# Surge protection for safety lighting systems

**White Paper**

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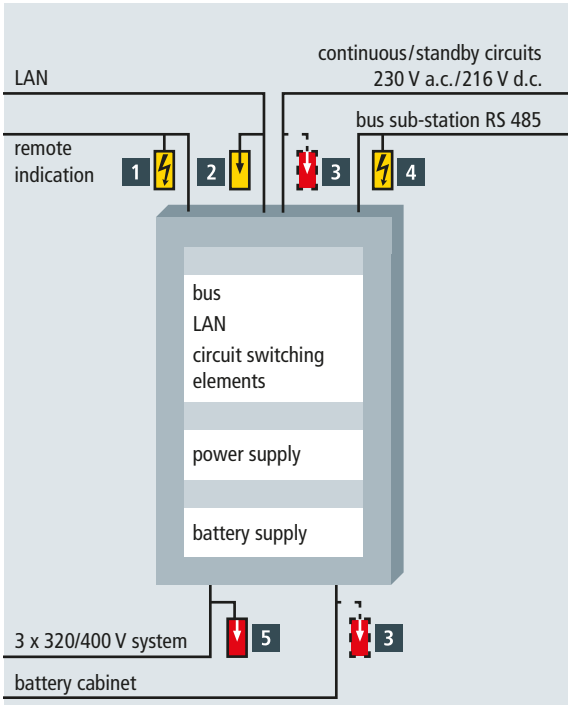
**White Paper**

The main functions of safety lighting systems are the designation and lighting of escape routes, lighting special risk work stations until work there has been finished in a safe manner and lighting to prevent panic.

The following looks at surge protection for central power supply systems (CPS), which are marketed as so-called central battery systems (CB).




| | Type | Info | Part No. |
|---|---|---|---|
| 1 | BXT ML4 BE 24 + BXT BAS | Earthing 6 mm² Cu | 920 324 + 920 300 |
| 2 | DPA M CAT6 RJ45S 48 | Earthing 1.5 mm² Cu | 929 100 |
| 3 | DG SE DC 242 (2 pcs.) EB 1 2 1.5 | Earthing 6 mm² Cu | 972 120 900 460 |
| 4 | BXT ML2 BD HFS 5 + BXT BAS | Earthing 6 mm² Cu | 920 271 + 920 300 |
| 5 | DG M TT 275 | | 952 310 |

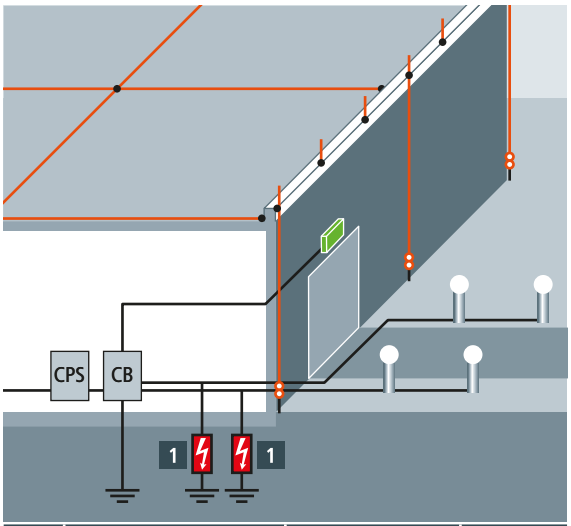
* Observe individual interfaces/system configurations

Figure 1 Central battery system, feeder cable, battery cabinet feeder cable, bus line, remote indication line, LAN line as well as continuous/standby circuit lines in LPZ 1 and in the same fire compartment

These systems feature the following interfaces:

- Power supply system
- Battery cabinet
- Circuit switching elements which, in combination with the system-specific electronic ballasts of the luminaires, ensure continuous/standby operation (individually assigned) and a switched permanent light in the circuit. These elements allow the required testing and monitoring of the individual lighting systems. Moreover, they incorporate the overcurrent protective devices required to protect the circuit
- Bus communication with the central battery system/sub-panels
- LAN
- Remote indication
- Freely programmable inputs and outputs

