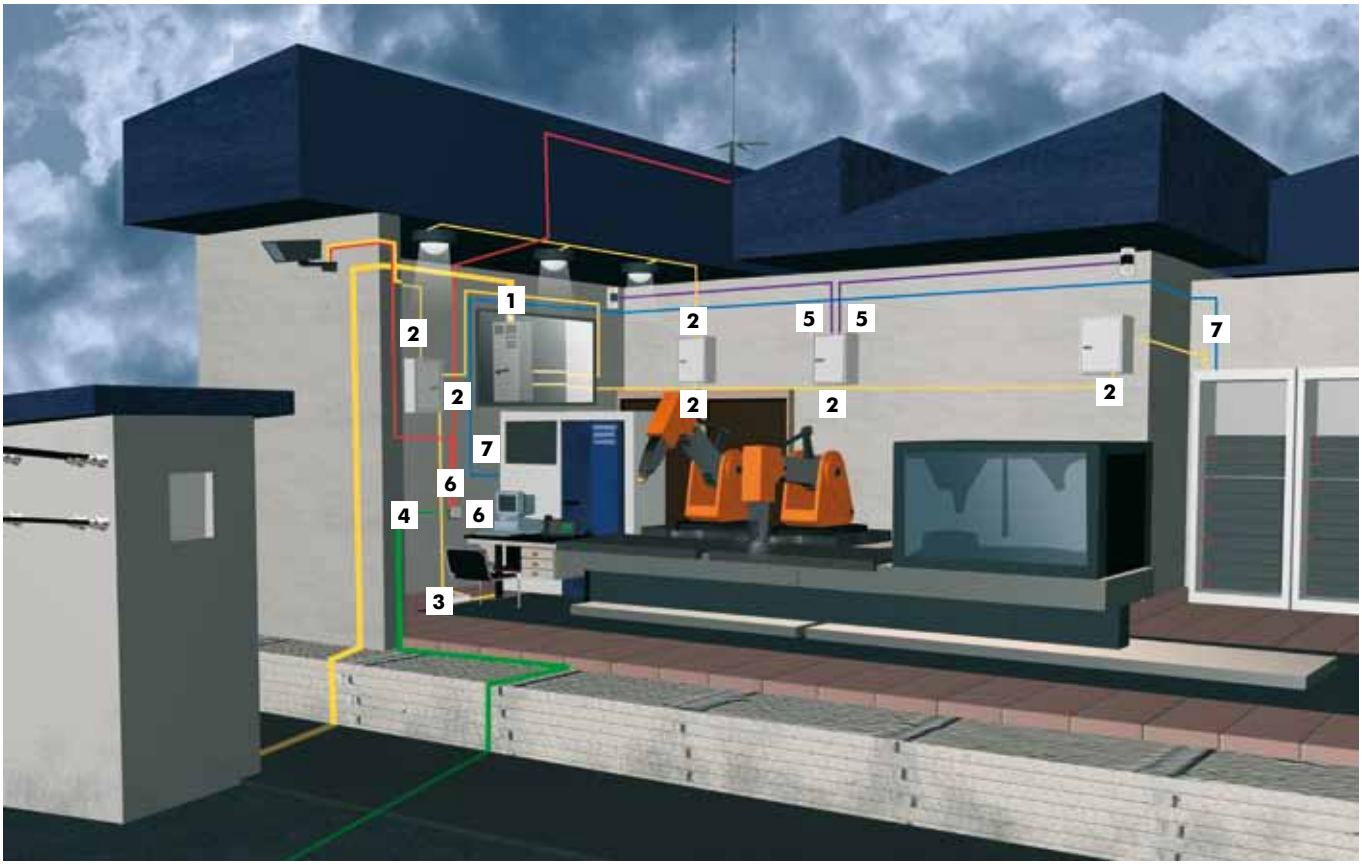
INTERNAL PROTECTION SYSTEMS

APLICACIONES TECNOLÓGICAS

PRACTICAL EXAMPLES OF OVERVOLTAGE PROTECTION

INDUSTRIAL INSTALLATIONS



OBJECT: Industrial premises, Industrial complexes, Hospitals, Public buildings

power line
telephone line
data line
computer line
coaxial line

Power supply		
TYPE 1 (direct lightning effects)	1	ATSHOCK (page 112)

Are there more than 10 m separation of cable?

YES	NO
	Coordination inductor
	ATLINK (page 166)

2	TYPE 2 (attenuated lightning effects) ATSHIELD (page 120) | ATSUB (page 148) | ATCOVER (page 160)
3	TYPE 3 (attenuated electromagnetics effects) ATSOCKET (page 207) | ATPLUG (page 209)

Data and Telecommunication		
TYPE 2 & 3 Coordinated	4	ATFONO (page 214)
	5	ATLINE (page 222)
	6	ATFREQ (page 237)
	7	ATLAN (page 225)

DOMESTIC INSTALLATIONS

OBJECT: House

power line
telephone line
coaxial line

Power supply		
TYPE 1 & 2 (direct or attenuated lightning effects)	1	ATSHIELD (page 120) ATSUB (page 148) ATCOVER (page 160)
TYPE 3 (attenuated electromagnetic effects)	2	ATSOCKET (page 207) ATPLUG (page 209)

Data and Telecommunication		
TYPE 2 & 3 Coordinated	3	ATFONO (page 214)
	4	ATFREQ (page 237)
	5	ATLAN (page 225)

OFFICE ENVIROMENT

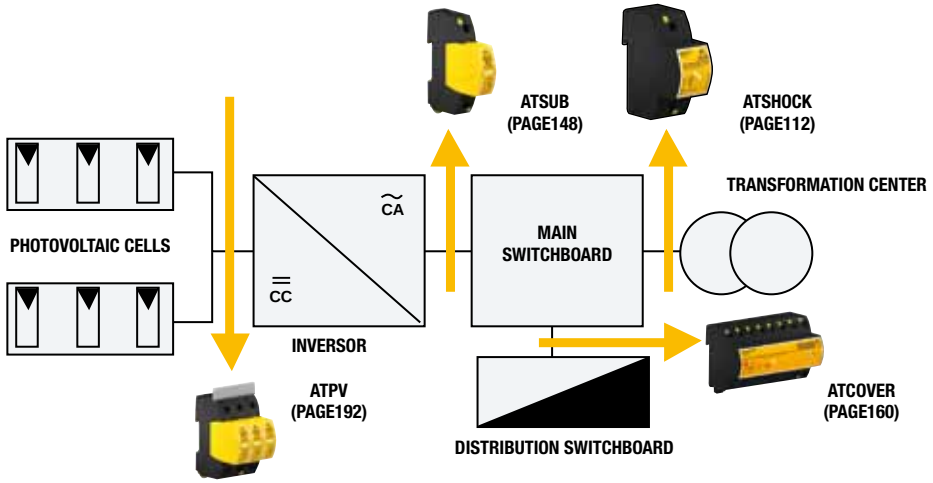
OBJECT: Office environment

power line
telephone line
computer line
coaxial line

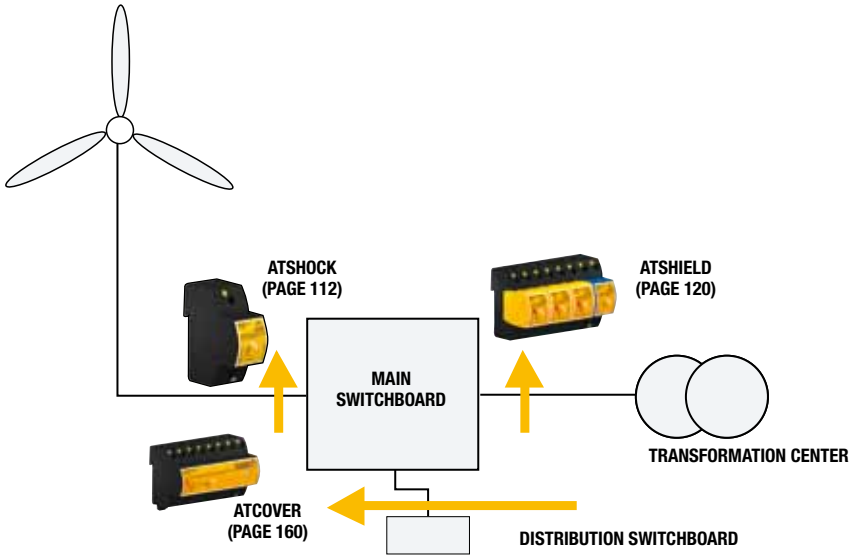
Power supply		
TYPE 1 (direct lightning effects)	1	ATSHOCK (page 112)
Are there more than 10 m separation of cable?		
YES		**NO**
		Coordination inductor
		ATLINK (page 166)
2	TYPE 2 (attenuated lightning effects) ATSHIELD (page 120) | ATSUB (page 148) | ATCOVER (page 160)	
3	TYPE 3 (attenuated electromagnetics effects) ATSOCKET (page 207) | ATPLUG (page 209) | ATFILTER (page 205)	

Data and Telecommunication		
TYPE 2 & 3 Coordinated	4	ATFONO (page 214)
	5	ATFREQ (page 237)
	6	ATLAN (page 225)

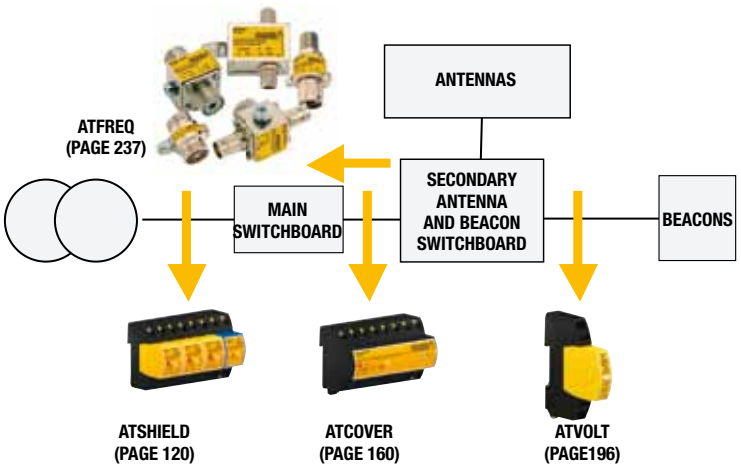
PHOTOVOLTAIC INSTALLATIONS



WIND TURBINES



TELECOMMUNICATION TOWERS



ADVANTAGES ON DESIGN

SURGE PROTECTION SYSTEMS FOR POWER LINES

Double terminal to facilitate the connection.

Round corners near the terminal to help inserting the cables.

The module has its own references for exchanges.

It is not allowed the exchange between line and neutral modules trough a polarizer.

Enhance of the DIN rail fixing, since it allows installing and uninstalling with one hand only, because of it has a piece of coupling which stays auto-fix on the equipment, allowing the user to disengage them one by one.

Easy connection for Modular Wiring System.

The bases and the modules have polarity to not allow the mounting of the modules upside down.

The product label is on the base on the front and the back.

It incorporates an inclination and a rounded shape that allows its installation in a DIN rail in small spaces.

Their capacity has been duplicated allowing the connection of two pairs of lines.

All these type of protectors have modules to allow their easy substitution. When substituting the module the line is not interrupted.

It incorporates an inclination and a rounded shape to allow its installation in a DIN rail in small spaces.

The earthing is implemented trough a metallic sheet opposite to the fixing from the DIN rail.

ADVANTAGES ON DESIGN

SURGE PROTECTION SYSTEMS FOR DC POWER SUPPLY, TELEPHONE AND DATA LINES

The sizes of these protectors have been reduced to more than a half.

The bases and the modules have polarity to not allow the mounting of the modules upside down.

The module has its own reference for exchanges.

It has a radiofrequency receiver in order to perform the maintenance just with one emission equipment. When the protector is functioning the LED has a green flicker. If the module is damaged the LED does not flick.

The product label is on the base at the back.

PROTECTION OF POWER SUPPLY LINES

Power supply lines enter the structures from outdoor and distribute the current to all the electrical and electronical equipment, ranging from robust motors to most sensitive devices. Mains power supplies often suffer small oscillations, harmonics, sudden increases and even severer disturbances such as short circuits or derivations to ground. Devices for solving these kind of problems and safeguarding the equipment are available in the market (circuit breakers, residual current circuit breakers, fuses, etc), however the response time of these devices is too slow and do not react properly against transient overvoltages.

Surge Protective Devices for power supply lines complement the above mentioned devices, since they only protect against transient overvoltages caused by lightning discharges and power switching. In general, they are to be installed in parallel with the line in order to avoid unnecessary losses and consumptions although some elements, such as decoupling inductors must be installed in series. When a SPD has any element in series with the line then its maximum continuous working current must be clearly specified, indicating the maximum current that can flow through it continuously.

Within power supply surge suppression, Aplicaciones Tecnológicas, S.A. supplies several SPD series depending on the intensity of the expected discharge current in the area to be protected and on the sensitivity of the protected equipment.

When different protection stages are used, it is essential that SPDs are well coordinated when a surge occurs. Surge protection series for power supply lines are the following:

ATSHOCK SERIES

Can withstand direct lightning strikes up to 50kA waveshape, 10/350µs. Protector type 1.

ATSHIELD SERIES

They combine very robust elements with clamping components in order to achieve a large absorption capacity of the direct lightning strike together with a low residual voltage. Protector type 1 + 2.

ATSUB SERIES

Can withstand tens of kiloamperes and reduce the overvoltage significantly to levels that are not harmful to the equipment. Protectors type 2 and 3.

PROTECTION OF POWER SUPPLY LINES

ATCOVER SERIES

Robust and very complete, protects all phases quickly and efficiently, in both common and differential modes, leaving a low residual voltage. Protectors type 1 + 2 + 3.

ATLINK SERIES

For the coordination of protection stages.

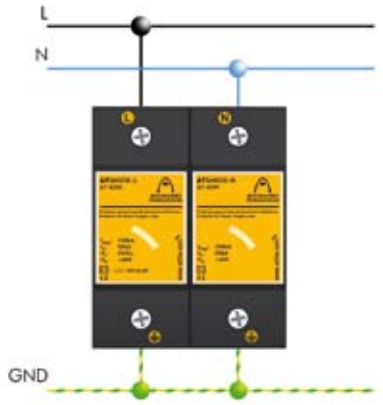
ATCOMPACT SERIES

Cabinet for multipolar protection made up of single-polar elements.

ATBARRIER SERIES

Coordinated protection cabinet.

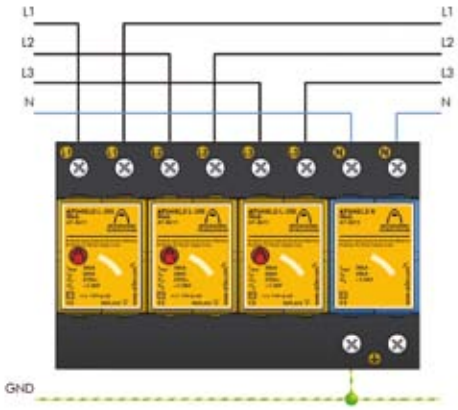
ATSHOCK Series



Can withstand direct lightning currents up to 50kA, waveshape 10/350µs, leaving a residual voltage of a few kilovolts. They consist of encapsulated spark gaps, thus no plasma arcs are produced outside the casing. They are installed in points likely to directly receive large lightning discharges.

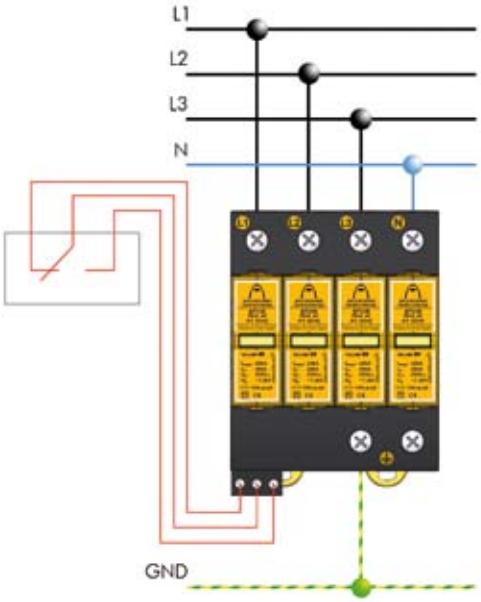
They should always be used in coordination with ATSUB and/or ATCOVER SPD series as in many cases their residual voltage all alone is still harmful to the connected equipment. They are single-pole protectors (protect only one phase or the neutral depending on the earth) and can be installed in all types of supply systems. There are different versions available depending on the electrical supply.

ATSHIELD Series



Protectors which bring together both, the quick response time of the zinc-oxide varistors together with the shunt capacity of spark gaps. They are designed and tested as a Type 1 protector, meaning that they can withstand tens of kiloamperes of direct atmospheric discharge intensity (wave 10/350µs), leaving a non harmful amount of residual voltage to the connected equipment, equivalent to Type 2 protectors. They have pluggable modules to facilitate its substitution. They have a bright warning light to detect any possible overvoltage. They are to be installed in lines with or without neutral, and they are available in three-phase or single-phase versions, for different voltage tension.

ATSUB Series



Made up of zinc oxide varistors and have a visual alarm to alert whenever the SPD is out of service. They are single-pole SPDs (they protect one phase or neutral) and can be installed in all types of supply systems.

ATSUB protectors can withstand tens of kiloamperes for an 8/20µs (waveform simulating lightning secondary effects) and they reduce surges to harmless levels for the protected equipment.

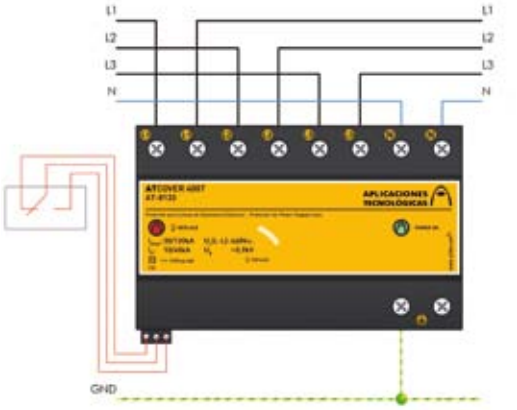
These characteristics, together with its small size and low cost, make them the most suitable SPDs for installation in secondary boards and close to the equipment. They can be combined with other ATSUB, ATSHOCK (which would receive the main lightning current) and with ATCOVER protectors, which leave a lower residual voltage. In any case, there must be 10 meters of cable or ATLINK devices for a proper coordination between protection stages.

There are also versions with pluggable modules (ATSUB-P) for an easy substitution in case of repeated overvoltages and versions with remote warning (ATSUB-R, ATSUB-PR).

ATCOVER Series

ATCOVER SPD series combine in a single device, protection in common mode (to earth) and differential mode (between lines). They can withstand currents up to 30kA 8/20µs, leaving very low residual voltages, completely harmless to the connected equipment. They have an internal combination of varistors and gas discharge tubes that avoid current leakage while the line is working under normal conditions.

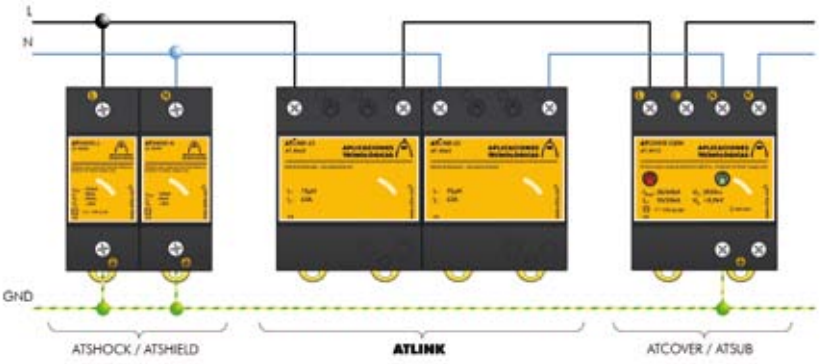
They are provided with a visual alarm and floating changeover contact output for remote control thus allowing the monitoring of its proper working. They should be installed at supply distribution systems with neutral. Three phase and single-phase versions are available for different network voltages. They can be installed in combination with other SPDs from ATSHOCK and ATSUB Series, always linked by at least 10 meters of cable or decoupling inductor as ATLINK.



ATLINK Series

ATLINK decoupling inductors are installed in series with the line thus it shall always be checked that the current flowing through it is not higher than the installed ATLINK rated current.

It allows coordinating the protection of different types of devices.



ATCOMPACT Series

ATBARRIER Series

These series consist in cabinets with different combinations of the preceding SPDs, already wired and ready for installation. It is practical for installations where the room available in distribution boards is not big enough.

AT83 Series

SINGLE-POLE PROTECTION FOR POWER SUPPLY LINES

ATSHOCK

AT-8350 ATSHOCK L: *line-ground protection. Uc = 255V*
AT-8351 ATSHOCK L-130: *line-ground protection. Uc = 145V*
AT-8352 ATSHOCK L-400: *line-ground protection. Uc = 440V*
AT-8399 ATSHOCK N: *neutral-ground protection*

The highest protection against transient overvoltages for power supply lines at the point they **enter the building**. ATSHOCK series provide protection even against **direct lightning strikes**. Tested and certified with lightning impulse current, **50kA**, 10/350µs wave.

Coarse protection according to scaled protection recommended in Low Voltage Regulation (REBT).
Type 1 Protector according to EN 61643-11 and GUIDE-BT-23 of REBT. For equipment of **categories III and IV** according to REBT.

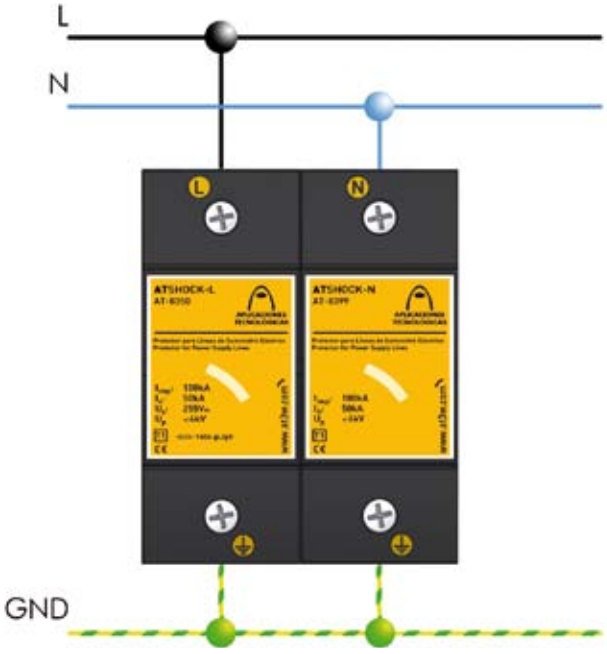
- ☐ Encapsulated, non-exhausting creepage discharge spark gap.
- ☐ Suitable for TT, TN-C and TN-S systems.
- ☐ Coordinable with other SPDs such as ATSUB and ATCOVER.
- ☐ Optimum protection level.
- ☐ Quick response
- ☐ Robust connectors, suitable for all type of connection.
- ☐ Single-pole protection. Withstands direct lightning strike current (10/350µs wave), over 50kA.
- ☐ Fork connection with fork terminal included for 16mm² cable.
- ☐ High energy diverting capability.
- ☐ Limits supply following currents.

AT83 Series SPDs have been tested in official, independent laboratories, obtaining their characteristics according to relevant standards (shown in the table).

⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATSHOCK Surge Protective Devices are to be installed in parallel with the Low Voltage supply line, connected to Phase and Ground (ATSHOCK L) or to Neutral and Ground (ATSHOCK N). One ATSHOCK L is needed for each line.
The **power should be disconnected** during the installation of the SPD.
ATSHOCK can be installed in combination with ATSUB or ATCOVER. In either case, both must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a correct coordination between them.
Their installation is recommended in main switchgears, where the line enters the building and where direct lightning currents could penetrate.



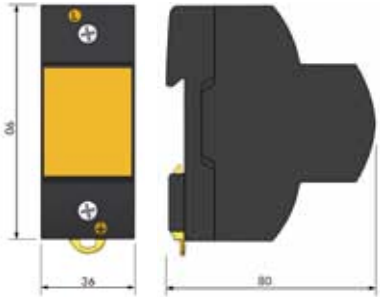
AT83 Series

Technical Datasheet

Reference		ATSHOCK L AT-8350	ATSHOCK L-130 AT-8351	ATSHOCK L-400 AT-8352	ATSHOCK N AT-8399
Protection categories according to REBT:		III and IV			
Type of tests according to EN 61643-11:		Type 1			
Maximum continuous operating voltage:	U_c	$255V_{AC}$	$145V_{AC}$	$440V_{AC}$	-
Nominal frequency:		50 - 60Hz			
Impulse current (10/350µs wave):	I_{imp}	50kA			100kA
Specific energy:	W/R	625kJ/Ω			2,5MJ/Ω
Nominal discharge current (8/20µs wave):	I_n	50kA			
Protection level for 1,2/50µs wave:	U_p	< 4 kV			
Follow current extinguishing capability:	I_f	50 kA_{eff}			100 A_{eff}
Response time:	t_r	< 100ns			-
Backup fuse(1):		160A gL/gG			
Maximum short-circuit current:		50kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)			
Fixing:		DIN Rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/G:		Section 16mm²			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT83 Series

SINGLE-POLE PROTECTION FOR POWER SUPPLY LINES

ATSHOCK 30

AT-8310 ATSHOCK L30: *line-ground protection. Uc = 255V*
AT-8311 ATSHOCK L30-130: *line-ground protection. Uc = 145V*
AT-8312 ATSHOCK L30-400: *line-ground protection. Uc = 440V*
AT-8398 ATSHOCK N60: *neutral-ground protection.*

The highest protection against transient overvoltages for power supply lines at the point they **enter the building**. ATSHOCK series provide protection even against **direct lightning strikes**. Tested and certified with lightning impulse current, **30kA**, 10/350µs wave.

Coarse protection according to scaled protection recommended in Low Voltage Regulation (REBT).
Type 1 Protector according to EN 61643-11 and GUIDE-BT-23 of REBT. For equipment of **categories III and IV** according to REBT.

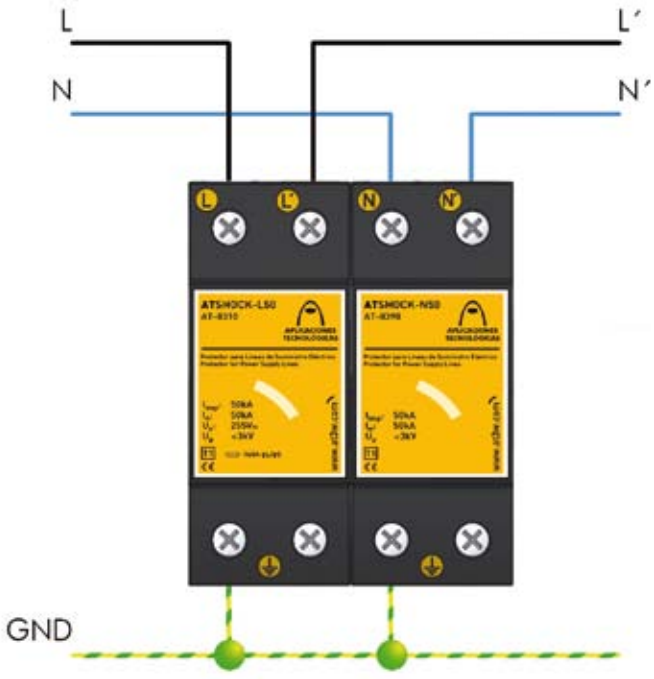
- ☐ Encapsulated, non-exhausting creepage discharge spark gap.
- ☐ Double connection in order to facilitate wiring.
- ☐ Possibility of connection to a M5 fork terminal.
- ☐ Suitable for TT, TN-C and TN-S systems.
- ☐ Coordinable with other SPDs such as ATSUB and ATCOVER.
- ☐ Quick response.
- ☐ Robust connectors, suitable for all type of connection.
- ☐ Single-pole protection. Withstands direct lightning strike current (10/350µs wave) of 30kA.
- ☐ High energy diverting capability.
- ☐ Limits supply following currents.

AT83 Series SPDs have been tested in official, independent laboratories, obtaining their characteristics according to relevant standards (shown in the table).

⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATSHOCK 30 Surge Protective Devices are to be installed in parallel with the Low Voltage supply line, connected to Phase and Ground (ATSHOCK L30) or to Neutral and Ground (ATSHOCK N60). One ATSHOCK L30 is needed for each line.
The **power should be disconnected** during the installation of the SPD.
It can be installed in combination with ATSUB or ATCOVER. In either case, both must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a correct coordination between them.
Their installation is recommended in main switchgears, where the line enters the building and where direct lightning currents could penetrate.



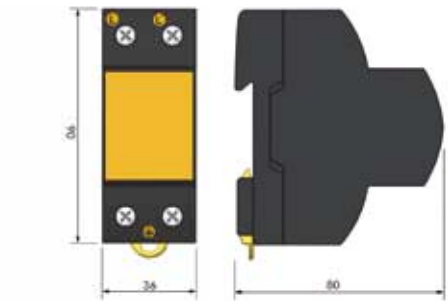
AT83 Series

Technical Datasheet

Reference		ATSHOCK L30 AT-8310	ATSHOCK L30-130 AT-8311	ATSHOCK L30-400 AT-8312	ATSHOCK N60 AT-8398
Protection categories according to REBT:		III and IV			
Type of tests according to EN 61643-11:		Type 1			
Maximum continuous operating voltage:	U_c	255V_{AC}	145V_{AC}	440V_{AC}	-
Nominal frequency:		50 - 60Hz			
Impulse current (10/350µs wave):	I_{imp}	30kA			60kA
Specific energy:	W/R	224kJ/Ω			900kJ/Ω
Nominal discharge current (8/20µs wave):	I_n	40kA			
Protection level for 1,2/50µs wave:	U_p	< 3 kV			
Follow current extinguishing capability:	I_f	50 kA_{eff}			100 A_{eff}
Response time:	tr	< 100ns			-
Backup fuse(1):		160A gL/gG			
Maximum short-circuit current:		50kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)			
Fixing:		DIN Rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE21186, UNE-EN 62305					

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

Dimensions



AT86 Series

COMBINED TECHNOLOGY AGAINST DIRECT LIGHTNING STRIKES

ATSHIELD T

AT-8603 ATSHIELD 400T:
protection of both line and neutral to ground for 400V_{ac} three phase lines

AT-8604 ATSHIELD 230T:
protection of both line and neutral to ground for 230V_{ac} three phase lines

Efficient and compact protection against transient overvoltages for **TT and TNS** power supplies systems, using an internal combination of spark gaps electronically activated.

This element is internally connected in such a way that no element in series with the line is needed for the correct coordination of the protection.
This protector combines the best qualities of the actual overvoltages protection technologies: the **passing residual voltage of the varistors together with the capacity of lightning current absorption of the spark gaps.**
Tested and certified as **Type 1 and 2** according to regulations EN 61643-11 and the GUIDE-BT-23 of REBT. Suitable for **Categories I, II, III and IV** equipment according to REBT.

- Coordinable with other SPDs such as ATSUB and ATCOVER series.
- Double connection in order to facilitate wiring.
- Short response time.
- Don't produce deflagration.
- Multi-pole protection.
- Their activation causes no interruption in power supply.
- Compact protection.
- Thermodynamic control device and light alarm for each phase.
- Pluggable modules for its easier substitution.

AT86 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).

Installation

ATSHIELD T Surge Protective Devices must be installed in parallel with the Low Voltage three phase power supply line provided with a neutral.
The **power should be disconnected** during the installation of the SPD.
They can be installed as single protection or in combination with other protectors that leave less residual tension voltage, in which case is necessary that they are separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in main switchboards, where the line enters the building or where big overvoltages can take place.
Their installation is recommended in places where direct lightning strikes can occur after the main board and when lines are connected to very sensitive equipment that cannot withstand big overvoltages.

