Modular multipole combined lightning current and surge arrester

- Prewired spark-gap-based combined lightning current and surge arrester consisting of a base part and plug-in protection modules
- Maximum system availability due to RADAX Flow follow current limitation
- No tripping of 20 A gL/gG fuses up to short-circuit currents of 50 kA_{rms}
- Discharge capacity up to 100 kA (10/350 µs)
- Capable of protecting terminal equipment
- Operating state/fault indication by indicator flag in the inspection window
- Easy replacement of protection modules without tools due to module locking system with module release button
- Vibration and shock-tested acc. to EN 60068-2

For protecting low-voltage consumer's installations against surges and even direct lightning strikes. For installation in conformity with the lightning protection zones concept at the boundaries from 0_A – 2.

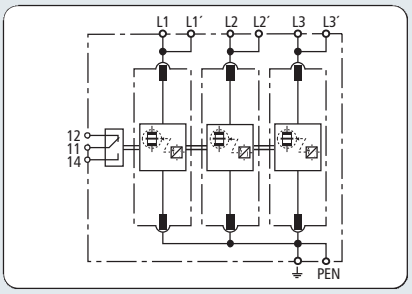
DEHNventil M TNC 255:	**Modular combined lightning current and surge arrester for use in TN-C systems**
DEHNventil M TNS 255:	**Modular combined lightning current and surge arrester for use in TN-S systems**
DEHNventil M TT 255:	**Modular combined lightning current and surge arrester for use in TT and TN-S systems ("3+1" circuit)**
DEHNventil M TN 255:	**Modular combined lightning current and surge arrester for use in single-phase TN systems**
DEHNventil M TT 2P 255:	**Modular combined lightning current and surge arrester for use in single-phase TT and TN systems ("1+1" circuit)**
DEHNventil M ... FM:	**With remote signalling contact for monitoring device (floating changeover contact)**

With their functional Red/Line design, the devices of the modular DEHNventil family provide a combination of safety and innovation. Designed for "all-in-one installation", the arresters integrate lightning equipotential bonding and surge protection in a single device, making them ideal for use in compact electrical installations. The energy coordinated arresters even allow to protect terminal equipment if the distance between DEHNventil and the consumers is ≤ 5 m. With a lightning current discharge capacity up to 100,000 A, the arresters ensure a high degree of availability of the electrical installation to be protected. Even in large-scale electrical installations, the modular DEHNventil arresters provide various application benefits. The Red/Line surge arresters installed at the boundaries of the individual lightning protection zones, for example, are already energy-coordinated with the DEHNventil arresters. DEHNventil arresters can be easily integrated into switchgear installations or distribution boards due to their encapsulated creepage discharge spark gaps and compact dimensions. A special feature of the modular DEHNventil family is its functional design, in particular the module release button. It fixes the protection module firmly in place so that it is safely connected to the base part even with maximum loads. Protection modules can be easily replaced without tools by pressing the module release button and removing the protection module. By using the double terminals suitable for all conductors, the arresters can be connected in series in a space-saving and cost-effective way according to IEC 60364-5-53 requirements for nominal currents up to 125 A. Busbars of type MVS 3 8 6 and MVS 4 11 8 can be used for connecting further DIN rail mounted devices. The type designation of DEHNventil arresters allows to easily choose the right arrester for the relevant system configuration of the low-voltage consumer's installation.

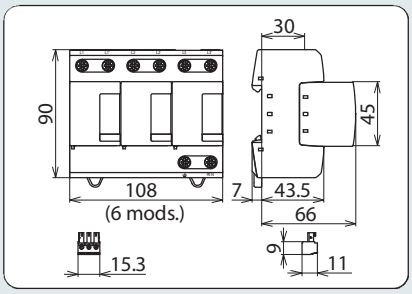
The patented RADAX Flow technology ensures follow current limitation and extinction as well as maximum system availability of the electrical installation to be protected. Even in case of short-circuit currents as high as 50 kA_{rms}, mains follow currents are reduced in such a way that selectivity is ensured for low-value fuses. This means that upstream fuses are not tripped by mains follow currents.

The operating state/fault indication of each protective circuit immediately indicates the operating state of the surge arrester even if no operating current is present. Apart from the standard visual indication with green and red flags, DEHNventil M ... FM devices feature a three-pole remote signalling terminal. With its floating changeover contact, the remote signal can be used as a break or make contact according to the particular circuit concept.

DEHNventil M TNC (FM)



Basic circuit diagram DV M TNC 255 FM



Dimension drawing DV M TNC 255 (FM)

- **Prewired spark-gap-based combined lightning current and surge arrester consisting of a base part and plug-in protection modules**
- **Maximum system availability due to RADAX Flow follow current limitation**
- **Capable of protecting terminal equipment**

Modular combined lightning current and surge arrester for protecting TN-C systems against surges

Type	DV M TNC 255	DV M TNC 255 FM
Part No.	951 300	951 305
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5m)	Type 1 + Type 2 + Type 3	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V	255 V
Lightning impulse current (10/350 µs) [L1+L2+L3-PEN] (I_{total})	75 kA	75 kA
Specific energy [L1+L2+L3-PEN] (W/R)	1.40 MJ/ohms	1.40 MJ/ohms
Lightning impulse current (10/350 µs) [L-PEN] (I_{imp})	25 kA	25 kA
Specific energy [L-PEN] (W/R)	156.25 kJ/ohms	156.25 kJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 / 75 kA	25 / 75 kA
Voltage protection level (U_P)	≤ 1.5 kV	≤ 1.5 kV
Follow current extinguishing capability a.c. (I_{fi})	50 kA_{rms}	50 kA_{rms}
Follow current limitation/Selectivity	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)
Response time (t_A)	≤ 100 ns	≤ 100 ns
Max. backup fuse (L) up to I_K = 50 kA_{rms}	315 A gL/gG	315 A gL/gG
Max. backup fuse (L) for I_K > 50 kA_{rms}	200 A gL/gG	200 A gL/gG
Max. backup fuse (L-L')	125 A gL/gG	125 A gL/gG
Temporary overvoltage (TOV) (U_T)	440 V / 5 sec.	440 V / 5 sec.
TOV characteristics	withstand	withstand
Operating temperature range [parallel]/[series] (T_U)	-40°C...+80°C / -40°C...+60°C	-40°C...+80°C / -40°C...+60°C
Operating state/fault indication	green / red	green / red
Number of ports	1	1
Cross-sectional area (L1, L1', L2, L2', L3, L3', PEN, ⏚) (min.)	10 mm^2 solid/flexible	10 mm^2 solid/flexible
Cross-sectional area (L1, L2, L3, PEN) (max.)	50 mm^2 stranded/35 mm^2 flexible	50 mm^2 stranded/35 mm^2 flexible
Cross-sectional area (L1', L2', L3', ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation	indoor installation
Degree of protection	IP 20	IP 20
Capacity	6 modules, DIN 43880	6 modules, DIN 43880
Approvals	KEMA, VDE, UL, VdS	KEMA, VDE, UL, VdS
Type of remote signalling contact	—	changeover contact
a.c. switching capacity	—	250 V/0.5 A
d.c. switching capacity	—	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Cross-sectional area for remote signalling terminals	—	max. 1.5 mm^2 solid/flexible

Accessory for DEHNventil® modular

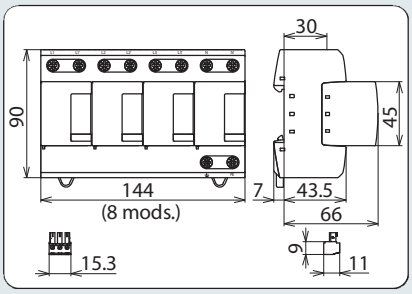
Spark-Gap-Based Protection Module

Spark-gap-based protection module

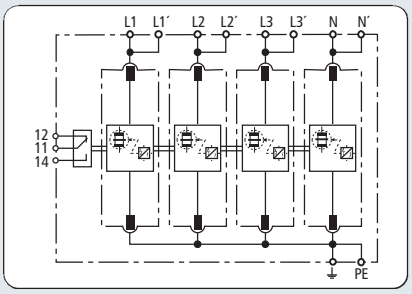
Type	DV MOD 255
Part No.	951 001
Max. continuous operating a.c. voltage (U_C)	255 V

