



Lightning and surge protection for outdoorlighting systems

White Paper



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Outdoor lighting systems can be installed at the outside walls of a building and in open terrain. In both cases, it must be checked whether the outdoor lighting systems are located in lightning protection zone LPZ 0_A or LPZ 0_B. Outdoor lighting systems in LPZ 0_A are subjected to direct lightning strikes, impulse currents up to the full lightning current and the full lightning field. In LPZ 0_B they are protected against direct lightning strikes, however, they are subjected to impulse currents up to partial lightning currents and the full lightning field.

Lamp poles in LPZ 0_A have to be connected to one another in the soil and to the earth electrodes of the buildings by means of suitable earthing conductors. It is advisable to use Table 7 of IEC 62305-3 (EN 62305-3) when selecting the materials and cross-sections to be used. **Table 9.2.1** shows an excerpt of the before mentioned table for practical use. The relevant material must always be selected with regard to its corrosion resistance.

It must be checked in each individual case whether measures to reduce the probability of electric shock hazard resulting from touch and/or step voltage must be taken.

To reduce touch voltages, the IEC 62305-3 (EN 62305-3) standard requires, for example, an asphalt layer with a thick-

ness of at least 5 cm in a radius of 3 m around the lamp pole (**Figure 1**).

To reduce step voltages, the IEC 62305-3 (EN 62305-3) standard requires, for example, potential control. To this end, four rings are buried around the lamp pole at distances of 1.0 m; 4.0 m; 7.0 m and 10.0 m at depths of 0.5 m; 1.0 m; 1.5 m and 2.0 m. These rings are interconnected by means of four connecting cables at right angles to each other and are connected to the lamp pole (**Figure 2**).

| Material | Configuration | Earthing conductor |
|-----------------------|---------------------------------------|---|
| Copper | Stranded/ round/ tape | 50 mm ² |
| Steel | Round, galvanised Tape, galvanised | 78 mm ² 90 mm ² |
| Stainless steel (V4A) | Round Tape | 78 mm ² 100 mm ² |

Table 1 Minimum dimensions of earthing conductors for interconnecting lamp poles in LPZ 0_A and connecting lamp poles to the earth-termination systems of the buildings

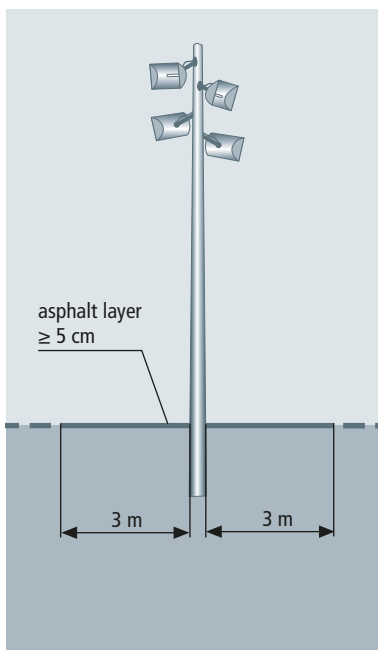


Figure 1 Standing surface insulation to reduce the risk of touch voltage in case of a lightning strike to a lamp pole

