Surge protection for churches

White Paper

Contents

Surge protection for churches

White Paper

Churches are buildings of high cultural value and places of public assembly. Therefore, they must be equipped with permanently effective lightning protection systems as described in chapter 18 of Supplement 2 of the German DIN EN 62305-3 lightning protection standard.
The IEC 62305-4 (EN 62305-4) lightning protection standard describes how to implement surge protection measures. Moreover, the IEC 60364-1 (HD 60364-1) standard requires that "property shall be protected against damage as a consequence of overvoltages such as those originating from atmospheric events or from switching" (section 131.6.2).

Figure 1 shows an example of the standard equipment of a church. The circuit of the control line of the bell controller is illustrated in detail in **Figure 2**.
If the separation distance s is maintained between the down conductors / lightning current carrying parts and the cables installed in the steeple, flashover is not to be expected, however electromagnetic coupling may occur. The following measures can be taken to minimise electromagnetic coupling:

- Short cable lengths
- No / little loop formation

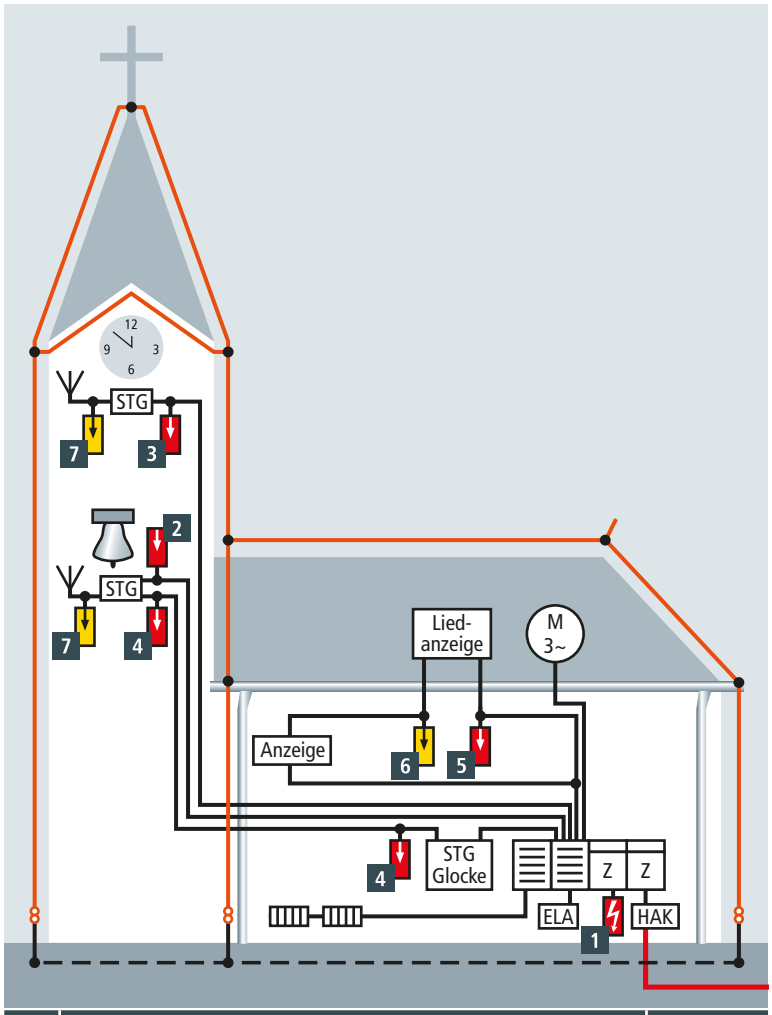
If these measures are not feasible, surge protective devices must be installed.

Lightning equipotential bonding

A lightning protection system requires lightning equipotential bonding for metallic systems and all buried cables entering the building. In case of churches, equipotential bonding must always be established for the low-voltage supply and other cables, if any (e.g. escape lighting).

Surge protection

The cables in the bell tower and nave such as the cables of the electric clock mechanism and the bell controller are frequently long and / or form loops. These two systems are time synchronised via the DCF 77 signal.



