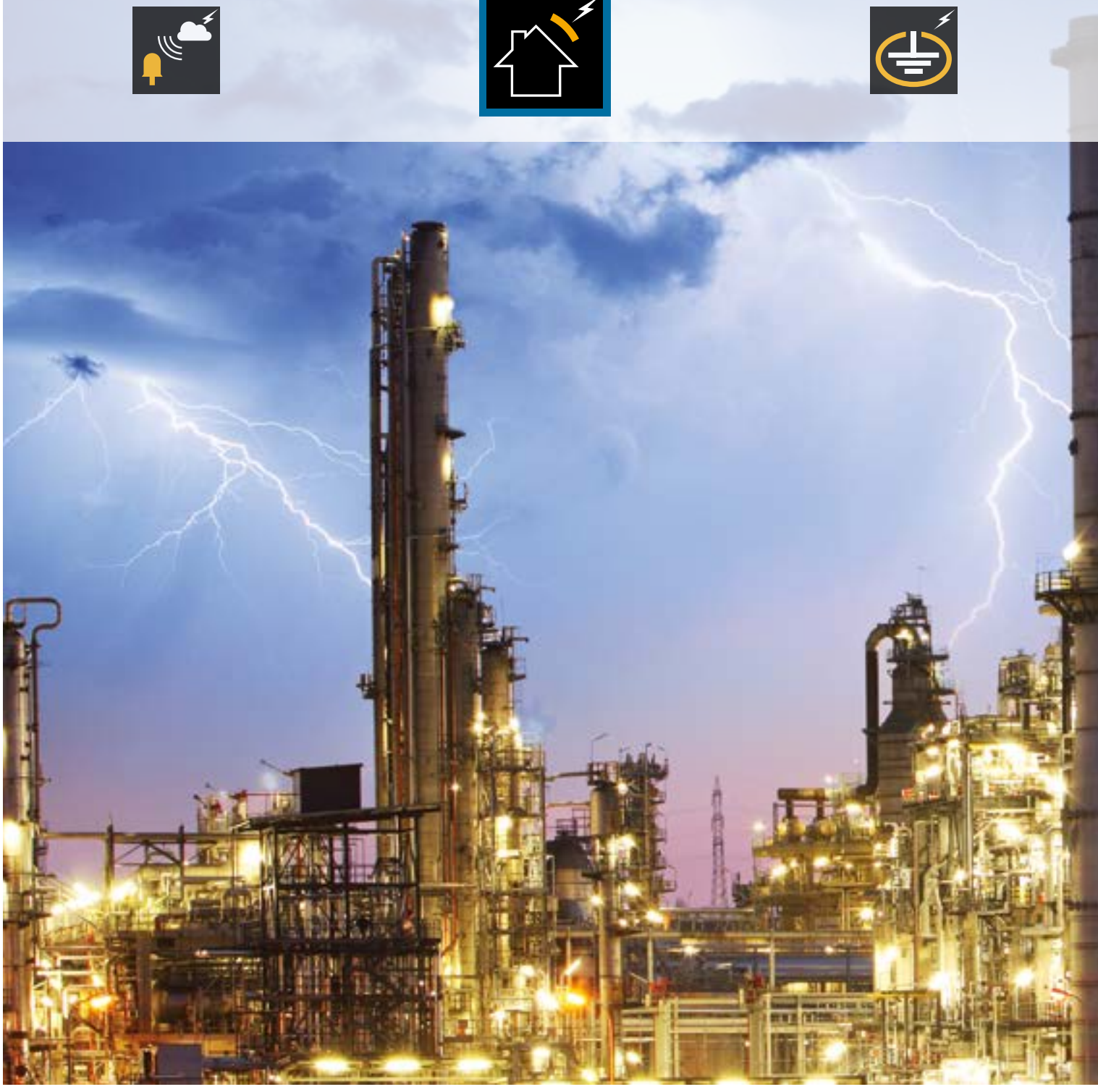
AIR TERMINALS



2

AND ACCESSORIES



> NEED FOR PROTECTION

Train derailment due to lightning strike. Wenzhou (China).

> DESTRUCTIVE EFFECTS OF LIGHTNING

Electrical effects: equipment destruction.

Increases in ground voltage and surges can damage all the equipment connected to the electrical network.

Electrodynamic effects: damage to buildings.

Deformation and breakages may occur in the structure due to the force generated by the high magnetic field produced.

Thermal effects: fires.

Sparks and heat dissipation produced by the Joule effect can even cause fires.

Effects on people and animals: electrocution and burns.

Current of a certain intensity passing through the body for a short duration is enough to cause the risk of electrocution due to cardiac or respiratory arrest. The risk of burns can also be added to the list.

Inductive effects:

Within a variable electromagnetic field, induced currents appear in every conductor.

If these conductors reach computers or other electronic equipment, irreversible damage may be produced.

Lightning is one of the most destructive natural phenomena. There are many atmospheric discharges during lightning storms and some of them can even reach **hundreds of kiloamperes**.

These electrical discharges are a great hazard to people, animals, buildings and electronic equipment. The economic consequences of lightning are also very important; it can cause fire, stop production of a factory or interrupt critical processes. A direct lightning discharge to a person results in current flowing through the body. This current lasts a very short time but the intensity is enough to provoke electrocution resulting in heart failure and causing burns of different degrees.

At present, there is no device capable of preventing lightning formation. However, it is possible to create a path for the grounding of lightning which minimizes damage to the environment: the Lightning Protection System (LPS).

The need for lightning protection should be considered preferably during the first phases of structure design.

A Lightning Protection System has four basic objectives:

1) To capture the lightning.
2) To conduct lightning current safely to earth.
3) To dissipate the lightning current in the ground.
4) To provide protection against the secondary effects of lightning.

In a world where buildings and equipment are more complex every day, lightning is a constant hazard. One discharge can damage buildings and cause failures in electronic equipment. It can even provoke fire and lead to serious financial losses.

> NEED FOR PROTECTION

Refinery fire due to lightning discharge. Puerto Cabello (Venezuela).

Fire in a church tower due to lightning impact. Wald (Germany).

Lightning causes the death of livestock. Miracema de Tocantins (Brazil).

Lightning strikes a residential building. London (United Kingdom).

> LEGISLATION AND REGULATIONS

The capacity of an installation to provide sufficient protection against lightning protection is guaranteed by compliance with all the regulations in force.

> SPECIFIC STANDARDS FOR LIGHTNING PROTECTION

NF C 17-102. UNE 21186 and other National Standards "Lightning Protection with Early Streamer Emission Air Terminals".

IEC/EN 62305 Series "Lightning Protection using rods and meshed conductors".

EN 5016 Series (IEC 62561) "Lightning Protection Components".

> GUIDE DOCUMENTS

BIP 2118: Protection against lightning. A UK guide to practical application of BS EN 62305.

> OTHER STANDARDS

Typically, in every country there are codes that may be related to lightning protection, such as:

National Electric Code
National Construction Code

It is highly advisable to check carefully if there are lightning protection requirements within national obligatory standards.

Other laws and codes may also apply to lightning protection. Typical cases are:

Requirements for protection of flammable and explosive areas
Work health and safety codes
Particular requirements for other high risk structures and areas, such as hospitals, campsites, dangerous industries, etc.

BS EN 2591-214: Aerospace series. Elements of electrical and optical connection. Test methods. Lightning strike, current and voltage pulse. Under no circumstances is a force majeure extraneous to work considered as sunstroke, lightning and other phenomena of an analogous nature.

BS EN 3840-308: Aerospace series. Circuit breakers. Test methods. Lightning.

BS EN 50468: Resistibility to overvoltage and overcurrent caused by lightning for equipment with telecommunication ports.

BS EN 50289-4-14: Communication cables. Specifications for test methods. Environmental test methods. Lightning.

BS EN 60076-4: Power transformers. Guide to the lightning impulse and switching impulse testing. Power transformers and reactors.

BS EN 61400-24: Wind turbine generator systems. Lightning protection.

IEC/TR 60479-4: Effects of current on human beings and livestock. Effects of lightning on human beings and livestock.

HIGH RISK SITUATIONS DESCRIBED BY THE REGULATION

Area with high density of lightning strikes

People in open areas

Any installation or machinery used for work purposes

Buildings that need a lightning protection system with a certain level of protection, set by a risk assessment carried out according to regulations

Need for continuity of public or industrial services

Structures with outside areas open to the public

Buildings containing highly sensitive or valuable documents or equipment (such as telecommunications, computers, files, museums, historical monuments, cultural heritage)

Very high or isolated buildings

Buildings and warehouses handling or containing hazardous materials (explosive, flammable or toxic materials, etc.)

> HOW IS LIGHTNING FORMED

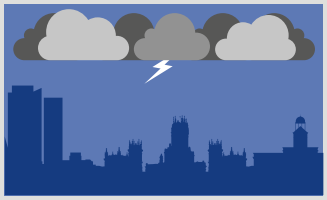
1

In normal atmospheric conditions, there is a balance between positive and negative charges, where the ground is more negatively charged than the air and other elements on the ground.

2

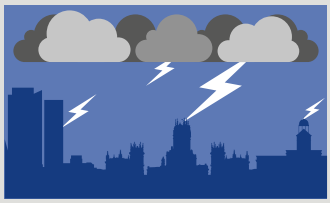
However, the formation of storm clouds creates a charge polarization: usually, the lower part of the cloud is negatively charged, thereby inducing a positive charge in the ground and other elements on it. The electric field formed in the atmosphere can then reach tens of kilovolts.
This positive charge is more evident in metal objects, pointed objects and well-earthed objects, including trees.

3



When the electric field is high enough, the cloud starts discharging towards the ground. The path formed by this discharge is called the downward leader and produces a very sharp variation in the electric field which affects the positive charges in the objects on the ground, causing the corona effect.

4

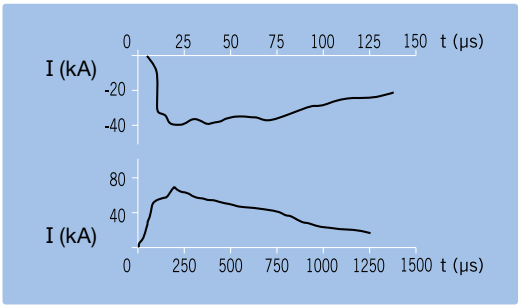


One of these objects will be the one forming the upward leader, which will move towards the downward leader thus forming the discharge path between the cloud and the ground. This object will receive the lightning strike. The cloud charge will find the most direct path to earth. If this path is not controlled, it could cause serious damage.

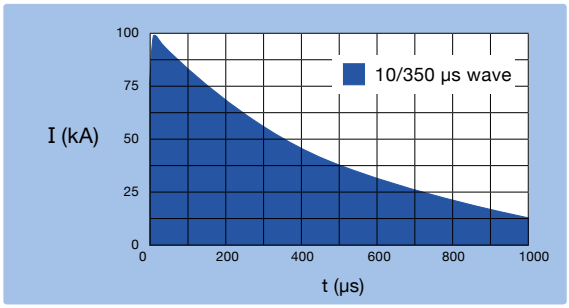
> LIGHTNING PARAMETERS

Lightning protection standards assume as a direct discharge wave, a double exponential which rise time is 10 µs (up to 90% of the peak value), peak value of 100 kA and tail time (up to 50% of the peak value) of 350 µs.

The values of the main lightning parameters have been obtained experimentally:



Wave shape and intensities of positive (ground to cloud) and negative (cloud to ground) discharges.



The measured values for intensity of lightning peak current range from hundreds of amperes to several hundred kiloamperes.

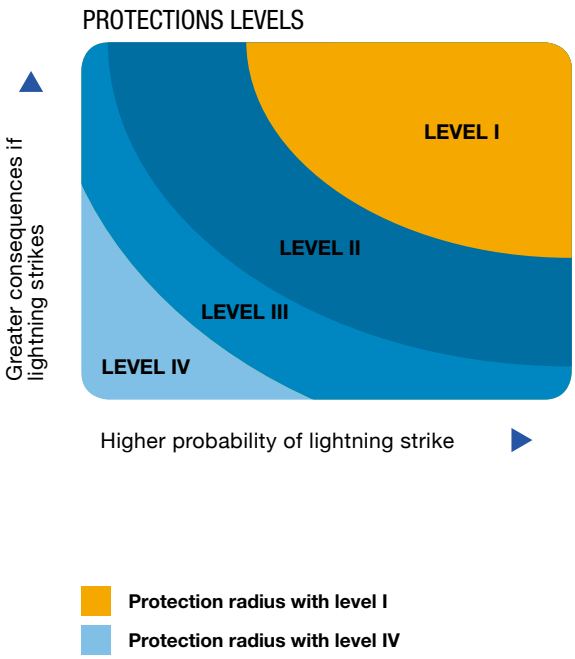
> RISK ASSESSMENT

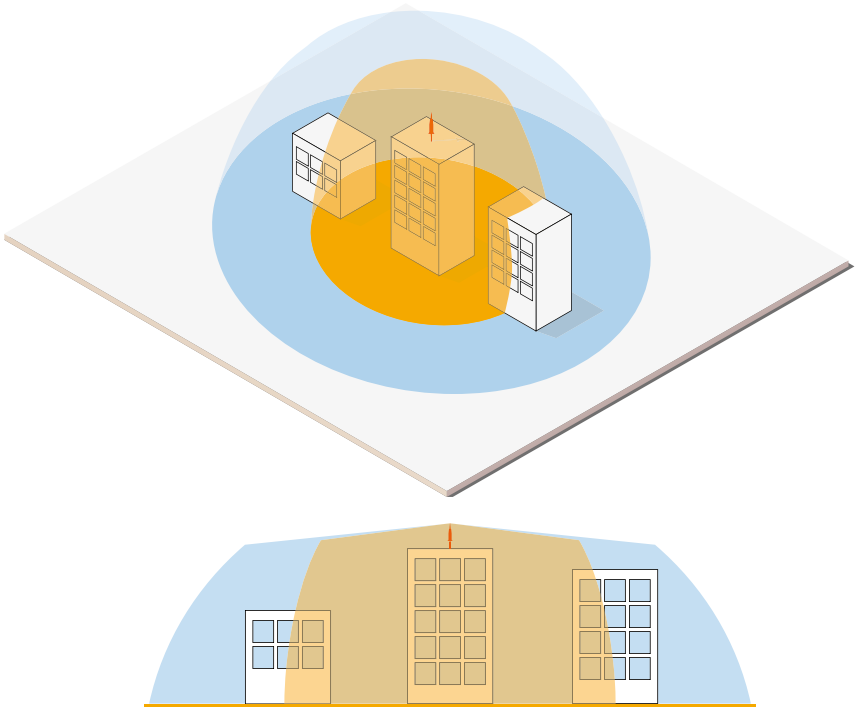
The procedure for calculating the risk index is described in lightning protection standards. The result determines the need for a lightning protection system and its degree of security (Protection Level). The risk assessment compares the expected lightning incidence with the assumed probability of lightning striking the structure. The relation between these two factors indicates whether a lightning protection system is needed or not and the corresponding degree of security.

This value depends on several tabulated factors, such as the type of structure and its contents, although sometimes other considerations could be taken into account to improve the protection level by increasing the effectiveness of the lightning protection system so that it is above the risk index calculated.

Protection level is thus related to the accepted probability of lightning striking a structure. A lower protection level (IV) will be able to intercept lightning with a high associated current, but may not capture a flash with a low current. Protection level I assumes more restrictive and safe conditions for the air terminals, hence the system would also intercept lower current lightning.

The need for protection and its level often depends on subjective criteria, since risk assessment consists of reaching a “tolerable risk” of strikes on the structure. Given that in many circumstances, this possibility is not acceptable, the decision may be taken to reduce the likelihood of lightning strike as far as possible by directly adopting level I, which is the safest and most effective.





> CD-RISK CALCULATION SOFTWARE

Risk assessment is a complex task. The Technical Department at Aplicaciones Tecnológicas, S.A. is at your disposal to calculate the risk of structures in accordance with the relevant regulations. We also recommend using calculation software **CD-RISK** in order to carry out the assessment and determine the protection level required for the structure.

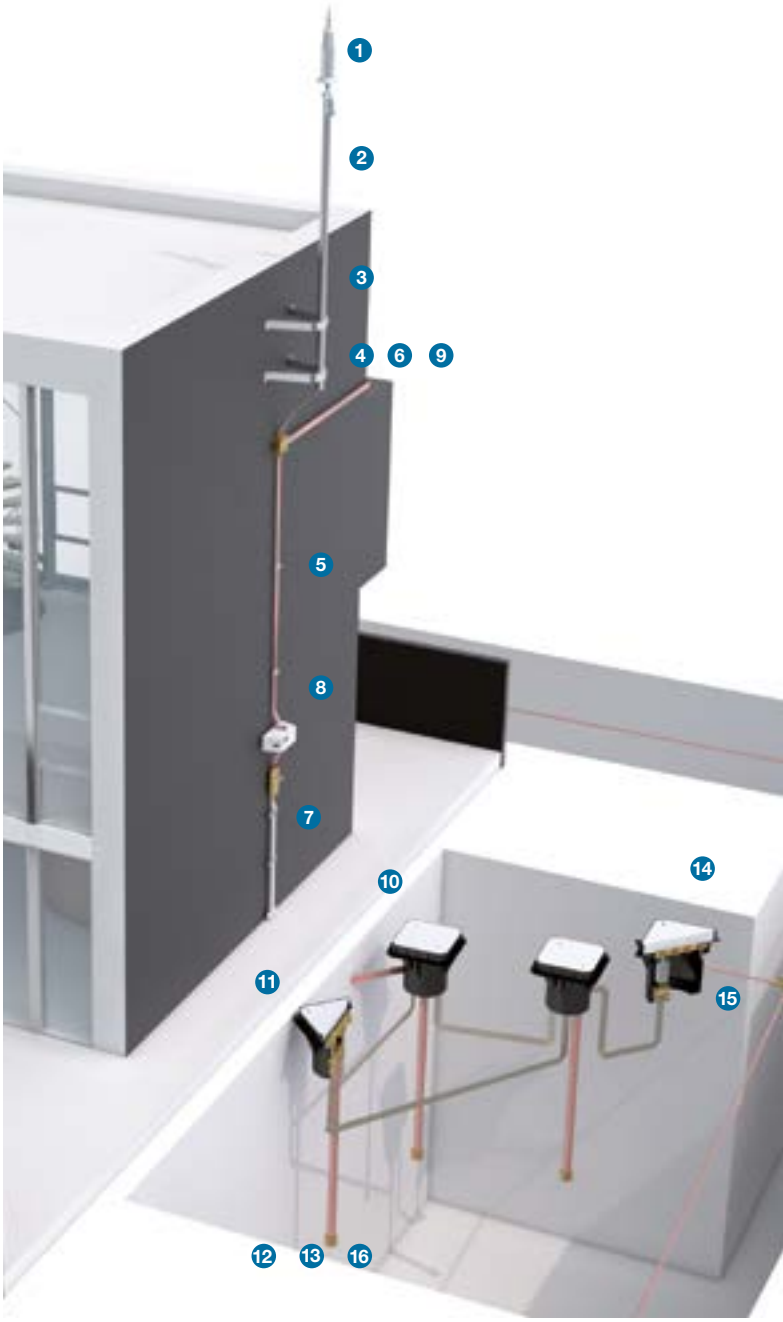
> GUIDE FOR THE DESIGN AND INSTALLATION OF EARLY STREAMER EMISSION AIR TERMINALS (ESE)

Operation of early streamer emission air terminals is based on the electric characteristics of lightning formation. Lightning begins with a down-conductor which spreads in any direction. Once it approaches the objects on the ground, any of them can be struck. The objective of an external lightning protection system is to control the lightning strike point and provide the lightning current with a path to earth avoiding damage to the structure.

The main feature of Early Streamer Emission (ESE) air terminals is the generation of the continuous upward leader before any other object within its protected area. The standards define this characteristic using a parameter **called advance time (ΔT)**: "Difference expressed in microseconds between the emission time of an early streamer emission air terminal and a simple rod air terminal measured in a laboratory under the conditions defined in the reference standard."

This advance time determines the protection radius of each air terminal. If the triggering occurs earlier, then the distance at which the downward leader is intercepted increases, thus avoiding a lightning strike in a wider area. The advance time must be measured in a high voltage laboratory, following the test procedure described in the ESE lightning protection regulations.

The components for a lightning protection system using ESE air terminals are as follows:



EXTERNAL LIGHTNING PROTECTION SYSTEM

- One or more air terminals.
- Two or more down-conductors.
- An earth termination system.

INTERNAL LIGHTNING PROTECTION SYSTEM

- A suitable surge protection installation.
- Other measures minimizing the destructive effects of lightning (equipotential bonding, screening etc.).

The **installation** of the LPS using ESE air terminals must follow the relevant standards (NF C 17-102, UNE 21186 or similar):

> PROTECTION RADIUS (R_p)

Calculated according to UNE 21186:2011, NF C 17-102:2011 and NP 4426:2013

		PROTECTION LEVEL I (D=20 m)				PROTECTION LEVEL II (D=30 m)				PROTECTION LEVEL III (D=45 m)				PROTECTION LEVEL IV (D=60 m)			
Ref. →		AT-1515 AT-2515	AT-1530 AT-2530	AT-1545 AT-2545	AT-1560 AT-2560	AT-1515 AT-2515	AT-1530 AT-2530	AT-1545 AT-2545	AT-1560 AT-2560	AT-1515 AT-2515	AT-1530 AT-2530	AT-1545 AT-2545	AT-1560 AT-2560	AT-1515 AT-2515	AT-1530 AT-2530	AT-1545 AT-2545	AT-1560 AT-2560
h (m)	2	13	19	25	31	15	22	28	35	18	25	32	39	20	28	36	43
	4	25	38	51	63	30	44	57	69	36	51	64	78	41	57	72	85
	6	32	48	63	79	38	55	71	87	46	64	81	97	52	72	90	107
	8	33	49	64	79	39	56	72	87	47	65	82	98	54	73	91	108
	10	34	49	64	79	40	57	72	88	49	66	83	99	56	75	92	109
	20	35	50	65	80	44	59	74	89	55	71	86	102	63	81	97	113
	60	35	50	65	80	45	60	75	90	60	75	90	105	75	90	105	120

h (m): Height of the air terminal over the element to be protected (in metres).
D (m): Rolling sphere radius (in metres).

> GUIDE FOR THE DESIGN AND INSTALLATION OF EARLY STREAMER EMISSION AIR TERMINALS (ESE)

> BASIC RECOMMENDED MATERIALS

INTERCEPTION

1. The radius of protection offered by an ESE lightning conductor depends on its height (h) in relation to the area to be protected, its triggering advance ΔT and the protection level.
2. The air terminal must be installed at least 2 metres higher than any other element within its radius of protection.

DENOMINATION	REF.	TABLE
ESE air terminals	AT-1560	1, 2
Adapting piece	AT-011A	15
Mast	AT-056A	30
Anchorage	AT-023B	31

DOWN-CONDUCTORS

3. Each air terminal must be earthed using two down-conductors located outside the structure. They will preferably be on different external walls of the building.
4. Each down-conductor should be installed such that its routing is as straight as possible and takes the shortest path to earth without sharp bends or upward sections.

   Care should also be taken to avoid crossing or running conductors in close proximity to electrical cables.