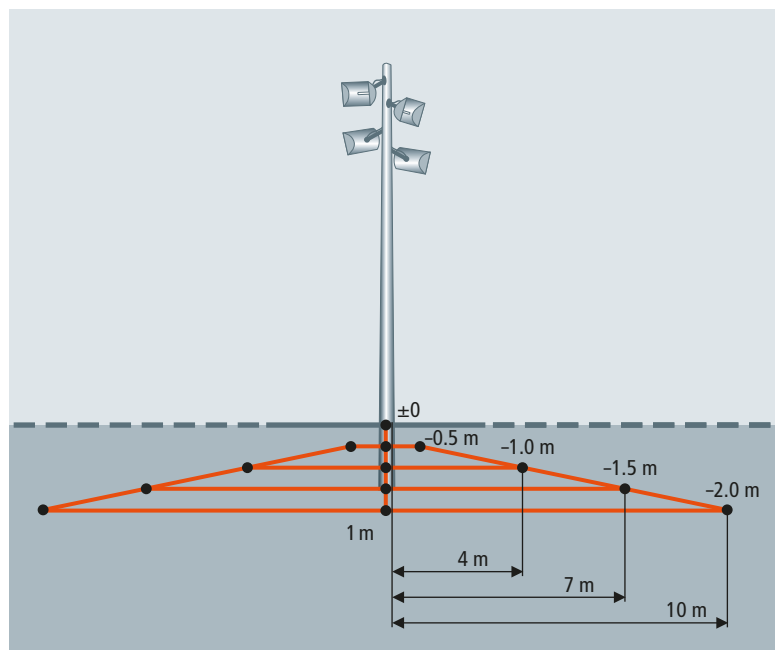
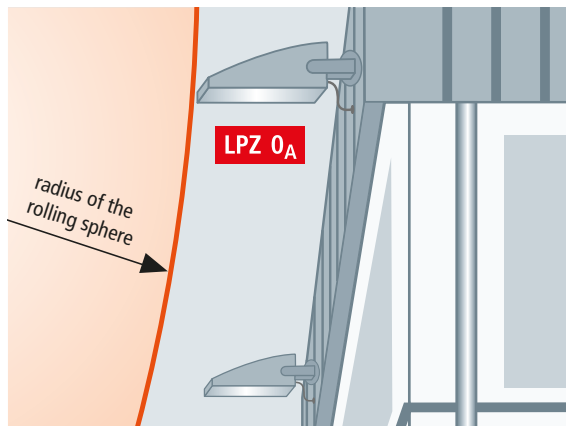


Figure 2 Potential control to reduce step voltage in case of a lightning strike to a lamp pole

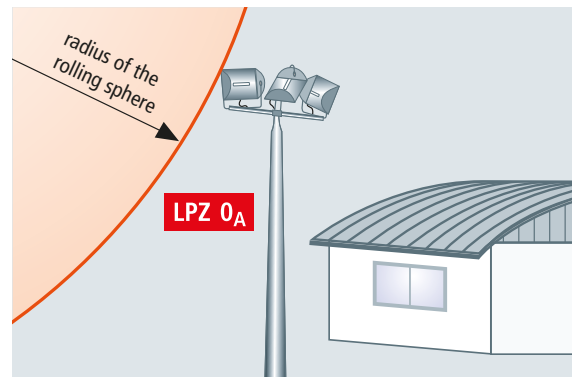
Lightning and surge protection for outdoor lighting systems

White Paper



| Application | Type | Part No. |
|------------------------------------|-----------------|----------|
| Lightning current arresters | | |
| TN system | DB M 1 255 (2x) | 961 120 |
| TT system | DB M 1 255 | 961 120 |
| | DGP M 1 255 | 961 101 |
| Combined arresters | | |
| TN system | DSH TN 255 | 941 200 |
| TT system | DSH TT 2P 255 | 941 110 |

Figure 3 Outdoor lighting system in the form of a 230 V wall lamp in lightning protection zone 0_A with lightning equipotential bonding at the entrance point into the building



| Application | Type | Part No. |
|------------------------------------|-----------------|----------|
| Lightning current arresters | | |
| TN-S system | DB M 1 255 (4x) | 961 120 |
| TT system | DB M 1 255 (3x) | 961 120 |
| | DGP M 1 255 | 961 101 |
| Combined arresters | | |
| TN-S system | DSH TNS 255 | 941 400 |
| TT system | DSH TT 255 | 941 310 |

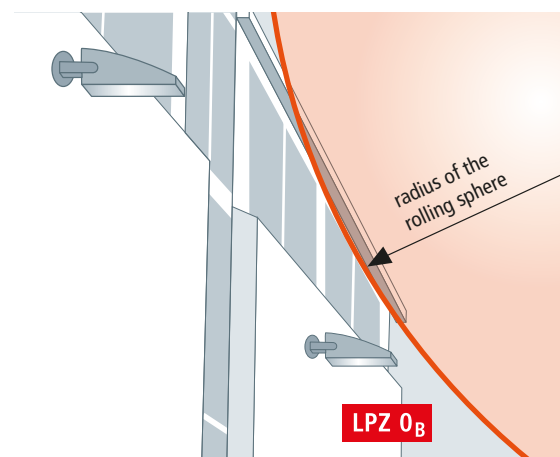
Figure 4 Outdoor lighting system in the form of a 3x 230/400 V lamp pole in lightning protection zone 0_A with lightning equipotential bonding at the entrance point into the building

The recommended arrester types must be installed at the transition from LPZ 0_A to 1 or from LPZ 0_B to 1.

