

# CATALOG

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EARLY STREAMER EMISSION  
AIR TERMINAL



CONDUCTORS



GROUNDING



TOOLS

# SUMMARY

Summary in pictures **04**

## Early Streamer Emission (ESE) - Air terminal - STAR®

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R & D



MANUFACTURING



TECHNICAL AND COMMERCIAL



EXPORT SALES

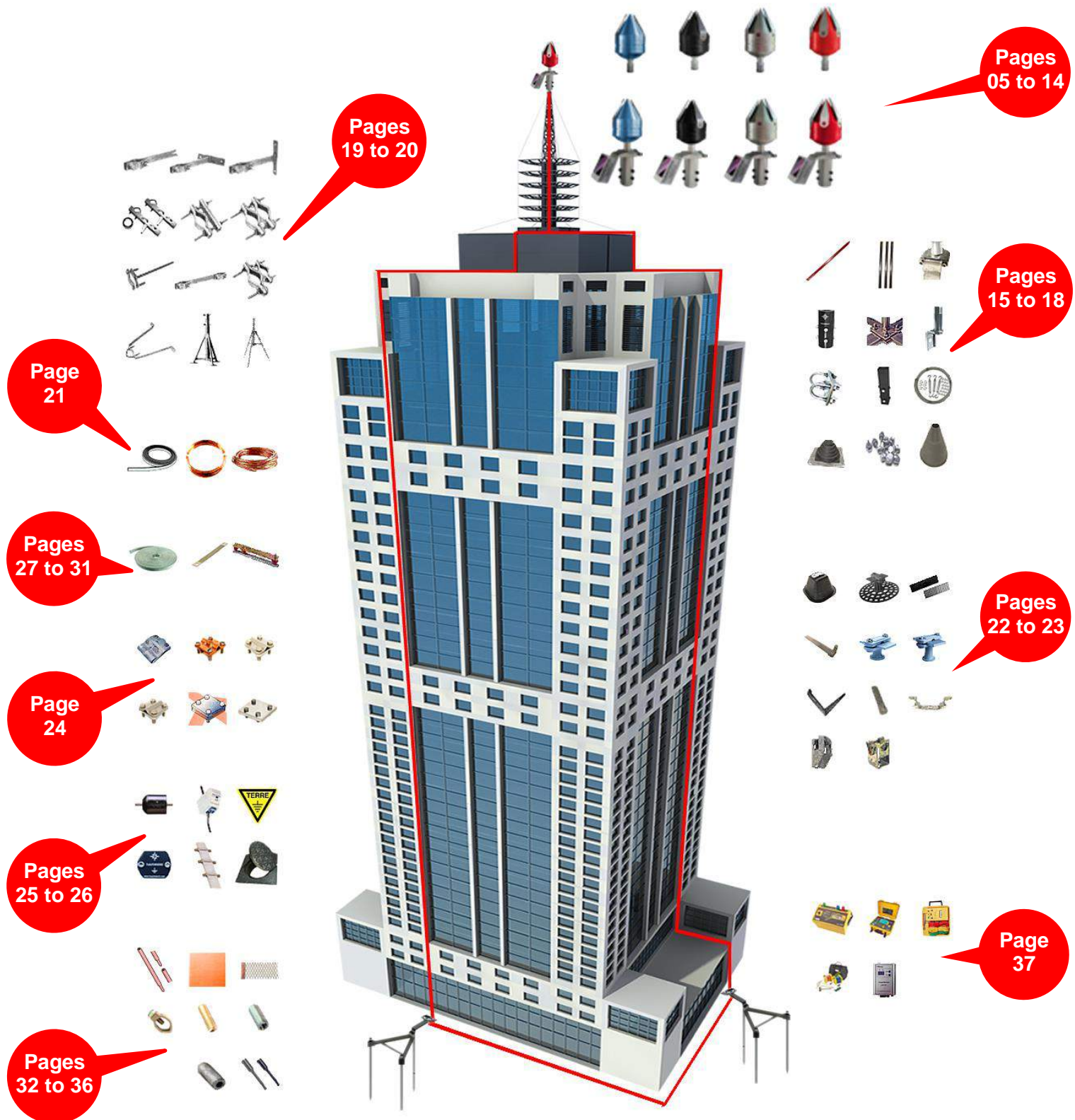


INSTALLATION



MAINTENANCE

# Summary (in pictures)



## Lightning Rod - Air Terminal STAR® Early Streamer Emission (ESE).

1

### OPERATION

The Streamer Advance contained by the CDT, allows the Priming Device STAR® to manage the lightning process, and to ensure the protection of its area.

Description of the protection process :

- ✓ The CDT detects the potential rise of the ambient electric field,
- ✓ Protection principle initiation process, prior to atmospheric discharge,
- ✓ Activate the detection of the descending plotter,
- ✓ Creation of the potential difference between the main body of the STAR® and its upper fins,
- ✓ Loading the upper fins of the STAR®,
- ✓ Control of the ascending tracer released by the STAR®, and evacuation in earth.

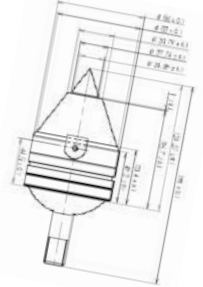
## THE + PRODUCTS

Products manufactured by Llamptech,  
Range of four powers,  
Functional tests,  
Individual marking protected,

Stand-alone operation,  
Photovoltaic sensors,  
Remote control available,  
Respect the environment,

Industrial verification procedure,  
Choice of aesthetic colors,  
Space and reduced weight,  
Range of products adapted to STAR®  
Easy installation,

Manufacturer warranty.

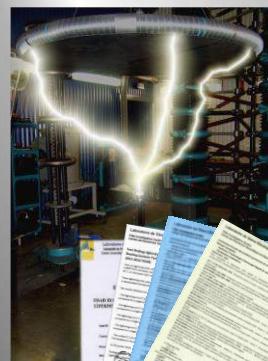


## Strengths :

- ▶ 4 operational powers.  
10, 25, 45 and 60 micro seconds,
- ▶ Natural dosing advances to boot, for optimal precision,
- ▶ CDT reinforced with the accelerated ascending sensor,
- ▶ Optimum reaction, with a margin of safety in stormy period,
- ▶ Autonomy, no power source,
- ▶ Star Evolution Testing remote Air terminal (ESE),
- ▶ Custom reinforced packaging.

## TESTS & Validation tests of the Star

- Conformity to standard NF C 17-102,
- Validation tests carried out at the Laboratory,
- Validation of field tests in real protection situation,



Lightning Rod - Air Terminal STAR®  
Early Streamer Emission (ESE).

- **Range STAR®.** Lightning protection of all types of structures.



## STAR® 210

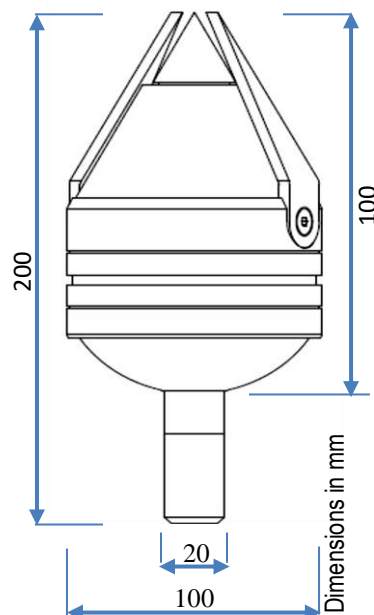


Reference : STAR210

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission**

Power : **( $\Delta I = 10 \mu s$ )**  
▶ 2 Fins stainless steel

Net weight : 1.416 kgs  
Gross weight : 1.607kgs (Package Included)  
Dimensions : 200x100 mm



## STAR® 325

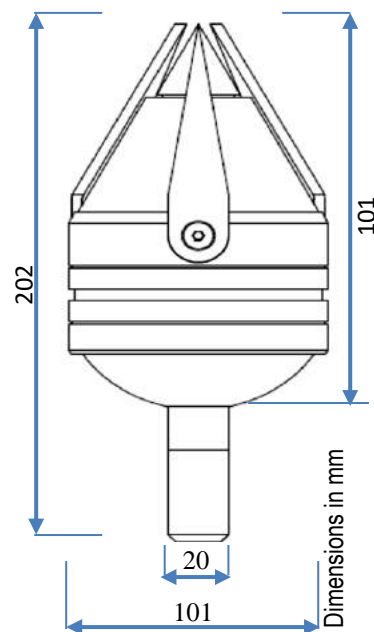


Reference : STAR325

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission**

Power : **( $\Delta I = 25 \mu s$ )**  
▶ 3 Fins stainless steel

Net weight : 1.475 kgs  
Gross weight : 1.661 kgs (Package Included)  
Dimensions : 202x101 mm



Lightning Rod - Air Terminal STAR®  
Early Streamer Emission (ESE).