   When external routing is impracticable, the down-conductor may be internally routed. However, this is not recommended as it reduces the effectiveness of the lightning protection system, makes maintenance difficult and increases the risk of voltage surges.
5. The number of down-conductor fixings is determined by considering 3 clips per metre as a reference.
6. Down-conductors should have a cross-section of at least 50 mm^2. Since lightning current needs to be driven, flat conductors (tape) are preferable to round conductors as they have a larger exterior surface area for the same amount of material. Tin-plated copper is recommended due to its physical, mechanical and electrical characteristics (conductivity, malleability, corrosion resistance and so on).
7. Down-conductors should be protected by installing guard tubes up to a height of 2 m above ground level.
8. The installation of a lightning event counter over the guard tube is recommended in order to carry out verification and maintenance operations which are essential for any lightning protection system.
9. It is recommended that the down-conductor be kept at a distance of at least 5 metres from the external gas pipes.

DENOMINATION	REF.	TABLE
Clip	AT-240E	46
Clamp	AT-020F	90
Lightning event counter	AT-034G	106
Guard tube	AT-060G	107
Conductor	AT-052D	121

EARTHING

10. Each down-conductor must have an earth termination system. Earth termination systems should be located outside the building, except where this is absolutely impossible.
11. The resistance of the earth termination system measured by conventional means must be lower than 10 Ω, when separated from other conductive elements.

    Connection with the earth termination system must be made directly at the bottom of each down-conductor, using a device that allows the disconnection of the earth electrode and should be placed inside an inspection pit marked with the earth symbol.
12. The inductance of the earth termination system must be as low as possible. The recommended arrangement is vertical electrodes forming a triangle with a minimum total length of 6 m. The vertical electrodes must be bonded with a conductor buried 50 cm deep and separated at a greater distance than their length.
13. The use of a soil conductivity improver is recommended in high resistivity ground.
14. All earth termination systems should be bonded together and to the general earthing system of the building.
15. It is recommended to use a spark gap to connect the lightning earth termination system to the general earth system, as well as the lightning air terminal mast to any aerials.
16. All elements of the lightning rod earth termination system must always be at least 5 m from any buried metal or electrical pipes.

DENOMINATION	REF.	TABLE
Earth Electrode	AT-025H	133
Earth pit	AT-010H	144
Bonding bar	AT-020H	148
Spark gap for earth connections	AT-050K	157
Clamp	AT-020F	90
Conductor	AT-052D	121

> GUIDE FOR DESIGN AND INSTALLATION USING RODS AND MESHED CONDUCTORS

Lightning protection using rods and meshed conductors is intended to share and dissipate the lightning current through a network of down-conductors and earth terminations.

The elements of a lightning protection system using rods and meshed conductors are as follows:

> EXTERNAL LIGHTNING PROTECTION SYSTEM

- Simple rods and/or meshed conductors
- Down-conductors
- Earth Termination System

> INTERNAL LIGHTNING PROTECTION SYSTEM

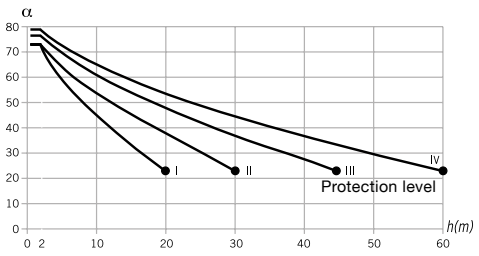
- A suitable surge protection installation.
- Other measures minimizing the destructive effects of lightning (equipotential bonding, screening etc.).

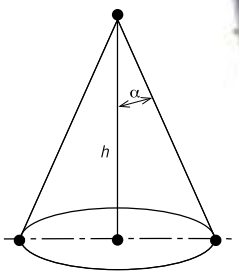
The installation of a lightning protection system using rods and meshed conductors must follow the standards IEC62305 on Lightning Protection:

The volume protected by the air terminals can be determined using 3 methods:

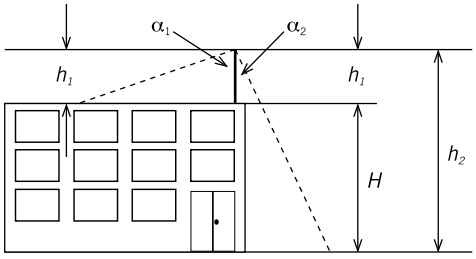
> ANGLE METHOD

According to this method, the protection volume is given by a line starting at the air terminal, the angle of which depends on the height and the protection level, according to the following graph:





Franklin rods should be placed on the higher and most vulnerable places (corners, overhangs, etc.), as shown in the figure:

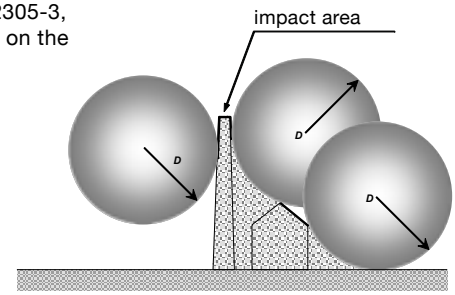


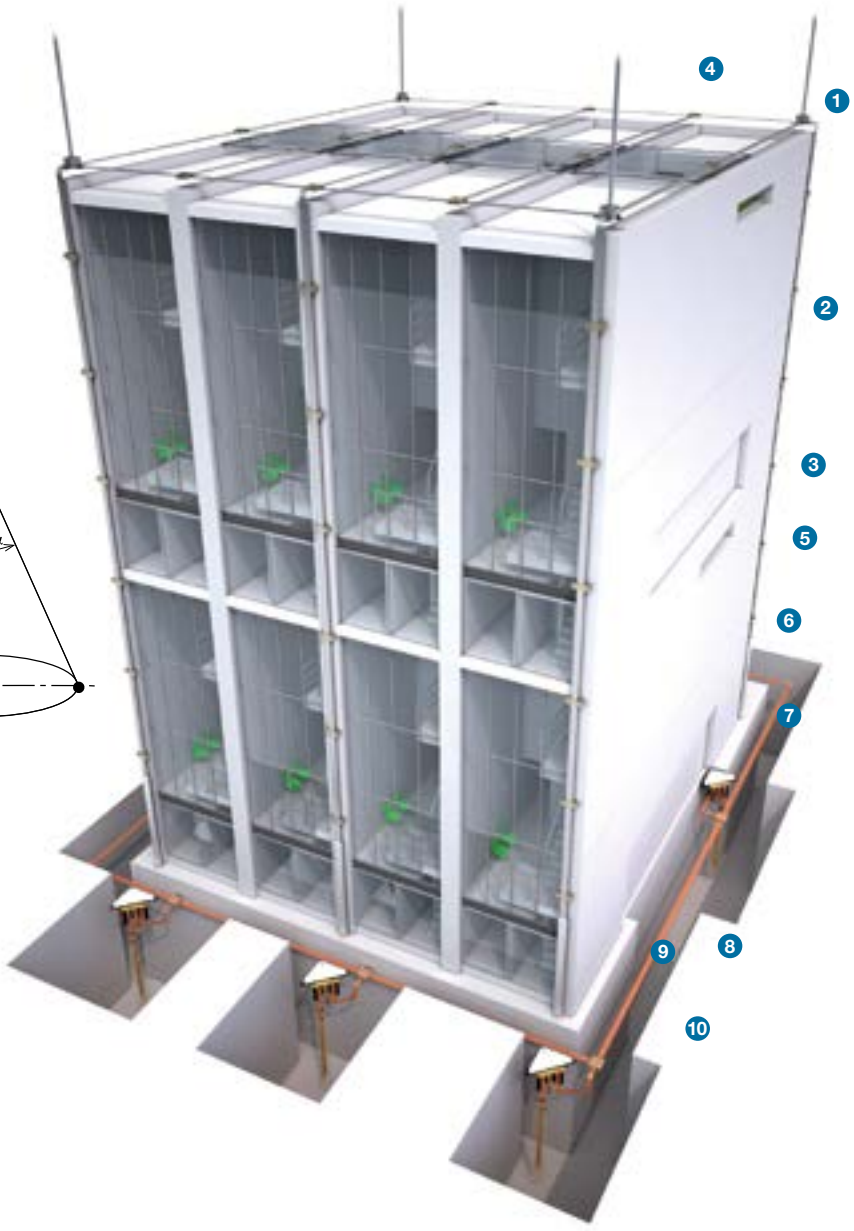
> ROLLING SPHERE METHOD

This method is based on an electrogeometric model that assumes that the last step of the downward leader can propagate in any direction. The model represents this with a sphere (of different radius depending on the required protection level) whose centre is the end of the lightning downward leader. This sphere is rolled along the external surface of the structure to be protected, so that the points in contact with the sphere are susceptible to get a lightning strike.

According to the Standard IEC 62305-3, the rolling sphere radius depends on the protection level:

- Protection level I: D = 20 m
- Protection level II D = 30 m
- Protection level III D = 45 m
- Protection level IV D = 60 m



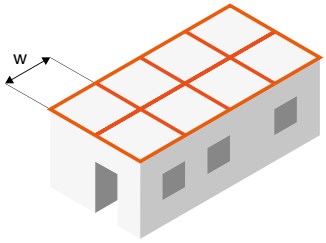


> GUIDE FOR DESIGN AND INSTALLATION USING RODS AND MESHED CONDUCTORS

> MESH METHOD

According to this method, conductors forming a mesh should be placed on the structure. The separation depends on the protection level:

Protection level	w	Distance between down-conductors
I	5 m	10 m
II	10 m	10 m
III	15 m	15 m
IV	20 m	20 m



> RECOMMENDED MATERIALS

DENOMINATION	REF.	TABLE
Franklin air rod	AT-008A	5
Franklin air rod base	AT-116B	17
Self-supporting Franklin air rod	AT-104A	10
Expansion unit	AT-012G	108
Roof conductor holder	AT-041E	66
Clamp	AT-039F	88
Conductor	AT-057D	123

INTERCEPTION

1. The mesh should be applied to the edges, overhangs and roof area perimeter, following the described methods.

For buildings higher than 60 m, a level IV mesh should also cover the upper 20% of the outer walls.

DOWN-CONDUCTORS

2. Down-conductors should provide several parallel paths to distribute the lightning current.

   The length of the current paths to the earthing system should be as short and direct as possible.

   To minimize the risk of dangerous sparks, down-conductors should be connected to the grounded metal parts of the structure if the distance between them is shorter than the safety separation distance as defined in the regulations.

3. The conductors should be fixed to the structure once every metre.

4. For longer conductors, it is recommended to install expansion joints every 20 m.

5. A guard tube should be installed for each down-conductor, covering at least 2 m from the floor, in order to avoid mechanical damages.

6. Each down-conductor must be connected to the earthing system. Equipotential bonding is recommended for all the down-conductors at ground level every 20 m.

DENOMINATION	REF.	TABLE
Clip	AT-240E	46
Rainwater pipe bond	AT-025J	87
Clamp	AT-039F	88
Bimetallic connector	AT-094F	103
Guard tube	AT-060G	107
Joint protection	AT-060G	107
Conductor	AT-057D	123

EARTHING

7. The recommended configuration for the earthing system is a ring bonding all down-conductors.

   A disconnecting sleeve should be installed in each down-conductor for measuring earth resistance separated from other conductive elements.

8. It is recommended that the earthing resistance is less than 10 Ω.

9. Earth conductors should be buried at a depth of at least 50 cm.

10. Aluminium conductors or fittings must not be used directly with the earth.

    Direct connections between copper and aluminium conductors or copper and galvanized steel conductors are not recommended in order to avoid corrosion. Bimetal or stainless steel clamps should be used for these connections.

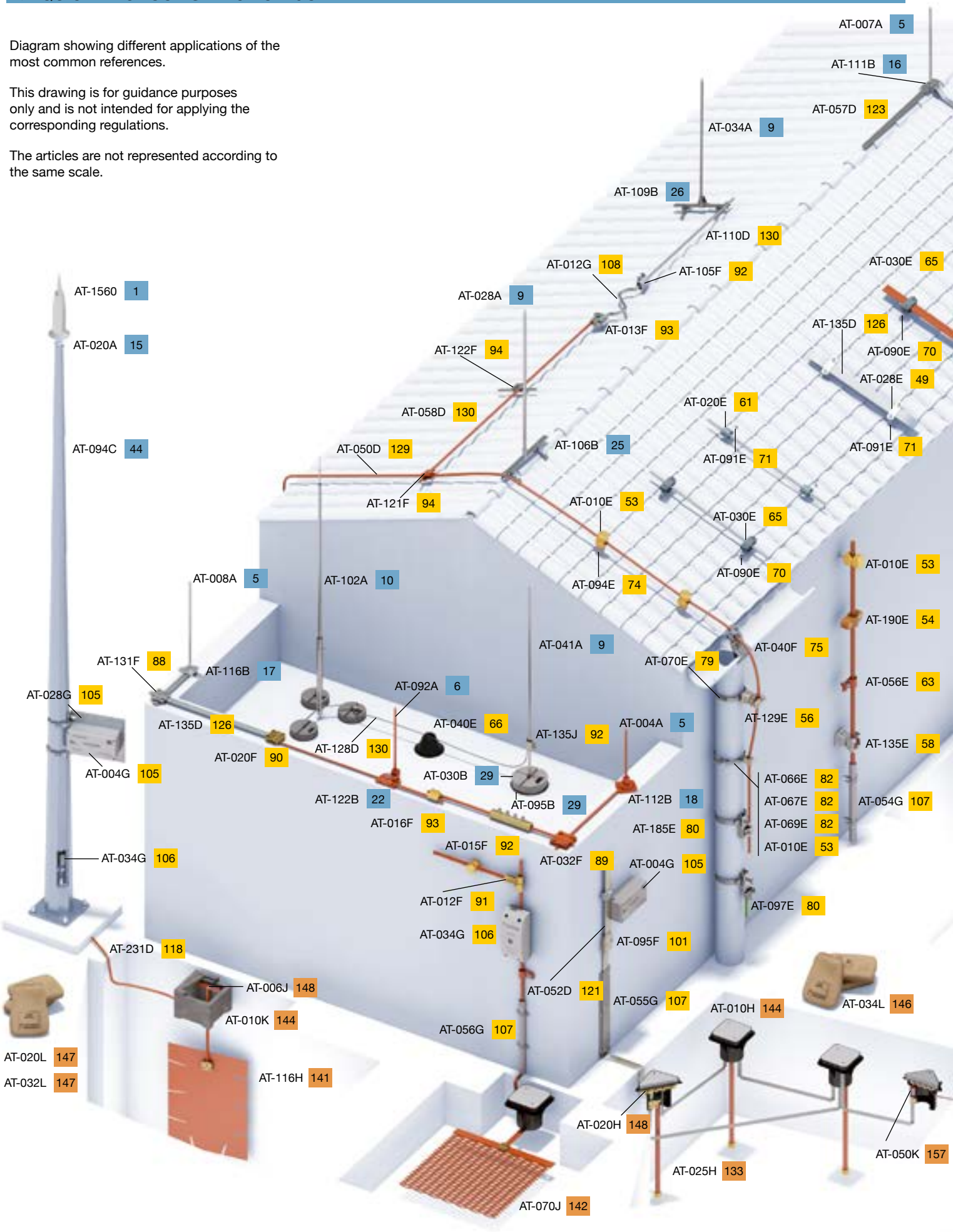
DENOMINATION	REF.	TABLE
Earth electrode	AT-041H	135
Clamp	AT-020F	90
Ground enhancing product	AT-010L	145
Earth pit	AT-010H	144
Bonding bar	AT-020H	148
Earth clamp	AT-090H	158
Conductor	AT-011D	120

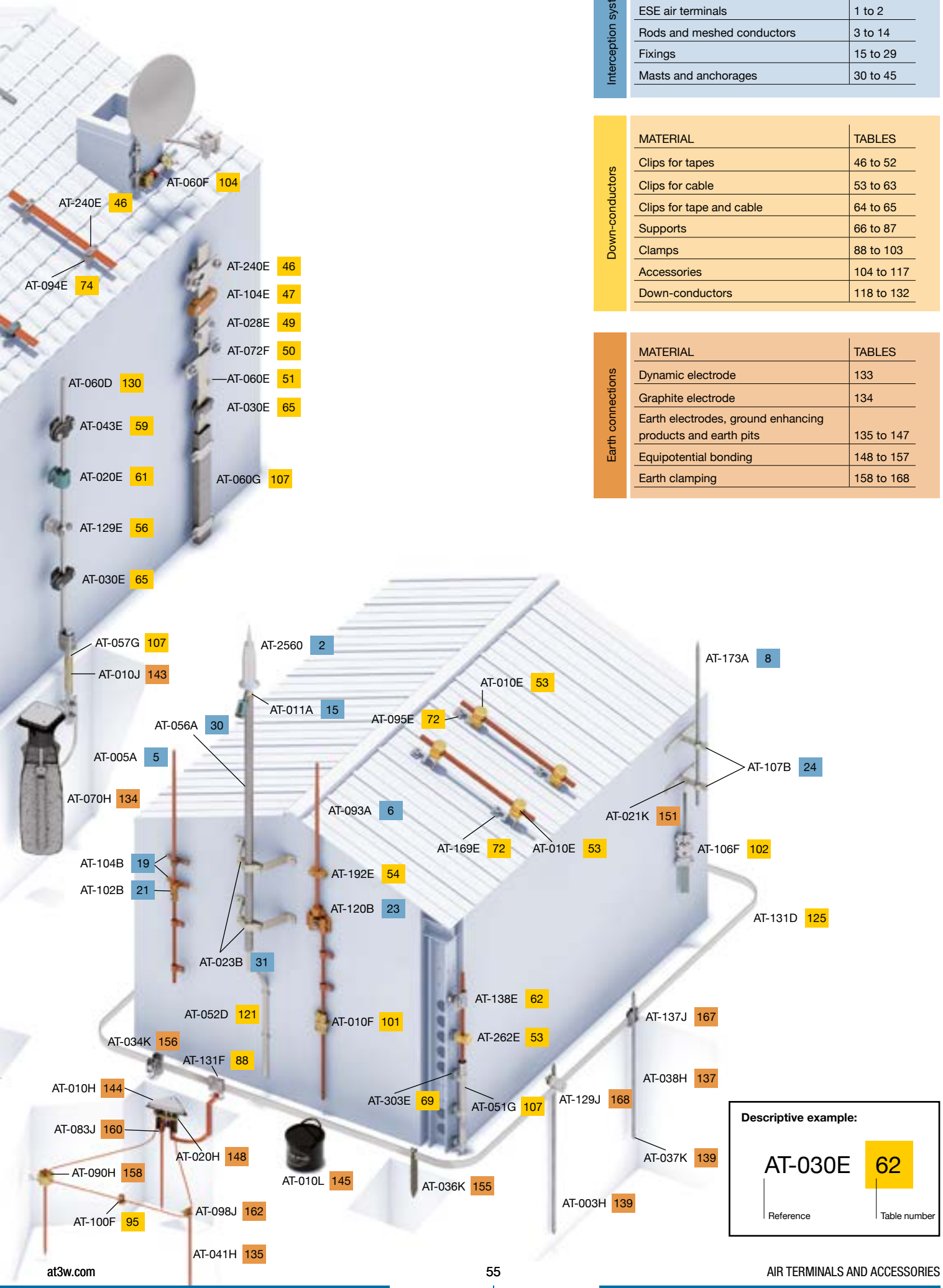
> QUICK PRODUCT SELECTION GUIDE

Diagram showing different applications of the most common references.

This drawing is for guidance purposes only and is not intended for applying the corresponding regulations.

The articles are not represented according to the same scale.





Descriptive example:

AT-030E **62**

Reference — Table number

>INTERCEPTION SYSTEMS AND ACCESSORIES

> ESE LIGHTNING AIR TERMINALS

1 > DAT CONTROLER® PLUS

> GENERAL DESCRIPTION

DAT CONTROLER® PLUS is an Early Streamer Emission (ESE) air terminal based on the electrical characteristics of lightning formation. The air terminal triggers the continuous upward leader before any other object within its radius of protection. This feature is referred to in the regulations as the **advance time of an ESE air terminal** (ΔT). The earlier the upward leader is triggered, the larger is the distance where the downward leader is intercepted, thus protecting a greater area against lightning (standards limit it to ΔT≤60 µs).

DAT CONTROLER® PLUS terminals offer the highest performance guarantees:

1 REGULATION REQUIREMENTS*

In accordance with the standard NF C 17-102:2011 "Early Streamer Emission air terminals"	Salt mist test ✓ Humid sulphurous atmosphere test ✓ Withstand current test: 100 kA (10/350 µs) ✓ Advance time ΔT test ✓

2 BEYOND THE STANDARDS: ADDITIONAL FEATURES

AENOR MARK (AENOR Producto Certificado 058-000005)	In accordance with the AENOR RP 058 specific regulation for ESE air terminals ✓ Monitoring samples taken by AENOR technicians ✓ Tests in official and independent laboratories ✓
Certified withstand current 100 kA, 20 impulses (10/350 µs)	Direct application of 20 impulses of current (10/350 µs) with a peak current higher than 100 kA and specific energy greater than 2.5 MJ/Ω ✓
Performance under rain (insulation above 95%) 	Test according to IEC-EN 60060-1:2012 ✓ The patented design of the **DAT CONTROLER® PLUS** prevents rain creating contact between the metal housing at atmospheric electric potential (in blue) and the grounded metal axis (in red) ✓ The source feeding the triggering device of an ESE air terminal is the high difference in the potential between its insulated metal frames during a thunderstorm. It is necessary to guarantee such a difference in potential in the event of rain.
Checking the state of the air terminal	In situ (DAT CONTROLER® PLUS) Remote checking (DAT CONTROLER® PLUS + AT-REMOTE TESTER) ✓

*The last edition of the standard UNE 21186, NF C 17-102 and NP 4426 requires, **consecutively and on the same sample,** the following tests:

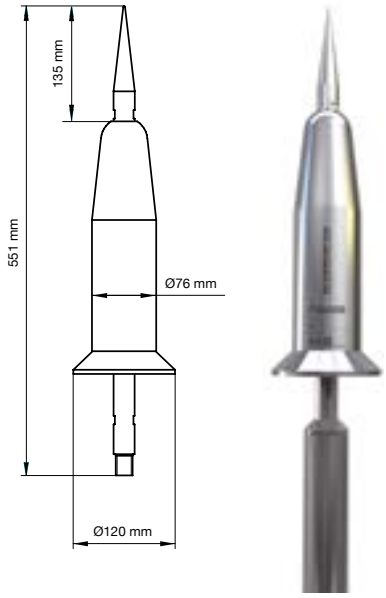
1. Environmental tests, in atmospheres with a high salt and sulphur concentration, in order to ensure the correct operation of the air terminal in highly corrosive atmospheres.
2. Current test, applying 3 impulses of 100 kA with a 10/350 µs wave to the air terminal in order to ensure it works after repeated lightning strikes.
3. Advance time test for calculating the ΔT factor which will determine its protection radius.