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT86 Series

Technical Datasheet

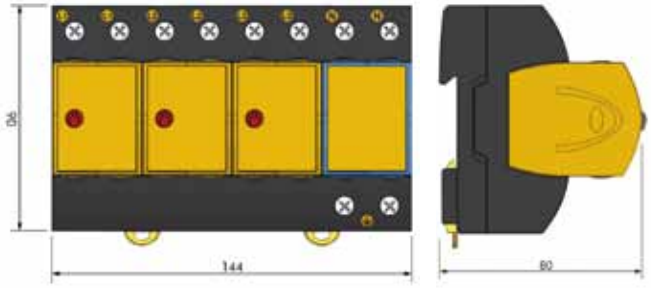
Reference		ATSHIELD 400T AT-8603	ATSHIELD 230T AT-8604
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 1 + 2	
Nominal Voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-N, L-GND)	$230V_{AC}$ (L-L) $130V_{AC}$ (L-N, L-GND)
Maximum continuous operating voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-N, L-GND)	$255V_{AC}$ (L-L) $145V_{AC}$ (L-N, L-GND)
Nominal frequency:		50 - 60Hz	
Impulse current (10/350µs wave):	I_{imp}	30kA	
Specific energy:	W/R	224kJ/Ω	
Nominal discharge current (8/20µs wave):	I_n	40kA	
Maximum discharge current (8/20µs wave):	I_{max}	65kA	
Protection level for 1,2/50µs wave:	U_p	< 1500V	
Follow current extinguishing capability:	I_f	50 kA_{eff}	
Response time:	t_r	< 100ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		4	
Dimensions:		144 x 90 x 80mm (8 mod. DIN43880)	
Fixing:		DIN Rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		> 10^{14}Ω	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE21186, UNE-EN 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8611 ATSHIELD L Mod.: I_{imp} 30kA. U_n 230V
- ☐ AT-8612 ATSHIELD L-130 Mod.: I_{imp} 30kA. Un 130V
- ☐ AT-8613 ATSHIELD N Mod.: I_{imp} 30kA

Dimensions



AT86 Series

COMBINED TECHNOLOGY AGAINST DIRECT LIGHTNING STRIKES

ATSHIELD M

AT-8607 ATSHIELD 230M:
protection of both line and neutral to ground for 230V_{ac} single phase lines

AT-8608 ATSHIELD 130M:
protection of both line and neutral to ground for 130V_{ac} single phase lines

Efficient and compact protection against transient overvoltages for power supplies systems, using an internal combination of spark gaps electronically activated.

This element is internally connected in such a way that no element in series with the line is needed for the correct coordination of the protection.
This protector combines the best qualities of the actual overvoltages protection technologies: the **passing residual voltage of the varistors together with the capacity of lightning current absorption of the spark gaps**.
Tested and certified as **Type 1 and 2** according to regulations EN 61643-11 and the GUIDE-BT-23 of REBT. Suitable for **Categories I, II, III and IV** equipment according to REBT.

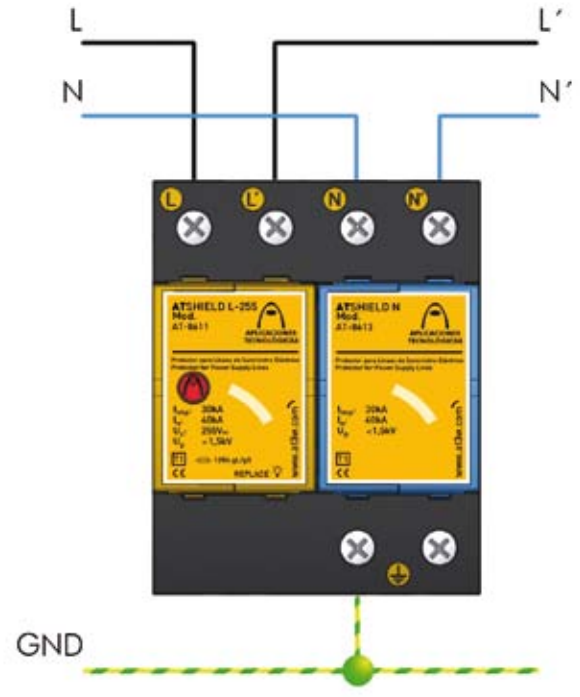
- ☐ Coordinable with other SPDs such as ATSUB and ATCOVER series.
- ☐ Double connection in order to facilitate wiring.
- ☐ Short response time.
- ☐ Don't produce deflagration.
- ☐ Bipolar protection.
- ☐ Their activation causes no interruption in power supply.
- ☐ Compact protection.
- ☐ Thermodynamic control device and light alarm for each phase.
- ☐ Pluggable modules for its easier substitution

AT86 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATSHIELD M Surge Protective Devices must be installed in parallel with the Low Voltage single-phase power supply line provided with a neutral.
The **power should be disconnected** during the installation of the SPD.
They can be installed as single protection or in combination with other protectors that leave less residual tension voltage, in which case is necessary that they are separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in main switchboards, where the line enters the building or where big overvoltages can take place.
Their installation is recommended in places where direct lightning strikes can occur after the main board and when lines are connected to very sensitive equipment that cannot withstand big overvoltages.



AT86 Series

Technical Datasheet

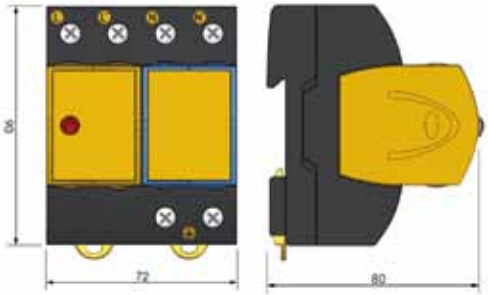
Reference		ATSHIELD 230M AT-8607	ATSHIELD 130M AT-8608
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 1 + 2	
Nominal Voltage:	U_n	$230V_{AC}$	$130V_{AC}$
Maximum continuous operating voltage:	U_c	$255V_{AC}$	$145V_{AC}$
Nominal frequency:		50 - 60Hz	
Impulse current (10/350µs wave):	I_{imp}	30kA	
Specific energy:	W/R	224kJ/Ω	
Nominal discharge current (8/20µs wave):	I_n	40kA	
Maximum discharge current (8/20µs wave):	I_{max}	65kA	
Protection level:	U_p	< 1500V	
Follow current extinguishing capability:	I_f	50 kA_{eff}	
Response time:	t_r	< 100ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		2	
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)	
Fixing:		DIN Rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		> 10^{14}Ω	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Complies with requirements of: UNE-EN 61643-11			
Relevant standards: UL 1449			
Relevant standards: UNE21186, UNE-EN 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8611 ATSHIELD L Mod.: I_{imp} 30kA. U_n 230V
- ☐ AT-8612 ATSHIELD L-130 Mod.: I_{imp} 30kA. U_n 130V
- ☐ AT-8613 ATSHIELD N Mod.: I_{imp} 30kA

Dimensions



AT86 Series

SINGLE-POLE PROTECTOR OF COMBINED TECHNOLOGY AGAINST DIRECT LIGHTNING STRIKES

ATSHIELD

AT-8601 ATSHIELD L: *protection line-earth*
AT-8602 ATSHIELD N: *protection neutron-ground*

Efficient and modular protection against transient overvoltages, using an internal combination of spark gaps electronically activated.

The placement of **3 ATSHIELD L** allows the protection of **TNC and IT** three-phases lines power supplies.
This element is internally connected in such a way that no element in series with the line is needed for the correct coordination of the protection.
This protector combines the best qualities of the actual overvoltages protection technologies: the **passing residual voltage of the varistors together with the capacity of lightning current absorption of the spark gaps**.
Tested and certified as **Type 1 and 2** according to regulations EN 61643-11 and the GUIDE-BT-23 of REBT. Suitable for **Categories I, II, III and IV** equipment according to REBT.

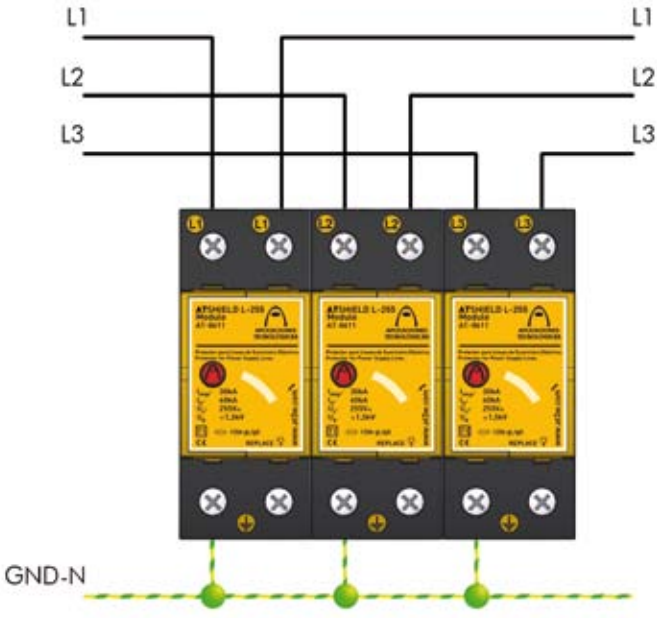
- ☐ Coordinable with other SPDs such as ATSUB and ATCOVER series.
- ☐ Short response time.
- ☐ Double connection in order to facilitate wiring.
- ☐ Don't produce deflagration.
- ☐ Single-pole protection.
- ☐ Their activation causes no interruption in power supply.
- ☐ Compact protection.
- ☐ Thermodynamic control device and light alarm for each phase.

AT86 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATSHIELD Surge Protective Devices must be installed in parallel with the Low Voltage three phase power supply line provided with a neutral.
The **power should be disconnected** during the installation of the SPD.
They can be installed as single protection or in combination with other protectors that leave less residual tension voltage, in which case is necessary that they are separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in main switchboards, where the line enters the building or where big overvoltages can take place.
Their installation is recommended in places where direct lightning strikes can occur after the main board and when lines are connected to very sensitive equipment that cannot withstand big overvoltages.



AT86 Series

Technical Datasheet

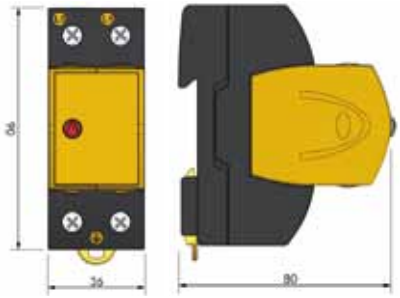
Reference		ATSHIELD L AT-8601	ATSHIELD N AT-8602
Protection categories according to REBT:		I, II, III, IV	
Type of tests according EN 61643-11:		Type 1 + 2	
Nominal Voltage:	U_n	$230V_{AC}$	-
Maximum continuous operating voltage:	U_c	$255V_{AC}$	-
Nominal frequency:		50 - 60Hz	
Impulse current (10/350µs wave):	I_{imp}	30kA	
Specific energy:	W/R	224kJ/Ω	
Nominal discharge current (8/20µs wave):	I_n	40kA	
Maximum discharge current (8/20µs wave):	I_{max}	65kA	
Protection level:	U_p	<1500V	
Follow current extinguishing capability:	I_f	$50\ kA_{eff}$	$100\ A_{eff}$
Response time:	t_r	< 100ns	
Backup fuse(1):		125A gL/gG	-
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)	
Fixing		DIN Rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		$> 10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8611 ATSHIELD L Mod.: I_{imp} 30kA. U_n 230V
- ☐ AT-8612 ATSHIELD L-130 Mod.: I_{imp} 30kA. U_n 130V
- ☐ AT-8613 ATSHIELD N Mod.: I_{imp} 30kA

Dimensions



AT82 Series

SINGLE-POLE PROTECTOR FOR POWER SUPPLY LINES

ATSUB 140

AT-8214 ATSUB 140-230:
Line protection. Max current of 140kA at Un=230V$_{ac}$

AT-8215 ATSUB 140-130:
Line protection. Max current of 140kA at Un=130V$_{ac}$

AT-8218 ATSUB 140-N:
Neutral protection. Max current of 40kA

Efficient protection against transient overvoltages, using Metal Oxide Varistors, for Power Supply lines with or without neutral. **Medium** protection according to scaled protection recommended in Low Voltage Regulation (REBT ITC23).

ATSUB 140 – 230
Max. discharge current in kA | **Voltage line-ground**

Tested and Certified as Type **1 and 2** protectors according to EN 61643-11 and GUIA-BT-23 from REBT. Suitable for equipment of **categories I, II, III and IV** according to ITC-BT-23 form REBT.

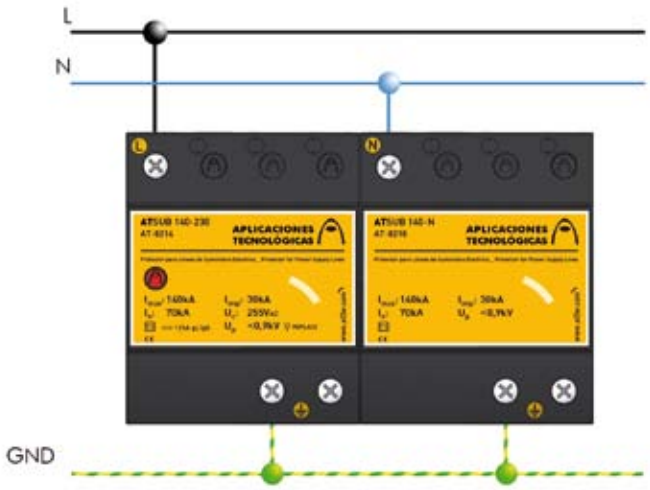
- Containing Zinc Oxide Varistors, able to withstand very high currents.
- Short response time.
- Don't produce deflagration.
- Single-pole protection.
- Do not cause at any moment any interruption in the supply lines.
- Thermodynamic control device and light alarm.

AT82 Series SPDs have been tested in official, independent laboratories, obtaining their characteristics according to relevant standards (related in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet the 230V and 130V versions of nominal voltage are included as common examples.

⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATSUB Surge Protective Devices are to be installed in parallel with the Low Voltage supply line, connected to the line (or neutral) to be protected and ground.
The **power should be disconnected** during the installation of the SPD.
Their installation is recommended in places where important overvoltages can occur after the main switchboard and when these lines are not connected to very sensitive equipment.



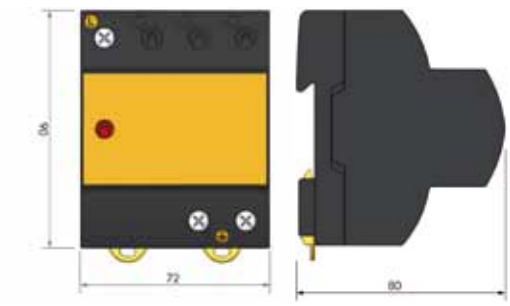
AT82 Series

Technical Datasheet

Reference		ATSUB 140-230 AT-8214	ATSUB 140-130 AT-8215	ATSUB 140-N AT-8218
Protection categories according to REBT:			I, II, III, IV	
Type of tests according to EN 61643-11:			Type 1 + 2	
Nominal Voltage:	U_n	$230V_{AC}$	$130V_{AC}$	-
Maximum continuous operating voltage:	U_c	$255V_{AC}$	$145V_{AC}$	-
Nominal frequency:			50 - 60Hz	
Impulse current (10/350µs wave):	I_{imp}		30kA	
Nominal discharge current (8/20µs wave):	I_n		40kA	
Maximmum current (8/20µs wave):	I_{max}		140kA	
Protection level for 1,2/50µs wave:	U_p	900V	500V	900V
Response time:	t_r		< 25ns	
Backup fuse(1):			125A gL/gG	
Maximum short-circuit current:			25kA (for maximum fuse)	
Working temperature:	ϑ		-40°C to +70°C	
SPD location:			Indoor	
Type of connection:			Parallel (one port)	
Dimensions:			72 x 90 x 80mm (4 mod. DIN43880)	
Fixing:			DIN Rail	
Enclosure material:			Polyamide	
Enclosure protection:			IP20	
Insulation resistance:			$> 10^{14}\Omega$	
Autoextinguish enclosure:			V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:			Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT82 Series

COMPACT PROTECTION FOR TT THREE-PHASE POWER SUPPLY LINES

ATSUB-4P TT

AT-8282 ATSUB-4P 15 TT: *max discharge current of 15kA. 230V*
AT-8285 ATSUB-4P 40 TT: *max discharge current of 40kA. 230V*
AT-8287 ATSUB-4P 65 TT: *max discharge current of 65kA. 230V*
AT-8283 ATSUB-4P 15-120 TT: *max discharge current of 15kA. 120V*
AT-8286 ATSUB-4P 40-120 TT: *max discharge current of 40kA. 120V*
AT-8289 ATSUB-4P 65-120 TT: *max discharge current of 65kA. 120V*
AT-8281 ATSUB-4P 15-400 TT: *max discharge current of 15kA. 400V*
AT-8284 ATSUB-4P 40-400 TT: *max discharge current of 40kA. 400V*

ATSUB 4P - 40 – 400 TT

Max discharge current in kA | **Line-ground voltage**

Efficient protection against transient overvoltages for electrical supply lines with neutral **type TT**, using a metal oxide varistors and gas discharge tubes. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (REBT ITC23).

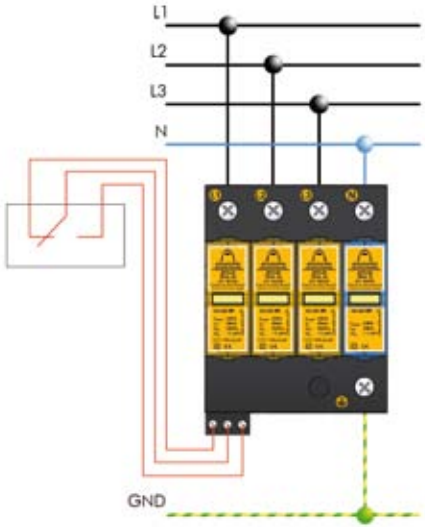
It's provided with removable cartridges that allows its replacement in case of fault thus without changing the base.
Tested and certified as **Type 1 , 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23.

- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- Short response time.
- Don't produce deflagration.
- Compact protection with removable cartridges that allows its replacement in case of breakage.
- Their activation causes no interruption in power supply.
- Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT82 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (Line-to-Line voltage of 690V and Line-to-Ground voltage of 400V) and **equipments using voltages common in the American continent** (230V L-L and 120V L-G)

Installation

They are installed **in parallel** to the Low Voltage line, with connections to the line to be protected to either the neutral and/or ground.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that cannot withstand big overvoltages.



⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT82 Series

Technical Datasheet

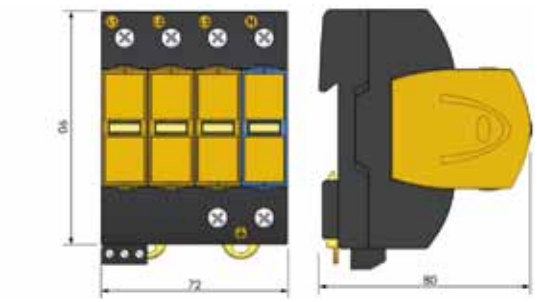
Reference		ATSUB-4P 15 TT AT-8282	ATSUB-4P 40 TT AT-8285	ATSUB-4P 65 TT AT-8287
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n	$400V_{AC}$ (L-L) / $230V_{AC}$ (L-N, L-GND)		
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) / $255V_{AC}$ (L-N, L-GND)		
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		25kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Number of poles:		4		
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Voltage-free contact for the remote control				
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE21186, UNE-EN 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8248 ATSUB Mod. 40: I_{max} 40kA
- ☐ AT-8228 ATSUB Mod. 15: I_{max} 15kA
- ☐ AT-8268 ATSUB Mod. 65: I_{max} 65kA
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

Dimensions



AT82 Series

Technical Datasheet

Reference		ATSUB-4P 15-120 TT AT-8283	ATSUB-4P 40-120 TT AT-8286	ATSUB-4P 65-120 TT AT-8289
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n	$230V_{AC}$ (L-L) / $120V_{AC}$ (L-N, L-GND)		
Maximum working voltage:	U_c	$255V_{AC}$ (L-L) / $140V_{AC}$ (L-N, L-GND)		
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		25kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Number of poles:		4		
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Voltage-free contact for the remote control				
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8296 ATSUB Mod. 40-120: I_{max} 40kA / U_n 120V
- ☐ AT-8297 ATSUB Mod. 15-120: I_{max} 15kA / U_n 120V
- ☐ AT-8298 ATSUB Mod. 65-120: I_{max} 65kA / U_n 120V
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

AT82 Series

Technical Datasheet

Reference		ATSUB-4P 15-400 TT AT-8281	ATSUB-4P 40-400 TT AT-8284
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2
Nominal voltage:	U_n	690V_{AC} (L-L) / 400V_{AC} (L-N, L-GND)	
Maximum working voltage:	U_c	800V_{AC} (L-L) / 460V_{AC} (L-N, L-GND)	
Nominal frequency:		50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V
Protection level (1,2/50µs):	U_p	1800V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V
Combined wave tension:	$U_{o.c.}$	6kV	-
Response time:	t_r	< 25ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		4	
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)	
Fixing:		DIN rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		> $10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control			
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²	
Contact output:		Commutated	
Working voltage:		250V_{AC} (Maximum working voltage of the alarm supply)	
Maximum current:		2A (Maximum current of the alarm supply)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8249 ATSUB Mod. 40-400: I_{max} 40kA / Un 400V
- ☐ AT-8229 ATSUB Mod. 15-400: I_{max} 15kA / Un 400V
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

AT82 Series

COMPACT PROTECTION FOR TT SINGLE PHASE POWER SUPPLY LINES

ATSUB-2P TT

AT-8232 ATSUB-2P 15 TT: *max discharge current of 15kA. 230V*
AT-8235 ATSUB-2P 40 TT: *max discharge current of 40kA. 230V*
AT-8238 ATSUB-2P 65 TT: *max discharge current of 65kA. 230V*
AT-8234 ATSUB-2P 15-120 TT: *max discharge current of 15kA. 120V*
AT-8237 ATSUB-2P 40-120 TT: *max discharge current of 40kA. 120V*
AT-8280 ATSUB-2P 65-120 TT: *max discharge current of 65kA. 120V*
AT-8233 ATSUB-2P 15-400 TT: *max discharge current of 15kA. 400V*
AT-8236 ATSUB-2P 40-400 TT: *max discharge current of 40kA. 400V*

ATSUB 2P - 40 – 400 TT

Max discharge current in kA | **Line-ground voltage**

Efficient protection against transient overvoltages for electrical supply lines with neutral **type TT**, using a metal oxide varistors and gas discharge tubes. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (RBT ITC23).

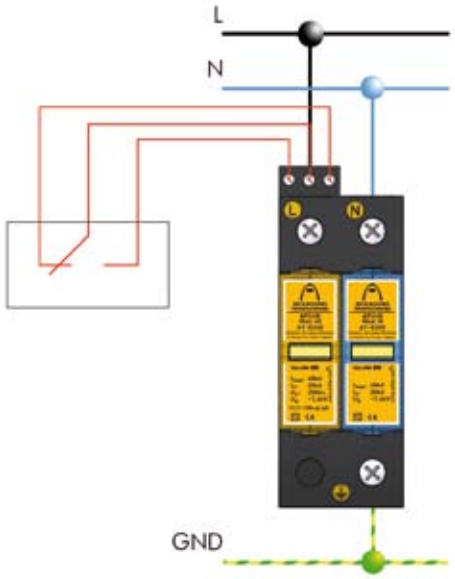
It's provided with removable cartridges that allows its replacement in case of fault thus without changing the base.
Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23.

- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- Short response time.
- Don't produce deflagration.
- Compact protection with removable cartridges that allows its replacement in case of breakage.
- Their activation causes no interruption in power supply.
- Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT82P Series SPDs have been tested in **official and independent laboratories,** obtaining their characteristics according to relevant standards (shown in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (Line-to-Line voltage of 690V and Line-to-Ground voltage of 400V) and **equipments using voltages common in the American continent** (230V L-L and 120V L-G).

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected to neutral and/or ground.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve **a correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that can not withstand big overvoltages.



⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT82 Series

Technical Datasheet

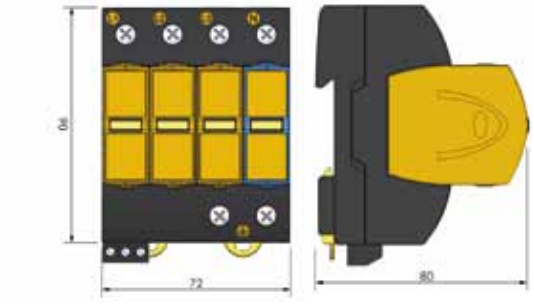
Reference		ATSUB-2P 15 TT AT-8232	ATSUB-2P 40 TT AT-8235	ATSUB-2P 65 TT AT-8238
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n		$230V_{AC}$	
Maximum working voltage:	U_c		$255V_{AC}$	
Nominal frequency:			50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r		< 25ns	
Backup fuse(1):			125A gL/gG	
Maximum short-circuit current:			25kA (for maximum fuse)	
Working temperature:	ϑ		-40°C to +70°C	
SPD location:			Indoor	
Type of connection:			Parallel (one port)	
Number of poles:			2	
Dimensions:			36 x 90 x 80mm (2 mod. DIN43880)	
Fixing:			DIN rail	
Enclosure material:			Polyamide	
Enclosure protection:			IP20	
Insulation resistance:			> $10^{14}\Omega$	
Autoextinguish enclosure:			V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:			Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control				
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8248 ATSUB Mod. 40: I_{max} 40kA
- ☐ AT-8228 ATSUB Mod. 15: I_{max} 15kA
- ☐ AT-8268 ATSUB Mod. 65: I_{max} 65kA
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

Dimensions



AT82 Series

Technical Datasheet

Reference		ATSUB-2P 15-120 TT AT-8234	ATSUB-2P 40-120 TT AT-8237	ATSUB-2P 65-120 TT AT-8280
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n	$120V_{AC}$		
Maximum working voltage:	U_c	$140V_{AC}$		
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		25kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Number of poles:		2		
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Voltage-free contact for the remote control				
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8296 ATSUB Mod. 40-120: I_{max} 40kA / Un 120V
- ☐ AT-8297 ATSUB Mod. 15-120: I_{max} 15kA / Un 120V
- ☐ AT-8298 ATSUB Mod. 65-120: I_{max} 65kA / Un 120V
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

AT82 Series

Technical Datasheet

Reference		ATSUB-2P 15-400 TT AT-8233	ATSUB-2P 40-400 TT AT-8236
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2
Nominal voltage:	U_n	$400V_{AC}$	
Maximum working voltage:	U_c	$460V_{AC}$	
Nominal frequency:		50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V
Protection level (1,2/50µs):	U_p	1800V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V
Combined wave tension:	$U_{o.c.}$	6kV	-
Response time:	t_r	< 25ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		2	
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)	
Fixing:		DIN rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		$> 10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control			
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²	
Contact output:		Commutated	
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)	
Maximum current:		2A (Maximum current of the alarm supply)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8249 ATSUB Mod. 40-400: I_{max} 40kA / Un 400V
- ☐ AT-8229 ATSUB Mod. 15-400: I_{max} 15kA / Un 400V
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

AT80 Series

COMPACT PROTECTION FOR TNS THREE-PHASE POWER SUPPLY LINES

ATSUB-4P TNS

AT-8000 ATSUB-4P 15 TNS: *max discharge current of 15kA. 230V*
AT-8001 ATSUB-4P 40 TNS: *max discharge current of 40kA. 230V*
AT-8002 ATSUB-4P 65 TNS: *max discharge current of 65kA. 230V*
AT-8003 ATSUB-4P 15-120 TNS: *max discharge current of 15kA. 120V*
AT-8004 ATSUB-4P 40-120 TNS: *max discharge current of 40kA.120V*
AT-8005 ATSUB-4P 65-120 TNS: *max discharge current of 65kA. 120V*
AT-8006 ATSUB-4P 15-400 TNS: *max discharge current of 15kA. 400V*
AT-8007 ATSUB-4P 40-400 TNS: *max discharge current of 40kA. 400V*

ATSUB 4P - 40 – 400 TNS

Max discharge current in kA | **Line-ground voltage**

Efficient protection against transient overvoltages for electrical supply lines with neutral **type TNS** using a metal oxide varistors. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (REBT ITC23).

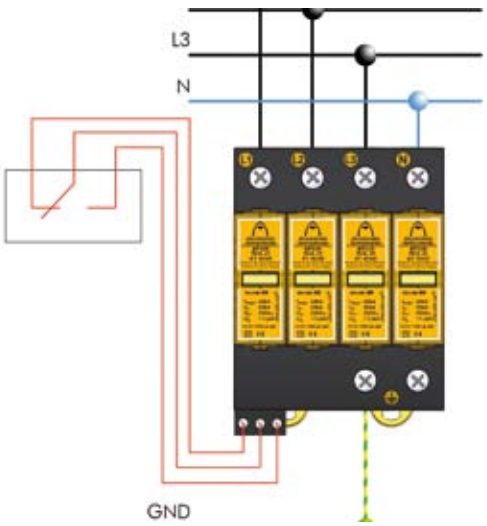
It's provided with removable cartridges that allows its replacement in case of fault thus without changing the base.
Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11, and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- ☐ Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- ☐ Short response time.
- ☐ Don't produce deflagration.
- ☐ Compact protection with removable cartridges that allows its replacement in case of breakage.
- ☐ Their activation causes no interruption in power supply.
- ☐ Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT80 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table)
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (Line-to-Line voltage of 690V and Line-to-Ground voltage of 400V) and **equipments using voltages common in the American continent** (230V L-L and 120V L-G)

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected to neutral and/or ground. The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that can not withstand big overvoltages.



⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT80 Series

Technical Datasheet

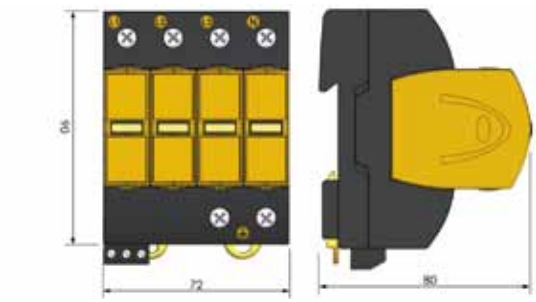
Reference		ATSUB-4P 15 TNS AT-8000	ATSUB-4P 40 TNS AT-8001	ATSUB-4P 65 TNS AT-8002
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n	$400V_{AC}$ (L-L) / $230V_{AC}$ (L-GND)		
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) / $255V_{AC}$ (L-GND)		
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		25kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Number of poles:		4		
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Voltage-free contact for the remote control				
Connection		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8248 ATSUB Mod. 40: I_{max} 40kA
- ☐ AT-8228 ATSUB Mod. 15: I_{max} 15kA
- ☐ AT-8268 ATSUB Mod. 65: I_{max} 65kA

Dimensions



AT80 Series

Technical Datasheet

Reference		ATSUB-4P 15-120 TNS AT-8003	ATSUB-4P 40-120 TNS AT-8004	ATSUB-4P 65-120 TNS AT-8005
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n	230V_{AC} (L-L) / 120V_{AC} (L-GND)		
Maximum working voltage:	U_c	255V_{AC} (L-L) / 140V_{AC} (L-GND)		
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		25kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Number of poles:		4		
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Voltage-free contact for the remote control				
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		250V_{AC} (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8296 ATSUB Mod. 40-120: I_{max} 40kA / Un 120V
- ☐ AT-8297 ATSUB Mod. 15-120: I_{max} 15kA / Un 120V
- ☐ AT-8298 ATSUB Mod. 65-120: I_{max} 65kA / Un 120V

AT80 Series

Technical Datasheet

Reference		ATSUB-4P 15-400 TNS AT-8006	ATSUB-4P 40-400 TNS AT-8007
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2
Nominal voltage:	U_n	690V_{AC} (L-L) / 400V_{AC} (L-GND)	
Maximum working voltage:	U_c	800V_{AC} (L-L) / 460V_{AC} (L-GND)	
Nominal frequency:		50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V
Protection level (1,2/50µs):	U_p	1800V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V
Combined wave tension:	$U_{o.c.}$	6kV	-
Response time:	t_r	< 25ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		4	
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)	
Fixing:		DIN rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		> $10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control			
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²	
Contact output:		Commutated	
Working voltage:		250V_{AC} (Maximum working voltage of the alarm supply)	
Maximum current:		2A (Maximum current of the alarm supply)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8249 ATSUB Mod. 40-400: I_{max} 40kA / Un 400V
- ☐ AT-8229 ATSUB Mod. 15-400: I_{max} 15kA / Un 400V

AT80 Series

COMPACT PROTECTION FOR TN SINGLE PHASE POWER SUPPLY LINES

ATSUB-2P TN

AT-8010 ATSUB-2P 15 TN: *max discharge current of 15kA. 230V*
AT-8009 ATSUB-2P 40 TN: *max discharge current of 40kA. 230V*
AT-8011 ATSUB-2P 65 TN: *max discharge current of 65kA. 230V*
AT-8012 ATSUB-2P 15-120 TN: *max discharge current of 15kA. 120V*
AT-8013 ATSUB-2P 40-120 TN: *max discharge current of 40kA.120V*
AT-8014 ATSUB-2P 65-120 TN: *max discharge current of 65kA. 120V*
AT-8015 ATSUB-2P 15-400 TN: *max discharge current of 15kA. 400V*
AT-8016 ATSUB-2P 40-400 TN: *max discharge current of 40kA. 400V*

ATSUB 2P - 40 – 400 TN

40 = Max discharge current in kA
400 = Line-ground voltage

Efficient protection against transient overvoltages for electrical supply lines with or without neutral, using a metal oxide varistors. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (RBT ITC23).