- **Range STAR®.** Lightning protection of all types of structures.



## STAR® 645

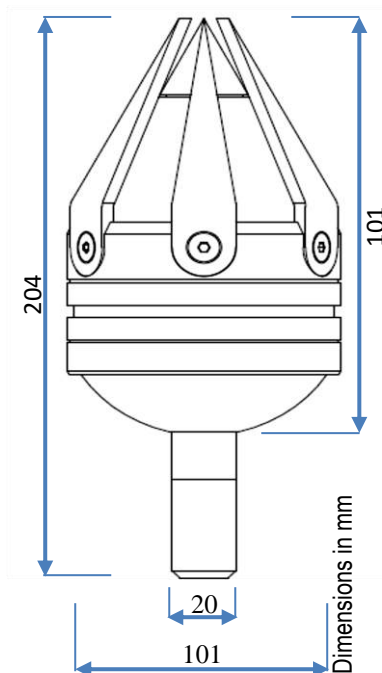


Reference : STAR645

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission**

Power : **( $\Delta I=45 \mu s$ )**  
▶ 6 Fins stainless steel

Net weight : 1.505 kgs  
Gross weight : 1.695 kgs (Package Included)  
Dimensions : 204x101 mm



## STAR® 660

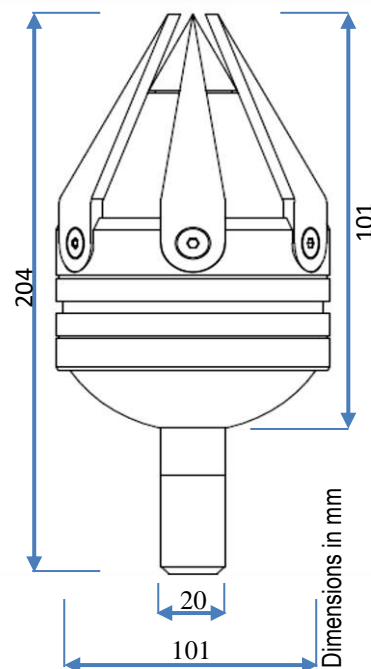


Reference : STAR660

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission**

Power : **( $\Delta I=60 \mu s$ )**  
▶ 6 Fins stainless steel

Net weight : 1.5285 kgs  
Gross weight : 1.719 kgs (Package Included)  
Dimensions : 204x101 mm



- Radius protection - AIR TERMINAL STAR® (ESE)

**STAR® 210 EFFICIENCY (ESE) +10µs**  
**PROTECTION RADIUS**

H meters	NIVEL 1	NIVEL 2	NIVEL 3	NIVEL 4
2	8	13	15	17
3	12	19	20	24
4	17	26	34	38
<b>5</b>	<b>21</b>	<b>32</b>	<b>41</b>	<b>49</b>
10	23	37	48	53
20	24	41	52	55

Distances de protection en meters

**STAR® 325 EFFICIENCY (ESE) +25µs**  
**PROTECTION RADIUS**

H meters	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
2	17	23	26	28
3	25	34	35	39
4	34	46	49	54
<b>5</b>	<b>42</b>	<b>57</b>	<b>63</b>	<b>67</b>
10	44	61	70	74
20	45	65	72	77

Distances de protection en meters

**STAR® 645 EFFICIENCY (ESE) +45µs**  
**PROTECTION RADIUS**

H mètres	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
2	25	32	34	36
3	38	48	51	55
4	51	65	70	73
<b>5</b>	<b>62</b>	<b>80</b>	<b>83</b>	<b>89</b>
10	64	83	91	94
20	65	86	97	99

Protection distances in meters

**STAR® 660 EFFICIENCY (ESE) +60µs**  
**PROTECTION RADIUS**

H meters	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
2	32	40	42	44
3	48	59	61	65
4	64	78	82	87
<b>5</b>	<b>79</b>	<b>97</b>	<b>99</b>	<b>107</b>
10	80	99	101	109
20	82	101	103	111

Distances de protection en meters

Complies with the requirements of standard NF C 17-102





## Lightning Rod - Air Terminal STAR® Evolution Early Streamer Emission (ESE).

- Range STAR® Evolution – Testing remote.



### ► Advantages of the STAR® Evolution ESEAT Testing remote :

- ✓ Stand-alone Photovoltaic Power Supply,
- ✓ Dating of the impacts of the lightning,
- ✓ Remote control tests,
- ✓ Function tests,
- ✓ Product recognition,
- ✓ Electrical continuity test,
- ✓ List of lightning strikes,
- ✓ Respect of the environment,
- ✓ 5 years manufacturer's warranty.



### THE + SAFETY

► The test system is used to interrogate the STAR® Evolution, and to know its operating status without moving.

Manage the "health" and history of your STAR in real time.

This advanced technology is for the user, through a gain in security after information processing.

### ESE – Air terminal STAR® and recycling combine to infinity ...

Protecting and safeguarding our environment is one of Llamptech's main objectives.

The recycling of the STAR® lightning conductor saves natural resources and 95% of the energy required to produce the primary metal.

Protecting and safeguarding our environment is an essential objective of a recycling approach.

- That is why the development of our STAR® lightning conductor is partly in MPM.



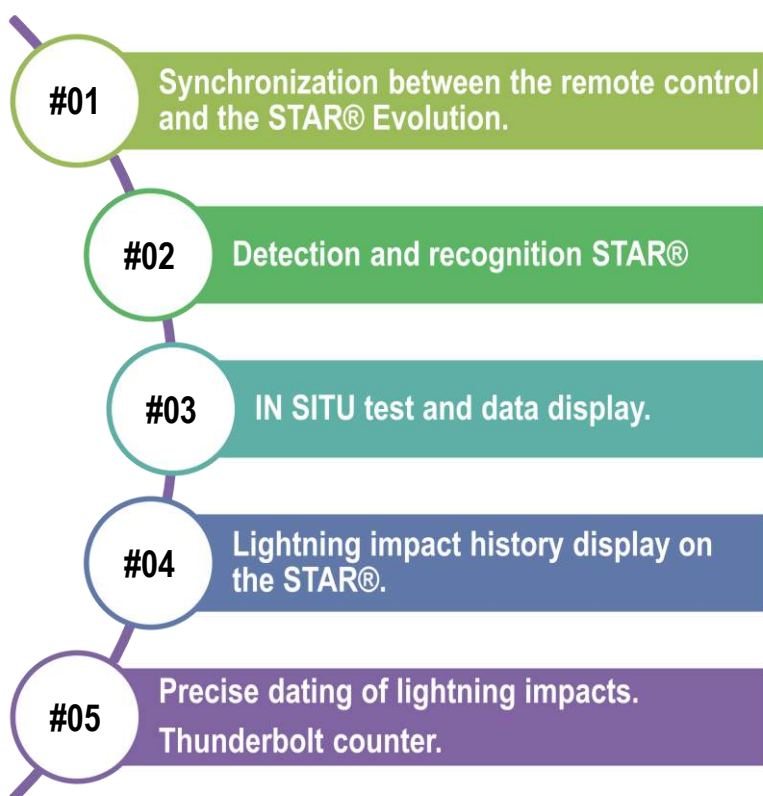


## Operation

### STAR® Evolution Testing remote - Test System.

► The test system is used to interrogate the STAR® Evolution Early Streamer Emission – Air Terminal (ESEAT), and to know its operating status without moving.

Communication process in 5 steps.



Included in the STAR® Evolution pack





Lightning Rod - Air Terminal STAR® Evolution  
Early Streamer Emission (ESE).

- Range STAR® Evolution – Testing remote.



## STAR® 210 Evolution

### ► Testing Remote

**Function test included.**

Reference : STAR210 evo

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission.  
Autonomous Photovoltaic System.  
Remote control tests.**

Power : **( $\Delta I = 10 \mu s$ )**  
► 2 Fins stainless steel

Net weight : 1.824 kgs  
Gross weight : 1.944 kgs (Package Included)  
Dimensions : 240x150 mm



Included in the pack STAR®210 Evo.

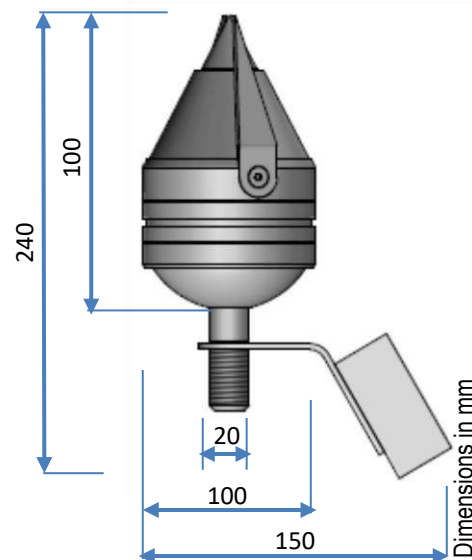
- ✓ STAR®210 Evolution photovoltaic,
- ✓ Remote test remote control,
- ✓ Conductor attachment fitting,
- ✓ Adaptation all supports,
- ✓ Technical assistance,
- ✓ 5-years manufacturer warranty.

