## TOP-TECHNIC


PROTEC LIGHTNING & SURGE ARRESTERS ÜBERSPANNUNGSABLEITER


COMBTEC LIGHTNING & SURGE ARRESTERS


VARTEC SURGE ARRESTERS


FINE PROTECTION ELEMENTS


FINE PROTECTION ELEMENTS – FLUSH-MOUNTED SOCKET AND ADAPTER PLUG

DATA LINE PROTECTOR DATEC

DATA LINE PROTECTOR DATEC – F-PORT, TV-PORT


SURGE ARRESTERS FOR PHOTOVOLTAIC SYSTEMS

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*"It is energy – the central element of which is will – that produces the miracle that is enthusiasm in all ages."*

Samuel Smiles, English physician, biographer and social reformer



# SURGE, LIGHTNING ARRESTERS

## CONTENTS

## LIGHTNING & SURGE ARRESTERS – GENERAL INFORMATION

### REGULATIONS:


Prerequisite for safe use of lightning and surge arresters is testing of the SPDs according to the current device standard: IEC61643-1, EN 61643-11

The Schrack family of surge protection devices (SPDs) is certified to these standards by an independent testing laboratory and thus legitimate bearer of the ÖVE mark.



### SPDS ARE DIVIDED INTO 3 CLASSES

| General designation | Designation according to EN 61643-11 | "Old" designation |
|---|---|---|
| Lightning arrester | Type 1 (abbreviation: T1) | SPD class "B" |
| Surge arrester | Type 2 (abbreviation: T2) | SPD class "C" |
| Fine protection element | Type 3 (abbreviation: T3) | SPD class "D" |

### ÖVE/ÖNORM

The use of lightning and surge arresters is usually governed by national regulations for installation, including Austria with the ÖVE/ÖNORM E 8001-1, erection of electrical installations with nominal voltages up to 1000 $V_{AC}$ and 1500 $V_{DC}$ (specifically for surge arresters ÖVE/ÖNORM 8001-1/A2).

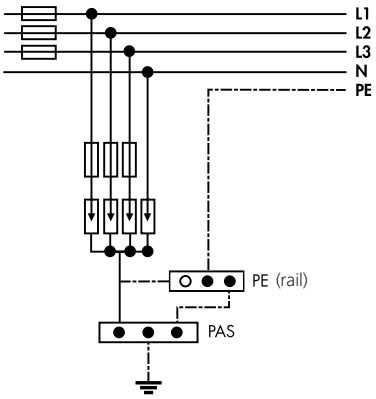
The most important element of the protection philosophy of the ÖVE/ÖNORM E 8001-1/A2 is the main potential equalisation and any additional potential equalisation rails to the extent necessary. The connecting line to the potential equalisation or protective earth conductor rail should be kept as short as possible and without any loops.

According to ÖVE/ÖNORM E 8001-1/A2, the maximum continuous voltage ($U_c$) of SPDs must not exceed 1.45 x $U_0$ ($U_0$ = voltage between phase and neutral conductor); it allows a maximum continuous voltage of 1.1 x $U_0$, for example: 230 V x 1.1 = 253 V -> all SPDs having a continuous voltage $U_c$ of 253 V or more may be used (assuming SPD testing according to IEC61643).

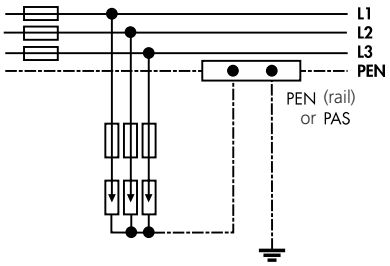
For insulation measurements, the SPDs must be disconnected from mains. To simplify disconnecting the SPDs, the test class 2 SPDs feature a plug-in design which allows them to be disconnected from mains by a simple manual operation.

The proper circuit type per mains system is also defined in the installation regulation. For example, circuit type "4+0" is common for the use of SPDs in TN-S systems, the so-called "3+0" type in TN-C systems with PEN conductors, and "3+1" in TT systems:

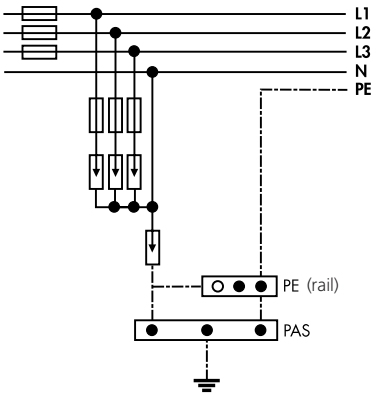
Connection type for TN-S system
(zero, PE-N isolated / 4+0)




Connection type for TN-C system
(zero, PEN conductor / 3+0)




Connection type for TT system
(3+1)




Extract from EN 8001-1/A2

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## ONE OF THE MAJOR POINTS OF EN 8001-1/A2

"Surge protection devices against indirect lightning strikes must be installed in every consumer system. If central surge protection devices are already installed in the consumer system, an installation of surge protection devices in each individual consumer system is not required, but recommended in areas with elevated and high lightning density."
"The protection against direct lightning strikes, if required, must be implemented with type 1 surge protection devices and, if necessary, additionally with type 2 and/or type 3 surge protection devices."

This stipulation requires a least the deployment of type 2 (class C) SPDs in every newly erected or modified electrical installation.

## RELATIONSHIP OF THUNDERSTORM DAYS AND LIGHTNING STRIKE (SOURCE: ALDIS)

| | | | | | | |
|---|---|---|---|---|---|---|
| Number of thunderstorm days per year | $T_d$ | $T_d < 20$ | $20 \leq T_d < 20$ | $25 \leq T_d < 30$ | $30 \leq T_d < 35$ | $T_d < 35$ |
| Lightning strikes per km² and year | $N_g$ | $N_g < 1,7$ | $1,7 \leq N_g < 2,2$ | $2,2 \leq N_g < 2,8$ | $2,8 \leq N_g < 3,4$ | $N_g < 3,4$ |
| Lightning hazard category | | Low | Moderate | Elevated | High | Very high |

The lightning protection class (risk level) is determined, when at risk of direct lightning strikes, taking account the number of thunderstorm days and recorded lightning strikes. The calculation of the lightning protection class can be found by visiting www.schrack.com.

## CLASSIFICATION OF SPDS

### LIGHTNING ARRESTERS T1 I B

T1 So-called lightning arresters are used against direct lightning strikes. The special feature of these SPDs is their lightning current capacity, which has been tested in accordance with the international standard SPD Class I (IEC61643-1). Unlike other SPD types, these SPDs are tested with the curve form 10/350 µs (this curve form meets the requirements for energy and charge). Critical parameters: peak current ($I_{imp}$), specific power, and charge. The comparison shows later that these SPDs can lead many times more energy as opposed to the surge arresters. The Schrack lightning arrester series is tested not only for direct, but also for indirect lightning strikes!

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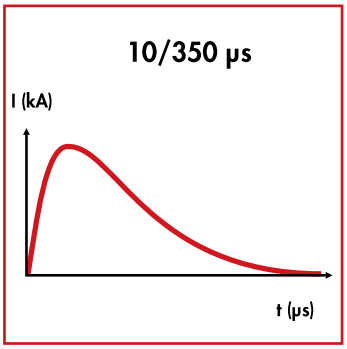
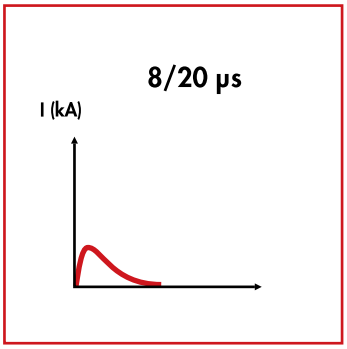
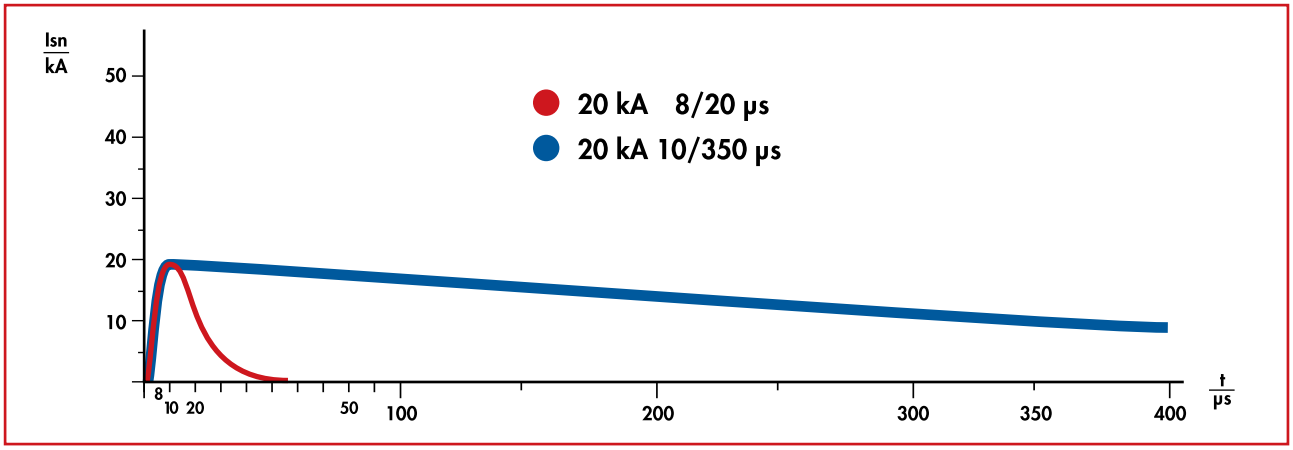



