1 ¹ / ₂ " STAINLESS STEEL	Ref. 114042	22,00 kg.

BASE SUPPORT PLATE



DESCRIPTION :

- Flat base support for horizontal surfaces for tube fastening, available for 1¹/₄", 1¹/₂" and 2" tubes.
- Made of hot galvanized steel.

MODELS :

1 ¹ / ₂ " with Double Anchor Clamps 1 ¹ / ₂ " - 1 ¹ / ₄ "	Ref. 113034	17,50 kg.
1 ¹ / ₂ " with Double Anchor Clamps 1 ¹ / ₂ " - 1 ¹ / ₂ "	Ref. 113031	17,70 kg.
1 ¹ / ₂ " with Double Anchor Clamps 1 ¹ / ₂ " - 2"	Ref. 113033	17,90 kg.
2" with Double Anchor Clamps 2" - 1 ¹ / ₂ "	Ref. 113035	18,30 kg.
2" with Double Anchor Clamps 2" - 2"	Ref. 113032	18,50 kg.

3.2 ACCESSORY MATERIAL

MAST ANCHOR SET



Ref. 112021

Ref. 112022

Ref. 112023



Ref. 112024

Ref. 112044

Ref. 112070



Ref. 112025

Ref. 112027

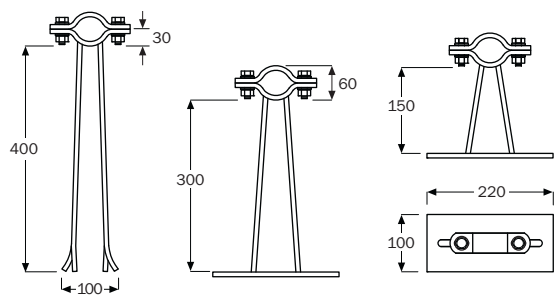
Ref. 112030



Ref. 112026

Ref. 112032

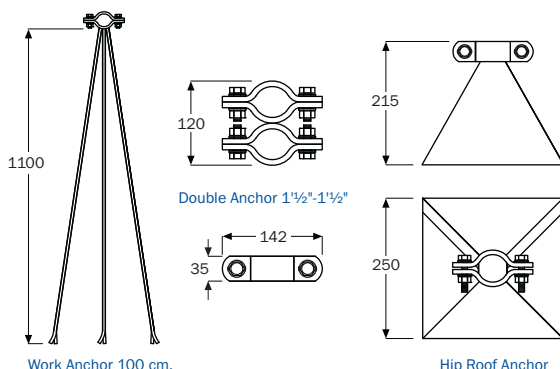
Ref. 112033



Work Anchor 30 cm.

Plate Anchor 30 cm.

Plate Anchor 15 cm.



Work Anchor 100 cm.

Double Anchor 1 1/2"-1 1/2"

Hip Roof Anchor

DESCRIPTION :

- Useful for vertical fastening of masts to various structures.
- Permits fastening 1 1/2" and 2" tubes. Consult for other measurements.
- Suppliable in Work, Plate or Double anchor versions.
- Set of two pieces made of hot galvanized steel.

MODELS :

MASONRY AND PLATE ANCHORING	MODEL 1 1/2"		MODEL 2"	
	Reference	Weight	Reference	Weight
WORK 30 cm.	112021	5,20 kg	112038	5,40 kg
WORK 60 cm.	112022	13,20 kg	112040	13,40 kg
WORK 100 cm.	112023	23,60 kg	112042	23,80 kg
PLATE 15 cm.	112024	5,80 kg	112037	6,00 kg
PLATE 15 cm. Inverted	112070	5,80 kg	—	—
PLATE 30 cm.	112025	7,20 kg	112039	7,40 kg
PLATE 60 cm.	112027	15,70 kg	112041	15,90 kg
PLATE 100 cm.	112030	30,80 kg	112043	31,00 kg

DOUBLE ANCHORING	Reference	Weight
DOUBLE ANCHOR CLAMP 1 1/2" - 1 1/2"	112026	3,00 kg
DOUBLE ANCHOR CLAMP 1 1/2" - 1 1/4"	112036	2,80 kg
DOUBLE ANCHOR CLAMP 1 1/2" - 2"	112035	3,20 kg
DOUBLE ANCHOR CLAMP 2" - 2"	112034	3,40 kg
DOUBLE ANCHOR CROSS CLAMP 1 1/2" - 1 1/2"	112032	3,00 kg

OTHER ANCHORINGS AND COMPLEMENTS	Reference	Weight
ANCHORING PLATE	112044	2,70 kg
HIP ROOF ANCHOR	112033	2,75 kg

3.2 ACCESSORY MATERIAL

BRAIDED COPPER CABLE



Ref. 117071

Ref. 117072

Ref. 117073

Ref. 117074



Cable section detail



35 mm²
(∅ 7 mm)



50 mm²
(∅ 8 mm)



70 mm²
(∅ 10 mm)



95 mm²
(∅ 11 mm)

DESCRIPTION :

- Braided bare electrolytic copper cable.
- Complies with the requirements set forth in the standards:
 - NFC 17.102
 - UNE 21.186
 - EN 50.164/2
 - EN 62.305 (only cables ≥ 50 mm²)
- Mainly applied as a down conductor for lightning protection and grounding systems.



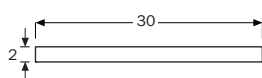
MODELS :

35 mm² of section	Ref. 117071	315 /m
50 mm² of section	Ref. 117072	500 /m
70 mm² of section	Ref. 117073	600 /m
95 mm² of section	Ref. 117074	830 /m

COPPER TAPE



Ref. 117076



Tape cross section detail

DESCRIPTION :

- Bare electrolytic copper tape of 30x2 mm.
- Complies with the requirements set forth in the standards:
 - NFC 17.102
 - UNE 21.186
 - EN 50.164/2
 - EN 62.305
- Mainly applied as a down conductor for lightning protection and grounding systems.
- Supplied in 3 meter bars or in coils (consult lengths).