(Ref. STAR210 evo)

(Ref. TE-STevo)

(Ref. RAPC02)

(Ref. MANR01)





## Lightning Rod - Air Terminal STAR® Evolution Early Streamer Emission (ESE).

- Range STAR® Evolution – Testing remote.



## STAR® 325 Evolution

### ► Testing Remote

**Function test included.**

Reference : STAR325 evo

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission.  
Autonomous Photovoltaic System.  
Remote control tests.**

Power : **( $\Delta I=25 \mu s$ )**  
► 3 Fins stainless steel

Net weight : 1.848 kgs  
Gross weight : 1.968 kgs (Package Included)  
Dimensions : 242x151 mm



Included in the pack STAR®325 Evo.

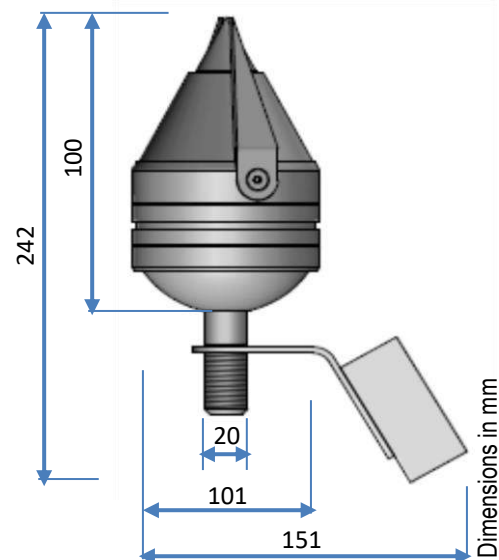
- ✓ STAR®325 Evolution photovoltaic,
- ✓ Remote test remote control,
- ✓ Conductor attachment fitting,
- ✓ Adaptation all supports,
- ✓ Technical assistance,
- ✓ 5-years manufacturer warranty.

(Ref. STAR325 evo)

(Ref. TE-STevo)

(Ref. RAPC02)

(Ref. MANR01)





Lightning Rod - Air Terminal STAR® Evolution  
Early Streamer Emission (ESE).

- Range STAR® Evolution – Testing remote.



## STAR® 645 Evolution

### ► Testing Remote

**Function test included.**

Reference : STAR645 evo

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission.  
Autonomous Photovoltaic System.  
Remote control tests.**

Power : **( $\Delta I = 45 \mu s$ )**  
► 6 Fins stainless steel

Net weight : 1.925 kgs  
Gross weight : 2.045 kgs (Package Included)  
Dimensions : 244x151 mm



Included in the pack STAR®645 Evo.

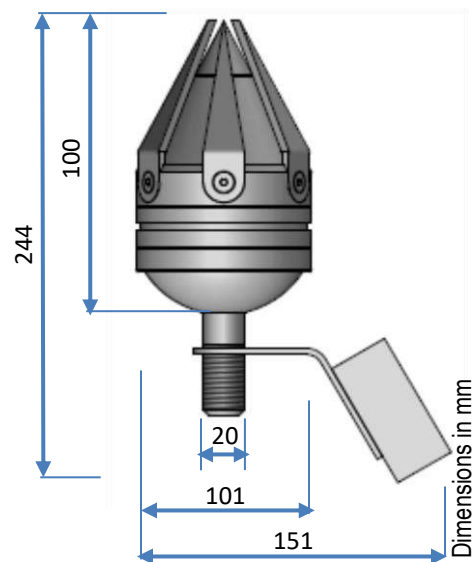
- ✓ STAR®645 Evolution photovoltaic,
- ✓ Remote test remote control,
- ✓ Conductor attachment fitting,
- ✓ Adaptation all supports,
- ✓ Technical assistance,
- ✓ 5-years manufacturer warranty.

(Ref. STAR645 evo)

(Ref. TE-STevo)

(Ref. RAPC02)

(Ref. MANR01)





## Lightning Rod - Air Terminal STAR® Evolution Early Streamer Emission (ESE).

- Range STAR® Evolution – Testing remote.



## STAR® 660 Evolution

### ► Testing Remote

**Function test included.**

Reference : STAR660 evo

Specification : **Lightning rod - Air Terminal  
Early Streamer Emission.  
Autonomous Photovoltaic System.  
Remote control tests.**

Power : **( $\Delta I=60 \mu s$ )**  
► 6 Fins stainless steel

Net weight : 1.962 kgs  
Gross weight : 2.082 kgs (Package Included)  
Dimensions : 244x151 mm



Included in the pack STAR®660 Evo.

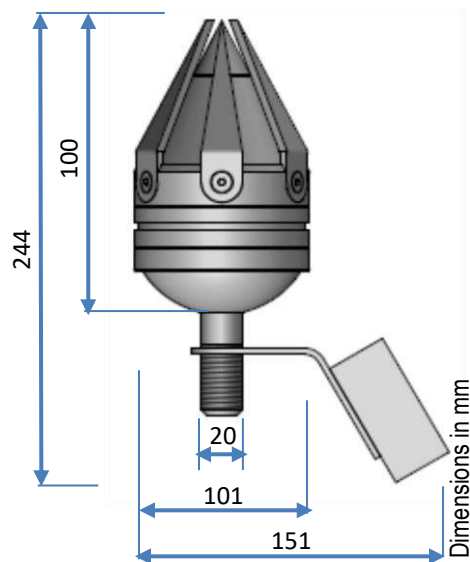
- ✓ STAR®660 Evolution photovoltaic,
- ✓ Remote test remote control,
- ✓ Conductor attachment fitting,
- ✓ Adaptation all supports,
- ✓ Technical assistance,
- ✓ 5-years manufacturer warranty.

(Ref. STAR660 evo)

(Ref. TE-STevo)

(Ref. RAPC02)

(Ref. MANR01)



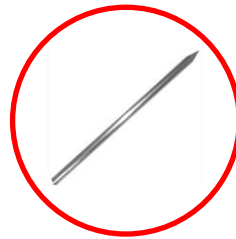
• Simple Tips lightning



COPPER



COPPER CHROME



STAINLESS STEEL

Reference	Designation	 Cond.U	Dim. mm HxØ	Weight/U (en kg)
<b>Range Copper</b>				
PTEC30	Length : 300 mm / Thread M20	1	300x20	0,620
PTEC50	Length : 500 mm / Thread M20	1	500x20	0,980
<b>Range Copper chrome</b>				
PTECC30	Length : 300 mm / Thread M20	1	300x20	0,620
PTECC50	Length : 500 mm / Thread M20	1	500x20	0,980
<b>Range Stainless Steel</b>				
PTEAI30	Length : 300 mm / Thread M20	1	300x20	0,620
PTEAI50	Length : 500 mm / Thread M20	1	500x20	0,980
PTEAI100	Length : 1000 mm / Muff	1	1000x20	1,940
PTEAI250	Length : 2500 mm / Muff	1	2500x30	4,000

• **Mechanical connections of lightning conductors and down conductors**



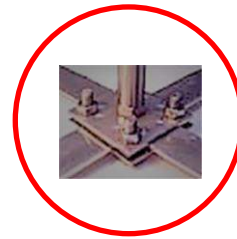
MANR01



MANC01



FOUCG01



RAPC03



SUP-PTE

Reference	Designation	Cond.U	Dim. mm Lxlxep	Weight/ U (en kg)
<b>Fixings of STAR lightning rods on all supports</b>				
MANR01	Adaptation by Muff round. Ø 32 mm interior - Ø 40 mm external Fixings in 6 points on the support by stainless screws provided.	1	100x Ø40	0,600
MANC01	Adaptation by Muff carré. 50 mm de côté interior - 60 mm côté external. 8-point fasteners on the support with stainless steel screws provided.	1	300x60x60	1,505
FOUCG01	Adaptation in copper to fix a lightning rod on a cross ornament and / or cock vane. Fixing the soldering ornament on the sheath.	1	750x800x Ø35	1,500
<b>Simple tips fasteners lightning</b>				
RAPC03	Stainless Steel cross-connector for single sensor tip mounting. Passage of crossed descending conductors, up to 30 mm wide. Central stud M10.	1	50x50x10	0,250
SUP-PTE	Stainless Steel Fixing Bracket for Single Point Sensor Mounting. Acroterion passage and offset. Central stud M10.	1	50x60x10	0,285