Combined SPDs – Type 1

DEHNventil M TNS (FM)



Dimension drawing DV M TNS 255 (FM)



Basic circuit diagram DV M TNS 255 FM

Modular combined lightning current and surge arrester for protecting TN-S systems against surges

- **Prewired spark-gap-based combined lightning current and surge arrester consisting of a base part and plug-in protection modules**
- **Maximum system availability due to RADAX Flow follow current limitation**
- **Capable of protecting terminal equipment**

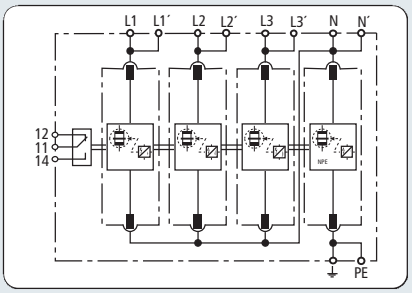
Type Part No.	DV M TNS 255 951 400	DV M TNS 255 FM 951 405
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5m)	Type 1 + Type 2 + Type 3	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V	255 V
Lightning impulse current (10/350 µs) [L1+L2+L3+N-PE] (I_{total})	100 kA	100 kA
Specific energy [L1+L2+L3+N-PE] (W/R)	2.50 MJ/ohms	2.50 MJ/ohms
Lightning impulse current (10/350 µs) [L, N-PE] (I_{imp})	25 kA	25 kA
Specific energy [L,N-PE] (W/R)	156.25 kJ/ohms	156.25 kJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 / 100 kA	25 / 100 kA
Voltage protection level [L-PE]/[N-PE] (U_P)	≤ 1.5 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 1.5 kV
Follow current extinguishing capability a.c. (I_{fi})	50 kA_{rms}	50 kA_{rms}
Follow current limitation/Selectivity	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)
Response time (t_A)	≤ 100 ns	≤ 100 ns
Max. backup fuse (L) up to I_K = 50 kA_{rms}	315 A gL/gG	315 A gL/gG
Max. backup fuse (L) for I_K > 50 kA_{rms}	200 A gL/gG	200 A gL/gG
Max. backup fuse (L-L')	125 A gL/gG	125 A gL/gG
Temporary overvoltage (TOV) [L-N] (U_T)	440 V / 5 sec.	440 V / 5 sec.
TOV characteristics	withstand	withstand
Operating temperature range [parallel]/[series] (T_U)	-40°C...+80°C / -40°C...+60°C	-40°C...+80°C / -40°C...+60°C
Operating state/fault indication	green / red	green / red
Number of ports	1	1
Cross-sectional area (L1, L1', L2, L2', L3, L3', N, N', PE, ⏚) (min.)	10 mm^2 solid/flexible	10 mm^2 solid/flexible
Cross-sectional area (L1, L2, L3, N, PE) (max.)	50 mm^2 stranded/35 mm^2 flexible	50 mm^2 stranded/35 mm^2 flexible
Cross-sectional area (L1', L2', L3', N', ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation	indoor installation
Degree of protection	IP 20	IP 20
Capacity	8 modules, DIN 43880	8 modules, DIN 43880
Approvals	KEMA, VDE, UL, VdS	KEMA, VDE, UL, VdS
Type of remote signalling contact	—	changeover contact
a.c. switching capacity	—	250 V/0.5 A
d.c. switching capacity	—	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Cross-sectional area for remote signalling terminals	—	max. 1.5 mm^2 solid/flexible

Accessory for DEHNventil® modular

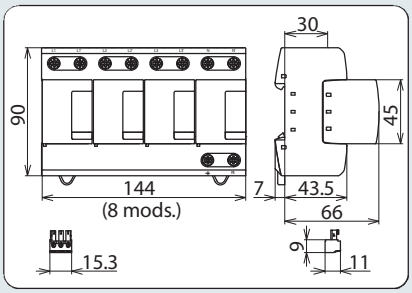
Spark-Gap-Based Protection Module

Spark-gap-based protection module

Type Part No.	DV MOD 255 951 001
Max. continuous operating a.c. voltage (U_C)	255 V



Basic circuit diagram DV M TT 255 FM



Dimension drawing DV M TT 255 (FM)

- **Prewired spark-gap-based combined lightning current and surge arrester consisting of a base part and plug-in protection modules**
- **Maximum system availability due to RADAX Flow follow current limitation**
- **Capable of protecting terminal equipment**

Modular combined lightning current and surge arrester for protecting TT and TN-S systems ("3+1" circuit) against surges

Type	DV M TT 255	DV M TT 255 FM
Part No.	951 310	951 315
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5m)	Type 1 + Type 2 + Type 3	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V	255 V
Lightning impulse current (10/350 µs) [L1+L2+L3+N-PE] (I_{total})	100 kA	100 kA
Specific energy [L1+L2+L3+N-PE] (W/R)	2.50 MJ/ohms	2.50 MJ/ohms
Lightning impulse current (10/350 µs) [L-N]/[N-PE] (I_{imp})	25 / 100 kA	25 / 100 kA
Specific energy [L-N]/[N-PE] (W/R)	156.25 kJ/ohms / 2.50 MJ/ohms	156.25 kJ/ohms / 2.50 MJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 / 100 kA	25 / 100 kA
Voltage protection level [L-N]/[N-PE] (U_P)	≤ 1.5 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 1.5 kV
Follow current extinguishing capability [L-N]/[N-PE] (I_{fi})	50 kA_{rms} / 100 A_{rms}	50 kA_{rms} / 100 A_{rms}
Follow current limitation/Selectivity	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)
Response time (t_A)	≤ 100 ns	≤ 100 ns
Max. backup fuse (L) up to I_K = 50 kA_{rms}	315 A gL/gG	315 A gL/gG
Max. backup fuse (L) for I_K > 50 kA_{rms}	200 A gL/gG	200 A gL/gG
Max. backup fuse (L-L')	125 A gL/gG	125 A gL/gG
Temporary overvoltage (TOV) [L-N] (U_T)	440 V / 5 sec.	440 V / 5 sec.
Temporary overvoltage (TOV) [N-PE] (U_T)	1200 V / 200 ms	1200 V / 200 ms
TOV characteristics	withstand	withstand
Operating temperature range [parallel]/[series] (T_U)	-40°C...+80°C / -40°C...+60°C	-40°C...+80°C / -40°C...+60°C
Operating state/fault indication	green / red	green / red
Number of ports	1	1
Cross-sectional area (L1, L1', L2, L2', L3, L3', N, N', PE, ⏚) (min.)	10 mm^2 solid/flexible	10 mm^2 solid/flexible
Cross-sectional area (L1, L2, L3, N, PE) (max.)	50 mm^2 stranded/35 mm^2 flexible	50 mm^2 stranded/35 mm^2 flexible
Cross-sectional area (L1', L2', L3', N', ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation	indoor installation
Degree of protection	IP 20	IP 20
Capacity	8 modules, DIN 43880	8 modules, DIN 43880
Approvals	KEMA, VDE, UL, VdS	KEMA, VDE, UL, VdS
Type of remote signalling contact	—	changeover contact
a.c. switching capacity	—	250 V/0.5 A
d.c. switching capacity	—	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Cross-sectional area for remote signalling terminals	—	max. 1.5 mm^2 solid/flexible

Accessory for DEHNventil® modular

Spark-Gap-Based Protection Module

Spark-gap-based protection module

Type	DV MOD 255
Part No.	951 001
Max. continuous operating a.c. voltage (U_C)	255 V

Accessory for DEHNventil® modular

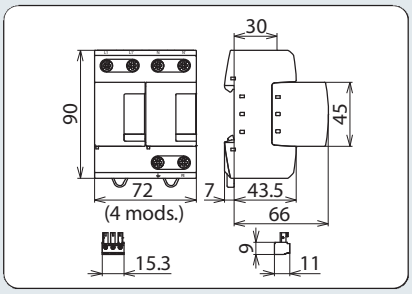
N-PE Spark-Gap-Base Protection Module

100 kA N-PE spark-gap-base protection module

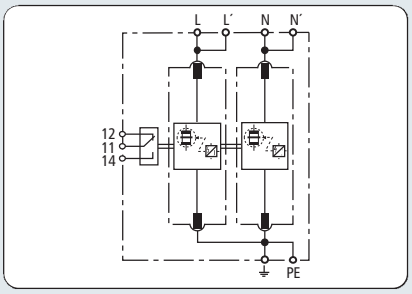
Type	DV MOD NPE 100
Part No.	951 100
Max. continuous operating a.c. voltage (U_C)	255 V