In general, a risk analysis must be performed to determine whether surge protective devices (SPDs) need to be installed for the interfaces. To protect the central battery system so that the risk is reduced to a minimum, surge protective devices are required for all the interfaces listed above (**Figure 1**). In **Figures 1 to 4** the electronic symbols for SPDs with a solid line represent those which are, as a rule, obligatory for protecting the interfaces, whereas protective circuits with a dashed line are installed following a special risk analysis.




| | Type | Info | Part No. |
|---|---|---|---|
| 1 | DSE M 1 242 (2 pcs.) MVS 1 3 | Earthing ≥16 mm² Cu | 971 122 900 615 |

Figure 2 Lightning equipotential bonding for the circuits of the safety lighting system at the zone transition from the building to the grounding system

# Surge protection for safety lighting systems

**White Paper**

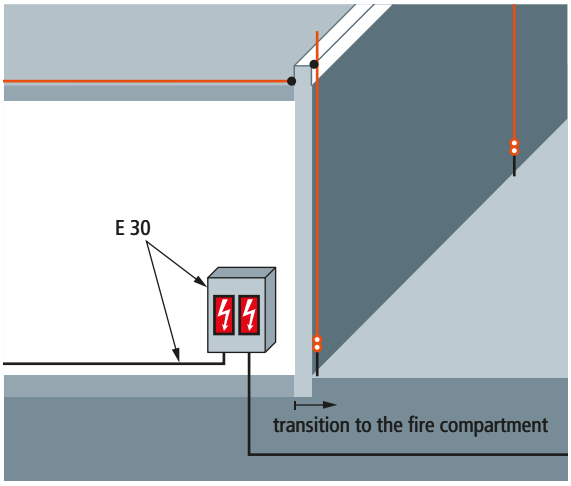



Figure 3 Lightning equipotential bonding at an E 30 line in an E 30 distribution board (inside of the outer wall)

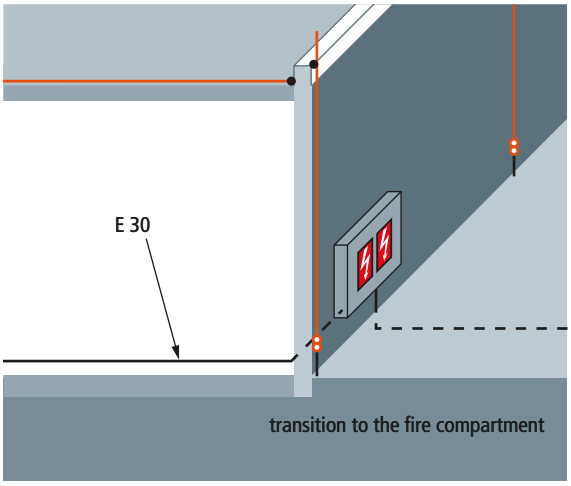



Figure 4 Lightning equipotential bonding in a conventional distribution board (outside of the outer wall)

While in **Figure 1** it is assumed that a coordinated type 1 lightning current arrester is installed in the power supply and information technology system of the building, a type 1 SPD is required for the outgoing circuits of the safety lighting system since lightning equipotential bonding is required (**Figure 2**). Since these circuits are supplied both during AC and DC operation, the type 1 arrester installed at the zone transition from LPZ $0_A$ to LPZ 1 (entry point to the building) must be suitable for this purpose. Technically, no standard spark-gap-based surge arresters, which have been developed and tested for operation in AC systems, can be used here. In such cases, DEHNsecure M 1 242 is the ideal protective device, designed for both AC and DC operation (max. backup fuse 10 A).

The functional integrity of the cable network is usually a must, not only in case of failure, but also if surge protective devices are used. This means that the surge protective device provided in the cable must be installed in an E 30 distribution board (**Figure 3**). To this end, the E 30 (integrity maintenance of 30 minutes) distribution board must be dimensioned in such a way that the maximum ambient temperature of the surge protective device cannot be exceeded. To ensure this, the data sheet of the surge protective device must be made available to the manufacturer of the E 30 distribution board.
However, if the functional integrity cable is only led through the outside wall, a conventional distribution board, which must be selected according to IP criteria, is sufficient for the surge protective device (**Figure 4**).

