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Surge protective circuit for a lift

# Surge protection for lifts

### **White Paper**



Lifts are used to transport people and goods in private and commercial buildings. Hydraulic lifts are frequently used for low lifting heights instead of counterbalanced cable lifts. The speed of passenger lifts starts at about 1 m/s and increases depending on the building (medium-sized buildings/multi-storey buildings up to 8 m/s and skyscrapers up to 17 m/s). Goods lifts have transportation capacities of up to 5 tonnes.

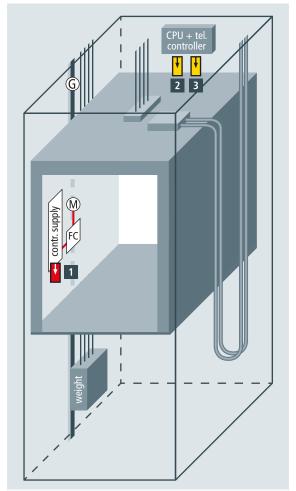
Lifts fulfil several functions such as:

- Smooth starting and stopping controlled by a frequency converter
- Traffic optimisation measures (e.g. no stop in case of full load, priority rides, behaviour of lifts in case of fire)
- Energy saving functions which switch off the cabin lighting and ventilator when the lift is empty or immobile
- Power input function (the kinetic energy generated by goods transport to the ground floor and empty rides to the top floors is fed into the grid)

These functions require highly sensitive electronic systems.

Lift manufacturers take various measures to reduce injection into the lift cabling/technology to an acceptable level. However, whether a metal and, therefore, shielding distribution board, the type of cable or the way cables are routed, these measures cannot prevent conducted transient overvoltages from damaging the lift.

The peripheral units of lifts such as floor panels or floor displays are connected to prewired plug-in connecting cables. Thus, surge protective devices are only required for the mains connection, the telephone line and, if there is one, the fire alarm system (**Figure 1**).



	Туре	Info	Part No.
1	DG M TT 275		952 310
2	BXT ML2 BD 180 + BXT BAS	earthing 6 mm <sup>2</sup> Cu (telephone controller)	920 247 + 920 300
3	BXT ML2 BE S 24 + BXT BAS	earthing 6 mm <sup>2</sup> Cu (fire control panel)	920 224 + 920 300

Figure 1 Surge protective circuit for a lift

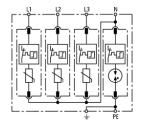
## White Paper: Surge protection for lifts

## **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





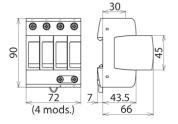


Figure without obligation

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).

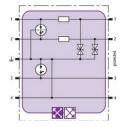
Modular surge arrester for use in TT and TN-S systems (3+1 configuration	
Type Part No.	DG M TT 275 952 310
<b>Part No.</b> SPD according to EN 61643-11 / IEC 61643-11	type 2 / class II
Energy coordination with terminal equipment (≤ 10 m)	type 2 + type 3
Nominal voltage (a.c.) (U <sub>N</sub> )	230 / 400 V (50 / 60 Hz)
Max. continuous operating voltage (a.c.) [L-N] (U <sub>c</sub> )	275 V (50 / 60 Hz)
Max. continuous operating voltage (a.c.) [N-PE] (U <sub>C</sub> )	255 V (50 / 60 Hz)
Nominal discharge current (8/20 µs) (I <sub>n</sub> )	20 kA
Max. discharge current (8/20 µs) (I <sub>max</sub> )	40 kA
Lightning impulse current (10/350 µs) [N-PE] (I <sub>imp</sub> )	12 kA
Voltage protection level [L-N]/[N-PE] (U <sub>P</sub> )	≤ 1.5 / ≤ 1.5 kV
Voltage protection level [L-N] / [N-PE] at 5 kA (U <sub>P</sub> )	≤ 1 / ≤ 1.5 kV
Follow current extinguishing capability [N-PE] (I <sub>fi</sub> )	100 A <sub>ms</sub>
Response time [L-N] (t <sub>A</sub> )	≤ 25 ns
Response time [N-PE] (t <sub>A</sub> )	≤ 100 ns
Max. mains-side overcurrent protection	125 A gG
Short-circuit withstand capability for max. mains-side overcurrent protection (I <sub>SCCR</sub> )	50 kA <sub>rms</sub>
Temporary overvoltage (TOV) [L-N] (U <sub>T</sub> ) – Characteristic	335 V / 5 sec. – withstand
Temporary overvoltage (TOV) [L-N] (U <sub>T</sub> ) – Characteristic	440 V / 120 min. – safe failure
Temporary overvoltage (TOV) [N-PE] (U <sub>T</sub> ) – Characteristic	1200 V / 200 ms – withstand
Operating temperature range (T <sub>II</sub> )	-40 °C +80 °C
Operating state / fault indication	green / red
Number of ports	1
Cross-sectional area (min.)	1.5 mm <sup>2</sup> solid / flexible
Cross-sectional area (max.)	35 mm <sup>2</sup> stranded / 25 mm <sup>2</sup> 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 <sub>P</sub> )	1.5 kV
Weight	405 g
Customs tariff number (Comb. Nomenclature EU)	85363030
GTIN	4013364108479
PU	1 pc(s)

