



# AT82 Series - ATSUB 20/40/60/N

ATSUB

## Single-pole protector for power supply lines

### AT82 SERIES - ATSUB 20/40/60/N

Efficient protection against transient overvoltages for power supply lines with or without neutral, using a metal oxide varistors. Medium protection according to coordinated stages protection recommended in Regulation of Low Voltages (RBT2002 ITC23).

Tested and certified as **Class I** and **II** according to regulations IEC61643-1, EN61643-11. Suitable for **Categories I, II, III** and **IV** equipment according to RBT2002.

- Coordinable with other SPDs such as ATSHOCK, ATSHIELD and ATCOVER series.
- Made up of zinc oxide varistors able to withstand very high currents.
- Short response time.
- Don't produce deflagration.
- Single-pole protection.
- Their activation causes no interruption in power supply.
- Small sized modular protection.
- Thermodynamic control device and light alarm for each line.
- Suitable connectors for any type of connection.

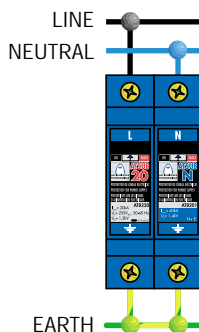
|                              |
|------------------------------|
| ATSUB 60 - 400               |
| Max. discharge current in kA |
| Voltage line - ground        |



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).

Minimum protection for TT systems. It is also recommended to install an ATSUB protector between each line and neutral, specially in TN-C and TN-S systems.



#### INSTALLATION

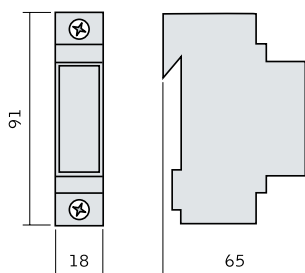
They are installed **in parallel** with the Low Voltage line, with connections to the line that is to be protected to neutral and/or ground.

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 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.



**AT8220 ATSUB 20:**

max discharge current of 20kA

**AT8240 ATSUB 40:**

max discharge current of 40kA

**AT8260 ATSUB 60:**

max discharge current of 60kA

**AT8201 ATSUB N:**

for neutral to ground protection

| Reference                                   |             | ATSUB 20  | ATSUB 40   | ATSUB 60    | ATSUB N        |
|---|-------------|---|------------|-------------|----------------|
|   |             | AT8220  | AT8240     | AT8260      | AT8201         |
| Protection categories according to RBT2002: |             | I, II, III, IV  |            | II, III, IV | I, II, III, IV |
| Nominal voltage:                            | $U_n$       | 200V <sub>AC</sub>  |            |             | –              |
| Maximum continuous operating voltage:       | $U_c$       | 255V <sub>AC</sub>  |            |             | –              |
| Nominal frequency:                          |             | 50/60Hz   |            |             |                |
| Nominal discharge current (wave 8/20μs):    | $I_n$       | 10kA  | 20kA       | 30kA        | 20kA           |
| Maximum discharge current (wave 8/20μs):    | $I_{max}$   | 20kA  | 40kA       | 60kA        | 40kA           |
| Protection level at $I_n$ (8/20μs):         | $U_p(I_n)$  | 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          |
| Response time:                              | $t_r$       | < 25ns  |            |             |                |
| Capacity:                                   | $C$         | 4,5pF   |            |             |                |
| Backup fuse <sup>(1)</sup> :                |             | 125A gL/gG  | 125A gL/gG | 160A gL/gG  | –              |
| Maximum short-circuit current:              |             | 25kA /50Hz(for maximum fuse)  |            |             |                |
| Working temperature:                        | $\vartheta$ | -55°C to +85°C  |            |             |                |
| SPD location:                               |             | Indoor  |            |             |                |
| Type of connection:                         |             | Parallel (one port)   |            |             |                |
| Mounting method:                            |             | Fixed   |            |             |                |
| Dimensions:                                 |             | 18 x 91 x 65mm (1 mod. DIN43880)  |            |             |                |
| Fixing:                                     |             | DIN rail  |            |             |                |
| Enclosure material:                         |             | Polycarbonate   |            |             |                |
| Enclosure protection:                       |             | IP20  |            |             |                |
| Insulation resistance:                      |             | > 10 <sup>14</sup> Ω  |            |             |                |
| Autoextinguish enclosure:                   |             | V-0 type according to UNE-EN 60707 (UL94)   |            |             |                |
| Connections L/N/G:                          |             | Max/Min section multi-stranded: 16 / 45mm <sup>2</sup> (5/1 AWG)<br>Max/Min section single-stranded: 4 / 45mm <sup>2</sup> (11/1 AWG) |            |             |                |