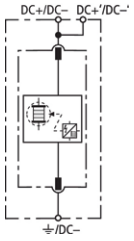
 

## DEHNsecure

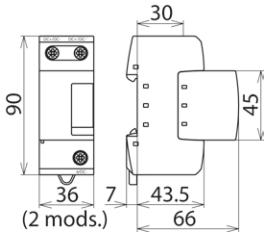
# DSE M 1 242 (971 122)

- Coordinated spark-gap-based lightning current arrester consisting of a base part and a plug-in protection module
- Spark gap technology particularly suited for use in d.c. circuits
- Coordinated with DEHNguard SE DC 242 (FM) surge protective devices

Figure without obligation




Basic circuit diagram DSE M 1 242




Dimension drawing DSE M 1 242

Coordinated and modular single-pole lightning current arrester for d.c. applications.

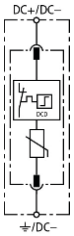
| Type<br>Part No. | DSE M 1 242<br>971 122 |
|---|---|
| SPD classification according to EN 61643-11 / IEC 61643-11 | type 1 / class I |
| Max. continuous operating voltage (d.c.) ($U_C$) | 242 V |
| Lightning impulse current (10/350 µs) ($I_{imp}$) | 25 kA |
| Specific energy (W/R) | 156.25 kJ/ohms |
| Voltage protection level ($U_P$) | ≤ 2.5 kV |
| Directly coordinated with DEHNguard | DG S 385 (Part No. 952 074) |
| Response time ($t_A$) | ≤ 100 ns |
| Short-circuit withstand capability for max. mains-side overcurrent protection d.c. ($I_{SCCR}$) | 25 kA |
| Max. mains-side overcurrent protection | 250 A gL |
| Max. backup fuse (DC+/DC- -> DC+'/DC-') | 125 A gL |
| Operating temperature range (parallel connection) ($T_{UP}$) | -40 °C ... +80 °C |
| Operating temperature range (series connection) ($T_{US}$) | -40 °C ... +60 °C |
| Operating state / fault indication | green / red |
| Number of ports | 1 |
| Cross-sectional area (DC+/DC-, DC+'/DC-', ⏚/DC-) (min.) | 10 mm² solid / flexible |
| Cross-sectional area (DC+/DC-, ⏚/DC-) (max.) | 50 mm² stranded / 35 mm² flexible |
| Cross-sectional area (DC+'/DC-') (max.) | 35 mm² stranded / 25 mm² 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 |
| Extended technical data: | when used in safety lighting systems |
| – d.c. and a.c. operation | yes |
| – Max. continuous operating voltage (a.c.) ($U_C$) | 255 V |
| – Max. backup fuse | 10 A gG |
| Weight | 258 g |
| Customs tariff number (Comb. Nomenclature EU) | 85363090 |
| GTIN | 4013364144477 |
| PU | 1 pc(s) |

## DEHNguard

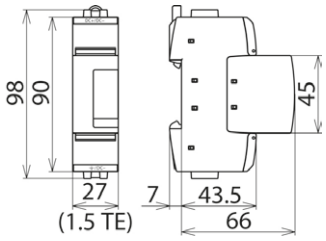
# DG SE DC 242 (972 120)

- Universal single-pole surge arrester consisting of a base part and a plug-in protection module
- Powerful d.c. switching device DCD
- Can be used without additional backup fuse

Figure without obligation




Basic circuit diagram DG SE DC 242




Dimension drawing DG SE DC 242

Modular single-pole surge arrester for d.c. applications.