Combined SPDs – Type 1

DEHNventil M TN (FM)



Dimension drawing DV M TN 255 (FM)



Basic circuit diagram DV M TN 255 FM

Modular combined lightning current and surge arrester for protecting single-phase TN systems against surges

- **Prewired spark-gap-based combined lightning current and surge arrester consisting of a base part and plug-in protection modules**
- **Maximum system availability due to RADAX Flow follow current limitation**
- **Capable of protecting terminal equipment**

Type Part No.	DV M TN 255 951 200	DV M TN 255 FM 951 205
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5m)	Type 1 + Type 2 + Type 3	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 V	230 V
Max. continuous operating a.c. voltage (U_C)	255 V	255 V
Lightning impulse current (10/350 µs) [L+N-PE] (I_{total})	50 kA	50 kA
Specific energy [L+N-PE] (W/R)	625.00 kJ/ohms	625.00 kJ/ohms
Lightning impulse current (10/350 µs) [L, N-PE] (I_{imp})	25 kA	25 kA
Specific energy [L,N-PE] (W/R)	156.25 kJ/ohms	156.25 kJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 / 50 kA	25 / 50 kA
Voltage protection level [L-PE]/[N-PE] (U_P)	≤ 1.5 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 1.5 kV
Follow current extinguishing capability a.c. (I_{fi})	50 kA_{rms}	50 kA_{rms}
Follow current limitation/Selectivity	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)
Response time (t_A)	≤ 100 ns	≤ 100 ns
Max. backup fuse (L) up to I_K = 50 kA_{rms}	315 A gL/gG	315 A gL/gG
Max. backup fuse (L) for I_K > 50 kA_{rms}	200 A gL/gG	200 A gL/gG
Max. backup fuse (L-L')	125 A gL/gG	125 A gL/gG
Temporary overvoltage (TOV) [L-N] (U_T)	440 V / 5 sec.	440 V / 5 sec.
TOV characteristics	withstand	withstand
Operating temperature range [parallel]/[series] (T_U)	-40°C...+80°C / -40°C...+60°C	-40°C...+80°C / -40°C...+60°C
Operating state/fault indication	green / red	green / red
Number of ports	1	1
Cross-sectional area (L, L', N, N', PE, ⏚) (min.)	10 mm^2 solid/flexible	10 mm^2 solid/flexible
Cross-sectional area (L, N, PE) (max.)	50 mm^2 stranded/35 mm^2 flexible	50 mm^2 stranded/35 mm^2 flexible
Cross-sectional area (L', N', ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation	indoor installation
Degree of protection	IP 20	IP 20
Capacity	4 modules, DIN 43880	4 modules, DIN 43880
Approvals	KEMA, VDE, UL, VdS	KEMA, VDE, UL, VdS
Type of remote signalling contact	—	changeover contact
a.c. switching capacity	—	250 V/0.5 A
d.c. switching capacity	—	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Cross-sectional area for remote signalling terminals	—	max. 1.5 mm^2 solid/flexible

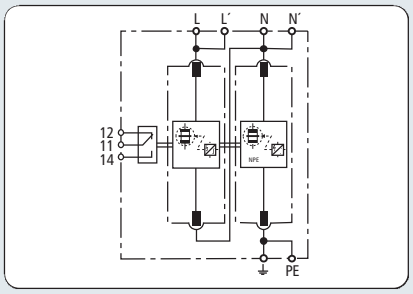
Accessory for DEHNventil® modular

Spark-Gap-Based Protection Module

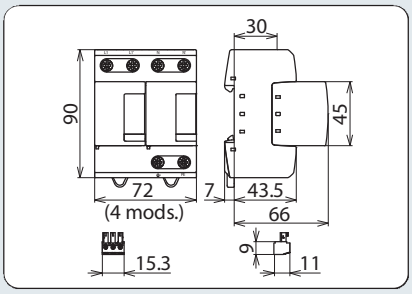
Spark-gap-based protection module

Type Part No.	DV MOD 255 951 001
Max. continuous operating a.c. voltage (U_C)	255 V

DEHNventil M TT 2P (FM)



Basic circuit diagram DV M TT 2P 255 FM



Dimension drawing DV M TT 2P 255 (FM)

- **Prewired spark-gap-based combined lightning current and surge arrester consisting of a base part and plug-in protection modules**
- **Maximum system availability due to RADAX Flow follow current limitation**
- **Capable of protecting terminal equipment**

Modular combined lightning current and surge arrester for protecting single-phase TT and TN systems ("1+1" circuit) against surges

Type	DV M TT 2P 255	DV M TT 2P 255 FM
Part No.	951 110	951 115
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5m)	Type 1 + Type 2 + Type 3	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 V	230 V
Max. continuous operating a.c. voltage (U_C)	255 V	255 V
Lightning impulse current (10/350 µs) [L+N-PE] (I_{total})	50 kA	50 kA
Specific energy [L+N-PE] (W/R)	625.00 kJ/ohms	625.00 kJ/ohms
Lightning impulse current (10/350 µs) [L-N]/[N-PE] (I_{imp})	25 / 50 kA	25 / 50 kA
Specific energy [L-N]/[N-PE] (W/R)	156.25 kJ/ohms / 625.00 kJ/ohms	156.25 kJ/ohms / 625.00 kJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 / 50 kA	25 / 50 kA
Voltage protection level [L-N]/[N-PE] (U_P)	≤ 1.5 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 1.5 kV
Follow current extinguishing capability [L-N]/[N-PE] (I_{fi})	50 kA_{rms} / 100 A_{rms}	50 kA_{rms} / 100 A_{rms}
Follow current limitation/Selectivity	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)
Response time (t_A)	≤ 100 ns	≤ 100 ns
Max. backup fuse (L) up to I_K = 50 kA_{rms}	315 A gL/gG	315 A gL/gG
Max. backup fuse (L) for I_K > 50 kA_{rms}	200 A gL/gG	200 A gL/gG
Max. backup fuse (L-L')	125 A gL/gG	125 A gL/gG
Temporary overvoltage (TOV) [L-N] (U_T)	440 V / 5 sec.	440 V / 5 sec.
Temporary overvoltage (TOV) [N-PE] (U_T)	1200 V / 200 ms	1200 V / 200 ms
TOV characteristics	withstand	withstand
Operating temperature range [parallel]/[series] (T_U)	-40°C...+80°C / -40°C...+60°C	-40°C...+80°C / -40°C...+60°C
Operating state/fault indication	green / red	green / red
Number of ports	1	1
Cross-sectional area (L, L', N, N', PE, ⏚) (min.)	10 mm^2 solid/flexible	10 mm^2 solid/flexible
Cross-sectional area (L, N, PE) (max.)	50 mm^2 stranded/35 mm^2 flexible	50 mm^2 stranded/35 mm^2 flexible
Cross-sectional area (L', N', ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94-V-0	thermoplastic, red, UL 94-V-0
Place of installation	indoor installation	indoor installation
Degree of protection	IP 20	IP 20
Capacity	4 modules, DIN 43880	4 modules, DIN 43880
Approvals	KEMA, VDE, UL, VdS	KEMA, VDE, UL, VdS
Type of remote signalling contact	—	changeover contact
a.c. switching capacity	—	250 V/0.5 A
d.c. switching capacity	—	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Cross-sectional area for remote signalling terminals	—	max. 1.5 mm^2 solid/flexible

Accessory for DEHNventil® modular

Spark-Gap-Based Protection Module

Spark-gap-based protection module

Type	DV MOD 255
Part No.	951 001
Max. continuous operating a.c. voltage (U_C)	255 V

