

- Maximum degree of protection by installation in the cable run
- For all field devices with suitable cable gland
- Two-part design for easy installation
- ATEX, FISCO, IECEx approval



Surge arrester for outdoor use to be screwed onto two-wire field devices. Stainless steel, installation up to a degree of protection of IP 67.

DEHNpipe is made of corrosion-resistant stainless steel and is screwed onto the field device instead of the conventional cable gland. The permanently connected lines are then connected to the terminals of the field device. Thus, the protective components are directly situated in the cable run, allowing energy-coordinated surge protection. The arrester protects

the inside of the field device against dangerous surges with the interfering impulses being discharged via the metal enclosure only and not via the inside of the field device. DEHNpipe MD Ex (i) can be either used in Ex zone 1 or 2.



IECEx approval for DPI MD EX \*)



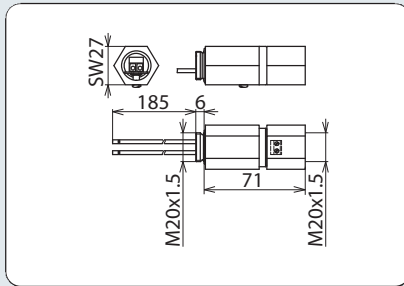
ATEX approval for DPI MD EX \*)



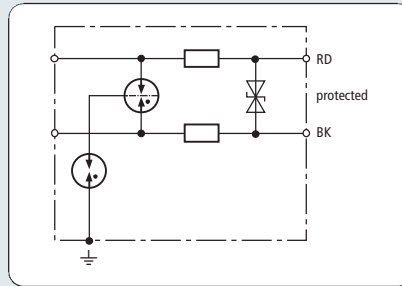
\*) The certificates can be downloaded at www.dehn.de



SPDs for Use in Potentially Explosive Atmospheres



Dimension drawing DPI MD EX



Basic circuit diagram DPI MD EX



Energy-coordinated two-stage surge arrester with low-capacitance protective circuit for protecting intrinsically safe measuring circuits and bus systems, meets FISCO requirements. Insulation strength > 500 V to earth. Cable glands must be ordered separately.

- Two-part design for easy installation
- Self-capacitance and self-inductance negligibly small
- For installation in conformity with the lightning protection zones concept at the boundaries from  $O_B - 2$  and higher

Type	DPI MD EX 24 M 2
Part No.	929 960
SPD class	TYPE 2 P1
Nominal voltage ( $U_N$ )	24 V
Max. continuous operating d.c. voltage ( $U_C$ )	34.8 V
Max. continuous operating a.c. voltage ( $U_C$ )	24.5 V
Max. input voltage acc. to EN 60079-11 ( $U_i$ )	30 V
Max. input current acc. to EN 60079-11 ( $I_i$ )	0.5 A
Nominal current ( $I_n$ )	0.5 A
D1 Lightning impulse current (10/350 $\mu$ s) per line ( $I_{imp}$ )	1 kA
C2 Total nominal discharge current (8/20 $\mu$ s) ( $I_n$ )	10 kA
C2 Nominal discharge current (8/20 $\mu$ s) per line ( $I_n$ )	5 kA
Voltage protection level line-line for $I_n$ C2 ( $U_p$ )	$\leq 55$ V
Voltage protection level line-PG for $I_n$ C2 ( $U_p$ )	$\leq 1100$ V
Voltage protection level line-line at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 49$ V
Voltage protection level line-PG at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 1000$ V
Series impedance per line	1.8 ohms
Cut-off frequency line-line ( $f_c$ )	7 MHz
Capacitance line-line (C)	$\leq 850$ pF
Capacitance line-PG (C)	$\leq 15$ pF
Operating temperature range	-40°C...+80°C
Degree of protection	IP 67
For mounting on (field/device side)	M20 x 1.5 female thread / M20 x 1.5 male thread
Connection (input/output)	screw / connecting leads (1.5 mm <sup>2</sup> )
Length of the connecting lead	200 mm
Cross-sectional area, solid	0.08 - 2.5 mm <sup>2</sup>
Cross-sectional area, flexible	0.08 - 1.5 mm <sup>2</sup>
Earthing via	enclosure
Enclosure material	V2A
Colour	bare surface
Test standards	IEC 61643-21 / EN 61643-21
SIL classification	SIL2 / SIL3 *)
ATEX approvals	DEKRA 11ATEX0076 X: II 2 (1) G Ex ia [ia Ga] IIC T4 ... T6 Gb
IECEx approvals	DEK 11.0025X: Ex ia [ia Ga] IIC T4 ... T6 Gb
Approvals	GOST

\*) For more detailed information please refer to [www.dehn.de/en/sil/](http://www.dehn.de/en/sil/)

Accessory for DEHNpipe MD Ex (i)

Cable Gland

Brass gland without shield connection

Type	KV M20 MS 10.5
Part No.	929 984
Sealing range	7.0 - 10.5 mm



Accessory for DEHNpipe MD Ex (i)

EMC Cable Gland

Brass gland with shield connection

Type	KV S M20 MS 9.5
Part No.	929 982
Sealing range	6.5 - 9.5 mm



## Surge arrester

SPDs for Use in Potentially Explosive Atmospheres



Surge arrester for outdoor use to be screwed onto two-wire field devices. Stainless steel, installation up to a degree of protection IP 67.