| Type<br>Part No. | DG SE DC 242<br>972 120 |
|---|---|
| SPD according to EN 61643-11 / IEC 61643-11 | type 2 / class II |
| Energy coordination with terminal equipment (≤ 10 m) | type 2 + type 3 |
| Nominal voltage (d.c.) ($U_N$) | 220 V |
| Max. continuous operating voltage (d.c.) ($U_C$) | 242 V |
| Nominal discharge current (8/20 µs) ($I_n$) | 12.5 kA |
| Voltage protection level ($U_P$) | ≤ 1.25 kV |
| Response time ($t_A$) | ≤ 25 ns |
| Short-circuit withstand capability without backup fuse (d.c.) ($I_{SCCR}$) | 300 A |
| Short-circuit withstand capability for max. mains-side overcurrent protection (d.c.) ($I_{SCCR}$) | 25 kA |
| Max. mains-side overcurrent protection | 35 A gG |
| Temporary overvoltage (TOV) d.c. ($U_T$) - Characteristic | 320 V / 5 sec. – withstand |
| Temporary overvoltage (TOV) d.c., 2x $U_C$ ($U_T$) - Characteristic | 484 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 DINs rails acc. to EN 60715 |
| Enclosure material | thermoplastic, red, UL 94 V-0 |
| Place of installation | indoor installation |
| Degree of protection | IP20 |
| Capacity | 1.5 module(s), DIN 43880 |
| Extended technical data: | use for safety lighting systems |
| – d.c. and a.c. operation | yes |
| – Max. continuous operating voltage (a.c.) ($U_C$) | 255 V |
| – Max. backup fuse | 10 A gG |
| Weight | 148 g |
| Customs tariff number (Comb. Nomenclature EU) | 85363030 |
| GTIN | 4013364158528 |
| PU | 1 pc(s) |

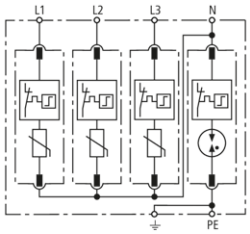
  

## DEHNguard

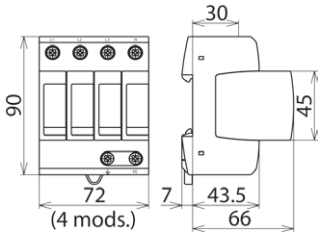
# DG M TT 275 (952 310)

- 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 configuration).

| Type<br>Part No. | DG M TT 275<br>952 310 |
|---|---|
| SPD according to EN 61643-11 / IEC 61643-11 | type 2 / class II |
| Energy coordination with terminal equipment (≤ 10 m) | type 2 + type 3 |
| Nominal voltage (a.c.) ($U_N$) | 230 / 400 V (50 / 60 Hz) |
| Max. continuous operating voltage (a.c.) [L-N] ($U_C$) | 275 V (50 / 60 Hz) |
| Max. continuous operating voltage (a.c.) [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]/[N-PE] ($U_P$) | ≤ 1.5 / ≤ 1.5 kV |
| Voltage protection level [L-N] / [N-PE] at 5 kA ($U_P$) | ≤ 1 / ≤ 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 |
| Extended technical data: | ---------- |
| Voltage protection level [L-PE] ($U_P$) | 1.5 kV |
| Weight | 405 g |
| Customs tariff number (Comb. Nomenclature EU) | 85363030 |
| GTIN | 4013364108479 |
| PU | 1 pc(s) |

## Modular Wiring System

### MVS 1 3 (900 615)

- Allows compact connection of arresters with each other and with other DIN rail mounted devices

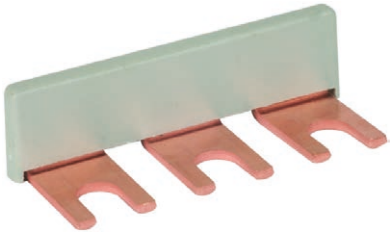
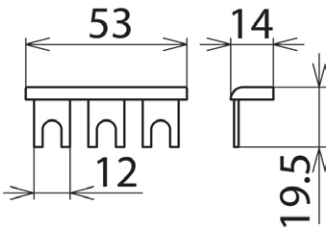


Figure without obligation




| Type<br>Part No. | MVS 1 3<br>900 615 |
|---|---|
| Type | single-phase |
| Number of contact studs | 3 |
| Max. installation length | 3 module(s) |
| Nominal cross-section | 16 mm$^2$ |
| Weight | 14 g |
| Customs tariff number (Comb. Nomenclature EU) | 85389099 |
| GTIN | 4013364086562 |
| PU | 1 pc(s) |