Accessory for DEHNventil® modular

N-PE Spark-Gap-Base Protection Module

50 kA N-PE spark-gap-based protection module

Type	DV MOD NPE 50
Part No.	951 050
Max. continuous operating a.c. voltage (U_C)	255 V

- High discharge capacity due to powerful creepage discharge spark gap
- Maximum system availability due to RADAX Flow follow current limitation
- Replacement of protection modules without tools by means of module release button
- Operating state/fault indication by green/red indicator flag in the inspection window
- The plug-in protection module can be replaced without the need to de-energise and without removing the distribution board cover

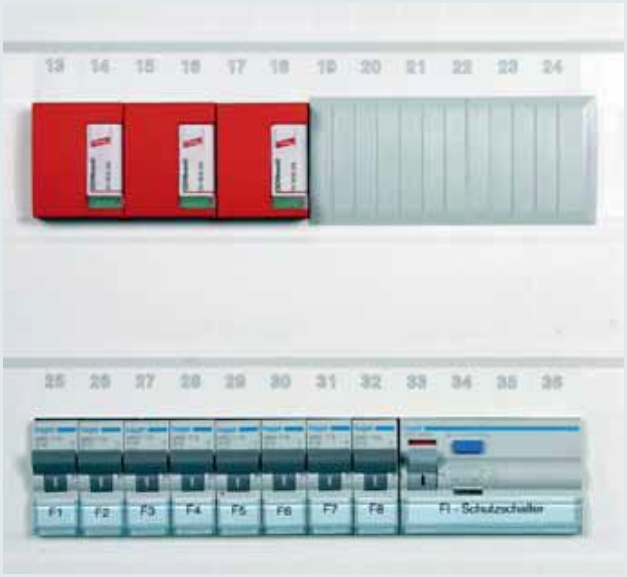
For protecting low-voltage consumer's installations against surges and even direct lightning strikes. For installation in conformity with the lightning protection zones concept at the boundaries from 0_A – 2.

DV MOD 255: Spark-gap-based protection module
DV MOD NPE 50: 50 kA N-PE spark-gap-based protection module
DV MOD NPE 100: 100 kA N-PE spark-gap-based protection module

The spark-gap-based protection modules of the modular DEHNventil series combine safety and innovation in a single device. Apart from the encapsulated RADAX Flow spark gap technology, the compact protection modules incorporate the complete monitoring circuit for controlling the energy flow of the spark gap, the monitoring device and the operating state/fault indicator.

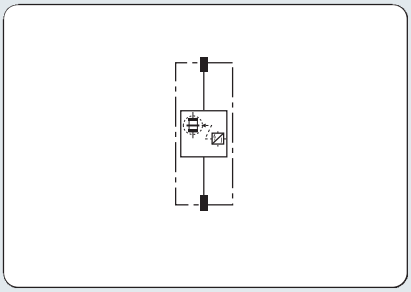
The mechanically coded protection module ensures that the N-PE protection modules are not confused with the spark-gap-based module for the phase conductors.

The module locking mechanism fixes the protection modules to the base part. Protection modules can be easily removed without tools by simply pressing the module release button.

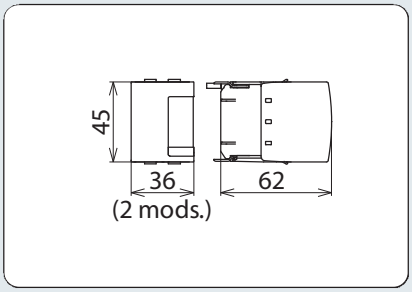


Protection Module for DEHNventil® modular

Spark-gap-based protection module



Basic circuit diagram DV MOD 255



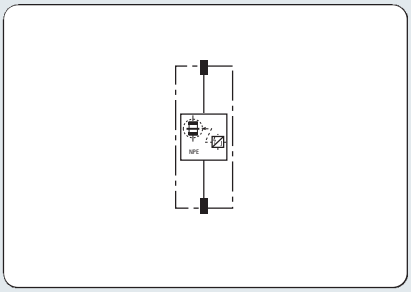
Dimension drawing DV MOD 255

Spark-gap-based protection module

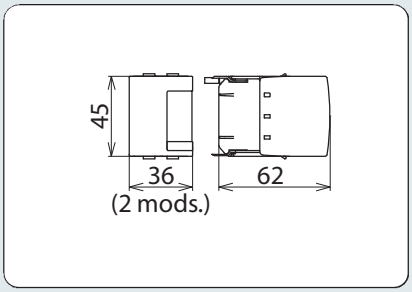
Type	DV MOD 255
Part No.	951 001
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) (I_{imp})	25 kA
Specific energy (W/R)	156.25 kJ/ohms
Follow current extinguishing capability [L-N] a.c. (I_{fi})	50 kA_{rms}
Follow current limitation/Selectivity	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)

Protection Module for DEHNventil® modular

N-PE spark-gap-based protection module



Basic circuit diagram DV MOD NPE ...



Dimension drawing DV MOD NPE ...

DV MOD NPE 50: 50 kA N-PE spark-gap-based protection module
DV MOD NPE 100: 100 kA N-PE spark-gap-based protection module

Type	DV MOD NPE 50	DV MOD NPE 100
Part No.	951 050	951 100
Max. continuous operating a.c. voltage (U_C)	255 V	255 V
Lightning impulse current (10/350 µs) (I_{imp})	50 kA	100 kA
Specific energy (W/R)	625.00 kJ/ohms	2.50 MJ/ohms
Follow current extinguishing capability [N-PE] a.c. (I_{fi})	100 A_{rms}	100 A_{rms}

Combined SPDs – Type 1

Multipole combined lightning current and surge arrester for primary power systems

- Combined lightning current and surge arrester based on RADAX Flow spark gap technology
- Fully compliant with all requirements of the national VDN* guideline on the use of SPDs upstream of the meter
- Quick and easy installation by snapping the arrester onto 40 mm busbar systems
- Test for correct operation by pressing the button with indicator light
- No tripping of 32 A gL/gG fuses up to short-circuit currents of 25 kA_{rms}
- Discharge capacity up to 100 kA (10/350 µs)
- Capable of protecting terminal equipment
- Maximum system availability

DEHNventil ZP TNC 255: Three-pole combined lightning current and surge arrester for TN-C systems for use in primary power systems

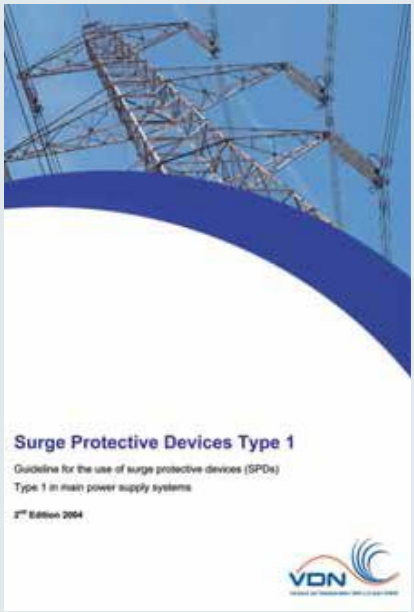
DEHNventil ZP TT 255: Four-pole combined lightning current and surge arrester for TT and TN-S systems for use in primary power systems

For protecting low-voltage consumer's installations against surges and even direct lightning strikes. For installation in conformity with the lightning protection zones concept at the boundaries from 0_A – 2.

DEHNventil ZP combined lightning current and surge arresters are specifically designed for installation in busbar connection panels of meter panels. They can be directly snapped onto the busbar system without tools. Their compact dimensions leave enough space for the connecting cable from the service entrance box, even if three selective main circuit breakers are installed.

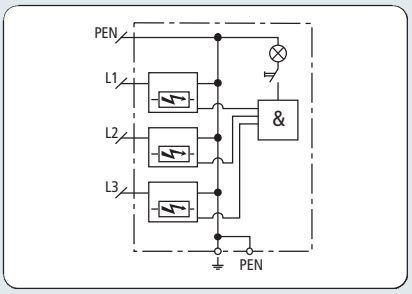
The operating state of the arresters is indicated by an indicator light at the push of a button. Both due to this kind of operating state indication and their design as a spark-gap-based arrester, DEHNventil ZP arresters have no leakage and operating currents.