>INTERCEPTION SYSTEMS AND ACCESSORIES

> ESE LIGHTNING AIR TERMINALS

> TECHNICAL CHARACTERISTICS

Material:	AISI 316L stainless steel
Weight:	3.8 kg
IP Code:	IP67
Working temperature:	-25 ºC to +88 ºC
Type of air terminal:	Electropulsator (emits impulses)
Internal insulation:	Polyurethane resin
Fixing:	M20 male thread
Regulation: UNE 21186:2011; NF C 17-102:2011; NP 4426:2013	

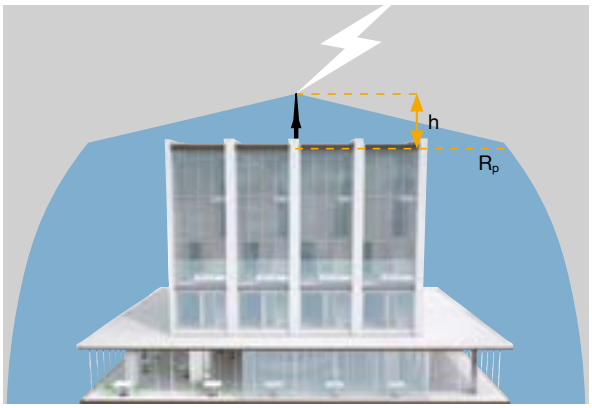


The installation of **DAT CONTROLER® PLUS** air terminals shall follow UNE 21186:2011, NF C 17-102:2011 and NP 4426:2013. “Lightning protection: ESE lightning air terminals”.

> DAT CONTROLER® PLUS ADVANCE TIMES (ΔT)

DAT CONTROLER® PLUS air terminals have passed all the tests according to the standards.
For safety and ease of calculation, the results have been rounded down thus certifying the following advance times (ΔT) in microseconds:

Ref.	Model	ΔT certified
AT-1515	DAT CONTROLER® PLUS 15	15 µs
AT-1530	DAT CONTROLER® PLUS 30	30 µs
AT-1545	DAT CONTROLER® PLUS 45	45 µs
AT-1560	DAT CONTROLER® PLUS 60	60 µs



> DAT CONTROLER® PLUS AND DAT CONTROLER® PLUS + AT-REMOTE TESTER PROTECTION RADIUS IN METRES (R_p)

		PROTECTION LEVEL I (D=20 m)				PROTECTION LEVEL II (D=30 m)				PROTECTION LEVEL III (D=45 m)				PROTECTION LEVEL IV (D=60 m)			
Ref. →		AT-1515	AT-1530	AT-1545	AT-1560	AT-1515	AT-1530	AT-1545	AT-1560	AT-1515	AT-1530	AT-1545	AT-1560	AT-1515	AT-1530	AT-1545	AT-1560
		AT-2515	AT-2530	AT-2545	AT-2560	AT-2515	AT-2530	AT-2545	AT-2560	AT-2515	AT-2530	AT-2545	AT-2560	AT-2515	AT-2530	AT-2545	AT-2560
h (m)	2	13	19	25	31	15	22	28	35	18	25	32	39	20	28	36	43
	4	25	38	51	63	30	44	57	69	36	51	64	78	41	57	72	85
	6	32	48	63	79	38	55	71	87	46	64	81	97	52	72	90	107
	8	33	49	64	79	39	56	72	87	47	65	82	98	54	73	91	108
	10	34	49	64	79	40	57	72	88	49	66	83	99	56	75	92	109
	20	35	50	65	80	44	59	74	89	55	71	86	102	63	81	97	113
	60	35	50	65	80	45	60	75	90	60	75	90	105	75	90	105	120

h (m): Height of the air terminal over the element to be protected (in metres).
D (m): Rolling sphere radius (in metres).

>INTERCEPTION SYSTEMS AND ACCESSORIES

> ESE LIGHTNING AIR TERMINALS

> DAT CONTROLER® PLUS CERTIFICATIONS

RADIUS PROTECTION CERTIFICATE AND REGULATION COMPLIANCE

Radius protection certificate for each model and level calculated according to standards UNE 21186:2011, NF C 17-102:2011 and NP 4426:2013.

AENOR PRODUCT CERTIFICATION NO. 058/000005

- Certified resistance to extreme environmental conditions (salt mist test and humid sulphurous atmosphere treatment).
- Certified withstand current: 100 kA (10/350 µs).
- Certified advance time ΔT (Annex C, NF C 17-102:2011).

WITHSTAND CURRENT CERTIFICATE FOR 20 IMPACTS OF 100 KA (10/350 µs)

Direct application of 20 current impulses (10/350 µs) with a peak current higher than 100 kA and specific energy greater than 2.5 MJ Ω (with positive and negative polarity), according to UNE-EN 60060-1 and IEC 61083-1.

CERTIFICATE OF PERFORMANCE UNDER RAIN

Insulation above 95%
These tests have been performed according to standard UNE-EN 60060-1:2012 in the Electrical Technology Institute (ITE).

- Comparative dry/rain tests with continuous voltage (simulating the electric field during a storm).
- Comparative dry/rain tests with switching impulses (simulating the approach of the downward leader).
- Comparative dry/rain tests with lightning impulses.

>INTERCEPTION SYSTEMS AND ACCESSORIES

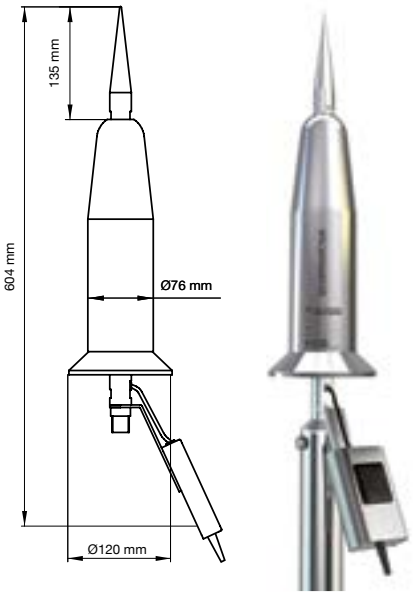
> ESE LIGHTNING AIR TERMINALS

2 > DAT CONTROLER® PLUS + AT-REMOTE TESTER

> GENERAL DESCRIPTION

DAT CONTROLER® PLUS may become a remote testable ESE air terminal at up to 100 m distance, when, at the customer's request, the air terminal comes with the AT-REMOTE TESTER device (reference AT-2510).

Ref.	Composition	Description
AT-2515	AT-1515 + AT-2510	DAT CONTROLER® PLUS 15 + AT-REMOTE TESTER
AT-2530	AT-1530 + AT-2510	DAT CONTROLER® PLUS 30 + AT-REMOTE TESTER
AT-2545	AT-1545 + AT-2510	DAT CONTROLER® PLUS 45 + AT-REMOTE TESTER
AT-2560	AT-1560 + AT-2510	DAT CONTROLER® PLUS 60 + AT-REMOTE TESTER

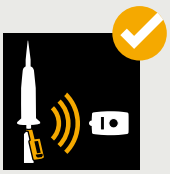


AT-REMOTE TESTER

- ✓ Range: 100 metres.
- ✓ Radiofrequency communication.
- ✓ Totally autonomous system thanks to its solar panels.
- ✓ Certified resistance to extreme environmental conditions (salt mist test and humid sulphurous atmosphere treatment).
- ✓ Certified withstand current: 20 x 100 kA (10/350 µs).
- ✓ Insulation above 95% according to IEC 60060-1

AT-REMOTE TESTER continuously checks the state of the air terminal and emits a signal with the result. This verification will be done by authorized personnel using a specific analysis device.

> AT-REMOTE TESTER CERTIFICATIONS



CERTIFICATE OF WITHSTAND CURRENT, 20 x 100 kA (10/350 µs), FOR THE REMOTE TESTER DEVICE OF DAT CONTROLER® PLUS AIR TERMINAL

Direct application of 20 current impulses (10/350 µs) a peak current higher than 100 kA and specific energy over 2.5 MJ Ω, according to EN 60060-1 and IEC 61083-1 to air terminals including the remote tester device (**DAT CONTROLER® PLUS + AT-REMOTE TESTER**).

>INTERCEPTION SYSTEMS AND ACCESSORIES

> RODS AND MESHED CONDUCTORS

3 > AIR TERMINATION ROD

Ø20 mm rods are assembled for example with accessories such as AT-022F or AT-003M (tables 27, 28), except AT-023A and AT-019A which are assembled, for example, with AT-010A (table 15). Ø16 mm rods are assembled with AT-161A (table 15) or AT-124B (table 18).

Reference	Dimensions (mm)	Thread	Material	Weight (kg)
AT-053L	Ø20 x 300	M10 female thread	Stainless steel	0.65
AT-055L	Ø20 x 500	M10 female thread	Stainless steel	1.14
AT-096A	Ø20 x 1000	M10 female thread	Stainless steel	2.35
AT-097A	Ø20 x 300	M10 female thread	Chrome-plated copper	0.70
AT-098A	Ø20 x 500	M10 female thread	Chrome-plated copper	1.25
AT-099A	Ø20 x 1000	M10 female thread	Chrome-plated copper	2.60
AT-023A	Ø20 x 400	M20	Stainless steel	0.90
AT-019A	Ø20 x 400	M20	Chrome-plated copper	1.00
AT-121A	Ø16 x 300	M16	Stainless steel	0.50
AT-122A	Ø16 x 600	M16	Stainless steel	1.00
Complies with IEC 62305, IEC 62561				

AT-023A (SS - stainless steel)
AT-019A (CC - chrome-plated copper)

AT-053L (SS - stainless steel)
AT-097A (CC - chrome-plated copper)

4 > AIR TERMINAL WITH MAST

For use in conjunction with reduced anchorages as AT-107B (table 24) or mast anchorages (tables 31 to 41). AT-024A and AT-017A include an adapting piece AT-011A (table 15) for fixing the conductor (tape, cable or round) inside the mast. The rest of the references require the conductor to be fixed on the outside of the mast (For example AT-033A, table 64). A conductor clip is included in reduced anchorage AT-107B.

Reference	Dimensions (mm)	Total height (m)	Material	Weight (kg)
AT-013A	Ø20 x 400 + Mast Ø1" x 1000	1.4	Stainless steel / Stainless steel (mast)	2.5
AT-014A	Ø20 x 400 + Mast Ø1" x 2000	2.4	Stainless steel / Stainless steel (mast)	4.5
AT-024A	Ø20 x 400 + Mast Ø1½" x 2000	2.4	Stainless steel / Galvanized steel (mast)	8.3
AT-015A	Ø20 x 400 + Mast Ø1" x 1000	1.4	Chrome-plated copper / Stainless steel (mast)	2.6
AT-016A	Ø20 x 400 + Mast Ø1" x 2000	2.4	Chrome-plated copper / Stainless steel (mast)	4.6
AT-017A	Ø20 x 400 + Mast Ø1½" x 2000	2.4	Chrome-plated copper / Galvanized steel (mast)	8.4
Complies with IEC 62305, IEC 62561				

AT-024A (SS - stainless steel)
AT-017A (CC - chrome-plated copper)

>INTERCEPTION SYSTEMS AND ACCESSORIES

> RODS AND MESHED CONDUCTORS

5 > TAPER POINTED AIR ROD

These air rods are available in copper or aluminium and fit into multi-points (table 11) and into flat and ridge saddles and air rod bases for example AT-104B or AT-110B (tables 16 to 21).

Reference	Dimensions (mm)	Total length (m)	Thread	Includes	Material	Weight (kg)
AT-004A	Ø16 x 350 + Ø15 x 150	0.5	M16	Tightening nut	Copper	0.73
AT-005A	Ø16 x 850 + Ø15 x 150	1	M16	Tightening nut	Copper	1.51
AT-006A	Ø16 x 1850 + Ø15 x 150	2	M16	Tightening nut	Copper	3.00
AT-007A	Ø16 x 350 + Ø15 x 150	0.5	M16	Tightening nut	Aluminium	0.29
AT-008A	Ø16 x 850 + Ø15 x 150	1	M16	Tightening nut	Aluminium	0.53
AT-009A	Ø16 x 1850 + Ø15 x 150	2	M16	Tightening nut	Aluminium	1.06
Complies with IEC 62305, IEC 62561						

AT-004A (Cu - copper)
AT-007A (Al - aluminium)

6 > Ø10 TAPER POINTED AIR ROD

These air rods are available in copper or aluminium and fit into the horizontal and vertical air terminal saddles, for example AT-122B. (tables 22 and 23). Only for applications where mechanical stress, such as wind loading, is not critical.

Reference	Dimensions (mm)	Thread	Includes	Material	Weight (kg)
AT-092A	Ø10 x 500	M10	Tightening nut	Copper	0.33
AT-093A	Ø10 x 1000	M10	Tightening nut	Copper	0.65
AT-094A	Ø10 x 500	M10	Tightening nut	Aluminium	0.11
AT-095A	Ø10 x 1000	M10	Tightening nut	Aluminium	0.22
Complies with IEC 62305, IEC 62561					

AT-092A (Cu - copper)
AT-094A (Al - aluminium)

7 > THREADED AIR ROD

Suitable for using with threaded concrete bases as AT-097B (table 29) or adapting piece as AT-161A (table 15).

Reference	Dimensions (mm)	Total height (m)	Thread	Material	Weight (kg)
AT-114A	Ø16 x 500 + Ø10 x 1000	1.5	M16	Aluminium	0.48
AT-115A	Ø16 x 1000 + Ø10 x 1000	2	M16	Aluminium	0.76
AT-116A	Ø16 x 1500 + Ø10 x 1000	2.5	M16	Aluminium	1.02
AT-117A	Ø16 x 2000 + Ø10 x 1000	3	M16	Aluminium	1.30
AT-118A	Ø16 x 2500 + Ø10 x 1000	3.5	M16	Aluminium	1.52
AT-119A	Ø16 x 3000 + Ø10 x 1000	4	M16	Aluminium	1.73
Complies with IEC 62305, IEC 62561					

AT-116A

>INTERCEPTION SYSTEMS AND ACCESSORIES

> RODS AND MESHED CONDUCTORS

8 > LIGHT AIR ROD

- AT-179A (GS - galvanized steel)
- AT-174A (SS - stainless steel)
- AT-163A (Cu - copper)
- AT-168A (Al - aluminium)

Hollow air terminal for reduced anchorage (AT-107B, table 24) and stackable wedged concrete base (AT-030B, table 29).

Reference	Dimensions (mm)	Total height (m)	Material	Weight (kg)
AT-163A	Ø18 x 1000	1	Copper	0.84
AT-164A	Ø18 x 1500	1.5	Copper	1.19
AT-165A	Ø18 x 2000	2	Copper	1.53
AT-166A	Ø18 x 2500	2.5	Copper	1.88
AT-167A	Ø18 x 3000	3	Copper	2.22
AT-168A	Ø18 x 1000	1	Aluminium	0.26
AT-169A	Ø18 x 1500	1.5	Aluminium	0.36
AT-171A	Ø18 x 2000	2	Aluminium	0.47
AT-172A	Ø18 x 2500	2.5	Aluminium	0.57
AT-173A	Ø18 x 3000	3	Aluminium	0.68
AT-174A	Ø18 x 1000	1	Stainless steel	0.76
AT-175A	Ø18 x 1500	1.5	Stainless steel	1.08
AT-176A	Ø18 x 2000	2	Stainless steel	1.40
AT-177A	Ø18 x 2500	2.5	Stainless steel	1.72
AT-178A	Ø18 x 3000	3	Stainless steel	2.04
AT-179A	Ø18 x 1000	1	Galvanized steel	0.77
AT-180A	Ø18 x 1500	1.5	Galvanized steel	1.10
AT-181A	Ø18 x 2000	2	Galvanized steel	1.42
AT-182A	Ø18 x 2500	2.5	Galvanized steel	1.75
AT-183A	Ø18 x 3000	3	Galvanized steel	2.07
Complies with IEC 62305, IEC 62561				

9 > LIGHTNING ROD FOR WEDGE

AT-045A

- AT-026A (GS - galvanized steel)
- AT-032A (SS - stainless steel)
- AT-036A (Cu - copper)
- AT-038A (Al - aluminium)

Non-threaded lightning rods suitable for use with stackable wedge concrete bases (for example AT-030B, table 29).

Reference	Dimensions (mm)	Total height (m)	Material	Weight (kg)
AT-025A	Ø16 x 750	0.75	Galvanized steel	1.22
AT-026A	Ø16 x 1000	1	Galvanized steel	1.60
AT-027A	Ø16 x 1250	1.25	Galvanized steel	2.00
AT-028A	Ø16 x 1500	1.50	Galvanized steel	2.40
AT-029A	Ø16 x 2000	2	Galvanized steel	3.20
AT-030A	Ø16 x 2500	2.50	Galvanized steel	4.20
AT-031A	Ø16 x 3000	3	Galvanized steel	4.80
AT-032A	Ø16 x 1000	1	Stainless steel	1.60
AT-034A	Ø16 x 1500	1.50	Stainless steel	2.38
AT-035A	Ø16 x 2000	2	Stainless steel	3.20
AT-036A	Ø16 x 1000	1	Copper	1.85
AT-037A	Ø16 x 1500	1.50	Copper	2.77
AT-038A	Ø16 x 1000	1	Aluminium	0.54
AT-039A	Ø16 x 1500	1.50	Aluminium	0.82
AT-040A	Ø16 x 2000	2	Aluminium	1.80
AT-041A	Ø16 x 2500	2.50	Aluminium	1.40
AT-042A	Ø16 x 3000	3	Aluminium	1.68
AT-043A	Ø10 x 1000	1	Aluminium	0.22
AT-044A	Ø16 x 500 + Ø10 x 1000	1.50	Aluminium	0.48
AT-045A	Ø16 x 1000 + Ø10 x 1000	2	Aluminium	0.76
AT-046A	Ø16 x 1500 + Ø10 x 1000	2.50	Aluminium	1.02
AT-047A	Ø16 x 2000 + Ø10 x 1000	3	Aluminium	1.30
Complies with IEC 62305, IEC 62561				

>INTERCEPTION SYSTEMS AND ACCESSORIES

> RODS AND MESHED CONDUCTORS

10 > SELF-SUPPORTING AIR-TERMINATION ROD

Tapered air-terminal rod with hinged tripod support for protection of roof structures that stick out, such air conditioning systems. The air terminal rods are designed for wind speed of up to 145 km/h. The stackable concrete bases, the flat washers and the clip for round conductor Ø6-10 mm. The rod is made of aluminium.

Reference	Base occupation (m)	Mast height (m)	No. of concrete bases	Load (kg/m²)	Material	Weight (kg)
AT-100A	0.80 x 0.73	3	3	110	Galvanized steel/Aluminium	64
AT-101A	0.80 x 0.73	3.5	3	110	Galvanized steel/Aluminium	64
AT-102A	0.82 x 0.82	4	4	110	Galvanized steel/Aluminium	78
AT-103A	0.82 x 0.82	4.5	4	110	Galvanized steel/Aluminium	78
AT-104A	1.10 x 1	5	6	105	Galvanized steel/Aluminium	116
AT-105A	1.10 x 1	5.5	6	105	Galvanized steel/Aluminium	116
AT-106A	1.25 x 1.25	6	8	100	Galvanized steel/Aluminium	160
AT-107A	1.25 x 1.25	6.5	8	100	Galvanized steel/Aluminium	160
AT-108A	1.25 x 1.25	7	8	100	Galvanized steel/Aluminium	160
AT-109A	1.25 x 1.25	7.5	8	100	Galvanized steel/Aluminium	160
AT-110A	1.25 x 1.25	8	8	100	Galvanized steel/Aluminium	160
AT-111A	1.50 x 1.40	8.5	12	115	Stainless steel / Aluminium	240
AT-081A	1.50 x 1.40	9	12	115	Stainless steel / Aluminium	245
AT-082A	1.50 x 1.40	9.5	12	115	Stainless steel / Aluminium	245
AT-083A	2.10 x 1.80	10	12	60	Stainless steel / Aluminium	250
AT-084A	2.10 x 1.80	11	12	60	Stainless steel / Aluminium	255
AT-086A	3.30 x 3	12	18	38	Stainless steel / Aluminium	380
AT-146A	3.30 x 3	13	24	49	Stainless steel / Aluminium	485
AT-147A	3.10 x 3.10	14	24	52	Stainless steel / Aluminium	503
AT-148A	3.10 x 3.10	15	24	53	Stainless steel / Aluminium	510
Complies with IEC 62305, IEC 62561						

APPLICATION AT-111A

11 > GUNMETAL MULTI-POINT

Multi-point only suitable for use with copper taper pointed air rods (for example AT-004A, table 5).

Reference	Rod dimensions (mm)	Material	Weight (g)
AT-000A	3 x (Ø9 x 90)	Gunmetal	325
Complies with IEC 62305, (IEC 62561), BS EN 1982			

AT-000A

APPLICATION AT-000A

12 > COPPER MULTI-POINT WITH MAST

Copper multi-point to be mounted at the top of metal structures. Total height: 1.5 m (including mast and anchorage). It includes 8 anchorage holes of Ø18 mm, at 80 mm from the centre.

Reference	Dimensions of the multi-point (mm)	Material	Weight (kg)
AT-001A	(Ø16 x 495) + 4 x (Ø16 x 315)	Copper (points) / Galvanized steel (mast)	9.5
Complies with IEC 62305, IEC 62561			

APPLICATION AT-001A

>INTERCEPTION SYSTEMS AND ACCESSORIES

> RODS AND MESHED CONDUCTORS

13 > MULTI-POINT

AT-003A (Cu - copper)
AT-002A (SS - stainless steel)

Multi-point with naval brass adapting piece. Suitable for use with mast 1½" (for example AT-056A, table 30).

Reference	Dimensions of the multi-point (mm)	Conductor range		Material	Weight (g)
		Ø (mm)	mm²		
AT-002A	(Ø16 x 185) + 4 x (Ø8 x 72)	8 - 10	50 - 70	Stainless steel (points)	885
AT-003A	(Ø16 x 185) + 4 x (Ø8 x 72)	8 - 10	50 - 70	Copper (points)	940
Complies with IEC 62305, IEC 62561					

14 > STRIKE PAD

AT-112A (Cu - copper)
AT-113A (Al - aluminium)

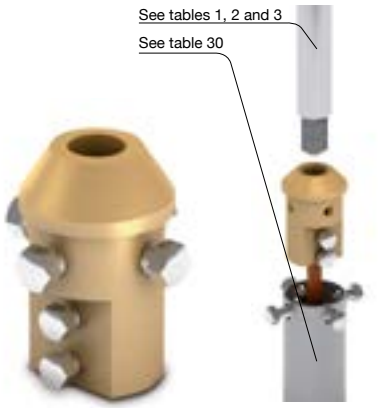
Equipped with a screw to fix the lightning conductors.

Reference	Dimensions (mm)	Material	Weight (g)
AT-112A	112 x 112 x 25	Copper	410
AT-113A	112 x 112 x 25	Aluminium	130
Complies with IEC 62305, IEC 62561			

> FIXINGS

15 > ADAPTING PIECE

APPLICATION AT-011A



AT-011A (NB - naval brass)
AT-021A (SS - stainless steel)

Suitable for fixing the lightning rod in the mast (table 26) with internal conductor (tape, cable or round) connection. Air termination rod as AT-121A (table 3) or AT-114A (table 7) can be fixed in AT-161A.