DEHNpipe C is made of corrosion-resistant stainless steel and is screwed directly onto the field device. Like a field cable, the permanently connected lines are connected to the terminals of the field device. Thus, the protective components are situated in parallel to the cable run. DEHNpipe C can be easily connected to metal or plastic enclosures as the earth wire of the protective device can be connected to the earth terminal of a field device.

- Surge protective device for field devices with spare cable gland
- Easy to retrofit and extremely space-saving
- ATEX, FISCO, IECEx approval

The design of the surge arrester allows a degree of protection IP 67. Intrinsically safe surge arresters are typically used in 4-20 mA measuring circuits or bus systems up to 30 V. Depending on the type used, DEHNpipe C is designed for measuring sensors with M20 x 1.5 or 1/2-14 NPT cable gland connections and can be either installed in Ex zones 1 or 2.



IECEx approval for DPI CD EXI \*)

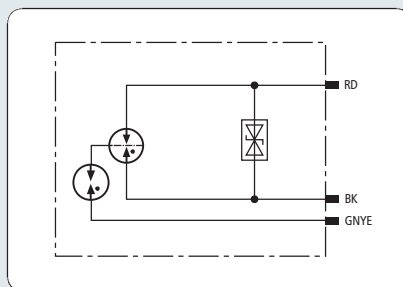


ATEX approval for DPI CD EXI \*)

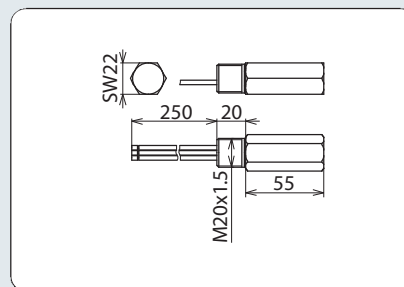


\*) The certificates can be downloaded at [www.dehn.de](http://www.dehn.de)





Basic circuit diagram DPI CD EXI



Dimension drawing DPI CD EXI

- Easy to mount on field devices with spare cable gland
- Self-capacitance and self-inductance negligibly small
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher

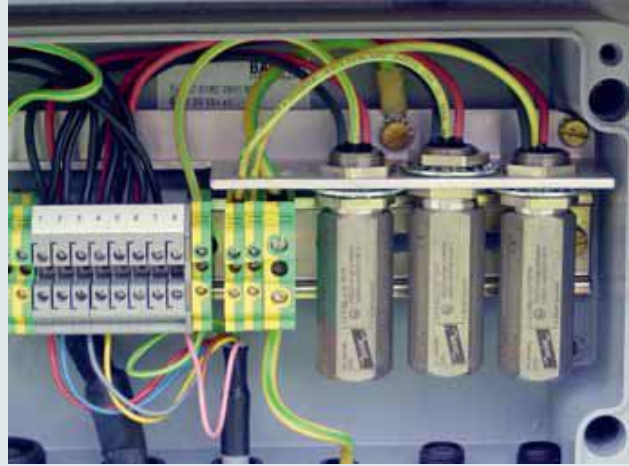
Surge arrester with a low-capacitance protective circuit for protecting intrinsically safe measuring circuits and bus systems, meets FISCO requirements. Insulation strength > 500 V to earth.

Type	DPI CD EXI 24 M	DPI CD EXI 24 N
Part No.	929 961	929 963
SPD class	TYPE 2 P1	TYPE 2 P1
Nominal voltage (U <sub>N</sub> )	24 V	24 V
Max. continuous operating d.c. voltage (U <sub>C</sub> )	32 V	32 V
Max. continuous operating a.c. voltage (U <sub>C</sub> )	22.6 V	22.6 V
Max. input voltage acc. to EN 60079-11 (U <sub>i</sub> )	30 V	30 V
Max. input current acc. to EN 60079-11 (I <sub>i</sub> )	0.55 A	0.55 A
Nominal current (I <sub>N</sub> )	0.55 A	0.55 A
D1 Lightning impulse current (10/350 μs) line-PG (I <sub>imp</sub> )	1 kA	1 kA
C2 Total nominal discharge current (8/20 μs) (I <sub>n</sub> )	10 kA	10 kA
C2 Nominal discharge current (8/20 μs) line-line (I <sub>n</sub> )	150 A	150 A
C2 Nominal discharge current (8/20 μs) line-PG (I <sub>n</sub> )	10 kA	10 kA
Voltage protection level line-line for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 58 V	≤ 58 V
Voltage protection level line-PG for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 1700 V	≤ 1700 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 50 V	≤ 50 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 1200 V	≤ 1200 V
Cut-off frequency line-line (f <sub>C</sub> )	67 MHz	67 MHz
Capacitance line-line (C)	≤ 25 pF	≤ 25 pF
Capacitance line-PG (C)	≤ 15 pF	≤ 15 pF
Operating temperature range	-50°C...+80°C	-50°C...+80°C
Degree of protection	IP 67	IP 67
For mounting on (field/device side)	M20 x 1.5 male thread	1/2-14 NPT male thread
Connection (input/output)	connecting leads (1.3 mm <sup>2</sup> )	connecting leads (1.3 mm <sup>2</sup> )
Length of the connecting lead	250 mm	250 mm
Earthing via	connecting lead	connecting lead
Enclosure material	V4A	V4A
Colour	bare surface	bare surface
Test standards	IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21
SIL classification	SIL2 *)	SIL2 *)
ATEX approvals	KEMA 04ATEX1189 X: II 2 (1) G Ex ia IIC T5 ... T6	KEMA 04ATEX1189 X: II 2 (1) G Ex ia IIC T5 ... T6
IECEx approvals	KEM 09.0076X: Ex ia [ia Ga] IIC T5 ... T6 Gb	KEM 09.0076X: Ex ia [ia Ga] IIC T5 ... T6 Gb
Approvals	GOST	GOST

\*) For more detailed information, please refer to [www.dehn.de/en/sil/](http://www.dehn.de/en/sil/)



- Surge protective device for field devices with spare cable gland or field bus distributors in hazardous areas
- Easy to retrofit and extremely space-saving
- ATEX, IECEx, CSA Hazloc approval



Surge arrester for outdoor use to be screwed onto two-wire field devices. Stainless steel. Installation up to a degree of protection IP 67.