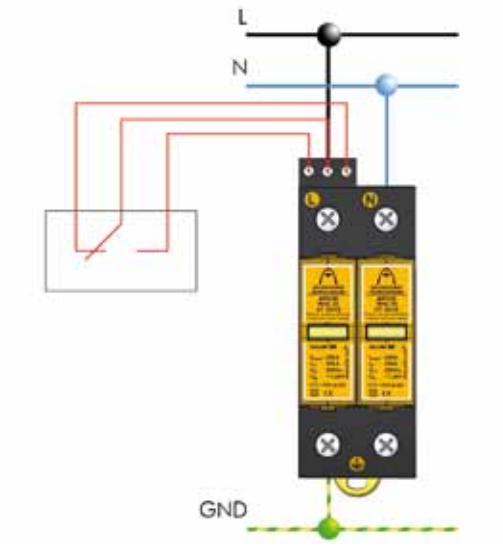
It's provided with removable cartridges that allows its replacement in case of fault thus without changing the base.
Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- ☐ Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- ☐ Short response time.
- ☐ Don't produce deflagration.
- ☐ Compact protection with removable cartridges that allows its replacement in case of breakage.
- ☐ Their activation causes no interruption in power supply.
- ☐ Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT80 Series SPDs have been tested in official and **independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (voltage of 400V) and **equipments using voltages common in the American continent** (voltage 120V).

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected to neutral and/or ground. The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that can not withstand big overvoltages.



⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT80 Series

Technical Datasheet

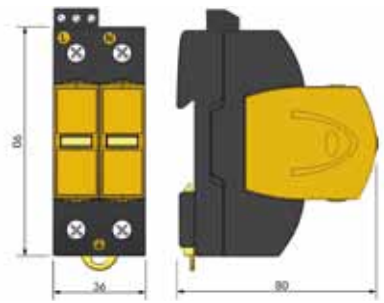
Reference		ATSUB-2P 15 TN AT-8010	ATSUB-2P 40 TN AT-8009	ATSUB-2P 65 TN AT-8011
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n	$230V_{AC}$		
Maximum working voltage:	U_c	$255V_{AC}$		
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		25kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Number of poles:		4		
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Voltage-free contact for the remote control				
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8248 ATSUB Mod. 40: I_{max} 40kA
- ☐ AT-8228 ATSUB Mod. 15: I_{max} 15kA
- ☐ AT-8268 ATSUB Mod. 65: I_{max} 65kA

Dimensions



AT80 Series

Technical Datasheet

Reference		ATSUB-2P 15-120 TN AT-8012	ATSUB-2P 40-120 TN AT-8013	ATSUB-2P 65-120 TN AT-8014
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2
Nominal voltage:	U_n	120V_{AC}		
Maximum working voltage:	U_c	140V_{AC}		
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V
Protection level (1,2/50µs):	U_p	700V	700V	900V
Protection level for 5kA 8/20µs:		900V	1000V	1100V
Impulse current (10/350µs wave):	I_{imp}	-		15kA
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		25kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Number of poles:		4		
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Voltage-free contact for the remote control				
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		250V_{AC} (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8296 ATSUB Mod. 40-120: I_{max} 40kA / Un 120V
- ☐ AT-8297 ATSUB Mod. 15-120: I_{max} 15kA / Un 120V
- ☐ AT-8298 ATSUB Mod. 65-120: I_{max} 65kA / Un 120V

AT80 Series

Technical Datasheet

Reference		ATSUB-2P 15-400 TN AT-8015	ATSUB-2P 40-400 TN AT-8016
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2
Nominal voltage:	U_n	$400V_{AC}$	
Maximum working voltage:	U_c	$460V_{AC}$	
Nominal frequency:		50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V
Protection level (1,2/50µs):	U_p	1800V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V
Combined wave tension:	$U_{o.c.}$	6kV	-
Response time:	t_r	< 25ns	
Backup fuse[1]:		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		4	
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)	
Fixing:		DIN rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		$> 10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control			
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²	
Contact output:		Commutated	
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)	
Maximum current:		2A (Maximum current of the alarm supply)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8249 ATSUB Mod. 40-400: I_{max} 40kA / Un 400V
- ☐ AT-8229 ATSUB Mod. 15-400: I_{max} 15kA / Un 400V

AT82 Series

SINGLE-POLE PROTECTOR FOR POWER SUPPLY LINES

ATSUB-P

AT-8222 ATSUB-P 15: *max discharge current of 15kA. 230V*
AT-8242 ATSUB-P 40: *max discharge current of 40kA. 230V*
AT-8262 ATSUB-P 65: *max discharge current of 65kA. 230V*
AT-8202 ATSUB-P N: *for neutral-ground protection*
AT-8290 ATSUB-P 15-120: *max discharge current of 15kA. 120V*
AT-8291 ATSUB-P 40-120: *max discharge current of 40kA. 120V*
AT-8292 ATSUB-P 65-120: *max discharge current of 65kA. 120V*
AT-8226 ATSUB-P 15-400: *max discharge current of 15kA. 400V*
AT-8246 ATSUB-P 40-400: *max discharge current of 40kA. 400V*

ATSUB-P 40 - 400

40 = Max discharge current in kA
400 = Line-ground voltage

Efficient protection against transient overvoltages for electrical supply lines with or without neutral using a metal oxide varistors and gas discharge tubes. It allows protection of three-phase lines **type TT, TNS, TNC and IT**. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (REBT ITC23).

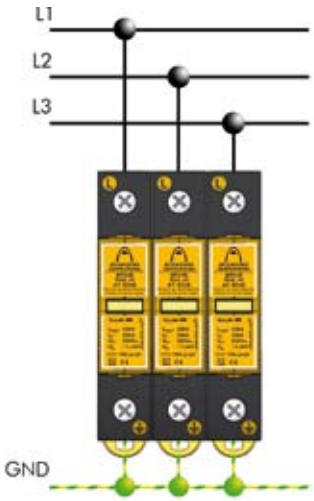
It's provided with removable cartridges that allows its replacement in case of fault thus without changing the base.
Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- Short response time.
- Don't produce deflagration.
- Single-pole protection with pluggable modules.
- Their activation causes no interruption in power supply.
- Small size modular protection
- Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT82 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (voltage of 400V) and **equipments using voltages common in the American continent** (Voltage 120V)

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected and to ground. As an example we show the 3 ATSUB-P connections in a three-phase power supply line TNC.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve **a correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that can not withstand big overvoltages.



⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT82 Series

Technical Datasheet

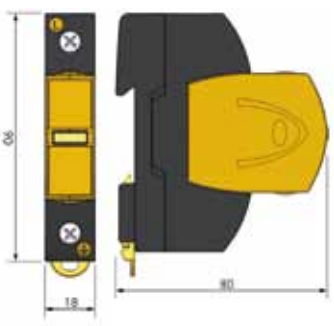
Reference		ATSUB-P 15 AT-8222	ATSUB-P 40 AT-8242	ATSUB-P 65 AT-8262	ATSUB-P N AT-8202
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$230V_{AC}$			-
Maximum working voltage:	U_c	$255V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV		-	
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8248 ATSUB Mod. 40: I_{max} 40kA
- ☐ AT-8228 ATSUB Mod. 15: I_{max} 15kA
- ☐ AT-8268 ATSUB Mod. 65: I_{max} 65kA
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

Dimensions



AT82 Series

Technical Datasheet

Reference		ATSUB-P 15-120 AT-8290	ATSUB-P 40-120 AT-8291	ATSUB-P 65-120 AT-8292	ATSUB-P N AT-8202
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$120V_{AC}$			-
Maximum working voltage:	U_c	$140V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV		-	
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- AT-8296 ATSUB Mod. 40-120: I_{max} 40kA / U_n 120V
- AT-8297 ATSUB Mod. 15-120: I_{max} 15kA / U_n 120V
- AT-8298 ATSUB Mod. 65-120: I_{max} 65kA / U_n 120V
- AT-8205 ATSUB Mod. N: neutral-earth

AT82 Series

Technical Datasheet

Reference		ATSUB-P 15-400 AT-8226	ATSUB-P 40-400 AT-8246	ATSUB-P N AT-8202
Protection categories according to REBT:		I, II, III, IV		I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 2
Nominal voltage:	U_n	$400V_{AC}$		-
Maximum working voltage:	U_c	$460V_{AC}$		-
Nominal frequency:		50 - 60Hz		
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V	2100V
Protection level (1,2/50µs):	U_p	1800V	1800V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V	1900V
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r	< 25ns		
Backup fuse(1):		125A gL/gG		
Maximum short-circuit current:		125kA (for maximum fuse)		
Working temperature:	ϑ	-40°C to +70°C		
SPD location:		Indoor		
Type of connection:		Parallel (one port)		
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)		
Fixing:		DIN rail		
Enclosure material:		Polyamide		
Enclosure protection:		IP20		
Insulation resistance:		> $10^{14}\Omega$		
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)		
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8249 ATSUB Mod. 40-400: I_{max} 40kA / U_n 400V
- ☐ AT-8229 ATSUB Mod. 15-400: I_{max} 15kA / U_n 400V
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

AT82 Series

SINGLE-POLE PROTECTOR FOR POWER SUPPLY LINES

ATSUB-PR

AT-8223 ATSUB-PR 15: *max discharge current of 15kA. 230V*
AT-8243 ATSUB-PR 40: *max discharge current of 40kA. 230V*
AT-8263 ATSUB-PR 65: *max discharge current of 65kA. 230V*
AT-8203 ATSUB-PR N: *for neutral-ground protection*
AT-8293 ATSUB-PR 15-120: *max discharge current of 15kA. 120V*
AT-8294 ATSUB-PR 40-120: *max discharge current of 40kA. 120V*
AT-8295 ATSUB-PR 65-120: *max discharge current of 65kA. 120V*
AT-8227 ATSUB-PR 15-400: *max discharge current of 15kA. 400V*
AT-8247 ATSUB-PR 40-400: *max discharge current of 40kA. 400V*

ATSUB-PR 65 – 400
Max discharge current in kA | **Line-ground voltage**

Efficient protection against transient overvoltages for electrical supply lines with or without neutral using a metal oxide varistors and gas discharge tubes. It allows protection of three-phase lines **type TT, TNS, TNC and IT**. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (REBT ITC23).

It's provided with removable cartridges that allows its replacement in case of fault thus without changing the base.
Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- Short response time.
- Don't produce deflagration.
- Single-pole protection with pluggable modules
- Their activation causes no interruption in power supply.
- Small size modular protection
- Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT82 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (voltage of 400V) and **equipments using voltages common in the American continent** (Voltage 120V)

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected and to ground. As an example we show the 3 ATSUB-PR connections in a three-phase power supply line TNC.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that can not withstand big overvoltages.

⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT82 Series

Technical Datasheet

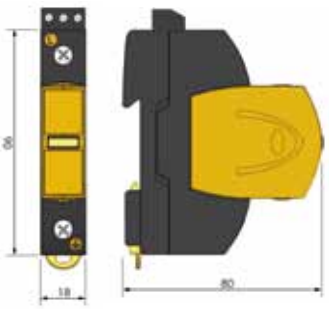
Reference		ATSUB-PR 15 AT-8223	ATSUB-PR 40 AT-8243	ATSUB-PR 65 AT-8263	ATSUB-PR N AT-8203
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$230V_{AC}$			-
Maximum working voltage:	U_c	$255V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV		-	
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Voltage-free contact for the remote control					
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²			
Contact output:		Commutated			
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)			
Maximum current:		2A (Maximum current of the alarm supply)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

- ☐ AT-8248 ATSUB Mod. 40: I_{max} 40kA
- ☐ AT-8228 ATSUB Mod. 15: I_{max} 15kA
- ☐ AT-8268 ATSUB Mod. 65: I_{max} 65kA
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

Dimensions



AT82 Series

Technical Datasheet

Reference		ATSUB-PR 15-120 AT-8293	ATSUB-PR 40-120 AT-8294	ATSUB-PR 65-120 AT-8295	ATSUB-PR N AT-8203
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$120V_{AC}$			-
Maximum working voltage:	U_c	$140V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV		-	
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Voltage-free contact for the remote control					
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²			
Contact output:		Commutated			
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)			
Maximum current:		2A (Maximum current of the alarm supply)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Accessories

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

- ☐ AT-8296 ATSUB Mod. 40-120: I_{max} 40kA / Un 120V
- ☐ AT-8297 ATSUB Mod. 15-120: I_{max} 15kA / Un 120V
- ☐ AT-8298 ATSUB Mod. 65-120: I_{max} 65kA / Un 120V
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

AT82 Series

Technical Datasheet

Reference		ATSUB-PR 15-400 AT-8227	ATSUB-PR 40-400 AT-8247	ATSUB-PR N AT-8203
Protection categories according to REBT:		I, II, III, IV		II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 2
Nominal voltage:	U_n		$400V_{AC}$	
Maximum working voltage:	U_c		$460V_{AC}$	
Nominal frequency:			50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V	2100V
Protection level (1,2/50µs):	U_p	1800V	1800V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V	1900V
Combined wave tension:	$U_{o.c.}$	6kV	-	
Response time:	t_r		< 25ns	
Backup fuse(1):			125A gL/gG	
Maximum short-circuit current:			25kA (for maximum fuse)	
Working temperature:	ϑ		-40°C to +70°C	
SPD location:			Indoor	
Type of connection:			Parallel (one port)	
Dimensions:			18 x 90 x 80mm (1 mod. DIN43880)	
Fixing:			DIN rail	
Enclosure material:			Polyamide	
Enclosure protection:			IP20	
Insulation resistance:			$> 10^{14}\Omega$	
Autoextinguish enclosure:			V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:			Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control				
Connection::		Maximum section single-stranded / multi-stranded: 1,5mm²		
Contact output:		Commutated		
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)		
Maximum current:		2A (Maximum current of the alarm supply)		
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

Accessories

- ☐ AT-8249 ATSUB Mod. 40-400: I_{max} 40kA / Un 400V
- ☐ AT-8229 ATSUB Mod. 15-400: I_{max} 15kA / Un 400V
- ☐ AT-8205 ATSUB Mod. N: neutral-earth

AT82 Series

SINGLE-POLE PROTECTOR FOR POWER SUPPLY LINES

ATSUB

AT-8220 ATSUB 15: *max discharge current of 15kA. 230V*
AT-8240 ATSUB 40: *max discharge current of 40kA. 230V*
AT-8260 ATSUB 65: *max discharge current of 65kA. 230V*
AT-8201 ATSUB N: *for neutral-ground protection*
AT-8230 ATSUB 15-120: *max discharge current of 15kA. 120V*
AT-8250 ATSUB 40-120: *max discharge current of 40kA. 120V*
AT-8270 ATSUB 65-120: *max discharge current of 65kA. 120V*
AT-8224 ATSUB 15-400: *max discharge current of 15kA. 400V*
AT-8244 ATSUB 40-400: *max discharge current of 40kA. 400V*
AT-8264 ATSUB 65-400: *max discharge current of 65kA. 400V*

ATSUB 65 – 400
Max discharge current in kA | **Line-ground voltage**

Efficient protection against transient overvoltages for electrical supply lines with or without neutral using a metal oxide varistors and gas discharge tubes. It allows protection of three-phase lines **type TT, TNS, TNC and IT**. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (REBT ITC23).

Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- It is possible to fix the modules through rivets in order to obtain blocks of 2, 3 or 4 elements.
- Short response time.
- Don't produce deflagration.
- Single-pole protection.
- Their activation causes no interruption in power supply.
- Small size modular protection.
- Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT82 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (voltage of 400V) and **equipments using voltages common in the American continent** (Voltage 120V)

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected and to ground. As an example we show the 3 ATSUB connections in a three-phase power supply line TNC.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that can not withstand big overvoltages.

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

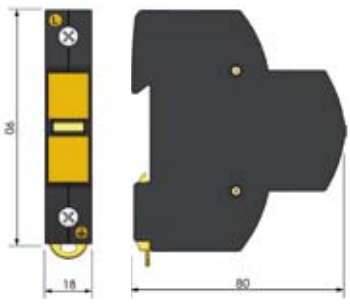
AT82 Series

Technical Datasheet

Reference		ATSUB 15 AT-8220	ATSUB 40 AT-8240	ATSUB 65 AT-8260	ATSUB N AT-8201
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$230V_{AC}$			-
Maximum working voltage:	U_c	$255V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV	-		
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT82 Series

Technical Datasheet

Reference		ATSUB 15-120 AT-8230	ATSUB 40-120 AT-8250	ATSUB 65-120 AT-8270	ATSUB N AT-8201
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$120V_{AC}$			-
Maximum working voltage:	U_c	$140V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV	-		
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

AT82 Series

Technical Datasheet

Reference		ATSUB 15-400 AT-8224	ATSUB 40-400 AT-8244	ATSUB 65-400 AT-8264	ATSUB N AT-8201
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$400V_{AC}$			-
Maximum working voltage:	U_c	$460V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V	2500V	2100V
Protection level (1,2/50µs):	U_p	1800V	1800V	1900V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V	2100V	1900V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV		-	
Response time:	t_r	< 25ns			
Backup fuse[1]:		125A gL/gG			
Maximum short-circuit current:		125kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

AT82 Series

SINGLE-POLE PROTECTOR FOR POWER SUPPLY LINES

ATSUB-R

AT-8221 ATSUB-R 15: *max discharge current of 15kA. 230V*
AT-8241 ATSUB-R 40: *max discharge current of 40kA. 230V*
AT-8261 ATSUB-R 65: *max discharge current of 65kA. 230V*
AT-8204 ATSUB-R N: *for neutral-ground protection*
AT-8299 ATSUB-R 15-120: *max discharge current of 15kA. 120V*
AT-8208 ATSUB-R 40-120: *max discharge current of 40kA. 120V*
AT-8209 ATSUB-R 65-120: *max discharge current of 65kA. 120V*
AT-8225 ATSUB-R 15-400: *max discharge current of 15kA. 400V*
AT-8245 ATSUB-R 40-400: *max discharge current of 40kA. 400V*
AT-8265 ATSUB-R 65-400: *max discharge current of 65kA. 400V*

ATSUB-R 65 – 400
65 = Max discharge current in kA
400 = Line-ground voltage

Efficient protection against transient overvoltages for electrical supply lines with or without neutral using a metal oxide varistors and gas discharge tubes. It allows protection of three-phase lines **type TT, TNS, TNC and IT**. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (REBT ITC23).

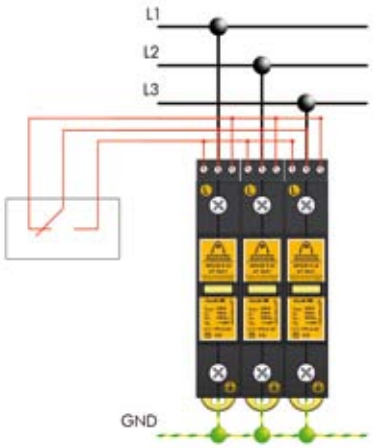
Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- ☐ Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- ☐ It is possible to fix the modules through riverts in order to obtain blocks of 2, 3 or 4 elements.
- ☐ Short response time.
- ☐ Don't produce deflagration.
- ☐ Single-pole protection.
- ☐ Their activation causes no interruption in power supply.
- ☐ Small size modular protection.
- ☐ Thermodynamic control device, mechanical warning and remote alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT82 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).
There exists the possibility of selecting a protector for the working voltage in each particular case. In the technical datasheet, we have included as common examples the optimal SPDs for **wind generators** (voltage of 400V) and **equipments using voltages common in the American continent** (Voltage 120V)

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected and to ground. As an example we show the 3 ATSUB-R connections in a three-phase power supply line TNC.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended in places where important overvoltages can occur and when lines are connected to very sensitive equipment that can not withstand big overvoltages.



⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

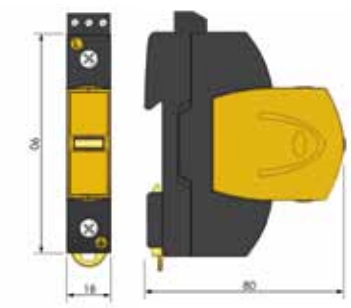
AT82 Series

Technical Datasheet

Reference		ATSUB-R 15 AT-8221	ATSUB-R 40 AT-8241	ATSUB-R 65 AT-8261	ATSUB-R N AT-8204
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	230V_{AC}			-
Maximum working voltage:	U_c	255V_{AC}			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV		-	
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Voltage-free contact for the remote control					
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²			
Contact output:		Commutated			
Working voltage:		250V (Maximum working voltage of the alarm supply)			
Maximum current:		2A (Maximum current of the alarm supply)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT82 Series

Technical Datasheet

Reference		ATSUB-R 15-120 AT-8299	ATSUB-R 40-120 AT-8208	ATSUB-R 65-120 AT-8209	ATSUB-R N AT-8204
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$120V_{AC}$			-
Maximum working voltage:	U_c	$140V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V	1400V	1600V	1400V
Protection level (1,2/50µs):	U_p	700V	700V	900V	700V
Protection level for 5kA 8/20µs:		900V	1000V	1100V	1000V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV	-		
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		$> 10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Voltage-free contact for the remote control					
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²			
Contact output:		Commutated			
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)			
Maximum current:		2A (Maximum current of the alarm supply)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

AT82 Series

Technical Datasheet

Reference		ATSUB-R 15-400 AT-8225	ATSUB-R 40-400 AT-8245	ATSUB-R 65-400 AT-8265	ATSUB-R N AT-8204
Protection categories according to REBT:		I, II, III, IV		II, III, IV	I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3	Type 2	Type 1 + 2	Type 2
Nominal voltage:	U_n	$400V_{AC}$			-
Maximum working voltage:	U_c	$460V_{AC}$			-
Nominal frequency:		50 - 60Hz			
Nominal discharge current (wave 8/20µs):	I_n	5kA	20kA	30kA	20kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA	40kA	65kA	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	2100V	2300V	2500V	2100V
Protection level (1,2/50µs):	U_p	1800V	1800V	1900V	1800V
Protection level for 5kA 8/20µs:		1900V	2000V	2100V	1900V
Impulse current (10/350µs wave):	I_{imp}	-		15kA	-
Combined wave tension:	$U_{o.c.}$	6kV		-	
Response time:	t_r	< 25ns			
Backup fuse(1):		125A gL/gG			
Maximum short-circuit current:		25kA (for maximum fuse)			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		$> 10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Voltage-free contact for the remote control					
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²			
Contact output:		Commutated			
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)			
Maximum current:		2A (Maximum current of the alarm supply)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

For other voltages, ask Aplicaciones Tecnologicas, S.A. technical department.

AT82 Series

SINGLE-PHASE COMPACT PROTECTION FOR HOME ENVIRONMENT

ATSUB-D T

AT-8217 ATSUB-D T: *max discharge current of 15kA. 230V*

Efficient protection against transient overvoltages for single-line electrical supply lines with neutral **type TT**, using a metal oxide varistors and gas discharge tubes. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (RBT ITC23). Specially prepared to be installed in homes according to ITC-25 from REBT.

Tested and certified as **Type 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

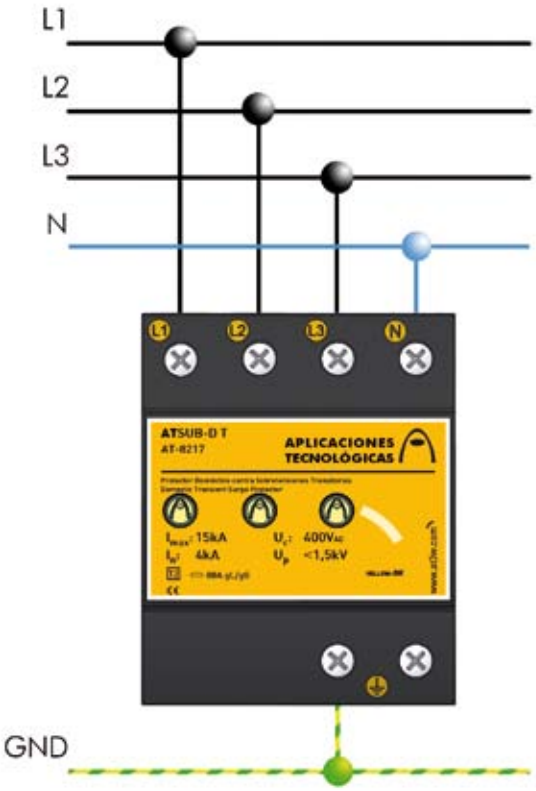
- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- ☐ Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- ☐ Short response time.
- ☐ Don't produce deflagration.
- ☐ Compact protection.
- ☐ Their activation causes no interruption in power supply.
- ☐ Thermodynamic control device, mechanical warning alarm.

AT82 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected to neutral and/or ground.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended for the homes main switchboard according to the article 16.3 from REBT.



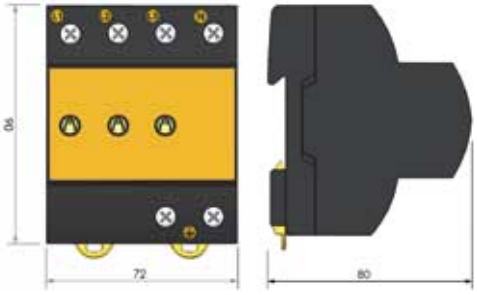
AT82 Series

Technical Datasheet

Reference		ATSUB-D T AT-8217
Protection categories according to REBT:		I, II, III, IV
Type of tests according to IEC61643-11, EN61643-11:		Type 2 + 3
Nominal Voltage:	U_n	$400V_{AC}$ (L-L) / $230V_{AC}$ (L-N, L-GND)
Maximum continuous operating voltage:	U_c	$400V_{AC}$ (L-N, L-GND)
Nominal frequency:		50 - 60Hz
Nominal discharge current (8/20µs wave):	I_n	4kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1500V
Protection level (1,2/50µs wave):	U_p	1100V
Residual voltage with combination wave 6kV/3kA:	$U_{o.c.}$	1500V
Response time	t_r	< 25ns
Backup fuse(1):		80A gL/gG
Maximum short-circuit current:		25kA (for maximum fuse)
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)
Fixing:		DIN Rail
Enclosure material:		Polyamide
Enclosure protection:		IP20
Insulation resistance:		> $10^{14}\Omega$
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

Dimensions



AT82 Series

SINGLE-PHASE COMPACT PROTECTION FOR HOME ENVIRONMENT

ATSUB-D M

AT-8216 ATSUB-D M: *max discharge current of 15kA. Un 230V*

Efficient protection against transient overvoltages for single-line electrical supply lines with neutral **type TT**, using a metal oxide varistors and gas discharge tubes. **Medium** protection according to coordinated stages protection recommended in Regulation of Low Voltages (RBT ITC23). Specially prepared to be installed in homes according to ITC-25 from REBT.

Tested and certified as **Type 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

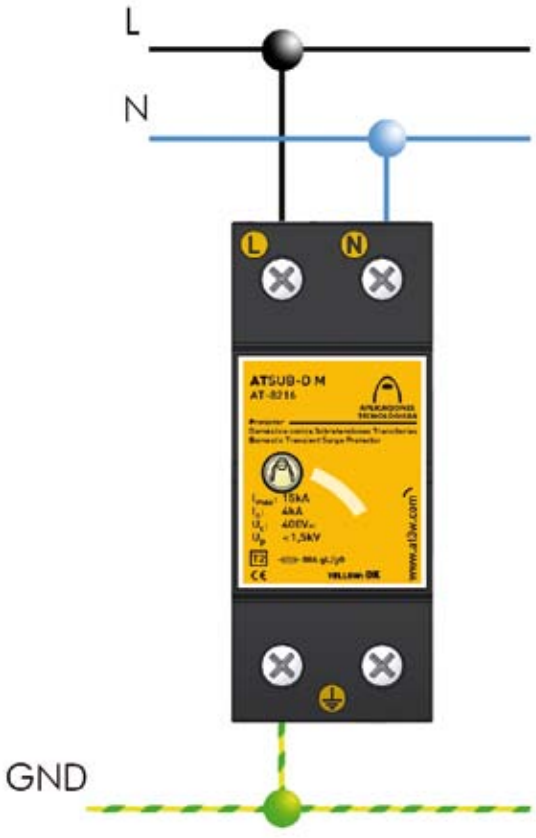
- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- ☐ Made up of zinc oxide varistors and gas discharge tubes able to withstand very high currents.
- ☐ Short response time.
- ☐ Don't produce deflagration.
- ☐ Compact protection.
- ☐ Their activation causes no interruption in power supply.
- ☐ Thermodynamic control device, mechanical warning alarm. When the warning is yellow the enclosure is in good shape. If not, replace.

AT82 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

They are installed **in parallel** with the low voltage line, with connections to the phase that is to be protected to neutral and/or ground.
The **power should be disconnected** during the installation of the SPD.
When ATSUB are installed as middle protection, they must be separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
Their installation is recommended for the homes main switchboard according to the article 16.3 from REBT.



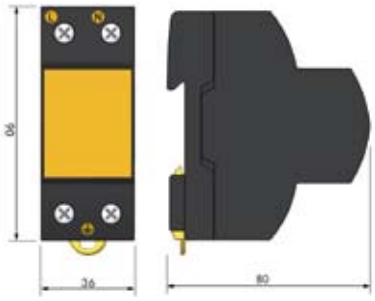
AT82 Series

Technical Datasheet

Reference		ATSUB-D M AT-8216
Protection categories according to REBT:		I, II, III, IV
Type of tests according to IEC61643-11, EN61643-11:		Tipo 2 + 3
Nominal Voltage:	U_n	$230V_{AC}$
Maximum continuous operating voltage:	U_c	$400V_{AC}$
Nominal frequency:		50 - 60Hz
Nominal discharge current (8/20µs wave):	I_n	4kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1500V
Protection level (1,2/50µs wave):	U_p	1100V
Residual voltage with combination wave 6kV/3kA:	$U_{o.c.}$	1500V
Response time	t_r	< 25ns
Backup fuse(1):		80A gL/gG
Maximum short-circuit current:		25kA (for maximum fuse)
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)
Fixing:		DIN Rail
Enclosure material:		Polyamide
Enclosure protection:		IP20
Insulation resistance:		> $10^{14}\Omega$
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT81 Series

COMPACT PROTECTOR FOR TT AND TNS THREE-PHASE POWER SUPPLY LINES IN COMMON AND DIFFERENTIAL MODE

ATCOVER T

AT-8133 ATCOVER 400T: *three-phase, 400V_{ac} line*
AT-8132 ATCOVER 230T: *three-phase, 230V_{ac} line*

Efficient protection against transient overvoltages for TT and TNS electrical supply lines in only one device. **Medium and low** internal coordination protection stages, recommended in Regulation of Low Voltages (REBT ITC23).

Tested and certified as **Type 1 and 2** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- ☐ Discharge takes place in an internal encapsulated element, with no external flash.
- ☐ It remains inactive in normal conditions, without affecting the normal working of the line and without leakage.
- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATSUB series.
- ☐ Both common and differential protection for the three lines and neutral.
- ☐ No interruptions in power supply, thus avoiding data loss and other inconvenients for the user.
- ☐ Low residual voltage.
- ☐ Double warning of "no protection" trough a lightning indicator of failure and a green light indicating good operation.
- ☐ With remote control alarm.
- ☐ Robust connectors, suitable for all type of connection.

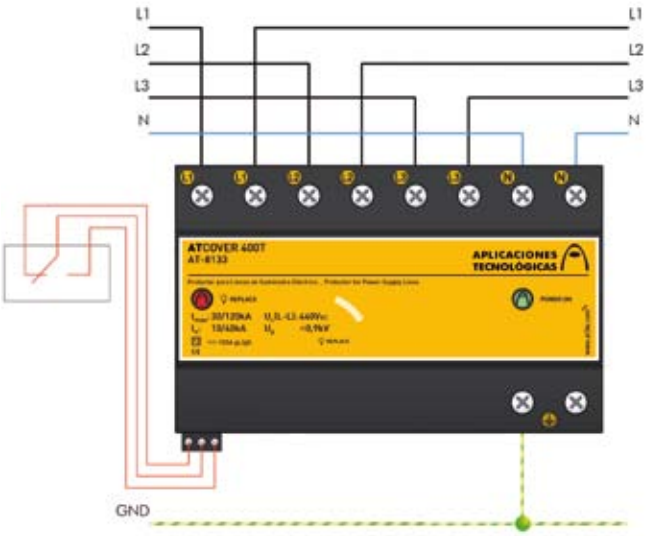
ATCOVER SPDs have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATCOVER Surge Protective Devices are to be installed in parallel with the Low Voltage supply line, connected to line/s, neutral and ground.
The **power should be disconnected** during the installation of the SPD.
When connecting the protector, the green light must turn on indicating its good operation. If the failure warning turns on, or the green pilot turns of its imperative to replace the protector.
ATCOVERs can be installed as single protection or in combination with other protectors that withstand higher discharge currents. In this case, it is necessary that both are separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a correct coordination between them.
Their installation is recommended in:

- ☐ Secondary boards supplying sensitive systems. (Electronics, informatics...
- ☐ Power supply of important equipment such as UPSs, PLCs, etc.