Type 1 lightning current arresters must be provided at the entrance point into the building for all outdoor lighting systems in LPZ 0_A . To determine this lightning protection zone, the relevant rolling sphere is "rolled over" the outdoor lighting system from all possible directions. If the rolling sphere touches the outdoor lighting system, it is located in LPZ 0_A (Figures 3 and 4).

Before installing type 1 lightning current arresters, it has to be checked whether an energy-coordinated type 2 surge arrester is already installed in the distribution board which houses the circuits of the outdoor lighting system. If this is not the case, we recommend to install combined arresters at the transition of the lightning protection zones.

Type 2 surge arresters must also be installed at the entrance point into the building for all outdoor lighting systems in LPZ 0_B (Figure 5).



| Application | Type | Part No. |
|-------------|----------------|----------|
| TN system | DG M TN 275 | 952 200 |
| TT system | DG M TT 2P 275 | 952 110 |

Figure 5 Outdoor lighting system in the form of a 230 V wall lamp in lightning protection zone 0_B

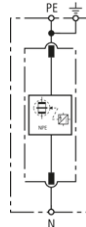
DEHNgap

DGP M 255 (961 101)

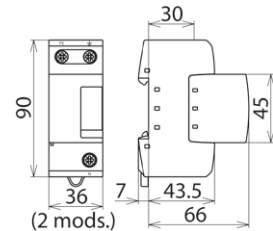
- Discharge capacity up to 100 kA (10/350 μ s)
- Total current arrester specifically designed for installation in "3+1" and "1+1" circuits of TT systems according to IEC 60364-5-53 between neutral conductor N and protective conductor PE
- Creepage discharge spark gap technology



Figure without obligation



Basic circuit diagram DGP M 255



Dimension drawing DGP M 255

Coordinated and modular single-pole N-PE lightning current arrester for $U_c = 255$ V; also available with remote signalling contact for the monitoring system (floating changeover contact).

| Type Part No. | DGP M 255 961 101 |
|--|---|
| SPD according to EN 61643-11 / IEC 61643-11 | type 1 / class I |
| Max. continuous operating a.c. voltage (U_c) | 255 V (50 / 60 Hz) |
| Lightning impulse current (10/350 μ s) (I_{imp}) | 100 kA |
| Specific energy (W/R) | 2.50 MJ/ohms |
| Voltage protection level (U_p) | ≤ 1.5 kV |
| Follow current extinguishing capability a.c. (I_n) | 100 A _{rms} |
| Response time (t_A) | ≤ 100 ns |
| Temporary overvoltage (TOV) (U_T) – Characteristic | 1200 V / 200 ms – withstand |
| Operating temperature range (parallel connection) (T_{UP}) | -40 °C ... +80 °C |
| Operating temperature range (series connection) (T_{US}) | -40 °C ... +60 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (N, PE, \pm) (min.) | 10 mm ² solid / flexible |
| Cross-sectional area (N, PE) (max.) | 50 mm ² stranded / 35 mm ² flexible |
| Cross-sectional area (\pm) (max.) | 35 mm ² stranded / 25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 2 module(s), DIN 43880 |
| Approvals | VDE, KEMA, UL |
| Weight | 315 g |
| Customs tariff number | 85363010 |
| GTIN | 4013364118676 |
| PU | 1 pc(s) |

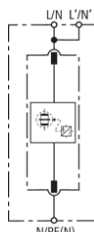
DEHNbloc

DB M 1 255 (961 120)

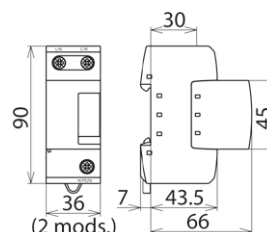
- Coordinated spark-gap-based lightning current arrester consisting of a base part and plug-in protection module
- Maximum system availability due to RADAX Flow follow current limitation
- Directly coordinated with DEHNguard surge protective devices without additional cable length