The flameproof DEHNpipe C surge arrester is made of corrosion-resistant stainless steel and is directly screwed onto the field device. Like a field cable, the permanently connected lines are connected to the terminals of the field device. Thus, the protection components are situated in parallel to the cable run. The device can be easily connected to metal or plastic field enclosures as the earth wire of the protective device can be connected to the earth terminal of a field device.

The design of the surge arrester allows a degree of protection IP 67. These flameproof arresters are typically used in 4-20 mA measuring circuits or bus systems up to 30 V. Depending on the type used, DEHNpipe C is designed for measuring sensors with M 20 x 1.5 or 1/2-14 NPT cable gland connections and can be either installed in Ex zone 1 or 2.



IECEx approval for DPI CD EXD 24 ...\*)



ATEX approval for DPI CD EXD 24 ... / HF EXD ... \*)

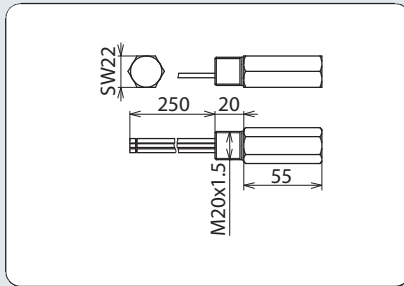


ATEX approval for DPI CD EXD 230 24 ... \*)

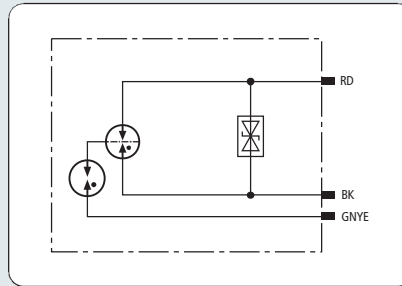


\*) The certificates can be downloaded at www.dehn.de





Dimension drawing DPI CD EXD



Basic circuit diagram DPI CD EXD

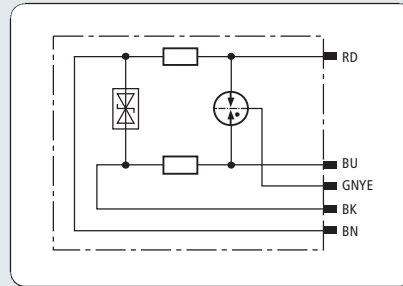


Flameproof surge arrester with a low-capacitance protective circuit for protecting measuring circuits and bus systems in potentially explosive atmospheres. Insulation strength > 500 V to earth. Certified to CSA and USA Hazloc standards.

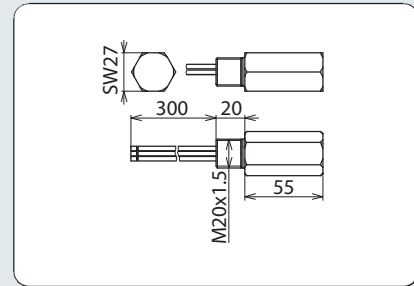
- Easy to mount on the spare cable gland of field devices
- Type Ex(d) for universal use
- For installation in conformity with the lightning protection zones concept at the boundaries from  $0_B - 2$  and higher

Type	DPI CD EXD 24 M	DPI CD EXD 24 N
Part No.	929 962	929 964
SPD class	TYPE 2 P1	TYPE 2 P1
Nominal voltage ( $U_N$ )	24 V	24 V
Max. continuous operating d.c. voltage ( $U_C$ )	32 V	32 V
Max. continuous operating a.c. voltage ( $U_C$ )	22.6 V	22.6 V
Nominal current ( $I_N$ )	0.55 A	0.55 A
D1 Lightning impulse current (10/350 $\mu$ s) line-PG ( $I_{imp}$ )	1 kA	1 kA
C2 Total nominal discharge current (8/20 $\mu$ s) ( $I_n$ )	10 kA	10 kA
C2 Nominal discharge current (8/20 $\mu$ s) per line ( $I_n$ )	10 kA	10 kA
Voltage protection level line-line for $I_n$ C2 ( $U_P$ )	$\leq 58$ V	$\leq 58$ V
Voltage protection level line-PG for $I_n$ C2 ( $U_P$ )	$\leq 1700$ V	$\leq 1700$ V
Voltage protection level line-line at 1 kV/ $\mu$ s C3 ( $U_P$ )	$\leq 50$ V	$\leq 50$ V
Voltage protection level line-PG at 1 kV/ $\mu$ s C3 ( $U_P$ )	$\leq 1200$ V	$\leq 1200$ V
Cut-off frequency line-line ( $f_c$ )	67 MHz	67 MHz
Capacitance line-line (C)	$\leq 25$ pF	$\leq 25$ pF
Capacitance line-PG (C)	$\leq 15$ pF	$\leq 15$ pF
Operating temperature range	-50°C...+80°C	-50°C...+80°C
Degree of protection	IP 67	IP 67
For mounting on (field/device side)	M20 x 1.5 male thread	1/2-14 NPT male thread
Connection (input/output)	connecting leads (1.3 mm <sup>2</sup> )	connecting leads (1.3 mm <sup>2</sup> )
Length of the connecting lead	250 mm	250 mm
Earthing via	connecting lead	connecting lead
Enclosure material	V4A	V4A
Colour	bare surface	bare surface
Test standards	IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21
ATEX approvals	KEMA 04ATEX2190 X: II 2 G Ex d IIC T5 or T6	KEMA 04ATEX2190 X: II 2 G Ex d IIC T5 or T6
IECEx approvals	KEM 09.0064X: Ex d IIC T5 or T6 Gb	KEM 09.0064X: Ex d IIC T5 or T6 Gb
CSA & USA Hazloc approvals (1)	CSA 10.2317168: AEx d IIC T4...T6	CSA 10.2317168: AEx d IIC T4...T6
CSA & USA Hazloc approvals (2)	CSA 10.2317168: Class I Div 1, 2; Class I Zone 1	CSA 10.2317168: Class I Div 1, 2; Class I Zone 1
SIL classification	SIL2 *)	SIL2 *)
Approvals	GOST	GOST