### SURGE ARRESTERS T2 II C

T2 SPDs certified for class II (former classification "C") have no lightning current carrying capacity and therefore may not be used against direct lightning strikes. These SPDs are designed to protect consumer systems against remote strikes (indirect lightning strikes) and voltage surges that are caused by switching operations or other events in the electrical system. The test surge wave for class II SPDs is standardised with the time parameter 8/20 µs and defined by the peak value. The energy carrying capacity of a surge arrester is many times lower than that of a lightning arrester. The chart (comparison of test class I (10/350) and test class II (8/20) curve forms) shows a comparison, where the areas under the curves represent a measure of the energy content at the same current peak value.








Comparison of test class I (10/350) and test class II (8/20) curve forms

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## FINE PROTECTION ELEMENT (EQUIPMENT FINE PROTECTION)

T3

For sensitive end devices, it is necessary to use a coordinated equipment fine protection in addition. This SPD, marked as T3 or III (former classification "D") is validated by means of a hybrid generator and defined by open-circuit voltage $V_{oc}$ and short-circuit current $I_{sc}$. The very low protection level protects sensitive equipment from damage. It is important when using these devices that the line length to the end equipment to be protected may not to exceed 10 m so that the fine protection element can exert its full protective function.
A combination with test class I or test class II SPDs allows the greatest possible protection against voltage surges at the end device.



## SELECTION OF POSSIBLE/NECESSARY SPD POSITIONS IN BUILDINGS

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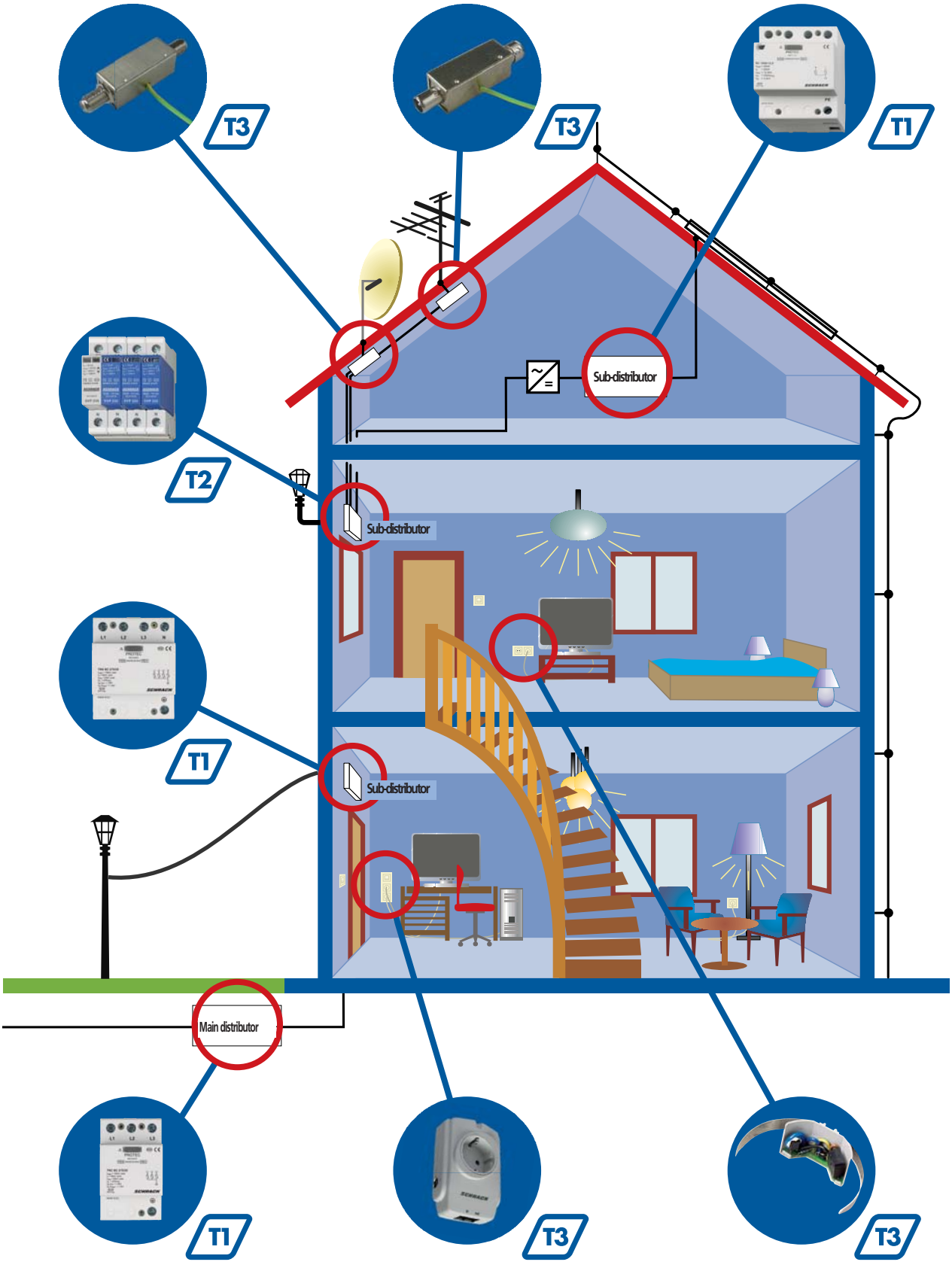
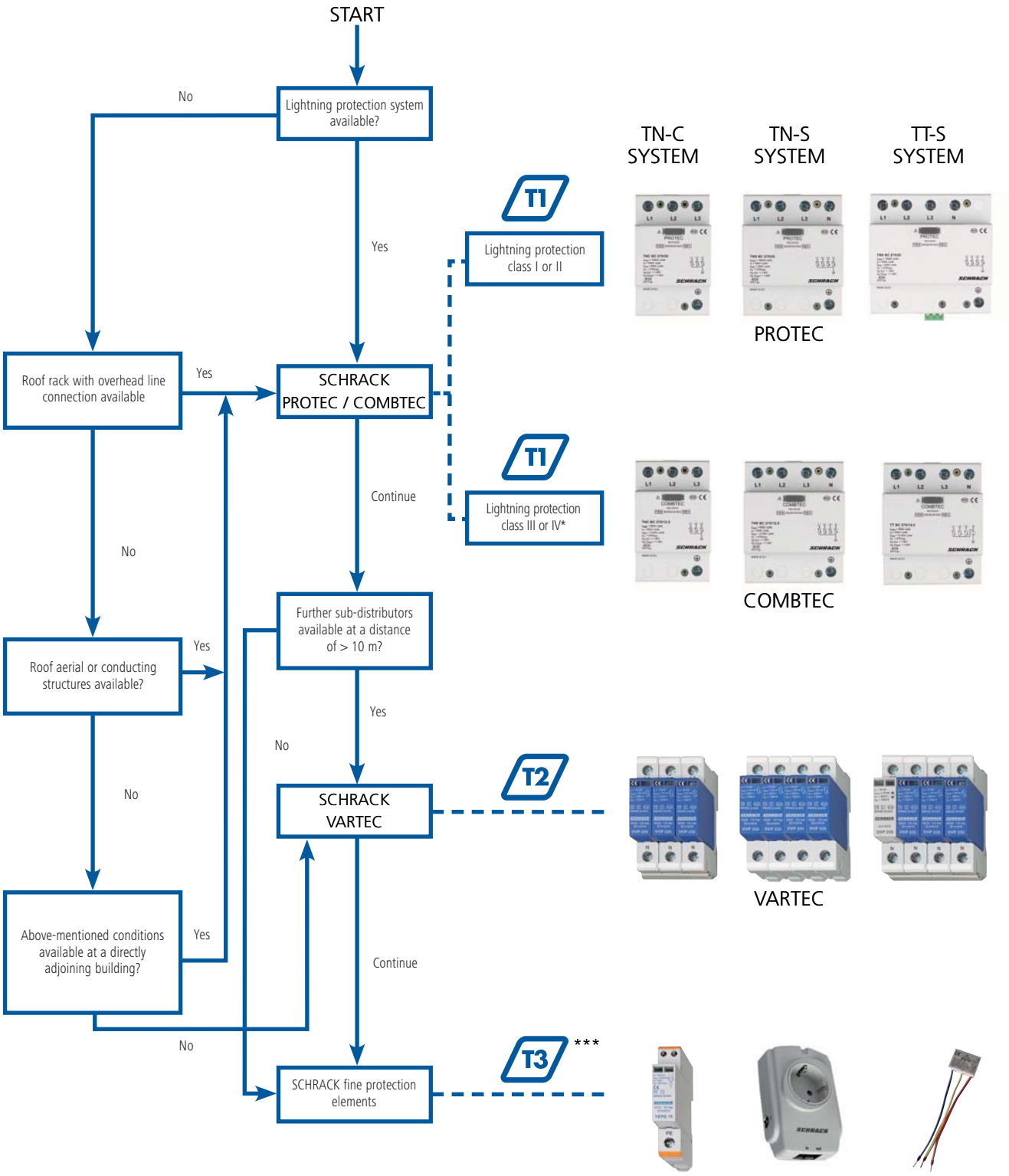


## SCHRACK SELECTION MATRIX FOR SURGE ARRESTERS

Choosing the right SPD is one of the most important topics when it comes to protect your consumer system. With the Schrack surge protection device selection matrix it is possible to find the right SPD quickly and easily.