Figure without obligation



Basic circuit diagram DB M 1 255



Dimension drawing DB M 1 255

Coordinated modular single-pole lightning current arrester with high follow current limitation

| Type | DB M 1 255 |
|--|--|
| Part No. | 961 120 |
| SPD according to EN 61643-11 | Type 1 |
| SPD according to IEC 61643-1/-11 | Class I |
| Max. continuous operating a.c. voltage (U_c) | 255 V |
| Lightning impulse current (10/350 μ s) (I_{imp}) | 50 kA |
| Specific energy (W/R) | 625.00 kJ/ohms |
| Nominal discharge current (8/20 μ s) (I_n) | 50 kA |
| Voltage protection level (U_p) | ≤ 2.5 kV |
| Follow current extinguishing capability a.c. (I_{fi}) | 50 kA _{rms} |
| Follow current limitation/Selectivity | no tripping of a 32 A gL/gG fuse up to 50 kA _{rms} (prosp.) |
| Response time (t_A) | ≤ 100 ns |
| Max. backup fuse (L) up to $I_K = 50$ kA _{rms} ($t_a \leq 0.2$ s) | 500 A gL/gG |
| Max. backup fuse (L) up to $I_K = 50$ kA _{rms} ($t_a \leq 5$ s) | 315 A gL/gG |
| Max. backup fuse (L-L') | 125 A gL/gG |
| Temporary overvoltage (TOV) (U_T) | 440 V / 5 sec. |
| TOV characteristic | withstand |
| Operating temperature range (parallel connection) (T_{UP}) | -40°C...+80°C |
| Operating temperature range (series connection) (T_{US}) | -40°C...+60°C |
| Operating state/fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (L/N, L'/N', N/PE (N)) (min.) | 10 mm ² solid/flexible |
| Cross-sectional area (L/N, N/PE(N)) (max.) | 50 mm ² stranded/35 mm ² flexible |
| Cross-sectional area (L'/N') (max.) | 35 mm ² stranded/25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 2 module(s), DIN 43880 |
| Approvals | VDE, KEMA, UL |
| Extended technical data: | Use in installations with prospective short-circuit currents of more than 50 kA _{rms} (tested by VDE) |
| - Maximum prospective short-circuit current | 100 kA _{rms} (220 kA _{peak}) |
| - Limitation/extinction of mains follow currents | up to 100 kA _{rms} (220 kA _{peak}) |
| - Max. backup fuse (L) up to $I_K = 100$ kA _{rms} ($t_a \leq 0.2$ s) | 500 A gL/gG |
| - Max. backup fuse (L) up to $I_K = 100$ kA _{rms} ($t_a \leq 5$ s) | 315 A gL/gG |
| Weight | 340 g |
| Customs tariff number | 85363030 |
| GTIN | 4013364118614 |
| PU | 1 pc(s) |

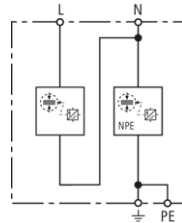
DEHNshield

DSH TT 2P 255 (941 110)

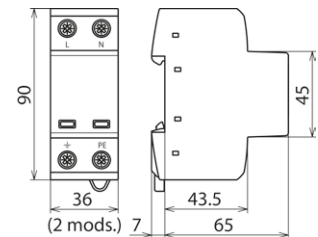
- Application-optimised and prewired spark-gap-based type 1 and type 2 combined lightning current and surge arrester
- Space-saving arrester for compact and simply equipped electrical installations with reduced technical requirements
- Capable of protecting terminal equipment



Figure without obligation



Basic circuit diagram DSH TT 2P 255



Dimension drawing DSH TT 2P 255

Application-optimised and prewired combined lightning current and surge arrester for single-phase TT and TN-S systems ("1+1" circuit).