\*) For more detailed information, please refer to [www.dehn.de/en/sil/](http://www.dehn.de/en/sil/)



Basic circuit diagram DPI CD HF EXD



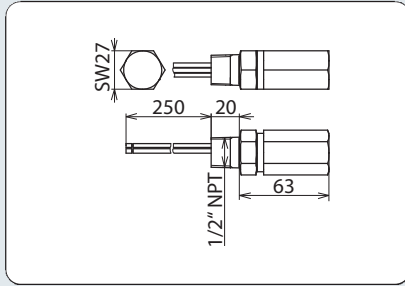
Dimension drawing DPI CD HF EXD

- Easy to mount on the spare cable gland of field devices
- Ex (d) version for a wide range of applications
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher

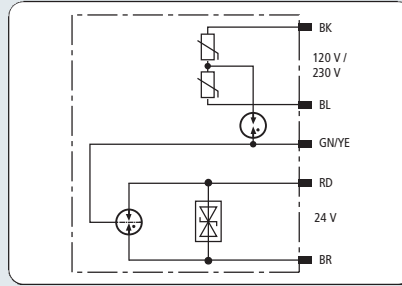
Flameproof surge arrester with an energy-coordinated low-capacitance protective circuit for protecting measuring circuits and bus systems in potentially explosive atmospheres.

Type	DPI CD HF EXD 5 M
Part No.	929 971
SPD class	TYPE 2 P1
Nominal voltage (U <sub>n</sub> )	5 V
Max. continuous operating d.c. voltage (U <sub>c</sub> )	6 V
Max. continuous operating a.c. voltage (U <sub>c</sub> )	4.2 V
Nominal current at 80° C (I <sub>n</sub> )	0.1 A
C2 Total nominal discharge current (8/20 μs) (I <sub>n</sub> )	20 kA
C2 Nominal discharge current (8/20 μs) per line (I <sub>n</sub> )	10 kA
Voltage protection level line-line for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 55 V
Voltage protection level line-PG for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 1000 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 12 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 700 V
Cut-off frequency line-line (f <sub>c</sub> )	100 MHz
Capacitance line-line (C)	≤ 40 pF
Capacitance line-PG (C)	≤ 30 pF
Series impedance per line	4.7 ohms
Operating temperature range	-50°C...+80°C
Degree of protection	IP 67
For mounting on field/device side	M20 x 1.5 male thread
Connection input/output	connecting leads (1.3 mm <sup>2</sup> )
Length of the connecting lead	300 mm
Earthing via	connecting lead
Enclosure material	V4A
Colour	bare surface
Test standards	IEC 61643-21 / EN 61643-21
ATEX approvals	KEMA 04ATEX2190 X: II 2 G Ex d IIC T5 or T6
IECEX approvals	KEM 09.0064X: Ex d IIC T5 or T6 Gb
Approvals	GOST





Dimension drawing DPI CD EXD 230 24



Basic circuit diagram DPI CD EXD 230 24



Flameproof surge arrester for the data and power side for protecting 120/230 V power supply systems and 24 V data interfaces of field devices in potentially explosive areas (zones 1 and 2). Additional safety due to distinctive Y circuit for 120/230 V power supply systems.

II 2 G Ex d IIC T5/T6 version universally applicable in hazardous zones 1 and 2. Certified to CSA and USA Hazloc standards.

