

## **LIGHTNING AND SURGE PROTECTION FOR EQUIPMENT IN BUSINESS PREMISES AND DOMESTIC USE**



# LIGHTNING AND SURGE PROTECTION FOR EQUIPMENT IN BUSINES PREMISES AND DOMESTIC USE

Houses contain now numerous electric and electronic equipments with more complex and important functions. Big electrical appliances such as washing machines or fridges are robust and can withstand transient overvoltages with no apparent harm at short term. Still their components may suffer degradation or detriment. This damage is more evident in electronic equipment such as computers or TV sets which peripherals are becoming more costly and sophisticated. Besides, these accessories are often interconnected thus increasing the probabilities of being affected by overvoltages. Houses with automated services using domotics are even more exposed, since a computer failure can lead to severe harms due to the controlled appliances.

Business premises have similar problems. Telecommunications, electronic systems and security devices are essential and they are often interconnected. In many of these premises there are internal computer networks connecting even equipment placed inside different buildings. Data lines and their connected equipment are designed for very low voltages and therefore surges

caused by lightning can produce them serious damages.

Even if the building is provided with a proper external lightning protection system, surges can enter the equipment through power supply, telephone or TV lines or through the earthing system. These lines come from outside the structure so lightning electromagnetic pulses may affect them, both a direct strike intercepted by the external lightning protection system or a distant discharge.

Aplicaciones Tecnológicas, S.A. has designed the basic set for an efficient surge protection of most usual domestic electric and electronic equipment, easy to install and with an optimized cost. They are a barrier for lightning current at each of the lines connecting the external environment with your house or premise and your equipment.

"Even if the building is provided with a proper external lightning protection system, surges can enter the equipment..."



## PROTECTION OF POWER SUPPLY LINES

### KIT ATCONTROL/B PT-T

Combined Single-Phase Protector against permanent and transient overvoltages. Includes shunt release and Miniature Circuit Breaker.



### TEMPORARY OVERVOLTAGES

ATCONTROL/B protectors actuate when detecting a temporary overvoltage, triggering the connected shunt release (S1, S2). This one disconnects then the associated Main Circuit Breaker (MCB), thus protecting down-stream installed equipment.

The temporary overvoltage warning system is formed by 2 light indicators: green (correct power supply) and red (overvoltage). It is provided with a test button for checking if the installation has been properly made.

### TRANSIENT OVERVOLTAGES

ATCONTROL/B protectors also actuate when detecting a transient overvoltage, driving the current to the earth and reducing the voltage to a level that does not damage the connected equipment. Tested and certified in official and independent laboratories.

Thermodynamic device for disconnection from the network in case of degradation.

Transient overvoltages warning system that lights up if the protector withstood an overvoltage over its capacity. Then the protector should be replaced.

Reference	AT-8711	AT-8712	AT-8713	AT-8714	AT-8715
Nominal Current	25A	32A	40A	50A	63A

## PROTECTION OF TELEPHONE LINES

### AT9101 ATFONO

Modular protector for telephone lines



Efficient protection for analogical and ADSL telephone lines, containing coordinated protection for one pair of lines.

- Protection for telephone lines and also for the digital and analogical equipment connected to these lines (fax, modem, etc).
- Discharge takes place in an internal encapsulated element, with no external flash.
- Both common and differential modes of protection.
- Low residual voltage.
- Very fast response.
- Connection with screw pressure, which provides better lightning current withstanding capacity than usual telephone connectors.

ATFONO SPD has been tested in official, independent laboratories, obtaining their characteristics according to relevant standards.



## PROTECTION OF COAXIAL LINES



### ATFREQ SERIES

Wide range of protectors for different frequencies and connectors.

Due to their placement, aerials are one of the most exposed elements to lightning discharges. Even when an external lightning protection system exists, the discharge secondary effects can affect the TV or RF signals.

ATFREQ Surge Protective Devices protect the signal cable deriving the induced and conducted surges to the ground, thus avoiding damages to the communication and TV equipment and to the connected devices (DVD, video, decoders, home cinema sets, etc.)

- Optimum coupling with imperceptible losses.
- Small attenuation in the signal even for very high frequencies.
- Short response time.
- Discharge takes place in an internal encapsulated element, without external flashes.
- Small size.
- Specific connectors for each application.

	ATFREQ	Connector	Frequency Range	Attenuation	Impedance	Exchanged Power	DC Sparkover Voltage
AT2104	TV	TV	0-1 GHz	<1,2dB	75R	50W	90V
AT2103	SAT	F (sat.)	0-2 GHz	<0,5dB	75R	50W	90V

## PROTECTION OF DATA LINES

Only necessary in  
case of computer  
networks

### AT2107 ATLAN UNI RJ-RJ

Single protector for computer networks

ATLAN SPDs are specially designed to avoid failures in data transfer between equipments inside the same network. They protect the input of the electronic circuits of the network cards against harms due to transient currents.