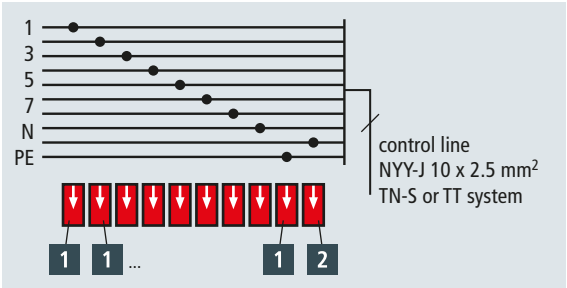
	Type		Part.-No.
1	DEHNventil DV M TNC 255 DEHNventil DV.M TT 255	(TN-C system) (TT system)	951 300 951 310
2	DEHNguard DG M TT 275	(TT/TN-S system)	952 310
3	DEHNguard DG M TT 2P 275	(TT/TN-S system)	952 110
4	See **Figure 9.24.2**		
5	DEHNflex DFL M 255		924 396
6	BLITZDUCTOR BXTU ML4 BD 0-180 (4 cores)* + BXT BAS base part		920 349 + 920 300
7	DEHNgate DGA G BNC + angled fixing plate		929 042 + 106 329

* Check whether arrester is suited for the system parameters

Figure 1 Principle of external and internal lightning protection for a church with steeple

Surge protection for churches

White Paper



	Type	Part.-No.
1	DEHNguard DG S 275	952 070
2	DEHNgap DGP C S	952 030

Figure 2 Example of surge protective devices for the bell controller

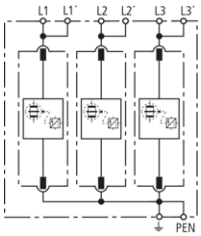
If the electrical hymn board is not radio controlled, electromagnetic coupling is to be expected.
In addition to the systems described before, the pipe heating system, electronic organ and sound system are also highly susceptible to electromagnetic coupling.
In the example shown, a separate earthing conductor to the main earthing busbar is not required for type 2 surge protective devices (230 V or 230/400 V) for power supply systems since the first surge protective device is already earthed.

DEHNventil

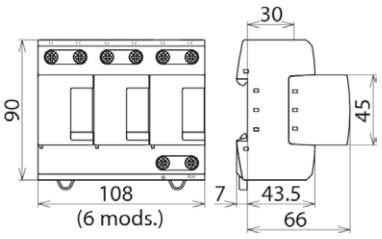
DV M TNC 255 (951 300)

- Prewired combined type 1 and type 2 spark-gap-based 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

Figure without obligation



Basic circuit diagram DV M TNC 255



Dimension drawing DV M TNC 255

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

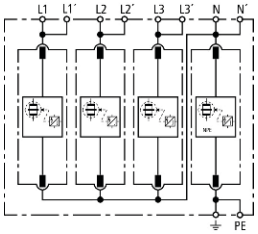
Type Part No.	DV M TNC 255 951 300
SPD according to EN 61643-11 / IEC 61643-11	type 1 + type 2 / class I + class II
Energy coordination with terminal equipment (≤ 5 m)	type 1 + type 2 + type 3
Nominal a.c. voltage (U_N)	230 / 400 V (50 / 60 Hz)
Max. continuous operating a.c. voltage (U_C)	264 V (50 / 60 Hz)
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) [L-PEN]/[L1+L2+L3-PEN] (I_n)	25 / 75 kA
Voltage protection level (U_P)	≤ 1.5 kV
Follow current extinguishing capability 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.)
Response time (t_A)	≤ 100 ns
Max. backup fuse (L) up to I_K = 50 kA_{rms}	315 A gG
Max. backup fuse (L-L')	125 A gG
Temporary overvoltage (TOV) (U_T) – Characteristic	440 V / 120 min. – withstand
Operating temperature range [parallel] / [series] (T_U)	-40 °C ... +80 °C / -40 °C ... +60 °C
Operating state / fault indication	green / red
Number of ports	1
Cross-sectional area (L1, L1', L2, L2', L3, L3', PEN, ⏚) (min.)	10 mm^2 solid / flexible
Cross-sectional area (L1, L2, L3, PEN) (max.)	50 mm^2 stranded / 35 mm^2 flexible
Cross-sectional area (L1', L2', L3', ⏚) (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	6 module(s), DIN 43880
Approvals	KEMA, VDE, UL, VdS
Extended technical data:	Use in switchgear installations with prospective short-circuit currents of more than 50 kA_{rms} (tested by the German VDE)
– Max. 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}	315 A gL/gG
Weight	970 g
Customs tariff number	85363030
GTIN	4013364108134
PU	1 pc(s)