### **BLITZDUCTOR XT**

## **BXT ML2 BE S 24 (920 224)**

- LifeCheck SPD monitoring function
- Optimal protection of two single lines and the cable shield
- For use in conformity with the lightning protection zone concept at the boundaries from 0<sub>A</sub> –2 and higher





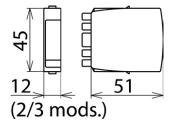


Figure without obligation

Basic circuit diagram BXT ML2 BE S 24

Dimension drawing BXT ML2 BE S 24

Space-saving combined lightning current and surge arrester module with LifeCheck feature for protecting two single lines sharing a common reference potential as well as unbalanced interfaces, 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.

Туре	BXT ML2 BE S 24
Part No.	920 224
SPD monitoring system	LifeCheck
SPD class	TYPE 1 PT
Nominal voltage (U <sub>N</sub> )	24 V
Max. continuous operating voltage (d.c.) (U <sub>c</sub> )	33 V
Max. continuous operating voltage (a.c.) (U <sub>c</sub> )	23.3 V
Nominal current at 45 °C (I <sub>L</sub> )	0.75 A
D1 Total lightning impulse current (10/350 µs) (I <sub>imp</sub> )	9 kA
D1 Lightning impulse current (10/350 μs) per line (I <sub>imp</sub> )	2.5 kA
C2 Total nominal discharge current (8/20 µs) (In)	20 kA
C2 Nominal discharge current (8/20 µs) per line (In)	10 kA
Voltage protection level line-line for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 102 V
Voltage protection level line-PG for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 66 V
Voltage protection level line-line at 1 kV/µs C3 (Up)	≤ 90 V
Voltage protection level line-PG at 1 kV/µs C3 (Up)	≤ 45 V
Series resistance per line	1.8 ohm(s)
Cut-off frequency line-PG (f <sub>G</sub> )	6.8 MHz
Capacitance line-line (C)	≤ 0.5 nF
Capacitance line-PG (C)	≤ 1.0 nF
Operating temperature range (T <sub>U</sub> )	-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, 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	37 g
Customs tariff number (Comb. Nomenclature EU)	85363010
IN 4013364117785	
PU	1 pc(s)

<sup>\*)</sup>For more detailed information, please visit www.dehn-international.com.

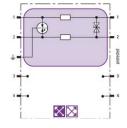
## White Paper: Surge protection for lifts

### **BLITZDUCTOR XT**

# **BXT ML2 BD 180 (920 247)**

- LifeCheck SPD monitoring function
- Optimal protection of one pair
- For installation in conformity with the lightning protection zone concept at the boundaries from 0<sub>A</sub>-2 and higher





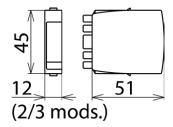


Figure without obligation

Basic circuit diagram BXT ML2 BD 180

Dimension drawing BXT ML2 BD 180

Space-saving combined lightning current and surge arrester module with LifeCheck feature for protecting one pair of unearthed balanced 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.