- Mechanical connections of lightning conductors and down conductors**




RAPC01



RAPC02



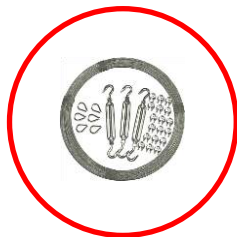
RAC-COND

Reference	Designation	 Cond.U	Dim. mm Lxlxep	Weight/U (en kg)
<b>Conductor Fittings / Lightning Supports</b>				
RAPC01	Fitting for a down conductor. Screwing in base of the STAR lightning rod. Tapping M20 Screws Stainless Steel.	1	40x40x10	0,400
RAPC02	Connection for two down conductors. Screwing in base of the STAR lightning rod. Tapping M20 Screws Stainless Steel.	1	40x40x10	0,400
RAC-COND	Stainless Steel Clamp for flat or round down conductor on riser mast	1	50x50x10 + demi-round 50	0,120

• Reinforcement and sealing masts



MATIE1-IE2-IE3



KITHAU




CONPAL



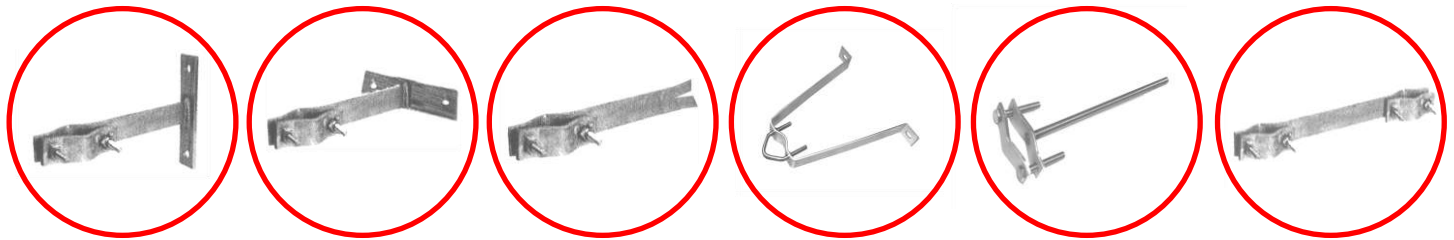
CONVIS



CONZINC

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
<b>Mast / Lightning rods</b>				
MATIE1	Stainless Steel elevation mast for lightning rod. Total height of 2.00m .	1	200x Ø34	3,500
MATIE2	Mast stainless steel lightning rod for elevation. Complementary adaptation to MATIE1 Cumulative height IE1 + IE2 = 3.60m Fixing by means of interlocking and double tightening by screws Stainless Steels.	1	200x Ø42	3,750
MATIE3	Mast stainless steel lightning rod for elevation. Complementary adaptation to MATIE1 Cumulative height IE1+IE2+IE3 = 5,50m. Fixing by means of interlocking and double tightening by screws Stainless Steels	1	200x Ø50	4,000
KITHAU	Kit bracing for supporting masts. Composition: Twisted stainless steel cables Ø 2 mm (50 meters) Clamps Stainless steel cables (x 18) Tighteners (x 3) Heart lugs (x 6) Star fixing cable / mast (x 1)	1	-	2,550
<b>Sealing / mast riser / lightning rod</b>				
CONPAL	Polyamide sealing cone / bi-material base alu-polyamide. Seals around a mast up to Ø 70 mm	1	100x100x90	0,150
CONVIS	Sealed Screws for polyamide cone.	100	Sachet	-
CONZINC	Zinc sealing cone Seals around a mast up to Ø 70 mm	1	120x Ø90	0,220

• Supports and fixings of lightning rods



DPGFIXH


DPGFIXV

DPGSEL

DPGMAT

DPGENU

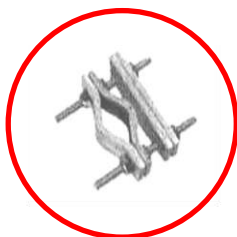
DPGFIL

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
<b>Mast fixings offset wall / roof</b>				
DPGFIXH	Mast fixings offset "horizontal base." Clamping on the support. Galvanized steel, sealed welds 3 lengths of offsets available.	2	Deport of 150 à 300. Tightening : Ømin. : 28 Ømax. : 60	2,000
DPGFIXV	"Vertical base" offset mast mountings. Clamping on the support. Galvanized steel, sealed welds 5 lengths offsets available.	2	Deport of 150 à 500. Tightening : Ømin. : 28 Ømax. : 60	2,000
DPGSEL	"Vertical base" offset mast mountings. Seal in the holder. Galvanized steel, sealed welds	2	200x 35x8 Tightening : Ømin. : 28 Ømax. : 60	2,000
DPGMAT	"Vertical base" offset mast mountings. Clamping on tube or pylon. Galvanized steel, sealed welds	2	Center distance : 140 à 240 Tightening : Ømin. : 28 Ømax. : 60	2,300
DPGENU	Mast Binding Large offset. Clamping on the support. Galvanized steel, sealed welds	2	Deport of 600.	1,900
DPGFIL	M10 offset mount attachments Galvanized steel, sealed welds 5 lengths offsets available	2	Deport of 50 à 300. Tightening : Ømin. : 28 Ømax. : 60	1,420

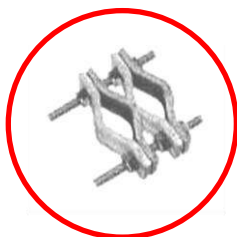
• Supports and fixings of lightning rods



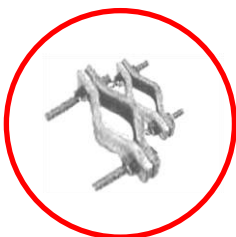
DPCHE



DPGXP1



DPGX1




DPGXA1



TRPG01


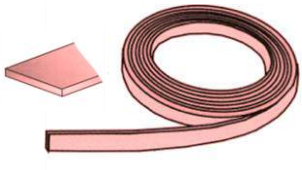






TRPG02

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
<b>Mast fixings offset wall / roof</b>				
DPCHE	Offset mast attachments for chimney. Strapping on the support. Galvanized steel, sealed welds.	2	Strapping of 5ml. Tightening : Ømin. : 28 Ømax. : 60	3,400
DPGXP1	Mast attachments in offset. Tightening on the support. Galvanized steel, sealed welds.	2	Deport of 40. Tightening : Ømin. : 28 Ømax. : 60	0,950
DPGX1	Mast attachments in offset. Tightening on tube or pylon. Galvanized steel, sealed welds.	2	Deport of 40. Tightening : Ømin. : 28 Ømax. : 60	0,950
DPGXA1	Offset mast fasteners Tightening on tube or pylon up to 140mm. Galvanized steel, sealed welds.	2	Tightening : Ømin. : 28 Ømax. : 60	1,250
TRPG01	Mast tripod for roof terrace Tightening by drilling on the roof. Galvanized steel, sealed welds.	1	Height : 1200mm. Floor dimension: 600mm	7,000
TRPG02	<b>Floating mast tripod, flat roof</b> Without drilling on the roof, with concrete blocks Galvanized steel, sealed welds.	1	Height : 1500mm. Floor dimension: 1600mm	12,000

\* Supply of additional concrete pads for Reference TRPG02 on request.

• Down Conductors

Delivery crown	Section mm <sup>2</sup>	width x ep. mm	Reference	Weight/m (en kg)	 /meter	Materials
  	<b>Copper conductors - Flat bars full</b>					
	60	30 x 2	COND-PC60	0,534	50 à 80	Copper
	60	30 x 2	COND-PCE60	0,534	50 à 80	Tinned copper
	<b>Steel conductors - Solid flats</b>					
	105	30 x 3,5	COND-PAG	0,850	50 à 60	Galvanized steel
	105	30 x 3,5	COND-PAI	0,825	50 à 60	Stainless Steel

Delivery crown	Ø mm	Reference.	Weight/m (en kg)	 /meter	Materials
  	<b>Conducteurs Copper – Rounds pleins</b>				
	6	COND-RC6	0,250	110 à 130	Copper
		COND-RC8	0,448	90 à 110	Copper
		COND-RCE8	0,448	90 à 110	Tinned copper
	<b>Conducteurs acier – Rounds pleins</b>				
	8	COND-RAG8	0,395	120 à 130	Galvanized steel
		COND-RAI8	0,395	120 à 130	Stainless Steel
		COND-RAL8	0,135	110 à 150	Aluminium