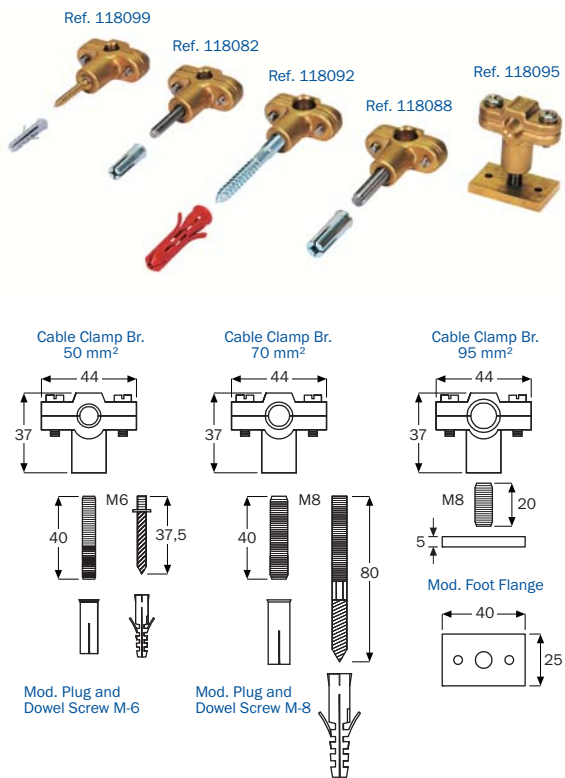


MODELS :

COPPER TAPE 30x2 mm.	Ref. 117076	530 /m
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3.2 ACCESSORY MATERIAL

CABLE CLAMPING BRACKETS



DESCRIPTION :

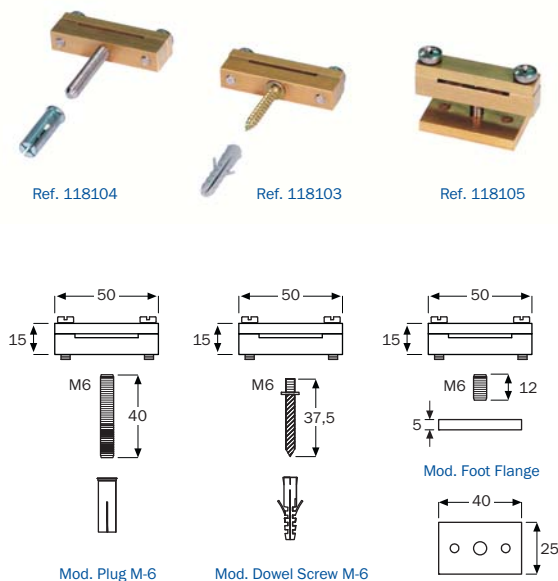
- Fastener clamps for 50-70-95 mm² cross section cables.
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/4
- Made of Cu/Zn alloy (brass), stainless steel hardware.
- Pre assembled models with different anchoring types in M6 and M8 sizes (plug, dowel screw, foot flange).



MODELS :

CLAMPING BRACKET	Cable 50 mm ²		Cable 70 mm ²		Cable 95 mm ²	
	Reference	Weight	Reference	Weight	Reference	Weight
Plug M-6	118082	114 gr.	118091	111 gr.	118090	105 gr.
Plug M-8	118081	122 gr.	118089	119 gr.	118088	113 gr.
Dowel Screw M6	118099	105 gr.	118000	102 gr.	118100	96 gr.
Dowel Screw M8	118083	119 gr.	118093	116 gr.	118092	110 gr.
Foot Flange	118084	145 gr.	118095	142 gr.	118094	136 gr.

TAPE CLAMPING BRACKETS



DESCRIPTION :

- Fastener clamps for 30x2 cross section tape.
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/4
- Made of Cu/Zn alloy (brass), stainless steel hardware.
- Available with different anchoring types in M6 (plug, dowel screw, foot flange).



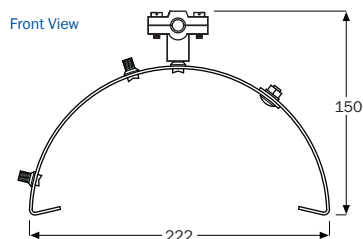
MODELS :

Plug M-6.....	Ref. 118104	63 gr.
Dowel Screw M-6.....	Ref. 118103	72 gr.
Foot Flange.....	Ref. 118105	101 gr.

3.2 ACCESSORY MATERIAL

ROOF CONDUCTOR SUPPORT

Ref. 118086



DESCRIPTION :

- Adjustable support for 160-260 mm wide lintel tiles.
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/4
- Made of hot galvanized steel.
- With fastener clamp for 50-70-95 mm² cross section cables.

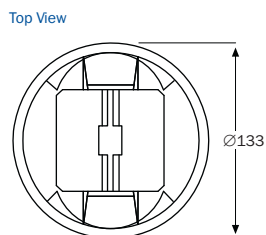
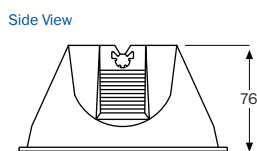


MODELS :

Cable CLAMP BRACKET 50 mm ²	Ref. 118086	275	92
Cable CLAMP BRACKET 70 mm ²	Ref. 118101	270	92
Cable CLAMP BRACKET 95 mm ²	Ref. 118102	265	92

ROOF CONDUCTOR HOLDER FOR FLAT ROOFS

Ref. 800011



DESCRIPTION :

- Concrete support with black polyethylene sheath.
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/4
- Allows fixing round conductors 35 to 95 mm² on flat roofs.