Reference	Mast Ø	Dimensions (mm)	Conductor range			Thread	Material	Weight (g)
			Ø (mm)	mm²	Tape (mm)			
AT-010A	1½"	Ø48 x 70	8 - 10	50 - 70	-	M20	Naval brass	675
AT-011A	1½"	Ø48 x 70	8 - 10	50 - 70	30 x 2 - 30 x 3.5	M20	Naval brass	655
AT-012A	1"	Ø34 x 97	8 - 10	50 - 70	-	M20	Naval brass	420
AT-020A	1½"	Ø48 x 70	8 - 10	50 - 70	-	M20	Stainless steel	615
AT-021A	1½"	Ø48 x 70	8 - 10	50 - 70	30 x 2 - 30 x 3.5	M20	Stainless steel	640
AT-022A	1"	Ø34 x 97	8 - 10	50 - 70	-	M20	Stainless steel	400
AT-151A	1½"	Ø48 x 70	8 - 10	50 - 70	30 x 2 - 30 x 3.5	M20	Aluminium	335
AT-161A	1½"	Ø48 x 70	8 - 10	50 - 70	30 x 2 - 30 x 3.5	M16	Stainless steel	625
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561								

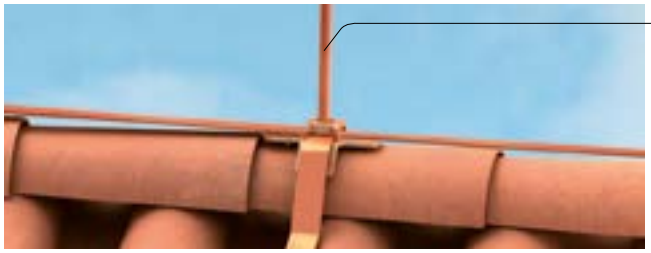
>INTERCEPTION SYSTEMS AND ACCESSORIES

> FIXINGS

16 > RIDGE SADDLE

Used for supporting lightning conductor air terminals on the ridge of the roof and connecting to the tape.

Reference	Dimensions (mm)	Conductor range (mm)	Thread	Material	Weight (g)
AT-110B	150 x 150 x 71	25 x 3 - 30 x 3	M16	Gunmetal	1070
AT-111B	150 x 150 x 71	25 x 3 - 30 x 3	M16	Aluminium	340
Complies with IEC 62305, IEC 62561, BS EN 1982					



APPLICATION AT-110B

AT-110B (Gu - gunmetal)
AT-111B (Al - aluminium)

17 > AIR ROD BASE

Used for supporting lightning conductor air terminals on the flat roof and connecting to the tape.

Reference	Dimensions (mm)	Conductor range (mm)	Thread	Material	Weight (g)
AT-115B	100 x 100 x 33	25 x 3	M16	Gunmetal	470
AT-116B	100 x 100 x 33	25 x 3	M16	Aluminium	150
Complies with IEC 62305, IEC 62561, BS EN 1982					

AT-115B (Gu - gunmetal)
AT-116B (Al - aluminium)

18 > FLAT SADDLE

Used for supporting lightning conductor air terminals on the flat roof and connecting to the cable or round.

Reference	Dimensions (mm)	Conductor range		Thread	Material	Weight (g)
		Ø (mm)	mm^2			
AT-112B	85 x 85 x 64	8	50	M16	Gunmetal	1030
AT-113B	85 x 85 x 64	10	70	M16	Gunmetal	950
AT-114B	85 x 85 x 64	13	95	M16	Gunmetal	950
AT-093B	79 x 79 x 20	8 - 13	50 - 95	M16	Aluminium	160
AT-124B	30 x 34 x 57	8 - 10	50 - 70	M16	Stainless steel	170
AT-125B	30 x 34 x 57	8 - 10	50 - 70	M20	Stainless steel	170
Complies with IEC 62305, IEC 62561, BS EN 1982						

AT-114B

>INTERCEPTION SYSTEMS AND ACCESSORIES

> FIXINGS

19 > ROD BRACKETS

These brackets are mainly used where it is not possible to fit a saddle on the roof. Used in conjunction with couplings (tables 20 or 21) and taper pointed air rods (table 5).

Reference	Dimensions (mm)	Rod Ø (mm)	Material	Weight (g)
AT-104B	120 x 24 x 60	16	Gunmetal	900
AT-105B	120 x 24 x 60	16	Aluminium	280
Complies with IEC 62305, IEC 62561, BS EN 1982, BS 2897				

- AT-104B (Gu - gunmetal)
- AT-105B (Al - aluminium)

See table 5

APPLICATION AT-100B, AT-104B (tables 19, 20 and 21)

20 > ROD TO TAPE COUPLING

This unit screws onto the air rod and connects to the tape by means of the screws provided. Used in conjunction with rod brackets (table 19) and taper pointed air rods (table 5).

Reference	Dimensions (mm)	Thread	Material	Weight (g)
AT-100B	39 x 39 x 80	M16	Gunmetal	200
AT-101B	39 x 39 x 80	M16	Aluminium	60
Complies with IEC 62305, IEC 62561, BS EN 1982, BS 2897				

- AT-100B (Gu - gunmetal)
- AT-101B (Al - aluminium)

21 > ROD TO CABLE COUPLING

This unit screws onto the air rod and connects to the cable by means of the screws provided. Used in conjunction with rod brackets (table 19) and taper pointed air rods (table 5).

Reference	Dimensions (mm)	Conductor range		Thread	Material	Weight (g)
		Ø (mm)	mm²			
AT-102B	39 x 39 x 80	8 - 10	50 - 70	M16	Gunmetal	220
AT-094B	39 x 39 x 80	8 - 10	50 - 70	M16	Aluminium	75
AT-103B	39 x 39 x 80	13	95	M16	Gunmetal	220
Complies with IEC 62305, IEC 62561, BS EN 1982, BS 2897						

- AT-102B (Gu - gunmetal)
- AT-094B (Al - aluminium)

>INTERCEPTION SYSTEMS AND ACCESSORIES

> FIXINGS

22 > HORIZONTAL AIR TERMINAL SADDLE

Used for supporting Ø10 mm taper pointed air rods (table 6) on the roof and connecting to the cable or round. They are not recommended for use in combination with the 1 m taper pointed air rods.

Reference	Dimensions (mm)	Conductor range		Thread	Material	Weight (g)
		Ø (mm)	mm²			
AT-122B	65 x 65 x 35	8	50	M10	Gunmetal	300
AT-123B	65 x 65 x 35	8	50	M10	Aluminium	110
Complies with IEC 62305, IEC 62561						

AT-122B (Gu - gunmetal)
AT-123B (Al - aluminium)

23 > VERTICAL AIR TERMINAL SADDLE

Used for supporting Ø10 mm taper pointed air rods (table 6) on the wall and connecting them to the cable or round. An additional fixing AT-192E or AT-193E (table 54) may be used for 1 m taper pointed air rods.

Reference	Dimensions (mm)	Conductor range		Thread	Material	Weight (g)
		Ø (mm)	mm²			
AT-120B	65 x 65 x 35	8	50	M10	Gunmetal	300
AT-121B	65 x 65 x 35	8	50	M10	Aluminium	110
Complies with IEC 62305, IEC 62561						

APPLICATION AT-120B

AT-120B (Gu - gunmetal)
AT-121B (Al - aluminium)

24 > REDUCED ANCHORAGE

Anchorage for 16 to 34 mm air rods (tables 4, 8 and 9) to be screwed into the wall. The anchorages need a minimum of 50 cm between each other and at least 20 cm from the top of the wall in order to ensure correct attachment. Clip included for Ø6-10 mm conductor. Single extra supports: ref. AT-108B and AT-118B, respectively.

Reference	Dimensions (mm)	Includes	Ø rod	Material	Weight (kg)
AT-107B	280 x 170 x 30	2 supports	16 mm - 34 mm (1")	Galvanized steel	1
AT-117B	280 x 170 x 30	2 supports	16 mm - 34 mm (1")	Stainless steel	1
Complies with IEC 62305, IEC 62561					

AT-107B (GS - galvanized steel)
AT-117B (SS - stainless steel)

>INTERCEPTION SYSTEMS AND ACCESSORIES

> FIXINGS

25 > RIDGE ANCHORAGE

APPLICATION AT-106B

Used for fixing Franklin air terminal rods (table 8 or 9) onto the ridge of the roof without becoming damaged. This anchorage adjusts to different sizes of tiles.

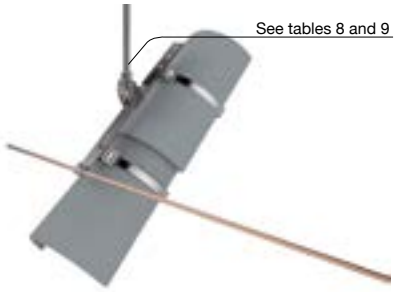
Reference	Dimensions (mm)	Conductor range		Maximum arch of tile	Ø rod (mm)	Material	Weight (kg)
		Ø (mm)	mm²				
AT-106B	460 x 100 x 500	8 - 10	50 - 70	500 mm	16 - 18	Stainless steel	1.1
Complies with IEC 62305, IEC 62561							

26 > ADJUSTABLE TILE ANCHORAGE

Used for supporting Franklin air termination rods (table 8 or 9) onto the roof tiles without them becoming damaged. This anchorage adjusts to different sizes and inclinations of tiles.

Reference	Dimensions (mm)	Conductor range		Max. inclination	Maximum arch of tile	Ø rod (mm)	Material	Weight (kg)
		Ø (mm)	mm²					
AT-109B	460 x 100 x 500	8 - 10	50 - 70	45°	500 mm	18	Stainless steel	1.4
Complies with IEC 62305, IEC 62561								

AT-109B



APPLICATION AT-109B

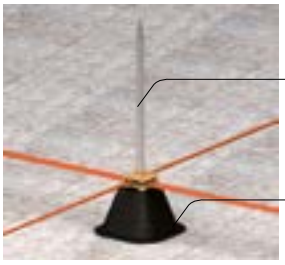
27 > NAVAL BRASS ROOF CLAMP

Used for supporting lightning conductor air terminals on the roof and connecting them via cable or tape.

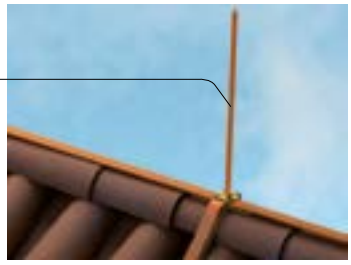
Reference	Model	Dimensions (mm)	Max. width of the conductor (mm)			Thread	Material	Weight (g)
			Ø (mm)	mm²	Tape (mm)			
AT-022F	For flat roofs	55 x 55 x 40	8 - 10	50 - 70	30 x 2 - 30 x 3.5	M10	Naval brass	360
AT-011M	For the ridge of the roof	270 x 160 x 140	8 - 10	50 - 70	30 x 2 - 30 x 3.5	M10	Naval brass	610
Complies with IEC 62305, IEC 62561								

AT-022F

AT-011M



APPLICATION AT-022F



APPLICATION AT-011M

>INTERCEPTION SYSTEMS AND ACCESSORIES

> FIXINGS

28 > SPECIAL ROD SUPPORTS

For fixing air rods with M10 male or female threads (for example AT-053L, AT-092A tables 3 and 6) to vertical surfaces or to the top of the aerial mast. The AT-030M is for masts from Ø6 - 50 mm.

Reference	Model	Dimensions (mm)	Includes	Material	Weight (g)
AT-003M	To vertical surface	40 x 40 x 40	M10	Stainless steel	130
AT-030M	To top of the aerial mast	Ø60 x 70	M10 female	Stainless steel	600
Complies with IEC 62305, IEC 62561					

See tables 3 and 6

APPLICATION AT-003M

See tables 3 and 6

APPLICATION AT-030M

29 > CONCRETE BASE

Used to fix air termination rods (tables 8 and 9) to flat roofs. These bases are not recommended for use with air rods over 3 m high due to wind load. AT-029B only allows Ø10 x 1000 mm and Ø16 x 1000 mm air termination rods (for example AT-043A or AT-026A, table 8).

Reference	Model	Dimensions (mm)	Rod Ø (mm)	Includes	Material	Weight (kg)
AT-030B	Stackable wedged concrete base	Ø325 x 90	16	Wedge	Concrete	17.00
AT-029B	Stackable wedged concrete base	Ø230 x 90	10 or 16	Wedge	Concrete	8.50
AT-095B	Support plate	Ø360 x 10	-	-	EVA	0.22
AT-096B	Support plate	Ø270 x 10	-	-	EVA	0.19
AT-097B	Threaded concrete base	Ø350 x 100	16	M16 Female	Concrete	12.00
AT-098B	Threaded concrete base	Ø350 x 120	16	M16 Female	Concrete	16.00
AT-099B	Threaded concrete base	Ø350 x 140	16	M16 Female	Concrete	25.00
Complies with IEC 62305, IEC 62561						

See tables 8 and 9

APPLICATION AT-030B

AT-030B

AT-029B

AT-095B

AT-097B

>INTERCEPTION SYSTEMS AND ACCESSORIES

> MASTS AND ANCHORAGES

30 > MASTS FOR ATTACHING TO WALL OR STRUCTURE

Elevation up to 8 m. For attachment using 2 anchorage supports, except those which are 8 m high, in which case 3 anchorage supports are needed. The distance between supports must be 60 cm. In atmospheres with a high level of corrosion, the use of stainless steel masts is recommended.

AT-066A (SS - stainless steel)
AT-056A (GS - galvanized steel)

Reference	Model	Dimensions	Includes	Material	Weight (kg)
AT-051A	1 m mast	Ø1½" x 1 m	1 section x 1 m	Galvanized steel	3.3
AT-052A	2 m mast	Ø1½" x 2 m	1 section x 2 m	Galvanized steel	6.6
AT-053A	3 m mast	Ø1½" x 3 m	1 section x 3 m	Galvanized steel	10.0
AT-050A	4 m mast	Ø1½" x 4 m	2 sections x 2 m	Galvanized steel	13.0
AT-056A	6 m mast (2 sections)	Ø1½" x 6 m	2 sections x 3 m	Galvanized steel	20.0
AT-057A	6 m mast (3 sections)	Ø1½" x 6 m	3 sections x 2 m	Galvanized steel	20.0
AT-058A	8 m mast	Ø2" - Ø1½" x 8 m	3 sections x 3 m	Galvanized steel	35.0
AT-060A	1 m mast	Ø1½" x 1 m	1 section x 1 m	Stainless steel	3.0
AT-062A	2 m mast	Ø1½" x 2 m	1 section x 2 m	Stainless steel	6.0
AT-063A	3 m mast	Ø1½" x 3 m	1 section x 3 m	Stainless steel	9.0
AT-085A	4 m mast	Ø1½" x 4 m	2 sections x 2 m	Stainless steel	12.0
AT-066A	6 m mast (2 sections)	Ø1½" x 6 m	2 sections x 3 m	Stainless steel	18.0
AT-067A	6 m mast (3 sections)	Ø1½" x 6 m	3 sections x 2 m	Stainless steel	18.0
AT-068A	8 m mast	Ø2" - Ø1½" x 8 m	3 sections x 3 m	Stainless steel	30.0
Complies with UNE 21186, NF C 17-102					

31 > U-SHAPED ANCHORAGE

1" - 1½" mast anchorage to be embedded or screwed into the wall. The 60 cm U-shaped anchorages are designed to avoid obstacles such as cornices of up to 50 cm. The anchorages need a minimum of 60 cm between each other and at least 30 cm from the top of the wall in order to ensure correct attachment. Single extra supports, ref: AT-012B, AT-015B, AT-009B, AT-021B and AT-025B, respectively.

AT-013B

Reference	Model	Dimensions (mm)	Includes	Material	Weight (kg)
AT-013B	30 cm U-shaped anchorage embedded into the wall	2 x (50 x 340 x 390)	2 supports	Galvanized steel	4.6
AT-014B	30 cm U-shaped anchorage embedded into the wall	3 x (50 x 340 x 390)	3 supports	Galvanized steel	6.9
AT-016B	60 cm U-shaped anchorage embedded into the wall	2 x (50 x 640 x 615)	2 supports	Galvanized steel	11.0
AT-017B	60 cm U-shaped anchorage embedded into the wall	3 x (50 x 640 x 615)	3 supports	Galvanized steel	16.0
AT-010B	15 cm U-shaped anchorage screwed into the wall	2 x (50 x 400 x 140)	2 supports	Galvanized steel	4.5
AT-011B	15 cm U-shaped anchorage screwed into the wall	3 x (50 x 400 x 140)	3 supports	Galvanized steel	6.8
AT-023B	30 cm U-shaped anchorage screwed into the wall	2 x (50 x 400 x 290)	2 supports	Galvanized steel	6.0
AT-024B	30 cm U-shaped anchorage screwed into the wall	3 x (50 x 400 x 290)	3 supports	Galvanized steel	9.0
AT-026B	60 cm U-shaped anchorage screwed into the wall	2 x (50 x 600 x 670)	2 supports	Galvanized steel	10.0
AT-027B	60 cm U-shaped anchorage screwed into the wall	3 x (50 x 600 x 670)	3 supports	Galvanized steel	15.0
Complies with UNE 21186, NF C 17-102					

AT-023B

APPLICATION AT-013B

APPLICATION AT-023B

> INTERCEPTION SYSTEMS AND ACCESSORIES

> MASTS AND ANCHORAGES

32 > ANGLE BAR ANCHORAGE

1” - 1½” mast anchorage to be welded to metal structures.
The anchorages require a minimum of 60 cm between each other in order to ensure they are correctly fixed. Single extra supports, ref: AT-034B, AT-044B, AT-037B and AT-047B, respectively.

Reference	Model	Dimensions (mm)	Includes	Material	Weight (kg)
AT-035B	30 cm angle bar anchorage	2 x (50 x 120 x 300)	2 supports	Galvanized steel	4.0
AT-036B	30 cm angle bar anchorage	3 x (50 x 120 x 300)	3 supports	Galvanized steel	5.5
AT-045B	30 cm angle bar anchorage	2 x (50 x 120 x 300)	2 supports	Stainless steel	3.0
AT-046B	30 cm angle bar anchorage	3 x (50 x 120 x 300)	3 supports	Stainless steel	4.5
AT-038B	60 cm angle bar anchorage	2 x (50 x 120 x 600)	2 supports	Galvanized steel	6.0
AT-039B	60 cm angle bar anchorage	3 x (50 x 120 x 600)	3 supports	Galvanized steel	9.0
AT-048B	60 cm angle bar anchorage	2 x (50 x 120 x 600)	2 supports	Stainless steel	4.5
AT-049B	60 cm angle bar anchorage	3 x (50 x 120 x 600)	3 supports	Stainless steel	7.0
Complies with UNE 21186, NF C 17-102					

AT-038B (GS - galvanized steel)
AT-048B (SS - stainless steel)

APPLICATION AT-038B

33 > MAST TO TRESTLE TOWER ANCHORAGE

1” - 1½” mast anchorage to be fixed to trestle towers.
Not recommended for masts higher than 6 m.
The anchorages require a minimum of 60 cm between each other in order to ensure they are correctly fixed.
Single supports: ref. AT-018B

Reference	Dimensions (mm)	Includes	Material	Weight (kg)
AT-019B	2 x (50 x 120 x 700)	2 supports	Galvanized steel	7.6
AT-020B	3 x (50 x 120 x 700)	3 supports	Galvanized steel	11.4
Complies with UNE 21186, NF C 17-102				

AT-019B

See table 30

APPLICATION AT-019B

> INTERCEPTION SYSTEMS AND ACCESSORIES

> MASTS AND ANCHORAGES

34 > LIGHT ANCHORAGE

1” - 1½” mast anchorage to be embedded or screwed into the wall.
The anchorages need a minimum of 60 cm between each other and at least 30 cm from the top of the wall in order to ensure correct attachment.
Single extra supports: ref. AT-031B and AT-041B, respectively.

AT-032B

AT-042B

Reference	Model	Dimensions (mm)	Includes	Material	Weight (kg)
AT-032B	30 cm light anchorage embedded into the wall	2 x (50 x 100 x 300)	2 supports	Galvanized steel	3.4
AT-033B	30 cm light anchorage embedded into the wall	3 x (50 x 100 x 300)	3 supports	Galvanized steel	5.1
AT-042B	30 cm light anchorage screwed into the wall	2 x (50 x 165 x 300)	2 supports	Galvanized steel	4.2
AT-043B	30 cm light anchorage screwed into the wall	3 x (50 x 165 x 300)	3 supports	Galvanized steel	6.3
Complies with UNE 21186, NF C 17-102					

APPLICATION AT-032B

APPLICATION AT-042B

35 > PARALLEL ANCHORAGE

Double bracket anchoring system for fixing 1” - 1½” mast in parallel to vertical sections of handrail or piping. The anchorages require a minimum of 60 cm between each other, and a robust structure, in order to ensure they are correctly fixed.
Single extra supports: ref. AT-051B and AT-061B, respectively.

AT-062B

Reference	Dimensions (mm)	Includes	Material	Weight (kg)
AT-052B	2 x (50 x 90 x 340)	2 supports	Galvanized steel	5.0
AT-053B	3 x (50 x 90 x 340)	3 supports	Galvanized steel	7.5
AT-062B	2 x (50 x 90 x 165)	2 supports	Galvanized steel	5.0
AT-063B	3 x (50 x 90 x 165)	3 supports	Galvanized steel	7.5
Complies with UNE 21186, NF C 17-102				

APPLICATION AT-052B

See table 30

APPLICATION AT-062B

See table 30

> INTERCEPTION SYSTEMS AND ACCESSORIES

> MASTS AND ANCHORAGES

36 > LAMP POST ANCHORAGE

1" - 1½" mast anchorage fixture adjustable for conic structures such as lamp posts.
The anchorages require a minimum of 60 cm between each other in order to ensure they are correctly fixed.
Single supports: ref. AT-067B

Reference	Dimensions (mm)	Includes	Material	Weight (kg)
AT-068B	2 x (50 x 90 x 190)	2 supports	Galvanized steel	6
AT-069B	3 x (50 x 90 x 190)	3 supports	Galvanized steel	9
Complies with UNE 21186, NF C 17-102				

See table 30

APPLICATION AT-068B

37 > CROSS-SHAPE ANCHORAGE

Cross-shape double bracket anchoring system, for fixing 1" - 1 ½"mast to horizontal sections of handrail or piping.
The anchorages require a minimum of 60 cm between each other, and a robust structure, in order to ensure they are correctly fixed.
Single supports: ref. AT-071B

Reference	Dimensions (mm)	Includes	Material	Weight (kg)
AT-072B	2 x (170 x 170 x 200)	2 supports	Galvanized steel	5.8
AT-073B	3 x (170 x 170 x 200)	3 supports	Galvanized steel	8.7
Complies with UNE 21186, NF C 17-102				

See table 30

APPLICATION AT-072B

38 > ADJUSTABLE ANCHORAGE

Due to the covers or cornices of the roofs, a substantial horizontal distance needs to be avoided. In these cases it is necessary to use the extendible tube (60 to 80 cm).
The anchorages require a minimum of 60 cm between each other in order to ensure they are correctly fixed.
Single supports: ref. AT-077B

Reference	Dimensions (mm)	Includes	Material	Weight (kg)
AT-078B	2 x (300 x 450 x 800)	2 supports	Galvanized steel	14
AT-079B	3 x (300 x 450 x 800)	3 supports	Galvanized steel	21
Complies with UNE 21186, NF C 17-102				

See table 30

APPLICATION AT-078B

39 > MAST TO POST ANCHORAGE

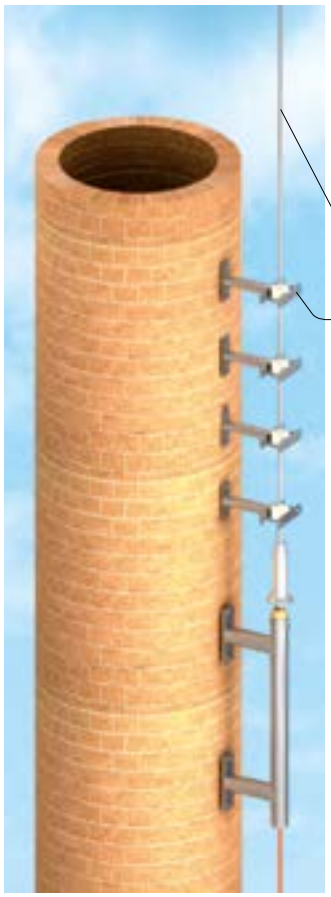
Suitable for fixing a 1" - 1½" mast to a 25 cm square or round post.
The anchorages require a minimum of 60 cm between each other in order to ensure they are correctly fixed.
Single supports: ref. AT-070B and AT-076B, respectively.