**Certificated tests according to: IEC 61643-1 / NFC 61-0740 / EN 61643-11 / IEC 61312-3**

Complies with requirements of: UL 1449

Relevant standards: UNE21186 / NFC 17102 / UNE21185 / IEC61024-1 / IEC61312-3

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



**AT8224 ATSUB 20-400:**

max discharge current of 20kA for 400 V<sub>AC</sub>

**AT8244 ATSUB 40-400:**

max discharge current of 40kA for 400 V<sub>AC</sub>

**AT8264 ATSUB 60-400:**

max discharge current of 60kA for 400 V<sub>AC</sub>

**AT8201 ATSUB N:**

for neutral to ground protection

| Reference                                    |                                  | ATSUB20-400   | ATSUB40-400 | ATSUB60-400 | ATSUB N        |
|--|----------------------------------|---|-------------|-------------|----------------|
|  |                                  | AT8224  | AT8244      | AT8264      | AT8201         |
| Protection categories according to RBT2002:  |                                  | I, II, III, IV  |             | II, III, IV | I, II, III, IV |
| Nominal voltage:                             | U <sub>n</sub>                   | 400V <sub>AC</sub>  |             |             | –              |
| Maximum continuous operating voltage:        | U <sub>c</sub>                   | 460V <sub>AC</sub>  |             |             | –              |
| Nominal frequency:                           |                                  | 50/60Hz   |             |             |                |
| Nominal discharge current (8/20μs wave):     | I <sub>n</sub>                   | 10kA  | 20kA        | 30kA        | 20kA           |
| Maximum discharge current (8/20μs wave):     | I <sub>max</sub>                 | 20kA  | 40kA        | 60kA        | 40kA           |
| Protection level at I <sub>n</sub> (8/20μs): | U <sub>p</sub> (I <sub>n</sub> ) | 2100V   | 2300V       | 2500V       | 1400V          |
| Protection level (1,2/50μs):                 | U <sub>p</sub>                   | 1800V   | 1800V       | 1900V       | 700V           |
| Protection level for 5kA 8/20μs:             |                                  | 1900V   | 2000V       | 2100V       | 1000V          |
| Response time:                               | t <sub>r</sub>                   | < 25ns  |             |             |                |
| Capacity:                                    | C                                | 4,5pF   |             |             |                |
| Backup fuse <sup>(1)</sup> :                 |                                  | 125A gL/gG  | 125A gL/gG  | 160A gL/gG  | –              |
| Maximum short-circuit current:               |                                  | 25kA /50Hz (for maximum fuse)   |             |             |                |
| Working temperature:                         | ϑ                                | -55°C to +85°C  |             |             |                |
| SPD location:                                |                                  | Indoor  |             |             |                |
| Type of connection:                          |                                  | Parallel (one port)   |             |             |                |
| Mounting method:                             |                                  | Fixed   |             |             |                |
| Dimensions:                                  |                                  | 18 x 91 x 65mm (1 mod. DIN43880)  |             |             |                |
| Fixing:                                      |                                  | DIN rail  |             |             |                |
| Enclosure material:                          |                                  | Polycarbonate   |             |             |                |
| Enclosure protection:                        |                                  | IP20  |             |             |                |
| Insulation resistance:                       |                                  | > 10 <sup>14</sup> Ω  |             |             |                |
| Autoextinguish enclosure:                    |                                  | V-0 type according to UNE-EN 60707 (UL94)   |             |             |                |
| Connections L/N/G:                           |                                  | Max/Min section multi-stranded: 16 / 45mm <sup>2</sup> (5/1 AWG)<br>Max/Min section single-stranded: 4 / 45mm <sup>2</sup> (11/1 AWG) |             |             |                |