MODELS :

CONCRETE SUPPORT	Ref. 800011	1.140	92
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3.2 ACCESSORY MATERIAL

CONNECTION SLEEVES

Ref. 115051



Ref. 115052



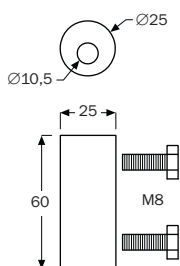
Ref. 115056



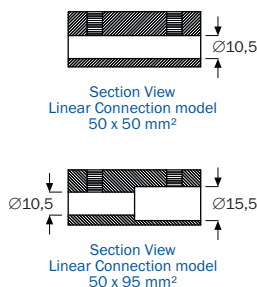
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Ref. 115053

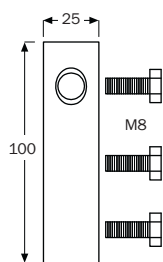


Linear Connection model
50 x 50 mm²

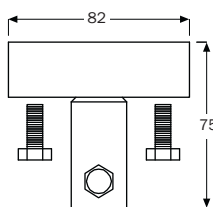


Section View
Linear Connection model
50 x 50 mm²

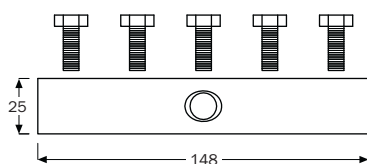
Section View
Linear Connection model
50 x 95 mm²



T' Connection model
(1 piece)



T' Connection model
(2 pieces)



Cross Connection model

DESCRIPTION :

- Sleeves for the connection of 35-50-70-95 mm² cross section cables.
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/1
- Made of Cu/Zn alloy (brass).
- Stainless steel hardware.



MODELS :

SLEEVES (by type of cables to connect)	Reference	Weight
LINEAR CONNECTION 35 x 35 mm ²	115067	235 gr.
LINEAR CONNECTION 35 x 50 mm ²	115070	226 gr.
LINEAR CONNECTION 50 x 50 mm ²	115051	217 gr.
LINEAR CONNECTION 50 x 70 mm ²	115072	212 gr.
LINEAR CONNECTION 50 x 95 mm ²	115076	195 gr.
LINEAR CONNECTION 70 x 70 mm ²	115074	204 gr.
LINEAR CONNECTION 70 x 95 mm ²	115078	187 gr.
LINEAR CONNECTION 95 x 95 mm ²	115080	168 gr.
ELECTRODE GROUND ROD CONNECTION	115055	203 gr.

SPECIAL SLEEVES	Cable 50/70 mm ²		Cable 95 mm ²	
	Reference	Weight	Reference	Weight
T' CONNECT. (1 Piece)	115052	355 gr.	115082	470 gr.
T' CONNECT. (2 Pieces)	115056	500 gr.	115084	610 gr.
CROSS CONNECTION	115053	450 gr.	115086	665 gr.

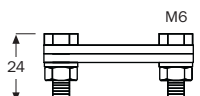
3.2 ACCESSORY MATERIAL

TAPE CONNECTORS

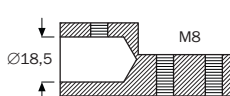
Ref. 115093



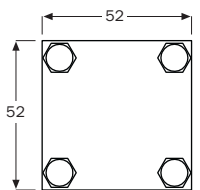
Ref. 115094



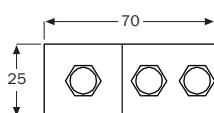
Front View Cross Coupler



Cross Section
Tape-Ground rod Coupler



Top View Cross Coupler



Top View
Tape-Ground rod Coupler

DESCRIPTION :

- Tape connectors specially designed for tapes 2 to 4 mm thick and 30 mm wide.
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/1
- Models made of copper or Cu/Zn alloy (brass), stainless steel hardware.

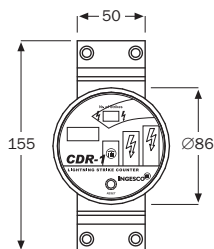


MODELS :

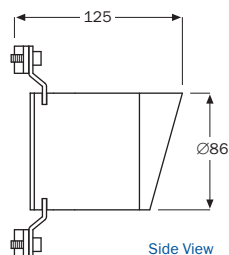
CROSS COUPLING FOR TAPE	Reference	Weight
In COPPER	115093	164
TAPE-GROUND ROD COUPLER	Reference	Weight
In Cu/Zn (Brass)	115094	284

CDR-1 LIGHTNING STRIKE COUNTER

Ref. 430016



Front View



Side View

DESCRIPTION :

- Logs the lightning strikes which occur within the external lightning protection system.
- Complies with the requirements set forth in the standards:
 - UNE 21.186
 - NFC 17.102
 - EN 62.305
- Range of Intensity: 1 kA (8/20 μs) - 100 kA (10/350 μs), according to EN 50.164/6
- Valid for: Cable 50-95 mm², Rod Ø 8-12 mm, Tape 30x2 mm.



MODELS :

CDR-1	Ref. 430016	830
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3.2 ACCESSORY MATERIAL

PCS CARD



Ref. 430002



Front View with the open support

DESCRIPTION :

- It detects and stores current spikes which circulate through the conductor.
- A support fixture is included for a 8 to 10 mm diameter round cable.