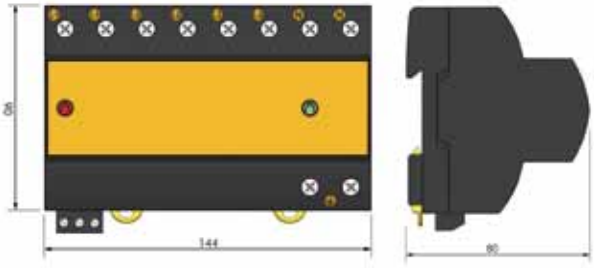
AT81 Series

Technical Datasheet

Reference		ATCOVER 400T AT-8133	ATCOVER 230T AT-8132
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 1 + 2 + 3	
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $220V_{AC}$ (L-N, L-GND)	$230V_{AC}$ (L-L) $130V_{AC}$ (L-N, L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-N, L-GND)	$255V_{AC}$ (L-L) 145_{VAC} (L-N, L-GND)
Nominal frequency:		50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	10kA	
Maximum discharge current (8/20µs wave):	I_{max}	30kA	
Impulse current (10/350µs wave):	I_{imp}	6kA	
Protection level (1,2/50µs wave):	U_p	700V	500V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	900V	700V
Combined wave tension:	$U_{o.c.}$	6kV	
Residual voltage with combination wave 6kV/3kA:		700V	450V
Response time:	t_r	< 25ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		4	
Dimensions:		144 x 90 x 80mm (8 mod. DIN43880)	
Fixing:		DIN rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		> $10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control			
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²	
Contact output:		Commutated	
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)	
Maximum current:		2A (Maximum current of the alarm supply)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT81 Series

COMPACT PROTECTOR FOR TNC AND IT THREE-PHASE POWER SUPPLY LINES IN COMMON AND DIFFERENTIAL MODE

ATCOVER T

AT-8153 ATCOVER TNC 400T: *three-phase without neutral, 400V$_{ac}$ line*
AT-8152 ATCOVER TNC 230T: *three-phase without neutral, 230V$_{ac}$ line*

Efficient protection against transient overvoltages for TT and IT electrical supply lines in only one device. **Medium and low** internal coordination protection stages, recommended in Regulation of Low Voltages (REBT ITC23).

Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- Discharge takes place in an internal encapsulated element, with no external flash.
- It remains inactive in normal conditions, without affecting the normal working of the line and without leakage.
- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATSUB series.
- Both common and differential protection for the three lines and neutral.
- No interruptions in power supply, thus avoiding data loss and other inconvenients for the user.
- Low residual voltage.
- Double warning of "no protection" trough a lightning indicator of failure and a green light indicating good operation.
- With remote control alarm.
- Robust connectors, suitable for all type of connection.

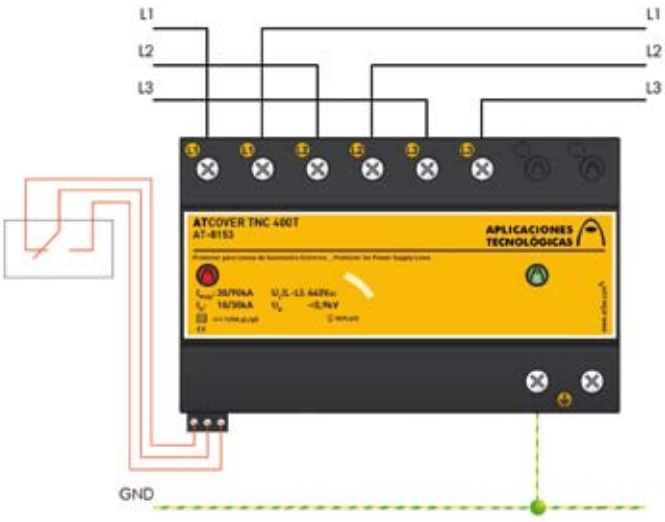
ATCOVER SPDs have been tested in **official, independent laboratories,** obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATCOVER Surge Protective Devices are to be installed in parallel with the Low Voltage supply line, connected to line/s, neutral and ground.
The **power should be disconnected** during the installation of the SPD.
When connecting the protector, the green light must turn on indicating its good operation. If the failure warning turns on, or the green pilot turns of its imperative to replace the protector.
ATCOVERs can be installed as single protection or in combination with other protectors that withstand higher discharge currents. In this case, it is necessary that both are separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a correct coordination between them.
Their installation is recommended in:

- Secondary boards supplying sensitive systems. (electronics, informatics...)
- Power supply of important equipment such as UPSs, PLCs, etc.



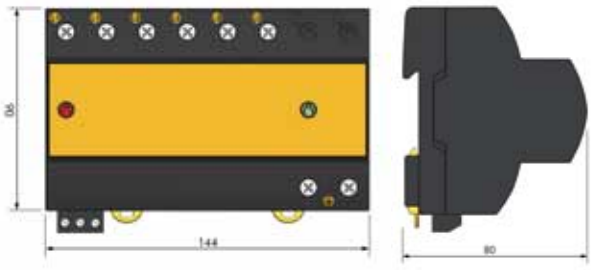
AT81 Series

Technical Datasheet

Reference		ATCOVER TNC 400T AT-8153	ATCOVER TNC 230T AT-8152
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 1 + 2 + 3	
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $220V_{AC}$ (L-N, L-GND)	$230V_{AC}$ (L-L) $130V_{AC}$ (L-N, L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-N, L-GND)	$255V_{AC}$ (L-L) $145V_{AC}$ (L-N, L-GND)
Nominal frequency:		50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	10kA	
Maximum discharge current (8/20µs wave):	I_{max}	30kA	
Impulse current (10/350µs wave):	I_{imp}	6kA	
Protection level (1,2/50µs wave):	U_p	700V	500V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	900V	700V
Combined wave tension:	$U_{o.c.}$	6kV	
Residual voltage with combination wave 6kV/3kA:		700V	450V
Response time:	t_r	< 25ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		3	
Dimensions:		144 x 90 x 80mm (8 mod. DIN43880)	
Fixing:		DIN rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		> $10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control			
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²	
Contact output:		Commutated	
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)	
Maximum current:		2A (Maximum current of the alarm supply)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT81 Series

COMPACT PROTECTOR FOR SINGLE-PHASE POWER SUPPLY LINES IN COMMON AND DIFFERENTIAL MODE

ATCOVER M

AT-8112 ATCOVER 230M: *single-phase, 230V_{ac} line*
AT-8111 ATCOVER 130M: *single-phase, 130 V_{ac} line*

Efficient protection against transient overvoltages for single-phase electrical supply lines neutral in only one device. **Medium and low** internal coordination protection stages, recommended in Regulation of Low Voltages (REBT ITC23).

Tested and certified as **Type 1, 2 and 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- ☐ Discharge takes place in an internal encapsulated element, with no external flash.
- ☐ It remains inactive in normal conditions, without affecting the normal working of the line and without leakage.
- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATSUB series.
- ☐ Both common and differential protection for the phase and neutral lines
- ☐ No interruptions in power supply, thus avoiding data loss and other inconvenients for the user.
- ☐ Low residual voltage.
- ☐ Double warning of "no protection" trough a lightning indicator of failure and a green light indicating good operation.
- ☐ With remote control alarm.
- ☐ Robust connectors, suitable for all type of connection.

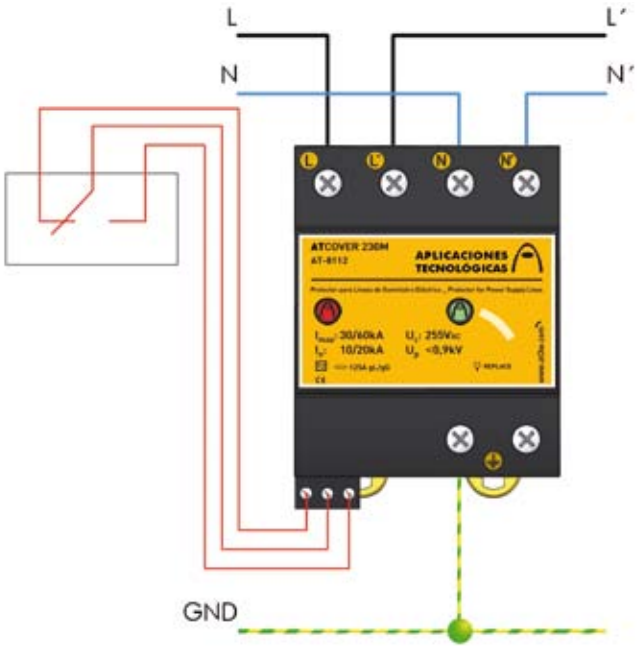
ATCOVER SPDs have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATCOVER Surge Protective Devices are to be installed in parallel with the Low Voltage supply line, connected to line/s, neutral and ground.
The **power should be disconnected** during the installation of the SPD.
When connecting the protector, the green light must turn on indicating its good operation. If the failure warning turns on, or the green pilot turns of its imperative to replace the protector.
ATCOVERs can be installed as single protection or in combination with other protectors that withstand higher discharge currents. In this case, it is necessary that both are separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a correct coordination between them.
Their installation is recommended in:

- ☐ Secondary boards supplying sensitive systems. (electronics, informatics...)
- ☐ Power supply of important equipment such as UPSs, PLCs, etc.



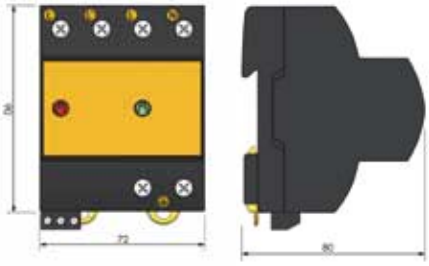
AT81 Series

Technical Datasheet

Reference		ATCOVER 230M AT-8112	ATCOVER 130M AT-8111
Protection categories according to REBT:		I, II, III, IV	
Type of tests according to EN 61643-11:		Type 1 + 2 + 3	
Nominal voltage:	U_n	$230V_{AC}$	$130V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$	$145V_{AC}$
Nominal frequency:		50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n	10kA	
Maximum discharge current (8/20µs wave):	I_{max}	30kA	
Impulse current (10/350µs wave):	I_{imp}	6kA	
Protection level (1,2/50µs wave):	U_p	700V	500V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	900V	700V
Combined wave tension:	$U_{o.c.}$	6kV	
Residual voltage with combination wave 6kV/3kA:		700V	450V
Response time:	t_r	< 25ns	
Backup fuse(1):		125A gL/gG	
Maximum short-circuit current:		25kA (for maximum fuse)	
Working temperature:	ϑ	-40°C to +70°C	
SPD location:		Indoor	
Type of connection:		Parallel (one port)	
Number of poles:		2	
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880	
Fixing:		DIN rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		$> 10^{14}\Omega$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Voltage-free contact for the remote control			
Connection:		Maximum section single-stranded / multi-stranded: 1,5mm²	
Contact output:		Commutated	
Working voltage:		$250V_{AC}$ (Maximum working voltage of the alarm supply)	
Maximum current:		2A (Maximum current of the alarm supply)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is higher nominal current installed "upstream" from the protector.

Dimensions



AT84 Series

DECOUPLING INDUCTOR FOR SPD POWER SUPPLY COORDINATION

ATLINK

AT-8435 ATLINK 35: *lines with $I_N \leq 35A$*
AT-8463 ATLINK 63: *lines with $I_N \leq 63A$*

A proper protection against transient overvoltages needs a good coordination between SPDs. ATLINK inductors provide **decoupling between SPDs** when they are connected in parallel at a same line. Thus, each one acts at the right moment, achieving the double objective: withstanding the lightning current and reducing the overvoltage to an acceptable level for the connected equipment.

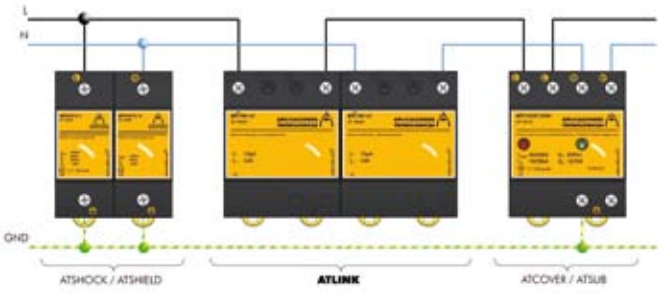
One ATLINK is needed for each line and another for neutral. For their selection the line **working current must be taken into account**, since this current will flow continuously through the device.
Its coordination capability has been tested and certified using **lightning wave** 10/350µs according to EN 61643-11.

- ☐ Allows the installation of SPDs of different classes in the same place, since the inductor substitutes the necessary length of cable for SPD coordination.
- ☐ Robust connectors, suitable for all kind of connections.

ATLINK devices have been tested in **official, independent laboratories**, verifying their working for a proper SPD coordination.

Installation

ATLINK inductors are to be installed in series with the LV power supply line, that is, cutting the line and connecting the obtained cable ends to the input and output connectors of the ATLINK. One ATLINK is needed for each line and another one for the neutral. **There is no ground connection**.
The **power should be disconnected** during the installation of the SPD.
Coordinates mainly ATSHOCK and ATSHIELD with ATSUB and/or ATCOVER surge protective devices when they cannot be separated by a cable at least 10 meters long.

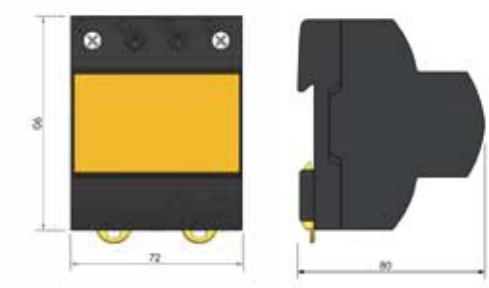


AT84 Series

Technical Datasheet

Reference		ATLINK 35 AT-8435	ATLINK 63 AT-8463
Protection categories according to REBT:		I, II, III, IV	
Maximum working current:	I_L	35A	63A
Nominal Voltage:	U_n	$230V_{AC}$	
Maximum continuous operating voltage:	U_c	$255V_{AC}$	
Nominal frequency:		50 - 60Hz	
Maximmum current (8/20µs wave):	I_{max}	100 kA	
Impulse coordinated current (10/350µs wave):	I_{imp}	100 kA	
Inductancia:	L	15µH	
Resistance:		3mΩ	
SPD location:		Indoor	
Type of connection:		Series (two ports)	
Working temperature:	ϑ	-40°C to +70°C	
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)	
Fixing:		DIN Rail	
Enclosure material:		Polyamide	
Enclosure protection:		IP20	
Insulation resistance:		$> 10^{14}Ω$	
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/G:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Certificated tests according to: IEC 61643-1, EN 61643-11			
Complies with requirements of: UL 1449			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

Dimensions



ATCOMPACT Series

MULTI-POLE POWER SUPPLY PROTECTION BOX INCLUDING PROTECTIVE FUSES

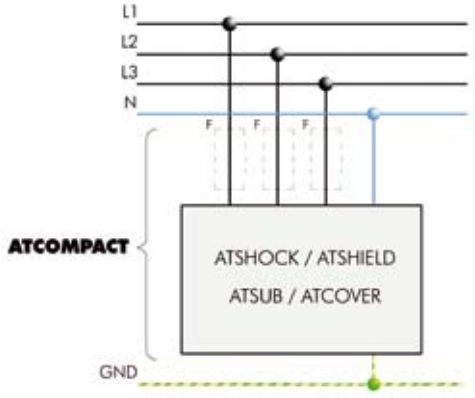
ATCOMPACT

ATCOMPACT protection boxes are made of several kind of SPD aiming the protection of all lines out from single-phase SPD, including the protective fuses against short circuits.

ATCOMPACT Surge Protective Devices are to be installed in parallel with the supply line, without altering at all its way of working under normal conditions. Combinations can be made for protection either in common mode (ground referred) or differential (between line/s and neutral).
Compact box, easy to install and with the same advantages as Aplicaciones Tecnológicas SPDs give: robust, quick, reliable and tested according current standards (EN 61643-11) in **official independent laboratories**.

Installation

ATCOMPACT boxes are to be installed **in parallel** with the Low Voltage supply line, connected to line, neutral and ground. **Fuses or circuit breakers must be present** upstream. They will be disconnected during the installation for working security.
When this ATCOMPACT is installed as middle protection, other protectors must be separated by at least 10 meter cable or, if this is not possible, by decoupling inductors ATLINK, in order to achieve a correct coordination between them.



AT-8131 ATCOMPACT M2 30kA:
Protection for single phase lines with ATCOVER 230M
AT-8130 ATCOMPACT T2 30kA:
Protection for three phase lines with ATCOVER 400T
AT-8117 ATCOMPACT M2 15kA:
Protection for single phase lines with ATSUB-2P 15
AT-8122 ATCOMPACT T2 15kA:
Protection for three phase lines with ATSUB-4P 15
AT-8139 ATCOMPACT M2 40kA:
Protection for single phase lines with ATSUB-2P 40
AT-8140 ATCOMPACT T2 40kA:
Protection for three phase lines with ATSUB-4P 40
AT-8119 ATCOMPACT M2 65kA
Protection for single phase lines with ATSUB-2P 65
AT-8120 ATCOMPACT T2 65kA:
rotection for three phase lines with ATSUB-4P 65
AT-8161 ATCOMPACT M1 30kA:
Protection for single phase lines with ATSHIELD 230M
AT-8160 ATCOMPACT T1 30kA:
Protection for three phase lines with ATSHIELD 400T
AT-8149 ATCOMPACT M1 50kA:
Protection for single phase lines with ATSHOCK
AT-8150 ATCOMPACT T1 50kA:
Protection for three phase lines with ATSHOCK

General nomenclature

ATCOMPACT T2 15kA

T1: Three-phase protection type 1
T2: Three-phase protection type 2
M1: Single-phase protection type 1
M2: Single-phase protection type 2

Max. discharge current for pole

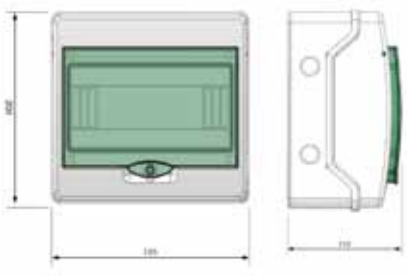
⚠ **Earth connection** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT M2 30kA AT-8131
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Tipo 1 + 2 + 3
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	10kA
Maximum discharge current (8/20µs wave):	I_{max}	30kA
Impulse current (10/350µs wave):	I_{imp}	6kA
Protection level (1,2/50µs wave):	U_p	700V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	900V
Combined wave tension:	$U_{o.c.}$	6kV
Residual voltage with combination wave 6kV/3kA:		700V
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		2
Dimensions:		200 x 195 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

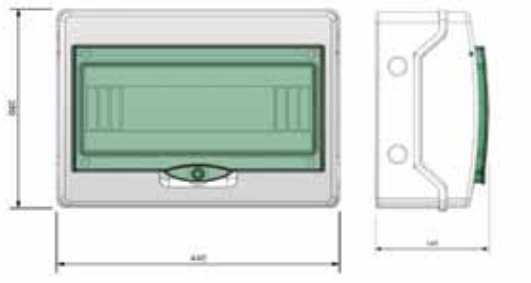


ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT T2 30kA AT-8130
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2 + 3
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	10kA
Maximum discharge current (8/20µs wave):	I_{max}	30kA
Impulse current (10/350µs wave):	I_{imp}	6kA
Protection level (1,2/50µs wave):	U_p	700V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	900V
Combined wave tension:	$U_{o.c.}$	6kV
Residual voltage with combination wave 6kV/3kA:		700V
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		280 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT M2 15kA AT-8117
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	5kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA
Protection level (1,2/50µs wave):	U_p	700V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V
Combined wave tension:	$U_{o.c.}$	6kV
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		2
Dimensions:		200 x 159 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

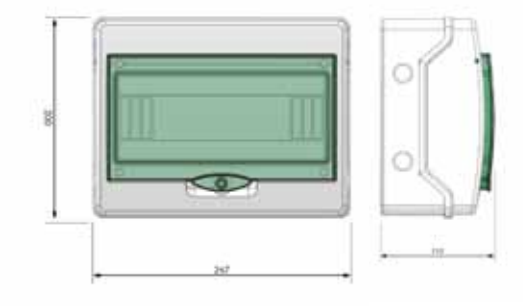
Dimensions

ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT T2 15kA AT-8122
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 2 + 3
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:	I_n	50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_{max}	5kA
Maximum discharge current (8/20µs wave):	I_{imp}	15kA
Protection level (1,2/50µs wave):	U_p	700V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1200V
Combined wave tension:	$U_{o.c.}$	6kV
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		200 x 267 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT M2 40kA AT-8139
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 2
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	20kA
Maximum discharge current (8/20µs wave):	I_{max}	40kA
Protection level (1,2/50µs wave):	U_p	700V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1400V
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		2
Dimensions:		280 x 159 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

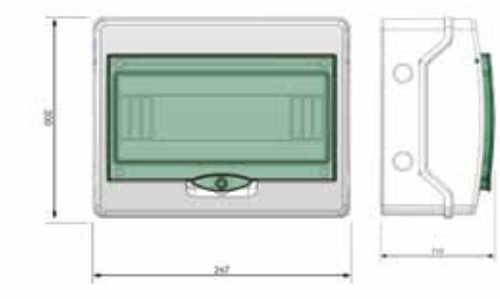
Dimensions

ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT T2 40kA AT-8140
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 2
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	20kA
Maximum discharge current (8/20µs wave):	I_{max}	40kA
Protection level (1,2/50µs wave):	U_p	700V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1400V
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		200 x 267 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

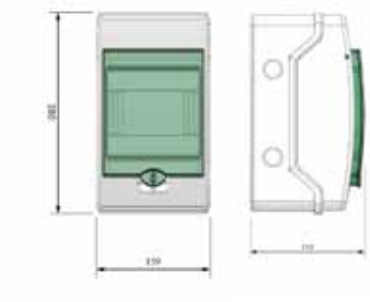


ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT M2 65kA AT-8119
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	30kA
Maximum discharge current (8/20µs wave):	I_{max}	65kA
Impulse current (10/350µs wave):	I_{imp}	15kA
Protection level (1,2/50µs wave):	U_p	900V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1600V
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		2
Dimensions:		280 x 159 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

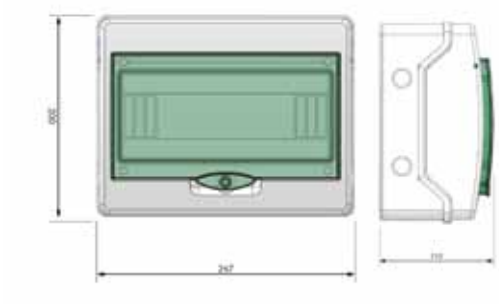


ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT T2 65kA AT-8120
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	30kA
Maximum discharge current (8/20µs wave):	I_{max}	65kA
Impulse current (10/350µs wave):	I_{imp}	15kA
Protection level (1,2/50µs wave):	U_p	900V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	1600V
Response time:	t_r	< 25ns
Included fuse:		50A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		200 x 267 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

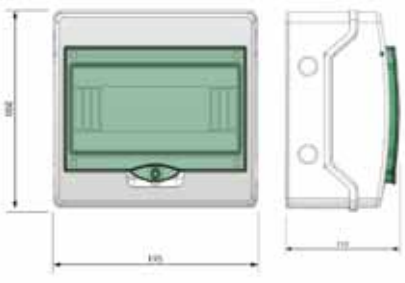


ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT M1 30kA AT-8161
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 2
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	40kA
Maximum discharge current (8/20µs wave):	I_{max}	65kA
Impulse current (10/350µs wave):	I_{imp}	30kA
Protection level (1,2/50µs wave):	U_p	1500V
Response time:	t_r	< 100ns
Included fuse:		80A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		2
Dimensions:		200 x 195 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

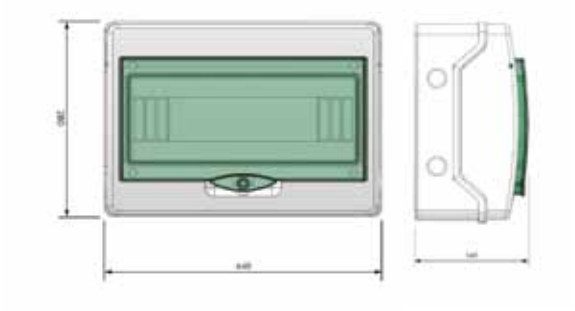


ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT T1 30kA AT-8160
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	40kA
Maximum discharge current (8/20µs wave):	I_{max}	65kA
Impulse current (10/350µs wave):	I_{imp}	30kA
Protection level (1,2/50µs wave):	U_p	1500V
Response time:	t_r	< 100ns
Included fuse:		80A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		280 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

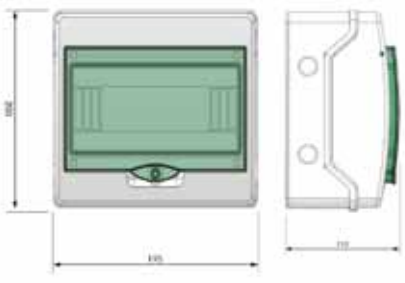


ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT M1 50kA AT-8149
Protection categories according to REBT:		III, IV
Type of tests according to EN 61643-11:		Type 1
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	4000V
Response time:	t_r	< 100ns
Included fuse:		80A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		2
Dimensions:		200 x 195 x 112 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

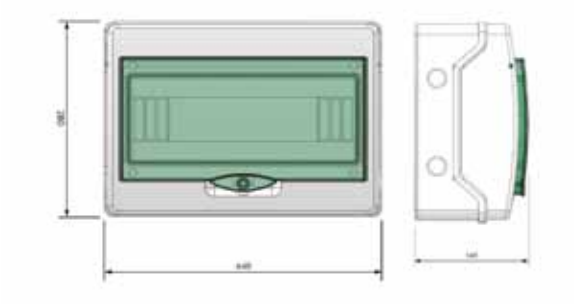


ATCOMPACT Series

Technical Datasheet

Reference		ATCOMPACT T1 50kA AT-8150
Protection categories according to REBT:		III, IV
Type of tests according to EN 61643-11:		Type 1
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	4000V
Response time:	t_r	< 100ns
Included fuse:		80A gG
Maximum short-circuit current:		100kA
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		4
Dimensions:		280 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



FULL COORDINATED PROTECTION CABINETS FOR POWER SUPPLY LINES

ATBARRIER

AT-8114 ATBARRIER MFF:
Coordinated protection for single-phase lines with ATSHOCK + ATCOVER
AT-8125 ATBARRIER MF:
Coordinated protection for single-phase lines with ATSHOCK + ATSUB15
AT-8118 ATBARRIER MM:
Coordinated protection for single-phase lines with ATSHOCK + ATSUB40
AT-8134 ATBARRIER TFF:
Coordinated protection for three-phase lines with ATSHOCK + ATCOVER
AT-8141 ATBARRIER TF:
Coordinated protection for three-phase lines with ATSHOCK + ATSUB15
AT-8121 ATBARRIER TM:
Coordinated protection for three-phase lines with ATSHOCK + ATSUB40

A proper surge protection is only achieved if all the stages are well coordinated. Otherwise the most robust protection will not act, possibly causing the destruction of the most sensitive protectors and even the equipment that they should protect.

General nomenclature

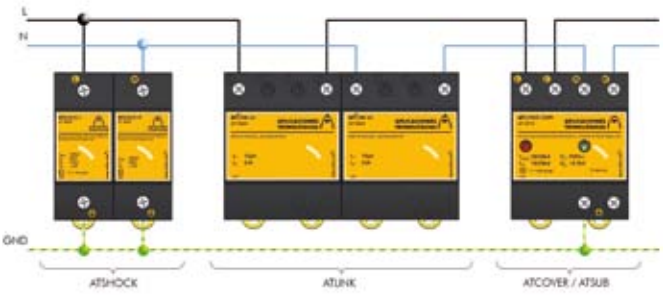
ATBARRIER T F

T: for Three-Phase supply
M: for Single-Phase supply

M: medium residual voltage (with ATSUB 40)
F: low residual voltage (with ATSUB 15)
FF:very low residual voltage (with ATCOVER)

Installation

ATBARRIER boxes are to be installed in series with the Low Voltage line, connected to line/s, neutral and ground. **Fuses or circuit breakers must be present** upstream. They will be disconnected during the installation for working security.
Their installation is recommended where direct lightning currents could penetrate and very sensitive equipment is connected, without distance enough for SPDs coordination.



For the working of all the protections, they must be separated by at least 10 meters cable. If this were not possible, a decoupling inductor should be installed between the protection stages. ATBARRIER boxes contain all the necessary elements for a coordinated protection.
ATBARRIER boxes are to be installed **in series** with the Low Voltage line, connected to line/s, neutral and ground. **Fuses or circuit breakers must be present** upstream. They will be disconnected during the installation for working security. If this protection does not exist, fuses must be installed in series with the box.
Compact box, easy to install and with the same advantages as Aplicaciones Tecnológicas SPDs give: robust, quick, reliable and tested according current standards (EN 61643-11) in **official independent laboratories**.

⚠ **The working current of the line must be lower than 63A.**

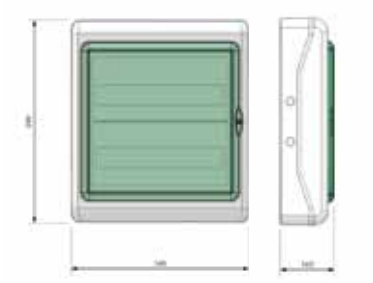
⚠ **Earth connection** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

ATBARRIER Series

Technical Datasheet

Reference		ATBARRIER MFF AT-8114
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2 + 3
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Maximum working current:	I_L	63A
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	900V
Combined wave tension:	$U_{o.c.}$	6kV
Residual voltage with combination wave 6kV/3kA:		700V
Response time:	t_r	< 25ns
Working temperature:	ϑ	-40ºC to +70ºC
SPD location:		Outdoor
Type of connection:		Series (two ports)
Number of poles:		2
Dimensions:		460 x 340 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650ºC according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

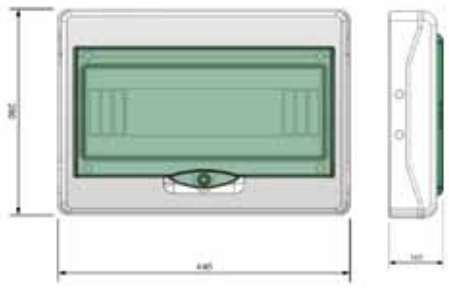


ATBARRIER Series

Technical Datasheet

Reference		ATBARRIER MF AT-8125
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2 + 3
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Maximum working current:	I_L	63A
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	1200V
Combined wave tension:	$U_{o.c.}$	6kV
Response time:	t_r	< 25ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Series (two ports)
Number of poles:		2
Dimensions:		280 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

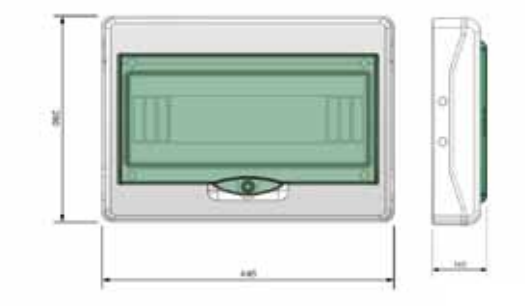


ATBARRIER Series

Technical Datasheet

Reference		ATBARRIER MM AT-8118
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Maximum working current:	I_L	63A
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	1400V
Response time:	t_r	< 25ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Series (two ports)
Number of poles:		2
Dimensions:		280 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

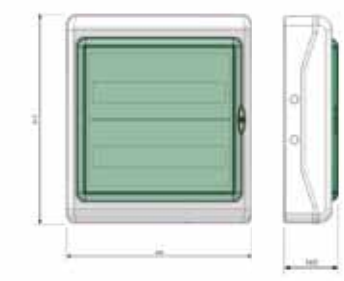


ATBARRIER Series

Technical Datasheet

Reference		ATBARRIER TFF AT-8134
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2 + 3
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Maximum working current:	I_L	63A
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	900V
Combined wave tension:	$U_{o.c.}$	6kV
Residual voltage with combination wave 6kV/3kA:		700V
Response time:	t_r	< 25ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Series (two ports)
Number of poles:		4
Dimensions:		610 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

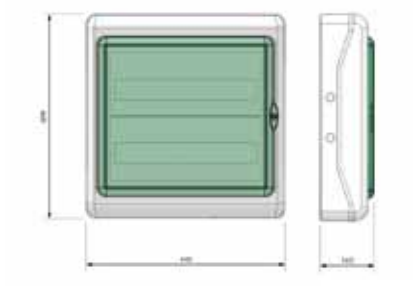


ATBARRIER Series

Technical Datasheet

Reference		ATBARRIER TF AT-8141
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2 + 3
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Maximum working current:	I_L	63A
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	1200V
Combined wave tension:	$U_{o.c.}$	6kV
Response time:	t_r	< 25ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Series (two ports)
Number of polos:		4
Dimensions:		460 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650°C according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions

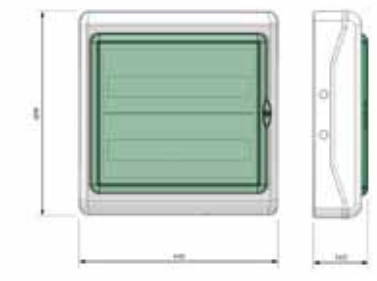


ATBARRIER Series

Technical Datasheet

Reference		ATBARRIER TM AT-8121
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 1 + 2
Nominal voltage:	U_n	$400V_{AC}$ (L-L) $230V_{AC}$ (L-GND)
Maximum working voltage:	U_c	$440V_{AC}$ (L-L) $255V_{AC}$ (L-GND)
Nominal frequency:		50 – 60Hz
Maximum working current:	I_L	63A
Nominal discharge current (wave 8/20µs):	I_n	50kA
Impulse current (10/350µs wave):	I_{imp}	50kA
Protection level (1,2/50µs wave):	U_p	1400V
Response time:	t_r	< 25ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Outdoor
Type of connection:		Series (two ports)
Number of polos:		4
Dimensions:		460 x 448 x 160 mm
Fixing:		Wall or vertical support
Enclosure material:		Autoextinguishing, isolating
Enclosure protection:		IP65 according to IEC 60.529
Enclosure:		Double (Class II)
Fire resistance:		650ºC according to IEC 695-2-1
Impact protection:		IK09 according to EN 50.102
Connections L/N/GND:		Maximum section 25 mm²
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



APLICACIONES TECNOLÓGICAS

PROTECTION OF SPECIAL EQUIPMENT POWER SUPPLY

PROTECTION OF SPECIAL EQUIPMENT POWER SUPPLY

The above explained supply SPD series are focused on AC power supply systems for different voltages. However, there are many apparatus which are supplied by especial generators, such as batteries or solar cells, with different types of voltages (continuous, pulses,...) and a wide range of different characteristics in current, frequency, number of wires, etc.