Reference	Model	Dimensions (mm)	Includes	Material	Weight (kg)
AT-074B	Mast to 25 cm square post	2 x (40 x 360 x 300)	2 supports	Galvanized steel	6
AT-075B	Mast to 25 cm square post	3 x (40 x 360 x 300)	3 supports	Galvanized steel	9
AT-083B	Mast to Ø25 cm round post	2 x (45 x 360 x 300)	2 supports	Galvanized steel	6
AT-086B	Mast to Ø25 cm round post	3 x (45 x 360 x 300)	3 supports	Galvanized steel	9
Complies with UNE 21186, NF C 17-102					

See table 30

APPLICATION AT-083B
APPLICATION AT-074B

40 > INSULATED CHIMNEY ANCHORAGE



Mast anchorage to attach to chimneys active**.** The insulation of the air rod anchorage is necessary in order to maintain the difference in potential between the parts of the **DAT CONTROLER® PLUS** for chimneys. The body of the **DAT CONTROLER® PLUS** has to be mounted moreless 3.5 m below the chimney hole to avoid the heat of the gases deforming the lightning rod structure and leading to early corrosion. AT-088B anchorage should be fixed as follows: the first in the threaded union between the **DAT CONTROLER® PLUS** for chimney and the rod (AT-085B); the second at 125 cm for the first; the third in the threaded union between the two parts of the rod (AT-085B) and the fourth 25 cm from the top of the wall in order to ensure they are correctly fixed. In order to comply with UNE 21186, the AT-085B rod should be mounted so that it is 2 m higher than the chimney.
Single extra support, ref: AT-081B.

AT-085B

AT-088B (x2)

Reference	Model	Dimensions (mm)	Material	Weight (kg)
AT-080B	DAT CONTROLER® PLUS for chimney anchorage	50 x 520 x 1000	Galvanized steel	7.5
AT-088B	DAT CONTROLER® PLUS for chimney insulated rod support (2 supports)	50 x 160 x 520	Galvanized steel + Teflon	7.0
AT-085B	DAT CONTROLER® PLUS for chimney 5 m rod	Ø18 x 5000	Stainless steel	10.0
Complies with UNE 21186, NF C 17-102				

Reference	Model	Dimensions (mm)	Material	Weight (kg)
AT-3515	DAT CONTROLER® PLUS 15 for chimney	120 x 120 x 610	Stainless steel	4
AT-3530	DAT CONTROLER® PLUS 30 for chimney	120 x 120 x 610	Stainless steel	4
AT-3545	DAT CONTROLER® PLUS 45 for chimney	120 x 120 x 610	Stainless steel	4
AT-3560	DAT CONTROLER® PLUS 60 for chimney	120 x 120 x 610	Stainless steel	4
Complies with UNE 21186, NF C 17-102				

APPLICATION AT-080B

>INTERCEPTION SYSTEMS AND ACCESSORIES

> MASTS AND ANCHORAGES

41 > MAST ANCHORAGE FOR FLAT ROOF

1 ½" mast support for flat roofs which can be drilled. If not, a concrete base will be required. 70 x 70 x 25 cm concrete base is recommended in order to avoid any damage to the roof.

Reference	Model	Dimensions (mm)	Material	Weight (kg)
AT-003B	For 1½" masts up to 3 m high	(300 x 300) x 500	Galvanized steel	8
AT-006B	For 1½" masts up to 6 m high	(500 x 500) x 800	Galvanized steel	21
Complies with UNE 21186, NF C 17-102				

See table 30

See table 66

APPLICATION AT-006B

42 > TRESTLE TOWERS

Towers that elevate up to 26.5 m with guy wires included. Ø1½" x 3 m mast is included. Each triangular section measures △ 180 mm x 3 m. If the flat roof cannot be perforated, a concrete base is needed for the trestle tower and the guy wire anchorages. 3 guy wire must be installed with 120º between them. The trestle towers can also be placed on walls using a trestle tower-wall anchorage (AT-037C, table 43). They must be assembled section by section and tightened using guy wires. The 3 guy wire anchorages must be joined to the down-conductor at fixation level.

Reference	Total height from ground (m)	Guy wire anchorage distance from tower (m)	Height/length of guy wires (m)					Material	Weight (kg)
			1	2	3	4	5		
AT-063C	5.5	2	2.6/3.8	-	-	-	-	Galvanized steel	25
AT-031C	8.5	2	4.6/5.6	-	-	-	-	Galvanized steel	35
AT-032C	11.5	3	4.4/5.9	7.6/8.8	-	-	-	Galvanized steel	50
AT-033C	14.5	4	5.4/7.3	10.6/11.9	-	-	-	Galvanized steel	60
AT-034C	17.5	5	4.4/7.3	9.1/11	13.6/15.1	-	-	Galvanized steel	75
AT-035C	20.5	6	4.9/8.6	10.9/13	16.9/18.2	-	-	Galvanized steel	85
AT-064C	23.5	9	5.3/11	10.9/14.7	14.9/18	19.6/22.2	-	Galvanized steel	100
AT-065C	26.5	10	4.4/11.2	9.4/14.3	13.9/17.7	18.4/21.6	22.6/25.3	Galvanized steel	120
Complies with UNE 21186, NF C 17-102									

APPLICATION AT-031C

>INTERCEPTION SYSTEMS AND ACCESSORIES

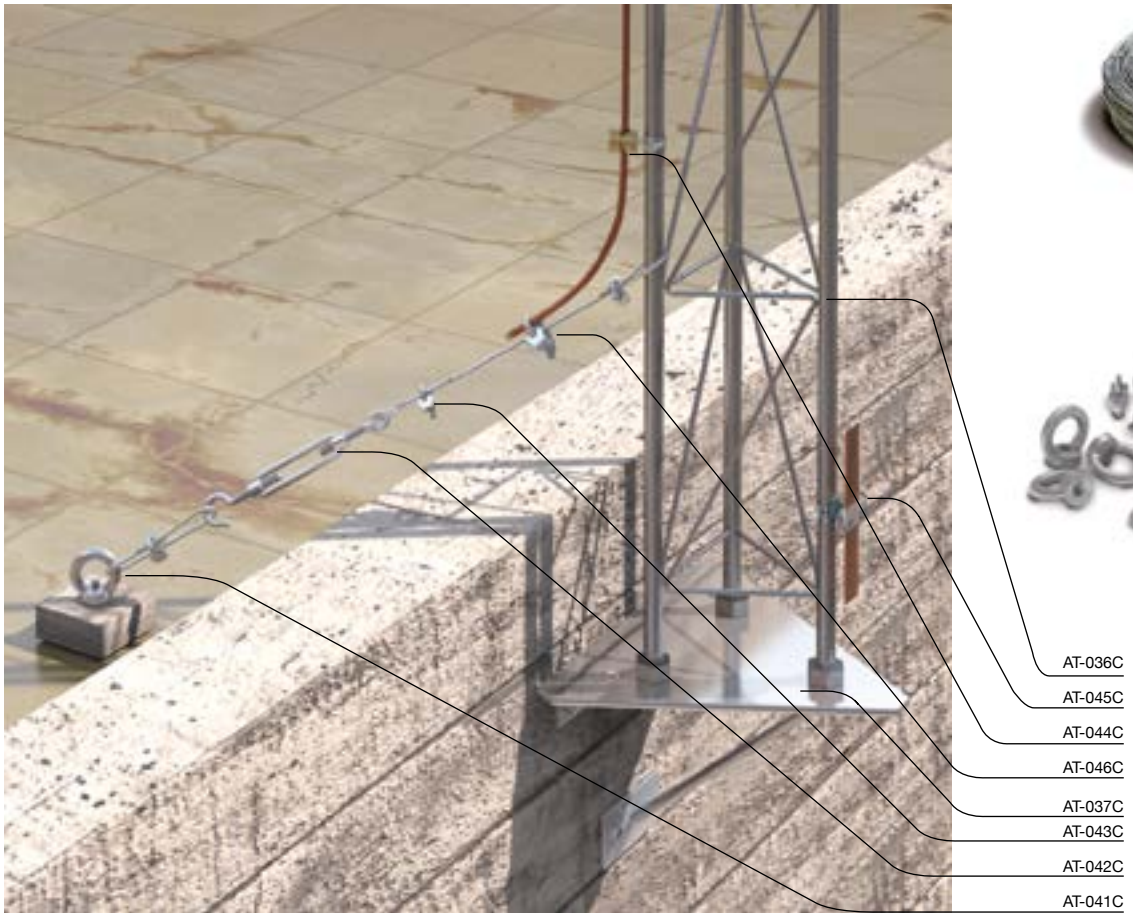
> MASTS AND ANCHORAGES

43 > TRESTLE TOWER ACCESSORIES

Different devices to complete a trestle tower installation.

Reference	Model	Dimensions (mm)	Includes	Material	Weight (g)
AT-036C	Trestle tower middle section	△ 180 mm x 3 m	-	Galvanized steel	11500
AT-037C	Trestle tower - wall anchorage	400 x 350 x 400	-	Galvanized steel	6000
AT-038C	Guy wire kit	-	1 AT-040C + 3 AT-041C + 3 AT-042C + 18 AT-043C	Galvanized steel	7500
AT-040C	Guy wire ring	Ø4 mm x 100 m	-	Galvanized steel	6000
AT-041C	Guy wire anchorage	55 x 30 x 55	-	Galvanized steel	155
AT-042C	Turnbuckle	25 x 15 x 200	-	Galvanized steel	160
AT-043C	Guy wire clamp	30 x 15 x 30	-	Galvanized steel	40
AT-044C	Cable to trestle tower clip	25 x 45 x 55	AT-010E	Naval brass - Stainless steel	85
AT-045C	Tape to trestle tower clip	40 x 45 x 50	AT-028E	Stainless steel	125
AT-046C	Cable to guy wire clamp	40 x 20 x 40	-	Galvanized steel	75
Complies with UNE 21186, NF C 17-102					

APPLICATION AT-037C, AT-036C, AT-044C, AT-045C, AT-041C, AT-042C, AT-043C and AT-046C



AT-040C

AT-038C

>INTERCEPTION SYSTEMS AND ACCESSORIES

> MASTS AND ANCHORAGES

44 > FREE STANDING MAST

Self supporting mast with polygonal section measured for wind velocity up to 250 km/h. Ø1½" at the top.

They are made of pyramidal trunk sections that slot into each other so the sections do not need to be joined by stud-bolts or welding and the hinge means they can be raised using a small crane.

Preliminary work is needed, which consists of inserting a flexible tube in order to let the down-conductor pass, as well as casting the steel support with the hinge in a concrete base (which varies in size depending on the mast height, as shown in the table).

It's necessary to wait until the concrete has hardened before placing the mast in its support. It is recommended to mount the air terminal with the conductor inside the mast before raising it. The conductor does not need to be fixed inside the mast, the down-conductor should simply be passed through the clip inside the mast at door level. It is possible to install a lightning strike counter AT-034G (table 106) inside the mast behind the inspection hatch in the base. ATLOGGER recorder of lightning activity may be installed outside the mast (AT-004G and AT-028G, table 105).

FOUNDATION AT-090C

APPLICATION AT-090C

Reference	Model	Sections	Mast dimensions (m)	Solid base dimensions (mm)	Dimensions of the foundations (m)	Material	Weight (kg)
AT-090C	6 m free standing mast	2	3.00 + 3.23	400 x 400	0.8 x 0.8 x 0.8	Galvanized steel	82.4
AT-091C	8 m free standing mast	3	2 x 3.00 + 2.5	400 x 400	0.8 x 0.8 x 0.8	Galvanized steel	114.5
AT-092C	10 m free standing mast	4	3 x 3.00 + 1.65	500 x 500	1 x 1 x 1	Galvanized steel	162.6
AT-093C	12 m free standing mast	5	4 x 3.00 + 0.95	500 x 500	1 x 1 x 1	Galvanized steel	203.3
AT-094C	15 m free standing mast	6	5 x 3.00 + 1.45	500 x 500	1.5 x 1.5 x 1.5	Galvanized steel	299.6
AT-095C	18 m free standing mast	7	6 x 3.00 + 1.8	600 x 600	1.6 x 1.6 x 2	Galvanized steel	504.0
AT-096C	20 m free standing mast	8	7 x 3.00 + 1.35	600 x 600	2 x 2 x 2	Galvanized steel	615.3
AT-097C	25 m free standing mast	10	9 x 3.00 + 2.85	Ø710	2 x 2 x 2.5	Galvanized steel	1050.0
AT-098C	30 m free standing mast	13	12 x 3.00 + 1.7	Ø870	2.5 x 2.5 x 2.5	Galvanized steel	1640.0
AT-099C	40 m free standing mast	19	18 x 3.00 + 1.00	Ø1130	3 x 3 x 3	Galvanized steel	3860.0
Complies with UNE 21186, NF C 17-102							

>INTERCEPTION SYSTEMS AND ACCESSORIES

> MASTS AND ANCHORAGES

45 > SELF-SUPPORTED TOWER

1½" elevation fixture up to 26 m. Particularly suitable where welding work is not allowed.
The total height from ground includes the tower + 6 m mast that is provided.

INSTALLATION
First of all, a hole for the foundation has to be made (the dimensions of the hole depend of the height of the tower).
The first section has to be embedded in the hole. Wait for the concrete to harden. The top of the concrete foundation needs a small slope to avoid water accumulating.

See tables 1 and 2

Reference	Height from ground (m)*	Dimensions	Dimensions of the foundations (m)	Material	Weight (kg)
AT-050C	14	0.73 x 0.73 x 8.5 m + 1½" x 5.5 m	0.9 x 0.9 x 1.85	Galvanized steel	300
AT-051C	16	0.8 x 0.8 x 10.5 m + 1½" x 5.5 m	0.95 x 0.95 x 1.95	Galvanized steel	390
AT-052C	18	0.87 x 0.87 x 12.5 m + 1½ " x 5.5 m	1.02 x 1.02 x 2	Galvanized steel	460
AT-053C	20	0.95 x 0.95 x 14.5 m + 1½" x 5.5 m	1.1 x 1.1 x 2	Galvanized steel	560
AT-054C	22	1 x 1 x 16.5 m + 1½" x 5.5 m	1.15 x 1.15 x 2.05	Galvanized steel	630
AT-055C	24	1.1 x 1.1 x 18.5 m + 1½" x 5.5 m	1.25 x 1.25 x 2.05	Galvanized steel	725
AT-056C	26	1.15 x 1.15 x 20.5 m + 1½" x 5.5 m	1.3 x 1.3 x 2.1	Galvanized steel	800

Complies with UNE 21186, NF C 17-102

Other dimensions, please contact us

See table 106

See tables 144 and 148

APPLICATION AT-050C

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR TAPES

46 > TAPE BUCKLE CLIP

Down-conductor holder suitable for fixing 30 x 2 or 30 x 3.5 mm tape to flat surface. The AT-006E and AT-061E include suitable screws and neoprene washers for metal sheets or sandwich panels. AT-012E and AT-019E include self-drill double screws and neoprene washers for metal structures. AT-216E and AT-217E are designed to overcome obstacles such as cornices.

Reference	Dimensions (mm)	Tape range (mm)	Conductor elevation (mm)	Includes	Material	Weight (g)
AT-240E	58 x 13 x 20	30 x 2 - 30 x 3.5	8	Plug and lag bolt M6 x 25 mm	Stainless steel	115
AT-006E	58 x 13 x 20	30 x 2 - 30 x 3.5	8	Self-drill screw + neoprene washer	Stainless steel	115
AT-012E	58 x 13 x 20	30 x 2 - 30 x 3.5	8	Self-drill double screw and neoprene washer	Stainless steel	120
AT-241E	58 x 13 x 20	30 x 2 - 30 x 3.5	8	Plug and lag bolt M6 x 25 mm	Galvanized steel	115
AT-061E	58 x 13 x 20	30 x 2 - 30 x 3.5	8	Self-drill screw + neoprene washer	Galvanized steel	115
AT-019E	58 x 13 x 20	30 x 2 - 30 x 3.5	8	Self-drill double screw and neoprene washer	Galvanized steel	120
AT-216E	58 x 63 x 20	30 x 2 - 30 x 3.5	58	Plug and lag bolt M8 x 40 mm	Stainless steel + Naval brass	290
AT-217E	58 x 113 x 20	30 x 2 - 30 x 3.5	108	Plug and lag bolt M8 x 40 mm	Stainless steel + Naval brass	485

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

APPLICATION AT-240E

APPLICATION AT-006E

AT-240E (SS - stainless steel)
AT-241E (GS - galvanized steel)

47 > DC TAPE CLIP

Reference	Dimensions (mm)	Tape (mm)	Type of tape	Material	Weight (g)
AT-100E	50 x 20 x 10	20 x 3	Bare copper	Gunmetal	60
AT-101E	50 x 20 x 10	25 x 3	Bare copper	Gunmetal	70
AT-102E	50 x 20 x 10	25 x 4	Bare copper	Gunmetal	70
AT-103E	50 x 20 x 13	25 x 6	Bare copper	Gunmetal	80
AT-104E	70 x 20 x 13	31 x 3	Bare copper	Gunmetal	90
AT-105E	70 x 20 x 13	31 x 6	Bare copper	Gunmetal	100
AT-106E	64 x 20 x 10	38 x 3	Bare copper	Gunmetal	120
AT-107E	63 x 20 x 10	38 x 5	Bare copper	Gunmetal	120
AT-108E	63 x 20 x 10	38 x 6	Bare copper	Gunmetal	140
AT-109E	65 x 20 x 10	40 x 4	Bare copper	Gunmetal	140
AT-110E	65 x 20 x 10	40 x 6	Bare copper	Gunmetal	150
AT-111E	80 x 20 x 10	50 x 3	Bare copper	Gunmetal	150
AT-112E	80 x 20 x 10	50 x 4	Bare copper	Gunmetal	150
AT-113E	80 x 20 x 16	50 x 6	Bare copper	Gunmetal	160
AT-114E	55 x 20 x 13	25 x 3	PVC coated copper	Gunmetal	100
AT-115E	55 x 20 x 16	25 x 6	PVC coated copper	Gunmetal	130
AT-116E	85 x 20 x 13	50 x 6	PVC coated copper	Gunmetal	260
AT-117E	50 x 20 x 10	20 x 3	Bare aluminium	Aluminium	20
AT-118E	50 x 20 x 10	25 x 3	Bare aluminium	Aluminium	30
AT-119E	50 x 20 x 13	25 x 6	Bare aluminium	Aluminium	40
AT-120E	80 x 20 x 16	50 x 6	Bare aluminium	Aluminium	50
AT-121E	55 x 20 x 23	25 x 3	PVC coated aluminium	Aluminium	40
AT-122E	85 x 20 x 20	50 x 6	PVC coated aluminium	Aluminium	60

Complies with IEC 62305, IEC 62561, BS EN 1982, BS 2897

Suitable for fixing the tape conductor to the building. Plug and screw included.

AT-101E (Gu - gunmetal)
AT-118E (Al - aluminium)

APPLICATION AT-101E

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR TAPES

48 > B BOND

This connection bonds the copper or aluminium tapes with the metal structures. The screw size is M10.

AT-022J (Gu - gunmetal)
AT-023J (Al - aluminium)

Reference	Dimensions (mm)	Tape (mm)	Material	Weight (g)
AT-022J	35 x 35 x 25	25 x 3	Gunmetal	100
AT-023J	35 x 35 x 25	25 x 3	Aluminium	60
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-022J

49 > METAL TAPE CLIP

Down-conductor support clip for 30 x 2 or 30 x 3.5 mm tape to flat surfaces.

AT-028E (SS - Stainless steel)
AT-027E (Cu - copper)

Reference	Dimensions (mm)	Tape range (mm)	Conductor elevation (mm)*	Includes	Material	Weight (g)
AT-027E	60 x 20 x 20	30 x 2 - 30 x 3.5	14	Plug and screw M6 x 25 mm	Copper	47
AT-028E	60 x 20 x 20	30 x 2 - 30 x 3.5	14	Plug and screw M6 x 25 mm	Stainless steel	46
AT-026E	60 x 20 x 20	30 x 2 - 30 x 3.5	18	Plug and screw M6 x 25 mm and nylon support	Stainless steel	45
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

Other dimensions, please contact us

50 > TAPE CLIP

AT-124E (Cu - copper)
AT-127E (Al - aluminium)

Suitable for securing the tape conductors to a flat surface, using two screws. Plugs and screws included.

Reference	Dimensions (mm)	Tape		Material	Weight (g)
		Size (mm)	Type		
AT-123E	70 x 20 x 7	20 x 3	Bare copper	Copper	30
AT-124E	75 x 20 x 7	25 x 3	Bare copper	Copper	30
AT-125E	70 x 20 x 7	25 x 3	PVC coated copper	Copper	30
AT-126E	70 x 20 x 7	20 x 3	Bare aluminium	Aluminium	10
AT-127E	70 x 20 x 7	25 x 3	Bare aluminium	Aluminium	10
AT-072F	70 x 11 x 8	30 x 2	Bare copper	Tin-plated copper	6
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561					

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR TAPES

51 > PUSH-IN TAPE CLIP

Hold-fast clip to secure the tape conductor to a flat surface. Plug and screw included.

Reference	Dimensions (mm)	Tape (mm)	Material	Weight (g)
AT-059E	45 x 10 x 8	25 x 3	Stainless steel	6
AT-068E	45 x 10 x 8	28 x 2	Stainless steel	6
AT-060E	45 x 10 x 8	30 x 2	Stainless steel	6
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-060E

AT-060E

52 > LIGHT BRACKET

Down-conductor clip for fixing 30 x 2 mm or 30 x 3.5 mm tape to flat surface.
Using AT-050E with bare copper tape may cause galvanic coupling. Plug and screw included.

Reference	Dimensions (mm)	Tape range (mm)	Material	Weight (g)
AT-050E	42 x 35 x 8	30 x 2 - 30 x 3.5	Galvanized steel	15
AT-051E	43 x 35 x 8	30 x 2 - 30 x 3.5	Stainless steel	15
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-050E

AT-051E (SS - stainless steel)
AT-050E (GS - galvanized steel)

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR CABLE

53 > NAVAL BRASS CABLE CLIP

Down-conductor clip for fixing round conductor or cable to flat surface.
AT-011E suitable to use on corners. The AT-009E includes screws and washers suitable for metal sheets or sandwich panels. AT-262E includes self-drill double screw and neoprene washer for metal structures. AT-013E and AT-014E are designed to avoid obstacles such as cornices.