| Type | DSH TT 2P 255 |
|---|--|
| Part No. | 941 110 |
| SPD according to EN 61643-11 / IEC 61643-11 | type 1 + type 2 / class I + class II |
| Energy coordination with terminal equipment (≤ 5 m) | type 1 + type 2 + type 3 |
| Nominal a.c. voltage (U_N) | 230 V (50 / 60 Hz) |
| Max. continuous operating a.c. voltage (U_C) | 255 V (50 / 60 Hz) |
| Lightning impulse current (10/350 μ s) [L+N-PE] (I_{total}) | 25 kA |
| Specific energy [L+N-PE] (W/R) | 156.25 kJ/ohms |
| Lightning impulse current (10/350 μ s) [L-N]/[N-PE] (I_{imp}) | 12.5 / 25 kA |
| Specific energy [L-N]/[N-PE] (W/R) | 39.06 / 156.25 kJ/ohms |
| Nominal discharge current (8/20 μ s) [L-N]/[N-PE] (I_n) | 12.5 / 25 kA |
| Voltage protection level [L-N]/[N-PE] (U_p) | ≤ 1.5 / ≤ 1.5 kV |
| Follow current extinguishing capability [L-N]/[N-PE] (I_{fl}) | 25 kA _{rms} / 100 A _{rms} |
| Follow current limitation / Selectivity | no tripping of a 32 A gL/gG fuse up to 25 kA _{rms} (prosp.) |
| Response time (t_A) | ≤ 100 ns |
| Max. mains-side overcurrent protection | 160 A gL/gG |
| Temporary overvoltage (TOV) [L-N] (U_T) – Characteristic | 440 V / 120 min. – withstand |
| Temporary overvoltage (TOV) [N-PE] (U_T) – Characteristic | 1200 V / 200 ms – withstand |
| Operating temperature range (T_U) | -40 °C ... +80 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (L, N, PE, \pm) (min.) | 1.5 mm ² solid / flexible |
| Cross-sectional area (L, N, PE, \pm) (max.) | 35 mm ² stranded / 25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 2 module(s), DIN 43880 |
| Approvals | KEMA, VDE, UL |
| Weight | 275 g |
| Customs tariff number | 85363030 |
| GTIN | 4013364137899 |
| PU | 1 pc(s) |

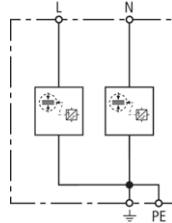
DEHNshield

DSH TN 255 (941 200)

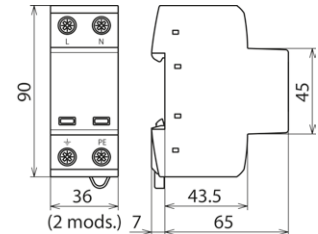
- Application-optimised and prewired spark-gap-based type 1 and type 2 combined lightning current and surge arrester
- Space-saving arrester for compact and simply equipped electrical installations with reduced technical requirements
- Capable of protecting terminal equipment



Figure without obligation



Basic circuit diagram DSH TN 255



Dimension drawing DSH TN 255

Application-optimised and prewired combined lightning current and surge arrester for single-phase TN systems.

| Type | DSH TN 255 |
|--|--|
| Part No. | 941 200 |
| SPD according to EN 61643-11 / IEC 61643-11 | type 1 + type 2 / class I + class II |
| Energy coordination with terminal equipment (≤ 5 m) | type 1 + type 2 + type 3 |
| Nominal a.c. voltage (U_N) | 230 V (50 / 60 Hz) |
| Max. continuous operating a.c. voltage (U_C) | 255 V (50 / 60 Hz) |
| Lightning impulse current (10/350 μ s) [L+N-PE] (I_{total}) | 25 kA |
| Specific energy [L+N-PE] (W/R) | 156.25 kJ/ohms |
| Lightning impulse current (10/350 μ s) [L, N-PE] (I_{imp}) | 12.5 kA |
| Specific energy [L,N-PE] (W/R) | 39.06 kJ/ohms |
| Nominal discharge current (8/20 μ s) [L/N-PE]/[L+N-PE] (I_n) | 12.5 / 25 kA |
| Voltage protection level [L-PE]/[N-PE] (U_P) | ≤ 1.5 / ≤ 1.5 kV |
| Follow current extinguishing capability a.c. (I_{fi}) | 25 kA _{rms} |
| Follow current limitation / Selectivity | no tripping of a 32 A gL/gG fuse up to 25 kA _{rms} (prosp.) |
| Response time (t_A) | ≤ 100 ns |
| Max. mains-side overcurrent protection | 160 A gL/gG |
| Temporary overvoltage (TOV) [L-N] (U_T) – Characteristic | 440 V / 120 min. – withstand |
| Operating temperature range (T_U) | -40 °C ... +80 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (L, N, PE, \pm) (min.) | 1.5 mm ² solid / flexible |
| Cross-sectional area (L, N, PE, \pm) (max.) | 35 mm ² stranded / 25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 2 module(s), DIN 43880 |
| Approvals | KEMA, VDE, UL |
| Weight | 250 g |
| Customs tariff number | 85363030 |
| GTIN | 4013364138209 |
| PU | 1 pc(s) |