• Brackets and downhill conductors



PLOTBET-P1



PLO-GRA



AGR-RUBE




AGR-TUIL1



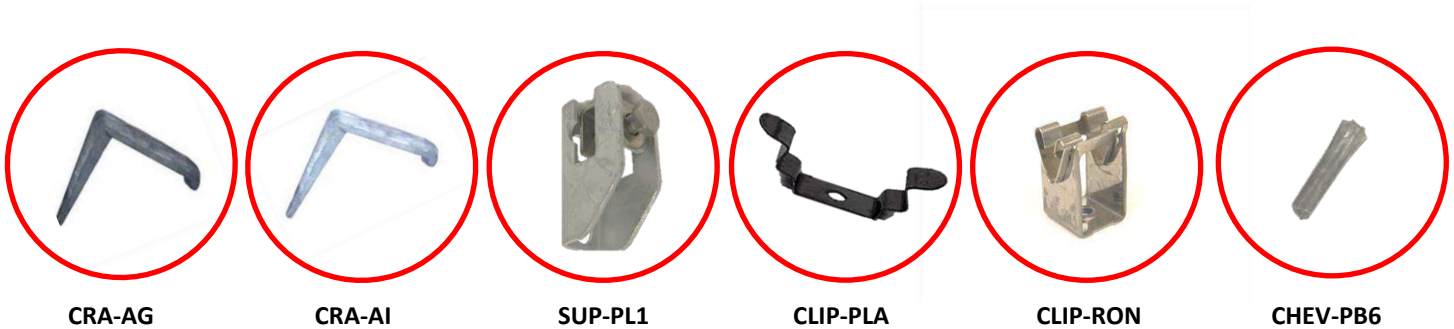
AGR-PL1




AGR-PLD1

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
PLOBET-P1	Cement support. Horizontal path. Protection by plastic wrap. Hold the driver by tightening. Suitable for flat or round conductor	10	40x140x80	1
<b>Other supports cement to consult us</b>				
PLOT-GRA	PVC support plate. Horizontal path. Maintenance by the weight of gravel on the roof terrace. Clamping the driver Suitable for flat or round conductor	10	H : 50 Ø : 100	0,100
AGR-RUBE	Band to stick. The tape sticks by heating on all types of media. Bi-material tar / aluminum. Suitable for flat or round conductor	10	200x4x50	1
AGR-TUIL1	Fixing for slate or tile roofs. Hold the driver by clipping. Suitable for flat conductor	50	150x50x9 ép. 1	0,045
AGR-PL1	PVC support. Horizontal and vertical path. Fastening by screwing in the support. <b>Without offset.</b> Hold the driver by tightening. Suitable for flat or round conductor	100	50x10x8	0,025
AGR-PLD1	PVC support. Horizontal and vertical path. Fastening by screwing in the support. <b>With offset.</b> Driver maintenance by Tightening. Suitable for flat or round conductor	100	50x10x8 dép. 20 mm	0,022

• Brackets and downhill conductors

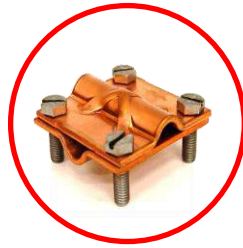


Reference	Designation	 Cond.U	Dim. mm Lxlxp - Ø	Weight/U (en kg)
<b>Fixing studs Galvanized steel - fasteners to hit.</b>				
CRA-AG30	Fixing clamp for flat conductor. Corresponding fixation : CHEV-PB6.	100	35x30x5	0,020
CRA-AG40	Fixing clamp for flat conductor. Corresponding fixation : CHEV-PB6.	100	35x40x5	0,022
CRA-AG50	Fixing clamp for flat conductor. Corresponding fixation : CHEV-PB6.	100	35x50x5	0,025
<b>Fixing studs Stainless Steel - fasteners to hit</b>				
CRA-AI30	Fixing clamp for flat conductor. Corresponding fixation : CHEV-PB6.	100	35x30x5	0,023
CRA-AI40	Fixing clamp for flat conductor. Corresponding fixation : CHEV-PB6.	100	35x40x5	0,026
CRA-AI50	Fixing clamp for flat conductor. Corresponding fixation : CHEV-PB6.	100	35x50x5	0,029
SUP-PL1	Horizontal fixing clips for flat conductors. To fix on the support by screwing or rivets	25	30x40x15	0,155
<b>Clips Tightening Stainless Steel.</b>				
CLIP-PLA	Fixing clips for flat conductors. To fix on the support by screwing or rivets	100	50x10x8	0,0025
CLIP-RON	Fixing clips for round conductor Ø8 mm. To fix on the support by screwing or rivets	50	H = 20 mm	0,014
CHEV-PB6	Lead peg for fixing clamp CRA.	100	Ø5x30	0,005

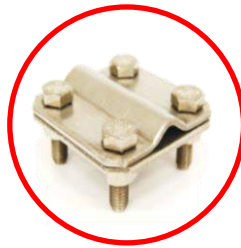
• Mechanical couplings between conductors



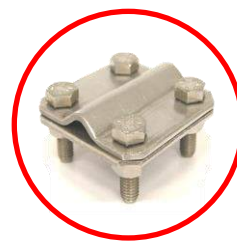
ED-RC



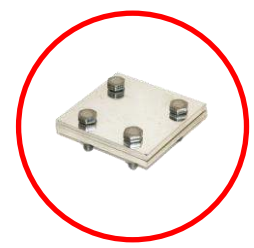
RAC-CU




RAC-CE



RAC-IN



RAC-PL

Reference	Designation	 Cond.U	Dim. mm LxIxep - Ø	Weight/U (en kg)
ED-RC	Mechanical connection for <b>flat conductor</b> . Allows equipotential bonding between the gutter and the lightning rod. Galvanized steel materials. Supplied with stainless Tightening bolts.	10	30x70x60	0,300
RAC-CU	Mechanical connection for <b>flat conductor or round</b> . Copper materials. Supplied with stainless Tightening fasteners.	10	18x50x50	0,130
RAC-CE	Mechanical connection for <b>flat conductor or round</b> . Materials Tinned copper. Supplied with stainless Tightening fasteners.	10	18x50x50	0,140
RAC-IN	Mechanical connection <b>for flat conductor or round</b> . Stainless steel materials. Supplied with stainless Tightening fasteners.	10	18x50x50	0,230
RAC-PL	Mechanical connection for <b>flat conductor</b> . Stainless steel materials. Supplied with stainless Tightening bolts.	10	12x50x50	0,310



# MANUFACTURER OF LIGHTNING PROTECTION AND EARTH PROTECTION


- Lightning counter
- Equipotential antenna mast cluster



ED-ECL



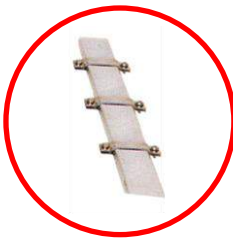
ED-CMPT

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
ED-ECL	Antenna mast cluster, and metal structures.	1	94 x Ø 45,9	0,355
ED-CMPT	Counter of lightning strikes "series". Display at each lightning impulse detected. IP65. Conductor Ø 8 mm Tinned copper Sensitivity 200A, current 100kA (8 / 20µs)	1	70x50x60	0,750

• Connecting pieces to earth



ED-JC01



ED-GP01



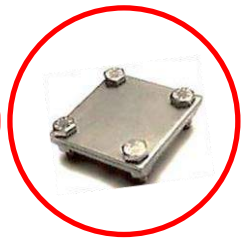
PLAQ-TE




ET-REGF




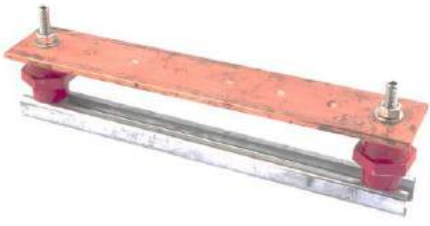
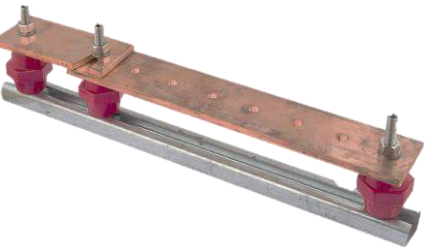



ET-REGP





RAC-PO

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
ED-JC01	Control joint or cut terminal. Used to measure the ohmic resistivity of the earth electrode. Normative marking. Tightenings M5 Stainless Steel Screws.	1	Ø 50 mm ep. 20 mm	0,115
ED-GP01	Protective sheath. Protects the driver from mechanical shock to the ground. Supplied with 3 clamps. Stainless steel screwdrivers	1	2000x10 (ext.) ep. 1 mm	0,900
PLAQ-TE	Aluminum sign plate. Paratonnerre Land - Security Restriction During Storms. Stainless steel screwdrivers	1	100x80 ep. 1 mm	0,022
ET- REGF	<b>Cast iron sight with normative marking.</b> Protects buried connections between conductors.	1	110x250x250	14,000
ET-REGP	<b>Trap Monobloc polypropylene body.</b> Protects buried connections between conductors. ► Uncapping with a simple hammer.	1	300x300x300	2,200
RAC-PO	Earthing connection for crow's feet. Mechanical connection for <b>flat conductor</b> . Stainless steel materials. Supplied with stainless Tightening bolts.	10	12x60x60	0,600