The RADAX Flow spark gap technology ensures the required selectivity for follow currents even in case of low-value fuses in the service entrance box. Undesirable supply interruptions due to tripped main fuses are thus avoided.

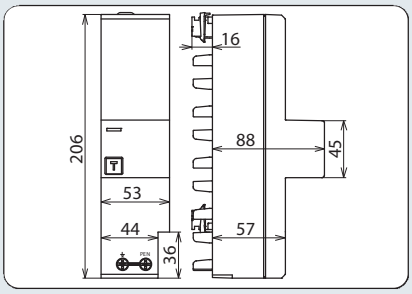


The dimensioning of the arrester parameters as well as the complete arrester concept are fully compliant with all requirements of the German VDN guideline* on the use of surge protective devices in primary power systems.

* VDN ... Verband der Netzbetreiber VDN e. V. beim BDEW
[Association of German Network Operators VDN e. V. at the BDEW in Germany]



Basic circuit diagram DV ZP TNC 255

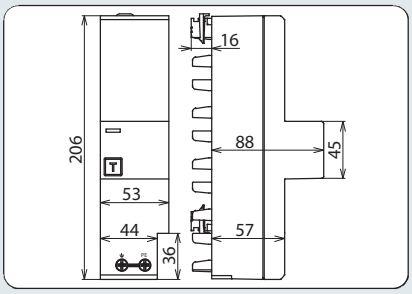


Dimension drawing DV ZP TNC 255

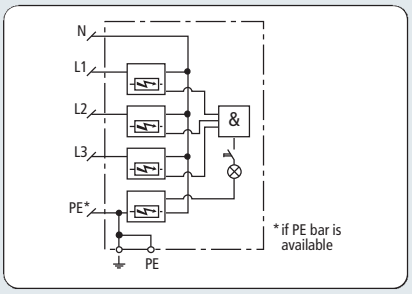
- **Combined lightning current and surge arrester based on RADAX Flow spark gap technology**
- **Quick and easy installation by snapping the arrester onto 40 mm busbar systems**
- **Capable of protecting terminal equipment**

Combined lightning current and surge arrester for TN-C systems for use in primary power systems ("3-0" circuit)

Type	DV ZP TNC 255
Part No.	900 390
SPD according to EN 61643-11	Type 1
SPD according to IEC 61643-1/-11	Class I
Energy coordination with terminal equipment	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5m)	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) [L1+L2+L3-PEN] (I_{total})	75 kA
Specific energy [L1+L2+L3-PEN] (W/R)	1.40 MJ/ohms
Lightning impulse current (10/350 µs) [L-PEN] (I_{imp})	25 kA
Specific energy [L-PEN] (W/R)	156.25 kJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 / 75 kA
Voltage protection level (U_P)	≤ 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. backup fuse up to I_K = 25 kA_{rms}	315 A gL/gG
Max. backup fuse for I_K > 25 kA_{rms}	200 A gL/gG
Temporary overvoltage (TOV) (U_T)	335 V / 5 sec.
TOV characteristics	withstand
Operating temperature range (T_U)	-40°C...+80°C
Operating state indication	button with indicator light
Number of ports	1
Cross-sectional area (PEN, ⏚)	10-35 mm^2 flexible/50 mm^2 stranded
For mounting on	40 mm busbar systems
Enclosure material	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation
Degree of protection	IP 20
Capacity	3 modules, DIN 43880
Approvals	VDE



Dimension drawing DV ZP TT 255



Basic circuit diagram DV ZP TT 255

Combined lightning current and surge arrester for TT and TN-S systems for use in primary power systems ("3+1" circuit)

- **Combined lightning current and surge arrester based on RADAX Flow spark gap technology**
- **Quick and easy installation by snapping the arrester onto 40 mm busbar systems**
- **Capable of protecting terminal equipment**

Type	DV ZP TT 255
Part No.	900 391
SPD according to EN 61643-11	Type 1
SPD according to IEC 61643-1/-11	Class I
Energy coordination with terminal equipment	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5m)	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) [L1+L2+L3+N-PE] (I_{imp})	100 kA
Specific energy [L1+L2+L3+N-PE] (W/R)	2.50 MJ/ohms
Lightning impulse current (10/350 µs) [L-N] (I_{imp})	25 kA
Specific energy [L-N] (W/R)	156.25 kJ/ohms
Lightning impulse current (10/350 µs) [N-PE] (I_{imp})	100 kA
Specific energy [N-PE] (W/R)	2.50 MJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 / 100 kA
Voltage protection level [L-N] (U_P)	≤ 1.5 kV
Voltage protection level [N-PE] (U_P)	≤ 1.5 kV
Follow current extinguishing capability [L-N] a.c. (I_{fi})	25 kA_{rms}
Follow current extinguishing capability [N-PE] a.c. (I_{fi})	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. backup fuse up to I_K = 25 kA_{rms}	315 A gL/gG
Max. backup fuse for I_K > 25 kA_{rms}	200 A gL/gG
Temporary overvoltage (TOV) [L-N] (U_T)	335 V / 5 sec.
Temporary overvoltage (TOV) [N-PE] (U_T)	1200 V / 200 ms
TOV characteristics	withstand
Operating temperature range (T_U)	-40°C...+80°C
Function monitoring	button with indicator light
Number of ports	1
Cross-sectional area (PE, ⏚)	10-35 mm^2 flexible/50 mm^2 stranded
For mounting on	40 mm busbar systems
Enclosure material	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation
Degree of protection	IP 20
Capacity	3 modules, DIN 43880
Approvals	VDE

For protecting low-voltage consumer's installations against surges and even direct lightning strikes. For installation in conformity with the lightning protection zones concept at the boundaries from 0_A – 2.

- Spark-gap based combined lightning current and surge arrester with integrated backup fuse
- Energy coordination with other arresters of the Red/Line product family
- Low voltage protection level $U_P \leq 1.5$ kV (including backup fuse)
- Maximum system availability due to RADAX Flow follow current limitation
- High follow current extinguishing capability a.c. of 50 kA_{rms}
- High lightning current discharge capacity up to 25 kA (10/350 µs)
- Capable of protecting terminal equipment
- Operating state/fault indication by indicator flag in the inspection window

DEHNvenCI 1 255: **Single-pole combined lightning current and surge arrester with integrated backup fuse**
DEHNvenCI 1 255 FM: **With remote signalling contact for monitoring device (floating changeover contact)**

With their functional Red/Line family design, DEHNvenCI coordinated combined lightning current and surge arresters combine system protection and compact dimensions in a single device.
The characteristics of the practice-proven DEHNventil family were combined with a lightning-current-carrying arrester backup fuse in an enclosure with a width of two modules.

The increasingly compact design of switchgear installations makes it difficult to install lightning current arresters in conformity with the standard. DEHNvenCI does not only allow space-saving integration of a combined arrester, but also meets the protection requirements in modern switchgear installations. The integrated arrester backup fuse is dimensioned to ensure maximum discharge capacity and optimal system protection.
This eliminates the need to select and install an arrester backup fuse, ensuring short connecting cable lengths as required in IEC 60364-5-53.
DEHNvenCI is an efficient combined arrester which is easy to install.

The energy coordinated arresters even allow to protect terminal devices or sensitive electronics in modern switchgear installations if the distance between DEHNvenCI and the consumers is ≤ 5 m.

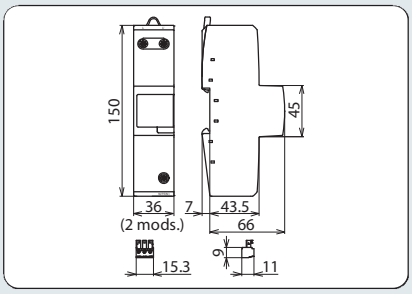
The patented RADAX Flow technology for follow current limitation and extinction ensures high system availability of the electrical consumer's installations to be protected.

Even in case of short-circuit currents as high as 50 kA_{rms}, DEHNvenCI can also be used in industrial systems without restrictions.