## Earthing Clip

### EB 1 2 1.5 (900 460)

- Allows compact connection of arresters with each other and with other DIN rail mounted devices

Figure without obligation

| Type<br>Part No. | EB 1 2 1.5<br>900 460 |
|---|---|
| Type | single-phase |
| Number of contact studs | 2 |
| Dimensions | 34 x 60 x 28 mm |
| Material | copper and tin-plated brass |
| Terminal | up to 25 mm$^2$ |
| Weight | 37 g |
| Customs tariff number (Comb. Nomenclature EU) | 85369095 |
| GTIN | 4013364244146 |
| PU | 1 pc(s) |

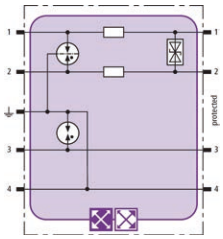
  

## BLITZDUCTOR XT

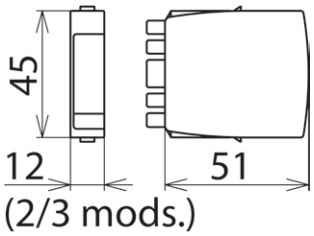
# BXT ML2 BD HFS 5 (920 271)

- LifeCheck SPD monitoring function
- Minimal signal interference
- For installation in conformity with the lightning protection zone concept at the boundaries from $0_A$ –2 and higher

Figure without obligation



Basic circuit diagram BXT ML2 BD HFS




Dimension drawing BXT ML2 BD HFS

Space-saving combined lightning current and surge arrester module with LifeCheck feature for protecting one pair of unearthed high-frequency bus systems or video transmission systems, with direct or indirect shield earthing. If LifeCheck detects thermal or electrical overload, the arrester has to be replaced. This status is indicated contactlessly by the DEHNrecord LC / SCM / MCM reader.

| Type<br>Part No. | BXT ML2 BD HFS 5<br>920 271 |
|---|---|
| SPD monitoring system | LifeCheck |
| SPD class | TYPE 1 P1 |
| Nominal voltage ($U_N$) | 5 V |
| Max. continuous operating voltage (d.c.) ($U_C$) | 6.0 V |
| Max. continuous operating voltage (a.c.) ($U_C$) | 4.2 V |
| Nominal current at 45 °C ($I_L$) | 1.0 A |
| D1 Total lightning impulse current (10/350 µs) ($I_{imp}$) | 9 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 $I_{imp}$ D1 ($U_p$) | ≤ 25 V |
| Voltage protection level line-PG for $I_{imp}$ D1 ($U_p$) | ≤ 550 V |
| Voltage protection level line-line at 1 kV/µs C3 ($U_p$) | ≤ 11 V |
| Voltage protection level line-PG at 1 kV/µs C3 ($U_p$) | ≤ 550 V |
| Series resistance per line | 1.0 ohm(s) |
| Cut-off frequency line-line ($f_G$) | 100.0 MHz |
| Capacitance line-line (C) | ≤ 25 pF |
| Capacitance line-PG (C) | ≤ 25 pF |
| Operating temperature range ($T_U$) | -40 °C ... +80 °C |
| Degree of protection (with plugged-in protection module) | 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 |
| Approvals | CSA, UL, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL |
| SIL classification | up to SIL3 *) |
| ATEX approvals | DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc |
| IECEx approvals | DEK 11.0032X: Ex nA IIC T4 Gc |
| CSA & USA Hazloc approvals (1) | 2516389: Class I Div. 2 GP A, B, C, D T4 |
| CSA & USA Hazloc approvals (2) | 2516389: Class I Zone 2, AEx nA IIC T4 |
| Weight | 22 g |
| Customs tariff number (Comb. Nomenclature EU) | 85363010 |
| GTIN | 4013364117556 |
| PU | 1 pc(s) |

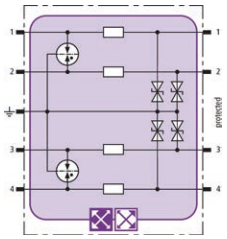
*) For more detailed information, please visit www.dehn-international.com.