AT-010E

Reference	Dimensions (mm)	Conductor range Ø (mm)	Conductor range mm²	Conductor elevation (mm)	Includes	Material	Weight (g)
AT-010E	24 x 32 x 24	6 - 10	25 - 70	7	Plug and lag bolt M6 x 25 mm	Naval brass	70
AT-009E	24 x 32 x 24	6 - 10	25 - 70	7	Self-drill screw + neoprene washer	Naval brass	70
AT-262E	24 x 32 x 24	6 - 10	25 - 70	7	Self-drill double screw + neoprene washer	Naval brass	70
AT-011E	24 x 32 x 24	6 - 10	25 - 70	7	Plug and lag bolt M6 x 25 mm	Naval brass	65
AT-013E	24 x 82 x 24	6 - 10	25 - 70	57	Plug and lag bolt M8 x 40 mm	Naval brass	245
AT-014E	24 x 132 x 24	6 - 10	25 - 70	107	Plug and lag bolt M8 x 40 mm	Naval brass	435
AT-025E	30 x 30 x 40	13	95	10	Plug and lag bolt M8 x 40 mm	Naval brass	165

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

AT-011E

APPLICATION AT-009E

APPLICATION AT-010E

APPLICATION AT-013E

54 > HEAVY DUTY CAST CABLE SADDLE

Suitable for fixing cable or round conductor to the building, using two screws.
Plugs and screws included.

Reference	Dimensions (mm)	Conductor range Ø (mm)	Conductor range mm²	Material	Weight (g)
AT-190E	50 x 17 x 20	8	50	Gunmetal	60
AT-191E	50 x 17 x 20	8	50	Aluminium	30
AT-192E	50 x 17 x 20	10	70	Gunmetal	60
AT-193E	50 x 17 x 20	10	70	Aluminium	30

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

APPLICATION AT-192E (Gu - gunmetal)
AT-193E (Al - aluminium)

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR CABLE

55 > TOWER EARTH CLAMP

They bond copper cable or round conductor to metal structures.
M10 bolts are used for AT-026J and AT-027J. Other references have M12 screws.

Reference	Dimensions (mm)	Conductor range		Material	Weight (g)
		Ø (mm)	mm²		
AT-026J	30 x 45 x 60	6 - 8	25 - 50	Aluminium	50
AT-027J	30 x 45 x 60	6 - 10	25 - 70	Gunmetal	130
AT-028J	35 x 50 x 65	10 - 15	70 - 120	Gunmetal	220
AT-029J	40 x 55 x 65	15 - 18	120 - 185	Gunmetal	300
AT-030J	40 x 60 x 65	18 - 20	185 - 240	Gunmetal	400
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561					

AT-027J (Cu - copper)
AT-026J (Al - aluminium)

APPLICATION AT-027J

56 > METAL CABLE CLIP

Down-conductor clip for fixing round conductor or cable to flat surface.

Reference	Dimensions (mm)	Conductor range		Conductor elevation (mm)*	Includes	Material	Weight (g)
		Ø (mm)	mm²				
AT-128E	40 x 20 x 40	6 - 10	25 - 70	18	Plug, screw and nylon support	Stainless steel	21
AT-129E	40 x 25 x 40	6 - 10	25 - 70	18	Metal support	Stainless steel	25
AT-130E	40 x 25 x 40	6 - 10	25 - 70	18	Metal support	Copper	28
AT-131E	45 x 25 x 50	16	150	18	Plug, screw and nylon support	Stainless steel	36
AT-132E	45 x 25 x 50	16	150	18	Plug, screw and metal support	Stainless steel	40
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561							

Other dimensions, please contact us

APPLICATION AT-128E

APPLICATION AT-129E (SS - Stainless steel)
AT-130E (Cu - copper)

APPLICATION AT-131E

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR CABLE

57 > KS CABLE CLIP

For connecting round conductor or cable to flat profiles.

Reference	Dimensions (mm)	Conductor range		Conductor elevation (mm)	Material	Weight (g)
		Ø (mm)	mm²			
AT-004E	25 x 25 x 40	6 - 10	25 - 70	8	Copper	65
AT-002E	25 x 25 x 40	6 - 10	25 - 70	8	Galvanized steel	65
AT-000E	25 x 25 x 40	6 - 10	25 - 70	8	Stainless steel	65
AT-003E	25 x 55 x 40	6 - 10	25 - 70	8	Galvanized steel	120
AT-005E	25 x 55 x 40	6 - 10	25 - 70	8	Copper	154
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

- AT-004E (Cu - copper)
- AT-002E (GS - galvanized steel)
- AT-000E (SS - stainless steel)

- AT-003E (GS - galvanized steel)
- AT-005E (Cu - copper)

APPLICATION AT-004E

58 > PUSH-IN CABLE CLIP

Hold-fast clip to secure round conductor or cable.

Reference	Dimensions (mm)	Conductor range		Conductor elevation (mm)*	Includes	Material	Weight (g)
		Ø (mm)	mm²				
AT-133E	20 x 15 x 30	8	50	18	Plug, screw and nylon support	Stainless steel	10
AT-134E	20 x 15 x 30	10	70	18	Plug, screw and nylon support	Stainless steel	10
AT-135E	20 x 15 x 30	8	50	18	Plug, screw and metal support	Stainless steel	13
AT-136E	20 x 15 x 30	10	70	18	Plug, screw and metal support	Stainless steel	13
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561							

Other dimensions, please contact us

APPLICATION AT-135E

APPLICATION AT-133E

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR CABLE

59 > NYLON CABLE CLIP Ø6 - 10 mm

Nylon clip to secure round conductor or cable.

Reference	Dimensions (mm)	Conductor range Ø (mm)	Conductor range mm²	Conductor elevation (mm)*	Includes	Material	Weight (g)
AT-043E	50 x 23 x 25	6 - 10	25 - 70	18	Plug and lag bolt M6 x 25 mm	Nylon	17
AT-044E	50 x 23 x 80	6 - 10	25 - 70	18	Integrated plug and screw	Nylon	18

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

Other dimensions, please contact us

APPLICATION AT-043E

APPLICATION AT-044E

60 > NYLON CABLE CLIP Ø13 - 16 mm

Nylon clip to secure round conductor or cable.
Also suitable for securing air termination rods to the side of the building.

Reference	Dimensions (mm)	Conductor range Ø (mm)	Conductor range mm²	Conductor elevation (mm)*	Includes	Material	Weight (g)
AT-045E	50 x 23 x 30	13	95	20	Plug and lag bolt M6 x 25 mm	Nylon	24
AT-046E	50 x 23 x 30	16	150	20	Plug and lag bolt M6 x 25 mm	Nylon	24
AT-047E	50 x 23 x 52	13	95	42	Plug and lag bolt M6 x 25 mm	Nylon	29
AT-048E	50 x 23 x 54	16	150	42	Plug and lag bolt M6 x 25 mm	Nylon	29
AT-049E	50 x 23 x 85	16	150	20	Integrated plug and screw	Nylon	32

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

Other dimensions, please contact us

APPLICATION AT-047E

APPLICATION AT-045E

APPLICATION AT-049E

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR CABLE

61 > NYLON HOLD-FAST CABLE CLIP

Nylon clip to secure round conductor or cable.

Reference	Dimensions (mm)	Conductor range		Conductor elevation (mm)	Includes	Material	Weight (g)
		Ø (mm)	mm²				
AT-020E	25 x 25 x 35	8 - 10	50 -70	18	Plug and lag bolt M6 x 25 mm	Nylon	9
AT-034E	25 x 25 x 35	10	70	18	Plug and lag bolt M6 x 25 mm	Nylon	9
AT-035E	25 x 25 x 35	8	50	25	Plug and lag bolt M6 x 25 mm	Nylon	10
AT-036E	25 x 25 x 35	10	70	25	Plug and lag bolt M6 x 25 mm	Nylon	10
AT-037E	25 x 25 x 70	8	50	40	Plug and lag bolt M6 x 25 mm	Nylon	11
AT-038E	25 x 25 x 70	10	70	40	Plug and lag bolt M6 x 25 mm	Nylon	13
AT-021E	25 x 25 x 90	8	50	18	Integrated plug and screw	Nylon	10
AT-039E	25 x 25 x 90	10	70	18	Integrated plug and screw	Nylon	10
AT-022E	25 x 25 x 80	8	50	25	Anti-humidity plug and screw	Nylon	20

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

APPLICATION AT-021E

APPLICATION AT-035E

APPLICATION AT-020E

APPLICATION AT-022E

APPLICATION AT-037E

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR CABLE

62 > CLAMPING FRAME

Used for fixing down-conductors (round conductor or cable) to metal structures. Include M8 x 30 mm bolt.

Reference	Dimensions (mm)	Conductor range		Material	Weight (g)
		Ø (mm)	mm²		
AT-138E	33 x 33 x 35	6 - 10	25 - 70	Stainless steel	34
AT-139E	33 x 33 x 35	6 - 10	25 - 70	Copper	35
AT-140E	33 x 33 x 35	6 - 10	25 - 70	Aluminium	27
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561					

AT-138E (SS - stainless steel)
AT-139E (Cu - copper)
AT-140E (Al - aluminium)

APPLICATION AT-138E

63 > ONE-HOLE CABLE CLIP

Simple holder to secure cable or round conductor to the wall. Plug and screw included.

Reference	Dimensions (mm)	Conductor range			Material	Weight (g)
		Ø (mm)	mm²	Type		
AT-056E	15 x 10 x 25	8	50	Bare copper	Copper	9
AT-058E	20 x 15 x 30	10	70	Bare copper	Copper	10
AT-057E	25 x 20 x 35	13	95	Bare copper	Copper	11
AT-141E	20 x 15 x 30	8	50	PVC coated copper	Copper	10
AT-142E	15 x 10 x 25	8	50	Bare aluminium	Aluminium	4
AT-143E	20 x 15 x 30	10	70	Bare aluminium	Aluminium	5
AT-144E	20 x 15 x 30	8	50	PVC coated aluminium	Aluminium	5
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

APPLICATION AT-056E (Cu - copper)
AT-142E (Al - aluminium)

> DOWN-CONDUCTORS AND ACCESSORIES

> CLIPS FOR TAPE AND CABLE

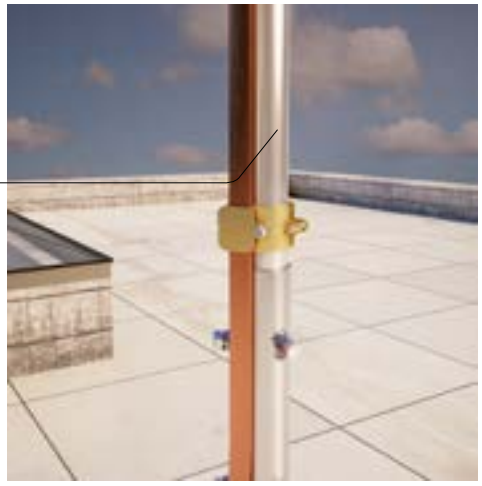
AT-048A

64 > CONDUCTOR-MAST SUPPORT CLIP

Down-conductor clip for fixing 1" - ½" pipe on the exterior of the mast.

Reference	Model	Dimensions (mm)	Conductor range			Material	Weight (g)
			Ø (mm)	mm²	Tape (mm)		
AT-033A	Ø1"	73 x 52 x 40	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Naval brass	275
AT-048A	Ø1 ¼" - 1½"	60 x 72 x 40	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Naval brass	310
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561							

See table 30



APPLICATION AT-048A

65 > NYLON CLIP

Nylon clips to secure round, cable or tape conductor.

Reference	Dimensions (mm)	Conductor range			Conductor elevation (mm)	Includes	Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)				
AT-030E	20 x 50 x 25	6 - 10	25 - 70	30 x 2 - 30 x 3.5	17	Plug and lag bolt M6 x 25 mm	Nylon	21
AT-053E	20 x 50 x 30	6 - 10	25 - 70	30 x 2 - 30 x 3.5	23	Plug and lag bolt M6 x 25 mm	Nylon	23
AT-054E	20 x 50 x 70	6 - 10	25 - 70	30 x 2 - 30 x 3.5	40	Plug and lag bolt M6 x 25 mm	Nylon	25
AT-031E	20 x 50 x 60	6 - 10	25 - 70	30 x 2 - 30 x 3.5	17	Integrated plug and screw	Nylon	28
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561								

APPLICATION AT-030E

APPLICATION AT-053E

APPLICATION AT-031E

APPLICATION AT-054E

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

66 > CONICAL ROOF CONDUCTOR HOLDER

Conductor holder for flat roofs where it is not possible to drill in order to secure the conductor, such as bitumen roofs. Supplied empty to be then filled with concrete, or already filled with concrete. The lip at the bottom of the cone allows it to be embedded in concrete or bitumen. It can also be sealed with polymer.

Reference	Dimensions (mm)	Conductor range			Conductor elevation (mm)	Includes	Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)				
AT-041E	140 x 140 x 90	8 - 10	50 - 70	30 x 2 - 30 x 3.5	65	Empty with base. Hold-fast clip	UV resistant polyethylene	80
AT-183E	140 x 140 x 90	8 - 10	50 - 70	30 x 2 - 30 x 3.5	65	Full of concrete. Hold-fast clip	UV resistant polyethylene + concrete	1000
AT-040E	140 x 140 x 90	8 - 10	50 - 70	-	65	Empty with base	UV resistant polyethylene	95
AT-184E	140 x 140 x 90	8 - 10	50 - 70	-	65	Full of concrete	UV resistant polyethylene + concrete	1000
AT-005M	140 x 140 x 95	-	-	-	-	Empty with base. M10	UV resistant polyethylene	105
AT-145E	140 x 140 x 120	8 - 10*	50 - 70*	30 x 2 - 30 x 3.5	90	Empty with base.	UV resistant polyethylene	400

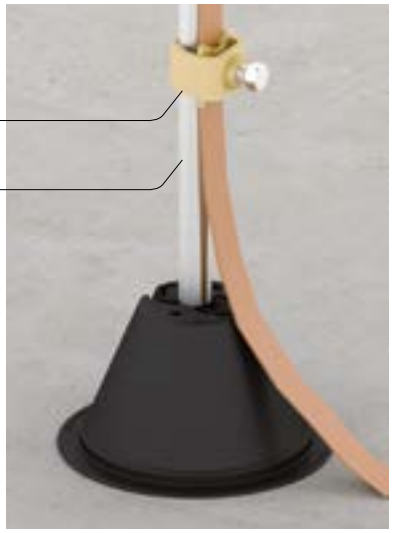
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

AT-005M

APPLICATION AT-040E
APPLICATION AT-184E

APPLICATION AT-041E
APPLICATION AT-183E

APPLICATION AT-145E



APPLICATION AT-005M

67 > ROOF CONDUCTOR HOLDER

Double hold-fast concrete support for cable or round conductor.

Reference	Dimensions (mm)	Conductor range		Conductor elevation (mm)	Material	Weight (kg)
		Ø (mm)	mm²			
AT-042E	140 x 75 x 50	8 - 10	50 - 70	60	Polypropylene/ concrete	1

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

APPLICATION AT-042E

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

68 > METAL SUPPORT

AT-178E

AT-179E

These supports are fixed using screws or adhesive to flat surfaces or welded onto metal structures. Suitable for use with rods such as AT-053L (table 3).

Reference	Dimensions (mm)	Includes	Material	Weight (g)
AT-178E	100 x 100 x 20	M10	Galvanized steel	155
AT-179E	80 x 30 x 12	M10	Galvanized steel	55
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

69 > METAL FIXATION

AT-009G

AT-303E

Component for fixing cable or tape clips onto metal surfaces.

Reference	Dimensions (mm)	Description	Application	Includes	Material	Weight (g)
AT-009G	Ø18 x 25 mm	3.9 x 25 mm self-drill screw	Metal sheets and sandwich panels	Ø18 mm neoprene washer	Galvanized steel	3.6
AT-303E	Ø19 x 20	6.3 x 5 mm self-drill double screw with M6	Beams and metal structures	Ø19 mm neoprene washer	Galvanized steel	9.2
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

70 > CURVED TILE SUPPORT

AT-090E (SS - stainless steel)
AT-151E (Cu - copper)

APPLICATION AT-090E

For fixing the conductor clips to curved tiles. Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 60, 61 or 65.

Reference	Model	Dimensions (mm)	Material	Weight (g)
AT-090E	170-240 mm curved tile support	180 x 25 x 140	Stainless steel	79
AT-150E	190-300 mm curved tile support	200 x 25 x 155	Stainless steel	113
AT-151E	170-240 mm curved tile support	180 x 25 x 140	Copper	85
AT-152E	190-300 mm curved tile support	200 x 25 x 155	Copper	120
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

71 > SPRING TILE SUPPORT

AT-091E

APPLICATION AT-091E

For fixing the conductor clips to tile. This support has a spring to adapt to tiles ranging from 180 to 280 mm. Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 60, 61 or 65.

Reference	Dimensions (mm)	Material	Weight (g)
AT-091E	20 x 35 x 220	Stainless steel	55
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

72 > METAL SANDWICH ROOF SUPPORT

Corrugated or sandwich roof supports. The support employs existent metal sheet fixings. Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 60, 61 or 65.

Reference	Dimensions (mm)	Material	Weight (g)
AT-095E	25 x 60 x 15	Stainless steel	15
AT-169E	25 x 60 x 25	Stainless steel	20
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

APPLICATION AT-169E

AT-095E

AT-169E

73 > CLIP SUPPORT FOR ROOFS

Different solutions for fixing the conductor clips to the roof.
Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 60, 61 or 65.

Reference	Model	Dimensions (mm)	Material	Weight (g)
AT-159E	210 mm flat tile elevated support	40 x 25 x 210	Stainless steel	37
AT-160E	260 mm flat tile elevated support	40 x 25 x 260	Stainless steel	46
AT-161E	335 mm flat tile elevated support	40 x 25 x 335	Stainless steel	70
AT-162E	210 mm flat tile smooth support	15 x 25 x 210	Stainless steel	43
AT-163E	260 mm flat tile smooth support	15 x 25 x 260	Stainless steel	51
AT-168E	130 mm flat tile angled support	60 x 25 x 130	Stainless steel	45
AT-092E	180 mm flat tile angled support	60 x 25 x 180	Stainless steel	55
AT-093E	440 mm flat tile angled support	60 x 25 x 440	Stainless steel	100
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-161E

AT-161E

AT-163E

AT-093E

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

74 > TILE SUPPORT

AT-094E

AT-158E

For fixing the clip to the tile without causing any damage in such a way that the conductor can be fixed afterwards. Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 60, 61 or 65.

Reference	Model	Dimensions (mm)	Material	Weight (g)
AT-156E	15 – 20 mm tile support	50 x 20 x 35	Stainless steel	30
AT-157E	20 – 25 mm tile support	50 x 20 x 40	Stainless steel	31
AT-158E	25 – 30 mm tile support	50 x 20 x 45	Stainless steel	32
AT-094E	Universal support for tiles up to 20 mm	25 x 40 x 80	Galvanized steel	85
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-094E

75 > GUTTER CLAMP

AT-040F (SS - stainless steel)
AT-153E (Cu - copper)

APPLICATION AT-040F

Clamp for Ø6-10 mm round conductor to be fixed at the edge of the gutter.

Reference	Dimensions (mm)	Material	Weight (g)
AT-040F	50 x 50 x 40	Stainless steel	65
AT-153E	50 x 50 x 40	Copper	72
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

76 > EXTENSION

AT-016E

APPLICATION AT-013E

Used when the installation requires the conductor to be fixed at a certain distance from the surface. For use in conjunction with AT-010E, for example (table 53). Plug and screw included. Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 60, 61 or 65.

Reference	Dimensions (mm)	Material	Weight (g)
AT-016E	Ø24 x 50	Naval brass	175
AT-017E	Ø24 x 100	Naval brass	370
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

77 > BACK PLATE HOLDFAST

Used when the installation requires the conductor to be fixed at a certain distance from the surface. For use in conjunction with AT-101E, for example (table 47). Plug and screw included. Suitable for use in conjunction with clips (table 47 or 54).

Reference	Dimensions (mm)	Material	Weight (g)
AT-170E	Ø63 x 74	Gunmetal	300
AT-171E	Ø63 x 74	Aluminium	100
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

APPLICATION AT-170E

AT-170E (Gu - gunmetal)
AT-171E (Al - aluminium)

78 > GLAZING BAR HOLDFAST

Suitable for fixing any clip to narrow flanges such as metal profiles.
Suitable for use in conjunction with clips from tables 46, 47, 49, 53, 54, 56, 58, 59, 60, 61 or 65.

Reference	Dimensions (mm)	Maximum width (mm)	Material	Weight (g)
AT-172E	20 x 15 x 35	12	Gunmetal	110
AT-173E	20 x 15 x 35	12	Aluminium	50
AT-018E	38 x 19 x 40	18	Galvanized steel	85
AT-174E	58 x 24 x 60	26	Galvanized steel	220
Complies with IEC 62305, UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

AT-172E (Gu - gunmetal)
AT-173E (Al - aluminium)

APPLICATION AT-172E

APPLICATION AT-018E

AT-018E

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

79 > SCREWDRIVER DOWNPIPE SUPPORT

Rainwater support, adjustable with a screwdriver. Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 61, 61 or 65.

AT-076E

AT-070E

APPLICATION AT-070E

Reference	Model	Dimensions (mm)	Downpipe diameter (mm)	Material	Weight (g)
AT-070E	Spiral pipe support	25 x 12 x 100	50 - 70	Stainless steel	70
AT-071E	Spiral pipe support	25 x 12 x 120	70 - 90	Stainless steel	75
AT-072E	Spiral pipe support	25 x 12 x 130	80 - 100	Stainless steel	77
AT-073E	Spiral pipe support	25 x 12 x 150	100 - 120	Stainless steel	78
AT-182E	Spiral pipe support	25 x 12 x 170	120 - 140	Stainless steel	84
AT-194E	Spiral pipe support	25 x 12 x 190	140 - 160	Stainless steel	87
AT-195E	Spiral pipe support	25 x 12 x 210	160 - 180	Stainless steel	96
AT-076E	Tube clip support	40 x 35 x 25	25 - 27	Stainless steel	30
AT-077E	Tube clip support	47 x 35 x 25	31 - 34	Stainless steel	33
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561					

80 > EARTHING PIPE CLAMP

Rainwater support with clamp to connect to earthing system or to fix the down-conductor.

AT-097E

AT-185E

Reference	Model	Dimensions (mm)	Conductor Ø (mm)	Downpipe Ø (mm)	Material	Weight (g)
AT-097E	Earthing pipe clamp	60 x 25 x 35	2.5 - 6 (4 - 25 mm²)	27 - 60 (¾" - 2")	Stainless steel	71
AT-098E	Earthing pipe clamp	60 x 25 x 35	2.5 - 6 (4 - 25 mm²)	27 - 115 (¾" - 4")	Stainless steel	76
AT-099E	Earthing pipe clamp	60 x 25 x 35	2.5 - 6 (4 - 25 mm²)	27 - 165 (¾" - 6")	Stainless steel	94
AT-185E	Earthing pipe clamp	70 x 35 x 40	6 - 10	27 - 89 (¾" - 3")	Stainless steel	133
AT-186E	Earthing pipe clamp	70 x 35 x 40	6 - 10	27 - 165 (¾" - 6")	Stainless steel	137
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

81 > DOWNPIPE CLAMP

50 -120 mm rainwater pipe clamp, for Ø6 - 10 mm round conductor or 25 - 70 mm² cable.