MODELS :

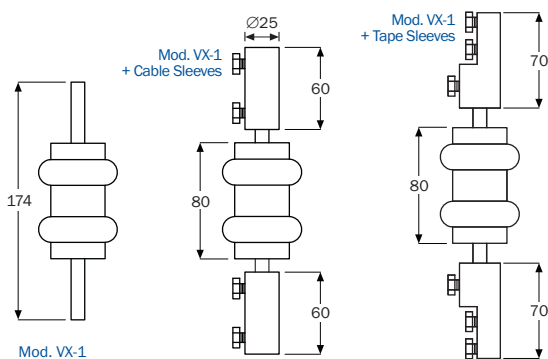
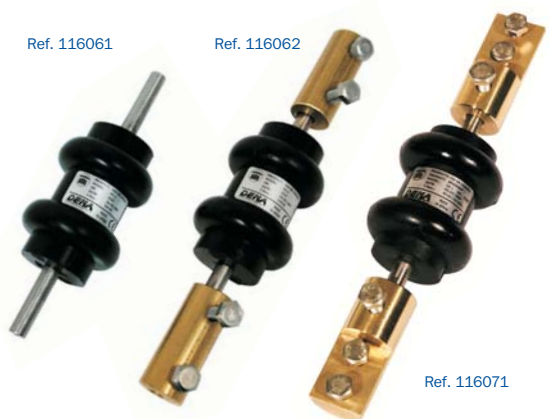
PCS CARD	Ref. 430002	24	
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VX-1 SPARK GAP

Ref. 116061

Ref. 116062

Ref. 116071



DESCRIPTION :

- Indicated for the connection of TV and communications antennas and cathodic protection.
- Complies with the requirements set forth in the standards:
 - EN 50.164/3
- Maximum intensity 50 kA, wave type 10/350 μ s.
- Response voltage (1,2/50 μ s) = 15kV
- It can be supplied with terminal connectors (sleeves) for tape or for 50-70-95 mm² cross section cables. Stainless steel hardware.

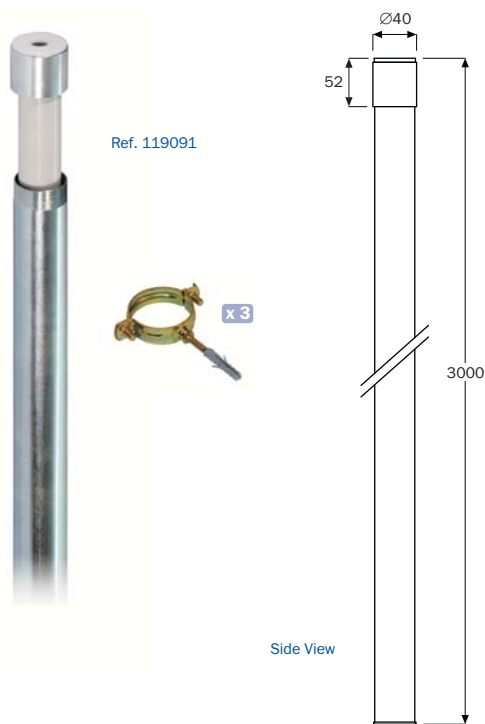


MODELS :

VX-1	Ref. 116061	360	
VX-1 + Connection Sleeves for Cable 50 mm ²	Ref. 116062	795	
VX-1 + Connection Sleeves for Cable 70 mm ²	Ref. 116063	785	
VX-1 + Connection Sleeves for Cable 95 mm ²	Ref. 116064	750	
VX-1 + Connection Sleeves for Tape	Ref. 116071	970	

3.2 ACCESSORY MATERIAL

PROTECTION TUBE



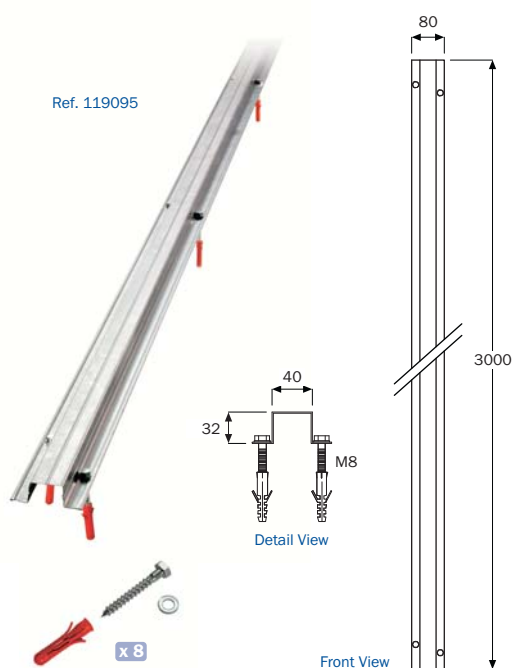
DESCRIPTION :

- Mechanical protector for down conductors of external lightning protection systems, placed at ground level.
- Suitable for the protection of external down conductors, as recommended by the UNE 21.186 and NFC 17.102 standards.
- Length 3 m.
- Model made with hot galvanized steel, containing \varnothing 32 mm inner tube made of PVC.
- Includes 3 clamps, plugs and dowel screws.

MODELS :

GALVANIZED STEEL TUBE..... Ref. 119091 5,00

GUARD FOR TAPE PROTECTION



DESCRIPTION :

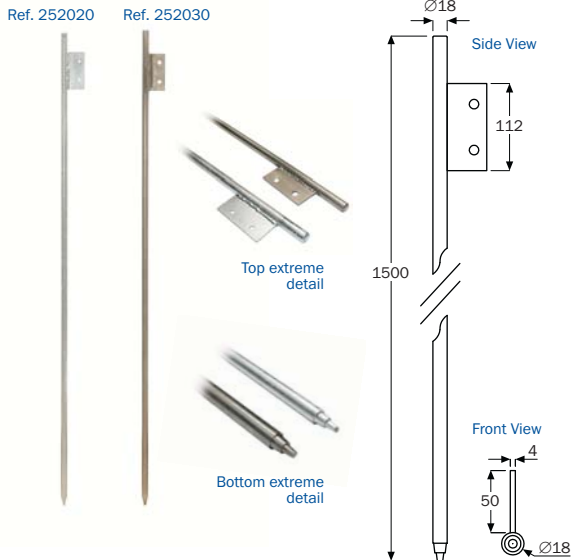
- Mechanical protector for tape down conductors of external lightning protection systems, placed at ground level.
- Suitable for the protection of external down conductors, as recommended by the UNE 21.186 and NFC 17.102 standards.
- Length 3 m.
- Model made of 1 mm hot galvanized steel plate sheet.
- Masonry wall anchoring hardware included.