DEHNventil

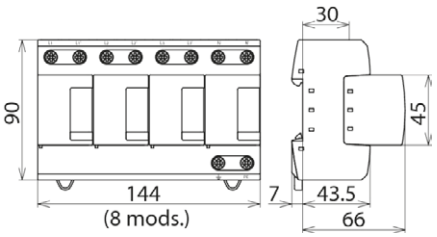
DV M TT 255 (951 310)

- Prewired spark-gap-based type 1 and type 2 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

Figure without obligation



Basic circuit diagram DV M TT 255



Dimension drawing DV M TT 255

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

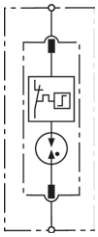
Type Part No.	DV M TT 255 951 310
SPD according to EN 61643-11 / IEC 61643-11	type 1 + type 2 / class I + class II
Energy coordination with terminal equipment (≤ 5 m)	type 1 + type 2 + type 3
Nominal a.c. voltage (U_N)	230 / 400 V (50 / 60 Hz)
Max. continuous operating a.c. voltage [L-N] (U_C)	264 V (50 / 60 Hz)
Max. continuous operating a.c. voltage [N-PE] ($U_{C\ (N-PE)}$)	255 V (50 / 60 Hz)
Lightning impulse current (10/350 µs) [L1+L2+L3+N-PE] (I_{total})	100 kA
Specific energy [L1+L2+L3+N-PE] (W/R)	2.50 MJ/ohms
Lightning impulse current (10/350 µs) [L-N]/[N-PE] (I_{imp})	25 / 100 kA
Specific energy [L-N]/[N-PE] (W/R)	156.25 kJ/ohms / 2.50 MJ/ohms
Nominal discharge current (8/20 µs) [L-N]/[N-PE] (I_n)	25 / 100 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})	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.)
Response time (t_A)	≤ 100 ns
Max. backup fuse (L) up to I_K = 50 kA_{rms}	315 A gG
Max. backup fuse (L-L')	125 A 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 [parallel] / [series] (T_U)	-40 °C ... +80 °C / -40 °C ... +60 °C
Operating state / fault indication	green / red
Number of ports	1
Cross-sectional area (L1, L1', L2, L2', L3, L3', N, N', PE, ⏚) (min.)	10 mm^2 solid / flexible
Cross-sectional area (L1, L2, L3, N, PE) (max.)	50 mm^2 stranded / 35 mm^2 flexible
Cross-sectional area (L1', L2', L3', 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	8 module(s), DIN 43880
Approvals	KEMA, VDE, UL, VdS
Extended technical data:	Use in switchgear installations with prospective short-circuit currents of more than 50 kA_{rms} (tested by the German VDE)
– Max. 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}	315 A gL/gG
Weight	1,27 kg
Customs tariff number	85363030
GTIN	4013364108172
PU	1 pc(s)

DEHNgap C S

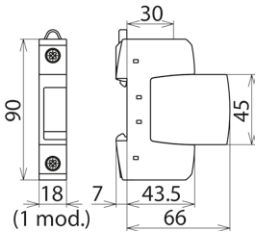
DGP C S (952 030)

- Specifically designed for use in "3+1" and "1+1" circuits of TT systems according to IEC 60364-5-53 between neutral conductor N and protective conductor PE
- High discharge capacity
- Two-part surge arrester consisting of a base part and plug-in spark-gap based protection module

Figure without obligation



Basic circuit diagram DGP C S



Dimension drawing DGP C S

N-PE surge arrester; FM version with floating remote signalling contact.