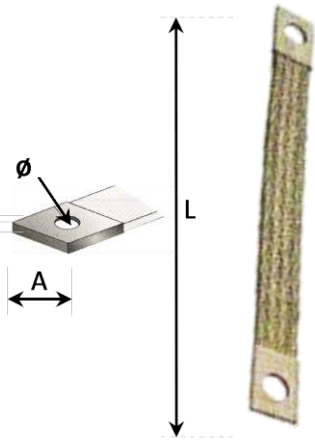
- Equipotential bonding bars

	Length	Qt perçage	Reference	Weight/U (en kg)	 Cond.U	Materials
	280	6	BAR-D280	1,250	1	50x5 mm copper plate mounted on fiberglass / polyester insulators .
	420	10	BAR-D420	1,750	1	
	595	15	BAR-D595	2,250	1	
	770	20	BAR-D770	2,800	1	
	945	25	BAR-D945	3,350	1	
	350	6	BAR-C350	1,650	1	50x5 mm copper plate mounted on fiberglass / polyester insulators. Equipped with a cut.
	490	10	BAR-C490	2,150	1	
	665	15	BAR-C665	2,650	1	
	840	20	BAR-C840	3,200	1	
	1015	25	BAR-C1015	3,750	1	
	Insulators sold separately on request					
Earth Blocks	Dim. mm	Section maxi. mm <sup>2</sup>	Reference	Weight/U (en kg)	 Cond.U	Materials
	120x30x40	35	BAR-T35	0,120	1	Copper and Polyester Alloy Barrette
	150x34x65	70	BAR-T70	0,270	1	

• Equipotential bonding conductors



Delivery crown	Section mm <sup>2</sup>	largeur x ep. mm	Reference	Weight/m (en kg)	 /mètre	Materials
<b>Flat braids for equipotential bonding</b>						
	5	8 x 1,1	<b>EQ-TPCE05</b>	0,045	<b>50 ou 100</b>	Tinned copper
	8	8 x 1,5	<b>EQ-TPCE08</b>	0,071	<b>50 ou 100</b>	
	10	10 x 1,5	<b>EQ-TPCE10</b>	0,089	<b>50 ou 100</b>	
	16	15 x 2	<b>EQ-TPCE16</b>	0,142	<b>50 ou 100</b>	
	25	25 x 2	<b>EQ-TPCE25</b>	0,223	<b>25 ou 50</b>	
	50	30 x 3,5	<b>EQ-TPCE50</b>	0,445	<b>25 ou 50</b>	



For other sections, please contact us

Delivery crown	Section mm <sup>2</sup>	Length dispo. (L) mm	Reference	AxBxØ	 Cond. U	Materials Accepted current
<b>Flat shunt with eyelets for equipotential bonding</b>						
	10	100-150-200- 250-300	<b>EQ-SH10</b>	11x3,2x6,5	<b>50 ou 100</b>	Tinned copper - 75 A
	16	100-150-200- 250-300	<b>EQ-SH16</b>	17x3,5x8,5	<b>50 ou 100</b>	Tinned copper - 120 A
	25	100-150-200- 250-300	<b>EQ-SH25</b>	26x4x8,5	<b>25 ou 50</b>	Tinned copper - 150 A
	35	100-150-200- 250-300	<b>EQ-SH35</b>	30x4x10,5	<b>25 ou 50</b>	Tinned copper - 190 A
	50	150-200-250- 300-400-500	<b>EQ-SH50</b>	33x4,5x10,5	<b>25 ou 50</b>	Tinned copper - 250 A
	70	200-250-300- 400-500	<b>EQ-SH70</b>	32x5x12,5	<b>10 ou 25</b>	Tinned copper - 290 A


Special manufacture on request

• Conducteurs de liaisons équipotielles

Delivery crown	Section mm <sup>2</sup>	Reference	Weight/m (en kg)	 /meter	Materials
<b>Braided cable - for potential equalization</b>					
	25	EQ-TRC25	0,223	50 ou 100	Electrolytic bare red copper
	29	EQ-TRC29	0,258	50 ou 100	
	35	EQ-TRC35	0,312	50 ou 100	
	50	EQ-TRC50	0,445	50 ou 100	
	75	EQ-TRC75	0,667	50 ou 100	
	150	EQ-TRC150	1,335	50 ou 100	
For other sections please contact us - annealed copper material available					

Delivery crown	Section mm <sup>2</sup>	Reference	Weight/m (en kg)	 /meter	Materials
<b>Câble de tresses - pour liaisons équipotielles</b>					
	5	EQ-TRCE05	0,045	50 ou 100	Tinned copper
	8	EQ-TRCE08	0,071	50 ou 100	
	10	EQ-TRCE10	0,089	50 ou 100	
	16	EQ-TRCE16	0,142	50 ou 100	
	25	EQ-TRCE25	0,223	25 ou 50	
	50	EQ-TRCE50	0,445	25 ou 50	
For other sections, please contact us					

• Mechanical connections of equipotential connections

	Sections mm <sup>2</sup>	Ø mm	Reference	Weight/U (en kg)	 Cond.U	Materials
	6-70	12	REQ-RD70	0,070	25	Copper alloy
	25-120	12	REQ-RD120	0,135	25	
	35-150	12	REQ-RD150	0,135	25	
	6-70	8	REQ-RP70	0,080	25	Copper alloy
	25-120	12	REQ-RP120	0,180	25	
	6-25	<b>M8</b>	REQ-RV25	0,018	25	Copper alloy
	10-35		REQ-RV35	0,030	25	
	35-60		REQ-RV60	0,048	25	
	50-95		REQ-RV95	0,070	25	
	70-120		REQ-RV120	0,089	25	
	95-150		REQ-RV150	0,115	25	
	10-70		REQ-RT70	0,100	25	Copper alloy
	25-120		REQ-RT120	0,200	25	

• Tubular lugs to crimp



CO-




COS-SO



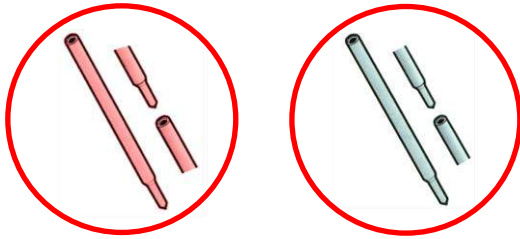
ED-GP02




PF1023

Reference	Section en mm <sup>2</sup>	Designation	 Cond.U	Dim. mm <sup>2</sup> Ø	Weight/U (en kg)
CO-10	10	Terminal lugs Copper alloy	100	4,30 à 13,00	0,490
CO-16	16		100	5,30 à 13,00	0,680
CO-25	25		100	5,30 à 15,00	1,050
CO-35	35		100	5,30 à 15,00	1,330
CO-50	50		100	6,50 à 17,00	1,800
CO-70	70		100	8,50 à 17,00	3,280
CO-95	95		100	8,50 à 15,00	4,300
COS-SO	0,75 à 50mm <sup>2</sup>		<b>Cable end for multi-stranded copper cable.</b> Allows the connection of cables in connection cages. I Protection of the conductive copper part in order to avoid crushing or cutting the copper strands.	100	0,75 à 50
ED-GP02	0,04 à 0,12	<b>Sheath heat-shrinkable single wall.</b> Enables electrical isolation and sealing of electrical cables, and their connections. Color green / yellow, blue, black or red, to locate cables with ease.	1ml	0,04 à 0,12	0,050
<b>Crimping accessories</b>					
PE1023	Crimper 6/10/25/35/50	<b>Crimping pliers.</b> Manual with ratchet crimping. Suitable for end connectors. Non-slip handles.	1	40.2x14.6 x4.2 cm	3,422

- **Self extensible ground pegs**  
▶ meets UL SPEC 467

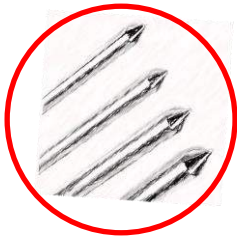


- Other ground pegs available on request:
- 
- **- EXTENDABLE BY MUFFS THREADED**
- **- CONTINUOUS BY MUFFS CONIC**