MODELS :

TAPE GUARD..... Ref. 119095 2,60

3.3 GROUNDING ACCESSORY MATERIAL

ELECTRODE - GROUNDING ROD



DESCRIPTION :

- Very useful in any type of grounding (houses, antennas, machinery and instrumentation, etc.)
- Complies with the requirements set forth in the standards:
 - EN 62.305
 - EN 50.164/2
- Models made of hot galvanized steel, stainless steel or copper-plated steel.

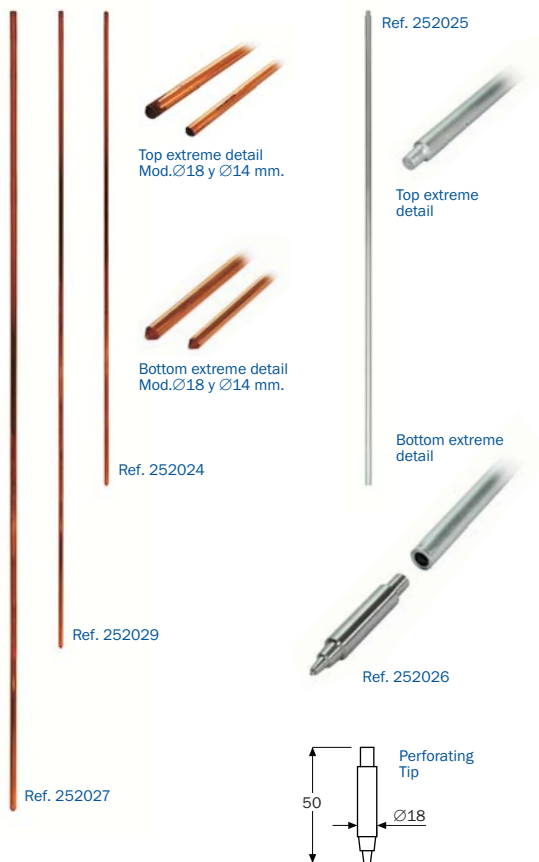


MODELS :

GROUNDING RODS WITH COUPLING TAB	Reference	Weight
1,5 m. in ZINC PLATED STEEL Ø18 mm.	252020	3,27 kg
1,5 m. in STAINLESS STEEL Ø18 mm.	252030	3,22 kg

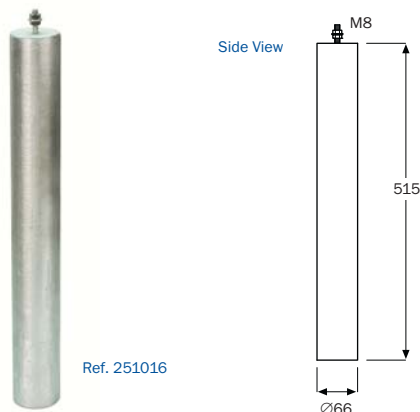
COPPER-PLATED STEEL GROUNDING RODS	Reference	Weight
2,5 m. long - Ø18 mm.	252027	5,25 kg
2 m. long - Ø18 mm.	252032	3,28 kg
2 m. long - Ø14 mm.	252029	2,55 kg
1,5 m. long - Ø18 mm.	252033	2,40 kg
1,5 m. long - Ø14 mm.	252024	1,86 kg

SPLICEABLE GROUNDING RODS	Reference	Weight
1,5 m. in ZINC PLATED STEEL Ø18 mm.	252025	3,19 kg
PERFORATING TIP in STEEL	252026	160 gr.



3.3 GROUNDING ACCESSORY MATERIAL

SACRIFICIAL ANODE



Ref. 251016

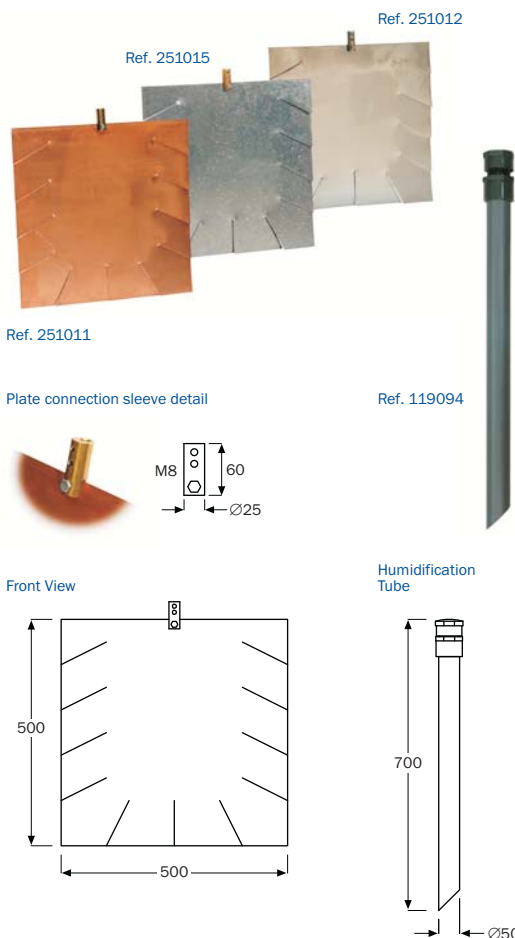
DESCRIPTION :

- Ideal for protection against corrosion.
- Composed of an alloy of Magnesium, Aluminum and Zinc.
- Potential of 1,55 volts in relation to the Cu/CuSO4 electrode.

MODELS :

SACRIFICIAL ANODE	Ref. 251016	3,60 kg
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ELECTRODE - GROUNDING PLATE



DESCRIPTION :

- Ideal for the installation of grounding systems with high resistance terrain.
- Models available made of Copper, Hot galvanized steel or Stainless steel*.
* (The stainless steel model is recommended by **INGESCO**® for use only in very humid, marine or highly corrosive environments).
- Stainless steel hardware.
- Complies with the requirements set forth in the standards (except Stainless steel model):
 - UNE 21.186
 - NFC 17.102
 - EN 50.164/2
 - EN 62.305
- Large contact surface.
- It is recommended to add the Quibacsol mineral compound in the installation, and also a humidifying tube accessory for maintenance.