Pyer         Description           SPD monitoring system         LifeCheek           SPD class         ■■■           Nominal voltage (U <sub>n</sub> )         180 V           Max. continuous operating voltage (d.c.) (U <sub>c</sub> )         180 V           Max. continuous operating voltage (d.c.) (U <sub>c</sub> )         127 V           Nominal current at 45 °C (L)         0.75 A           D1 Total lightning impulse current (10/350 µs) (I <sub>lim</sub> )         5 kA           D1 Lightning impulse current (10/350 µs) per line (I <sub>lim</sub> )         2.5 kA           C2 Total nominal discharge current (10/250 µs) per line (I <sub>lim</sub> )         2.5 kA           C2 Total nominal discharge current (8/20 µs) per line (I <sub>lim</sub> )         4.0 kA           C2 Nominal discharge current (8/20 µs) per line (I <sub>lim</sub> )         5 kA           C2 Nominal discharge current (8/20 µs) per line (I <sub>lim</sub> )         4.0 kA           C2 Nominal discharge current (8/20 µs) per line (I <sub>lim</sub> )         5 50 V           Voltage protection level line-line for I <sub>lim</sub> D1 (U <sub>s</sub> )         4 270 V           Voltage protection level line-line for I <sub>lim</sub> D1 (U <sub>s</sub> )         4 250 V           Voltage protection level line-line for I <sub>lim</sub> D1 (U <sub>s</sub> )         4 250 V           Voltage protection level line-line (G)         5 km/s           Capacitance line-PG (T <sub>s</sub> )         4 10 m/s           Capacitance line-PG (L <sub>s</sub> )         5 km/	WOW reader.	
SPD class         Image:           Nominal voltage (l/n)         180 V           Max. continuous operating voltage (d.c.) (l/c)         180 V           Max. continuous operating voltage (d.c.) (l/c)         180 V           Max. continuous operating voltage (d.c.) (l/c)         127 V           Max. continuous operating voltage (d.c.) (l/c)         0.75 A           D1 Total lightning impulse current (10/350 µs) (l/m)         5 KA           D1 Lightning impulse current (10/350 µs) (l/m)         2.5 KA           D1 Lightning impulse current (10/350 µs) per line (l/m)         2.5 KA           C2 Total nominal discharge current (8/20 µs) per line (l/m)         10 KA           C2 Total nominal discharge current (8/20 µs) per line (l/m)         10 KA           Voltage protection level line-fine for l/m, D1 (l/m)         5 550 V           Voltage protection level line-fine for l/m, D1 (l/m)         5 550 V           Voltage protection level line-fine at 1 kV/µs C3 (l/m)         5 550 V           Voltage protection level line-fine at 1 kV/µs C3 (l/m)         5 550 V           Voltage protection level line-fine at 1 kV/µs C3 (l/m)         5 550 V           Cut-off frequency line-line (l/m)         2 5 MHz           Capacitance line-Fine (l/m)         2 5 MHz           Capacitance line-Fine (l/m)         3 FM SA / BSP BAS 4 base part           Eli	Type	BXT ML2 BD 180
SPD class         Marilla Voltage (Nn)         180 V           Naminal Voltage (Nn)         180 V           Max. continuous operating voltage (a.c.) (Uc)         127 V           Nominal current at 45 °C (In)         0.75 A           On Total lightning impulse current (10/350 µs) (Imp)         5 KA           D1 Lightning impulse current (10/350 µs) per line (Imp)         2.5 kA           C2 Total nominal discharge current (8/20 µs) (Imp)         2.5 kA           C2 Total nominal discharge current (8/20 µs) (Imp)         10 kA           C4 Total profit and indextarge current (8/20 µs) (Imp)         2.5 kA           C2 Total nominal discharge current (8/20 µs) (Imp)         2.0 kA           C2 Total nominal discharge current (8/20 µs) (Imp)         2.0 kA           C4 Total profit and Indextarge current (8/20 µs) (Imp)         2.0 kA           Voltage protection level line-line for Imp (In)         3.2 kTO           Voltage protection level line-line at 1 kV/µs C3 (Up)         2.550 V           Voltage protection level line-line at 1 kV/µs C3 (Up)         2.550 V           Voltage protection level line-line at 1 kV/µs C3 (Up)         2.550 V           Voltage protection level line-line at 1 kV/µs C3 (Up)         2.550 V           Voltage protection level line-line at 1 kV/µs C3 (Up)         2.550 V           Voltage protection level line-line for Imp (Imp (Imp (Im		