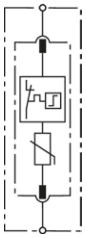
Type Part No.	DGP C S 952 030
SPD according to EN 61643-11 / IEC 61643-11	type 2 / class II
Max. continuous operating a.c. voltage (U_C)	255V (50 / 60 Hz)
Nominal discharge current (8/20 µs) (I_n)	20 kA
Max. discharge current (8/20 µs) (I_{max})	40 kA
Follow current extinguishing capability (I_{fi})	100 A_{rms}
Lightning impulse current (10/350 µs) (I_{imp})	12 kA
Voltage protection level (U_P)	≤ 1.5 kV
Response time (t_A)	≤ 100 ns
Temporary overvoltage (TOV) (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	1 module(s), DIN 43880
Approvals	KEMA, VDE, UL, VdS
Weight	111 g
Customs tariff number	85363010
GTIN	4013364108530
PU	1 pc(s)

DEHNguard S

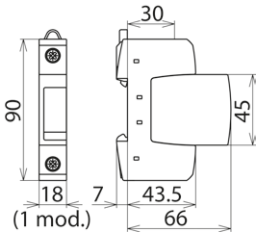
DG S 275 (952 070)

- Multi-purpose surge arrester consisting of a base element and plug-in protection module
- High discharge capacity due to heavy-duty zinc oxide varistor
- High reliability due to "Thermo Dynamic Control" SPD monitoring device

Figure without obligation



Basic circuit diagram DG S 275



Dimension drawing DG S 275

Pluggable single-pole surge arrester consisting of a base part and plug-in protection module.

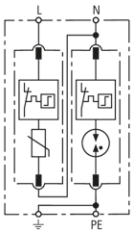
Type Part No.	DG S 275 952 070
SPD according to EN 61643-11 / IEC 61643-11	type 2 / class II
Nominal a.c. voltage (U_N)	230 V (50 / 60 Hz)
Max. continuous operating a.c. voltage (U_C)	275V (50 / 60 Hz)
Max. continuous operating d.c. voltage (U_C)	350 V
Nominal discharge current (8/20 µs) (I_n)	20 kA
Max. discharge current (8/20 µs) (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	1 module(s), DIN 43880
Approvals	KEMA, VDE, UL, VdS, CSA
Weight	130 g
Customs tariff number	85363030
GTIN	4013364108493
PU	1 pc(s)

DEHNguard

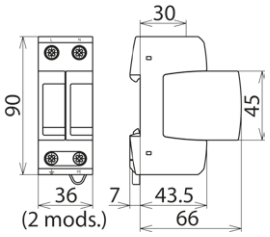
DG M TT 2P 275 (952 110)

- 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).

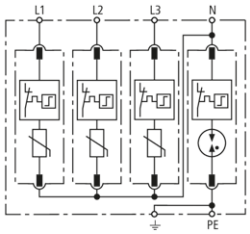
Type Part No.	DG M TT 2P 275 952 110
SPD according to EN 61643-11 / IEC 61643-11	type 2 / class II
Nominal a.c. voltage (U_N)	230 V (50 / 60 Hz)
Max. continuous operating a.c. voltage [L-N] (U_C)	275 V (50 / 60 Hz)
Max. continuous operating a.c. voltage [N-PE] (U_C)	255 V (50 / 60 Hz)
Nominal discharge current (8/20 µs) (I_n)	20 kA
Max. discharge current (8/20 µs) (I_{max})	40 kA
Lightning impulse current (10/350 µs) [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_{fi})	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

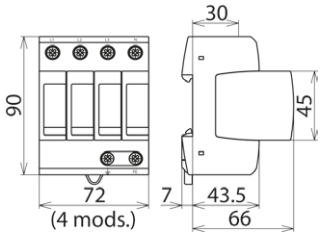
DG M TT 275 (952 310)

- 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 275



Dimension drawing DG M TT 275

Modular surge arrester for use in TT and TN-S systems ("3+1" circuit).