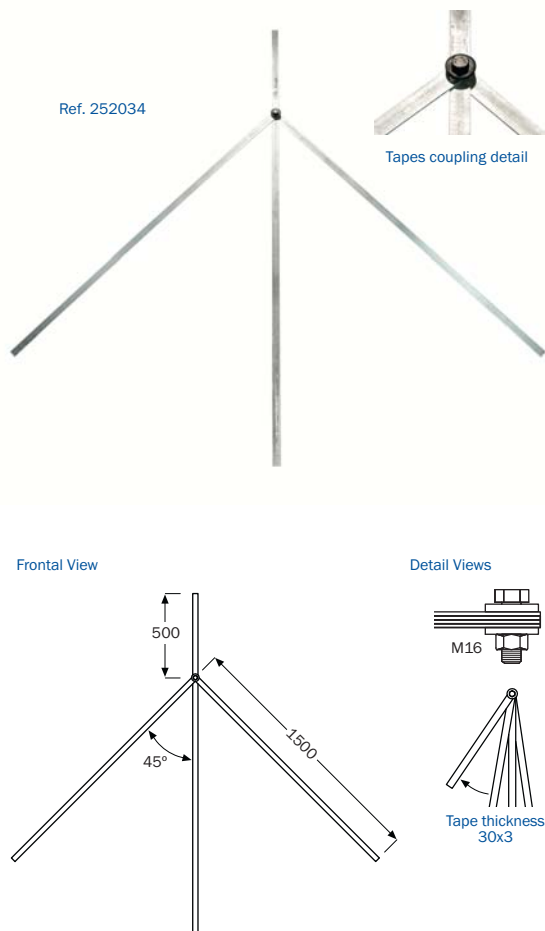


MODELS :

GROUNDING PLATE - COPPER	Ref. 251011	4,70 kg
GROUNDING PLATE - GALVANIZED STEEL	Ref. 251015	6,20 gr
GROUNDING PLATE - STAINLESS STEEL	Ref. 251012	4,30 gr
HUMIDIFYING TUBE ACCESSORY	Ref. 119094	570 gr

3.3 GROUNDING ACCESSORY MATERIAL

GROUND TERMINATION KIT - "CROW'S FOOT"



DESCRIPTION :

- Very useful in any type of grounding, specially recommended for lightning protection systems.
- Complies with the requirements set forth in the standards:
 - UNE 21.186
 - EN 50.164/2
 - NFC 17.102
 - EN 62.305
- Models made of hot galvanized steel.



MODELS :

KIT "CROW'S FOOT" 1,5 m.	Ref. 252034	4,50 kg
KIT "CROW'S FOOT" 3 m.	Ref. 252035	8,30 kg

QUIBACSOL MINERAL COMPOUND



DESCRIPTION :

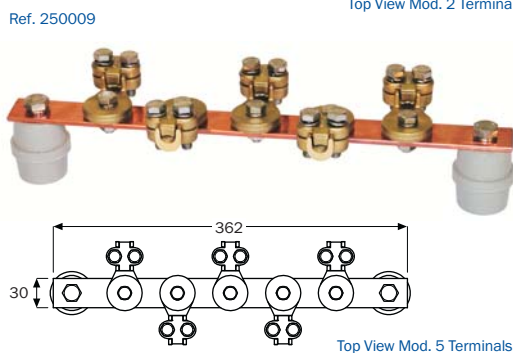
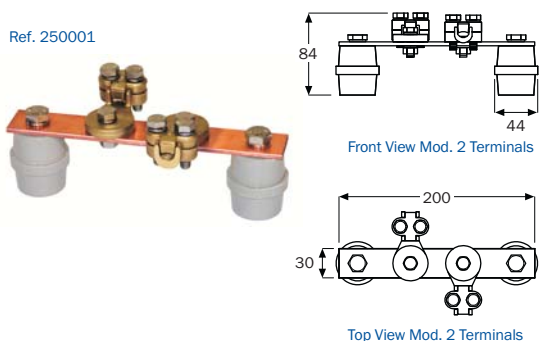
- Mineral composite to improve conductivity to ground.
- With its use, low resistances are obtained in all types of groundings (houses, antennas, machinery and instrumentation, lightning rods, etc.)
- Packaging made of recycled plastic, practical and easy to store.

MODELS :

QUIBACSOL - 10 kg. PACKAGE	Ref. 254041	10,40 kg
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3.3 GROUNDING ACCESSORY MATERIAL

WALL MOUNTED TEST JOINT



DESCRIPTION :

- Grounding connection bar consisting of copper bar, insulators and terminal connectors.
- Complies with the requirements set forth in the standards:
 - UNE 21.186 • NFC 17.102 • EN 50.164/1 • EN 62.305
- Made of Cu (bar) and brass (terminals). Stainless steel hardware.