Nominal voltage (U <sub>1</sub> )         180 V           Max. continuous operating voltage (a.c.) (U <sub>2</sub> )         180 V           Max. continuous operating voltage (a.c.) (U <sub>2</sub> )         127 V           Nominal current at 45 °C (I <sub>1</sub> )         0.75 A           D1 Total lightning impulse current (107350 µs) (I <sub>min</sub> )         5 kA           D1 Lightning impulse current (107350 µs) per line (I <sub>min</sub> )         2.5 kA           C2 Total nominal discharge current (8/20 µs) per line (I <sub>1</sub> )         10 kA           C2 Nominal discharge current (8/20 µs) per line (I <sub>1</sub> )         10 kA           Voltage protection level line-line for I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 270 V           Voltage protection level line-line for I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-PG of I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-PG of I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-PG of I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-PG of I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-PG of I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-PG of I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-PG of I <sub>min</sub> D1 (U <sub>2</sub> )         ≤ 250 V           Voltage protection level line-PG of I k1 k1/µ (U <sub>2</sub> )         ≤ 18		
Max. continuous operating voltage (a.c.) (U <sub>c</sub> )         180 V           Max. continuous operating voltage (a.c.) (U <sub>c</sub> )         127 V           Nominal current at 45 °C (I <sub>c</sub> )         0.75 A           D1 Total lightning impulse current (10/350 µs) (I <sub>ma</sub> )         5 kA           D1 Lightning impulse current (10/350 µs) per line (I <sub>ma</sub> )         2.5 kA           C2 Total nominal discharge current (8/20 µs) (I <sub>m</sub> )         10 kA           Voltage protection level line-line for I <sub>ma</sub> D1 (U <sub>n</sub> )         ≤ 270 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Voltage protection level line-PG at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Voltage protection level line-PG at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Voltage protection level line-PG at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Voltage protection level line-PG at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Voltage protection level line-PG at 1 kV/µs C3 (U <sub>n</sub> )         ≤ 550 V           Series resistance per line         1 8 ohm(s)           Cut-off frequency line-line (f <sub>0</sub> )         2 5 ohm tz           Capacitance line-line (f <sub>0</sub> )         5 16 pF           Operating temperature range (T <sub>0</sub> )		
Max. continuous operating voltage (a.c.) (U <sub>C</sub> )         127 V           Nominal current at 45 °C (U <sub>C</sub> )         0.75 A           D1 Total lightning impulse current (10/350 µs) (m <sub>m</sub> )         5 kA           D1 Lightning impulse current (10/350 µs) per line (U <sub>m</sub> )         2.5 kA           C2 Total nominal discharge current (8/20 µs) (I <sub>C</sub> )         20 kA           C2 Nominal discharge current (8/20 µs) per line (I <sub>m</sub> )         10 kA           Voltage protection level line-line for I <sub>m</sub> , D1 (U <sub>D</sub> )         ≤ 270 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>I</sub> )         ≤ 250 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>I</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 V           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 W           Voltage protection level line-line (I <sub>C</sub> )         ≤ 250 W           Series resistance per line         1.8 o hm(s) <td< td=""><td>- · · · · · · · · · · · · · · · · · · ·</td><td></td></td<>	- · · · · · · · · · · · · · · · · · · ·	
Nominal current at 45 °C (l₁)         0.75 A           D1 Total lighthing impulse current (10/350 μs) (l₂, l₂)         5 kA           D1 Total lighthing impulse current (10/350 μs) per line (l₂, l₂)         2.5 kA           C2 Total nominal discharge current (8/20 μs) per line (l₂, l₂)         20 kA           C2 Nominal discharge current (8/20 μs) per line (l₂, l₂)         10 kA           Voltage protection level line-line for l₂, D1 (U₂)         5 270 V           Voltage protection level line-line for l₂, D1 (U₂)         5 550 V           Voltage protection level line-line at 1 kV/µs C3 (U₂)         5 550 V           Voltage protection level line-line at 1 kV/µs C3 (U₂)         5 550 V           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (f₂)         2 5.0 MHz           Capacitance line-line (f₂)         2 5.0 MHz           Capacitance line-line (f₂)         4 16 pF           Capacitance line-line (f₂)         5 16 pF           Operating temperature range (T₂)         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		
D1 Total lightning impulse current (10/350 µs) (Imp)         5 kA           D1 Lightning impulse current (10/350 µs) per line (Imp)         2.5 kA           C2 Total nominal discharge current (8/20 µs) (Imp)         20 kA           C2 Nominal discharge current (8/20 µs) (Imp)         10 kA           Voltage protection level line-line for Imp D1 (Up)         ≤ 270 V           Voltage protection level line-line at 1 kV/ys C3 (Up)         ≤ 550 V           Voltage protection level line-line at 1 kV/ys C3 (Up)         ≤ 550 V           Voltage protection level line-line at 1 kV/ys C3 (Up)         ≤ 550 V           Voltage protection level line-line (Follow (Protection level line-line (Follow (		