- Dual surge protection for 120/230 V power supply systems and data interfaces
- Easy to mount on field devices with a spare cable gland
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher

Type	DPI CD EXD 230 24 M	DPI CD EXD 230 24 N
Part No.	929 969	929 970
<b>Protection of the data side:</b>		
SPD class	TYPE 2 P2	TYPE 2 P2
Nominal voltage (U <sub>N</sub> )	24 V	24 V
Max. continuous operating d.c. voltage (U <sub>C</sub> )	32 V	32 V
Max. continuous operating a.c. voltage (U <sub>C</sub> )	22.6 V	22.6 V
Nominal current at 80° C (I <sub>N</sub> )	0.55 A	0.55 A
D1 Lightning impulse current (10/350 μs) line-PG (I <sub>imp</sub> )	1 kA	1 kA
C2 Total nominal discharge current (8/20 μs) (I <sub>n</sub> )	10 kA	10 kA
Voltage protection level line-line for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 58 V	≤ 58 V
Voltage protection level line-PG for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 900 V	≤ 900 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 50 V	≤ 50 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 850 V	≤ 850 V
Capacitance line-line (C)	≤ 25 pF	≤ 25 pF
Capacitance line-PG (C)	≤ 15 pF	≤ 15 pF
Operating temperature range	-40°C...+80°C	-40°C...+80°C
Degree of protection	IP 67	IP 67
For mounting on (field/device side)	M20 x 1.5 male thread	1/2-14 npt male thread
Connection (input/output)	connecting leads (1.3 mm <sup>2</sup> )	connecting leads (1.3 mm <sup>2</sup> )
Length of the connecting lead	250 mm	250 mm
Earthing via	connecting lead	connecting lead
Enclosure material	V4A	V4A
Colour	bare surface	bare surface
Test standards	IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21
ATEX approvals	KEMA 10ATEX0114 X: II 2 G Ex d IIC T5/T6	KEMA 10ATEX0114 X: II 2 G Ex d IIC T5/T6
IECEx approvals	DEK 11.0006X: Ex d IIC T5 or T6 Gb	DEK 11.0006X: Ex d IIC T5 or T6 Gb
CSA & USA Hazloc approvals (1)	CSA 10.2317168: AEx d IIC T4...T6	CSA 10.2317168: AEx d IIC T4...T6
CSA & USA Hazloc approvals (2)	CSA 10.2317168: Class I Div 1, 2; Class I Zone 1	CSA 10.2317168: Class I Div 1, 2; Class I Zone 1
Approvals	GOST	GOST
<b>Protection of the power side:</b>		
SPD according to EN 61643-11	Type 2	Type 2
SPD according to IEC 61643-1	Class II	Class II
Nominal a.c. voltage (U <sub>N</sub> )	120/230 V	120/230 V
Max. continuous operating a.c. voltage (U <sub>C</sub> )	255 V	255 V
Nominal discharge current (8/20 μs) L-N (I <sub>n</sub> )	3 kA	3 kA
Total discharge current (8/20 μs) L+N-PE (I <sub>total</sub> )	5 kA	5 kA
Voltage protection level L-N (U <sub>p</sub> )	≤ 1.4 kV	≤ 1.4 kV
Voltage protection level L/N-PE (U <sub>p</sub> )	≤ 1.5 kV	≤ 1.5 kV
Max. discharge current L-N (I <sub>max</sub> )	3 kA	3 kA
Max. mains-side overcurrent protection	16 A gL/gG or B 16 A	16 A gL/gG or B 16 A
Short-circuit withstand capability for mains-side overcurrent protection with 16 A gL/gG	6 kA <sub>rms</sub>	6 kA <sub>rms</sub>
Temporary overvoltage (TOV) L-N (U <sub>T</sub> )	335 V / 5 sec.	335 V / 5 sec.
Temporary overvoltage (TOV) L/N-PE (1) (U <sub>T</sub> )	400 V / 5 sec.	400 V / 5 sec.
Temporary overvoltage (TOV) L/N-PE (2) (U <sub>T</sub> )	1200 V+U <sub>CS</sub> / 200 ms	1200 V+U <sub>CS</sub> / 200 ms
Indication of the disconnecter	upstream fuse	upstream fuse

Surge arrester

SPDs for Use in Potentially Explosive Atmospheres



- Surge protective device for field devices with spare cable gland or fieldbus distributors in potentially explosive atmospheres
- Flexible use in Ex(i) and Ex(d) circuits
- Protection of two signal circuits in a single device
- Easy installation and retrofitting
- ATEX, IECEx and FISCO approval

Different DEHNpipe versions for two signal circuits or one supply circuit and one signal circuit for field devices in potentially explosive atmospheres

The devices of the DEHNpipe family are made of corrosion-resistant stainless steel and can be directly screwed onto a field device in a potentially explosive atmosphere. Like a field cable, the permanently connected lines are connected to the terminals of the field device. The surge arresters can be used for a wide range of applications. A single arrester is capable of protecting two unearthed signal circuits or the supply circuit of the field device and one signal circuit. When installed in a fieldbus distributor, two field devices can be protected by a single arrester. The surge arresters are designed in such a way that the protection components are arranged in parallel to the cable run.

Due to the different approvals, the surge arresters can be installed on field devices in intrinsically safe measuring circuits Ex(i) or on devices with flameproof enclosure and are suitable for use in Ex zone 1 or 2.

The surge arresters are ideally suited for installation in process environments, for example on transducers or field bus devices. 4-20 mA measuring circuits or bus systems up to 30 V are typical fields of application.