Reference	Dimensions (mm)	Downpipe diameter (mm)	Material	Weight (g)
AT-082E	120 x 180 x 40	50 - 120	Copper	155
AT-083E	120 x 180 x 40	50 - 120	Stainless steel	130
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-082E

82 > DOWNPIPE SUPPORT

Different pieces to customize your downpipe support.
Suitable for use in conjunction with clips from tables 46, 49, 53, 56, 58, 59, 60, 61 or 65.

Reference	Model	Dimensions (mm)	Downpipe diameter (mm)	Material	Weight (g)
AT-096E	Adjustable tensioning strap for downpipes up to Ø160 mm	160 x 180 x 20	Up to 160	Stainless steel	40
AT-069E	Continuous tensioning strap	14 x 0.3 (50 m)	-	Stainless steel	1800
AT-029E	Continuous tensioning strap	14 x 0.3 (100 m)	-	Stainless steel	4000
AT-067E	Separate strap holder	36 x 22 x 20	-	Stainless steel	10
AT-066E	Downpipe clip holder	25 x 30 x 65	-	Stainless steel	20
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561					

AT-096E

APPLICATION AT-069E, AT-067E AND AT-066E

AT-069E

AT-067E

AT-066E

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

83 > DOWNPIPE CABLE HOLDER

APPLICATION AT-084E

Adjustable rainwater pipe conductor holder, for Ø8 mm round conductor or 50 mm² cable.

Reference	Dimensions (mm)	Downpipe diameter (mm)	Material	Weight (g)
AT-084E	70 x 80 x 12	50 - 70	Stainless steel	27
AT-085E	90 x 100 x 12	70 - 90	Stainless steel	31
AT-086E	100 x 110 x 12	80 - 100	Stainless steel	33
AT-087E	120 x 130 x 12	100 - 120	Stainless steel	37
AT-088E	140 x 150 x 12	120 - 140	Stainless steel	41
AT-089E	160 x 170 x 12	140 - 160	Stainless steel	45
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

84 > ALUMINIUM DOWNPIPE CABLE HOLDER

AT-065E

Aluminium rainwater pipe conductor holder, for Ø8 mm or 50 mm² cable.

Reference	Dimensions (mm)	Downpipe diameter (mm)	Material	Weight (g)
AT-065E	120 x 120 x 18	80 - 120	Aluminium	10
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

85 > PIPE BOND

AT-175E (Gu - gunmetal)
AT-176E (Al - aluminium)

Used to fix an 8 mm diameter down-conductor to large diameter piping.

Reference	Dimensions (mm)	Downpipe diameter (mm)	Material	Weight (g)
AT-175E	60 x 35 x 40	50 - 200	Gunmetal	460
AT-176E	60 x 35 x 40	50 - 200	Aluminium	250
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-175E

> DOWN-CONDUCTORS AND ACCESSORIES

> SUPPORTS

86 > WATERMAIN PIPE BOND

Used for bonding copper tape to water pipes.

Reference	Dimensions (mm)	Tape (mm)	Material	Weight (g)
AT-177E	45 x 35 x 40	25 x 3	Gunmetal	260
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-177E

AT-177E

87 > RAINWATER PIPE (RWP) BOND

This bonds copper or aluminium tapes to metal circular surfaces such as rainwater pipes, handrails, etc. The bolt size is M10.

Reference	Dimensions (mm)	Tape range (mm)	Material	Weight (g)
AT-024J	32 x 32 x 40	25 x 3	Gunmetal	180
AT-025J	32 x 32 x 40	25 x 3	Aluminium	70
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-024J

AT-024J (Gu - gunmetal)
AT-025J (Al - aluminium)

> CLAMPS

88 > SQUARE TAPE CLAMPS

Linear, T, L and cross-shape equipotential bonds for tape.

Reference	Dimensions (mm)	Tape range (mm)	Material	Weight (g)
AT-033F	55 x 55 x 15	25 x 3	Gunmetal	230
AT-034F	55 x 55 x 20	25 x 6	Gunmetal	420
AT-035F	85 x 85 x 25	50 x 6	Gunmetal	980
AT-039F	55 x 55 x 15	25 x 3	Aluminium	70
AT-026F	60 x 60 x 6	30 x 2 - 30 x 3.5	Galvanized steel	330
AT-029F	60 x 60 x 6	25 x 3 - 30 x 3.5	Copper	315
AT-131F	60 x 60 x 6	30 x 2 - 30 x 3.5	Stainless steel	300
Complies with IEC 62305, UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

APPLICATION AT-026F

APPLICATION AT-033F (Gu - gunmetal)
AT-039F (Al - aluminium)

> DOWN-CONDUCTORS AND ACCESSORIES

> CLAMPS

89 > SQUARE CABLE CLAMPS

Linear, T, L and cross-shape equipotential bonds for round conductor and cable.

Reference	Dimensions (mm)	Conductor range		Rod Ø (mm)	Material	Weight (g)
		Ø (mm)	mm²			
AT-036F	60 x 60 x 40	8	50	-	Gunmetal	320
AT-037F	60 x 60 x 40	10	70	-	Gunmetal	290
AT-038F	60 x 60 x 40	13	95	-	Gunmetal	250
AT-032F	60 x 60 x 22	8 - 10	50 - 70	-	Copper	330
AT-023F	60 x 60 x 19	8 - 10	50 - 70	-	Galvanized steel	330
AT-028F	60 x 60 x 21	7 - 13	35 - 95	-	Stainless steel	330
AT-136J	60 x 60 x 22	8 - 10	50 - 70	16	Galvanized steel	330
AT-137J	60 x 60 x 22	8 - 10	50 - 70	16	Stainless steel	330
AT-138J	60 x 60 x 22	8 - 10	50 - 70	16	Copper	330
AT-089J-1	50 x 50 x 45	8 - 15	50 - 120	-	Naval brass	250

Complies with IEC 62305, UNE 21186, NF C 17-102, IEC 62305, IEC 62561

APPLICATION AT-023F (GS - galvanized steel)
AT-032F (Cu - copper)
AT-028F (SS - stainless steel)

APPLICATION AT-136J (GS - galvanized steel)
AT-138J (Cu - copper)
AT-137J (SS - stainless steel)

APPLICATION AT-089J-1

APPLICATION AT-036F

90 > SQUARE TAPE AND CABLE CLAMPS

Linear, T, L and cross-shape equipotential bonds for round, cable and tape.

Reference	Dimensions (mm)	Conductor range			Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)		
AT-020F	57 x 57 x 25	7 - 13	35 - 95	30 x 2 - 30 x 3.5	Naval brass	330
AT-134F	57 x 57 x 25	7 - 13	35 - 95	30 x 2 - 30 x 3.5	Aluminium	120
AT-031F	60 x 60 x 14	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Galvanized steel	330
AT-133F	60 x 60 x 14	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Copper	450
AT-136F	60 x 60 x 14	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Stainless steel	333
AT-015J	60 x 60 x 19	16	150	30 x 2 - 30 x 3.5	Galvanized steel	330
AT-016J	60 x 60 x 19	16	150	30 x 2 - 30 x 3.5	Stainless steel	330
AT-017J	60 x 60 x 19	16	150	30 x 2 - 30 x 3.5	Copper	330

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

AT-015J (GS - Galvanized steel) (application)
AT-016J (Cu - copper)
AT-017J (SS - stainless steel)

APPLICATION AT-031F (GS - galvanized steel)
AT-133F (Cu - copper)
AT-136F (SS - stainless steel)

APPLICATION AT-020F (NB - naval brass)
AT-134F (Al - aluminium)

APPLICATION AT-020F (NB - naval brass)
AT-134F (Al - aluminium)

APPLICATION AT-020F (NB - naval brass)
AT-134F (Al - aluminium)

> DOWN-CONDUCTORS AND ACCESSORIES

> CLAMPS

91 > T-CLAMP

T-shape equipotential bond for round conductor and cable.

Reference	Dimensions (mm)	Conductor range		Material	Weight (g)
		Ø (mm)	mm²		
AT-012F	50 x 40 x 20	8 - 10	50 - 70	Naval brass	120
AT-119F	49 x 27 x 21	8	50	Gunmetal	120
AT-120F	49 x 27 x 21	8	50	Galvanized steel	120
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561					

APPLICATION AT-012F

APPLICATION AT-119F (Gu - gunmetal)
AT-120F (GS - galvanized steel)

92 > STRAIGHT CLAMP

Linear joint for cable or round conductor.

Reference	Dimensions (mm)	Conductor range			Rod	Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)			
AT-015F	Ø21 x 100	8 - 10	50 - 70	-	-	Naval brass	140
AT-116F	Ø15 x 75	6 - 8	25 - 50	-	-	Copper	140
AT-117F	Ø15 x 75	6 - 8	25 - 50	-	-	Stainless steel	140
AT-118F	60 x 27 x 20	8	50	-	-	Galvanized steel	140
AT-135F	60 x 27 x 20	8	50	-	-	Gunmetal	100
AT-105F	40 x 30 x 17	8 - 10	50 - 70	-	-	Aluminium	50
AT-135J	43 x 41 x 30	7 - 10	35 - 70	-	16	Galvanized steel	120
AT-090H	85 x 41 x 44	8 - 10	50 - 70	30 x 2 - 30 x 3.5	20	Naval brass	265
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561							

AT-015F (NB - naval brass)
AT-116F (Cu - copper)
AT-117F (SS - stainless steel)

AT-090H

APPLICATION AT-118F (GS - galvanized steel)
AT-135F (Gu - gunmetal)

APPLICATION AT-090H

APPLICATION AT-135J

APPLICATION AT-105F

> DOWN-CONDUCTORS AND ACCESSORIES

> CLAMPS

93 > PARALLEL CLAMP

Parallel bond for cable or round conductor. AT-013F is used for bonds between copper and aluminium conductors, preventing galvanic coupling.

AT-011F

Reference	Dimensions (mm)	Conductor range			Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)		
AT-011F	45 x 45 x 14	8	50	30 x 2 - 30 x 3.5	Naval brass	120
AT-013F	42 x 42 x 25	4 - 13	16 - 95	-	Aluminium alloy	183
AT-016F	42 x 42 x 25	4 - 13	16 - 95	-	Naval brass	220
AT-009F	42 x 42 x 25	4 - 13	16 - 95	-	Aluminium	217
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

AT-016F (NB - naval brass)
AT-009F (Al - aluminium)

AT-013F

94 > UNIVERSAL CLAMP

Cross or parallel bond between copper cables or round conductors.

APPLICATION AT-113F (SS - stainless steel)
AT-112F (Cu - copper)

Reference	Dimensions (mm)	Conductor range		Rod Ø (mm)	Material	Weight (g)
		Ø (mm)	mm²			
AT-112F	33 x 33 x 35 (Miniature)	6 - 8	25 - 50	-	Copper	80
AT-113F	33 x 33 x 35 (Miniature)	6 - 8	25 - 50	-	Stainless steel	80
AT-115F	40 x 40 x 45	8 - 10	50 - 70	-	Aluminium	60
AT-121F	40 x 40 x 45	8 - 10	50 - 70	-	Copper	120
AT-122F	40 x 40 x 45	8 - 10	50 - 70	-	Stainless steel	120
AT-125F	40 x 40 x 45	8 - 10	50 - 70	-	Galvanized steel	120
AT-128F	40 x 40 x 45	8 - 10	50 - 70	-	Copper/Aluminium	120
AT-025F	48 x 44 x 45	8 - 10	50 - 70	16	Stainless steel	130
AT-127J	48 x 44 x 45	8 - 10	50 - 70	16	Copper	130
AT-128J	48 x 44 x 45	8 - 10	50 - 70	16	Galvanized steel	130
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

APPLICATION AT-121F
AT-115F (Al - aluminium)
AT-122F (SS - stainless steel)
AT-125F (GS - galvanized steel)
AT-128F (Cu/Al - copper/aluminium)

APPLICATION AT-025F (SS - stainless steel)
AT-127J (Cu - copper)
AT-128J (GS - galvanized steel)

> DOWN-CONDUCTORS AND ACCESSORIES

> CLAMPS

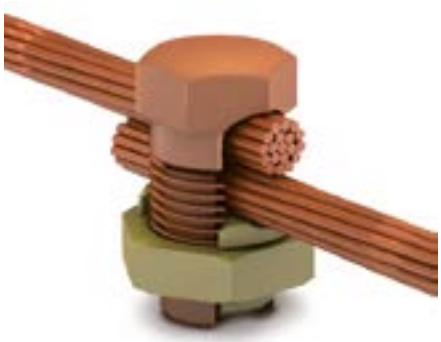
95 > TYPE H SPLIT BOLT CLAMP

Parallel bond between two stranded or solid round conductors.

Reference	Dimensions (mm)	Conductor range		Application	Material	Weight (g)
		Conductor A (mm^2)	Conductor B (mm^2)			
AT-096F	23 x 10 x 12	10	1.5 - 10	Cu/Cu	Electrolytic copper/gunmetal	20
AT-097F	25 x 11 x 12	16	2.5 - 16	Cu/Cu	Electrolytic copper/gunmetal	24
AT-098F	30 x 15 x 18	25	2.5 - 25	Cu/Cu	Electrolytic copper/gunmetal	37
AT-099F	31 x 15 x 19	35	2.5 - 35	Cu/Cu	Electrolytic copper/gunmetal	45
AT-100F	39 x 20 x 20	50	2.5 - 50	Cu/Cu	Electrolytic copper/gunmetal	70
AT-101F	43 x 20 x 22	70	2.5 - 70	Cu/Cu	Electrolytic copper/gunmetal	85
AT-102F	53 x 25 x 28	95	2.5 - 95	Cu/Cu	Electrolytic copper/gunmetal	145
AT-103F	53 x 27 x 28	120	10 - 120	Cu/Cu	Electrolytic copper/gunmetal	160
AT-082F	50 x 26 x 28	150	10 - 150	Cu/Cu	Electrolytic copper/gunmetal	160
AT-104F	60 x 30 x 31	185	50 - 185	Cu/Cu	Electrolytic copper/gunmetal	240
AT-114F	72 x 34 x 34	240	95 - 240	Cu/Cu	Electrolytic copper/gunmetal	345
AT-057F	27 x 10 x 12	10	2.5 - 10	Cu/Al or Al/Al	Electrolytic copper/gunmetal	23
AT-058F	27 x 11 x 12	16	2.5 - 16	Cu/Al or Al/Al	Electrolytic copper/gunmetal	26
AT-064F	32 x 15 x 18	25	4 - 25	Cu/Al or Al/Al	Electrolytic copper/gunmetal	43
AT-065F	37 x 15 x 19	35	4 - 35	Cu/Al or Al/Al	Electrolytic copper/gunmetal	50
AT-066F	44 x 20 x 20	50	4 - 50	Cu/Al or Al/Al	Electrolytic copper/gunmetal	80
AT-067F	44 x 20 x 22	70	10 - 70	Cu/Al or Al/Al	Electrolytic copper/gunmetal	95
AT-068F	54 x 25 x 28	95	10 - 95	Cu/Al or Al/Al	Electrolytic copper/gunmetal	160
AT-069F	57 x 27 x 28	120	10 - 120	Cu/Al or Al/Al	Electrolytic copper/gunmetal	182
AT-074F	55 x 26 x 28	150	16 - 150	Cu/Al or Al/Al	Electrolytic copper/gunmetal	200
AT-075F	65 x 30 x 31	185	25 - 185	Cu/Al or Al/Al	Electrolytic copper/gunmetal	275
AT-076F	75 x 34 x 34	240	95 - 240	Cu/Al or Al/Al	Electrolytic copper/gunmetal	400
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

AT-100F

APPLICATION
AT-100F



> DOWN-CONDUCTORS AND ACCESSORIES

> CLAMPS

96 > METAL SHEET CLAMP

Equipotential bond between round, cable or tape and metal sheet.

Reference	Dimensions (mm)	Conductor range			Tape (mm)	Material	Weight (g)
		Ø (mm)	mm²	Sheet (mm)			
AT-043K	56 x 45 x 60	7 - 10	35 - 70	-	5 - 18	Galvanized steel	210
AT-044K	56 x 45 x 50	6 - 10	25 - 70	-	1 - 12	Galvanized steel	190
AT-045K	27 x 47 x 50	7 - 10	35 - 70	-	1 - 12	Galvanized steel	155
AT-046K	35 x 40 x 40	6 - 10	25 - 70	-	1 - 8	Galvanized steel	110
AT-047K	30 x 40 x 50	6 - 10	25 - 70	-	1 - 8	Copper	100
AT-048K	30 x 40 x 50	6 - 10	25 - 70	-	1 - 8	Stainless steel	100
AT-049K	35 x 35 x 40	7 - 10	35 - 70	-	1 - 5	Zinc alloy	110
AT-052K	65 x 50 x 20	6 - 10	25 - 70	-	1 - 5	Galvanized steel	135
AT-053K	65 x 50 x 20	6 - 10	25 - 70	-	1 - 5	Copper	148
AT-054K	50 x 60 x 30	8 - 10	50 - 70	-	1 - 8	Galvanized steel	120
AT-055K	50 x 40 x 60	7 - 10	35 - 70	-	1 - 5	Galvanized steel	160
AT-056K	55 x 30 x 40	-	-	30 x 2 - 30 x 3.5	1 - 5	Copper	280
AT-057K	55 x 30 x 40	-	-	30 x 2 - 30 x 3.5	1 - 5	Galvanized steel	270

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

APPLICATION AT-047K (Cu - copper)
AT-048K (SS - stainless steel)

APPLICATION AT-046K

APPLICATION AT-045K

APPLICATION AT-049K

APPLICATION AT-043K

APPLICATION AT-056K (Cu - copper)
AT-057K (GS - galvanized steel)

APPLICATION AT-055K

APPLICATION AT-054K

APPLICATION AT-052K (GS - galvanized steel)
AT-053K (Cu - copper)

> DOWN-CONDUCTORS AND ACCESSORIES

> TEST CLAMPS

97 > TAPE TEST CLAMP

Specially used for disconnection and test purposes for tape conductors.

Reference	Model	Dimensions (mm)	Tape range (mm)	Material	Weight (g)
AT-081F	Oblong test clamp	60 x 35 x 30	25 x 3	Gunmetal	290
AT-083F	Oblong test clamp	60 x 35 x 30	25 x 3	Aluminium	120
AT-084F	Plate type test clamp	80 x 80 x 40	25 x 3	Gunmetal	620
AT-085F	Screw-down test clamp	60 x 60 x 60	25 X 3	Gunmetal	720
Complies with IEC 62305, UNE 21186, NF C 17-102, IEC 62305, IEC 62561					

APPLICATION AT-081F (Gu - gunmetal)
AT-082F (Al - aluminium)

APPLICATION AT-084F

APPLICATION AT-085F

98 > UNIVERSAL DISCONNECTING CLAMP FOR TAPE

Linear connection between tapes.

Reference	Dimensions (mm)	Tape range (mm)	Material	Weight (g)
AT-111F	58 x 30 x 20	30 x 2 - 30 x 3.5	Galvanized steel	180
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

AT-111F

> DOWN-CONDUCTORS AND ACCESSORIES

> TEST CLAMPS

99 > UNIVERSAL DISCONNECTING CLAMP FOR CABLE

Linear connection between cables.

Reference	Dimensions (mm)	Conductor range		Rod Ø (mm)	Material	Weight (g)
		Ø (mm)	mm²			
AT-110F	50 x 30 x 20	8 - 10	50 - 70	-	Galvanized steel	180
AT-108F	50 x 30 x 20	8	50	-	Copper/Galvanized steel	180
AT-124F	50 x 30 x 20	8 - 10	50 - 70	-	Stainless steel	200
AT-113J	58 x 30 x 20	8 - 10 (Copper)	50 - 70 (Copper)	16 (Galvanized steel)	Copper/Galvanized steel	150
AT-114J	58 x 30 x 20	8 - 10	50 - 70	16	Galvanized steel	150
AT-115J	58 x 30 x 20	8 - 10	50 - 70	16	Stainless steel	100

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

AT-108F (Cu/GS - copper/galvanized steel)
AT-110F (GS - galvanized steel)
AT-124F (SS - stainless steel)

APPLICATION AT-114J (GS - galvanized steel)
AT-113J (Cu/GS - copper /galvanized steel)
AT-115J (SS - stainless steel)

100 > UNIVERSAL DISCONNECTING CLAMP FOR CABLE AND TAPE

Linear connection between cable and tape.

Reference	Dimensions (mm)	Conductor range			Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)		
AT-107F	58 x 30 x 20	8 - 10 (Copper)	50 - 70 (Copper)	30 x 2 - 30 x 3.5 (Galvanized steel)	Copper/Galvanized steel	180
AT-109F	58 x 30 x 20	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Galvanized steel	180
AT-123F	58 x 30 x 20	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Stainless steel	200

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

AT-109F (GS - galvanized steel)
AT-107F (Cu/GS - copper/galvanized steel)
AT-123F (SS - stainless steel)

> DOWN-CONDUCTORS AND ACCESSORIES

> TEST CLAMPS

101 > CABLE AND TAPE TEST CLAMP

Especially used for disconnection and testing purposes for cable, round or tape conductors.

Reference	Dimensions (mm)	Conductor range			Includes	Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)			
AT-010F	55 x 30 x 75	8	50	30 x 2 - 30 x 3.5	Plug and screw M4 x 38	Naval brass	295
AT-086F	30 x 65 x 45	7	35	25 x 3	-	Gunmetal	400
AT-087F	30 x 65 x 45	8	50	25 x 3	-	Gunmetal	400
AT-088F	30 x 65 x 45	10	70	25 x 3	-	Gunmetal	400
AT-089F	30 x 65 x 45	13	95	25 x 3	-	Gunmetal	390
AT-090F	30 x 65 x 45	15	120	25 x 3	-	Gunmetal	390
AT-091F	30 x 65 x 45	8	50	25 x 3	-	Aluminium	90
AT-095F	55 x 75 x 20	8 - 10	50 - 70	30 x 3.5	Plug and screw M4 x 38	Nickel plated brass	500
Complies with IEC 62305, UNE 21186, NF C 17-102, IEC 62305, IEC 62561							

AT-010F

APPLICATION AT-010F

APPLICATION AT-095F

APPLICATION AT-086F (Gu - gunmetal)
AT-091F (Al - aluminium)

102 > TEST JOINT

Disconnecting sleeve between galvanized steel round and tape conductor.

Reference	Dimensions (mm)	Conductor range			Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)		
AT-106F	136 x 70 x 30	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Galvanized steel	330
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

APPLICATION AT-106F

103 > BIMETAL CONNECTOR

Used for bonding copper, aluminium or galvanized steel conductors, preventing galvanic coupling, particularly where an aluminium or galvanized steel lightning protection system has to be connected to a copper earthing system.

Reference	Dimensions (mm)	Conductor range			Material	Weight (g)
		Ø (mm)	mm²	Tape (mm)		
AT-013F	42 x 42 x 25	4 - 13	16 - 95	-	Aluminium alloy	183
AT-092F	100 x 30 x 30	8	50	-	Copper/Aluminium	250
AT-093F	100 x 30 x 30	8 (Aluminium)	50 (Aluminium)	25 x 3 (Copper)	Copper/Aluminium	225
AT-094F	100 x 30 x 25	-	-	25 x 3	Copper/Aluminium	200
AT-107F	58 x 30 x 20	8 - 10 (Copper)	50 - 70 (Copper)	30 x 2 - 30 x 3.5 (Galvanized steel)	Copper/Galvanized steel	180
AT-108F	50 x 30 x 20	8	50	-	Copper/Galvanized steel	180
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561						

AT-013F

APPLICATION AT-092F

APPLICATION AT-093F

APPLICATION AT-094F

AT-107F

AT-108F

> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

104 > SPARK GAP FOR AERIAL MAST

Aerials are particularly exposed to lightning strikes and their consequences. The lightning protection system must protect the aerial against direct impact, however part of the lightning current could side-strike it and follow an uncontrolled path to earth. Even if it is only part of the lightning current, the damage caused could be very significant.