D1 Lightning impulse current (10/350 μs) per line (l <sub>mp</sub> )         2.5 kA           C2 Total nominal discharge current (8/20 μs) (l₁)         20 kA           C2 Nominal discharge current (8/20 μs) per line (l₂)         10 kA           Voltage protection level line-line for l <sub>mp</sub> D1 (l₂)         ≤ 270 v           Voltage protection level line-line for l <sub>mp</sub> D1 (l₂)         ≤ 550 v           Voltage protection level line-line at 1 kV/μs C3 (l₂)         ≤ 250 v           Voltage protection level line-line (at 1 kV/μs C3 (l₂)         ≤ 250 v           Voltage protection level line-line (at 1 kV/μs C3 (l₂)         ≤ 250 v           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (b₁)         25.0 MHz           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-line (C)         ≤ 16 pF           Operating temperature range (T₁)         40 °C 480 °C           Degree of protection (with plugged-in protection module)         BXT BAS / BSP BAS 4 base part           Earthing via         BXT BAS / BSP BAS 4 base part           Earthing via         BXT BAS / BSP BAS 4 base part           Enclosure material         polyamide PA 6.6           Colour         yellow           Est standards         IEC 61643-21 / EN 61643-21, UL 4978           Approvals         CSA, EAC, ATEX, IECEX, CS	1.5	
C2 Total nominal discharge current (8/20 µs) (ln)         20 kA           C2 Nominal discharge current (8/20 µs) per line (ln)         10 kA           Voltage protection level line-line for lnm D1 (Up)         ≤ 270 V           Voltage protection level line-line for lnm D1 (Up)         ≤ 550 V           Voltage protection level line-PG for Lm D1 (Vp)         ≤ 250 V           Voltage protection level line-PG at 1 kV/µs C3 (Up)         ≤ 250 V           Voltage protection level line-PG at 1 kV/µs C3 (Up)         ≤ 250 V           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (fc)         ≤ 240 pF           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-line (C)         ≤ 16 pF           Operating temperature range (Tu)         4.0 °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 / LU 497B           Approvals         CSA, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL           EIL classification         pt SIL 10,032X: Ex nA IIC T4 Gc		
C2 Nominal discharge current (8/20 µs) per line (In,)         10 kA           Voltage protection level line-line for Inmp D1 (Up)         ≤ 270 V           Voltage protection level line-PG for Imp D1 (Up)         ≤ 550 V           Voltage protection level line-PG for Imp D1 (Up)         ≤ 550 V           Voltage protection level line-PG for 1 kV/µs C3 (Up)         ≤ 550 V           Voltage protection level line-PG at 1 kV/µs C3 (Up)         ≤ 550 V           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (fo)         25.0 MHz           Capacitance line-PG (C)         ≤ 16 pF           Operating temperature range (Tu)         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 / LU 497B           Approvals         CSA, EAC, ATEX, IECEX, CSA & USA Hazloc, SIL           SIL classification         µ to SIL 3°           ATEX approvals         DEKRA 11ATEX.0089 X: II 3 G Ex nA IIC T4 Gc           IECEx approvals         DEKRA 11ATEX.0089 X: II 3 G Ex nA IIC T4 Gc		
Voltage protection level line-line for l <sub>mp</sub> D1 (U <sub>p</sub> )         ≤ 270 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>p</sub> )         ≤ 550 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>p</sub> )         ≤ 250 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>p</sub> )         ≤ 550 V           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (f <sub>o</sub> )         25.0 MHz           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-PG (C)         ≤ 16 pF           Operating temperature range (T <sub>u</sub> )         -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, 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	C2 Total nominal discharge current (8/20 µs) (I <sub>n</sub> )	20 kA