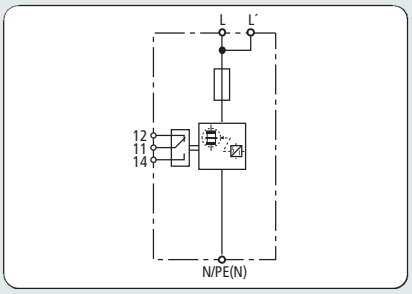
The ability of carrying lightning impulse currents without destruction and simultaneously reducing the energy to an acceptable level for terminal devices ensures the availability of the switchgear installation in case of a lightning strike. This considerably reduces the risk of high loss failures.

The operating state/fault indication of DEHNvenCI, in which the fuse monitoring is integrated, provides information on the operating state of the arrester even if no operating current is present. Apart from the standard visual indication with green and red indicator flags, DEHNvenCI 1 255 FM devices feature a three-pole remote signalling terminal. With its floating changeover contact, the remote signal can be used as a break or make contact according to the particular circuit concept.

Combined SPDs – Type 1



Dimension drawing DVCI 1 255 (FM)



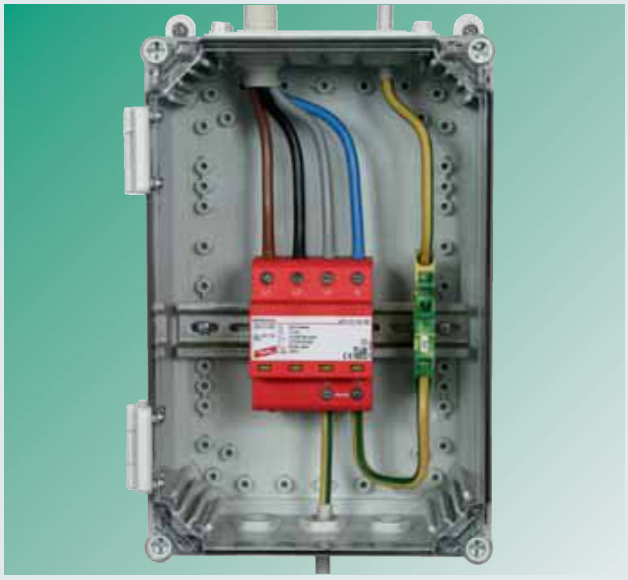
Basic circuit diagram DVCI 1 255 FM

NEW

Combined lightning current and surge arrester with integrated arrester backup fuse

- **Spark-gap-based combined lightning current and surge arrester with integrated backup fuse**
- **Maximum system availability due to RADAX Flow follow current limitation**
- **Capable of protecting terminal equipment**

Type	DVCI 1 255	DVCI 1 255 FM
Part No.	961 200	961 205
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5 m)	Type 1 + Type 2 + Type 3	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 V	230 V
Maximum continuous operating a.c. voltage (U_C)	255 V	255 V
Lightning impulse current (10/350 µs) (I_{imp})	25 kA	25 kA
Specific energy (W/R)	156.25 kJ/ohms	156.25 kJ/ohms
Nominal discharge current (8/20 µs) (I_n)	25 kA	25 kA
Voltage protection level (U_P)	≤ 1.5 kV	≤ 1.5 kV
Follow current extinguishing capability a.c. (I_{fi})	50 kA_{rms}	50 kA_{rms}
Follow current limitation/Selectivity	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)	no tripping of a 20 A gL/gG fuse up to 50 kA_{rms} (prosp.)
Response time (t_A)	≤ 100 ns	≤ 100 ns
Max. mains-side overcurrent protection	not required	not required
Max. backup fuse (L-L')	125 A gL/gG	125 A gL/gG
Temporary overvoltage (TOV) (U_T)	440 V / 5 sec.	440 V / 5 sec.
TOV characteristics	withstand	withstand
Operating temperature range [parallel]/[series] (T_U)	-40°C...+80°C / -40°C...+60°C	-40°C...+80°C / -40°C...+60°C
Operating state/fault indication	green / red	green / red
Number of ports	1	1
Cross-sectional area (L, L', N/PE(N)) (min.)	10 mm^2 solid/flexible	10 mm^2 solid/flexible
Cross-sectional area (L, N/PE(N)) (max.)	50 mm^2 stranded/35 mm^2 flexible	50 mm^2 stranded/35 mm^2 flexible
Cross-sectional area (L') (max.)	35 mm^2 stranded/25 mm^2 flexible	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation	indoor installation
Degree of protection	IP 20	IP 20
Capacity	2 modules, DIN 43880	2 modules, DIN 43880
Type of remote signalling contact	—	changeover contact
a.c. switching capacity	—	250 V/0.5 A
d.c. switching capacity	—	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Cross-sectional area for remote signalling terminals	—	max. 1.5 mm^2 solid/flexible



For protecting low-voltage consumer's installations against surges and even direct lightning strikes. For installation in conformity with the lightning protection zones concept at the boundaries from 0_A – 2.

- Application-optimised prewired combined lightning current and surge arrester based on spark gap technology
- Space-saving arrester for compact and simply equipped electrical installations with reduced technical requirements
- For protecting residential buildings and special applications (see brochure No. DS193)
- Capable of protecting terminal equipment
- Discharge capacity up to 50 kA (10/350 µs)
- No tripping of 32 A gL/gG fuses up to short-circuit currents of 25 kA_{rms}
- Operating state/fault indication by indicator flag in the inspection window

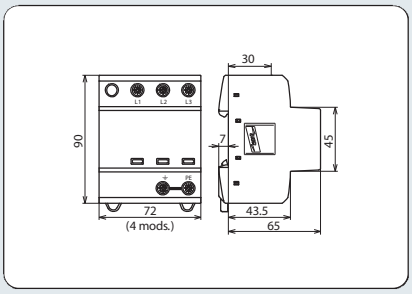
DEHNshield TNC 255: Application-optimised combined lightning current and surge arrester for TN-C systems
DEHNshield TNS 255: Application-optimised combined lightning current and surge arrester for TN-S systems
DEHNshield TT 255: Application-optimised combined lightning current and surge arrester for TT and TN-S systems ("3+1" circuit)
DEHNshield TN 255: Application-optimised combined lightning current and surge arrester for single-phase TN systems
DEHNshield TT 2P 255: Application-optimised combined lightning current and surge arrester for single-phase TT and TN systems ("1+1" circuit)

The space-saving and application-optimised DEHNshield family offers various benefits that are characteristic of spark-gap-based Type 1 arresters such as the "wave breaker function" (WBF). This function and the associated reduction of the pulse time mitigate the energy of the lightning impulse current to an acceptable level for downstream protection stages or terminal equipment. Moreover, DEHNshield arresters are directly energy coordinated with other arresters of the Red/Line product family.
Application-optimised DEHNshield combined lightning current and surge arresters combine lightning equipotential bonding up to 50 kA (10/350 µs) lightning impulse currents and surge protection in a single device.
This clearly distinguishes DEHNshield from varistor-based arresters of this application and performance class.

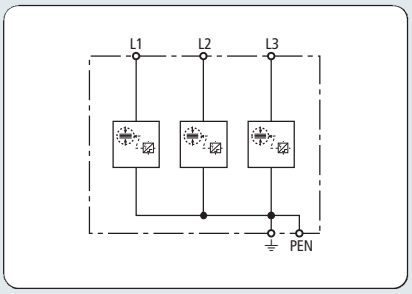
Due to their technical parameters which are rated for use in simple and compact electrical installations, DEHNshield arresters are ideally suited for this application class. For this reason, they are a space-saving and application-optimised solution in particular for residential buildings.
DEHNshield arresters also provide optimal protection in buildings without external lightning protection system where roof superstructures or overhead line supplies are installed. According to VdS 2031, it is advisable to use Type 1 SPDs for these buildings. A detailed application description can be found in brochure DS193.
No additional backup fuse is required if an installation is protected by backup fuses up to 160 A.
If applications are not sufficiently defined, it is advisable to use DEHNventil. Fulfilling the most stringent technical requirements, DEHNventil provides adequate protection at any time and is suitable for any application.

The energy coordinated arresters even allow to protect terminal equipment if the distance between DEHNshield and the consumers is ≤ 5 m. Owing to their non-exhausting spark gap and low space requirements, the application-optimised combined lightning current and surge arresters can be easily integrated into distribution boards.
The follow-current-limiting spark gap technology ensures selectivity even in case of low-value fuses (35 A gL/gG), meaning that upstream fuses are not tripped by mains follow currents.