Robust design for Ex(i) and Ex(d) applications



Metric and NPT thread



ATEX and IECEx approval





IECEx approval for DPI CD EXI+D \*)



ATEX approval for DPI CD EXI+D \*)



\*) The certificates can be downloaded at [www.dehn.de](http://www.dehn.de)

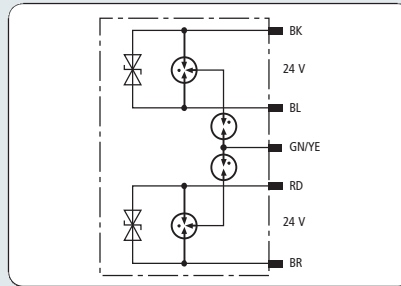


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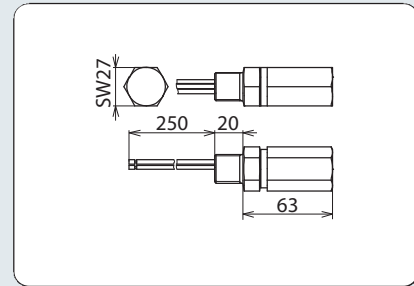


Presumably available in the second quarter 2012

- Easy installation on field devices with a spare cable gland
- Flexible use in Ex(i) and Ex(d) circuits
- Installation in conformity with the lightning protection zones concept at the boundaries from  $0_B - 2$  and higher



Basic circuit diagram DPI CD EXI+D

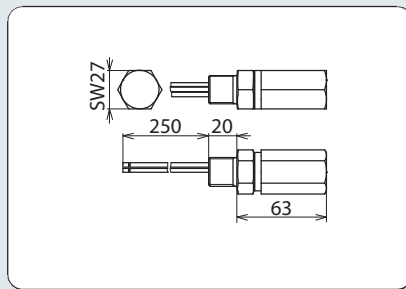


Dimension drawing DPI CD EXI+D

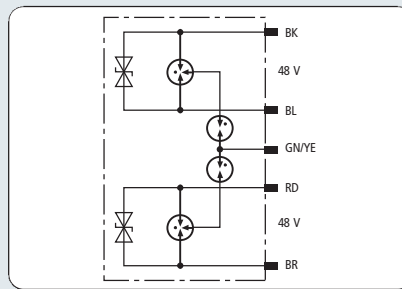
Flameproof surge arrester for protecting two 24 V interfaces in potentially explosive atmospheres.

Type	DPI CD EXI+D 2X24 M	DPI CD EXI+D 2X24 N
Part No.	929 950	929 951
SPD class	TYPE 2 P1	TYPE 2 P1
Nominal voltage ( $U_N$ )	24 V	24 V
Max. continuous operating d.c. voltage ( $U_C$ )	36 V	36 V
Max. continuous operating a.c. voltage ( $U_D$ )	25.4 V	25.4 V
Nominal current ( $I_N$ )	0.55 A	0.55 A
D1 Lightning impulse current (10/350 $\mu$ s) line-PG ( $I_{imp}$ )	1.5 kA	1.5 kA
C2 Total nominal discharge current (8/20 $\mu$ s) ( $I_n$ )	20 kA	20 kA
C2 Nominal discharge current (8/20 $\mu$ s) line-PG ( $I_n$ )	10 kA	10 kA
Voltage protection level line-line for $I_n$ C2 ( $U_p$ )	$\leq 65$ V	$\leq 65$ V
Voltage protection level line-PG for $I_n$ C2 ( $U_p$ )	$\leq 2000$ V	$\leq 2000$ V
Voltage protection level line-line at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 50$ V	$\leq 50$ V
Voltage protection level line-PG at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 1200$ V	$\leq 1200$ V
Capacitance line-line (C)	$\leq 2$ nF	$\leq 2$ nF
Capacitance line-PG (C)	$\leq 15$ pF	$\leq 15$ pF
Operating temperature range	-40°C...+80°C	-40°C...+80°C
Degree of protection	IP 67	IP 67
Mounting (field/device side)	M20 x 1.5 male thread	1/2-14 NPT male thread
Connection (input/output)	connecting leads (1.3 mm <sup>2</sup> )	connecting leads (1.3 mm <sup>2</sup> )
Length of the connecting lead	250 mm	250 mm
Earthing via	connecting lead	connecting lead
Enclosure material	V4A	V4A
Colour	bare surface	bare surface
Test standards	IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21
ATEX approvals (1)	KEMA 11ATEX0207 X: II 2 (1) G Ex ia [ia Ga] IIC T5 or T6 Gb	KEMA 11ATEX0207 X: II 2 (1) G Ex ia [ia Ga] IIC T5 or T6 Gb
ATEX approvals (2)	KEMA 11ATEX0217 X: II 2 G Ex d IIC T5 or T6 Gb	KEMA 11ATEX0217 X: II 2 G Ex d IIC T5 or T6 Gb
IECEX approvals (1)	DEK 11.0076X: Ex ia [ia Ga] IIC T5 or T6 Gb	DEK 11.0076X: Ex ia [ia Ga] IIC T5 or T6 Gb
IECEX approvals (2)	DEK 11.0079X: Ex d IIC T5 or T6 Gb	DEK 11.0079X: Ex d IIC T5 or T6 Gb

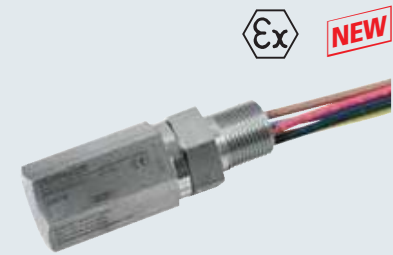




Dimension drawing DPI CD EXI+D



Basic circuit diagram DPI CD EXI+D



Presumably available in the second quarter 2012

Flameproof surge arrester for protecting two 48 V interfaces in potentially explosive atmospheres.