* not applicable in Austria (ETV), ** not applicable in Austria since 31/12/2008, *** Independent from power system

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# PROTEC LIGHTNING & SURGE ARRESTERS

*PROTEC*

## SCHRACK INFO

The Schrack Protec series is a combination of lightning and surge arresters (TI + TII). This series was tested and certified in accordance with IEC/EN 61643. The use of SCHRACK Protec SPDs is necessary in consumer systems that are classified in lightning protection class (hazard level) I or II (25 kA / 19 kA (10/350) per pole). In indoor mounting not dependent on position the national installation regulations must be followed (Austria: ÖVE/ÖNORM E 8001, ÖVE/ÖNORM 8049, ÖVE/ÖNORM EN 62305). The Protec series has been designed such that there is a complete unit for each network system – interconnecting different devices is not necessary. Special rail mounting systems are available for easy rail connection of the SPDs with the residual current circuit breaker.

## TECHNICAL DATA

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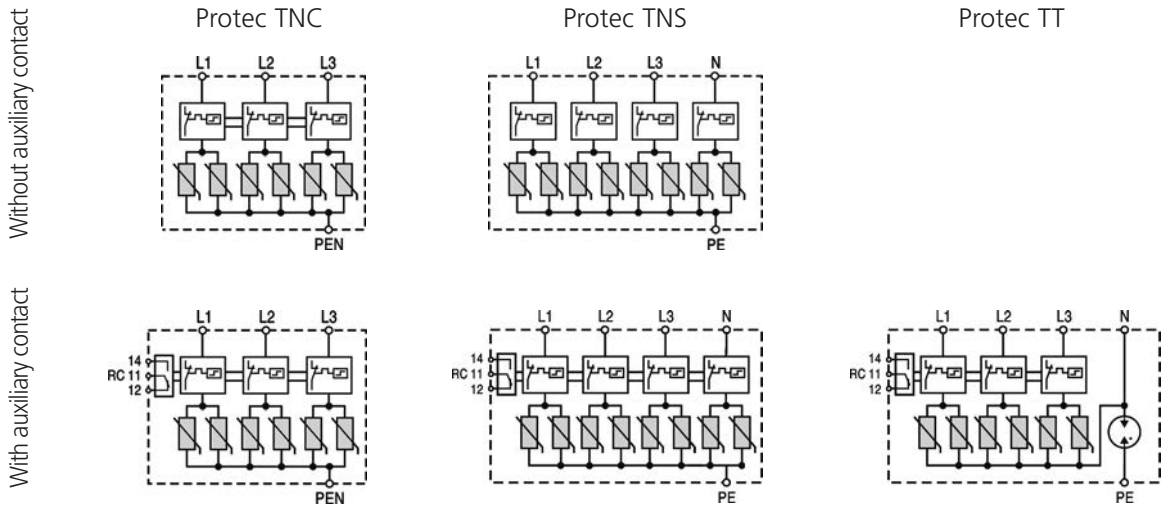
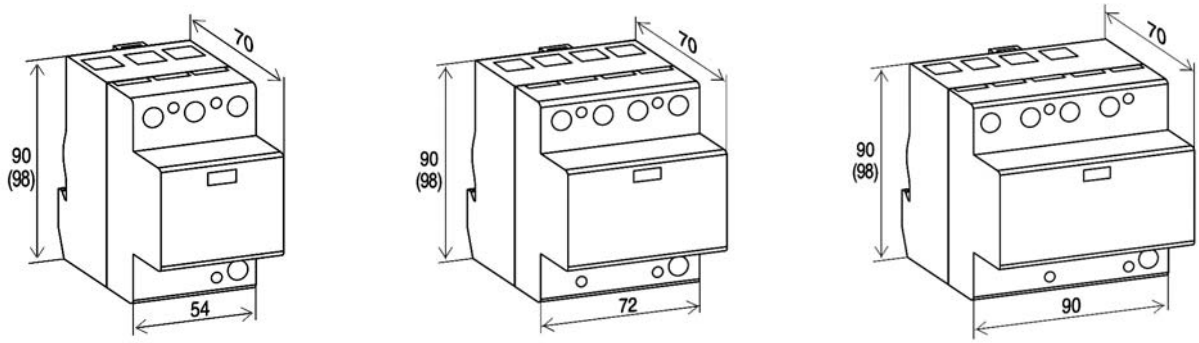
| | Protec TNC | Protec TNS | Protec TT |
|---|---|---|---|
| Validated according to | Test class I + II (B + C) IEC61643-1/EN 61643-11 | | |
| Max. continuous voltage $U_c$ | 275 $V_{AC}$ (350 $V_{DC}$) | 275 $V_{AC}$ (350 $V_{DC}$) | 275 $V_{AC}$ (350 $V_{DC}$) |
| Impulse current $I_{imp}$ | 25 kA/Pole | 25 kA/Pole | 25 kA/Pole - 100 kA(GDT) |
| Specific power (W/R) | 156 kJ/Ω/Pole | 156 kJ/Ω/Pole | 156 kJ/Ω/Pole - 2,5 MJ/Ω(GDT) |
| Charge Q | 12,5 As/Pole | 12,5 As/Pole | 12,5 As/Pole - 50 As (GDT) |
| Max. discharge current $I_{max}$ (8/20) | 100 kA/Pole | 100 kA/Pole | 100 kA/Pole - 100 kA (GDT) |
| Nominal discharge current $I_n$ (8/20) | 25 kA/Pole | 25 kA/Pole | 25 kA/Pole - 100 kA (GDT) |
| Protection level $U_p$ (at $I_n$) | ≤1,4 kV | ≤1,4 kV | ≤1,5 kV |
| Max. tightening torque | 4,5 Nm | 4,5 Nm | 4,5 Nm |
| Max. back-up fuse | 250 AgL | | |
| Temperature range | -40°C - +80°C | | |
| Terminal cross-section: | 35 mm² (solid) / 25 mm² (finely stranded) | | |
| Mounting | 35 mm DIN rail | | |
| Degree of protection | IP20 | | |
| Dimensions | 54 x 90 x 70 | 72 x 90 x 70 | --- |
| Dimensions with auxiliary contact | 54 x 98 x 70 | 72 x 98 x 70 | 90 x 98 x 70 |

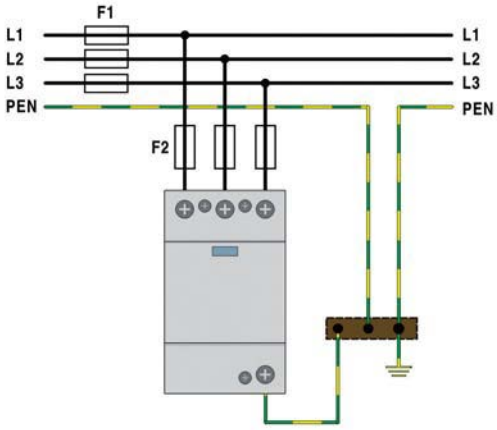
## SCHEMATIC DIAGRAM

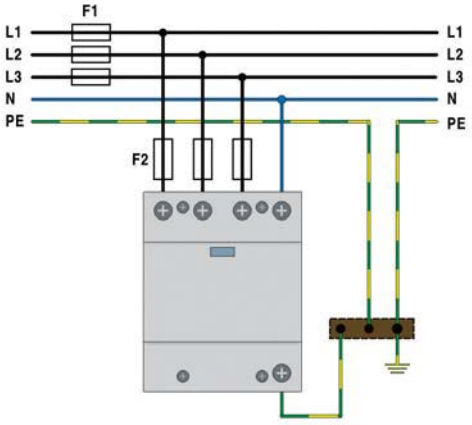


## DIMENSIONS

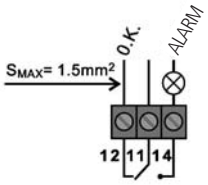



## CONNECTION DIAGRAM




## OTHER




| | |
|---|---|
| A.C. | 250 V / 0.5 A |
| D.C. | 250 V / 0.1 A |
| | 125 V / 0.2 A |
| | 75 V / 0.5 A |

For SPDs with auxiliary contact, the product number ends with "1".