The variety of this equipment, together with the fact that they are in constant evolution makes a constant study of new solutions obligatory for each case. Aplicaciones Tecnológicas, S.A. holds a Technical Department, expert in surge protection that designs new protectors or adapts the existing ones to the equipment and systems to be protected.

ATPV SERIES

Protection box for photovoltaic installations.

ATVOLT SERIES

Coordinated protection for DC supply lines.

ATVOLT P SERIES

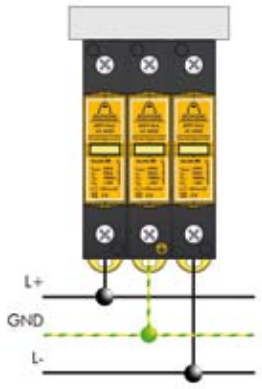
Surge protection for DC supply lines.

ATCOMBO SERIES

Protection box provided with sockets.

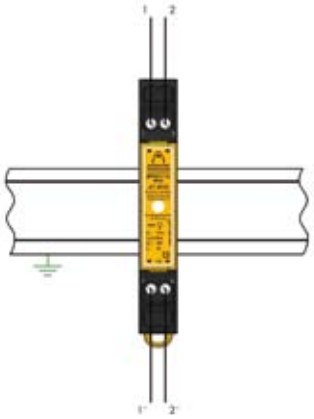
ATPV SERIES

ATPVs protection box are designed for each customer installation individually, in order to provide maximum protection to the photovoltaic cells and all their integrated elements, such as typically the frequency converter.
ATPV SPDs are made with common protectors such as spark gaps, zinc oxide varistors, together with other protectors, suitable for each specific voltage of the installation to be protected.
Both are connected in series or parallel. The normal working of the line is not affected.



ATVOLT SERIES

ATVOLT SPDs have got plenty of uses for this kind of equipment thanks to the flexibility of their design and connectors. Each SPD protects a pair of wires. Several protection stages are internally coordinated. ATVOLT Series contains a wide range of voltages. They are mainly used for DC supply lines of tens of volts.
They are installed in series with the line and they are able to withstand continuously currents ranging up to several amperes without significant line losses or consumption.
ALVOLT SPDs withstand lightning secondary effects and power switching surges. They react to voltage impulses in a few nanoseconds, thus achieving a very low residual voltage, protecting even highly sensitive equipment.

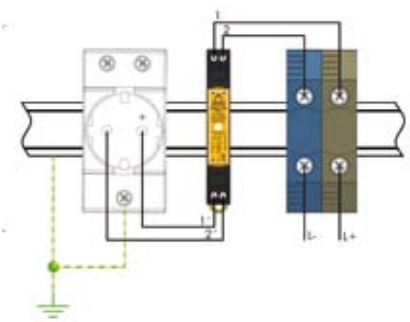


ATVOLT P SERIES

ATVOLT P SPDs allows the protection of the same equipments as ATVOLT series but since these are installed in parallel, they have the characteristic of having no limitation for current consumption. Each SPD protects a pair of wires. Several protection stages are internally coordinated. ATVOLT P Series contains a wide range of voltages. They are mainly used for DC supply lines of tens of volts.
They are installed in series with the line and they are able to withstand continuously currents ranging up to several amperes without significant line losses or consumption.
ALVOLT P SPDs withstand lightning secondary effects and power switching surges. They react to voltage impulses in a few nanoseconds, thus achieving a very low residual voltage, protecting even highly sensitive equipment.

ATCOMBO SERIES

ATCOMBO SPDs gather in a single, small size box a power supply SPD such as ATVOLT or ATCOVER together with a Schuko socket in order to facilitate connections.
They are especially recommended for telecommunication stations or similar installations, where the use of moving equipment is very common and weather conditions may be severe.
SPDs and accessories are supplied in a close, robust box, easy to open when equipment should be connected and with all the internal connections already done.



AT89 Series

SPD FOR PHOTOVOLTAIC INSTALLATIONS

ATPV

AT-8901 ATPV:
prepared for overvoltages induced in photovoltaic installations.

Photovoltaic installations are prone to lightning strikes due to their location in open areas.

Efficient protection of the photovoltaic installations and every element integrated on the installation, such as the DC-AC converter.
Tested and certified as **Type 2** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT.

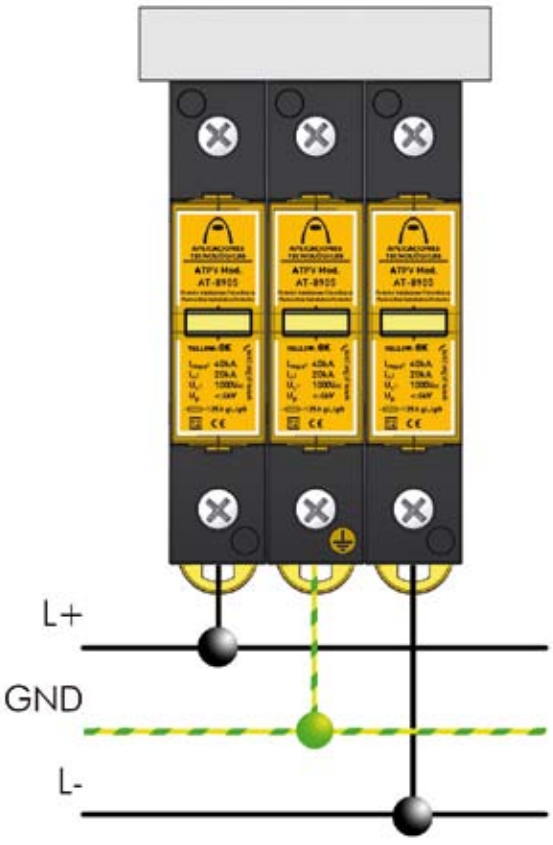
- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- Made up of zinc oxide varistors fitted to the specific voltage of the electrical installation to be protected. They are able to protect **Inverters with voltage up 1000V_{DC}**.
- Short response time.
- Don't produce deflagration.
- Single pole protection with removable cartridges.
- Compact protection with removable cartridges that allows its replacement in case of breakage.
- Their activation causes no interruption in power supply.
- Thermodynamic control device and light alarm and mechanical remote warning. When the warning light is green the enclosure is in good shape. If not, replace.

They are installed **in parallel** with the line, without affecting its working in normal conditions.
ATPV series is provided with removable cartridges that allows its replacement in case of fault thus without changing the base.
AT89 Series SPDs have been tested in **official and independent laboratories**, obtaining their characteristics according to relevant standards (shown in the table).

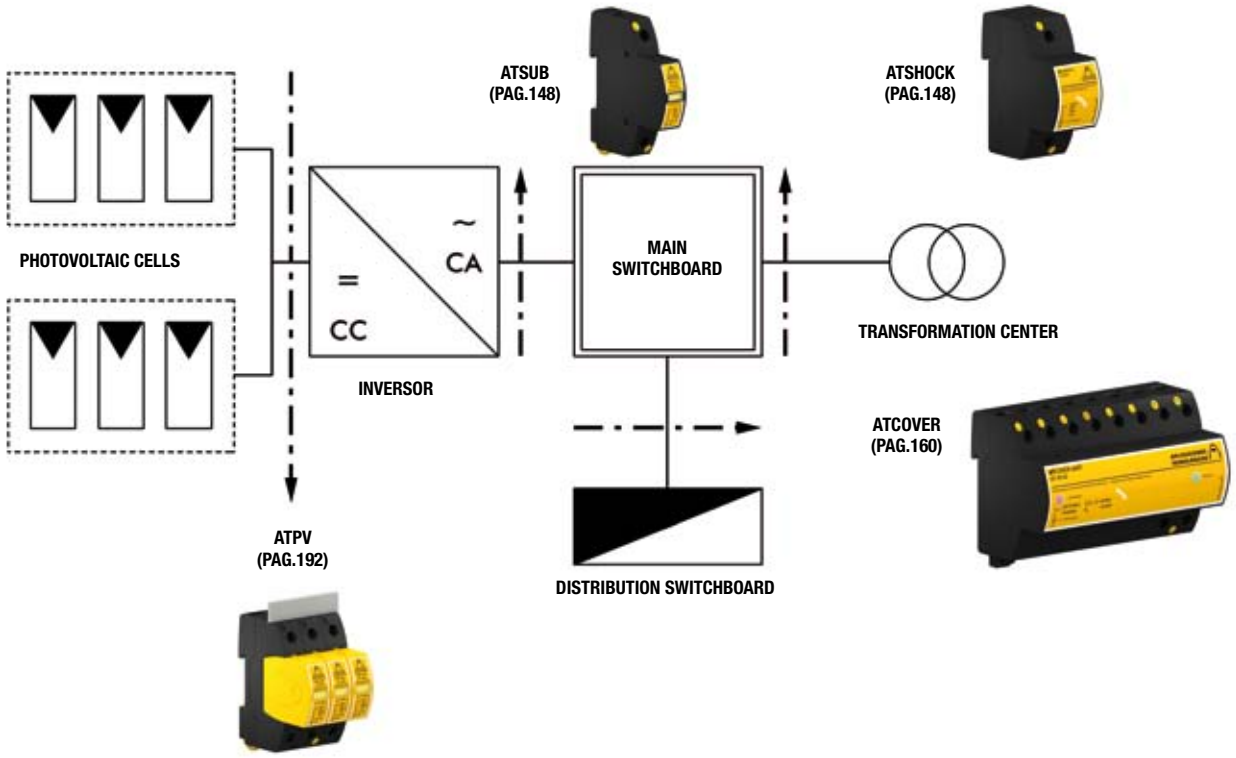
⚠ **Earth connection** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

They must be installed **in parallel** with the Low Voltage supply line, connected to line/s, positive, negative and ground. Fuses or circuit breakers must be present upstream. They will be **disconnected during** the installation for working security. The installations must be done with out line voltage



AT89 Series



Electrical installation should be protected as follows:

- An ATPV protector should be installed on the continuous part of the inverter.
- A medium protection based in the ATSUB series must be placed in order to protect the main switchboards from the installation process.
- If generated power is used for local needs, it is recommended top lace a tight protector ATCOVER in the distribution board in order to avoid high residual voltages.
- If generated power is to export to the electrical network through an owned transformation centre, ATSHOCK should be placed in order to avoid transient overvoltages in the line.

AT89 Series

Technical Datasheet

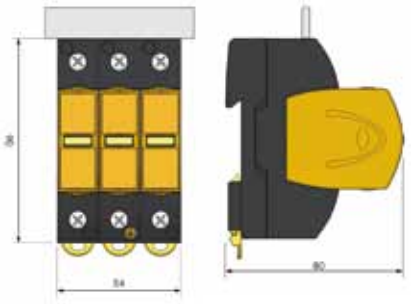
Reference		ATPV AT-8901
Type of tests according to EN 61643-11:		Type 2
Nominal voltage:	U_c	$1000V_{DC}$
Nominal discharge current (wave 8/20µs):	I_n	20kA
Maximum discharge current (8/20µs wave):	I_{max}	40kA
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	4kV
Protection level 5kA; 8//20µs wave:		3,5kV
Response time:	t_r	< 25ns
Backup fuse(1):		125A gL/gG
Maximum short-circuit current:		25kA (for maximum fuse)
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Parallel (one port)
Number of poles:		3
Dimensions:		54 x 90 x 80mm (3 mod. DIN43880)
Fixing:		DIN rail
Enclosure material:		Polyamide
Enclosure protection:		IP20
Insulation resistance:		> $10^{14}\Omega$
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)
Connections L/N/GND:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

(1) Needed in cases where there is higher nominal current installed “upstream” from the protector.

Accessories

☐ AT-8906 ATPV Mod.: I_{max} 40kA / U_c 500V_{DC}

Dimensions



AT89 Series

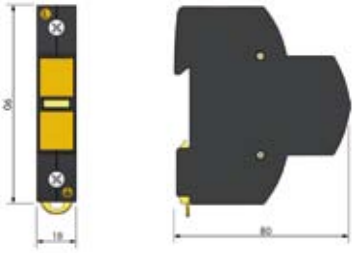
Technical Datasheet

Reference		ATPV3 AT-8905
Nominal voltage:	U_c	$950V_{DC}$
Nominal discharge current (8/20µs wave):	I_n	20kA
Maximum discharge current (8/20µs wave):	I_{max}	40kA
Protection level at I_n 8/20µs wave:	U_p	2600V
Response time:	t_r	< 25ns
Backup fuse(1):		125A gL/gG
Maximum short-circuit current:		25kA (for maximum fuse)
Working Temperature:	ϑ	-40ºC to +70ºC
SPD location:		Indoor
Type of connection:		Parallel (one port)
Dimensions:		18 x 90 x 80mm (1 mod. DIN43880)
Fixing:		DIN rail
Enclosure material:		Polyamide
Enclosure protection:		IP20
Insulation resistance:		> $10^{14}\Omega$
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)
Connections L/N/G:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)
Certificated tests according to: IEC 61643-11, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards : UNE21186, NFC17102, IEC62305		

(1) Needed in cases where there is no equal or less nominal current installed “upstream” from the protector.

installation

Dimensions



AT85 Series

COORDINATED DC POWER SUPPLY SPD

ATVOLT

AT-3501: RF SPD TESTER:
Radiofrequency SPD tester.

AT-8505: ATVOLT 5: *5V_{DC} lines*
AT-8512: ATVOLT 12: *12V_{DC} lines*
AT-8515: ATVOLT 15: *15V_{DC} lines*
AT-8524: ATVOLT 24: *24V_{DC} lines*
AT-8530: ATVOLT 30: *30V_{DC} lines*
AT-8548: ATVOLT 48: *48V_{DC} lines*
AT-8560: ATVOLT 60: *60V_{DC} lines*
AT-8580: ATVOLT 80: *80V_{DC} lines*
AT-8510: ATVOLT 110: *110V_{DC} lines*

Efficient protection for **DC supply lines** in modules **containing coordinated** protection for one pair of lines.

Tested and certified as **Type 3** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

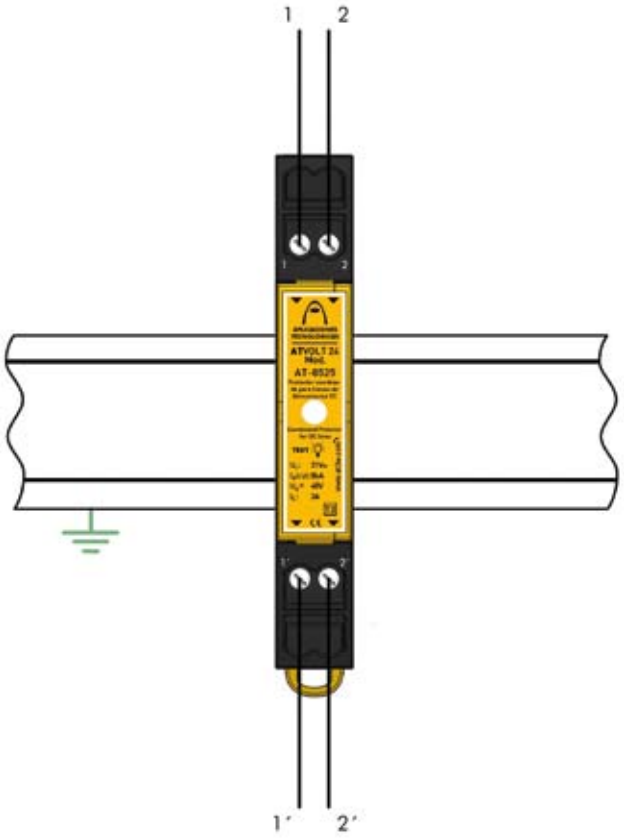
- Recommended protection in both common and differential mode.
- Pluggable modules for its easier substitution in case of failure without the need of disconnecting the wiring. When substituting the module the line suffers no interruptions.
- It has a radiofrequency receptor in order to do the maintenance only with issuer equipment. When the RF SPD Tester is applied and the protector is working, the LED flickers green. If the cartridge is damage the LED does not flick.
- Earthing implemented through a metallic sheet opposite to the fixing DIN rail.
- Wide variety of SPDs for different working voltages.
- It remains inactive in normal conditions, without affecting the normal working of the line and without leakage.
- Low residual voltage for all working voltages.
- Very fast response.
- Mechanic connection for conductors through screws, which allows absorbing a highest amount of overvoltage

ATVOLT SPDs have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATVOLT Surge Protective Devices are to be installed in series with the DC supply line, cutting the cables and connecting the positive and negative terminals to the corresponding connectors. It is very important to pay especial attention to these connections since a wrong connection can cause short-circuits at the equipment supply.
On another side, it is essential to connect correctly the input and output terminals. Otherwise the SPD components will not work properly.
The lower terminal must be connected to the Earth Termination System, where the surge associated current must be derived.
ATVOLT SPDs should be installed preferably as close to the equipment as possible.
The power should be disconnected during the installation of the SPD.



AT85 Series

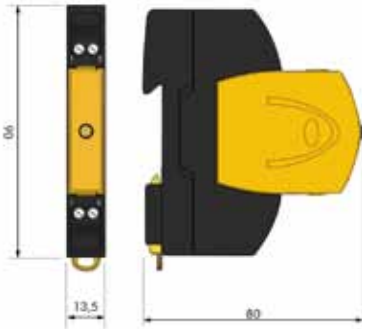
Technical Datasheet

Reference		ATVOLT 5 AT-8505	ATVOLT 12 AT-8512	ATVOLT 15 AT-8515	ATVOLT 24 AT-8524	ATVOLT 30 AT-8530
Protection categories according to REBT:				I, II, III, IV		
Type of tests according to EN 61643-11:				Type 3		
Nominal voltage:	U_n	$5V_{DC}$	$12V_{DC}$	$15V_{DC}$	$24V_{DC}$	$30V_{DC}$
Maximum working voltage:	U_c	$7V_{DC}$	$15V_{DC}$	$18V_{DC}$	$31V_{DC}$	$37V_{DC}$
Maximum working current:	I_L			3A		
Nominal discharge current (wave 8/20µs):	I_n			5kA		
Combined wave tension:	$U_{o.c.}$			10kV		
Protection level (1,2/50µs wave):	U_p	9V	18V	20V	35V	40V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	13V	25V	25V	40V	45V
Response time:	t_r			< 10ns		
Working temperature:	ϑ			-40°C to +70°C		
SPD location:				Indoor		
Type of connection:				Series (two ports)		
Number of poles:				2		
Dimensions:				13,5 x 90 x 80mm (0,75 mod. DIN43880)		
Fixing:				DIN rail		
Enclosure material:				Polyamide		
Enclosure protection:				IP20		
Insulation resistance:				> $10^{14}\Omega$		
Autoextinguish enclosure:				V-0 Type according to UNE-EN 60707 (UL94)		
Connections:				Maximum Section: 4mm²		
Certificated tests according to: IEC 61643-1, EN 61643-11						
Complies with requirements of: UL 1449						
Relevant standards: UNE 21186, NFC 17102, IEC 62305						

Accessories

- ☐ AT-8506: ATVOLT 5 Mod.: $5V_{DC}$ lines
- ☐ AT-8513: ATVOLT 12 Mod.: $12V_{DC}$ lines
- ☐ AT-8516: ATVOLT 15 Mod.: $15V_{DC}$ lines
- ☐ AT-8525: ATVOLT 24 Mod.: $24V_{DC}$ lines
- ☐ AT-8531: ATVOLT 30 Mod.: $30V_{DC}$ lines

Dimensions



AT85 Series

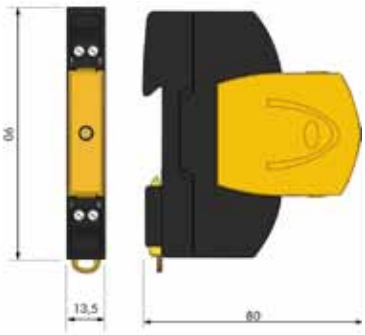
Technical Datasheet

Reference		ATVOLT 48 AT-8548	ATVOLT 60 AT-8560	ATVOLT 80 AT-8580	ATVOLT 110 AT-8510
Protection categories according to REBT:		I, II, III, IV			
Type of tests according to EN 61643-11:		Type 3			
Nominal voltage:	U_n	$48V_{DC}$	$60V_{DC}$	$80V_{DC}$	$110V_{DC}$
Maximum working voltage:	U_c	$65V_{DC}$	$72V_{DC}$	$96V_{DC}$	$132V_{DC}$
Maximum working current:	I_L	3A			
Nominal discharge current (wave 8/20µs):	I_n	5kA			
Combined wave tension:	$U_{o.c.}$	10kV			
Protection level (1,2/50µs wave):	U_p	70V	90V	120V	160V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	75V	100V	135V	180V
Response time:	tr	< 10ns			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Series (two ports)			
Number of poles:		2			
Dimensions:		13,5 x 90 x 80mm (0,75 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		$> 10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections:		Maximum Section: $4mm^2$			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

Accessories

- ☐ AT-8550: ATVOLT 48 Mod.: $48V_{DC}$ lines
- ☐ AT-8561: ATVOLT 60 Mod.: $60V_{DC}$ lines
- ☐ AT-8581: ATVOLT 80 Mod.: $80V_{DC}$ lines
- ☐ AT-8511: ATVOLT 110 Mod.: $110V_{DC}$ lines

Dimensions



AT85 Series

DC POWER SUPPLY SPD

ATVOLT P

AT-8590: ATVOLT P5: $5V_{DC}$ lines
AT-8514: ATVOLT P12: $12V_{DC}$ lines
AT-8526: ATVOLT P24: $24V_{DC}$ lines
AT-8549: ATVOLT P48: $48V_{DC}$ lines

Installation

ATVOLT P Surge Protective Devices are to be installed **in parallel** connected to positive and negative line.
ATVOLT P can be installed as single protection or in combination with other protectors that withstand higher discharge currents. In this case, it is necessary that both are separated by at least 10 meter cable or, if this is not possible, by a decoupling inductor ATLINK, in order to achieve a **correct coordination** between them.
The lower terminal must be connected to the Earth Termination System, where the surge associated current must be derived.
ATVOLT P SPDs should be installed preferably **as close to the equipment as possible**.

Efficient protection for **DC supply lines** in modules containing **medium protection** for one pair of lines.

Tested and certified as **Type 2** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT

- ☐ Recommended protection in both common and differential mode.
- ☐ Wide variety of SPDs for different working voltages.
- ☐ It remains inactive in normal conditions, without affecting the normal working of the line and without leakage.
- ☐ Discharge takes place in an internal encapsulated element, with no external flash.
- ☐ Mechanic connection for conductors through screws, which allows absorbing a highest amount of voltage.
- ☐ Possibility of connection to a M5 fork terminal
- ☐ Suitable for TT, TN-C and TN-S systems.
- ☐ Coordinable with other SPDs such as ATSHOCK and ATCOVER.
- ☐ Quick response

ATVOLT P SPDs have been tested in official, independent laboratories, obtaining their characteristics according to relevant standards (related in the table).

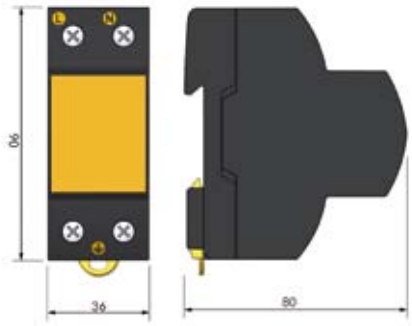
⚠ *Earth connection is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT85 Series

Technical Datasheet

Reference		ATVOLT P5 AT-8590	ATVOLT P12 AT-8514	ATVOLT P24 AT-8526	ATVOLT P48 AT-8549
Protection categories according to REBT:		I, II, III, IV			
Type of tests according to EN 61643-11:		Type 2+3			
Nominal voltage:	U_n	$5V_{DC}$	$12V_{DC}$	$24V_{DC}$	$48V_{DC}$
Maximum working voltage:	U_c	$7V_{DC}$	$15V_{DC}$	$31V_{DC}$	$65V_{DC}$
Nominal discharge current (wave 8/20µs):	I_n	10kA			
Maximum discharge current (8/20µs wave):	I_{max}	20kA			
Combined wave tension:	$U_{o.c.}$	6kV			
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	500V	570V	630V	730V
Response time:	t_r	< 25ns			
Working temperature:	ϑ	-40°C to +70°C			
SPD location:		Indoor			
Type of connection:		Parallel (one port)			
Number of poles:		2			
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material:		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> $10^{14}\Omega$			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections:		Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)			
Certificated tests according to: IEC 61643-1, EN 61643-11					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

Dimensions



ATCOMBO Series

PROTECTION BOX PROVIDED WITH SOCKETS

ATCOMBO

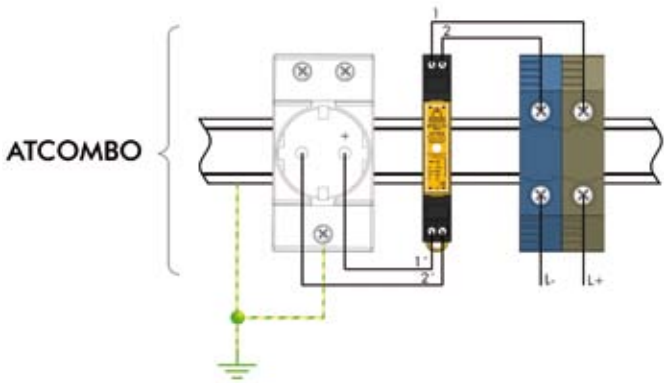
AT-8113 ATCOMBO 230: *230V_{AC} lines*
AT-8115 ATCOMBO 130: *130V_{AC} lines*
AT-9320 ATCOMBO 12: *12V_{DC} lines*
AT-9325 ATCOMBO 24: *24V_{DC} lines*
AT-9326 ATCOMBO 48: *48V_{DC} lines*

AT-3501: RF SPD TESTER:
Radiofrequency SPD tester

ATCOMBO series are power supply protection boxes with specific Schucko sockets to facilitate equipment connection.

Installation

ATCOMBO boxes are to be installed **in parallel or in series** with the Low Voltage line, depending on the different protectors they can use: ATCOVER or ATVOLT , connected to line/s, neutral and ground. **Fuses or circuit breakers must be present** upstream. They will be disconnected during the installation for working security.
Their installation is recommended where direct lightning currents could penetrate and very sensitive equipment is connected, without distance enough for SPDs coordination. Especial care should be taken when there is an **ATCOMBO box which contents ATVOLT enclosed**, since the proper polarity must always be kept.



⚠ **Earth connection** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

- ☐ Containing the SPDs with a lower residual voltage (ATCOVER, ATVOLT).
- ☐ Compact box, fully wired and easy to install. Fire resistant, robust, sealable.
- ☐ Discharge takes place in an internal encapsulated element, with no external flash.
- ☐ It remains inactive in normal conditions, without affecting the normal working of the line and without leakage.
- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATSUB series.
- ☐ Both common and differential protection for the three lines and neutral.
- ☐ No interruptions in power supply, thus avoiding data loss and other inconvenients for the user.
- ☐ It has a radiofrequency receptor in order to do the maintenance only with issuer equipment. When the RF SPD Tester is applied and the protector is working, the LED flickers green. If the cartridge is damage the LED does not flick.
- ☐ Wide variety of SPD for different working voltages.
- ☐ Conductor connection through screws, which allows absorbing a higher sustention.

The SPDs contained in ATCOMBO and their coordination have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table

ATCOMBO Series

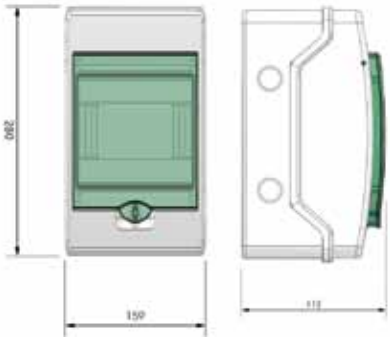
Technical Datasheet

Reference		ATCOMBO230 AT-8113	ATCOMBO130 AT-8115	ATCOMBO12 AT-9320	ATCOMBO24 AT-9325	ATCOMBO48 AT-9326
Protection categories according to REBT:		I, II, III, IV				
Type of tests according to EN 61643-11:		1 + 2 + 3		3		
Nominal voltage:	U_n	$230V_{AC}$ (50Hz)	$130V_{AC}$ (50Hz)	$12V_{DC}$	$24V_{DC}$	$48V_{DC}$
Maximum continuous operating voltage:	U_c	$255V_{AC}$ (50Hz)	$145V_{AC}$ (50Hz)	$15V_{DC}$	$31V_{DC}$	$65V_{DC}$
Maximum working current:	I_L	-		3A		
Nominal discharge current (8/20µs wave):	I_n	10kA		5kA		
Maximum discharge current (8/20µs wave):	I_{max}	30kA		-		
Impulse current (10/350µs wave):	I_{imp}	6kA		-		
Combined wave tension:	$U_{o.c.}$	10kV				
Protection level (1,2/50µs):	U_p	600V	500V	18V	35V	70V
Protection level at I_n (8/20µs)	$U_p(I_n)$	900V	700V	25V	40V	75V
Residual voltage with combination wave 6kV/3kA (L-N, L-G):	$U_{o.c.}$	6kV		10kV		
Response time:	tr	< 25ns		< 10ns		
Working temperature:	ϑ	-40°C to +70°C				
Dimensions:		200 x 267 x 112mm		280 x 159 x 112mm		
SPD location:		Outdoor				
Type of connection:		Parallel (one port)		Series (two ports)		
Number of poles:		2				
Fixing:		Wall or vertical support				
Enclosure material:		Autoextinguishing, isolating				
Enclosure protection:		IP65 according to IEC 60.529				
Isolating:		Double (Class II)				
Fire resistance:		650°C according to IEC 695-2-1				
Impact protection:		IK09 according to EN 50.102				
Connections:		Maximum section 25mm²		Maximum section 4mm²		
Certificated tests according to: IEC 61643-1, EN 61643-11						
Complies with requirements of: UL 1449						
Relevant standards: UNE 21186, NFC 17102, IEC61024-1, IEC61312-3						

Accessories

- ☐ AT-8517: ATVOLT 12 Mod.: $12V_{DC}$ lines
- ☐ AT-8527: ATVOLT 24 Mod.: $24V_{DC}$ lines
- ☐ AT-8550: ATVOLT 48 Mod.: $48V_{DC}$ lines

Dimensions



POWER SUPPLY PROTECTION OF AREAS WITH LOW OVERVOLTAGES

POWER SUPPLY PROTECTION OF AREAS WITH LOW OVERVOLTAGES

This protection is specially aimed for working in coordination with the power supply protection already seen in previous sections. Usually, one talks about tight protection compared to that seen in other sections, called coarse or medium.
This is focused to protect equipments more sensitive to overvoltages (computer systems, measures, electronics, etc.) and final customer equipments.