- Easy installation on field devices with a spare cable gland
- Flexible use in Ex(i) and Ex(d) circuits
- Installation in conformity with the lightning protection zones concept at the boundaries from  $0_B - 2$  and higher

Type	DPI CD EXI+D 2X48 M	DPI CD EXI+D 2X48 N
Part No.	929 952	929 953
SPD class	TYPE 2 P1	TYPE 2 P1
Nominal voltage ( $U_N$ )	48 V	48 V
Max. continuous operating d.c. voltage ( $U_C$ )	58 V	58 V
Max. continuous operating a.c. voltage ( $U_C$ )	41 V	41 V
Nominal current ( $I_n$ )	0.55 A	0.55 A
D1 Lightning impulse current (10/350 $\mu$ s) line-PG ( $I_{imp}$ )	1.5 kA	1.5 kA
C2 Total nominal discharge current (8/20 $\mu$ s) ( $I_n$ )	20 kA	20 kA
C2 Nominal discharge current (8/20 $\mu$ s) line-PG ( $I_n$ )	10 kA	10 kA
Voltage protection level line-line for $I_n$ C2 ( $U_p$ )	$\leq 95$ V	$\leq 95$ V
Voltage protection level line-PG for $I_n$ C2 ( $U_p$ )	$\leq 2000$ V	$\leq 2000$ V
Voltage protection level line-line at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 80$ V	$\leq 80$ V
Voltage protection level line-PG at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 1200$ V	$\leq 1200$ V
Capacitance line-line (C)	$\leq 1.2$ nF	$\leq 1.2$ nF
Capacitance line-PG (C)	$\leq 15$ pF	$\leq 15$ pF
Operating temperature range	-40°C...+80°C	-40°C...+80°C
Degree of protection	IP 67	IP 67
Mounting (field/device side)	M20 x 1.5 male thread	1/2-14 NPT male thread
Connection (input/output)	connecting leads (1.3 mm <sup>2</sup> )	connecting leads (1.3 mm <sup>2</sup> )
Length of the connecting lead	250 mm	250 mm
Earthing via	connecting lead	connecting lead
Enclosure material	V4A	V4A
Colour	bare surface	bare surface
Test standards	IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21
ATEX approvals (1)	KEMA 11ATEX0207 X: II 2 (1) G Ex ia [ia Ga] IIC T5 or T6 Gb	KEMA 11ATEX0207 X: II 2 (1) G Ex ia [ia Ga] IIC T5 or T6 Gb
ATEX approvals (2)	KEMA 11ATEX0217 X: II 2 G Ex d IIC T5 or T6 Gb	KEMA 11ATEX0217 X: II 2 G Ex d IIC T5 or T6 Gb
IECEX approvals (1)	DEK 11.0076X: Ex ia [ia Ga ] IIC T5 or T6 Gb	DEK 11.0076X: Ex ia [ia Ga ] IIC T5 or T6 Gb
IECEX approvals (2)	DEK 11.0079X: Ex d IIC T5 or T6 Gb	DEK 11.0079X: Ex d IIC T5 or T6 Gb



**Surge arrester**

SPDs for Use in Potentially Explosive Atmospheres



Pluggable, multipole, universal surge arrester for use in intrinsically safe systems with integrated LifeCheck monitoring device

- Effective protection with minimum space requirements
- For two-pole, three-pole or four-pole intrinsically safe interfaces
- Function-optimised design for safe use and easy installation
- Quick testing of LifeCheck-equipped protection modules
- ATEX, FISCO approval

BLITZDUCTOR XT EX is a pluggable, four-pole, universal DIN rail mounted surge arrester designed for the most stringent requirements on the availability of intrinsically safe measuring and control circuits and bus systems.

With regard to intrinsic safety, the arrester is considered earth-free and its self-inductance and self-capacitance are negligibly small. The low-impedance arrester design ensures a high impulse current discharge capacity (min. 10x) and a low voltage protection level.

LifeCheck allows quick and easy testing of arresters. However, the protection modules may only be read out by means of the hand-held DRC LC reader in non-explosive atmospheres.

Integrated into the protection modules, LifeCheck permanently monitors

the proper condition of the arrester. Like an early warning system, LifeCheck reliably detects imminent electrical or thermal overload of the protection components. The LifeCheck status can be read out within a matter of seconds by means of the hand-held DEHNrecord LC reader via contactless RFID technology and also shows the date of the last test of the protection module. A stationary condition monitoring system allows condition-based maintenance of 10 BXT arresters.

To ensure safe operation, the arrester provides protection against vibration effects and shock up to a 30-fold acceleration of gravity. The function-optimised design of the devices allows quick and easy replacement of protection modules which house all relevant protection elements. The protection module and the base part must be ordered separately.



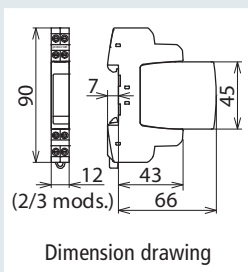
BLITZDUCTOR XT EX

Completely installed BLITZDUCTOR XT EX. Two-part design with universal base part and application-specific protection module. Particularly space-saving, for DIN rail mounting.



Base part

Universal base part accommodates all types of protection modules. The protection modules can be easily removed from the base part without signal interruption thereby minimising storage requirements as well as prewiring and maintenance operations.



Dimension drawing

Dimension drawing of a BLITZDUCTOR XT EX base part with protection module. Width: 2/3 modules (12 mm), for use in distribution boards with DIN rails.



Four different versions

**BXT ML4 BD EX 24:**  
Universal LifeCheck-equipped surge arrester module for protecting two intrinsically safe circuits such as 4-20 mA, HART, PROFIBUS.