If the colour of the viewing window changes to red, the SPD was overloaded and must be replaced.

| DESCRIPTION | MW | LIGHTNING PROT. | ARRESTER CLASS | $U_C$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|---|---|
| PROTEC BC TNC 275/25 | 3 | I + II | TI + TI (B + C) | 275 V AC | 9004840553963 | | IS211330 |
| PROTEC BC TNC 275/25 + aux. contact | 3 | I + II | TI + TI (B + C) | 275 V AC | 9004840553987 | | IS211331 |
| PROTEC BC TNS 275/25 | 4 | I + II | TI + TI (B + C) | 275 V AC | 9004840553970 | | IS211340 |
| PROTEC BC TNS 275/25 + aux. contact | 4 | I + II | TI + TI (B + C) | 275 V AC | 9004840553994 | | IS211341 |
| PROTEC BC TT 275/25 + aux. contact | 5 | I + II | TI + TI (B + C) | 275 V AC | 9004840554007 | | IS211311 |
| Busbar UEA (BC) between RCCB 3-pole | 6 | | | | 9004840557091 | | IS050019 |
| Busbar UEA (BC) between RCCB 4-pole | 8 | | | | 9004840557084 | | IS050020 |

# COMBTEC LIGHTNING & SURGE ARRESTERS

COMBTEC

## SCHRACK INFO

The Schrack Combtec series is a combination of lightning and surge arresters (TI + TII). This series was tested and certified in accordance with IEC/EN 61643. The use of SCHRACK Combtec arresters is necessary in consumer systems that are classified in lightning protection class (hazard level) III or IV (12.5 kA (10/350) per pole). In indoor mounting not dependent on position the national installation regulations must be followed (Austria: ÖVE/ÖNORM E 8001, ÖVE/ÖNORM 8049, ÖVE/ÖNORM EN 62305). The Combtex series has been designed such that there is a complete unit for each network system – interconnecting different devices is not necessary. Special rail mounting systems are available for easy rail connection of the SPDs with the residual current circuit breaker.

## TECHNICAL DATA

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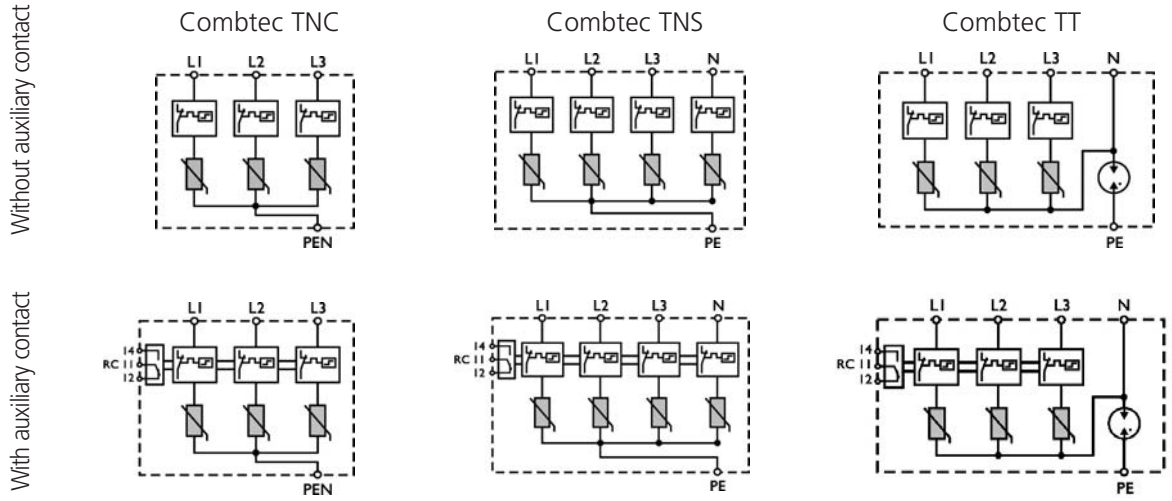
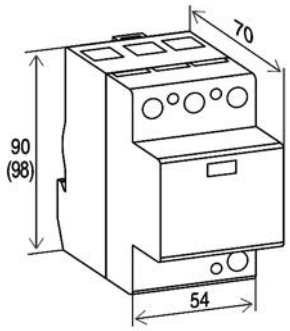
| | Combtec TNC* | Combtec TNS* | Combtec TT* |
|---|---|---|---|
| Validated according to | Test class I + II + [III] (B + C + [D]) IEC61643-1/EN 61643-11 | | |
| Max. continuous voltage | 275 $V_{AC}$ (350 $V_{DC}$) | 275 $V_{AC}$ (350 $V_{DC}$) | 275 $V_{AC}$ (350 $V_{DC}$) |
| Impulse current $I_{imp}$ (10/350) | 12,5 kA/Pole | 12,5 kA/Pole | 12,5 kA/Pole |
| Specific power (W/R) | 39 kJ/Ω/Pole | 39 kJ/Ω/Pole | 39 kJ/Ω/Pole |
| Charge Q | 6,25 As/Pole | 6,25 As/Pole | 6,25 As/Pole |
| Max. discharge current $I_{max}$ (8/20) | 50 kA/Pole | 50 kA/Pole | 50 kA/Pole |
| Nominal discharge current $I_n$ (8/20) | 20 kA/Pole | 20 kA/Pole | 20 kA/Pole |
| [Combined surge $U_{oc}/I_{sc}$] | [10 kV/5 kA] | [10 kV/5 kA] | [10 kV/5 kA] |
| Protection level $U_p$ (at $I_n$) | ≤1,5kV | ≤1,5kV | ≤1,5kV |
| Max. tightening torque | 4,5 Nm | 4,5 Nm | 4,5 Nm |
| Max. back-up fuse | 250 AgL | | |
| Temperature range | -40 °C -+ 80 °C | | |
| Terminal cross-section | 35 mm² (solid), 25 mm² (finely stranded) | | |
| Mounting | 35 mm DIN rail | | |
| Degree of protection | IP20 | | |
| Dimensions | 54 x 90 x 70 | 72 x 90 x 70 | 72 x 90 x 70 |
| Dimensions with auxiliary contact | 54 x 98 x 70 | 72 x 98 x 70 | 72 x 98 x 70 |

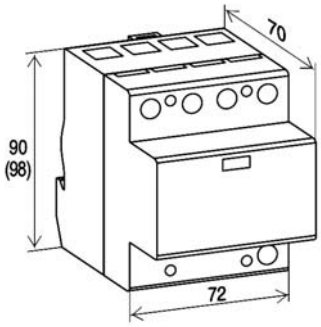
* for max. continuous voltage Uc = 335 V AC versions, charge article code to IS210*, all other technical data are identical

## SCHEMATIC DIAGRAM

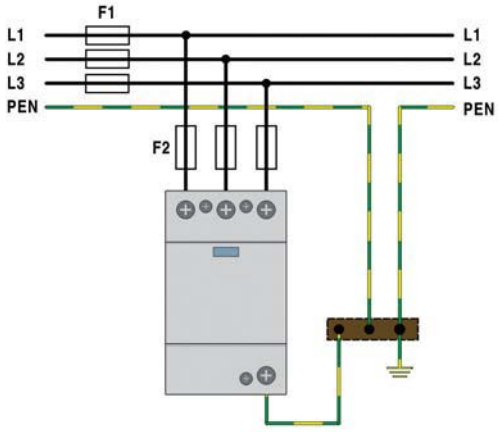


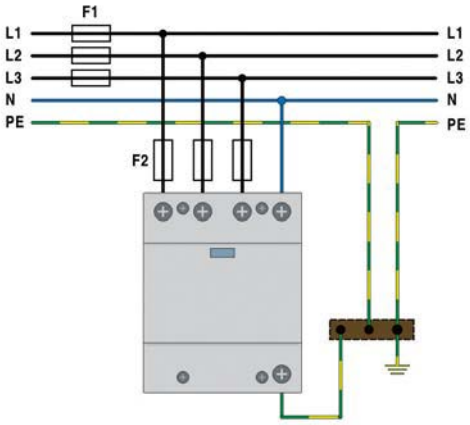
## DIMENSIONS



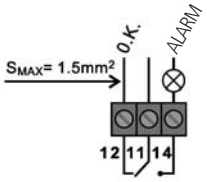




## CONNECTION DIAGRAM




## OTHER




| | |
|---|---|
| A.C. | 250 V / 0.5 A |
| D.C. | 250 V / 0.1 A |
| | 125 V / 0.2 A |
| | 75 V / 0.5 A |

For SPDs with auxiliary contact, the product number ends with "1".