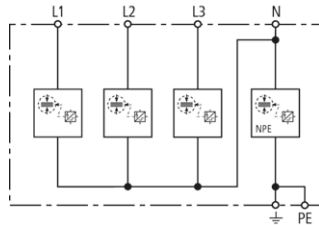
DEHNshield

DSH TT 255 (941 310)

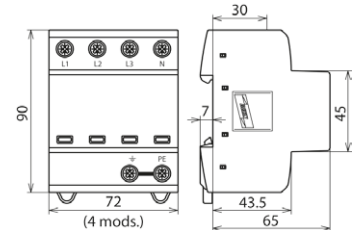
- Application-optimised and prewired spark-gap-based type 1 and type 2 combined lightning current and surge arrester
- Space-saving arrester for compact and simply equipped electrical installations with reduced technical requirements
- Capable of protecting terminal equipment



Figure without obligation



Basic circuit diagram DSH TT 255



Dimension drawing DSH TT 255

Application-optimised and prewired combined lightning current and surge arrester for TT and TN-S systems ("3+1" circuit).

| Type Part No. | DSH TT 255 941 310 |
|--|--|
| SPD according to EN 61643-11 / IEC 61643-11 | type 1 + type 2 / class I + class II |
| Energy coordination with terminal equipment (≤ 5 m) | type 1 + type 2 + type 3 |
| Nominal a.c. voltage (U_N) | 230 / 400 V (50 / 60 Hz) |
| Max. continuous operating a.c. voltage (U_C) | 255 V (50 / 60 Hz) |
| Lightning impulse current (10/350 μ s) [L1+L2+L3+N-PE] (I_{total}) | 50 kA |
| Specific energy [L1+L2+L3+N-PE] (W/R) | 625.00 kJ/ohms |
| Lightning impulse current (10/350 μ s) [L-N]/[N-PE] (I_{imp}) | 12.5 / 50 kA |
| Specific energy [L-N]/[N-PE] (W/R) | 39.06 / 625.00 kJ/ohms |
| Nominal discharge current (8/20 μ s) [L-N]/[N-PE] (I_n) | 12.5 / 50 kA |
| Voltage protection level [L-N]/[N-PE] (U_p) | ≤ 1.5 / ≤ 1.5 kV |
| Follow current extinguishing capability [L-N]/[N-PE] (I_f) | 25 kA _{rms} / 100 A _{rms} |
| Follow current limitation / Selectivity | no tripping of a 32 A gL/gG fuse up to 25 kA _{rms} (prosp.) |
| Response time (t_A) | ≤ 100 ns |
| Max. mains-side overcurrent protection | 160 A gL/gG |
| Temporary overvoltage (TOV) [L-N] (U_T) – Characteristic | 440 V / 120 min. – withstand |
| Temporary overvoltage (TOV) [N-PE] (U_T) – Characteristic | 1200 V / 200 ms – withstand |
| Operating temperature range (T_U) | -40 °C ... +80 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (L1, L2, L3, N, PE, \ominus) (min.) | 1.5 mm ² solid / flexible |
| Cross-sectional area (L1, L2, L3, N, PE, \ominus) (max.) | 35 mm ² stranded / 25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 4 module(s), DIN 43880 |
| Approvals | KEMA, VDE, UL |
| Weight | 480 g |
| Customs tariff number | 85363030 |
| GTIN | 4013364131798 |
| PU | 1 pc(s) |

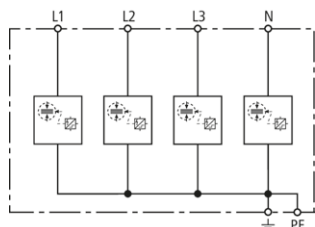
DEHNshield

DSH TNS 255 (941 400)