It's more flexible since it allows protection at both installation level (distribution board) and working place or particular equipment.
Aplicaciones Tecnológicas' SPDs attain coordinated protection of the complete electric installation from the mains to the very final customer equipment, leaving protection levels of the same order as its maximum working voltage.

ATFILTER SERIES

SPD provided with a filter for high frequency disturbances.

ATSOCKET SERIES

SPDs for indoors power supply installation.

ATPLUG SERIES

SPDs for already installed power supply sockets.

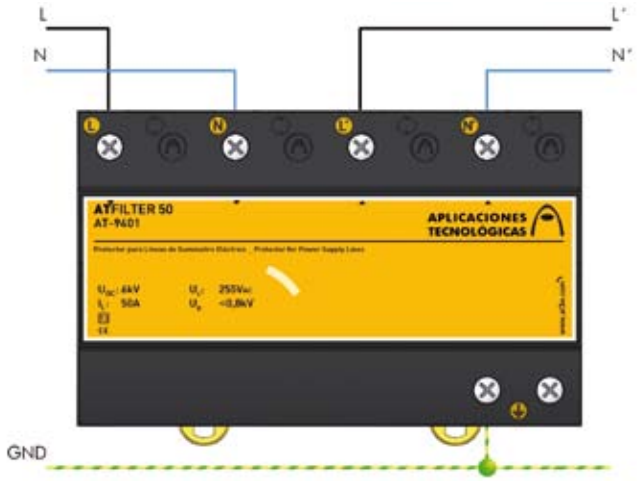
SURGE PROTECTOR PROVIDED WITH A FILTER AGAINST HIGH FREQUENCY DISTURBANCES

ATFILTER

AT-9402 ATFILTER 16: I_L lines 16A
AT-9403 ATFILTER 32: I_L lines 32A
AT-9401 ATFILTER 50: I_L lines 50A

Installation

ATFILTER devices are to be installed in series with the power supply line, that is, cutting the line and connecting the obtained cable ends to the input and output connectors. Please pay attention to these connections since if terminals are wrongly wired, a short circuit may happen.
On the other hand, it's of capital importance a right wiring of input/output terminals. If not, protector components won't act properly.
Linking the earth terminal to ground is a must.
The power should be disconnected during the installation of the SPD. The protector is ready to be fitted on the DIN rail of the distribution board, the closest to the equipment to be protected against overvoltages and screened against electromagnetic noise.



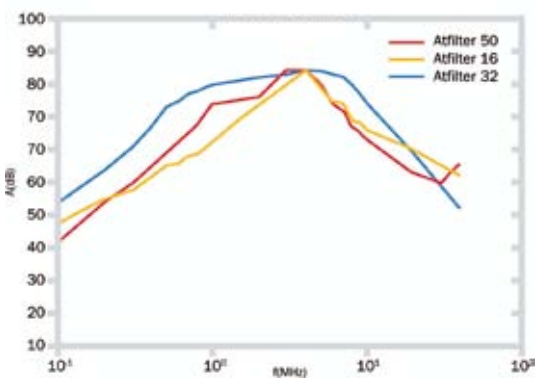
⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

ATFILTER device has been conceived with the purpose of providing a highly efficient protection to electronic equipments against overvoltages and high frequency disturbances.

This is achieved by mean of placing **gas discharge tubes** and **suppressor diodes beside a high quality low-pass frequency filter**, what implies a full protection against pulses of high amplitude and/or frequency.
Every electric disturbance above 100Hz will be attenuated.
Tight protection according to scaled protection recommended in Low Voltage Regulation (REBT ITC23).
Type 2 and 3 protector according EN 61643-11 and GUIDE BT-23 from REBT standards. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.
There are several models depending on the nominal current of the line to be protected (I_L).
The proper working of the ATFILTER equipments has been certified by **official independent laboratories**, verifying the proper coordination between SPDs.

Bode diagram of electromagnetic noise

Asymmetric attenuation

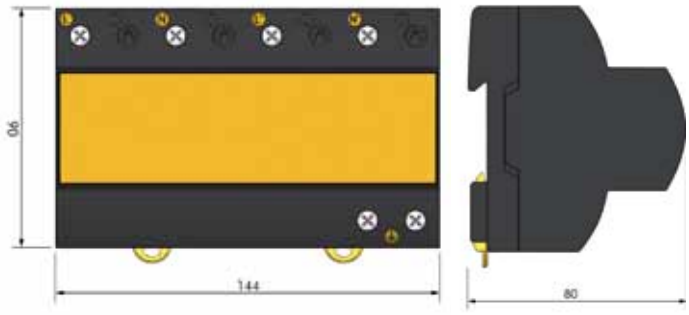


AT94 Series

Technical Datasheet

Reference		ATFILTER 16 AT-9402	ATFILTER 32 AT-9403	ATFILTER 50 AT-9401
Protection categories according to REBT:			I, II, III, IV	
Type of tests according to EN 61643-11:			Type 2 + 3	
Maximum working current:	I_L	16A	32A	50A
Nominal voltage:	U_n		$230V_{AC}$	
Maximum working voltage:	U_c		$255V_{AC}$	
Nominal frequency:			50 - 60Hz	
Nominal discharge current (wave 8/20µs):	I_n		5kA	
Maximum discharge current (8/20µs wave):	I_{max}		10kA	
Combined wave tension:	$U_{o.c.}$		6kV	
Inductance:	L		< 2mH	
Attenuation between 0.15 and 30MHz:			Min. 80dB a 4MHz Min.40dB with the range from 0.15 to 30 MHz	
Protection level at I_n (8/20µs wave):	$U_p(I_n)$		800V	
Residual voltage with combination wave 6kV/3kA:			600V	
Response time:	t_r		<25ns	
Working temperature:	ϑ		-40°C to +70°C	
SPD location:			Indoor	
Type of connection:			Series (two ports)	
Number of poles:			2	
Dimensions:			144 x 90 x 80mm (8 mod. DIN43880)	
Fixing:			DIN rail	
Enclosure material:			Polyamide	
Enclosure protection:			IP20	
Insulation resistance:			> $10^{14}\Omega$	
Autoextinguish enclosure:			V-0 Type according to UNE-EN 60707 (UL94)	
Connections L/N/GND:			Min/Max section multi-stranded: 4 / 35 mm² (11/2 AWG) Min/Max section single-stranded: 1 / 35 mm² (17/2 AWG)	
Certificated tests according to: IEC 61643-1, EN 61643-11				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

Dimensions



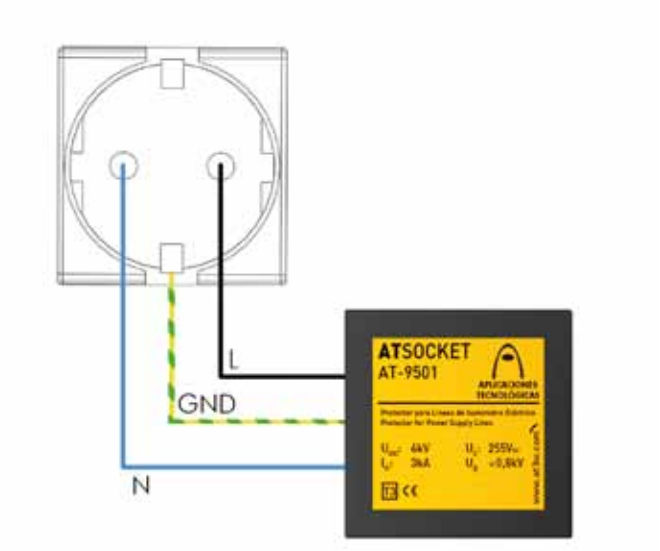
INDOORS PROTECTOR FOR POWER SUPPLY LINES

ATSOCKET

AT-9501 ATSOCKET: *Single phase protection*

Installation

To be installed in parallel with the power supply line, with connections to phase to be protected, neutral and ground.
The **power should be disconnected** during the installation of the SPD.
Its use is recommended in systems where overvoltage sensitive equipments are installed (computers, printers, servers, etc.) and always coordinated with protector type 1 or 2.



This SPD is designed for its connection inside the cable channels that feed the sockets.

Its small size allows its fitting close to the voltage sockets that will be used by customers.
It contains an efficient protection against transient overvoltages, for single-phase power supply lines.
Tight protection according to scaled protection recommended in Low Voltage Regulation (REBT ITC23).
Tested and certified as **Type 3** according to regulations UNe-EN61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD, ATSUB and ATCOVER.
- ☐ Made of supressor diodes.
- ☐ Small response time.
- ☐ Discharge takes place in an internal encapsulated element, with no external flash.
- ☐ No interruptions in power supply, thus avoiding data loss and other inconvenients for the user.
- ☐ Small size modular protection.
- ☐ Thermic control device and visual warning.

AT95 have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

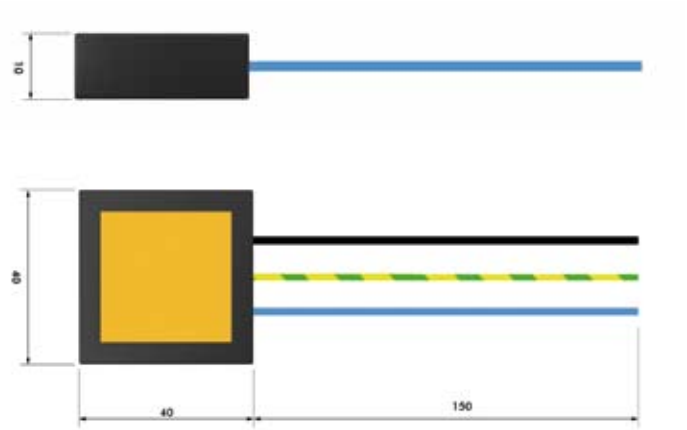
⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT95 Series

Technical Datasheet

Reference		ATSOCKET AT-9501
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 3
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 – 60Hz
Nominal discharge current (wave 8/20µs):	I_n	3kA
Combined wave tension:	$U_{o.c.}$	6kV
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	800V
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40ºC to +70ºC
Dimensions:		40 x 40 x 10mm
SPD location:		Indoor
Type of connection:		Parallel (one port)
Number of poles:		2
Enclosure material:		ABS
Enclosure protection:		IP20
Insulation resistance:		$> 10^{14}\Omega$
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)
Connections L/N/GND:		Section 2,5mm² 150mm long
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



AT96 Series

POWER SUPPLY PLUG-IN SPD

ATPLUG

AT-9601 ATPLUG:
Single phase line protection for Schuko.

This SPD is plugged directly in the same socket as the load to be protected.

Installation

To be installed **in parallel** with the loads plugged into the same socket.
Its use is recommended in systems where overvoltage sensitive equipments are installed (computers, printers, servers, etc.) and always coordinated with protector type 1 or 2.

It contains an effective protection based upon suppressor diodes against transient overvoltages, aimed towards single-phase power supply lines.
Tight protection according to scaled protection recommended in Low Voltage Regulation (REBT ITC23).
Its installation is simple, complementing the load to protect no matter where it's placed.
Tested and certified as **Type 3 protectors** according to regulations EN 61643-11 and GUIDE-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipment according to ITC-BT-23 from REBT.

- ☐ Coordinable with other SPDs such as ATSHOCK, ATSHIELD, ATSUB and ATCOVER.
- ☐ Short response time.
- ☐ Discharge takes place in an internal encapsulated element, with no external flash.
- ☐ No interruptions in power supply, thus avoiding data loss and other inconvenient for the user.
- ☐ Thermic control device and visual warning. When the protector it OK the green light its on. When there is a failure the light turns off.

AT96 SPDs have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

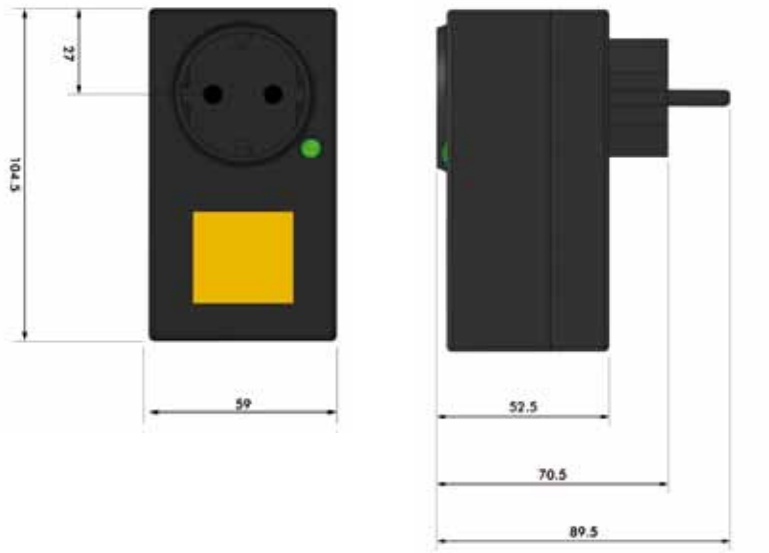
⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT96 Series

Technical Datasheet

Reference		ATPLUG AT-9601
Protection categories according to REBT:		I, II, III, IV
Type of tests according to EN 61643-11:		Type 3
Nominal voltage:	U_n	$230V_{AC}$
Maximum working voltage:	U_c	$255V_{AC}$
Nominal frequency:		50 - 60Hz
Nominal discharge current (wave 8/20µs):	I_n	3kA
Combined wave tension:	$U_{o.c.}$	6kV
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	800V
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40°C to +70°C
Dimensions:		105 x 90 x 59mm
SPD location:		Outdoor
Type of connection:		Parallel (one port)
Number of poles:		2
Enclosure material:		ABS
Enclosure protection:		IP20
Insulation resistance:		> $10^{14}\Omega$
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)
Certificated tests according to: IEC 61643-1, EN 61643-11		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



PROTECTION FOR DATA AND TELECOMMUNICATION LINES

PROTECTION FOR DATA AND TELECOMMUNICATION LINES

Surges often enter structures via telephone and data lines, thus affecting the equipment. The same as power supply lines they can cover large distances and connect very sensitive electronic equipment. Besides, telephone and data lines convey normally very low currents and reach the most fragile components. Examining any electronic device, it is clear that the power supply part is formed by more robust elements, while data communication lines connect directly to integrated circuits, other electronic components through the printed board thin tracks. Surges can cause severe damages in these tracks and components, degrading or destroying them and also affecting the data they store.

Telephone lines connect not only phone terminals but also more important and sensitive equipment, such as faxes and modems, inside and outside computers. Furthermore, one of the consequences of the global use of Internet is that many machines (PLCs, electrical household, etc.) activate through the telephone line.

Another very common trend is to design all kind of devices for remote distance controlling. This process often means the multiplication of cross-connections and wiring between devices that are placed in separated buildings or with different grounding. The risk of surges damaging the equipment increases then considerably, causing important economic losses not only due to the equipment damage but also the delay or cancellation of the processes and the services they should supply. Protecting communication lines against surges can solve all these problems.

Data and telephone lines need a wide previous study of the systems to be protected. Telecommunications is a field in constant evolution, where high precision is required and many different procedures exist. Each transmission protocol has its own working voltage, type of connection, pin-out, etc. All these data should be well known before designing a surge protection strategy that, firstly, does not affect the user and, secondly, is efficient against transient overvoltages.

Aplicaciones Tecnológicas, S.A. supplies specific data and telephone SPDs for the most common working conditions. Besides, being manufacturers, we can develop new devices for the new telecommunication types that appear in the market. Our SPDs are usually made of screwed terminals instead of RJ11, RJ45 and DB9 because they withstand higher currents.

ATFONO SERIES

For protection of standard, ADSL and ISDL telephone lines.

ATLINE SERIES

Data lines protection with a wide range of working voltages.

ATLAN SERIES

Computer lines and network protection (switches, hubs).

ATDB9 SERIES

Protection of data lines and communication buses with connector type DB9.

ATFREQ SERIES

Coaxial cable protectors for TV, CCTV and High Frequency signals.

AT91 Series

MODULAR PROTECTOR FOR TELEPHONE LINES FOR DIN RAIL

ATFONO

AT-3501: RF SPD TESTER: Radiofrequency SPD tester.

AT-9101 ATFONO: *prepared for 2 pairs of telephone lines*

Efficient protection for **analogical and ADSL telephone lines**, containing **coordinated protection for 2 pair of lines**.

- Both common and differential protection recommended for this type of lines.
- Allows the connection of 2 pairs of lines with a very small size (0,75 DIN modules)
- Protection for telephone lines and also for the digital and analogical equipment connected to these lines (fax, modem, etc).
- Pluggable modules for its easier substitution in case of failure without the need of disconnecting the wiring. When substituting the module the line suffers no interruptions.
- It has a radiofrequency receptor in order to do the maintenance only with issuer equipment. When the RF SPD Tester is applied and the protector is working, the LED flickers green. If the cartridge is damage the LED does not flick
- Earthing implemented through a metallic sheet opposite to the fixing DIN rail.
- In normal conditions stays inactive, without affecting the line working and without producing any leakage.
- Both common and differential modes of protection.
- Very fast response.
- Connection with screw pressure, which provides better lightning current withstanding capacity than usual telephone connectors.

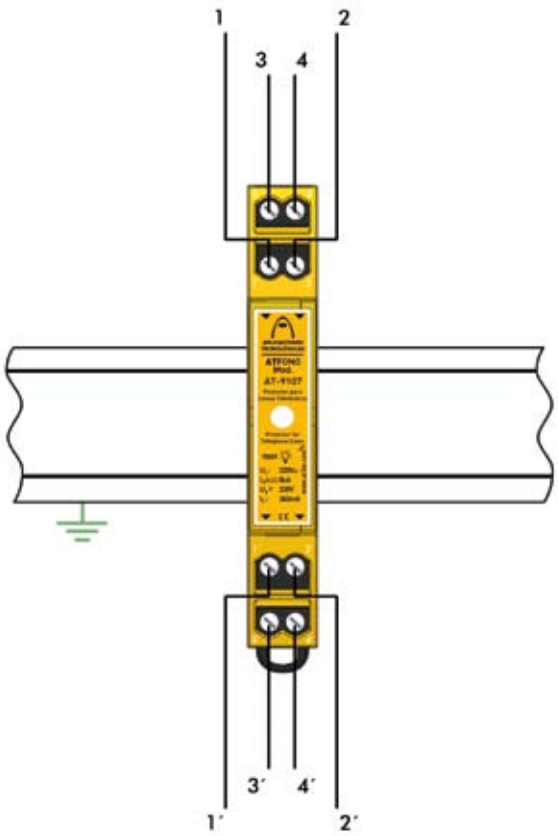
ATFONO SPD has been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATFONO Surge Protective Devices are to be installed in series with the telephone line, at the point where the line enters the building and always the telephone company indications should be complied.
When the 2 devices to be protected are placed in different buildings and intercommunicated, SPDs should be placed both where the line goes into and out of the buildings.
The recommended procedure for its installation is the following:

1. Cut the telephone cable
2. Insert the telephone ends in the connectors. Verify carefully that input and output connections are correctly placed.
3. Connect the DIN rail to the earth terminal, since the overvoltage should be derived to this element.



AT91 Series

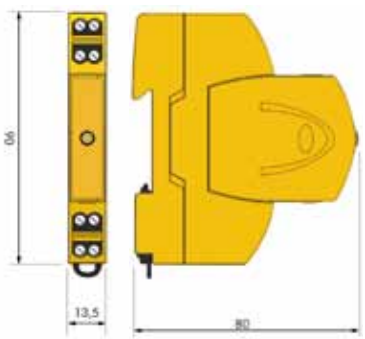
Technical Datasheet

Reference		ATFONO AT-9101
Nominal voltage:	U_n	$130V_{DC}$
Maximum continuous operating voltage:	U_c	$220V_{AC, DC}$
Nominal discharge current for line C2 10kV(1,2/50µs) / 5kA(8/20µs):	I_n(C2)	5kA
Total C2 nominal discharge current 10kV(1,2/50µs) / 5kA(8/20µs):		20kA
Protection level for 1,2/50µs wave:	U_p	250V
Protection level at I_n (8/20µs):	$U_p(I_n)$	330V
Maximum working current:	I_L	360mA
Resistance (series):	R_s	15Ω
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Series (two ports)
Number of poles:		4
Dimensions:		13,5 x 90 x 80mm (0,75 mod. DIN43880)
Fixing:		DIN rail
Enclosure material:		Polyamide
Enclosure protection:		IP20
Insulation resistance:		> 10^{14}Ω
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)
Connections:		Maximum section 4mm²
Certificated tests according to: IEC 61643-21, EN 61643-21		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Accessories

- AT-9107: ATFONO Mod.: 220V telephone lines

Dimensions



AT91 Series

PROTECTOR FOR TELEPHONE LINES WITH RJ11 CONNECTION

ATFONO RJ11

AT-9104 ATFONO RJ11:
prepared for telephone lines with connection type RJ11

Efficient protection for telephone lines in modules with **tight protection**.

ATFONO RJ11 is a protector with **RJ11 input and output connectors**, able to hold up nominal discharge currents of 2kA for each line.

- Both common and differential protection recommended for this type of lines.
- Protection for telephone lines and also for the digital and analogical equipment connected to these lines (fax, modem, etc).
- In normal conditions stays inactive, without affecting the line working and without producing any leakage.
- Discharge takes place in an internal encapsulated element, with no external flash.
- Very fast response.
- Includes cable with RJ11 connector of 20cm.

ATFONO RJ11 SPD has been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

It is recommended that the installation is done as close as possible to the equipment. A telephone cable with a connector RJ11 has 4 wires. The ATFONO RJ11 protects in series these 2 pairs of wires.
For a complete protection it must be coordinated with an ATFONO protector on the main entrance of the line.
When the 2 devices to be protected are placed in different buildings and intercommunicated, SPDs should be placed both sides of the line.
The recommended procedure for its installation is the following:

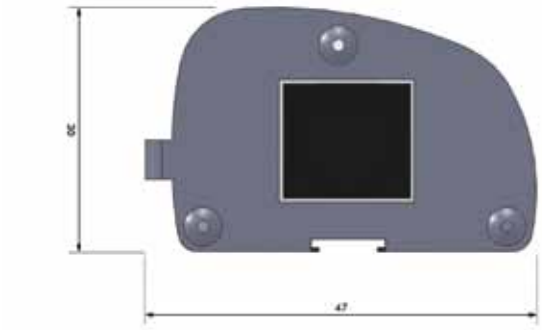
1. Insert the protector between the cable with RJ11 connector and the equipment to protect.
2. Bond the protector to the ground through a connector type “faston” supplied.

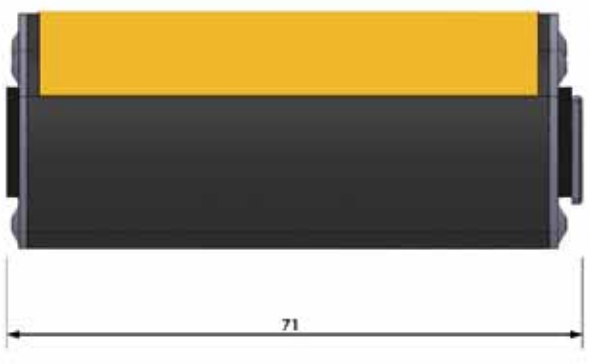
AT91 Series

Technical Datasheet

Reference		ATFONO RJ11 AT-9104
Nominal voltage:	U_n	$130V_{DC}$
Maximum continuous operating voltage:	U_c	$220V_{AC,\ DC}$
Nominal discharge current for line C2 10kV(1,2/50µs) / 5kA(8/20µs):	I_n(C2)	2kA
Protection level for 1,2/50µs wave:	U_p	250V
Protection level at I_n (8/20µs):	$U_p(I_n)$	330V
Maximum working current:	I_L	300mA
Resistance (series):	R_s	15Ω
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Serie (dos puertos)
Nº of pairs protected:		Series (two ports)
Dimensions		71 x 47 x 30mm
Enclosure material:		Aluminium
Enclosure protection:		IP20
Input / Output connector:		RJ11 / RJ11
Earthing:		6mm Faston
Certificated tests according to: IEC 61643-21, EN 61643-21		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions





AT91 Series

PROTECTOR FOR TELEPHONE LINES WITH RJ45 CONNECTION

ATFONO RJ45

AT-9108 ATFONO RJ45:
prepared for telephone lines with connection type RJ45.

Efficient protection **for telephone lines in modules with tight protection.**

ATFONO RJ45 is a protector with **input and output connectors RJ45**, able to hold up nominal discharge currents of 2kA for each line.

- Both common and differential protection recommended for this type of lines.
- Protection for telephone lines and also for the digital and analogical equipment connected to these lines (fax, modem, etc).
- In normal conditions stays inactive, without affecting the line working and without producing any leakage.
- Discharge takes place in an internal encapsulated element, with no external flash.
- Very fast response.
- Includes cable with RJ45 connector of 50cm.

ATFONO RJ45 SPD has been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

It is recommended that the installations are done as close as possible to the equipment. A telephone cable with a connector RJ45 has 4 wires. The ATFONO RJ45 protects in series these 2 pairs of wires.
For a complete protection it must be coordinated with an ATFONO protector on the main entrance of the line.
When the 2 devices to be protected are placed in different buildings and intercommunicated, SPDs should be placed both sides of the line.
The recommended procedure for its installation is the following:

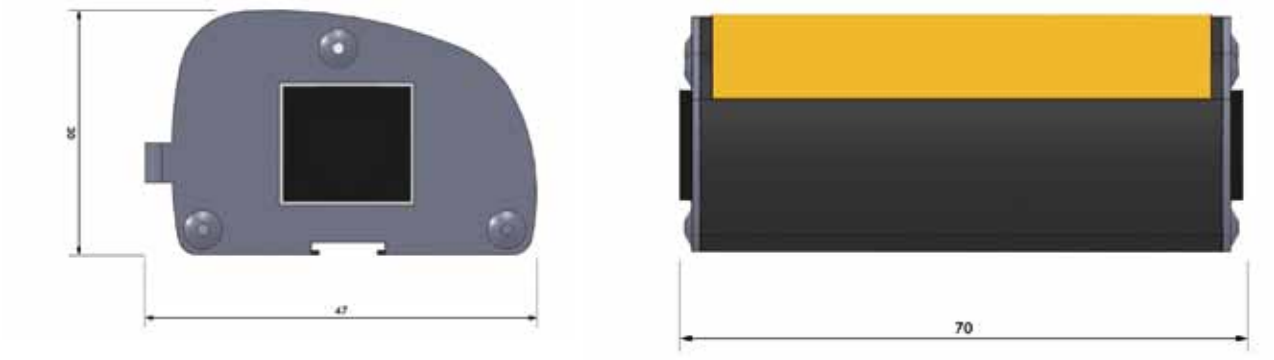
1. Insert the protector between the cable with RJ45 connector and the equipment to protect.
2. Bond the protector to the ground through a connector type “faston” supplied.

AT91 Series

Technical Datasheet

Reference		ATFONO RJ45 AT-9108
Nominal voltage:	U_n	$130V_{DC}$
Maximum continuous operating voltage:	U_c	$220V_{AC, DC}$
Nominal discharge current for line C2 10kV(1,2/50µs) / 5kA(8/20µs):	I_n(C2)	2kA
Protection level for 1,2/50µs wave:	U_p	250V
Protection level at I_n (8/20µs):	$U_p(I_n)$	330V
Maximum working current:	I_L	300mA
Resistance series:	R_s	15Ω
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Series (two ports)
Nº of pairs protected:		2
Dimensions:		70 x 47 x 30mm
Enclosure material:		Aluminium
Enclosure protection:		IP20
Input / Output connector:		RJ45 / RJ45 shielded
Earthing:		6mm Faston
Certificated tests according to: IEC 61643-21, EN 61643-21		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



AT91 Series

PROTECTOR FOR TELEPHONE LINES FOR KRONE OR REICHLE & DE-MASSARI CONNECTIONS WITH EARTHING TERMINAL

ATFONO KRONE / R&M

AT-9105 ATFONO R&M1:
coordinated protection for telephone lines connected to Reichle & De-Massari connections.
AT-9106 ATFONO R&M2:
tight protection for telephone lines connected to Reichle & De-Massari connections.
AT-9109 ATFONO KRONE:
coordinated protection for telephone lines connected to KRONE connections.

Efficient protection for telephone lines with KRONE or Reichle & De-Massari connections in modules with medium and tight coordinated protection for 1 pair of wires.

This is a modular and pluggable protector, able to withstand nominal discharge currents of 5kA for each line.

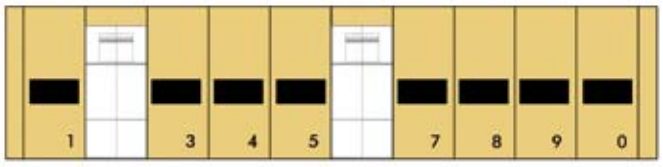
- Protection for telephone lines and also for the digital and analogical equipment connected to these lines (fax, modem, etc).
- Compact, unplug and with small dimensions.
- In normal conditions stays inactive, without affecting the line working and without producing any leakage.
- Discharge takes place in an internal encapsulated element, with no external flash.
- It has a testing system in the frontal part to check the protector's condition.
- The earthing will implement through a slot connected to the earthing terminal from the Reichle & De-Massari connection.

This SPD has been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Installation

ATFONO R&M are to be installed with the telephone line, on the entrance connection line, always respecting the indications from the telephonic company.
When the 2 devices to be protected are placed in different buildings and intercommunicated, SPDs should be placed both sides of the line.

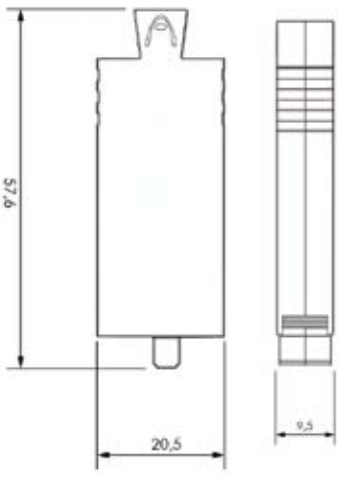


AT91 Series

Technical Datasheet

Reference		ATFONO R&M1 AT-9105	ATFONO R&M2 AT-9106	ATFONO KRONE AT-9109
Nominal voltage:	U_n		$130V_{DC}$	
Maximum continuous operating voltage:	U_c		$180V_{DC}$	
Nominal discharge current for line C2 10kV(1,2/50µs) / 5kA(8/20µs):	I_n(C2)	5kA	100A	5kA
Protection level at I_n (8/20µs):	U_p	400V		300V
Maximum working current:	I_L		250mA	
Response time:	t_r		< 10ns	
Working temperature:	ϑ		-40°C to +70°C	
SPD location:			Indoor	
Type of connection:			Series (two ports)	
Number of pairs protected :			1 pair	
Dimensions:			58 x 21 x 10mm	
Enclosure material:			Polyamide	
Enclosure protection:			IP20	
Insulation resistance:			> $10^{14}\Omega$	
Autoextinguish enclosure:			V-0 Type according to UNE-EN 60707 (UL94)	
Certificated tests according to: IEC 61643-21, EN 61643-21				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

Dimensions



AT92 Series

MODULAR PROTECTOR FOR DATA LINES FOR DIN RAIL

ATLINE

AT-3501: RF SPD TESTER:
Radiofrequency SPD tester.

AT-9205 ATLINE 5: *5V_{DC} lines*
AT-9212 ATLINE 12: *12V_{DC} lines*
AT-9215 ATLINE 15: *15V_{DC} lines*
AT-9224 ATLINE 24: *24V_{DC} lines*
AT-9230 ATLINE 30: *30V_{DC} lines*
AT-9248 ATLINE 48: *48V_{DC} lines*
AT-9260 ATLINE 60: *60V_{DC} lines*
AT-9280 ATLINE 80: *80V_{DC} lines*
AT-9210 ATLINE 110: *110V_{DC} lines*

Efficient protection for **data lines**, containing **coordinated protection** for two pair of lines.

- Protection for data lines and the digital or analogical equipments connected (computers, PLCs, discharge cells, etc.).
- Wide variety of SPDs for different working voltages.
- Both common and differential protection recommended for this type of lines.
- Allows the connection of two pairs of lines with a very small size (0,75 DIN modules).
- Pluggable modules for its easier substitution in case of failure without the need of disconnecting the wiring. When substituting the module the line suffers no interruptions.
- It has a radiofrequency receptor in order to do the maintenance only with issuer equipment. When the RF SPD Tester is applied and the protector is working, the LED flickers green. If the cartridge is damage the LED does not flick.
- Earthing implemented through a metallic sheet opposite to the fixing DIN rail.
- In normal conditions stays inactive, without affecting the line working and without producing any leakage.
- Low residual voltage in all the working voltages.
- Very fast response.
- Connection with screw pressure, which provides better lightning current withstanding capacity than usual telephone connectors.