ATLAN UNI RJ-RJ is a protector with RJ45 input and output connectors, with a withstanding current up to 2kA for every pair of lines.

It is designed to protect individually every single equipment connected to the computers network.



## EXTERNAL PROTECTION

The installation of an external lightning protection system avoids direct impacts on the structure and the pass of the lightning current through the equipment.

Aplicaciones Tecnológicas, S.A. recommends the installation of an Early Streamer Emission air terminal DAT CONTROLLER<sup>®</sup> PLUS characterized by its response to lightning approach, going ahead any other element within its protection area and thus driving lightning current to earth through a safe path.

**DAT CONTROLLER<sup>®</sup> PLUS radii of protection (in meters) for h= 5m**

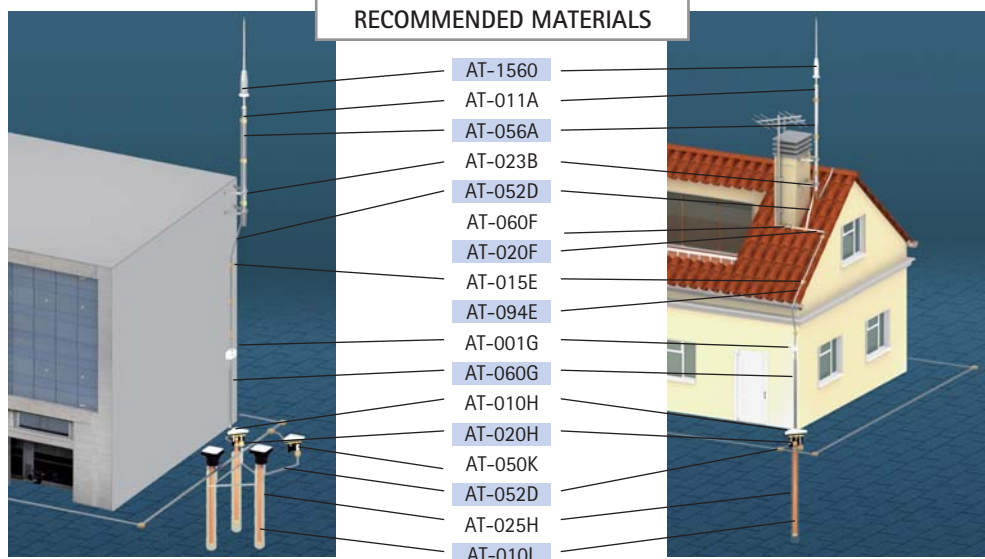
	DC+15	DC+30	DC+45	DC+60
Level 1 according to UNE-EN62305 Level I according to UNE21186	32	48	63	79
Level 2 according to UNE-EN62305	37	55	71	86
Level 3 according to UNE-EN62305 Level II according to UNE21186	45	63	81	97
Level 4 according to UNE-EN62305 Level III according to UNE21186	51	72	90	107

h: height of the air terminal over the surface to be protected

The installation of a Lightning Protection System with ESE Air Terminals must follow the standard UNE 21186 or equivalents. Basic installation rules are the following:

- The lightning air terminal should be installed at least two meters higher than any other element within its protected area.
- Each air terminal should be connected to the earthing with a down-conductor, placed preferably outside the structure. In case of buildings or structures with a height over 28 meters, or if the horizontal trajectory of the down-conductor is larger than the vertical, then two down-conductors are needed.
- The down-conductor should be installed providing that its routing is as straight as possible along the shortest path without sharp bends or upward sections
- 3 fixings per meter should be installed along the down-conductor.
- The down-conductor should have a minimal section of 50mm<sup>2</sup>. Due to the impulse nature of lightning current, flat conductors (tapes) are preferable to round conductors since the surface is larger for the same section.
- Down-conductors should be protected from mechanical hits by installing ground guard tubes up to a height of 2m above ground level.
- Earthing resistance value measured using conventional equipment should be lower than 10Ω.
- All earthing should be bonded to each other and to the general earthing ring.

### RECOMMENDED MATERIALS



INTERCEPTION SYSTEMS	REFERENCE
ESE lightning air terminal	AT-1560
Adapting piece	AT-011A
Mast	AT-056A
Anchorage	AT-023B

DOWN-CONDUCTORS	REFERENCE
Clip	AT-015E
Tile support	AT-094E
Downpipe support	AT-073E
Clamp	AT-020F
Spark gap for aerial mast	AT-060F
Lightning event counter	AT-001G
Guard tube	AT-060G
Conductor	AT-052D

EARTHING	REFERENCE
Earth electrode	AT-025H
Ground enhancing product	AT-010L
Earth pit	AT-010H
Bonding bar	AT-020H
Spark gap for earthing	AT-050K
Conductor	AT-052D



[www.at3w.com](http://www.at3w.com)

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