MODELS :

WALL MOUNTED TEST JOINT	Reference	Weight
2 TERMINALS (Length: 200 mm.)	250001	940 gr
3 TERMINALS (Length: 254 mm.)	250007	1.215 gr
4 TERMINALS (Length: 308 mm.)	250008	1.490 gr
5 TERMINALS (Length: 362 mm.)	250009	1.750 gr

TEST JOINT IN BOX



DESCRIPTION :

- Wall mounted grounding test joint, consisting of Cu/Zn alloy (brass) manual disconnection system and 160x118x75 mm PVC box, water resistant (IP 65). Stainless steel hardware.
- Specially made for 50 mm² cross section Cu cable down conductors. Fittings also available for connection of 70 and 95 mm² cross section cables and for copper tape 30x2 mm down conductors.
- Complies with the requirements set forth in the standards:
 - UNE 21.186 • NFC 17.102 • EN 50.164/1 • EN 62.305



MODELS :

TEST JOINT IN BOX	Ref. 250006	610 gr
FITTINGS FOR 70 mm ² CABLE	Ref. 250010	260 gr
FITTINGS FOR 95 mm ² CABLE	Ref. 250011	226 gr
FITTINGS FOR TAPE CONDUCTOR.....	Ref. 250012	392 gr

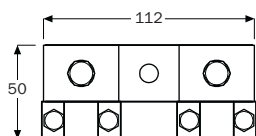
3.3 GROUNDING ACCESSORY MATERIAL

TEST JOINT IN ACCESS BOX - CABLE MODEL

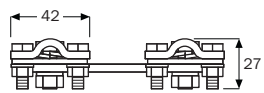
Ref. 250004



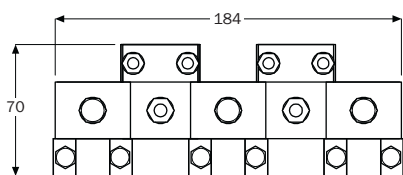
Ref. 250019



Top View Mod. 2 Terminals



Front View Mod. 2 Terminals



Top View Mod. 5 Terminals

DESCRIPTION :

- Grounding connection bar consisting of copper bar and connection terminals for 35 to 95 mm² cross section cables.
- Complies with the requirements set forth in the standards:
 - UNE 21.186
 - NFC 17.102
 - EN 50.164/1
 - EN 62.305
- Made of Cu (Copper). Stainless steel hardware.

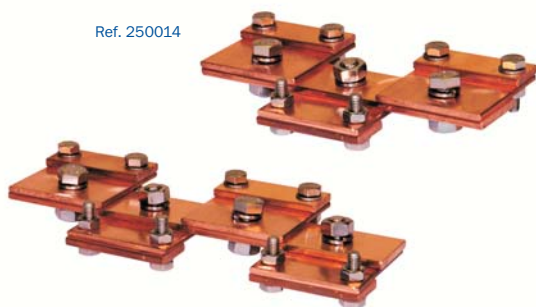


MODELS :

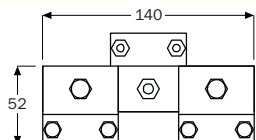
TEST JOINT IN ACCESS BOX - Cable Model	Reference	Weight
2 TERMINALS (Length: 110 mm.)	250004	335 gr.
3 TERMINALS (Length: 110 mm.)	250017	455 gr.
4 TERMINALS (Length: 146 mm.)	250018	605 gr.
5 TERMINALS (Length: 182 mm.)	250019	755 gr.

TEST JOINT IN ACCESS BOX - TAPE MODEL

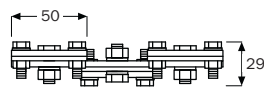
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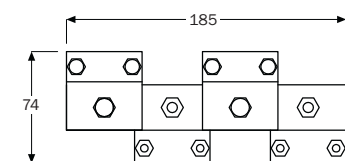
Ref. 250015



Top View Mod. 3 Terminals



Front View Mod. 3 Terminals



Top View Mod. 4 Terminals

DESCRIPTION :

- Grounding connection bar consisting of copper bar and connection terminals for 30x2 mm copper tape.
- Complies with the requirements set forth in the standards:
 - UNE 21.186
 - NFC 17.102
 - EN 50.164/1
 - EN 62.305
- Made of Cu (Copper). Stainless steel hardware.



MODELS :

TEST JOINT IN ACCESS BOX - Tape Model	Reference	Weight
2 TERMINALS (Length: 140 mm.)	250013	410 gr.
3 TERMINALS (Length: 140 mm.)	250014	540 gr.
4 TERMINALS (Length: 185 mm.)	250015	720 gr.
5 TERMINALS (Length: 230 mm.)	250016	900 gr.

3.3 GROUNDING ACCESSORY MATERIAL

INSPECTION CHAMBERS AND COVERS



Ref. 253031



Ref. 253032



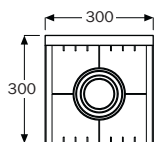
Ref. 253034



Ref. 253037



Ref. 253033



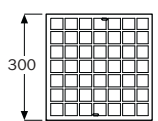
Front View
PP Square model



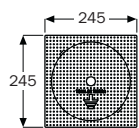
Front View
PP Circular model



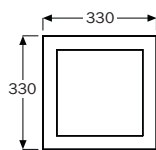
Front View
Concrete model



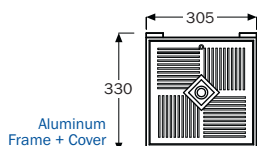
Top View
PP Square model



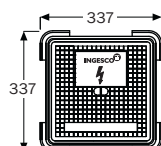
Top View
PP Circular model



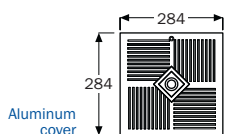
Top View
Concrete model



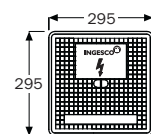
Aluminum
Frame + Cover



Cast iron
Frame + Cover



Aluminum
cover



Cast iron
cover

DESCRIPTION :

- Registry system for grounding installations.
- High strength antiskid inspection chambers and covers.
- Models made of polypropylene or concrete.