If the colour of the viewing window changes to red, the SPD was overloaded and must be replaced.

| DESCRIPTION | MW | LIGHTNING PROT. | ARRESTER CLASS | $U_c$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|---|---|
| COMBTEC BC TNC 275/12.5 | 3 | III + (IV) | TI + TII (B+C) | 275 V AC | 9004840554014 | | **IS211230** |
| COMBTEC BC TNC 275/12.5 + aux. contact | 3 | III + (IV) | TI + TII (B+C) | 275 V AC | 9004840554045 | | **IS211231** |
| COMBTEC BC TNS 275/12.5 | 4 | III + (IV) | TI + TII (B+C) | 275 V AC | 9004840554021 | | **IS211240** |
| COMBTEC BC TNS 275/12.5 + aux. contact | 4 | III + (IV) | TI + TII (B+C) | 275 V AC | 9004840554052 | | **IS211241** |
| COMBTEC BC TT 275/12.5 | 4 | III + (IV) | TI + TII (B+C) | 275 V AC | 9004840554038 | | **IS211210** |
| COMBTEC BC TT 275/25 + aux. contact | 4 | III + (IV) | TI + TII (B+C) | 275 V AC | 9004840554069 | | **IS211211** |
| COMBTEC BCD TNC 275/12.5 + aux. contact | 3 | III + (IV) | TI + TII + TIII (B+C+D) | 275 V AC | 9004840554076 | | IS211431 |
| COMBTEC BCD TNS 275/12.5 + aux. contact | 4 | III + (IV) | TI + TII + TIII (B+C+D) | 275 V AC | 9004840554083 | | **IS211441** |
| COMBTEC BCD TT 275/12.5 + aux. contact | 4 | III + (IV) | TI + TII + TIII (B+C+D) | 275 V AC | 9004840554090 | | IS211411 |
| Busbar UEA (BC) between RCCB 3-pole | 6 | | | | 9004840557091 | | **IS050019** |
| Busbar UEA (BC) between RCCB 4-pole | 8 | | | | 9004840557084 | | **IS050020** |

# POWERTEC – DRAINS WITH SEPARATION SPARK GAP (B+C)

POWERTEC

## SCHRACK INFO

POWERTEC arrester with a low level of protection is a selective, two-stage constructed T1 + T2 (B + C) arrester, which realizes the protection classes I + II in one device. This eliminates the need for cable lengths under 10m, the decoupling elements required by the use of inert gas-filled, hermetically sealed spark gap, the requirement for a high arresting capacity is achieved at high functional stability. No exhaust port, so no safety distances required.

## TIPS & TRICKS

The first stage (valve-type) leads impulse currents (up to 4kA), without causing line follow currents. When exceeding a some surge current to (4kA) takes over the second stage (hermetically sealed, inert gas-filled spark gap), the rare dissipation of energy tansienten up to 25kA / 60kA (10/350µs) that can occur with near and direct strikes. To signal is optional in case a potential-free alarm contact (R) with plug connector. The V-wiring can be on the unmarked clamp (the device is not connected to the clamp L / N) by means of the optional two-pole comb type busbar is easy.



## CERTIFICATIONS

Tested according to E DIN VDE EN61643-11 and after 0675-6-11/98-A1 or IEC61643-1 and OVE ÖNORM E8001-1 classification to Class B / C, I + II, T1, T2.

## TECHNICAL DATA

- Protection level: < 2.5 kV
- Output (R): optional
- Lightning current: 25 kA, 60 kA (20/350 µs)
- High insulation resistance of an insulation resistance of > 1010 Ω
- Maximum continuous operating voltage UC: 335 V ~
- Nominal voltage Un: 230V/400V AC 50/60Hz
- Response time: < 50 ns
- Maximum permissible line or fuse F2 on stub wiring: 160A gL
- Maximum permissible line or fuse F3 at V-wiring: 100A gL
- Operating temperature range: -40° C ... +85° C
- Wire strip length: 50 mm² stranded / flexible 35 mm²
- Material / color: polycarbonate (halogen free) / gray RAL 7035
- Protection: IP20
- Mounting on 35 mm DIN rail: according to EN 50 022

## DIMENSIONS AND CIRCUIT DIAGRAMS

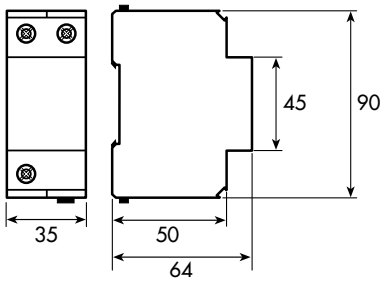
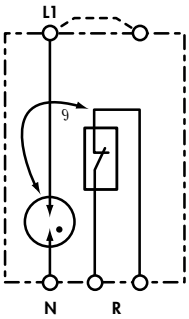
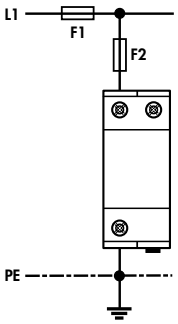



**Abbildung mit Remote Kontakt R**

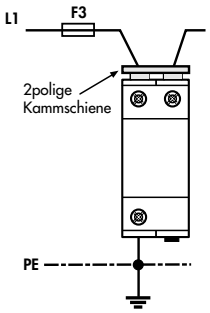
**R 230VAC/0,5A**




**Stichleitungs - Verdrahtung**




**V - Verdrahtung**




**Wenn Leitungssicherung (F1) ≤ 160 A eingesetzt ist, ist die Vorsicherung (F2) nicht zwingend**

| DESCRIPTION | MW | WEIGHT (kg) | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|
| POWERTEC 25kA Class/II B/C | 2 | 0,19 | 9004840268058 | | **IS010111** |
| POWERTEC 25kA+H Class/II B/C | 2 | 0,19 | 9004840268041 | | **IS010112** |
| POWERTEC 60kA Class.I/II B/C | 2 | 0,19 | 9004840256000 | | **IS010113** |
| POWERTEC 60kA+H Class/II B/C | 2 | 0,19 | 9004840268065 | | IS010114 |
| Busbar 3-fold, for TN-C system | - | - | 9004840277944 | | **IS010173** |
| Busbar 4-fold, for TN-S, TT system | - | - | 9004840277951 | | **IS010174** |

## VARTEC SURGE ARRESTERS

VARTEC

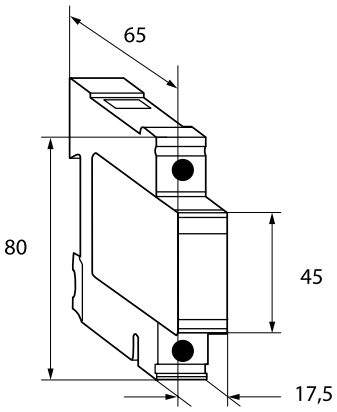
### SCHRACK INFO

The Schrack Vartec series is a pure surge arrester series (TII). This series was tested and certified in accordance with IEC/EN 61643. The use of SCHRACK Vartec arresters is necessary in every consumer installation, which is newly built or significantly altered. In indoor mounting not dependent on position the national installation regulations must be followed (Austria: ÖVE/ÖNORM E 8001). Through their plug-in design, these arresters are very easy to replace in the case of an overload to an arrester.

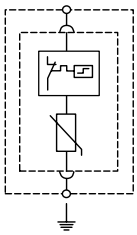
### TECHNICAL DATA

| | VVP 255 | VVP 335 | DVP 255 |
|---|---|---|---|
| SPD continuous voltage | 255 $V_{AC}$ | 335 $V_{AC}$ | 255 $V_{AC}$ |
| Nominal discharge current $I_n$ (8/20) | 15 kA/20 kA | 15 kA/20 kA | 20 kA |
| Max. discharge current $I_{max}$ (8/20) | 30 kA/40 kA | 30 kA/40 kA | 40 kA |
| Protection level $U_p$ (la $I_n$) | ≤1,3 kV/1,4 kV | ≤1,4 kV/1,65 kV | ≤1,2 kV |
| Response time $t_a$ | <25 ns | <25 ns | <100 ns |
| Max. permissible ambient temperature | -40 °C ... + 80 °C | | |
| Degree of protection open/installed | IP20 / 40 | | |
| Max. permissible back-up fuse | 100 A | 100 A | - |
| Max. terminal cross-section | 16 / 25 mm² (finely stranded) | | |
| Auxiliary switch (optional) | 250 $V_{AC}$ / 0,5 A, max. 1,5 mm² | | |
| DIN-rail mountable | on both sides | | |
| Max. terminal tightening torque | 2.5 to 3.0 Nm (main terminal) | | |