## BLITZDUCTOR XT

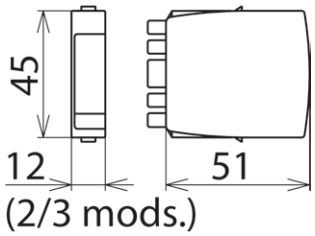
# BXT ML4 BE 24 (920 324)

- LifeCheck SPD monitoring function
- Optimal protection of four single lines
- For installation in conformity with the lightning protection zone concept at the boundaries from $0_A$ – 2 and higher

Figure without obligation



Basic circuit diagram BXT ML4 BE 24




Dimension drawing BXT ML4 BE 24

Space-saving combined lightning current and surge arrester module with LifeCheck feature for protecting four single lines sharing a common reference potential as well as unbalanced interfaces. If LifeCheck detects thermal or electrical overload, the arrester has to be replaced. This status is indicated contactlessly by the DEHNrecord LC / SCM / MCM reader.

| Type<br>Part No. | BXT ML4 BE 24<br>920 324 |
|---|---|
| SPD monitoring system | LifeCheck |
| SPD class | TYPE 1 P1 |
| Nominal voltage ($U_N$) | 24 V |
| Max. continuous operating voltage (d.c.) ($U_C$) | 33 V |
| Max. continuous operating voltage (a.c.) ($U_C$) | 23.3 V |
| Nominal current at 45 °C ($I_L$) | 0.75 A |
| 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 $I_{imp}$ D1 ($U_p$) | ≤ 102 V |
| Voltage protection level line-PG for $I_{imp}$ D1 ($U_p$) | ≤ 66 V |
| Voltage protection level line-line at 1 kV/µs C3 ($U_p$) | ≤ 90 V |
| Voltage protection level line-PG at 1 kV/µs C3 ($U_p$) | ≤ 45 V |
| Series resistance per line | 1.8 ohm(s) |
| Cut-off frequency line-PG ($f_G$) | 6.8 MHz |
| Capacitance line-line (C) | ≤ 0.5 nF |
| Capacitance line-PG (C) | ≤ 1.0 nF |
| Operating temperature range ($T_U$) | -40 °C ... +80 °C |
| Degree of protection (with plugged-in protection module) | 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 |
| Approvals | CSA, UL, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL |
| SIL classification | up to SIL3 *) |
| ATEX approvals | DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc |
| IECEx approvals | DEK 11.0032X: Ex nA IIC T4 Gc |
| CSA & USA Hazloc approvals (1) | 2516389: Class I Div. 2 GP A, B, C, D T4 |
| CSA & USA Hazloc approvals (2) | 2516389: Class I Zone 2, AEx nA IIC T4 |
| Weight | 38 g |
| Customs tariff number (Comb. Nomenclature EU) | 85363010 |
| GTIN | 4013364109056 |
| PU | 1 pc(s) |

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

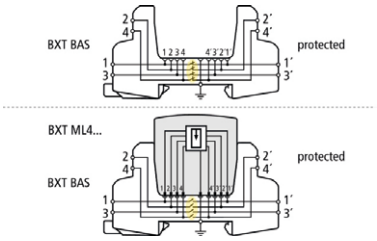
  

## BLITZDUCTOR XT

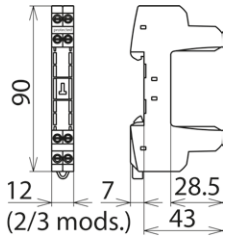
# BXT BAS (920 300)

- 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 an extremely space-saving and universal four-pole feed-through terminal for the insertion of a protection module without signal disconnection 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, maintenance is only required for the protection modules.

| Type<br>Part No. | BXT BAS<br>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, UL, EAC, ATEX, IECEx *) |
| Weight | 34 g |
| Customs tariff number (Comb. Nomenclature EU) | 85369010 |
| GTIN | 4013364109179 |
| PU | 1 pc(s) |

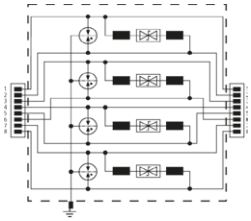
*) only in connection with an approved protection module