ATLINE SPDs have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

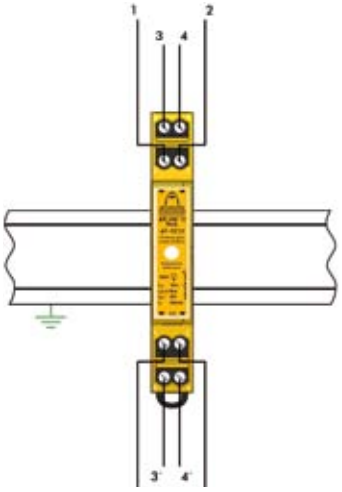
Installation

ATLINE SPDs should be installed preferably **as close to the equipment as possible**. One communication cable or data line may contain several wires. Each ATLINE can protect four of these wires. It is very important to know precisely the **working voltage, current and function of each wire**, in order to select the proper SPD. It is very important to know the working voltage, the intensity and the function of every wire of the line to select the correct protector.

In case where two equipments located **in separated buildings but linked together** are to be protected, protection must be installed in both sides of the line.

The recommended **installation procedure** is the following:

1. Cut the data cable.
2. Insert the cable ends in the connectors. Verify carefully that input and output connections are correctly placed.
3. Connect the DIN rail to the earth termination system where current will be diverted.



⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT92 Series

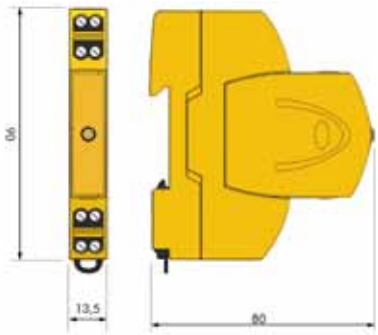
Technical Datasheet

Reference		ATLINE5 AT-9205	ATLINE12 AT-9212	ATLINE15 AT-9215	ATLINE24 AT-9224	ATLINE30 AT-9230
Nominal voltage:	U_n	5V $_{DC}$	12V $_{DC}$	15V $_{DC}$	24V $_{DC}$	30V $_{DC}$
Maximum working voltage:	U_c	7V$_{AC, DC}$	15V$_{AC, DC}$	18V$_{AC, DC}$	31V$_{AC, DC}$	37V$_{AC, DC}$
Nominal discharge current for line C2 10kV(1,2/50µs) / 5kA(8/20µs):	I_n(C2)	5kA				
Total nominal discharge current C2 10kV(1,2/50µs) / 5kA(8/20µs):		20kA				
Protection level (1,2/50µs):	U_p	9V	18V	20V	35V	40V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	13V	25V	25V	40V	45V
Nominal current:	I_N	360mA				
Series resistance:	R_s	15Ω				
Response time:	t_r	< 10ns				
SPD location:		Indoor				
Type of connection:		Serie (two ports)				
Number of poles:		4				
Working temperature:	ϑ	-40°C to +70°C				
Dimensions:		13,5 x 90 x 80mm (0,75 mod. DIN43880)				
Fixing:		DIN rail				
Enclosure material:		Polyamide				
Enclosure protection:		IP20				
Insulation resistance:		> 10^{14}Ω				
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)				
Connections:		Maximum Section 4mm²				
Certificated tests according to: IEC 61643-21, EN 61643-21						
Complies with requirements of: UL 1449						
Relevant standards: UNE 21186, NFC 17102, IEC 62305						

Accessories

- ☐ AT-9206 ATLINE 5 Mod.: 5V$_{DC}$ lines
- ☐ AT-9213 ATLINE 12 Mod.: 12V$_{DC}$ lines
- ☐ AT-9216 ATLINE 15 Mod.: 15V$_{DC}$ lines
- ☐ AT-9225 ATLINE 24 Mod.: 24V$_{DC}$ lines
- ☐ AT-9231 ATLINE 30 Mod.: 30V$_{DC}$ lines

Dimensions



AT92 Series

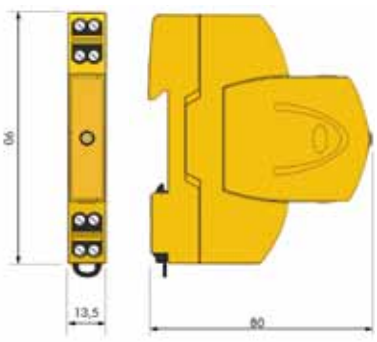
Technical Datasheet

Reference		ATLINE48 AT-9248	ATLINE60 AT-9260	ATLINE80 AT-9280	ATLINE110 AT-9210
Nominal voltage:	U_n	48V $_{DC}$	60V $_{DC}$	80V $_{DC}$	110V $_{DC}$
Maximum working voltage:	U_c	65$V_{AC,\ DC}$	72$V_{AC,\ DC}$	96$V_{AC,\ DC}$	132$V_{AC,\ DC}$
Nominal discharge current for line C2 10kV(1,2/50µs) / 5kA(8/20µs):	I_n(C2)	5kA			
Total nominal discharge current C2 10kV(1,2/50µs) / 5kA(8/20µs):		20kA			
Protection level (1,2/50µs):	U_p	70V	90V	120V	160V
Protection level at I_n (8/20µs wave):	$U_p(I_n)$	75V	100V	135V	180V
Nominal current:	I_N	360mA			
Series resistance:	R_s	15Ω			
Response time:	t_r	< 10ns			
SPD location:		Indoor			
Type of connection:		Serie (two ports)			
Number of poles:		4			
Working temperature:	ϑ	-40°C to +70°C			
Dimensions:		13,5 x 90 x 80mm (0,75 mod. DIN43880)			
Fixing:		DIN rail			
Enclosure material		Polyamide			
Enclosure protection:		IP20			
Insulation resistance:		> 10^{14}Ω			
Autoextinguish enclosure:		V-0 Type according to UNE-EN 60707 (UL94)			
Connections:		Maximum Section 4mm²			
Certificated tests according to: IEC 61643-21, EN 61643-21					
Complies with requirements of: UL 1449					
Relevant standards: UNE 21186, NFC 17102, IEC 62305					

Accessories

- ☐ AT-9249 ATLINE 48 Mod.: 48V_{DC} lines
- ☐ AT-9261 ATLINE 60 Mod.: 60V_{DC} lines
- ☐ AT-9281 ATLINE 80 Mod.: 80V_{DC} lines
- ☐ AT-9211 ATLINE 110 Mod.: 110V_{DC} lines

Dimensions



ATLAN Series

SINGLE PROTECTOR FOR COMPUTER NETWORKS

ATLAN

AT-2107 ATLAN 100 BASE-T:
single network SPD with speed of 100Mbit/s.
AT-2204 ATLAN 1000 BASE-T POE:
single network SPD with speed of 1 Gbit/s type Over Ethernet
AT-2207 ATLAN 1000 BASE-T:
single network SPD with speed of 1 Gbit/s.

Installation

Protection should be done as close as **possible to the equipment**. A UTP cable provided with a RJ45 connector has 8 wires. ATLAN protects **in series** 4 pairs of wire.
In case where two equipments located in **separated buildings but linked together** are to be protected, protection must be installed in both sides of the line.
The recommended installation procedure is as it follows:

1. Insert the protector between the network wire with RJ45 connector and the equipment to be protected.
2. Bond the protector to the ground through a connector type "faston" supplied.

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 is a protector with **RJ45 input and output connectors**, with a withstanding current up to 2kA for line.
It is available with different voltages and data transmission speed.
It's designed to protect individually every single equipment connected to the computers network.
1000 BASE-T version is design for equipments which transmit a **big amount of data** (working stations, graphic stations, servers...)
Includes cable with connector RJ45 of 50 cm.
ATLAN have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

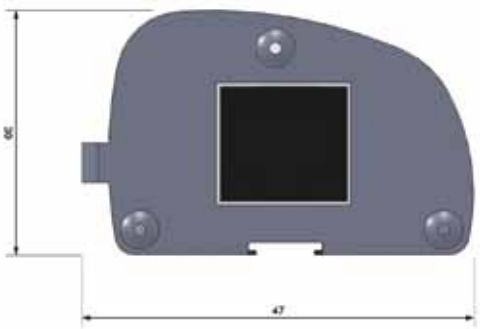
⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

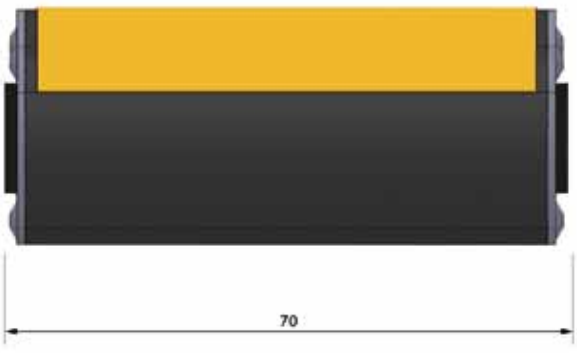
ATLAN Series

Technical Datasheet

Reference		ATLAN 100 BASE-T AT-2107	ATLAN 1000 BASE-T POE AT-2204	ATLAN 1000 BASE-T AT-2207
Maximum speed transfer:		100Mbit/s	1000Mbit/s	1000Mbit/s
Nominal voltage :	U_n	$5V_{DC}$	$48V_{DC}$	$5V_{DC}$
Maximum continuous operating voltage:	U_c	$6V_{DC}$	$65V_{DC}$	$6V_{DC}$
Nominal discharge current for line C2 10kV(1,2/50µs) / 5kA(8/20µs):	I_n(C2)		2kA	
Protection level at In (8/20µs):	U_p	50V	100V	50V
Maximum working current:	I_L		300mA	
Series resistance:	R_s		15Ω	
Response time:	t_r		< 10ns	
Working temperature:	ϑ		-40 a +80°C	
SPD location:			Indoor	
Type of connection:			Series (two ports)	
Number of pairs protected :			4 pairs	
Dimensions:			70 x 47 x 30mm	
Enclosure material:			Aluminium	
Enclosure protection:			IP20	
Input / Output connector:			RJ45 / RJ45 shielded	
Earthing:			6mm Faston	
Certificated tests according to: IEC 61643-21, EN 61643-21				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

Dimensions





ATLAN 1000 BASE-T CAT6 Series

SINGLE PROTECTOR FOR COMPUTER NETWORKS WITH CLASS 6 CATEGORY

ATLAN 1000 BASE-T-CAT6

AT-2213 ATLAN 1000 BASE-T CAT6:
single network SPD
with category 6 wiring.

Installation

Protection should be done **as close as possible to the equipment**. A UTP cable provided with a RJ45 connector has 8 wires. ATLAN protects in series 4 pairs of wire.
In case where two equipments located in **separated buildings but linked together** are to be protected, protection must be installed in both sides of the line.
The recommended installation procedure is as it follows:

1. Insert the protector between the network wire with RJ45 connector and the equipment to be protected.
2. Bond the protector to the ground through a connector type “faston” supplied.

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 1000 BASE-T CAT6 is a protector with **RJ45 input and crimped output connectors**, with a withstanding current up to 2kA for each line with a speed transmission of 250MHz.
It is designed to protect every single equipment connected to a 1000 BASE-T computer network with wiring of category 6 which transmit a **big amount of data** (working stations, graphic stations, servers...)
It is Included category 6 cable with connector RJ45 of 50 cm already crimped.
ATLAN CAT6 have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

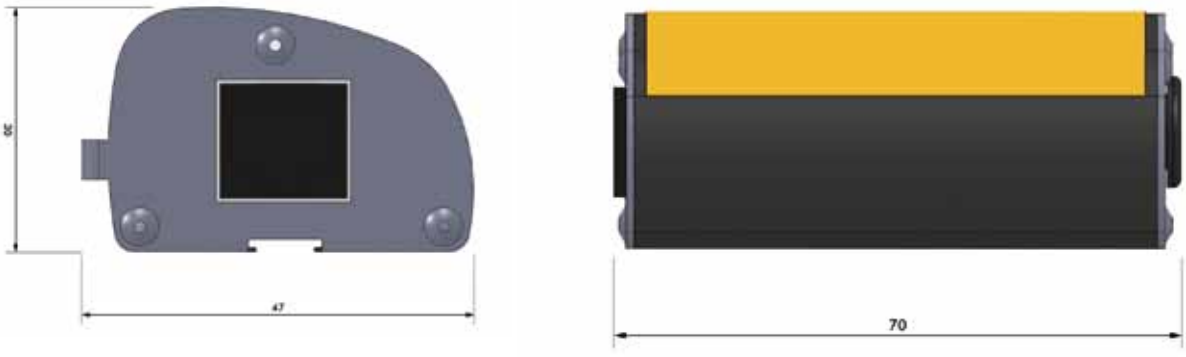
⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

ATLAN 1000 BASE-T CAT6 Series

Technical Datasheet

Reference		ATLAN 1000 BASE-T CAT6 AT-2213
Maximum speed transfer:		1000Mbit/s
Nominal voltage :	U_n	$5V_{DC}$
Maximum continuous operating voltage:	U_c	$25V_{DC}$
Nominal discharge current for line C2 4kV(1,2/50µs) / 2kA(8/20µs):	I_n(C2)	2kA
Protection level:	U_p	100V
Maximum working current:	I_L	300mA
Series resistance:	R_s	15Ω
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Series (two ports)
Number of pairs protected :		4 pairs
Dimensions:		70 x 47 x 30mm
Enclosure material:		Aluminium
Enclosure protection:		IP20
Input / Output connector:		RJ45 crimped cable / RJ45 shielded
Earthing:		6mm Faston
Certificated tests according to: IEC 61643-21, EN 61643-21		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



PROTECTOR AGAINST OVERVOLTAGES FOR 8 COMPUTER LINES IN ONE BOX

ATLAN-C 8

AT-2221 ATLAN-C 8:
protector ready for 8 local network lines

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.

Installation

Protection should be done **as close as possible to the equipment**.
In case where two equipments located in **separated buildings but linked together** are to be protected, protection must be installed in both sides of the line.
The recommended installation procedure is as it follows:

1. Insert the protector between the network wire with RJ45 connector and the equipment to be protected.
2. Bond the cabinet ground to the ground marked in the box chassis.

RJ45 Cable from network

RJ45 Cable to PC

ATLAN C-8 is an SPD prepared for **8 line** protection, 4 pairs protected per line. This is done with a Printed Circuit Board with **RJ45 input/output connectors**.
With a withstanding current up to 2kA for every line and a transfer speed of Gbits/s.
It's specially designed to protect equipments which required a high Internet speed connection, like the PC´s form a cyber place.
Includes category 8 cable with connector RJ45 of 50 cm.
ATLAN C-8 have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

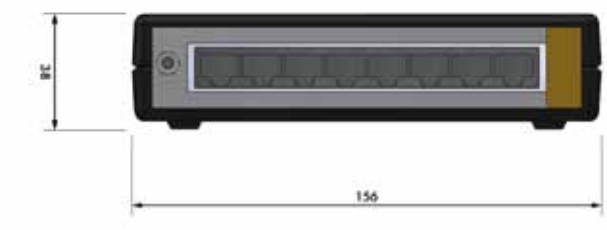
⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

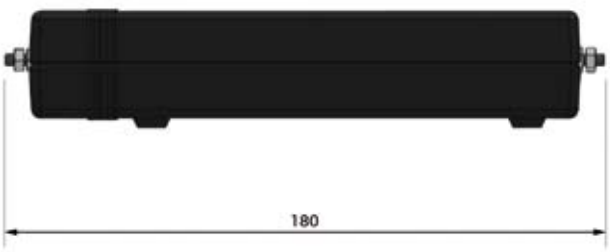
ATLAN-C 8 Series

Technical Datasheet

Reference		ATLAN-C 8 AT-2221
Maximum speed transfer:		1000Mbit/s
Nominal voltage :	U_n	$5V_{DC}$
Maximum continuous operating voltage:	U_c	$6V_{DC}$
Nominal discharge current for line C2 4kV(1,2/50µs) / 2kA(8/20µs):	I_n(C2)	2kA
Protection level:	U_p	50V
Maximum working current	I_L	300mA
Series resistance:	R_s	15Ω
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40ºC to +70ºC
SPD location:		Indoor
Type of connection:		Series (two ports)
Number of pairs protected :		8 x 4 pairs
Dimensions:		180 x 156 x 38mm
Enclosure material:		Polyamide
Enclosure protection:		IP20
Insulation resistance:		> 10^{14}Ω
Autoextinguish enclosure:		Type V-0 according to UNE-EN 60707 (UL94)
Input / Output connector:		RJ45 / RJ45 shielded
Earthing:		M5 screw
Certificated tests according to: IEC 61643-21, EN 61643-21		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions





ATLAN 24/16/8 Series

PROTECTOR FOR COMPUTER NETWORK RACK

ATLAN 24/16/8

AT-2206 ATLAN 8:
protector in rack ready for 8 network lines.
AT-2209 ATLAN 16:
protector in rack ready for 16 network lines.
AT-2208 ATLAN 24:
protector in rack ready for 24 network lines.

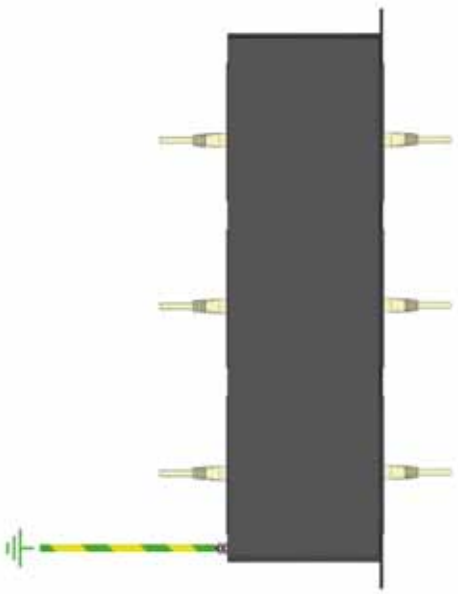
ATLAN SPDs are specially designed **to avoid failures in data transfer between equipments inside the same network**. They protect the input of the electronic circuits of the network cards against harms due to transient currents.

Installation

Protection should be done **as close as possible to the equipment**. In this particular case, we're talking about switches and hubs.
In case where two equipments located in **separated buildings but linked together** are to be protected, protection must be installed in both sides of the line.

The recommended installation procedure is as it follows:

1. Screw down protectors in the box prepared for mounting in the 19" rack.
2. Insert the network distribution lines that come off the hub or switch to the protector.
3. Bond the cabinet ground to the ground marked in the box chassis.



RJ45 Cable from network

RJ45 Cable to PCs

ATLAN 24/16/8 is an SPD prepared for **24, 16 and 8 lines** of protection with four pairs protected per line. This is done with a Printed Circuit Board with **RJ45 input/output connectors**.
With a withstanding current up to 2kA for each line and a transfer speed of Gbits/s.
It's aimed to be inserted into a rack and protect distribution computer network cabinets. Because of its high transfer speed, it's suitable for networks **transferring a big amount of data** (servers, workstations, graphic stations, etc).
Includes output cable with connector RJ45 of 50 cm.
ATLAN 24/16/8 have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

Serie ATLAN 24/16/8

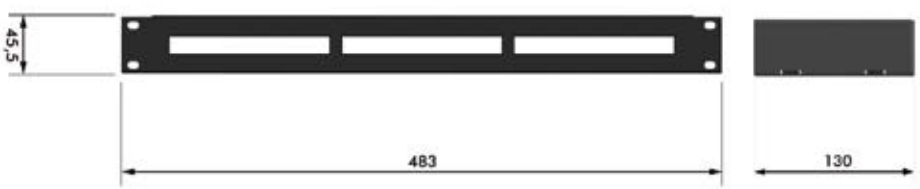
Technical Datasheet

Reference		ATLAN 8 AT-2206	ATLAN 16 AT-2209	ATLAN 24 AT-2208
Maximum speed transfer:			1000Mbit/s	
Nominal voltage:	U_n		$5V_{DC}$	
Maximum continuous operating voltage:	U_c		$6V_{DC}$	
Nominal discharge current for line C2 4kV(1,2/50µs) / 2kA(8/20µs):	I_n(C2)		2kA	
Protection level:	U_p		50V	
Maximum working current:	I_L		300mA	
Series resistance:	R_s		15Ω	
Response time:	t_r		< 10ns	
Working temperature:	ϑ		-40°C to +70°C	
SPD location:			Indoor	
Type of connection:			Series (two ports)	
Number of pairs protected:		8 x 4 pairs	16 x 4 pairs	24 x 4 pairs
Dimensions:			483 x 130 x 46mm	
Enclosure material:			Steel	
Enclosure protection:			IP20	
Input / Output connector:			RJ45 / RJ45 shielded	
Earthing:			M5 screw	
Certificated tests according to: IEC 61643-21, EN 61643-21				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

Accessories

- ATLAN 8 PCB – AT-2215
  Printed Circuit Board for ATLAN 8/16/24. It is prepared for 8 lines.
- ATLAN 8/24 – AT-2201
  Metallic panel where ATLAN 8 PCB modules can be fitted in up to a number of 3, to be monted in 19'' racks.

Dimensions



PROTECTOR FOR COMPUTER NETWORK RACK WITH CATEGORY 6 WIRING

ATLAN 12/8/4 CAT6

AT-2217 ATLAN 4 CAT6:
protector in rack ready for 4 network lines category 6.
AT-2212 ATLAN 8 CAT6:
protector in rack ready for 8 network lines category 6.
AT-2211 ATLAN 12 CAT6:
protector in rack ready for 12 network lines category 6.

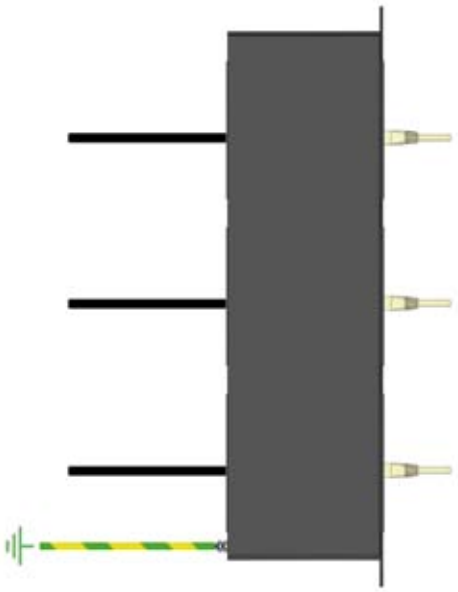
ATLAN SPDs are specially designed **to avoid failures in data transfer between equipments inside the same network**. They protect the input of the electronic circuits of the network cards against harms due to transient currents.

ATLAN 12/8/4 is an SPD prepared for **12, 8 and 4 lines** of protection with four pairs protected per line. This is done with a Printed Circuit Board with **RJ45 input and already crimped output connectors** with a withstanding current up to 2kA for each line and a transfer speed of 250MHz.
It's aimed to be inserted into a rack and protect distribution computer network cabinets. Because of its high transfer speed, it's suitable for networks **transferring a big amount of data** (servers, workstations, graphic stations, etc).
Includes output cable with 6 connector RJ45 already crimped of 50 cm.
ATLAN 12/8/4 CAT6 have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

Installation

Protection should be done **as close as possible to the equipment**. In this particular case, we're talking about switches and hubs.
In case where two equipments located **in separated buildings but linked together** are to be protected, protection must be installed in both sides of the line.
The recommended installation procedure is as it follows:

1. Screw down protectors in the box prepared for mounting in the 19" rack.
2. Insert the network distribution lines that come off the hub or switch to the protector.
3. Bond the cabinet ground to the ground marked in the box chassis.



Cable from network

RJ45 Cable to PCs

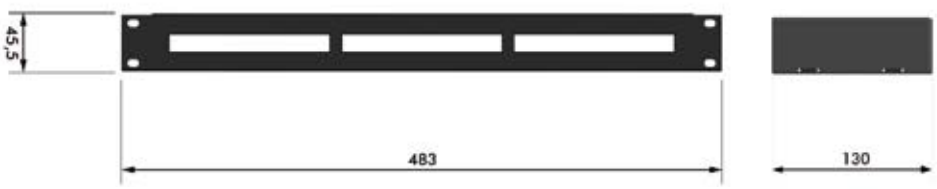
⚠ ***Earth connection** is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

ATLAN 12/8/4 CAT6 Series

Technical Datasheet

Reference		ATLAN 4 CAT6 AT-2217	ATLAN 8 CAT6 AT-2212	ATLAN 12 CAT6 AT-2211
Maximum speed transfer:			1000Mbit/s	
Nominal voltage:	U_n		$5V_{DC}$	
Maximum continuous operating voltage:	U_c		$26V_{DC}$	
Nominal discharge current for line C2 4kV(1,2/50µs) / 2kA(8/20µs):	I_n(C2)		2kA	
Protection level:	U_p		100V	
Maximum working current:	I_L		300mA	
Series resistance:	R_s		15Ω	
Response time:	t_r		< 10ns	
Working temperature:	ϑ		-40°C to +70°C	
SPD location:			Indoor	
Type of connection:			Series (two ports)	
Number of pairs protected:		4 x 4 pairs	8 x 4 pairs	12 x 4 pairs
Dimensions:			483 x 130 x 46mm	
Enclosure material:			Steel	
Enclosure protection:			IP20	
Input / Output connector:			RJ45 crimped cable / RJ45 shielded	
Earthing:			M5 screw	
Certificated tests according to: IEC 61643-21, EN 61643-21				
Complies with requirements of: UL 1449				
Relevant standards: UNE 21186, NFC 17102, IEC 62305				

Dimensions



INDIVIDUAL PROTECTOR FOR DATA LINES TYPE DB9

ATDB9

AT-2300 ATDB9:
Individual protector with connector type DB9 for data lines.

Installation

Protection should be done **as close as possible to the equipment**. A SUB-D9 connector has 9 wires. The ATDB9 protects in series this 9 wires.
In case where two equipments located in **separated buildings but linked together** are to be protected, protection must be installed in both sides of the line.
The recommended installation procedure is as it follows:

1. Insert the protector between the communication cable with connector DB9 and the equipment to protect.
2. Bond the protector to the ground through a connector type “faston” supplied.

ATDB9 SPDs are specially designed **to avoid failures in data transfer between equipments with connectors type DB9 or SUB-D9**.

They are specially design for communications type RS-232, RS-485, TTL and buses type **Profibus, Can, I2C and SPI**
ATDB9 is a screened protector with **SUB-D9 input and output connectors**, with a withstanding current of 2kA for each line.
ATDB9 have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

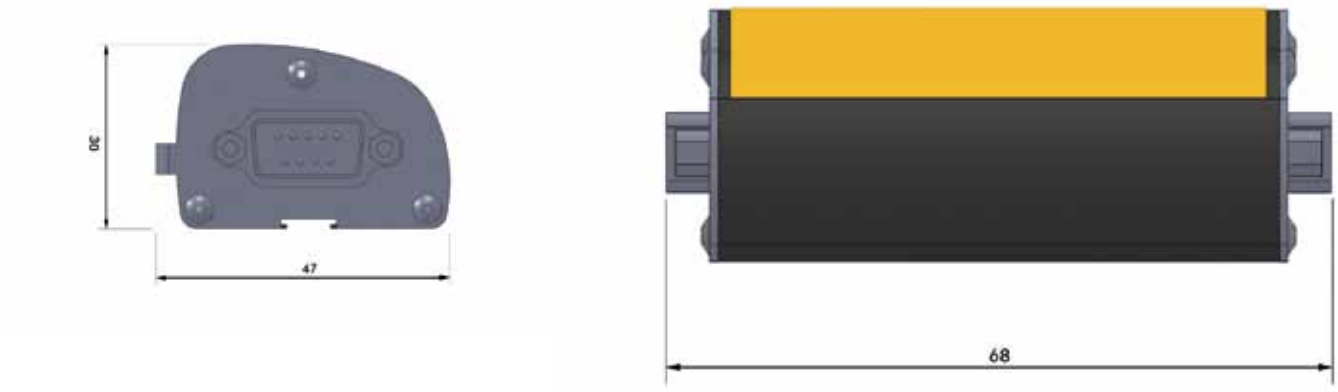
⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

AT23 - ATDB9 Series

Technical Datasheet

Reference		ATDB9 AT-2300
Nominal voltage:	U_n	$12V_{DC}$
Maximum continuous operating voltage:	U_c	$15V_{DC}$
Nominal discharge current for line C2 4kV(1,2/50µs) / 2kA(8/20µs):	I_n(C2)	2kA
Protection level:	U_p	80V
Maximum working current:	I_L	300mA
Series resistance:	R_s	15Ω
Response time:	t_r	< 10ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Series (two ports)
Number of wires protected:		9 wire
Dimensions:		68 x 47 x 30mm
Enclosure material:		Aluminium
Enclosure protection:		IP20
Input / Output connector:		DB9 / DB9
Earthing:		6mm Faston
Certificated tests according to: IEC 61643-21, EN 61643-21		
Complies with requirements of: UL 1449		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

Dimensions



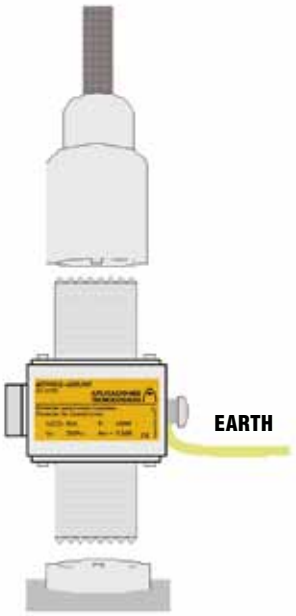
SURGE PROTECTIVE DEVICES FOR COAXIAL CABLES

ATFREQ

AT-2102 ATFREQ-50UHF: *Type UHF 50W protector.*
AT-2103 ATFREQ-F: *Type F 50W protector.*
AT-2104 ATFREQ-TV: *Type TV 50W protector.*
AT-2105 ATFREQ-50BNC015: *Type BNC 50W protector 0,15dB.*
AT-2106 ATFREQ-50N: *Type N 50W protector.*
AT-2108 ATFREQ-400BNC015: *Type BNC 400W protector 0,15dB.*
AT-2109 ATFREQ-400UHF: *Type UHF 400W protector.*
AT-2110 ATFREQ-7/16: *Type 7/16 900W protector.*
AT-2111 ATFREQ-400N: *Type N 400W protector.*
AT-2115 ATFREQ-50BNC: *Type BNC 50W protector.*
AT-2118 ATFREQ-400BNC: *Type BNC 400W protector.*

Installation

ATFREQ SPDs are designed to be placed in series with the aerial signal cable. It is convenient to install it as close as possible to the equipment to be protected.
Each protector is provided with two coaxial connectors for an easy insertion and one earthing terminal. We supply SPDs provided with the most widely employed connectors (**BNC, UHF, N, F, TV, 7/16**) and male/female adaptors for direct insertion in any connection.
It is important to point out that ATFREQ protects the signal coaxial cable coming from the aerial, not the power supply. Power supply should be protected using specific SPDs such as ATSUB, ATCOVER, ATSHOCK or ATVOLT.
Connection to earth is carried out using a M5 screw placed at the SPD side. It must be as straight as possible, using a proper terminal and cable.



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.)
Efficient protection against transitory surtentions, through **gas discharge tubes** with **10kA** withstand.

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

ATFREQ protectors have been tested in **official, independent laboratories**, obtaining their characteristics according to relevant standards (related in the table).