Voltage protection level line-PG for line D1 (U <sub>2</sub> )         ≤ 550 V           Voltage protection level line-line at 1 kV/µs C3 (U <sub>p</sub> )         ≤ 250 V           Voltage protection level line-PG at 1 kV/µs C3 (U <sub>p</sub> )         ≤ 550 V           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (f <sub>c</sub> )         25.0 MHz           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-PG (C)         ≤ 16 pF           Operating temperature range (T <sub>0</sub> )         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 / IEN 61643-21, ILL 497B           Approvals         CSA, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL           SIL classification         up to SIL 3°           ATEX approvals         DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc           IECEx approvals         DEKRA 11ATEX0089 X: II 3 G 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 Div. 2 GP A, B, C, D T4	C2 Nominal discharge current (8/20 μs) per line (I <sub>n</sub> )	10 kA
Voltage protection level line-line at 1 kV/µs C3 (Up)         ≤ 250 V           Voltage protection level line-PG at 1 kV/µs C3 (Up)         ≤ 550 V           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (fo)         25.0 MHz           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-PG (C)         ≤ 18 pF           Operating temperature range (Tu)         -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, 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         DEKRA 11ATEX0089 X: II 3 G 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         43 g           Customs tariff number (Comb. Nom	Voltage protection level line-line for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 270 V
Voltage protection level line-PG at 1 kV/µs C3 (U₂)         ≤ 550 V           Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (f₀)         25.0 MHz           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-PG CP (C)         ≤ 16 pF           Operating temperature range (Tu)         -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, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL           SIL classification         up to SIL3 *0           ATEX approvals         DEK 11.0032X: Ex nA IIC T4 Gc           IEC & approvals         DEK 11.0032X: Ex nA IIC T4 Gc           CSA & USA Hazloc approvals (1)         2516389: Class I Div. 2 GPA, B, C, D T4           CSA & USA Hazloc approvals (2)         2516389: Class I Div. 2 GPA, B, C, D T4           CSA & USA Hazloc approvals (3)         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078 </td <td>Voltage protection level line-PG for I<sub>imp</sub> D1 (U<sub>p</sub>)</td> <td>≤ 550 V</td>	Voltage protection level line-PG for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 550 V
Series resistance per line         1.8 ohm(s)           Cut-off frequency line-line (f₀)         25.0 MHz           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-PG (C)         ≤ 16 pF           Operating temperature range (T₀)         -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, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL           SIL classification         up to SIL3 **           ATEX approvals         DEKRA 11ATEX/0899 X: II 3 GE xn A IIC T4 Gc           IECEx approvals         DEKRA 11ATEX/0899 X: II 3 GE xn A 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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	Voltage protection level line-line at 1 kV/µs C3 (Up)	≤ 250 V
Cut-off frequency line-line (fc)         25.0 MHz           Capacitance line-line (C)         ≤ 240 pF           Capacitance line-PG (C)         ≤ 16 pF           Operating temperature range (Tu)         -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, EAC, ATEX, IECEX, CSA & USA Hazloc, SIL           SIL classification         up to SIL3 *¹           ATEX approvals         DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc           IECE x approvals         DEK 11.0032X: Ex nA IIC T4 Gc           IECX & 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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	Voltage protection level line-PG at 1 kV/µs C3 (Up)	≤ 550 V
Capacitance line-line (C)         ≤ 240 pF           Capacitance line-PG (C)         ≤ 16 pF           Operating temperature range (Tu)         -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, 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           IECEx 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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	Series resistance per line	1.8 ohm(s)
Capacitance line-PG (C)         ≤ 16 pF           Operating temperature range (Tu)         -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, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL           SIL classification         up to SIL3 *¹           ATEX approvals         DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc           IECEx approvals         DEKRA 11ATEX0089 X: II 3 G 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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	Cut-off frequency line-line (f <sub>G</sub> )	25.0 MHz