Ø mm	Length mm	Reference	Weight/U (en kg)	 Cond.U	Materials
<b>Range copper 254 Microns Ø16</b>					
16	1000	PIQAA-1610	1,300	5	
16	1500	PIQAA-1615	1,900	5	
16	2000	PIQAA-1620	2,550	5	Steel - Copper 254 µm
16	2500	PIQAA-1625	3,200	5	
16	3000	PIQAA-1630	3,800	5	
<b>Range copper 254 Microns Ø19</b>					
19	1000	PIQAA-1910	1,850	5	
19	1500	PIQAA-1915	2,700	5	
19	2000	PIQAA-1920	3,700	5	Steel - Copper 254 µm
19	2500	PIQAA-1925	4,550	5	
19	3000	PIQAA-1930	5,400	5	
<b>Range copper 350 Microns</b>					
19	1000	PIQAA35-1910	1,850	5	
19	1500	PIQAA35-1915	2,700	5	Steel - Copper 350 µm
19	2000	PIQAA35-1920	3,700	5	
<b>Range stainless steel</b>					
16	1000	PIQAA-1610I	1,500	5	
16	1500	PIQAA-1615I	2,250	5	Stainless steel
16	2000	PIQAA-1620I	3,000	5	



- **Piquets de terre allongeable**  
▶ respecte UL SPEC 467




Stainless steel



Copper

Autres piquets disponibles sur simple demande :

- ALLONGEABLES PAR MUFFS FILETES
- ALLONGEABLES PAR MUFFS CONIQUES

Ø mm	Length mm	Reference	Weight/U (en kg)	 Cond.U	Materials
<b>Range Copper 50 Microns Ø14</b>					
14	1000	PIQNA-1410	1,300	5	Steel - Copper 50 µm
14	2000	PIQNA-1420	2,550	5	
<b>Range Copper 254 Microns Ø16</b>					
16	1000	PIQNA-1610	1,300	5	Steel - Copper 254 µm
16	1500	PIQNA-1615	1,900	5	
16	2000	PIQNA-1620	2,550	5	
16	2500	PIQNA-1625	3,200	5	
16	3000	PIQNA-1630	3,800	5	
<b>Range Copper 254 Microns Ø19</b>					
19	1000	PIQNA-1910	1,850	5	Steel - Copper 254 µm
19	1500	PIQNA-1915	2,700	5	
19	2000	PIQNA-1920	3,700	5	
19	2500	PIQNA-1925	4,550	5	
19	3000	PIQNA-1930	5,400	5	
<b>Range Stainless steel</b>					
16	1000	PIQNA-1610I	1,500	5	Stainless steel
16	1500	PIQNA-1615I	2,250	5	
16	2000	PIQNA-1620I	3,000	5	
16	2500	PIQNA-1625I	3,750	5	
16	3000	PIQNA-1630I	4,500	5	

- Connection terminals between posts and conductors
- Muffs connections between pickets




COS-P01



MANC-C



MAN-FIL

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
<b>Terminal lugs with earth conductor and Earth stakes</b>				
COS-P01	Brass connection terminal for strapping and Earth stakes from 14 to 19mm	5	40x40x15	0,120
<b>Muffs connections between Earth stakes - Conical</b>				
MANC-C16	Muff for Earth stakes extension Materials: Copper Alloy	5	int. : 16x70	0,100
MANC-C19	Muff for Earth stakes extension Materials: Copper Alloy	5	int. : 19x70	0,150
<b>Muffs of connections between Earth stakes - Threads</b>				
MAN-FIL16	Threaded muff for Earth stakes extension Materials: Copper Alloy	5	int. : 16x70	0,160
MAN-FIL16	Threaded muff for Earth stakes extension Materials: Copper Alloy	5	<b>int. : 16x70</b>	0,183

- Material to install the Earth stakes




MF-MAS



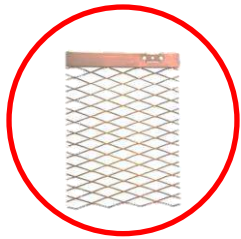
MF-B01



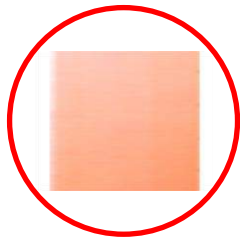
MF-B02

Reference	Designation	 Cond. U	Weight/U (en kg)
MF-MAS	Hammer adapted to the driving of Earth stakes up to 19 mm diameter, <b>without degradation</b> .	1	10.00
MF-B01	Hammer (up to Ø 19 mm) for Earth stakes	1	0.400
MF-B02	Hammer for self-extending Earth stakes (PIQAA-****)	1	0.450


- Grounding by grids and ground plates



GRT-



PLC-

Reference	Designation	 Cond.U	Dim. mm Lxlxep - Ø	Weight/U (en kg)
<b>Copper Ground Grid - Galvanized Steel or Stainless Steel</b>				
GRT-2088		1	2000 x 8800 x 3	53,000
GRT-2010	Grounding by current dissipation. Grid connection lightning and / or trench bottom .	1	2000 x 1000 x 3	9,000
GRT-1010	► Use: High ohmic resistivity, impossibility of driving earth stakes. <b>Ease of implementation.</b>	1	1000 x 1000 x 3	4,500
GRT-0710		1	700 x 1000 x 3	3,000
<b>Ground plate Copper CuA1</b>				
PLC-2010	Grounding by current dissipation. Connection to the lightning rod and / or bottom of excavation.	1	2000 x 1000 x 2	36,000
PLC-1010		1	1000 x 1000 x 2	18,000
PLC-1067	► Use: Electrical field, high ohmic resistivity, impossibility of driving earth stakes. <b>Ease of implementation.</b>	1	1000 x 670 x 2	12,000

• Earth and resistivity meters



MES-PRO



MES-PRO01



MES-VAL



MES-OR



MES-PORT

Reference	Specification	Cond.U
<b>Earthmeters</b>		
MES-PRO	Compact earth meter 2 poles and 3 markers, measurement frequency: 128Hz	1
MES-PRO01	Earth meter, extended measurement ranges from 0.001 Ω to 100 kΩ. IP53 protection. Supplied with 1 AC adapter, 1 x 2-pole power cable for charging the battery, 1 data export software, 1 optical / USB communication cable, 2 clips with 2 security cords, 1 carrying bag, 1 CD-ROM Rom containing the operating instructions.	1
MES-VAL	ground kit for MES-PRO ground controller.	1
<b>Storm detector</b>		
MES-OR	Atmospheric overvoltage detection monitor. Designed to monitor the radiation and surge system. Online monitoring of lightning impacts .	1
MES-PORT	<b>Individual portable storm detector.</b> Fastening to the belt. <u>Storm detection in a radius of 65 km.</u> Visual and audible alert with information on the stormy progression and its direction.	1

# MANUFACTURER OF LIGHTNING PROTECTION AND EARTH PROTECTION



## TERMS AND CONDITIONS OF SALE COMPANY LLAMPTECH

### Article 1 - General

The LLAMPTECH COMPANY hereinafter referred to as "THE COMPANY" and the customer hereinafter referred to as "THE PURCHASER"

The COMPANY is only committed by sending an order confirmation. Unless otherwise expressly accepted by the COMPANY, the contractual relations between the COMPANY and its buyers are governed exclusively by these general conditions of sale. The conditions of purchase and / or sale general and / or specific buyer are not opposable to the COMPANY, except written exception expressly accepted by the COMPANY. Acceptance and retention by the buyer of any goods whatsoever will be worth including full acceptance of these conditions. Any information contained in the catalog, prospectus and tariff or communicated by the sellers is given for information only. We reserve the right to make any changes to our equipment that we deem appropriate, in form, size or material, even after acceptance of the orders, without the essential features being affected.

### Article 2 - Offer:

The terms of the offer relate exclusively to the supplies specified in the specifications. They do not bind the COMPANY for additional supplies. The masses indicated are only approximate; in any case, the COMPANY is not obliged to provide its execution drawings, even if the supply is delivered with an installation diagram. Linear coasts are only indicative; these ribs must be established by the buyer under his responsibility. The delivery terms indicated in our offer (FOB, CAF, ...) are referred to by reference to the incoterms of the International Chamber of Commerce.

### Article 3 - Orders:

Any order resulting from a quote LLAMPTECH® and addressed to LLAMPTECH® - info@llamptech.com, and entails by the same fact, the acceptance by the buyer of our general conditions of sale and this notwithstanding any clause to the contrary from him . They must be confirmed in writing using a numbered order form from the buyer. They must include all the legal information, customary and related to the client.

### Article 4 - Price and conditions of payment:

Prices are EXCLUDING TAX on international sales. The prices indicated on our offers or quotations are valid for a duration of 2 months (Two), unless otherwise written in the offer. Prices are for the quantities provided for therein. They are subject to change in the event that the quantities ordered do not correspond to those of the estimate. The COMPANY reserves the right to modify its prices according to the indices of the building and the industry, and or the evolution of the prices of the raw materials. All our invoices are payable in cash, with the order by bank transfer unless another period or another method of payment appears on the front of the acceptance of the order, mentioned in article 1. The COMPANY may always demand cash payment before delivery if the buyer shows signs of insolvency, particularly in case of protests, unfunded checks, proposals concordats, same amicable, balance sheets or non-public, non-payment any other delivery or other circumstance likely to render the payment at maturity uncertain. In case of partial delivery, each delivery may be billed as a global contract.