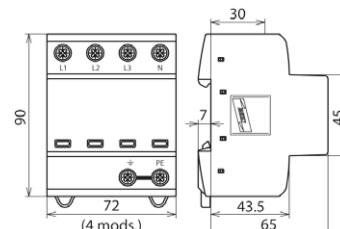
- Application-optimised and prewired type 1 and type 2 spark-gap-based combined lightning current and surge arrester
- Space-saving arrester for compact and simply equipped electrical installations with reduced technical requirements
- Capable of protecting terminal equipment



Figure without obligation



Basic circuit diagram DSH TNS 255



Dimension drawing DSH TNS 255

Application-optimised and prewired combined lightning current and surge arrester for TN-S systems.

| Type | DSH TNS 255 |
|---|--|
| Part No. | 941 400 |
| SPD according to EN 61643-11 / IEC 61643-11 | type 1 + type 2 / class I + class II |
| Energy coordination with terminal equipment (≤ 5 m) | type 1 + type 2 + type 3 |
| Nominal a.c. voltage (U_N) | 230 / 400 V (50 / 60 Hz) |
| Max. continuous operating a.c. voltage (U_C) | 255 (50 / 60 Hz) |
| Lightning impulse current (10/350 μ s) [L1+L2+L3+N-PE] (I_{total}) | 50 kA |
| Specific energy [L1+L2+L3+N-PE] (W/R) | 625.00 kJ/ohms |
| Lightning impulse current (10/350 μ s) [L, N-PE] (I_{imp}) | 12.5 kA |
| Specific energy [L,N-PE] (W/R) | 39.06 kJ/ohms |
| Nominal discharge current (8/20 μ s) [L/N-PE]/[L1+L2+L3+N-PE] (I_n) | 12.5 / 50 kA |
| Voltage protection level [L-PE]/[N-PE] (U_P) | ≤ 1.5 / ≤ 1.5 kV |
| Follow current extinguishing capability a.c. (I_{fi}) | 25 kA _{rms} |
| Follow current limitation / Selectivity | no tripping of a 32 A gL/gG fuse up to 25 kA _{rms} (prosp.) |
| Response time (t_A) | ≤ 100 ns |
| Max. mains-side overcurrent protection | 160 A gL/gG |
| Temporary overvoltage (TOV) [L-N] (U_T) – Characteristic | 440 V / 120 min. – withstand |
| Operating temperature range (T_U) | -40 °C ... +80 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (L1, L2, L3, N, PE, \pm) (min.) | 1.5 mm ² solid / flexible |
| Cross-sectional area (L1, L2, L3, N, PE, \pm) (max.) | 35 mm ² stranded / 25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 4 module(s), DIN 43880 |
| Approvals | KEMA, VDE, UL |
| Weight | 525 g |
| Customs tariff number | 85363030 |
| GTIN | 4013364133563 |
| PU | 1 pc(s) |

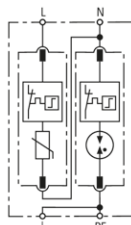
DEHNguard

DG M TT 2P 275 (952 110)

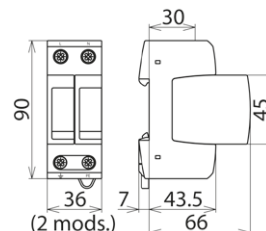
- Prewired complete unit consisting of a base part and plug-in protection modules
- High discharge capacity due to heavy-duty zinc oxide varistors / spark gaps
- High reliability due to "Thermo Dynamic Control" SPD monitoring device



Figure without obligation



Basic circuit diagram DG M TT 2P 275



Dimension drawing DG M TT 2P 275

Modular surge arrester for use in single-phase TT and TN systems ("1+1" circuit).