The AT-060F protector is connected to the aerial mast in order to ensure an equipotential bond between metal elements, thereby preventing dangerous sparks between the lightning protection system and the aerial mast, which could result in fire and damage to the structure.

AT-060F

APPLICATION AT-060F

Reference	**AT-060F**
Dimensions:	50 x 50 x 230 mm
Weight:	900 g
Lightning impulse current (10/350 µs wave):	I_p (10/350) > 100 kA
Nominal discharge current:	I_n(8/20 µs) = 50 kA
Protection level (1.2/50 µs wave):	U_p < 4 kA
Working temperature:	-55 ºC to +85 ºC
Connections:	Mast: Holdfast for Ø30 - 50 mm aerial LPS: Clamp for Ø8-10 mm round conductor or 30 x 2 mm / 25 x 3 mm tape
Material:	Polyurethane resin
Tests certified according to:	EN 50164 (IEC 62561) IEC 61643
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561	

Aplicaciones Tecnológicas, S.A. supplies specific surge protection equipment for the aerial signal cable (ATFREQ series, page 364), which will protect the connected equipment.

INSTALLATION

AT-060F is to be installed connecting the aerial mast to the closest grounded element of the lightning protection system. Its connecting clamp is suitable for a wide range of conductors.

> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

105 > ATLOGGER

ATLOGGER is a recorder of electrical activity in the lightning rod's down-conductor which, in addition to counting the number of strikes, records the amplitude and polarity of the lightning, as well as the date and time the impact occurred.

Installation is very easy as it does not involve interrupting the down-conductor. Simply place it beside the down-conductor and fix it properly onto a flat surface.

The data is downloaded automatically using a USB device that enables data transfer from different ATLOGGER devices to the reading point.

AT-004G

CE Ex Authorised for use in explosive atmospheres

Reference	**AT-004G**
Dimensions:	160 x 80 x 55 mm
Includes:	M4 plug and screw x 49
Material:	Polycarbonate V0
Weight:	0.6 kg
Counter:	0… 999999
Power supply:	2 AA batteries 3.6 V
Temperature:	-25 ºC to +70 ºC
Registry:	Minimum 1 kA (8/20 µs) Maximum 100 kA (10/350 µs)
ATEX marking:	Ex ic nA IIC T3/T4 Gc
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561	

See table 107

APPLICATION AT-004G

DATA DOWNLOAD

Data downloading should coincide, at least, with the revision and periodic maintenance of the system or when the number of strikes on the installation exceeds 30 since the last download, since the internal memory can record up to 40 events.

Software is included for download management by means of transfer device with USB connection.

INSTALLATION

It must be installed so that the down-conductor of air terminal is on the side nearest the electromechanical counter.

When no drill is allowed, the fixing is made by a support plate providing a flat and sturdy surface for fixing the ATLOGGER: AT-005G with 2 bonding clamps for ¾" guard tube for cable or tape; AT-035G with 2 bonding clamps for a 1½" and AT-028G support is to be used to install the ATLOGGER in free-standing masts.

APPLICATION AT-005G

APPLICATION AT-028G

Reference	**AT-005G**	**AT-035G**	**AT-028G**
Dimensions:	250 x 250 mm	285 x 215 mm	175 x 150 mm
Material:	Galvanized steel	Galvanized steel	Galvanized steel
Weight:	2.3 kg	2.4 kg	0.9 kg

> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

106 > LIGHTNING EVENT COUNTER

AT-034G

The AT-034G lightning event counter is a device to be installed on the down-conductor, usually above the guard tube. It automatically counts the strikes received by the lightning protection system. It is very sturdy and totally autonomous, however it is advisable to check it periodically in order to see if there has been a strike and, therefore, whether or not the lightning protection system needs any special maintenance.
This counter is designed to be installed inside self-supporting masts and interrupting the down-conductor is not necessary for its installation.

Reference	**AT-034G**
Dimensions:	150 x 65 x 52 mm
Includes:	Support sheet and 4 M4 x 25 mm screws
Material:	Polycarbonate
Weight:	1 kg
Counter:	0… 999999
Registry:	Minimum 1 kA (8/20 µs)
Temperature:	-25 ºC to +70 ºC
Power supply:	No need, totally autonomous
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561	

See table 107

APPLICATION AT-034G and AT-056G

APPLICATION AT-034G

INSTALLATION

The counter installation is very simple, It merely needs to be fixed to the down-conductor by tightening the four screws included in the support sheet, so that the down-conductor is between both elements.

The lightning counter has been successfully tested in official and independent laboratories. The counter has proved its effective operation and strength by means of these tests, withstanding lightning currents (100 kA, 10/350 µs) without suffering any damage.

> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

107 > GUARD TUBE

Anti-vandal guard for cable or tape down-conductors. In order to avoid the cable breaking due to accidental impacts, it is necessary to install a guard tube, which is at least 2 metres high, wherever the cable is accessible. AT-056G is recommended to prevent touch voltages in public buildings with low resistivity soil.

Reference	Dimensions (mm)	Conductor range			Includes	Material	Weight (kg)
		Ø (mm)	mm²	Tape (mm)			
AT-051G	Ø27 x 2000	8 - 10	50 - 70	-	Bonding clamps	Galvanized steel	3
AT-050G	Ø27 x 3000	8 - 10	50 - 70	-	Bonding clamps	Galvanized steel	5
AT-054G	Ø27 x 2000	8 - 10	50 - 70	-	Bonding clamps	Stainless steel	2.3
AT-053G	Ø27 x 3000	8 - 10	50 - 70	-	Bonding clamps	Stainless steel	3.5
AT-056G	Ø26 x 2500	8 - 10	50 - 70	-	Bonding clamps	3 mm cross-linked polyethylene	0.7
AT-060G	40 x 14 x 2000	-	-	30 x 2 - 30 x 3.5	Bonding clamps	Galvanized steel	1
AT-063G	40 x 14 x 2000	-	-	30 x 2 - 30 x 3.5	Bonding clamps	Stainless steel	1
AT-055G	70 x 15 x 2000	8 - 10	50 - 70	30 x 2 - 30 x 3.5	Plug and screw	Galvanized steel	3
AT-057G	40 x 30 x 1500	7 - 10	35 - 70	-	Straight clamp and KS cable clip	Galvanized steel	2.6

Complies with UNE 21186, NF C 17-102

AT-055G

AT-053G (SS - stainless steel)
AT-051G (GS - galvanized steel)

AT-063G (SS - stainless steel)
AT-060G (GS)

AT-056G

APPLICATIONAT-057G

See table 56
See table 143

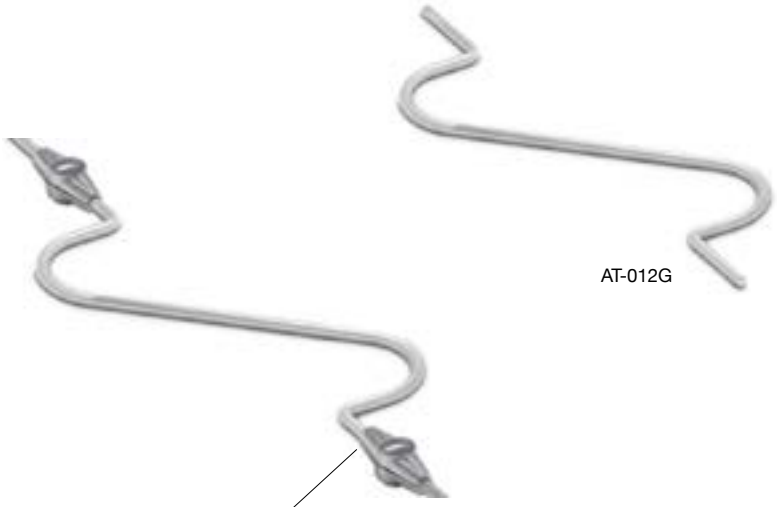
> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

108 > EXPANSION UNIT

For thermal expansion of longer conductors. Suitable to install it each 20 m. If the down-conductors are made of copper, use a bimetal clamp such as AT-128F (table 94).

Reference	Dimensions (mm)	Material	Weight (g)
AT-012G	400 x 100 x 8	Aluminium	80
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			



AT-012G

APPLICATIONAT-012G

109 > FLEXIBLE BRAID BOND

This flexible braid allows an equipotential bond between diverse metal elements such as fences, doors and windows.
Fixed using Ø11 mm holes.

Reference	Dimensions (mm)	Equivalent section (mm^2)	Material	Weight (g)
AT-001F	25 x 3.5 x 200	35	Tin-plated copper	80
AT-032J	25 x 3.5 x 400	35	Copper	150
AT-033J	33 x 4 x 180	50	Aluminium	30
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561				

AT-001F

APPLICATION AT-001F

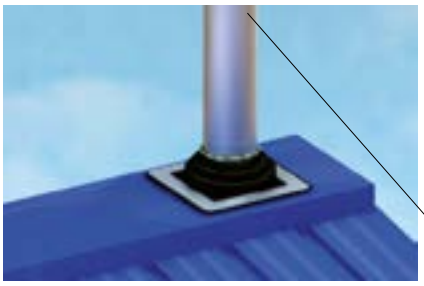
> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

110 > WATERTIGHT CONE

It prevents water penetrating flat roof surfaces. Used with Ø6 to 50 mm air rods and masts.

Reference	Dimensions (mm)	Material	Weight (g)
AT-090B	115 x 115 x 60	Rubber	76



APPLICATIONAT-090B

AT-090B

111 > SEALING WASHER

To be used in conjunction with any screw threaded attachments in order to protect it from water on vertical surfaces.

Reference	Dimensions (mm)	Material	Weight (g)
AT-014G	Ø35 x 5	Rubber	2

APPLICATION AT-014G

AT-014G

112 > ASPHALT STRIP

For fixing conductors to flat roof (secured using heat).

Reference	Dimensions (mm)	Material	Weight (g)
AT-071F	100 x 40 x 3	Asphalt	35
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

APPLICATION AT-071G

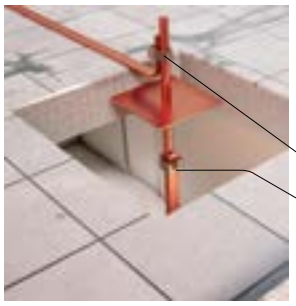
> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

113 > PUDDLE FLANGE

Enables the conductor to pass through the roof.

AT-015G (Cu - copper)
AT-016G (Al - aluminium)



APPLICATION AT-015G

Reference	Dimensions (mm)	Material	Weight (kg)
AT-015G	150 x 150 x 600	Copper	1.7
AT-016G	150 x 150 x 600	Aluminium	0.5
Complies with BS 6651, BS 1432 C101, BS 2897			

114 > HANGING GUY WIRE KIT

For installing guy wire to hold the cable or round conductor over flat traffic-bearing terraces. The cable is joined to the guy wire using AT-046C (See table 43).

Reference	Model	Includes	Weight (kg)
AT-080G	Hanging guy wire kit	15 m of guy wire + 2 AT-042C + 4 AT-043C + 28 AT-046C (see table 43) + AT-081G	1.00
AT-081G	Guy wire plate for Ø1½'' mast + anchorage	-	0.21
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

AT-081G

APPLICATION AT-080G

> DOWN-CONDUCTORS AND ACCESSORIES

> ACCESSORIES

115 > WIRE STRAIGHTENER

For straightening round conductors made of medium-hard materials.

Reference	Model	Dimensions (mm)	Material	Weight (kg)
AT-040G	5 straightening coils with handles	300 x 200 x 150	Galvanized steel	6.20
AT-041G	For bending and straightening round conductors	260 x 50 x 60	Galvanized steel	0.33

AT-040G

AT-041G

116 > ANTI-CORROSION SPRAY

This cold galvanizer spray protects all kind of metals from corrosion. Specially used to protect welding.

Reference	Dimensions (mm)	Weight (g)
AT-023G	60 x 60 x 200	435

AT-023G

117 > BIMETAL SHEET (CUPAL)

To prevent galvanic coupling between conductors and structures of a different kind.

Reference	Model	Dimensions (mm)	Material	Weight (g)
AT-030G	Copper inside/Aluminium outside	Ø8 x 60	Copper/Aluminium	4
AT-031G	Copper outside/Aluminium inside	Ø8 x 60	Aluminium/Copper	3
AT-070F	Strip	40 x 0.5 x 500	Copper/Aluminium	38

AT-070F

AT-030G

AT-031G

> DOWN-CONDUCTORS AND ACCESSORIES

> CONDUCTORS

118 > COPPER-STEEL BIMETAL CONDUCTOR

AT-231D

AT-234D

Copper-steel conductors (Cu 25%) maintain the electrical characteristics of the electrolytic copper, along with the best mechanical properties of steel.

Reference	Model	Dimensions (mm²)	Weight (kg/m)
AT-230D	7 x Ø2.6 mm stranded cable	35	0.30
AT-231D	7 x Ø3.3 mm stranded cable	50	0.47
AT-232D	7 x Ø3.7 mm stranded cable	70	0.60
AT-233D	7 x Ø4.6 mm stranded cable	95	0.95
AT-234D	Ø7 mm round conductor	35	0.34
AT-235D	Ø8 mm round conductor	50	0.43
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

119 > COPPER-CLAD ALUMINIUM BIMETAL CONDUCTOR

AT-236D

AT-241D

Copper-clad aluminium conductors (Cu 15%) maintain the electrical characteristics of copper conductors but with a lower cost. Installation with this material is easier than using copper-steel due to its high malleability.

Reference	Model	Dimensions (mm²)	Weight (kg/m)
AT-236D	7 x Ø2.6 mm stranded cable	35	0.17
AT-237D	7 x Ø3.3 mm stranded cable	50	0.21
AT-238D	7 x Ø3.7 mm stranded cable	70	0.27
AT-239D	7 x Ø4.6 mm stranded cable	95	0.43
AT-241D	Ø7 mm round conductor	35	0.15
AT-242D	Ø8 mm round conductor	50	0.19
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

> DOWN-CONDUCTORS AND ACCESSORIES

> CONDUCTORS

120 > BARE COPPER TAPE

Copper tape recommended as a down-conductor for lightning protection systems.

Reference	Dimensions (mm)	Weight per metre (kg/m)
AT-006D	12.5 x 1.5	0.20
AT-007D	12.5 x 3	0.30
AT-008D	20 x 1.5	0.25
AT-009D	20 x 3	0.32
AT-010D	25 x 1.5	0.35
AT-011D	25 x 3	0.70
AT-012D	25 x 4	0.90
AT-013D	25 x 6	1.35
AT-014D	30 x 2	0.50
AT-015D	30 x 3	0.80
AT-016D	30 x 4	1.10
AT-017D	30 x 5	1.40
AT-018D	38 x 3	1.00
AT-019D	38 x 5	1.70
AT-020D	38 x 6	1.80
AT-021D	40 x 3	1.10
AT-022D	40 x 4	1.40
AT-023D	40 x 5	1.80
AT-024D	40 x 6	2.20
AT-025D	50 x 3	1.40
AT-026D	50 x 4	1.80
AT-027D	50 x 5	2.20
AT-028D	50 x 6	2.75

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

Other dimensions, please contact us

AT-011D

121 > TIN-PLATED COPPER TAPE

Tin-plated copper tape is recommended for use as a down-conductor and earth conductor in lightning protection systems.

Reference	Dimensions (mm)	Weight per metre (kg/m)
AT-000D	12.5 x 1.5	0.2
AT-055D	25 x 3	0.7
AT-052D	30 x 2	0.5
AT-002D	25 x 6	1.3
AT-003D	31 x 3	0.8
AT-004D	38 x 5	1.7
AT-005D	50 x 6	2.7

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

Other dimensions, please contact us

AT-052D

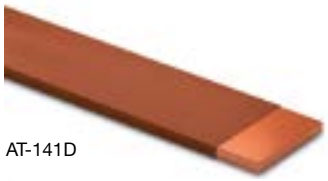
> DOWN-CONDUCTORS AND ACCESSORIES

> CONDUCTORS

122 > PVC COATED COPPER TAPE


AT-139D


AT-030D


AT-141D


AT-140D


AT-143D


AT-142D

Copper tape coated in PVC used to blend the down-conductor into the building.

Reference	Dimensions (mm)	PVC colour	Weight per metre (kg/m)
AT-029D	12.5 x 1.5	Black	0.2
AT-030D	25 x 3	Black	0.7
AT-139D	25 x 3	Grey	0.7
AT-140D	25 x 3	Green	0.7
AT-141D	25 x 3	Brown	0.7
AT-142D	25 x 3	Stone	0.7
AT-143D	25 x 3	White	0.7
AT-031D	25 x 6	Green	1.5
AT-032D	50 x 6	Green	3.0

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

Other dimensions, please contact us

123 > ALUMINIUM TAPE


AT-057D

Aluminium tape is easier to install than copper tape but has lower conductivity. Not suitable for direct contact with the soil.

Reference	Dimensions (mm)	Weight per metre (kg/m)
AT-033D	12.5 x 1.5	0.05
AT-034D	20 x 3	0.18
AT-057D	25 x 3	0.22
AT-056D	30 x 3	0.27
AT-037D	25 x 6	0.41
AT-038D	40 x 6	0.69
AT-039D	50 x 6	0.85

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

Other dimensions, please contact us

124 > PVC COATED ALUMINIUM TAPE


AT-144D


AT-042D


AT-146D


AT-145D

Aluminium tape coated in PVC used to blend the down-conductor into the building. Not suitable for direct contact with the soil.

Reference	Dimensions (mm)	PVC colour	Weight per metre (kg/m)
AT-040D	12.5 x 1.5	Black	0.10
AT-041D	20 x 3	Black	0.25
AT-042D	25 x 3	Black	0.32
AT-144D	25 x 3	Brown	0.32
AT-145D	25 x 3	Grey	0.32
AT-146D	25 x 3	Stone	0.32

Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561

Other dimensions, please contact us

> DOWN-CONDUCTORS AND ACCESSORIES

> CONDUCTORS

125 > GALVANIZED STEEL TAPE

Galvanized steel tape has an acceptable resistance to corrosion in air, concrete and non-chemically aggressive soil.

Reference	Dimensions (mm)	Weight per metre (kg/m)
AT-130D	20 x 2.5	0.4
AT-131D	30 x 3.5	0.8
AT-132D	30 x 4	1.0
AT-133D	40 x 4	1.3
AT-134D	40 x 5	1.6
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561		

Other dimensions, please contact us

AT-131D

126 > STAINLESS STEEL TAPE

Stainless steel tape is strongly recommended in highly corrosive environments.

Reference	Dimensions (mm)	Weight per metre (kg/m)
AT-135D	30 x 3.5	0.8
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561		

Other dimensions, please contact us

AT-135D

127 > FLEXIBLE COPPER BRAID

The copper braid is recommended when there is movement between the equipotentially connected objects.

Reference	Dimensions (mm)	Section (mm²)	Weight per metre (kg/m)
AT-043D	12 x 1	11	0.05
AT-044D	15 x 1.5	15	0.10
AT-045D	10 x 2 (tin-plated)	10	0.10
AT-046D	16 x 2 (tin-plated)	16	0.13
AT-047D	19 x 2.5	19	0.16
AT-048D	25 x 3.5	40	0.35
AT-049D	25 x 3.5 (tin-plated)	40	0.35
AT-053D	30 x 3.5 (tin-plated)	50	0.40
AT-051D	32 x 6	80	0.65
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

Other dimensions, please contact us

AT-053D

128 > HARD DRAWN COPPER BAR

Hard drawn copper bars are suitable for rigid connections.

Reference	Dimensions (mm)	Weight per metre (kg/m)
AT-080D	25 x 3 x 5 m	0.65
AT-081D	25 x 6 x 5 m	1.35
AT-082D	40 x 6 x 5 m	2.00
AT-083D	50 x 6 x 5 m	2.70
AT-084D	50 x 6 x 5 m (tin-plated)	2.70
AT-085D	50 x 10 x 5 m	4.50
AT-086D	75 x 6 x 5 m	4.00
AT-087D	100 x 6 x 5 m	5.40
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561		

AT-083D

> DOWN-CONDUCTORS AND ACCESSORIES

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129 > STRANDED ELECTROLYTIC COPPER CABLE

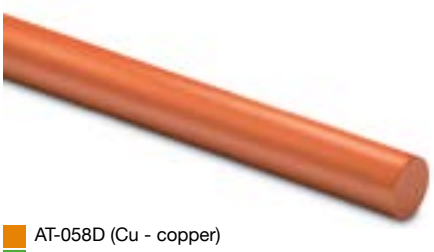
AT-050D

Stranded cable is easier to install than solid round conductor.

Reference	Dimensions (mm^2)	Stranded (mm)	Weight (kg/m)
AT-035D	35	7 x Ø2.5	0.40
AT-050D	50	19 x Ø1.8	0.47
AT-070D	70	19 x Ø2.2	0.65
AT-095D	95	19 x Ø2.5	0.85
AT-120D	120	37 x Ø2	1.10
AT-150D	150	37 x Ø2.3	1.34
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

Other dimensions, please contact us

130 > BARE SOLID ROUND CONDUCTOR



- AT-058D (Cu - copper)
- AT-138D (Al - aluminium)
- AT-060D (GS - galvanized steel)
- AT-128D (SS - stainless steel)

Solid round conductors are more suitable for corrosive environments.

Reference	Dimensions (mm^2)	Material	Weight (kg/m)
AT-058D	8	Copper	0.45
AT-110D	8	Semi-hard aluminium alloy (AlMgSi)	0.14
AT-138D	8	Soft aluminium alloy (AlMgSi)	0.14
AT-125D	10	Aluminium	0.15
AT-060D	8	Galvanized steel	0.40
AT-061D	10	Galvanized steel	0.62
AT-128D	8	Stainless steel	0.40
AT-129D	10	Stainless steel	0.60
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

Other dimensions, please contact us

> DOWN-CONDUCTORS AND ACCESSORIES

> CONDUCTORS

131 > PVC INSULATED STRANDED COPPER CABLE

AT-114D

Stranded copper cable coated in PVC is used as an internal earth conductor.

Reference	Dimensions (mm^2)	Stranded (mm)	Weight (kg/m)
AT-113D	35	7 x Ø2.5	0.40
AT-114D	50	19 x Ø1.8	0.55
AT-115D	70	19 x Ø2.2	0.75
AT-116D	95	19 x Ø2.5	1.00
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

Other dimensions, please contact us

132 > PVC COATED SOLID ROUND CONDUCTOR

- AT-123D (Cu - copper)
- AT-124D (Al - aluminium)
- AT-126D (GS - galvanized steel)

Solid round conductors coated in PVC are used to blend the down-conductor into the building.

Reference	Dimensions (mm)	Material	Weight (kg/m)
AT-123D	8	Copper	0.50
AT-124D	8	Aluminium	0.15
AT-126D	8	Galvanized steel	0.45
AT-127D	10	Galvanized steel	0.65
Complies with UNE 21186, NF C 17-102, IEC 62305, IEC 62561			

Other dimensions, please contact us