**Certificated tests according to: IEC 61643-1 / NFC 61-0740 / EN 61643-11 / IEC 61312-3**

Complies with requirements of: UL 1449

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

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




**AT8230 ATSUB 20-120:**

 max discharge current of 20kA for 120 V<sub>AC</sub>
**AT8250 ATSUB 40-120:**

 max discharge current of 40kA for 120 V<sub>AC</sub>
**AT8270 ATSUB 60-120:**

 max discharge current of 60kA for 120 V<sub>AC</sub>
**AT8201 ATSUB N:**

for neutral to ground protection

| Reference   | ATSUB20-120   ATSUB40-120   ATSUB60-120   ATSUB N   |            |             |                |
|---|---|------------|-------------|----------------|
|   | AT8230  | AT8250     | AT8270      | AT8201         |
| Protection categories according to RBT2002:                                   | I, II, III, IV  |            | II, III, IV | I, II, III, IV |
| Nominal voltage: U <sub>n</sub>   | 120V <sub>AC</sub> (L-G)  |            |             | –              |
| Maximum continuous operating voltage: U <sub>c</sub>                          | 140V <sub>AC</sub>  |            |             | –              |
| Nominal frequency:  | 50/60Hz   |            |             |                |
| Nominal discharge current (wave 8/20μs): I <sub>n</sub>                       | 10kA  | 20kA       | 30kA        | 20kA           |
| Maximum discharge current (8/20μs wave): I <sub>max</sub>                     | 20kA  | 40kA       | 60kA        | 40kA           |
| Protection level at I <sub>n</sub> (8/20μs): U <sub>p</sub> (I <sub>n</sub> ) | 1200V   | 1400V      | 1600V       | 1400V          |
| Protection level (1,2/50μs): U <sub>p</sub>                                   | 700V  | 700V       | 900V        | 700V           |
| Protection level for 5kA 8/20μs:  | 900V  | 1000V      | 1100V       | 1000V          |
| Response time: t <sub>r</sub>   | < 25ns  |            |             |                |
| Capacity: C   | 4,5pF   |            |             |                |
| Backup fuses <sup>(1)</sup> :   | 125A gL/gG  | 125A gL/gG | 160A gL/gG  | –              |
| Maximum short-circuit current:  | 25kA /50Hz (for maximum fuse)   |            |             |                |
| Working temperature: ϑ  | -55°C to +85°C  |            |             |                |
| SPD location:   | Indoor  |            |             |                |
| Type of connection:   | Parallel (one port)   |            |             |                |
| Mounting method:  | Fixed   |            |             |                |
| Dimensions:   | 18 x 91 x 65mm (1 mod. DIN43880)  |            |             |                |
| Fixing:   | DIN rail  |            |             |                |
| Enclosure material:   | Polycarbonate   |            |             |                |
| Enclosure protection:   | IP20  |            |             |                |
| Insulation resistance:  | > 10 <sup>14</sup> Ω  |            |             |                |
| Autoextinguish enclosure:   | V-0 type according to UNE-EN 60707 (UL94)   |            |             |                |
| Connections L/N/G:  | Max/Min section multi-stranded: 16 / 45mm <sup>2</sup> (5/1 AWG)<br>Max/Min section single-stranded: 4 / 45mm <sup>2</sup> (11/1 AWG) |            |             |                |

**Certificated tests according to: IEC 61643-1 / NFC 61-0740 / EN 61643-11 / IEC 61312-3**

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