### Article 5 - Deliveries:

The COMPANY will, as far as possible, respect the deadlines stipulated in the order. Any indication of delivery time is purely indicative. However, a possible delay can not be opposed to him. No order may be canceled either in whole or in part, unilaterally by the buyer due to non-observance of the delivery period, without the Company having been put in default by letter with AR and a new delivery date has been agreed in writing by mutual agreement. No delay in delivery can justify claims for damages. The COMPANY may always proceed to partial shipments. Goods delivered free of domicile are deemed delivered when delivered by the carrier to the buyer. Other goods are deemed delivered at the point of dispatch, when they are handed over by the COMPANY to a carrier for transport to the destination specified by the buyer. Risks related to the products are transferred to the buyer from the moment of delivery of the products. The risk of delivery will remain the responsibility of the recipient, regardless of the conditions of sale and transport. For any dispute arising from the delay, loss or damage of goods, it will be the recipient to exercise the remedies against third-party carrier.

### Article 6 - Transport:

According to Article 105 of the Commercial Code, the goods travel at the risk and peril of the recipient buyer to whom it is responsible to check the condition of the goods in the presence of the deliveryman. In case of damage, it is imperative to notify the carrier document with the maximum accuracy, followed by a registered letter to the carrier within 48 hours. If the merchandise is totally unusable, refuse it. If you sign the carrier's bill without any reservations, it is because you acknowledge that you have received the goods in good condition and therefore no further appeal or refund or replacement of parts will be possible.

### Article 7 - Interest on late payment and penalty clause:

Any invoice remaining unpaid on its due date will be increased automatically and without formal notice, as a lump sum and irreducible compensation, an amount corresponding to 40% of its amount with a minimum of 300.00 EUR. In addition, unpaid invoices shall be increased by an amount equal to an interest rate of not less than 1.5% per month from the due date until the full day of payment, provided that any month commenced will be due in full.

In the event of a term or partial payment: The non-payment of the price or of the balance remaining due on a due date will result in the immediate payment of the totality of the balance due. In case of non-compliance by the buyer of its obligations including payment, the COMPANY reserves the right to resolve the sale of right without prior notice. In this case, the buyer would be liable for a compensation fixed at a flat rate of 40% of the price H.-T. of the goods (Article 1152 of the Civil Code). In the event that, without resolving the contract, we would ask our client to fulfill its obligations by litigation, we will owe a lump sum compensation equal to 40% of the price H.-T. of the goods. In the event that the buyer does not take delivery under the conditions specified above, the COMPANY may, at its discretion, pursue either the forced execution of the contract or its implementation. In the latter case, the termination indemnity will be, as a penalty clause, an amount equal to one third of the value excluding tax of the ordered material. The non-return of the drafts within the statutory deadline or the modification of their deadlines without prior agreement of our company, will automatically entail the removal of the payment facilities. Failure to pay a single payment will automatically result in the payment of interest and the costs involved, as well as the termination of orders in progress. The billing date is the date of delivery of the equipment, or the provision in our workshops, but also on receipt of work. The receipt of works is deemed to have been made from the moment the Company's receipt of works document is signed by both parties at the end of the works. Within the framework of absence of sheet of reception of works, and without complaint notified by letter with Acknowledgment of Reception within 3 (three) days after reception of the invoice, the works will be considered as accepted by the buyer without any Reserve.

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**CATALOG OF PROTECTION AGAINST LIGHTNING**

# MANUFACTURER OF LIGHTNING PROTECTION AND EARTH PROTECTION



GENERAL CONDITIONS OF SALE COMPANY LLAMPTECH (continued)

#### Article 8 - Retention of title clause and express rescission clause:

Without prejudice to the preceding provisions, the COMPANY will remain the owner of the products until full payment of the invoice and any interest due. The buyer can in no way transform, incorporate or generally use the products as long as they remain the property of the COMPANY under paragraph 1 of this clause. During this period, the buyer also agrees to keep the products in such a way that they can be identified as the property of the COMPANY. In the same way, the buyer can not under any circumstances sell, rent, put at the disposal of third parties any title, pledge or burden any product as long as these remain the property of the COMPANY under of paragraph 1 of this clause. The buyer is obliged to take all necessary measures to guarantee this retention of title. In particular, it undertakes to inform the COMPANY at the request of the latter of the location of the products and will allow access to these places at any time and without any restriction to the representative of the COMPANY who may take back the products. at the first request, in the absence of an effective settlement. In case of bankruptcy, seizure or any claim on the goods sold, the buyer will immediately notify the curator or the bailiff of the existence of this retention of title clause. The buyer will also inform the COMPANY of his bankruptcy or of a seizure practiced on the products covered by this clause. In the event of non-payment of our invoices on their due date or in the event of liquidation, bankruptcy or insolvency of the buyer, the COMPANY may immediately and by registered post by registered letter declare the agreement resolved, without prejudice his right to restitution and his right to damages. Any costs resulting from the implementation of this clause remain the responsibility of the purchaser.

#### Article 9 - Warranty-Limitation of liability:

Our equipment is guaranteed for a period of one years, (Five years for STAR products) unless another period appears on the front of the order confirmation mentioned in article 1, from delivery against all defects in construction or operation resulting from a defect in the design, materials or workmanship. Our warranty does not apply in the following cases:

- defects arising either from the materials supplied by the purchaser or from a design imposed by him, - replacements or repairs resulting from normal wear and tear of the apparatus and machinery, deteriorations or accidents resulting from negligence, defect monitoring or maintenance, or faulty use of the device,
- incidents taking fortuitous acts or force majeure. The guarantee consists in the repair, the modification or the replacement of the parts or the devices recognized defective, as soon as possible and expenses to our load, in particular of parts and labor. The liability of the COMPANY is limited to the obligations thus defined and it can not be compensated towards the buyer for all damages suffered such as accident to the personnel, damage to property distinct from the object of the contract or loss of profit. For devices or devices that are not of our manufacture, the scope and duration of the warranty shall not exceed those granted to us by the manufacturer or seller. The warranty ceases automatically if the buyer has made changes or repairs to our devices, on his own initiative and without our express agreement. Warranty means compliance with the law and standards (NFC17102) in force at the time of sale. The guarantee is valid only in the context where the installations respect the obligations of periodic and maintenance checks of the external and internal installations of protection against lightning, as the law and the standards require, with inscription in the register of security. If the equipment and materials in place are not verified, maintained and notified to the building safety register as mentioned above (annual periodic checks), the guarantee is void, and the COMPANY can not be held responsible for any malfunction. or damage to existing products, property and / or people.

#### Article 10 - Return of Goods and Claims:

Any complaint relating to the delivered goods must be brought to the attention of the COMPANY within 5 days from delivery. Under no circumstances do we accept returns of coin against payment or postage due or poorly packaged. Returns are limited only to parts in their original packaging and in perfect condition for marketing, which means unassembled. Contact us to obtain a return authorization and know how to make this return in the best conditions. Any complaint concerning any mention or dispute raised on the invoices must be made within 3 days after receipt of the invoices. No dispute authorizes the buyer to delay the payment of his invoices for an amount exceeding 2% of the value of the invoices relating thereto. Any complaint must be notified in writing by letter with acknowledgment of receipt.

#### Article 11 - Force majeure, unforeseenness:

The COMPANY can not in any case be held responsible for non-performance or poor performance of its obligations in case of force majeure. Will be considered as an event of force majeure, any unforeseen event relating to the persons and / or equipment of which the COMPANY habitually uses which are of such nature to make the execution of the contract impossible, or to such a point difficult and / or disproportionately expensive that the Prompt execution of the obligation can not reasonably be required. Similarly, the following must be considered as force majeure: the measures of any public authority, late delivery, bankruptcy or stock-outs of a supplier, war, fire and damage caused by water, strike, lockout, wind, etc. In case of force majeure, the buyer is not entitled to any compensation whatsoever and can not claim the performance of the contract. In the event of the occurrence of events that have the effect of upsetting the economy of the contract, the COMPANY may request a revision of the contract so as to restore the original contractual economy. The parties undertake to renegotiate in good faith the terms of the contract.

#### Article 12 - Confidentiality:

The studies, plans and documents given to the buyer remain our property and are confidential, the buyer can neither use them outside the contract, nor to communicate them knowingly or not to thirds and he undertakes to take all necessary measures to this end.

In case of non-conclusion of the sale, studies of the documents submitted in support of the offer must be returned to the COMPANY within 15 days from the date of expiry of the offer.

#### Article 13 - Jurisdiction

In case of dispute, the courts of Andorra la Vella in the Principality of Andorra, are only competent.

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