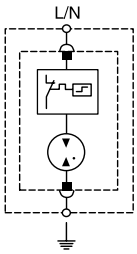
### DIMENSIONS AND CIRCUIT DIAGRAMS



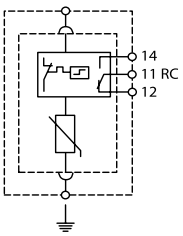

VVP 255/355



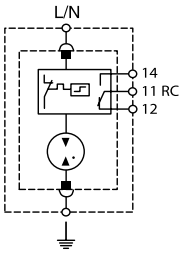
DVP 255




VVP 255/355
with auxiliary switch



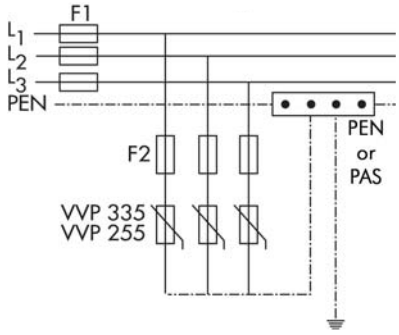

DVP 255
with auxiliary contact



## CIRCUIT DIAGRAMS

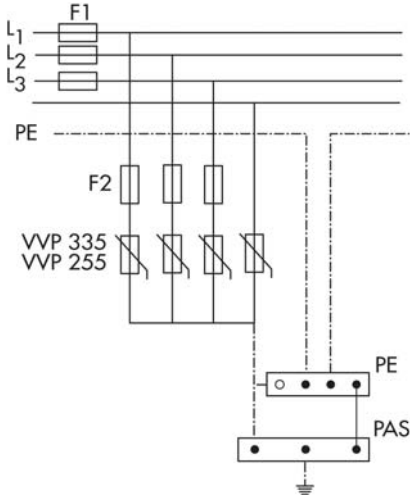
### TN-C MAINS SYSTEM

Zeroing



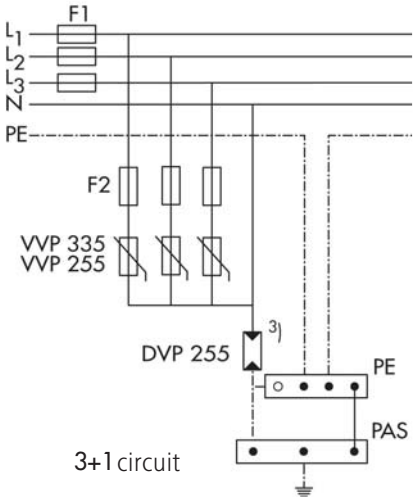

### TN-S MAINS SYSTEM

Zeroing

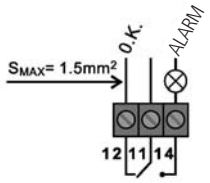



### TN-C/TT-/IT MAINS SYSTEM

Zeroing
Residual-current protective circuit
Insulation monitoring system




## OTHER




| | |
|---|---|
| A.C. | 250 V / 0.5 A |
| D.C. | 250 V / 0.1 A |
| | 125 V / 0.2 A |
| | 75 V / 0.5 A |

For SPDs with auxiliary contact, the product number ends with "1".


If the colour of the viewing window changes to red, the SPD was overloaded and must be replaced.

| DESCRIPTION | MW | ARRESTER CLASS | $U_C$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|---|
| C-arr. module 15 kA VVP255, IEC | 1 | TII (C) | 255 V AC | 9004840229707 | | **IS010076** |
| C-arr. module 20 kA VVP255, IEC | 1 | TI (C) | 255 V AC | 9004840229608 | | **IS010077** |
| C-arr. module 15 kA VVP335, ÖVE | 1 | TII (C) | 335 V AC | 9004840229615 | | **IS010078** |
| C-arr. module 20 kA VVP335, ÖVE | 1 | TII (C) | 335 V AC | 9004840239683 | | **IS010079** |
| N-PE arr. module 20 kA DVP255[1)] | 1 | TII (C) | 255 V AC | 9004840229622 | | **IS010075** |
| Base 1-pole for VVP | 1 | TI (C) | - | 9004840382747 | | **IS010071-A** |
| Base 1-pole for VVP + aux. contact | 1 | TII (C) | - | 9004840382723 | | **IS010069-A** |
| Base 1-pole for DVP | 1 | TI (C) | - | 9004840382730 | | **IS010070-A** |
| Base 1-pole for DVP + aux. contact | 1 | TI (C) | - | 9004840382716 | | **IS010068-A** |
| Base 3+1 circuit | 4 | TII (C) | - | 9004840382693 | | **IS010064-A** |
| Base 3+1 circuit + aux. contact | 4 | TII (C) | - | 9004840382709 | | **IS010065-A** |
| Busbar 3-fold, insulated, for TN-C system | | | | 9004840135589 | | **IS050103** |
| Busbar 4-fold, insulated, for TN-S, TT System | | | | 9004840135596 | | **IS050104** |

[1)] As stated in ÖVE/ÖNORM E8001-1, the requirement of 20 kA applies to the SPD between the neutral conductor and the main earthing bar (NPE arrester), (PAS) or PE rail without changes, even if overvoltage protection devices with higher nominal discharge current, e.g. 15 kA or 20 kA, are used between the outer conductors and the neutral conductor.

# FINE PROTECTION ELEMENTS


IS010200

## SCHRACK INFO

Schrack rail-mounted fine protection element (T3) for indoor mounting for the protection of single-phase consumer systems against transient overvoltages. With two protection paths in 1 MW, this Schrack fine protection element is ideal for space-saving installation in small distribution boxes or other DIN rail enclosures. The plug-in design allows easy replacement of the module in case of any overloading of the arrester.

## TECHNICAL DATA

| | VMG 275 |
|---|---|
| SPD continuous voltage $U_c$ | 275 $V_{AC}$ |
| Nominal discharge current $I_n$ (8/20) | 3 kA / Pol |
| $U_{oc}$ (1.2/50) | 6 kV / Pol |
| Protection level $U_p$ (la $I_n$) | ≤0.9 kV |
| Response time $t_a$ | <100 ns |
| Max. permissible ambient temperature | -40 °C ...+80 °C |
| Degree of protection open/installed | IP20 / 40 |
| Max. permissible back-up fuse | 63 A |
| Max. terminal cross-section | L, N = 6 mm²; PE = 25/35 mm² |
| Auxiliary switch (optional) | 250 $V_{AC}$ / 0.5 A; max. 1.5 mm² |

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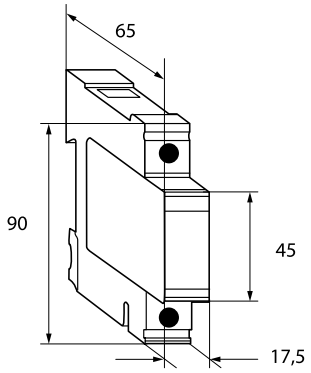
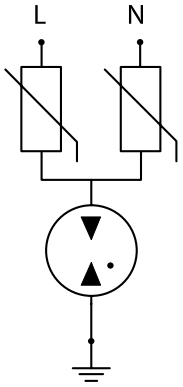
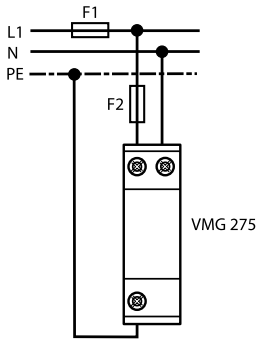
## DIMENSIONS AND CIRCUIT DIAGRAMS




Internal circuit diagram




Schematic diagram




F2 only necessary if F1> 63 AgL

| DESCRIPTION | MW | ARRESTER CLASS | Uc | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|---|
| D-arr. module 3 kA, VMG | 1 | TIII (D) | 275 VAC | 9004840250657 | | IS010200 |
| Base 1-pole for VMG / VEPG | 1 | | | 9004840250664 | | IS010201 |
| Base 1-pole + aux. contact for VMG / VEPG | 1 | | | 9004840250671 | | IS010202 |

# FINE PROTECTION ELEMENTS – FLUSH-MOUNTED BOX AND ADAPTER PLUG

IS211450/IS010002/IS010003

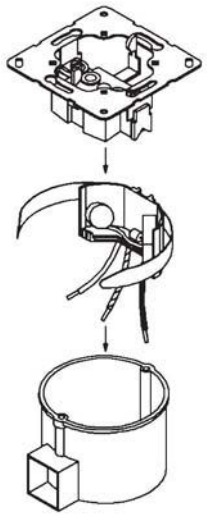
## SCHRACK INFO

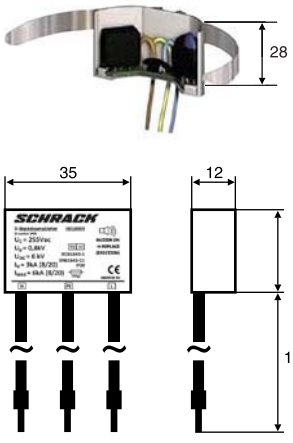
Schrack fine protection elements for flush-mounted boxes are suitable for installation of new and retrofitting existing earthed socket outlets. Through-wiring in the IS010002 enables the connection of additional socket outlets. In case of overload, the built-in signal transmitter signals a defective device. The power supply of end devices is maintained. The Schrack fine protection adapter plug is Ideal for retrofitting a test class 3 arrester for sensitive end devices. The combined protection of power lines and data lines with F-port (TV aerial) or telephone line connection (RJ11) protects all important feed lines to TV set or phone line. Installation always in combination with Protec, Combtec or Vartec arresters!