## DEHNpatch

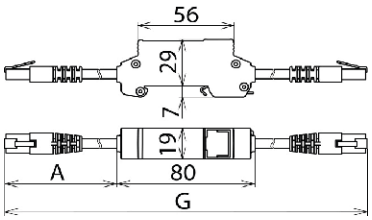
# DPA M CAT6 RJ45S 48 (929 100)

- Ideally suited for retrofitting, protection of all lines
- CAT 6A in the channel according to ANSI/TIA/EIA-568
- Power over Ethernet IEEE 802.3 compliant (up to PoE++ / 4PPoE)
- For installation in conformity with the lightning protection zone concept at the boundaries from $0_B$ –2 and higher

Figure without obligation



Basic circuit diagram DPA M CAT6 RJ45S 48




Dimension drawing DPA M CAT6 RJ45S 48

Universal arrester for Industrial Ethernet, Power over Ethernet (IEEE 802.3 compliant up to PoE++ / 4PPoE) and similar applications in structured cabling systems according to Cat. 6 and class $E_A$ up to 500 MHz. Fully shielded type for DIN rail mounting.

| Type<br>Part No. | DPA M CAT6 RJ45S 48<br>929 100 |
|---|---|
| SPD class | TYPE 2 P1 |
| Nominal voltage ($U_N$) | 48 V |
| Max. continuous operating voltage (d.c.) ($U_c$) | 48 V |
| Max. continuous operating voltage (a.c.) ($U_c$) | 34 V |
| Max. continuous operating voltage (d.c.) pair-pair (PoE) ($U_c$) | 57 V |
| Nominal current ($I_L$) | 1 A |
| D1 Lightning impulse current (10/350 µs) per line ($I_{imp}$) | 1 kA |
| C2 Nominal discharge current (8/20 µs) line-line ($I_n$) | 150 A |
| C2 Nominal discharge current (8/20 µs) line-PG ($I_n$) | 2.5 kA |
| C2 Nominal discharge current (8/20 µs) total ($I_n$) | 10 kA |
| C2 Nominal discharge current (8/20 µs) pair-pair (PoE) ($I_n$) | 150 A |
| Voltage protection level line-line for $I_n$ C2 ($U_P$) | ≤ 190 V |
| Voltage protection level line-PG for $I_n$ C2 ($U_P$) | ≤ 600 V |
| Voltage protection level line-line for $I_n$ C2 (PoE) ($U_P$) | ≤ 600 V |
| Voltage protection level line-line at 1 kV/µs C3 ($U_P$) | ≤ 145 V |
| Voltage protection level line-PG at 1 kV/µs C3 ($U_P$) | ≤ 500 V |
| Voltage protection level pair-pair at 1 kV/µs C3 (PoE) ($U_P$) | ≤ 600 V |
| Cut-off frequency ($f_G$) | 250 MHz |
| Insertion loss at 250 MHz | ≤ 2 dB |
| Capacitance line-line (C) | ≤ 165 pF |
| Capacitance line-PG (C) | ≤ 255 pF |
| Operating temperature range ($T_U$) | -20 °C ... +60 °C |
| Degree of protection | IP 20 |
| For mounting on | 35 mm DIN rails acc. to EN 60715 |
| Connection (input / output) | RJ45 connecting line / RJ45 connecting line |
| Pinning | 1/2, 3/6, 4/5, 7/8 |
| Connecting line | A = approx. 0.5 m, G = approx. 3 m |
| Connector | Stewart 39 series |
| Earthing via | 35 mm DIN rail acc. to EN 60715 |
| Enclosure material | zinc die-casting |
| Colour | bare surface |
| Test standards | IEC 61643-21 / EN 61643-21 |
| Approvals | GHMT, EAC |
| Transmission class according to ISO/IEC 11801 | Cat. 6 |
| Transmission class according to EN 50173-1 | Class $E_A$ |
| Transmission class according to ANSI/TIA/EIA-568 | cat. 6A in the channel |
| External accessories | fixing material |
| Weight | 244 g |
| Customs tariff number (Comb. Nomenclature EU) | 85363010 |
| GTIN | 4013364102170 |
| PU | 1 pc(s) |

www.dehn-international.com/partners

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

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