Operating temperature range (Tu) Degree of protection (with plugged-in protection module) 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, 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) CSA & USA Hazloc approvals (2) 2516389: Class I Div. 2 GP A, B, C, D T4 Weight 43 g Customs tariff number (Comb. Nomenclature EU) 85363010 GTIN 4013364116078	Capacitance line-line (C)	≤ 240 pF
Degree of protection (with plugged-in protection module)  Pluggable into  BXT BAS / BSP BAS 4 base part  Earthing via  BXT BAS / BSP BAS 4 base part  Enclosure material  Colour  yellow  Test standards  Approvals  CSA, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL  SIL classification  ATEX approvals  DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc  IECEx approvals  DEKRA 11AZIOC approvals (1)  CSA & USA Hazloc approvals (2)  DEKRA 143 g  Customs tariff number (Comb. Nomenclature EU)  BXT BAS / BSP BAS 4 base part  BXT BAS / BST B	Capacitance line-PG (C)	≤ 16 pF
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, 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)  CSA & USA Hazloc approvals (2)  2516389: Class I Div. 2 GP A, B, C, D T4  Weight  43 g  Customs tariff number (Comb. Nomenclature EU)  85363010  GTIN  4013364116078	Operating temperature range (T <sub>U</sub> )	-40 °C +80 °C
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, 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 43 g  Customs tariff number (Comb. Nomenclature EU) 85363010  GTIN 4013364116078	Degree of protection (with plugged-in protection module)	IP 20
Enclosure material polyamide PA 6.6  Colour yellow  Test standards IEC 61643-21 / EN 61643-21, UL 497B  Approvals CSA, 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 43 g  Customs tariff number (Comb. Nomenclature EU) 85363010  GTIN 4013364116078	Pluggable into	BXT BAS / BSP BAS 4 base part
Colour         yellow           Test standards         IEC 61643-21 / EN 61643-21, UL 497B           Approvals         CSA, 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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	Earthing via	BXT BAS / BSP BAS 4 base part
Test standards         IEC 61643-21 / EN 61643-21, UL 497B           Approvals         CSA, 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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	Enclosure material	polyamide PA 6.6
Approvals  CSA, 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)  CSA & USA Hazloc approvals (2)  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  43 g  Customs tariff number (Comb. Nomenclature EU)  85363010  GTIN  4013364116078	Colour	yellow
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 43 g  Customs tariff number (Comb. Nomenclature EU) 85363010  GTIN 4013364116078	Test standards	IEC 61643-21 / EN 61643-21, UL 497B
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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	Approvals	CSA, EAC, ATEX, IECEx, CSA & USA Hazloc, SIL
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         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	SIL classification	up to SIL3 *)
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       43 g         Customs tariff number (Comb. Nomenclature EU)       85363010         GTIN       4013364116078	ATEX approvals	DEKRA 11ATEX0089 X: II 3 G Ex nA IIC T4 Gc
CSA & USA Hazloc approvals (2)  Weight Customs tariff number (Comb. Nomenclature EU)  GTIN  2516389: Class I Zone 2, AEx nA IIC T4  43 g  85363010  4013364116078	IECEx approvals	DEK 11.0032X: Ex nA IIC T4 Gc
Weight         43 g           Customs tariff number (Comb. Nomenclature EU)         85363010           GTIN         4013364116078	CSA & USA Hazloc approvals (1)	2516389: Class I Div. 2 GP A, B, C, D T4
Customs tariff number (Comb. Nomenclature EU) 85363010 GTIN 4013364116078	CSA & USA Hazloc approvals (2)	2516389: Class I Zone 2, AEx nA IIC T4
GTIN 4013364116078	Weight	43 g
	Customs tariff number (Comb. Nomenclature EU)	85363010
PU 1 pc(s)	GTIN	4013364116078
	PU	1 pc(s)

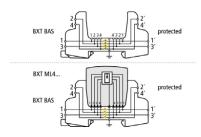
 $<sup>^{\</sup>star)}$  For more detailed information, please visit www.dehn-international.com.

### **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





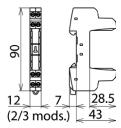


Figure without obligation

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 Part No.	BXT BAS 920 300
Operating temperature range (T <sub>U</sub> )	-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 <sup>2</sup>
Cross-sectional area, flexible	0.08-2.5 mm <sup>2</sup>
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)

 $<sup>^{\</sup>star)}$  only in connection with an approved protection module

Surge Protection
Lightning Protection
Safety Equipment
DEHN protects.

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