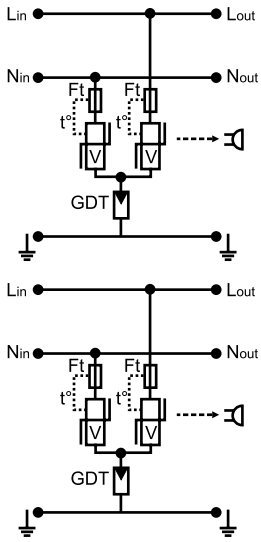
## TECHNICAL DATA

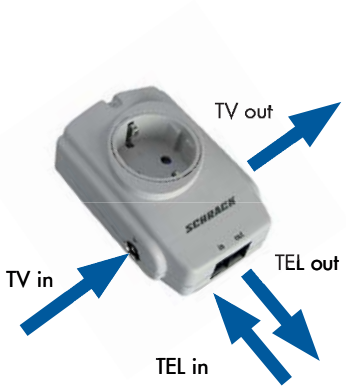
| | Flush-mounted box SPD | | Adapter plug |
|---|---|---|---|
| | IS010002 | IS010003 | IS211450 |
| Validated according to | Test class III (D) IEC61643-1/EN 61643-11 | | |
| Through-wiring | YES | NO | NO |
| Max. continuous voltage $U_c$ | 255 $V_{AC}$ | | 275 $V_{AC}$ |
| Combined surge $U_{oc}/I_{sc}$ | 4 kV / 2,5 kA | 6 kV / 3 kA | 6 kV / 3 kA |
| Max. input power | - | - | 3500 VA |
| Protection level $U_p$ (Ia $I_n$ /L-N ) | <0,9 kV | <0,8 kV | <1.25 kV |
| Max. back-up fuse | 16 AgL/gG | | |
| Temperature range | -0 °C - + 40 °C | | |
| Terminal cross-section | 2,5² | 1,5² | - |
| Signalling | Buzzer | Buzzer | LED display |
| Child safety lock | - | - | YES |

## MOUNTING / DIMENSIONS / SCHEMATIC MOUNTING – FLUSH-MOUNTED BOX






| DESCRIPTION | ARRESTER CLASS | $U_c$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|
| Adapter plug 230 VAC /16A | TIII (D) | 275 V AC | 9004840585919 | | IS211450 |
| D-Base outlet arrester 2.5 kA, through-wiring | TIII (D) | 255 V AC | 9004840255911 | | IS010002 |
| D-Base outlet arrester 2.5 kA | TIII (D) | 255 V AC | 9004840532432 | | IS010003 |



**Order no. blue:** on stock, usually ready for delivery on the day of order!

# DATEC DATA LINE PROTECTOR

DATEC

## SCHRACK INFO

The Datec data line protector is used for data lines such as bus cables, control lines, etc. Since the module can be replaced without interruption (the contacts are closed before the module is contactless), the Datec is also suitable for protection of signal processing inputs (equipment). This solution includes a 12 mm wide module and two protection paths. Through direct contact with an earthed DIN rail, no extra earthing line is required to the module.

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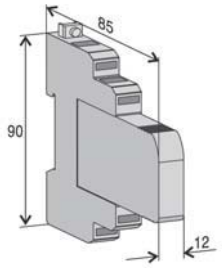
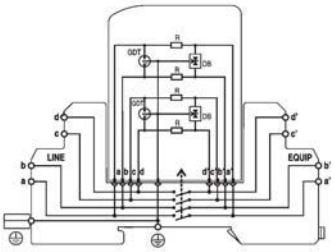
## TECHNICAL DATA

| | IS212405-- | IS212412-- | IS212424-- | IS212430-- |
|---|---|---|---|---|
| Description | DATEC DMOD5V | DATEC DMOD12V | DATEC DMOD24V | DATEC DMOD30V |
| Validated according to | Test class III IEC61643-21 | | | |
| Number of protected circuits | 2x2 (4 wires) | | | |
| Nominal voltage $U_N$ | 5 $V_{DC}$ | 12 $V_{DC}$ | 24 $V_{DC}$ | 30 $V_{DC}$ |
| Max. continuous voltage Uc | 7 $V_{DC}$ | 15 $V_{DC}$ | 28 $V_{DC}$ | 33 $V_{DC}$ |
| Ignition voltage range (a/b-PG)(a-b) | 8 - 10 V | 17 – 21 V | 31 – 37 V | 36 – 44 V |
| Nominal current $I_L$ at 25°C | 1 A | | | |
| Nominal discharge current $I_n$ (8/20) | 10 kA | | | |
| Max. discharge current $I_{max}$ (8/20) | 20 kA | | | |
| Residual voltage $U_{res}$ at 5 kA (8/20) | ≤22 V | ≤42 V | ≤70 V | ≤80 V |
| Response time $t_A$ | ≤1 ns | | | |
| Thermal separator | Thermo clip | | | |
| Insulation resistance | ≥5kΩ / 5 $V_{DC}$ | ≥12MΩ / 12 $V_{DC}$ | ≥24MΩ / 24 $V_{DC}$ | ≥30MΩ / 30 $V_{DC}$ |
| Serial impedance R | 1.6 - 2.0Ω | | | |
| Transverse capacitance C | 50 pF | | | |
| Cutoff frequency fG | 30 MHz | | | |
| Terminal cross-section | 4 mm² (finely stranded) | | | |
| Degree of protection | IP20 | | | |
| Housing material | Thermoplastic V-0 | | | |
| Mounting | 35 mm DIN rail | | | |
| Dimensions | 95 x 90 x 12 | | | |

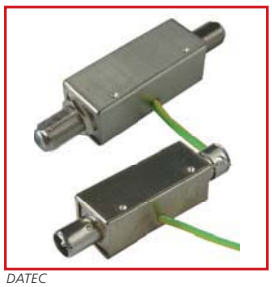
## DIMENSIONS AND CIRCUIT DIAGRAMS




| DESCRIPTION | MW | ARRESTER CLASS | $U_C$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|---|
| DATEC bus arrester 5 V DC 1 A, 12 mm | 0.5 | TII (D) | 7 V DC | 9004840585926 | | **IS212405** |
| DATEC bus arrester 12 V DC 1 A, 12 mm | 0.5 | TIII (D) | 15 V DC | 9004840585933 | | IS212412 |
| DATEC bus arrester 24 V DC 1 A, 12 mm | 0.5 | TIII (D) | 28 VDC | 9004840585940 | | **IS212424** |
| DATEC bus arrester 30 V DC 1 A, 12 mm | 0.5 | TIII (D) | 33 VDC | 9004840585957 | | **IS212430** |

# DATEC DATA LINE PROTECTOR – F-PORT, TV-PORT (MF)



DATEC

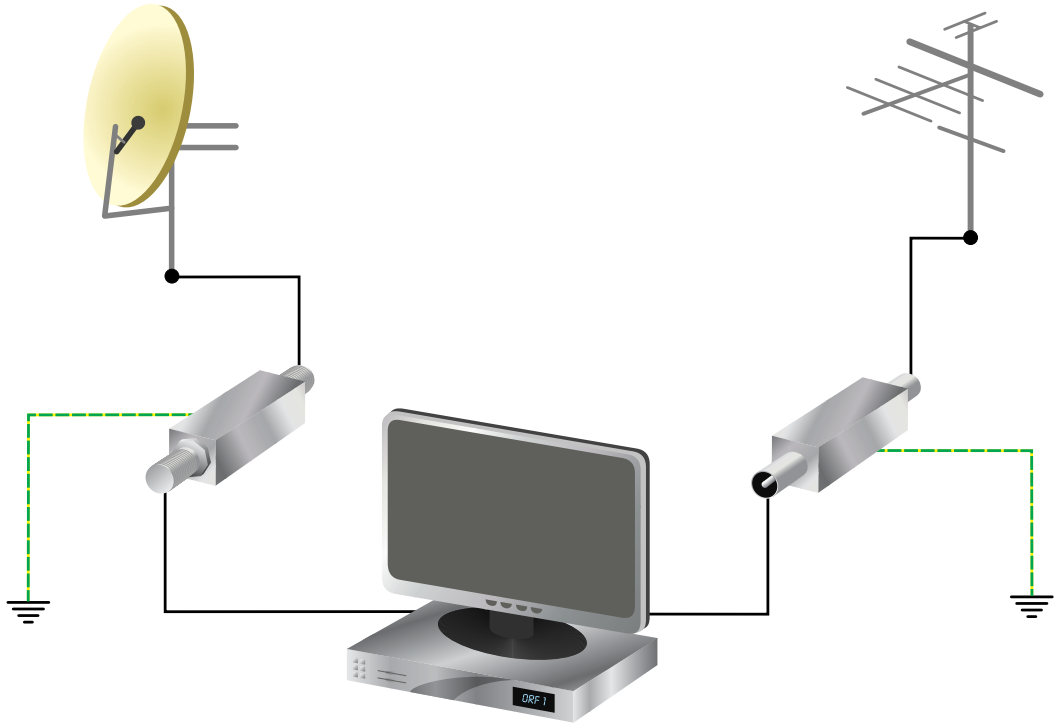
## SCHRACK INFO

Just as power lines, all the data lines need to be protected as well. They are also at risk to carry overvoltages and that may destroy electronic devices. Application areas: Lines from TV aerials or satellite dishes to TV set and receiver station.