Busbars and pin-shaped terminals from DEHN + SÖHNE can be used for connecting DEHNshield to other DIN rail mounted devices. The type designation of DEHNshield allows to easily choose the right arrester for the relevant system configuration of the low-voltage consumer's installation.
The operating state/fault indication of every protective path immediately provides information on the operating state of the arrester even if no operating current is present.



Dimension drawing DSH TNC 255



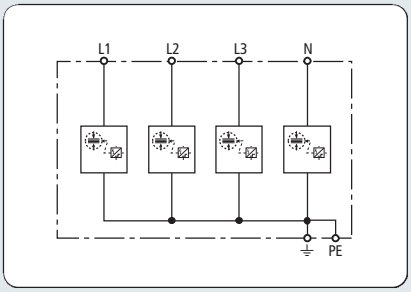
Basic circuit diagram DSH TNC 255

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

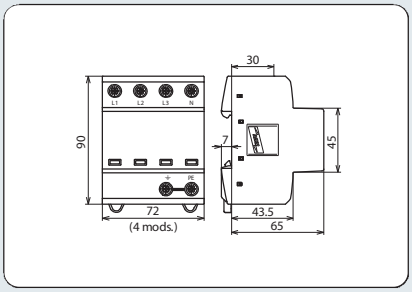
- **Application-optimised prewired spark-gap-based combined lightning current and surge arrester**
- **Space-saving arrester for compact and simply equipped electrical installations with reduced technical requirements**
- **Capable of protecting terminal equipment**

Type	DSH TNC 255
Part No.	941 300
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5 m)	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) [L1+L2+L3-PEN] (I_{total})	37.5 kA
Specific energy [L1+L2+L3-PEN] (W/R)	352.00 kJ/ohms
Lightning impulse current (10/350 µs) [L-PEN] (I_{imp})	12.5 kA
Specific energy [L-PEN] (W/R)	39.06 kJ/ohms
Nominal discharge current (8/20 µs) (I_n)	12.5 / 37.5 kA
Voltage protection level (U_P)	≤ 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) (U_T)	440 V / 5 sec.
TOV characteristics	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, PEN) (min.)	1.5 mm^2 solid/flexible
Cross-sectional area (L1, L2, L3, PEN) (max.)	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation
Degree of protection	IP 20
Capacity	4 modules, DIN 43880

NEW



Basic circuit diagram DSH TNS 255

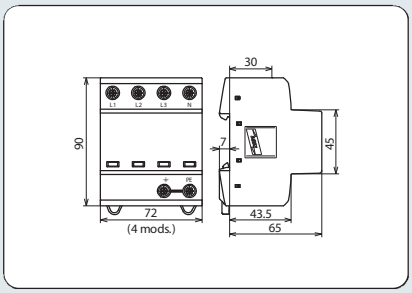


Dimension drawing DSH TNS 255

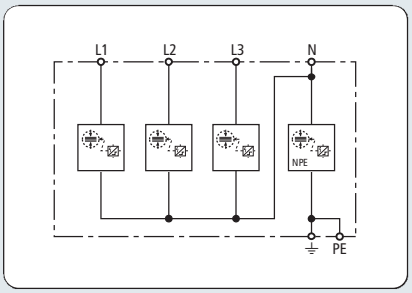
- **Application-optimised prewired spark-gap-based combined lightning current and surge arrester**
- **Space-saving arrester for compact and simply equipped electrical installations with reduced technical requirements**
- **Capable of protecting terminal equipment**

Application-optimised 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 61643-1/-11	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5 m)	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) [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 µs) [L, N-PE] (I_{imp})	12.5 kA
Specific energy [L,N-PE] (W/R)	39.06 kJ/ohms
Nominal discharge current (8/20 µs) (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)	440 V / 5 sec.
TOV characteristics	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, ⏚) (min.)	1.5 mm^2 solid/flexible
Cross-sectional area (L1, L2, L3, N, PE, ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation
Degree of protection	IP 20
Capacity	4 modules, DIN 43880



Dimension drawing DSH TT 255



Basic circuit diagram DSH TT 255

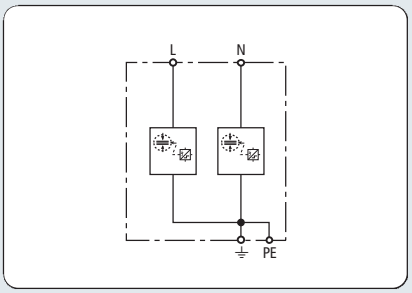
Application-optimised prewired combined lightning current and surge arrester for TT and TN-S systems ("3+1" circuit)

- **Application-optimised prewired 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**

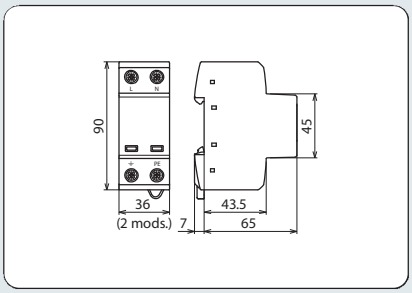
Type	DSH TT 255
Part No.	941 310
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5 m)	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 / 400 V
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) [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 µs) [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 µs) [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_{fi})	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)	440 V / 5 sec.
Temporary overvoltage (TOV) [N-PE] (U_T)	1200 V / 200 ms
TOV characteristics	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, ⏚) (min.)	1.5 mm^2 solid/flexible
Cross-sectional area (L1, L2, L3, N, PE, ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation
Degree of protection	IP 20
Capacity	4 modules, DIN 43880

NEW

- **Application-optimised prewired 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**



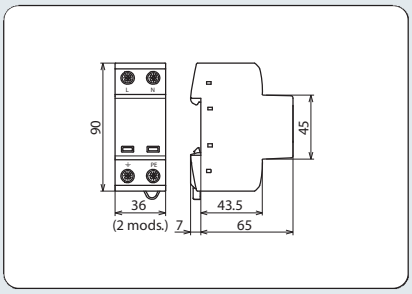
Basic circuit diagram DSH TN 255



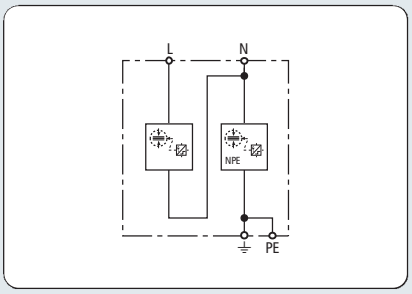
Dimension drawing DSH TN 255

Application-optimised 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 61643-1/-11	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5 m)	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 V
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) [L+N-PE] (I_{total})	25 kA
Specific energy [L+N-PE] (W/R)	156.25 kJ/ohms
Lightning impulse current (10/350 µs) [L, N-PE] (I_{imp})	12.5 kA
Specific energy [L,N-PE] (W/R)	39.06 kJ/ohms
Nominal discharge current (8/20 µs) (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)	440 V / 5 sec.
TOV characteristics	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, ⏚) (min.)	1.5 mm^2 solid/flexible
Cross-sectional area (L, N, PE, ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation
Degree of protection	IP 20
Capacity	2 modules, DIN 43880



Dimension drawing DSH TT 2P 255



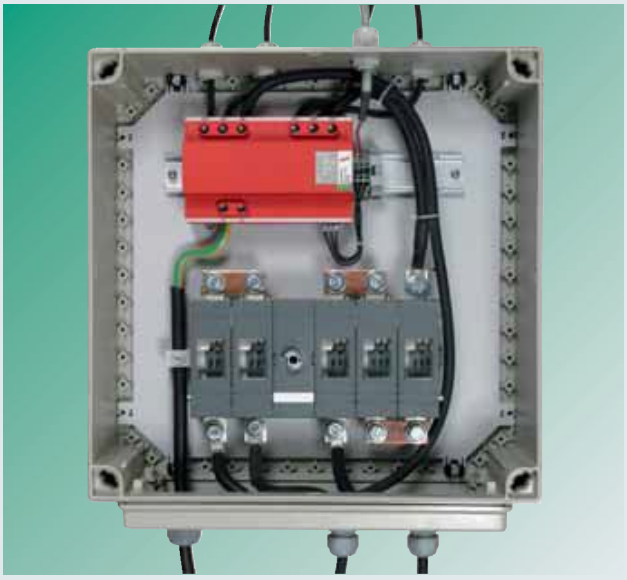
Basic circuit diagram DSH TT 2P 255

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

- **Application-optimised prewired 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**