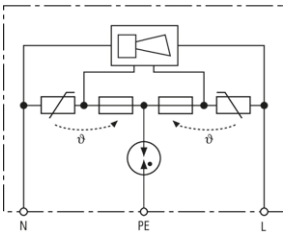
Type Part No.	DG M TT 275 952 310
SPD according to EN 61643-11 / IEC 61643-11	type 2 / class II
Nominal a.c. voltage (U_N)	230 / 400 V (50 / 60 Hz)
Max. continuous operating a.c. voltage [L-N] (U_C)	275 V (50 / 60 Hz)
Max. continuous operating a.c. voltage [N-PE] (U_C)	255 V (50 / 60 Hz)
Nominal discharge current (8/20 µs) (I_n)	20 kA
Max. discharge current (8/20 µs) (I_{max})	40 kA
Lightning impulse current (10/350 µs) [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_{fi})	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	4 module(s), DIN 43880
Approvals	KEMA, VDE, UL, VdS
Weight	450 g
Customs tariff number	85363030
GTIN	4013364108479
PU	1 pc(s)

DEHNflex

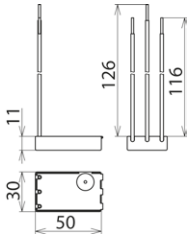
DFL M 255 (924 396)

- Acoustic fault indication
- Compact design
- For use in flush-mounted systems, cable ducts and flush-type boxes

Figure without obligation



Basic circuit diagram DFL M 255



Dimension drawing DFL M 255

Surge arrester for use in all types of installation systems for terminal equipment; compact dimensions

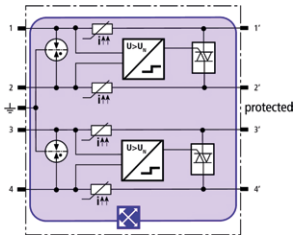
Type Part No.	DFL M 255 924 396
SPD according to EN 61643-11	Type 3
SPD according to IEC 61643-1/-11	Class III
Nominal a.c. voltage (U_N)	230 V
Max. continuous operating a.c. voltage (U_C)	255 V
Nominal discharge current (8/20 µs) (I_n)	1.5 kA
Total discharge current (8/20 µs) [L+N-PE] (I_{total})	3 kA
Combined impulse (U_{OC})	3 kV
Combined impulse [L+N-PE] ($U_{OC\ total}$)	6 kV
Voltage protection level [L-N] (U_P)	≤ 1.25 kV
Voltage protection level [L/N-PE] (U_P)	≤ 1.5 kV
Response time [L-N] (t_A)	≤ 25 ns
Response time [L/N-PE] (t_A)	≤ 100 ns
Max. mains-side overcurrent protection	32 A gL/gG or B/C 32 A
Short-circuit withstand capability for mains-side overcurrent protection with 32 A gL/gG	6 kA_{rms}
Temporary overvoltage (TOV) [L-N] (U_T)	335 V / 5 sec.
Temporary overvoltage (TOV) [L/N-PE] (U_T)	400 V / 5 sec.
Temporary overvoltage (TOV) [L+N-PE] (U_T)	1200 V + U_{CS} / 200 ms
TOV characteristic [L-N]	withstand
TOV characteristic [L/N-PE]	withstand
TOV characteristic [L+N-PE]	safe
Fault indication	acoustic signal on
Number of ports	1
Operating temperature range (T_U)	-25°C...+40°C
Terminal wires	1 mm^2, 120 mm long
Enclosure material	thermoplastic, red, UL 94 V-2
Place of installation	indoor installation
Degree of protection of installed device	IP 20
Dimensions	30 x 50 x 11 mm
Weight	32 g
Customs tariff number	85363010
GTIN	4013364091016
PU	1 pc(s)

BLITZDUCTOR XT

BXTU ML4 BD 0-180 (920 349)

- Universal voltage type with actiVsense technology
- For installation in conformity with the lightning protection zone concept at the boundaries from 0_A – 2 and higher
- With integrated LifeCheck monitoring