## TECHNICAL DATA

| | IS211405-- | IS210242-- |
|---|---|---|
| Description | DATEC IEC | DATEC F |
| Validated according to | Test class III IEC/EN 61643-21 | |
| Coaxial connection | IEC (Connection) 75 Ω | F (Connection) 75 Ω |
| Insertion loss (47 – 860 MHz) | <0.5 dB | |
| Maximum continuous voltage | 48 $V_{AC}$ / 60 $V_{DC}$ | |
| Nominal discharge current $I_n$ (8/20) | 5 kA | |
| Protection level at $I_n$ | ≤550 V | |
| Response time | <5 ns | |

## CONNECTION DIAGRAM




| DESCRIPTION | ARRESTER CLASS | $U_C$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|
| DATEC coaxial F connector 75 Ω | TIII (D) | 60 V DC | 9004840585896 | | IS210424 |
| DATEC coaxial IEC connector 75 Ω | TIII (D) | 60 V DC | 9004840585902 | | IS211405 |

# LIGHTNING- & SURGE ARRESTER FOR PHOTOVOLTAIC SYSTEM

IS011110

## SCHRACK INFO

The SCHRACK PHOTEC series has been developed specifically for the protection of photovoltaic systems and protects them from direct and indirect lightning strikes and power surges. Through proper installation of these surge arresters, the photovoltaic system is protected in areas of lightning protection class (risk level) III and IV. By using 2 terminals per protected pole, a secure connection of cables and equipment can be implemented with ease. The combination of lightning and surge arrester requires no additional arresters between the photovoltaic panels and inverters.

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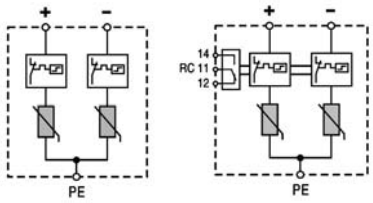
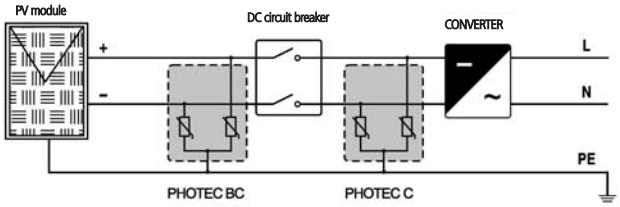
## TECHNICAL DATA

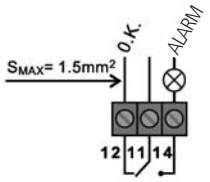
| | PHOTEC BC 1000 | PHOTEC BC 550 |
|---|---|---|
| Validated according to | Test class I + II (B + C) IEC61643-1/EN 61643-11 | |
| Max. continuous voltage | 1000 $V_{DC}$ | 550 $V_{DC}$ |
| Impulse current $I_{imp}$ (10/350) | 12,5 kA/ Pole | 12,5 kA/ Pole |
| Max. discharge current $I_{max}$ (8/20) | 40 kA/ Pole | 40 kA/ Pole |
| Nominal discharge current $I_n$ (8/20) | 20 kA/ Pole | 20 kA/ Pole |
| Protection level $U_p$ (at $I_n$) | ≤2.25 kV | ≤2.0 kV |
| Max. tightening torque | 4,5 Nm | 4,5 Nm |
| Max. back-up fuse | 250 AgL | |
| Temperature range | -40 °C - + 80 °C | |
| Terminal cross-section | 35 mm² (solid) / 25 mm² (finely stranded) | |
| Mounting | 35 mm DIN rail | |
| Degree of protection | IP20 | |
| Dimensions | 72 x 90 x 70 | 72 x 90 x 70 |
| Dimensions with auxiliary contact | 72 x 98 x 70 | 72 x 98 x 70 |

## SCHEMATIC STRUCTURE / SAMPLE APPLICATION




## OTHER




| | |
|---|---|
| A.C. | 250 V / 0.5 A |
| D.C. | 250 V / 0.1 A |
| | 125 V / 0.2 A |
| | 75 V / 0.5 A |

For SPDs with auxiliary contact, the product number ends with "1".


If the colour of the viewing window changes to red, the SPD was overloaded and must be replaced.

| DESCRIPTION | MW | LIGHTNING PROT. | ARRESTER CLASS | $U_C$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|---|---|
| PHOTEC BC 1000/12.5 | 4 | III + IV | TI + TI (B + C) | 1000 V DC | 9004840547610 | | **IS011110** |
| PHOTEC BC 1000/12.5 + aux. contact | 4 | III + IV | TI + TI (B + C) | 1000 V DC | 9004840547627 | | IS011111 |
| PHOTEC BC 550/12.5 | 4 | III + IV | TI + TI (B + C) | 550 V DC | 9004840547597 | | **IS011150** |
| PHOTEC BC 550/12.5 + aux. contact | 4 | II + IV | TI + TI (B + C) | 550 V DC | 9004840547603 | | IS011151 |

# SURGE ARRESTER FOR PHOTOVOLTAIC SYSTEMS

IS011252

## SCHRACK INFO

This SCHRACK PHOTEC series has been developed specifically for the protection of photovoltaic systems and protects them from direct and indirect lightning strikes and power surges. Through proper installation of these surge arresters, the photovoltaic system is protected against transient overvoltages. The plug-in design of the overvoltage protection modules allows easy replacement in case of an overload. The modules must not be replaced under load! Be sure to follow the national installation regulations.

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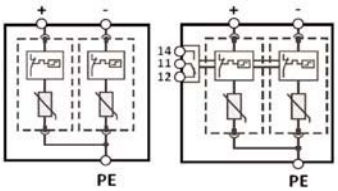
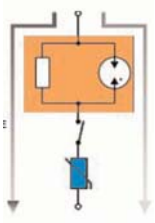
## TECHNICAL DATA

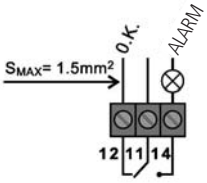
| | PHOTEC C 1000 | PHOTEC C 550 |
|---|---|---|
| Validated according to | Test class II (C) IEC61643-1/EN 61643-11 | |
| Max. continuous voltage | 1000 $V_{DC}$ | 550 $V_{DC}$ |
| Max. discharge current $I_{max}$ (8/20)) | 40 kA/ Pole | 40 kA/ Pole |
| Nominal discharge current $I_n$ (8/20) | 20 kA/ Pole | 20 kA/ Pole |
| Protection level $U_p$ (at $I_n$) | ≤4 kV | ≤2.1 kV |
| Max. tightening torque | 4.5 Nm | 4.5 Nm |
| Max. back-up fuse | 125 AgL | |
| Temperature range | -40 °C - + 80 °C | |
| Terminal cross-section | 35 mm² (solid) / 25 mm² (finely stranded) | |
| Mounting | 35 mm DIN rail | |
| Degree of protection | IP20 | |
| Dimensions | 54 x 90 x 72 | 36 x 90 x 72 |
| Dimensions with auxiliary contact | 54 x 98 x 72 | 36 x 98 x 72 |

## SCHEMATIC STRUCTURE / SAMPLE APPLICATION



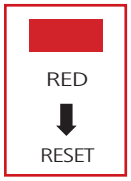



## OTHER




| | |
|---|---|
| A.C. | 250 V / 0.5 A |
| D.C. | 250 V / 0.1 A |
| | 125 V / 0.2 A |
| | 75 V / 0.5 A |

For SPDs with auxiliary contact, the product number ends with "1".




If the colour of the viewing window changes to red, the SPD was overloaded and must be replaced.

| DESCRIPTION | MW | ARRESTER CLASS | $U_C$ | EAN CODE | AVAILABLE | ORDER NO. |
|---|---|---|---|---|---|---|
| PHOTEC C 1000/20 | 3 | TII (C) | 1000 V DC | 9004840667073 | | **IS011210-A** |
| PHOTEC C 1000/20 + aux. contact | 3 | TII (C) | 1000 V DC | 9004840667080 | | IS011211-A |
| PHOTEC C 550/20 | 2 | TII (C) | 550 V DC | 9004840667097 | | **IS011250-A** |
| PHOTEC C 550/20 + aux. contact | 2 | TI (C) | 550 V DC | 9004840667103 | | IS011251-A |