⚠ ***Earth connection*** *is a must. Earthing in all the installation must be bonded either directly or by a spark gap and resistance should be lower than 10Ω. If the indications of this datasheet are not fulfilled during the use or installation of the SPDs, the protection assured by this device could be endangered.*

ATFREQ Series

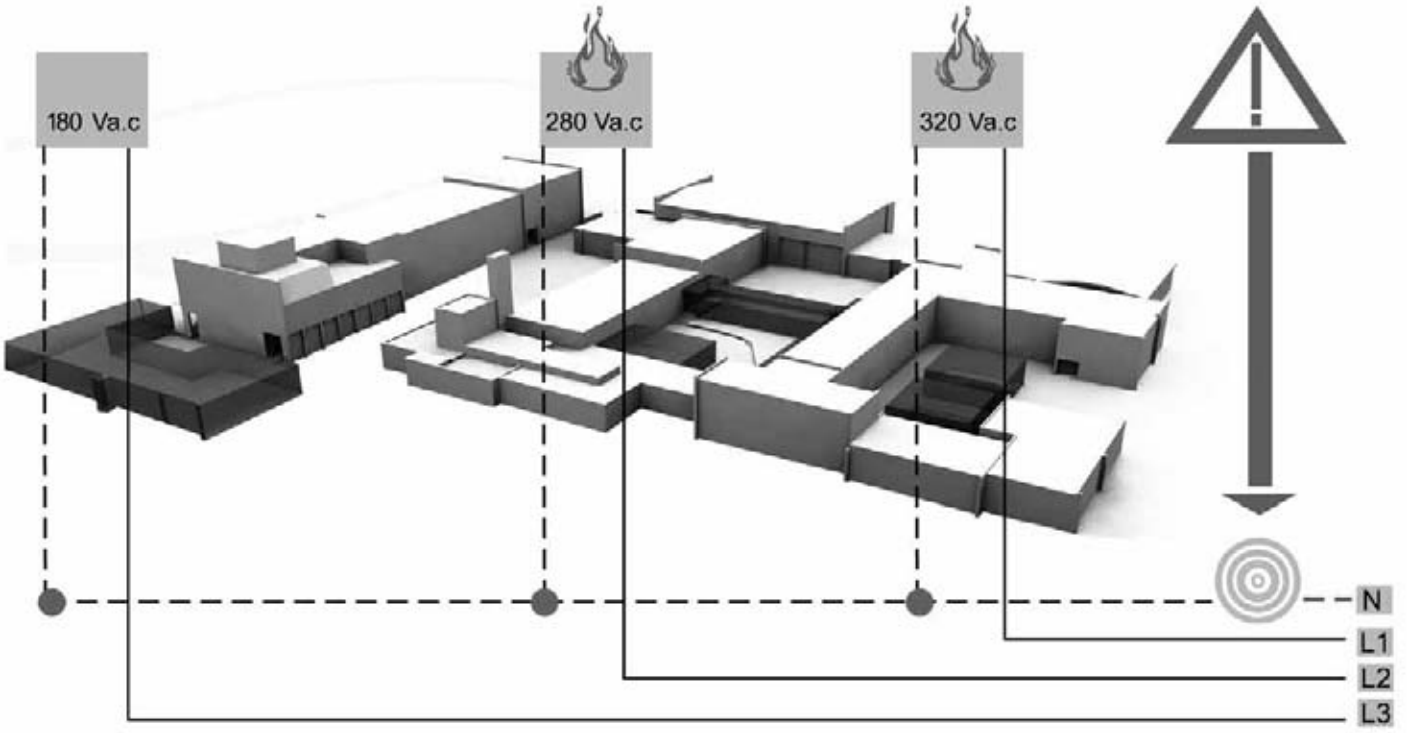
Technical Datasheet

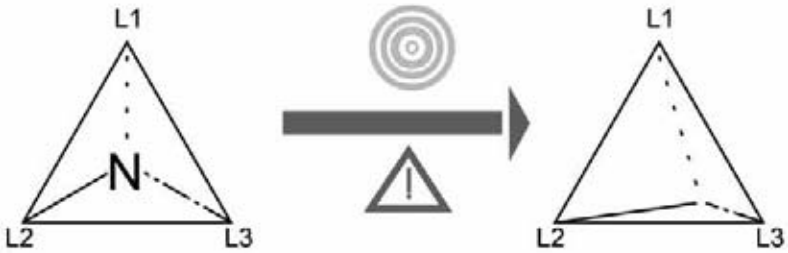
Reference	ATFREQ	Connector	Frequency range	Atenuation	Impedance	Max. working voltage (U_c)	Exchanged Power	DC Sparkover voltage
AT-2104	TV	TV	0-1 GHz	< 1,2dB	75Ω	$70V_{DC}$	50W	90V
AT-2103	F	F (sat.)	0-2 GHz	< 0,5dB				
AT-2105	50BNC015	BNC	0-1 GHz	< 0,15dB	50Ω	$70V_{DC}$	50W	90V
AT-2115	50BNC			< 0,2dB				
AT-2108	400BNC015			< 0,15dB		$200V_{DC}$	400W	250V
AT-2118	400BNC			< 0,2dB				
AT-2106	50N	N	0-3 GHz	< 1,5dB	50Ω	$70V_{DC}$	50W	90V
AT-2111	400N			< 1,5dB		$200V_{DC}$	400W	250V
AT-2102	50UHF	UHF	0-3 GHz	< 0,3dB	50Ω	$70V_{DC}$	50W	90V
AT-2109	400UHF			< 0,3dB		$200V_{DC}$	400W	250V
AT-2110	7/16	7/16”	0,9-2,6 GHz	< 0,5dB	50Ω	$350V_{DC}$	900W	600V

Common Characteristics

Maximum discharge current (8/20µs wave):	I_{max}	10kA
Nominal discharge current for C2 line 10kV (1,2/50µs) / 5kA(8/20µs):	I_n(C2)	5kA
Response time:	t_r	< 100ns
Working temperature:	ϑ	-40°C to +70°C
SPD location:		Indoor
Type of connection:		Series (two ports)
Enclosure material:		Steel
Enclosure protection:		IP20
Earthing:		M5 screw
Certificated tests according to: IEC 61643-21, EN 61643-21		
Complies with requirements of: UL 1449		
Relevant standards UNE 21186, NFC 17102, UNE-EN62305		

POWER FREQUENCY OVERVOLTAGES


180 Va.c
280 Va.c
320 Va.c
N
L1
L2
L3

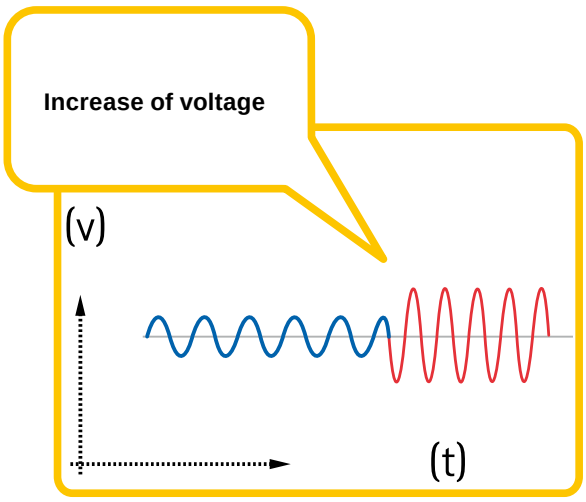

L1
N
L2
L3
L1
L2
L3

POWER FREQUENCY OVERVOLTAGES AND ITS DAMAGES

Power frequency, permanent or maintained overvoltages are those whose duration are relatively long (several cycles) and can cause damages on the installation and the electrical equipments.

Usual causes:

- ☐ Defect connection to the neutral.
- ☐ Lower consumption.



SELECTION OF THE PROTECTOR

			ONE RESIDUAL CURRENT DEVICE	SEVERAL RESIDUAL CURRENT DEVICES		
			Permanent overvoltage protection triggering on the residual current device	Permanent overvoltage protection triggering on the Main Circuit Breaker with different possibilities of timing.		
			With time delay	Without time delay including shunt release and Miniature Circuit Breaker (up to 63A)	Time delay for shunt release	Time delay including shunt release and Miniature
SINGLE-PHASE POWER SUPPLY	PERMANENT	INDIVIDUAL	ATCONTROL/D P-M (pag. 248)	IGA TEST M (pag. 242)		
	PERMANENT + TRANSIENT	COMBINED (integrated on 1 protector)	ATCONTROL/D PT-M (pag. 248)		ATCONTROL/B PT-M (pag. 244)	KIT ATCONTROL/B PT-M (pag. 246)
		MODULAR (divided in 2 protectors)	ATCONTROL/D P-M (pag. 248) + ATSUB-D M (pag. 158)	IGA TEST M (pag. 242) + ATSUB-D M (pag. 158)		
THREE-PHASE POWER SUPPLY	PERMANENT	INDIVIDUAL	ATCONTROL/D P-T (pag. 249)	IGA TEST T (pag. 243)		
	PERMANENT + TRANSIENT	COMBINED (integrated in 1 protector)	ATCONTROL/D PT-T (pag. 249)		ATCONTROL/B PT-T (pag. 245)	KIT ATCONTROL/B PT-T (pag. 247)
		MODULAR (divided in 2 protectors)	ATCONTROL/D P-T (pag. 249) + ATSUB-D T (pag. 156)	IGA TEST T (pag. 243) + ATSUB-D T (pag. 156)		

IGA TEST M

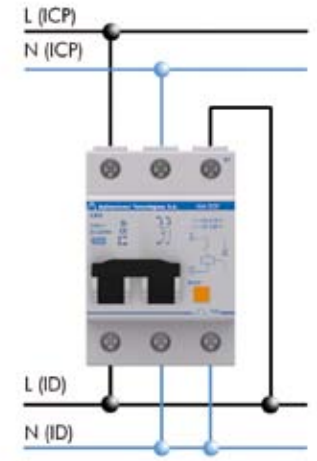
SINGLE PHASE PROTECTOR AGAINST OVERVOLTAGE WITH MCB INTEGRATED

The protector is formed by a protective coil together with a Miniature Circuit Breaker (MCB)

IGA TEST protectors actuate when detecting a temporary overvoltage, for example a failure on the neutral, cutting off the power supply and thus, protecting the equipments installed downstream.
To restore the IGA TEST it is necessary to reconnect the protective coil in advance using the RESET button.
IGA TEST protectors against permanent overvoltages can be installed in combination with **ATSUB-D** transient overvoltage protectors.
The MCB integrated is available in the most usual nominal discharge currents: 25, 32, 40, 50 and 63A.

Installation

They must be installed **in series** with the Low Voltage line, between the Power Control Circuit Breaker (ICP) and the Residual Current Device (ID).
Installation should be made without power in the line.
The protective coil must be installed between the line coming from the residual current breaker (ID) and the neutral.



Technical Datasheet

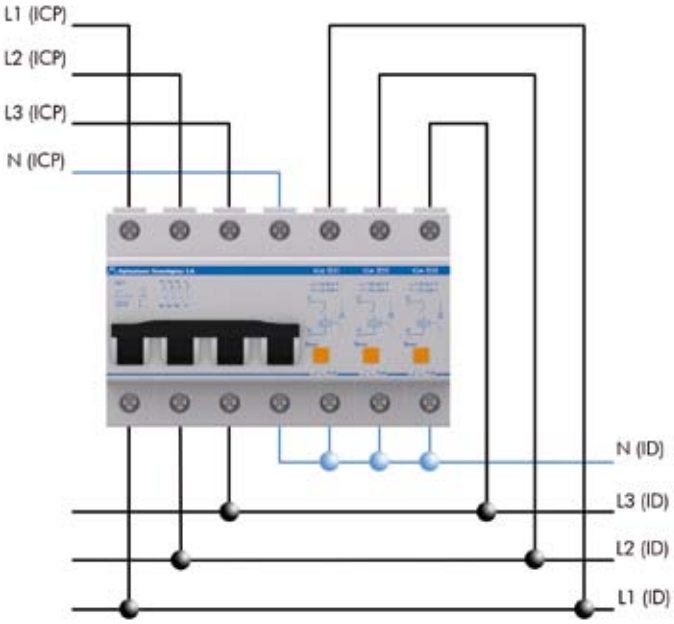
Reference		IGA TEST M 25 AT-9001	IGA TEST M 32 AT-9002	IGA TEST M 40 AT-9003	IGA TEST M 50 AT-9004	IGA TEST M 63 AT-9005
Nominal discharge current:		25A	32A	40A	50A	63A
Nominal voltage:	U_n	$230V_{AC}$				
Maximum overvoltage:		$400V_{AC}$				
Actuating voltage:	U_A	$265\text{-}280V_{AC}$				
Actuating time:		$265\text{-}280V_{AC} \leq 0,8s$ / $280\text{-}400V_{AC} \leq 0,3s$				
Maximum short-circuit current:		10kA				
Dimensions:		51 x 81 x 65mm (3 mod. DIN43880)				
MCB cable range:		Min / Max section 1,5 / 35mm²				
Inductor cable range:		Min / Max section 1,5 / 2,5mm² (single-stranded) or 4mm² (multi-stranded)				
Certified test according to regulations: EN 60898						

IGA TEST T

THREE-PHASE PROTECTOR AGAINST OVERVOLTAGE WITH MCB INTEGRATED

Installation

They must be installed in series with the Low Voltage line, between the Power Control Circuit Breaker (ICP) and the Residual Current Device (ID).
Installation should be made without power in the line.
The protective coils must be installed between the lines coming from the residual current breaker (ID) and the neutral.



The protector is formed by a protective coil together with a miniature circuit breaker (MCB)

IGA TEST protectors actuate when detecting a temporary overvoltage, for example a failure on the neutral, cutting off the power supply and thus, protecting the equipments installed downstream.
To restore the IGA TEST it is necessary to reconnect the protective coils in advance using the RESET button. Proceed always from the most external to the one closer to the MCB.
IGA TEST protectors against permanent overvoltages can be installed in combination with **ATSUB-D** transient overvoltage protectors.
The MCB integrated is available in the most usual nominal discharge currents: 25, 32, 40, 50 and 63A.

Technical Datasheet

Reference		IGA TEST T 25 AT-9006	IGA TEST T 32 AT-9007	IGA TEST T 40 AT-9008	IGA TEST T 50 AT-9009	IGA TEST T 63 AT-9010
Nominal current:		25A	32A	40A	50A	63A
Nominal voltage:	U_n	$230V_{AC}$				
Maximum overvoltage:		$400V_{AC}$				
Actuating voltage:	U_A	$265\text{-}280V_{AC}$				
Actuating time:		$265\text{-}280V_{AC} \leq 0,8s$ / $280\text{-}400V_{AC} \leq 0,3s$				
Maximum short-circuit current:		10kA				
Dimensions:		123 x 81 x 65mm (7 mod. DIN43880)				
MCB cable range:		Min / Max section 1,5 / 35mm²				
Coil cable range:		Min / Max Section 1,5 / 2,5mm² (single-stranded) ó 4mm² (multi-stranded)				
Certified test according to regulations: EN 60898						

ATCONTROL/B PT-M

SINGLE-PHASE PROTECTOR COMBINED AGAINST PERMANENT AND TRANSIENT OVERVOLTAGES WORKING ON ANY SHUNT RELEASE

PERMANENT OVERVOLTAGES

ATCONTROL/B PT-M protector actuates switching the contact associated to itself (S1, S2) whenever it detects a permanent overvoltage. The shunt release causes the disconnection of the Main Circuit Breaker (MCB) associated, protecting the equipments installed downstream.
The warning system for permanent overvoltages consists in 2 luminous indicators: green (correct power supply) and red (overvoltage). It has a test button to check that the installations have been executed correctly.

TRANSIENT OVERVOLTAGES

ATCONTROL/B PT-M protector also actuates whenever it detects a transient overvoltage driving the current to earth and reducing the voltage to a level that does not damage the connected equipment.
Tested and certified as Type 2 protector in official and independent laboratories, according to regulations IEC 61643-11 and GUÍA-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipments according to the ITC-BT-23 from REBT.
It is provided with a thermodynamic control device that disconnects from the electrical network in case of degrading and a warning system. When the warning is yellow the enclosure is in good shape. If not, replace.

Installation

Installation should be made without power in the line.
They must be installed **in parallel** with the Low Voltage supply line, downstream from the MCB associated, connected to line, neutral and ground. It has a double connector in order to facilitate the installation.
Connect the S1 and S2 terminals, always without voltage, to the shunt release actuating on the MCB.

Technical Datasheet

Reference		ATCONTROL/B PT-M AT-8704
Nominal voltage:		$230V_{AC}$
Maximum overvoltage:	U_n	$400V_{AC}$
Nominal frequency:		50Hz
Actuating voltage:	U_A	$265V_{AC}$
Actuating time:		$265V_{AC} \leq 3,5s$ / $400V_{AC} \leq 0,5s$
Nominal voltage for the shunt release:		$110\text{-}415V_{AC}$ / $110\text{-}250V_{DC}$
Type of tests according to IEC 61643-11:		Type 2
Protection categories according to REBT:		I, II, III, IV
Nominal discharge current (8/20µs wave):	I_n	4kA
Maximum discharge current (8/20µs wave):	I_{max}	15kA
Protection level for I_n 8/20µs wave:	$U_p(I_n)$	1,5kV
Protection level for 1,2/50µs wave:	U_p	1,1kV
Response time:	t_r	< 25ns (L-N) / < 100ns (N-T)
Backup fuse(1):		80A gL/gG
Maximum short-circuit current:		25kA (for maximum fuse)
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)
Minimum wiring section:		$4mm^2$
Certified test according to regulations: IEC 61643-11		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

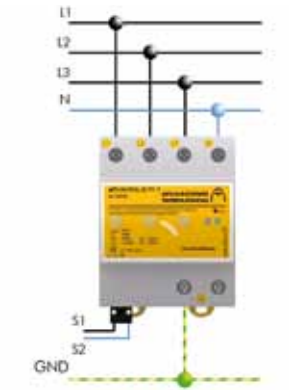
(1) Needed in cases where there is no equal or less nominal current installed "upstream" from the protector.

ATCONTROL/B PT-T

THREE-PHASE PROTECTOR COMBINED AGAINST ANY PERMANENT AND TRANSIENT OVERVOLTAGE ACTUATING ON ANY SHUNT RELEASE

PERMANENT OVERVOLTAGES

ATCONTROL/B PT-T protector actuates switching the contact associated to itself (S1, S2) whenever it detects a permanent overvoltage. The shunt release causes the disconnection of the Main Circuit Breaker (MCB) associated, protecting the equipments installed downstream.
The warning system for permanent overvoltages consists in 2 luminous indicators: green (correct power supply) and red (overvoltage). It has a test button to check that the installations have been executed correctly



TRANSIENT OVERVOLTAGES

ATCONTROL/B PT-T protector also actuates whenever it detects a transient overvoltage driving the current to earth and reducing the voltage to a level that does not damage the connected equipment.
Tested and certified as Type 2 protector in official and independent laboratories, according to regulations IEC 61643-11 and GUÍA-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipments according to the ITC-BT-23 from REBT.
It is provided with a thermodynamic control device that disconnects from the electrical network in case of degrading and a warning system. When the warning is yellow the enclosure is in good shape. If not, replace.

Installation

Installation should be made without power in the line.
They must be installed **in parallel** with the Low Voltage supply line, downstream from the MCB associated, connected to line, neutral and ground.
Connect the S1 and S2 terminals, always without voltage, to the shunt release actuating on the MCB.

Technical Datasheet

Reference		ATCONTROL/B PT-T AT-8702
Nominal voltage:		$230V_{AC}$
Maximum overvoltage:	U_n	$400V_{AC}$
Nominal frequency:		50Hz
Actuating voltage:	U_A	$265V_{AC}$
Actuating time:		$265V_{AC} \leq 3,5s$ / $400V_{AC} \leq 0,5s$
Nominal voltage for the shunt release:		$110\text{-}415V_{AC}$ / $110\text{-}250V_{DC}$
Type of tests according to IEC 61643-11:		Type 2
Protection categories according to REBT:		I, II, III, IV
Nominal discharge current (8/20µs wave):	I_n	15kA
Maximum discharge current (8/20µs wave):	I_{max}	40kA
Protection level for I_n 8/20µs wave:	$U_p(I_n)$	1,8kV
Protection level for 1,2/50µs wave:	U_p	1,4kV
Response time:	t_r	< 25ns (L-N) / < 100ns (N-T)
Backup fuse(1):		80A gL/gG
Maximum short-circuit current:		25kA (for maximum fuse)
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)
Minimum wiring section:		$4mm^2$
Certified test according to regulations: IEC 61643-11		
Relevant standards: UNE 21186, NFC 17102, IEC 62305		

(1) Needed in cases where there is no equal or less nominal current installed "upstream" from the protector.

KIT ATCONTROL/B PT-M

COMPLETE KIT WHICH INCLUDES SINGLE-PHASE PROTECTOR COMBINED AGAINST PERMANENT AND TRANSIENT OVERVOLTAGES, SHUNT RELEASE AND MAIN CIRCUIT BREAKER

PERMANENT OVERVOLTAGES

ATCONTROL/B series protectors actuate triggering the contact shunt release (S1, S2) whenever it detects a permanent overvoltage. The shunt release causes the disconnection of the Main Circuit Breaker (MCB), protecting the equipments installed downstream.

The warning system for permanent overvoltages consists in 2 luminous indicators: green (correct power supply) and red (overvoltage). It has a test button to check that the installations have been executed correctly.

TRANSIENT OVERVOLTAGES

ATCONTROL/B protector also actuates whenever it detects a transient overvoltage driving the current to earth and reducing the voltage to a level that does not damage the connected equipment. Tested and certified as Type 2 protector in official and independent laboratories, according to regulations IEC 61643-11 and GUÍA-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipments according to the ITC-BT-23 from REBT.

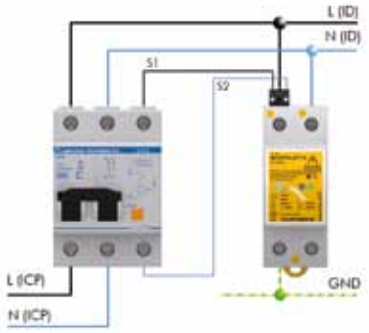
It is provided with a thermodynamic control device that disconnects from the electrical network in case of degrading and a warning system. When the warning is yellow the enclosure is in good shape. If not, replace.

Installation

They must be installed **in parallel** with the Low Voltage supply line, downstream from the MCB included on the kit, connected to line, neutral and ground. It has a double connector to facilitate the installation. Installation should be made without power in the line.

MCB must be installed **in series** with the Low Voltage line, between the Power Control Breaker (ICP) and the Residual Current Breaker (ID).

Connect the S1 and S2 terminals, always without the power turned off to the shunt release that actuates on the MCB.



Technical Datasheet

Reference		KIT ATCONTROL/B PT-M (25 / 32 / 40 / 50 / 63)				
		AT-8711	AT-8712	AT-8713	AT-8714	AT-8715
Nominal Current:		25A	32A	40A	50A	63A
Nominal voltage:	U_n	$230V_{AC}$				
Maximum overvoltage:	U_c	$400V_{AC}$				
Nominal frequency:		50Hz				
Actuating voltage:	U_A	$265\text{-}280V_{AC}$				
Actuating time:		$265\text{-}280V_{AC} \leq 3,5s$ / $280\text{-}400V_{AC} \leq 0,5s$				
Nominal voltage for the shunt release:		$110\text{-}415V_{AC}$ / $110\text{-}250V_{DC}$				
Maximum short-circuit current:		10kA				
Type of tests according to IEC 61643-11:		Type 2				
Protection categories according to REBT:		I, II, III, IV				
Nominal discharge current (8/20µs wave):	I_n	4kA				
Maximum discharge current (8/20µs wave):	I_{max}	15kA				
Protection level for I_n 8/20µs wave:	U_p (I_n)	1,5kV				
Protection level for 1,2/50µs wave:	U_p	1,1kV				
Response time:	t_r	< 25ns (L-N) / < 100ns (N-T)				
Protector dimensions:		36 x 90 x 80mm (2 mod. DIN43880)				
Dimensions MCB + Shunt release:		51 x 81 x 65mm (3 mod. DIN43880)				
MCB cable range:		Min / Max section 1,5 / 35mm²				
Coil cable range:		Min / Max Section 1,5 / 2,5mm² (single-stranded) or 4mm² (multi-stranded)				
Minimum wiring section:		4mm²				
Certified test according to regulations: IEC 61643-11, EN 60898						
Relevant standards: UNE 21186, NFC 17102, IEC 62305						

KIT ATCONTROL/B PT-T

COMPLETE KIT WHICH INCLUDES THREE-PHASE PROTECTOR COMBINED AGAINST PERMANENT AND TRANSIENT OVERVOLTAGES, SHUNT RELEASE AND MAIN CIRCUIT BREAKER

PERMANENT OVERVOLTAGES

ATCONTROL/B series protector actuate triggering the contact shunt release (S1, S2) whenever it detects a permanent overvoltage. The shunt release causes the disconnection of the Main Circuit Breaker (MCB) associated, protecting the equipments installed downstream.

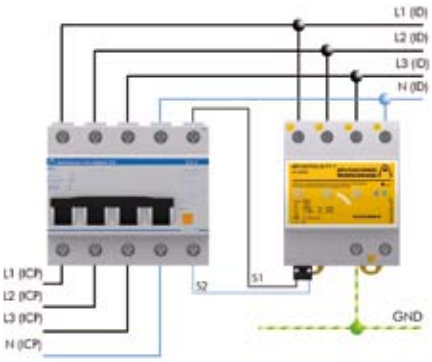
The warning system for permanent overvoltages consists in 2 luminous indicators: green (correct power supply) and red (overvoltage). It has a test button to check that the installations have been executed correctly.

TRANSIENT OVERVOLTAGES

ATCONTROL/B protector works as well whenever it detects a transient overvoltage driving the current to earth and reducing the voltage to a level that does not damage the connected equipment.

Tested and certified as Type 2 protector in official and independent laboratories, according to regulations IEC 61643-11 and GUÍA-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipments according to the ITC-BT-23 from REBT.

It is provided with a thermodynamic control device that disconnects from the electrical network in case of degrading and a warning system. When the warning is yellow the enclosure is in good shape. If not, replace.



Installation

They must be installed **in parallel** with the Low Voltage supply line, downstream from the MCB included in the kit, with connections to the neutral, phase and earth. It is provided with a double terminal in order to facilitate its installation. Installation should be made without power in the line.

MCB must be installed in series with the Low Voltage line, between the Power Control Breaker (ICP) and the Residual Current Breaker (ID).

Connect the S1 and S2 terminals, always without the power turned off to the shunt release that actuates on the MCB.

Technical Datasheet

Reference		KIT ATCONTROL/B PT-T (25 / 32 / 40 / 50 / 63)				
		AT-8716	AT-8717	AT-8718	AT-8719	AT-8720
Nominal current:		25A	32A	40A	50A	63A
Nominal voltage:	U_n	$230V_{AC}$				
Maximum overvoltage:	U_c	$400V_{AC}$				
Nominal frequency:		50Hz				
Actuating voltage:	U_A	$265\text{-}280V_{AC}$				
Actuating time:		$265\text{-}280V_{AC} \leq 3,5s$ / $280\text{-}400V_{AC} \leq 0,5s$				
Nominal voltage for the shunt release:		$110\text{-}415V_{AC}$ / $110\text{-}250V_{DC}$				
Maximum short-circuit current:		10kA				
Type of tests according to IEC 61643-11:		Type 2				
Protection categories according to REBT:		I, II, III, IV				
Nominal discharge current (8/20µs wave):	I_n	15kA				
Maximum discharge current (8/20µs wave):	I_{max}	40kA				
Protection level for I_n 8/20µs wave:	U_p (I_n)	1,8kV				
Protection level for 1,2/50µs wave:	U_p	1,4kV				
Response time:	t_r	< 25ns (L-N) / < 100ns (N-T)				
Protector dimensions:		72 x 90 x 80mm (4 mod. DIN43880)				
Dimensions MCB + Shunt release:		88 x 81 x 65mm (5 mod. DIN43880)				
MCB cable range:		Min / Max section 1,5 / 35mm²				
Coil cable range:		Min / Max Section 1,5 / 2,5mm² (single-stranded) or 4mm² (multi-stranded)				
Minimum wiring section:		4mm²				
Certified test according to regulations: IEC 61643-11, EN 60898						
Relevant standards: UNE 21186, NFC 17102, IEC 62305						

ATCONTROL/D P(T)-M

SINGLE-PHASE PROTECTOR INDIVIDUAL OR COMBINED AGAINST PERMANENT AND TRANSIENT OVERVOLTAGES ACTUATING ON ANY RESIDUAL CURRENT BREAKER

PERMANENT OVERVOLTAGES

ATCONTROL/D protectors actuate whenever they detect a permanent overvoltage, generating a pulse to earth to disconnect the residual current breaker (ID) associated.
The warning system for permanent overvoltages consists in 2 luminous indicators: green (correct power supply) and red (overvoltage). It has a test button to check that the installations have been executed correctly.

TRANSIENT OVERVOLTAGES

ATCONTROL/D PT-M protector works as well whenever it detects a transient overvoltage driving the current to earth and reducing the voltage to a level that does not damage the connected equipment.
Tested and certified as Type 2 protector in official and independent laboratories, according to regulations IEC 61643-11 and GUÍA-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipments according to the ITC-BT-23 from REBT.
It is provided with a thermodynamic control device that disconnects from the electrical network in case of degrading and a warning system. When the warning is yellow the enclosure is in good shape. If not, replace.

Installation

Installation should be made without power in the line.
They must be installed **in parallel** with the Low Voltage supply line, downstream from the residual current breaker associated, connected to line, neutral and ground. It is provided with a double terminal in order to facilitate its installation.

Technical Datasheet

Reference		ATCONTROL/D P-M AT-8707	ATCONTROL/D PT-M AT-8708
Nominal voltage:	U_n	$230V_{AC}$	
Maximum overvoltage:	U_c	$400V_{AC}$	
Nominal frequency:		50Hz	
Actuating voltage:	U_A	$265V_{AC}$	
Actuating time:		$265V_{AC} \leq 3,5s$ / $400V_{AC} \leq 0,5s$	
Residual current:		30mA	
Type of tests according to IEC 61643-11:		-	Type 2
Protection categories according to REBT:		-	I, II, III, IV
Nominal discharge current (8/20µs wave):	I_n	-	4kA
Maximum discharge current (8/20µs wave):	I_{max}	-	15kA
Protection level for I_n 8/20µs wave:	U_p (I_n)	-	1,5kV
Protection level for 1,2/50µs wave:	U_p	-	1,1kV
Response time:	t_r	-	< 25ns (L-N) / < 100ns (N-T)
Backup fuse(1):		-	80A gL/gG
Maximum short-circuit current:		-	25kA (for maximum fuse)
Dimensions:		36 x 90 x 80mm (2 mod. DIN43880)	
Minimum wiring section:		$4mm^2$	
Certified test according to regulations: IEC 61643-11			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

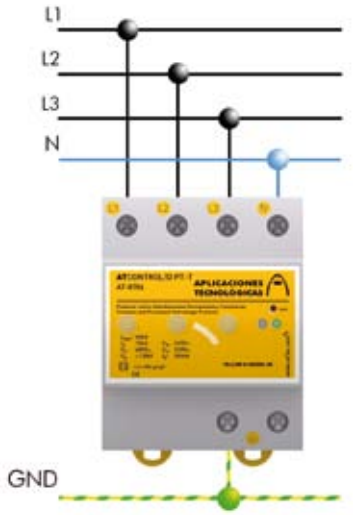
(1) Needed in cases where there is no equal or less nominal current installed "upstream" from the protector.

ATCONTROL/D P(T)-T

THREE-PHASE PROTECTOR INDIVIDUAL OR COMBINED AGAINST PERMANENT AND TRANSIENT OVERVOLTAGES ACTUATING ON ANY RESIDUAL CURRENT BREAKER

PERMANENT OVERVOLTAGES

ATCONTROL/D protectors actuate whenever they detect a permanent overvoltage, generating a pulse to earth to disconnect the residual current breaker (ID) associated.
The warning system for permanent overvoltages consists in 2 luminous indicators: green (correct power supply) and red (overvoltage). It has a test button to check that the installations have been executed correctly.



TRANSIENT OVERVOLTAGES

ATCONTROL/D PT-T protector works as well whenever it detects a transient overvoltage driving the current to earth and reducing the voltage to a level that does not damage the connected equipment.
Tested and certified as Type 2 protector in official and independent laboratories, according to regulations IEC 61643-11 and GUÍA-BT-23 from REBT. Suitable for **Categories I, II, III and IV** equipments according to the ITC-BT-23 from REBT.
It is provided with a thermodynamic control device that disconnects from the electrical network in case of degrading and a warning system. When the warning is yellow the enclosure is in good shape. If not, replace.

Installation

Installation should be made without power in the line. They must be installed **in parallel** with the Low Voltage supply line, downstream from the residual current breaker associated, connected to line, neutral and ground. It is provided with a double terminal in order to facilitate its installation.

Technical Datasheet

Reference		ATCONTROL/D P-T AT-8705	ATCONTROL/D PT-T AT-8706
Nominal voltage:	U_n	$230V_{AC}$	
Maximum overvoltage:	U_c	$400V_{AC}$	
Nominal frequency:		50Hz	
Actuating voltage:	U_A	$265V_{AC}$	
Actuating time:		$265V_{AC} \leq 3,5s$ / $400V_{AC} \leq 0,5s$	
Residual current:		30mA	
Type of tests according to IEC 61643-11:		-	Type 2
Protection categories according to REBT:		-	I, II, III, IV
Nominal discharge current (8/20µs wave):	I_n	-	15kA
Maximum discharge current (8/20µs wave):	I_{max}	-	40kA
Protection level for I_n 8/20µs wave:	U_p (I_n)	-	1,8kV
Protection level for 1,2/50µs wave:	U_p	-	1,4kV
Response time:	t_r	-	< 25ns (L-N) / < 100ns (N-T)
Backup fuse(1):		-	80A gL/gG
Maximum short-circuit current:		-	25kA (for maximum fuse)
Dimensions:		72 x 90 x 80mm (4 mod. DIN43880)	
Minimum wiring section:		$4mm^2$	
Certified test according to regulations: IEC 61643-11			
Relevant standards: UNE 21186, NFC 17102, IEC 62305			

(1) Needed in cases where there is no equal or less nominal current installed "upstream" from the protector.

APLICACIONES TECNOLOGICAS S.A.

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