MODELS :

POLYPROPYLENE INSPECTION CHAMBERS	Reference	Weight
SQUARE (30x30x30 cm.)	253031	3,00 kg
CIRCULAR (Ø20 cm.)	253032	775 g

CONCRETE INSPECTION CHAMBERS	Reference	Weight
SQUARE (33x33x23 cm.)	253034	24,00 kg

COVERS FOR INSPECTION CHAMBERS	Reference	Weight
ALUMINUM FRAME AND COVER	253037	2,22 kg
CAST IRON FRAME AND COVER	253033	4,95 kg

3.4 INTERNAL PROTECTION DEVICES

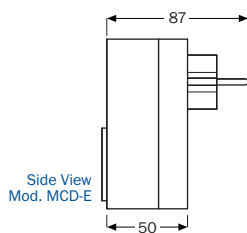
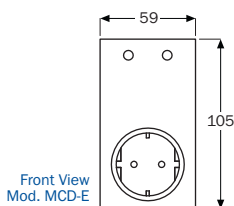
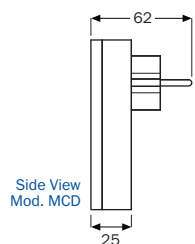
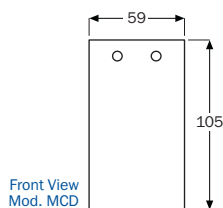
ABSORBER - TRANSIENT SURGE PROTECTION



Ref. 370070



Ref. 370166



DESCRIPTION :

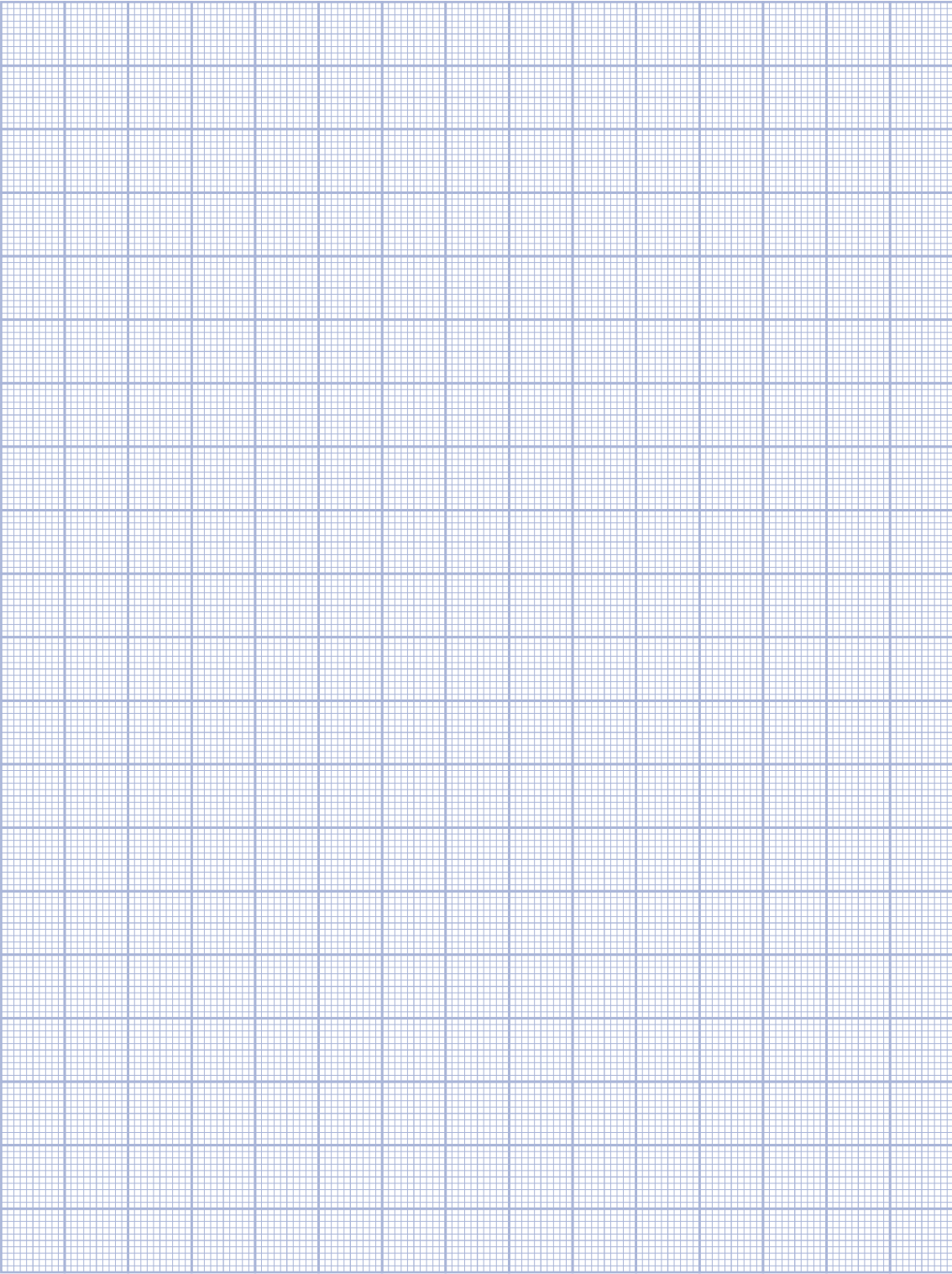
- Protection against transitory surges of general electrical facilities connected to single-phase low voltage 230V mains power. Protector Type III (Fine protection).
- Suitable for protection of equipment intended to be connected to an electrical installation (Category I, according to ITC-BT-23).
- Model MCD-E, includes a front jack for connecting equipment to the electrical grid.
- Technical specifications of the Absorber protectors:

Nominal Voltage:	$U_N = 230V$ AC (50Hz).
Maximum working Voltage:	$U_C = 275V$ AC (50Hz)
Nominal discharge Intensity:	$I_n (8/20 \mu s) = 5kA$
Maximum discharge Intensity:	$I_{max} (8/20 \mu s) = 8kA$
Response time:	$t_A < 25$ ns
Protection level:	$U_P \leq 1kV$
Nominal load current:	$I_L = 16$ A (MCD-E model)



MODELS :

ABSORBER MCD	Ref. 370070	200	
ABSORBER MCD-E	Ref. 370166	238	



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TECHNICAL SUPPORT

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lightning rods & accessory material



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