Figure without obligation



Basic circuit diagram BXTU ML4 BD 0-180

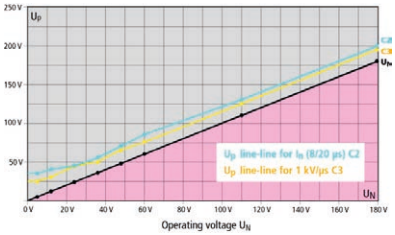


Diagram of the voltage protection level BXTU

Space-saving combined lightning current and surge arrester module with actiVsense and LifeCheck technology for protecting two pairs with the same or a different operating voltage of galvanically isolated balanced interfaces. Automatically detects the operating voltage of the useful signal and optimally adapts the voltage protection level to it.

Type Part No.	BXTU ML4 BD 0-180 920 349
SPD class	TYPE 1 P1
SPD monitoring system	LifeCheck
Operating voltage (U_N)	0-180 V
Frequency of the operating voltage (f_{UN})	0-400 Hz
Max. continuous operating d.c. voltage (U_C)	180 V
Max. continuous operating a.c. voltage (U_C)	127 V
Permissible superimposed signal voltage (U_{signal})	≤ +/- 5 V
Cut-off frequency line-line (U_{signal}, balanced 100 ohms) (f_G)	50 MHz
Nominal current at 80 °C (equal to max. short-circuit current) (I_L)	100 mA
D1 Total lightning impulse current (10/350 µs) (I_{imp})	10 kA
D1 Lightning impulse current (10/350 µs) per line (I_{imp})	2.5 kA
C2 Total nominal discharge current (8/20 µs) (I_n)	20 kA
C2 Nominal discharge current (8/20 µs) per line (I_n)	10 kA
Voltage protection level line-line for I_n C2 (U_p)	see diagram, line C2
Voltage protection level line-line at 1 kV/µs C3 (U_p)	see diagram, line C3
Voltage protection level line-line for I_{imp} D1 (U_p)	≤ U_N + 53 V
Voltage protection level line-PG for C2/C3/D1	≤ 550 V
Series resistance per line	≤ 10 ohms; typically 7.5 ohms
Capacitance line-line (C)	≤ 80 pF
Capacitance line-PG (C)	≤ 16 pF
Operating temperature range (T_U)	-40 °C ... +80 °C
Degree of protection (plugged-in)	IP 20
Pluggable into	BXT BAS / BSP BAS 4 base part
Earthing via	BXT BAS / BSP BAS 4 base part
Enclosure material	polyamide PA 6.6
Colour	yellow
Test standards	IEC 61643-21 / EN 61643-21, UL 497B
SIL classification	up to SIL3 *)
Approvals	CSA, UL, GOST
Weight	25 g
Customs tariff number	85363010
GTIN	4013364126404
PU	1 pc(s)

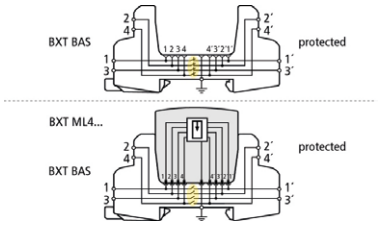
*) For more detailed information, please visit www.dehn-international.com.

BLITZDUCTOR XT

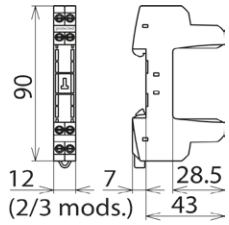
BXT BAS (920 300)

- Four-pole version for universal use with all types of BSP and BXT / BXTU protection modules
- No signal interruption if the protection module is removed
- Universal design without protection elements

Figure without obligation



Basic circuit diagram with and without plugged-in module



Dimension drawing BXT BAS

The BLITZDUCTOR XT base part is a very space-saving and universal four-pole feed-through terminal for the insertion of a protection module without signal interruption if the protection module is removed. The snap-in mechanism at the supporting foot of the base part allows the protection module to be safely earthed via the DIN rail. Since no components of the protective circuit are situated in the base part, only the protection modules must be maintained.