Type	DSH TT 2P 255
Part No.	941 110
SPD according to EN 61643-11 / IEC 61643-1/-11	Type 1 / Class I
Energy coordination with terminal equipment	Type 1 + Type 2
Energy coordination with terminal equipment (≤ 5 m)	Type 1 + Type 2 + Type 3
Nominal a.c. voltage (U_N)	230 V
Max. continuous operating a.c. voltage (U_C)	255 V
Lightning impulse current (10/350 µs) [L+N-PE] (I_{total})	25 kA
Specific energy [L+N-PE] (W/R)	156.25 kJ/ohms
Lightning impulse current (10/350 µs) [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 µs) [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_{fi})	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)	440 V / 5 sec.
Temporary overvoltage (TOV) [N-PE] (U_T)	1200 V / 200 ms
TOV characteristics	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, ⏚) (min.)	1.5 mm^2 solid/flexible
Cross-sectional area (L, N, PE, ⏚) (max.)	35 mm^2 stranded/25 mm^2 flexible
For mounting on	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation
Degree of protection	IP 20
Capacity	2 modules, DIN 43880

Type 1 combined lightning current and surge arrester for use in PV systems



For protecting photovoltaic inverters against surges and even direct lightning strikes. For use in accordance with IEC 60364-7-712:2002-05 (Installation of photovoltaic power supply systems).

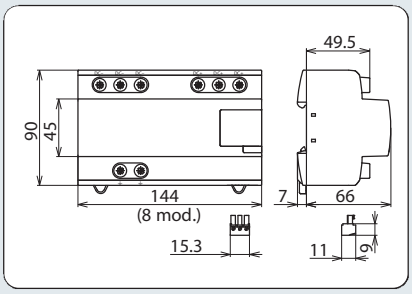
- **Prewired combined lightning current and surge arrester for use in photovoltaic generator circuits**
- **For use in photovoltaic systems up to 1000 V U_{CPV}**
- **High lightning current discharge capacity due to approved creepage discharge spark gap technology**
- **Maximum system availability due to spark gap technology with direct current extinction circuit**
- **Operating state and fault indication by indicator flag in the inspection window**
- **Double and triple terminals provide additional installation benefits when connecting the combined lightning current and surge arrester (e.g. joining of two PV strings)**

DEHNlimit PV 1000 V2: **Combined lightning current and surge arrester for use in photovoltaic power supply systems up to 1000 V d.c.**
DEHNlimit PV 1000 V2 FM: **With remote signalling contact for monitoring device (floating changeover contact)**

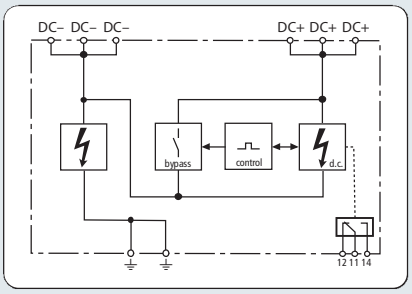
DEHNlimit PV 1000 V2 combined lightning current and surge arresters was specifically developed for use in photovoltaic power supply systems. The approved encapsulated creepage discharge spark gap technology allows to reliably protect photovoltaic generators and inverters even in case of direct lightning impulse currents. Due to its high lightning current discharge capacity, DEHNlimit PV 1000 V2 fulfils the most stringent requirements on lightning current arresters. The voltage protection level of DEHNlimit PV 1000 V2 and the reduction of the pulse time of the voltage pulse by means of the spark gap allow to coordinate the arrester with the equipment to be protected.
The d.c. extinction by means of the spark gap is a unique feature of DEHNlimit PV 1000 V2. Potential d.c. short-circuit currents up to 100 A d.c. caused by a tripping spark gap are interrupted without destruction within a split of a second in case of a photovoltaic voltage up to 1000 V d.c.

The combination of lightning current carrying capability, protection capability and follow current extinction ensures maximum availability of the PV system protected by DEHNlimit PV 1000 V2.
Triple terminals for the d.c.+ and d.c.- connection protect several strings at the same time by means of a single arrester. The double PE terminal allows easy connection to the local equipotential bonding and earth-termination system. The clamping range of all terminals of 1.5 to 35 mm² is optimised for cross-sectional areas commonly used for photovoltaic systems.
Moreover, DEHNlimit PV 1000 V2 features an operating state and fault indication that immediately indicates the operating state of the arrester even if no operating current is present. Apart from the standard visual indication with green and red indicator flags, DEHNlimit PV 1000 V2 FM features a three-pole remote signalling terminal. With its floating changeover contact, the remote signal can be used as a break or make contact according to the particular circuit concept.

Combined SPDs – Type 1 for PV Systems



Dimension drawing DLM PV 1000 V2 FM



Basic circuit diagram DLM PV 1000 V2 FM

Combined lightning current and surge arrester for photovoltaic power supply systems up to 1000 V d.c.

- **Prewired combined lightning current and surge arrester for use in photovoltaic generator circuits**
- **High lightning current discharge capacity due to approved spark gap technology**
- **Maximum system availability due to spark gap technology with direct current extinction circuit**

Type	DLM PV 1000 V2	DLM PV 1000 V2 FM
Part No.	900 342	900 345
SPD classification according to EN 61643-11	Type 1	Type 1
SPD classification according to IEC 61643-1/-11	Class I	Class I
Max. PV voltage [U_{CPV}] of the PV generator	1000 V	1000 V
Max. continuous operating d.c. voltage ($U_{max\ DC}$)	1000 V	1000 V
Min. continuous operating d.c. voltage ($U_{min\ DC}$)	100 V	100 V
Follow current extinguishing capability d.c. ($I_{fi\ DC}$)	100 A	100 A
Nominal discharge current (8/20 µs) (I_n)	25 kA	25 kA
Lightning impulse current (10/350 µs) [DC+/DC- -> PE] (I_{imp})	50 kA	50 kA
Specific energy [DC+/DC- -> PE] (W/R)	625.00 kJ/ohms	625.00 kJ/ohms
Lightning impulse current (10/350 µs) [DC+ -> DC-] (I_{imp})	25 kA	25 kA
Specific energy [DC+ -> DC-] (W/R)	156.25 kJ/ohms	156.25 kJ/ohms
Voltage protection level [DC+ -> DC-] (U_P)	≤ 3.3 kV	≤ 3.3 kV
Voltage protection level [(DC+/DC-) -> PE] (U_P)	≤ 4 kV	≤ 4 kV
Operating current ($I_{IN\ dc}$)	≤ 5 mA	≤ 5 mA
Response time [DC+ -> DC-] (t_A)	≤ 20 ns	≤ 20 ns
Protective conductor current (I_{PE})	≤ 1 µA	≤ 1 µA
Operating temperature range (T_U)	-40°C...+60°C	-40°C...+60°C
Operating state/fault indication	green / red	green / red
Number of ports	1	1
Cross-sectional area (min.)	1.5 mm² solid/flexible	1.5 mm² solid/flexible
Cross-sectional area (max.)	35 mm² stranded/25 mm² flexible	35 mm² stranded/25 mm² flexible
For mounting on	35 mm DIN rail acc. to EN 60715	35 mm DIN rail acc. to EN 60715
Enclosure material	thermoplastic, red, UL 94 V-0	thermoplastic, red, UL 94 V-0
Place of installation	indoor installation	indoor installation
Degree of protection	IP 20	IP 20
Capacity	8 modules, DIN 43880	8 modules, DIN 43880
Type of remote signalling contact	—	changeover contact
a.c. switching capacity	—	250 V/0.5 A
d.c. switching capacity	—	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Cross-sectional area for remote signalling terminals	—	max. 1.5 mm² solid/flexible