| Type | DG M TT 2P 275 |
|--|---|
| Part No. | 952 110 |
| SPD according to EN 61643-11 / IEC 61643-11 | type 2 / class II |
| Nominal a.c. voltage (U_N) | 230 V (50 / 60 Hz) |
| Max. continuous operating a.c. voltage [L-N] (U_C) | 275 V (50 / 60 Hz) |
| Max. continuous operating a.c. voltage [N-PE] (U_C) | 255 V (50 / 60 Hz) |
| Nominal discharge current (8/20 μ s) (I_n) | 20 kA |
| Max. discharge current (8/20 μ s) (I_{max}) | 40 kA |
| Lightning impulse current (10/350 μ s) [N-PE] (I_{imp}) | 12 kA |
| Voltage protection level [L-N] (U_P) | ≤ 1.5 kV |
| Voltage protection level [L-N] at 5 kA (U_P) | ≤ 1 kV |
| Voltage protection level [N-PE] (U_P) | ≤ 1.5 kV |
| Follow current extinguishing capability [N-PE] (I_n) | 100 A _{rms} |
| Response time [L-N] (t_A) | ≤ 25 ns |
| Response time [N-PE] (t_A) | ≤ 100 ns |
| Max. mains-side overcurrent protection | 125 A gG |
| Short-circuit withstand capability for max. mains-side overcurrent protection (I_{SCCR}) | 50 kA _{rms} |
| Temporary overvoltage (TOV) [L-N] (U_T) – Characteristic | 335 V / 5 sec. – withstand |
| Temporary overvoltage (TOV) [L-N] (U_T) – Characteristic | 440 V / 120 min. – safe failure |
| Temporary overvoltage (TOV) [N-PE] (U_T) – Characteristic | 1200 V / 200 ms – withstand |
| Operating temperature range (T_U) | -40 °C ... +80 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (min.) | 1.5 mm ² solid / flexible |
| Cross-sectional area (max.) | 35 mm ² stranded / 25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 2 module(s), DIN 43880 |
| Approvals | KEMA, VDE, UL, VdS |
| Weight | 242 g |
| Customs tariff number | 85363030 |
| GTIN | 4013364108417 |
| PU | 1 pc(s) |

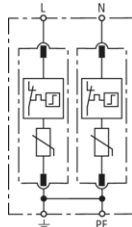
DEHNguard

DG M TN 275 (952 200)

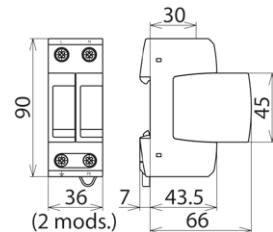
- Prewired complete unit consisting of a base part and plug-in protection modules
- High discharge capacity due to heavy-duty zinc oxide varistors / spark gaps
- High reliability due to "Thermo Dynamic Control" SPD monitoring device



Figure without obligation



Basic circuit diagram DG M TN 275



Dimension drawing DG M TN 275

Modular surge arrester for use in single-phase TN systems.

| Type | DG M TN 275 |
|--|---|
| Part No. | 952 200 |
| SPD according to EN 61643-11 / IEC 61643-11 | type 2 / class II |
| Nominal a.c. voltage (U_N) | 230 V (50 / 60 Hz) |
| Max. continuous operating a.c. voltage (U_C) | 275 V (50 / 60 Hz) |
| Nominal discharge current (8/20 μ s) (I_n) | 20 kA |
| Max. discharge current (8/20 μ s) (I_{max}) | 40 kA |
| Voltage protection level (U_P) | ≤ 1.5 kV |
| Voltage protection level at 5 kA (U_P) | ≤ 1 kV |
| Response time (t_A) | ≤ 25 ns |
| Max. mains-side overcurrent protection | 125 A gG |
| Short-circuit withstand capability for max. mains-side overcurrent protection (I_{SCCR}) | 50 kA _{rms} |
| Temporary overvoltage (TOV) (U_T) – Characteristic | 335 V / 5 sec. – withstand |
| Temporary overvoltage (TOV) (U_T) – Characteristic | 440 V / 120 min. – safe failure |
| Operating temperature range (T_U) | -40 °C ... +80 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (min.) | 1.5 mm ² solid / flexible |
| Cross-sectional area (max.) | 35 mm ² stranded / 25 mm ² flexible |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP 20 |
| Capacity | 2 module(s), DIN 43880 |
| Approvals | KEMA, VDE, UL, VdS |
| Weight | 229 g |
| Customs tariff number | 85363030 |
| GTIN | 4013364108394 |
| PU | 1 pc(s) |

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**Surge Protection
Lightning Protection
Safety Equipment
DEHN protects.**

DEHN + SÖHNE
GmbH + Co.KG.

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