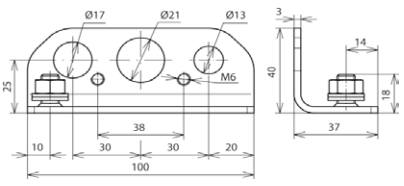
Type Part No.	BXT BAS 920 300
Operating temperature range (T_U)	-40 °C ... +80 °C
Degree of protection	IP 20
For mounting on	35 mm DIN rails acc. to EN 60715
Connection (input / output)	screw / screw
Signal disconnection	no
Cross-sectional area, solid	0.08-4 mm^2
Cross-sectional area, flexible	0.08-2.5 mm^2
Tightening torque (terminals)	0.4 Nm
Earthing via	35 mm DIN rails acc. to EN 60715
Enclosure material	polyamide PA 6.6
Colour	yellow
ATEX approvals	DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc *)
IECEx approvals	DEK 11.0032X: Ex nA IIC T4 Gc *)
Approvals	CSA, VdS, UL, GOST
Weight	34 g
Customs tariff number	85369010
GTIN	4013364109179
PU	1 pc(s)

*) only in connection with an approved protection module

DEHNgate

BW90 B17 21 16 V2A (106 329)

Figure without obligation



With three mounting boreholes for three different sizes of DEHNgate arresters, e.g. 1x 929 042 + 1x 929 057 + 1x (929 043, 929 044, 929 045 or 929 059).

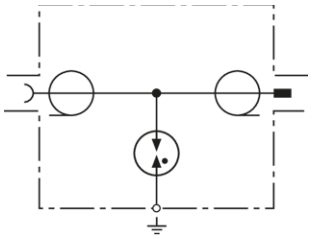
Type Part No.	BW90 B17 21 16 V2A 106 329
Material	stainless steel
Weight	143 g
Customs tariff number	85389099
GTIN	4013364107182
PU	1 pc(s)

DEHNgate

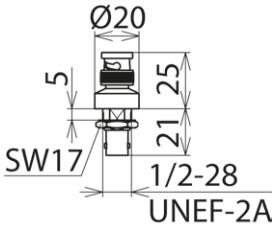
DGA G BNC (929 042)

- Compact dimensions
- Extremely wide transmission range
- For installation in conformity with the lightning protection zone concept at the boundaries from 0_B – 1 and higher

Figure without obligation



Basic circuit diagram DGA G BNC



Dimension drawing DGA G BNC

Surge arrester for remote power supply with integrated gas discharge tube. Ideally suited for wireless applications for the coaxial interfaces of devices and antennas.
Available with SMA, BNC or N connection for bushing installation.

Type Part No.	DGA G BNC 929 042
SPD class	TYPE 2
Max. continuous operating d.c. voltage (U_C)	135 V
Nominal current (I_L)	3.5 A
Max. transmission capacity	25 W
D1 Lightning impulse current (10/350 µs) (I_{imp})	1 kA
C2 Nominal discharge current (8/20 µs) (I_n)	5 kA
Voltage protection level for I_n C2 (U_P)	≤ 650 V
Frequency range	0-4 GHz
Insertion loss	≤ 0.2 dB
Return loss (d.c. - 3 GHz)	≥ 20 dB
Return loss (3 GHz-4 GHz)	≥ 20 dB
Characteristic impedance (Z)	50 ohms
Operating temperature range (T_U)	-40 °C ... +85 °C
Degree of protection (if lines are connected)	IP 20
Connection	BNC socket / BNC plug
Earthing via	bushing (Ø12.9 mm)
Enclosure material	brass, gold-plated
Colour	gold
Test standards	IEC 61643-21 / EN 61643-21
Approvals	GOST
Weight	39 g
Customs tariff number	85366910
GTIN	4013364091030
PU	1 pc(s)

www.dehn-international.com/partners

Surge Protection
Lightning Protection
Safety Equipment
DEHN protects.

DEHN + SÖHNE
GmbH + Co.KG.

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