**BXT ML2 BD S EX 24:**  
LifeCheck-equipped universal surge arrester module for one intrinsically safe circuit such as 4-20 mA, PROFIBUS. Optionally available with direct/indirect shield earthing.

**BXT ML4 BC EX 24:**  
For protecting, for example three or four-wire temperature measuring systems.

**BXT ML2 BD HF EX 6:**  
For protecting one pair for fast data transmission and supply currents up to 4.8 A.





**KEMA**

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 06ATEX0274 X** Issue Number: **2**

(4) Equipment: **Blitzductor BXT-series**

(5) Manufacturer: **DEHN + SÖHNE GmbH + Co. KG**

(6) Address: **Hans-Dehn-Strasse 1, 92218 Neumarkt/Opf., Germany**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0544 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex B to the Directive.

The examination and test results are recorded in confidential test report number 209501900.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN 60079-0 : 2006 EN 60079-11 : 2007 EN 60079-26 : 2007 EN 60079-27 : 2008**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

**Ex**

**II 2 (1) G Ex Ia IIC T4, T5, T6 or  
II 2 G Ex Ib IIC T4, T5, T6**

The certificate is issued on September 18, 2009 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.  
C.G. van Es  
Certification Manager

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\* Integral publication of this certificate and allowing reports is allowed. This Certificate may only be reproduced in its entirety and without any change.  
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T +31 20 538 22 00 F +31 20 3 52 58 00 customers@kema.com www.kema.com Registered Amstelveen 28022206  
www.kema.com

**KEMA**

(13) **SCHEDULE**

(14) to EC-Type Examination Certificate KEMA 06ATEX0274 X Issue No. 2

(15) **Description**

The Blitzductor BXT series serve as transient suppressors in the lines of intrinsically safe circuits.

This approval applies to the following equipment types:  
BXT BAS EX (Base unit)  
BXT ML4 BD EX 24 (Module)  
BXT ML4 BC EX 24 (Module)  
BXT ML2 SD HF EX 6 (Module)

The relation between the ambient temperature and temperature class is per table below.

Ambient temperature range	Temperature class
-40 °C to +60 °C	TB
-40 °C to +75 °C	TS
-40 °C to +85 °C	T4

**Electrical data**

For Blitzductor BXT series type BXT ML4 B EX 24:  
The Blitzductor BXT series are in type of protection intrinsic safety.  
The level of protection "ia" or "ib" and the apparatus group (IC or IB or IIA) is determined by the intrinsically safe circuit(s) in which the Blitzductor BXT series is placed.

**Module input circuits:**  
U<sub>i</sub> = 30 V; I<sub>i</sub> = 500 mA; P<sub>i</sub> = any; C<sub>i</sub> = 0 nF; L<sub>i</sub> = 0 mH,  
or for connection to a certified intrinsically safe circuit or a circuit in accordance with FISCO, with the following maximum values:  
U<sub>i</sub> = 17,5 V; I<sub>i</sub> = 380 mA; P<sub>i</sub> = 5,32 W; C<sub>i</sub> = 0 nF; L<sub>i</sub> = 0 µH.

**Module output circuits:**  
The values of U<sub>o</sub>, I<sub>o</sub> and P<sub>o</sub> are determined by the parameters of the circuit(s) to which the Blitzductor BXT series is connected.

The electrical data applies to each circuit connected to Module type BXT ML4 BD EX 24 and to the combined circuits for Module type BXT ML4 BC EX 24.

For Blitzductor BXT series type BXT ML2 SD HF EX 6:  
The Blitzductor BXT series are in type of protection intrinsic safety.  
The level of protection "ib" and the apparatus group (IC or IB or IIA) is determined by the intrinsically safe circuit(s) in which the Blitzductor BXT series is placed.

**Module input circuits:**  
U<sub>i</sub> = 4,2 V; I<sub>i</sub> = 4,8 A; P<sub>i</sub> = any; C<sub>i</sub> = 0 nF; L<sub>i</sub> = 0 mH.

**Module output circuits:**  
The values of U<sub>o</sub>, I<sub>o</sub> and P<sub>o</sub> are determined by the parameters of the circuit(s) to which the Blitzductor BXT series is connected.

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**KEMA**

(13) **SCHEDULE**

(14) to EC-Type Examination Certificate KEMA 06ATEX0274 X Issue No. 2

**Installation instructions**

The Blitzductor BXT series can be installed outside or within the potentially explosive atmosphere, however in all cases they may only be connected to intrinsically safe circuits.

When installed outside the potentially explosive atmosphere its operation may be checked by the LifeCheck unit model DEHRecord GRC LC1 or DEHRecord GRC LC2.

The degree of protection of the Blitzductor BXT series is IP20.  
When the environmental conditions are such that a higher degree of ingress protection is required, this shall be taken into account.

When the BXT BAS EX (Base unit) is installed inside the potentially explosive atmosphere for use in combination with module type BXT ML2 SD HF EX 6, the supply shall only be connected when a module is inserted.

(16) **Test Report**

KEMA No. 209501900.

(17) **Special conditions for safe use**

When the Blitzductor BXT series is used in a Fieldbus system according to FISCO, the power supply shall have fail-safe galvanic isolation and may not be connected to earth or shall be infallibly connected to the potential equalizing system within the hazardous area.

For ambient temperature range, see (15).

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 209501900.

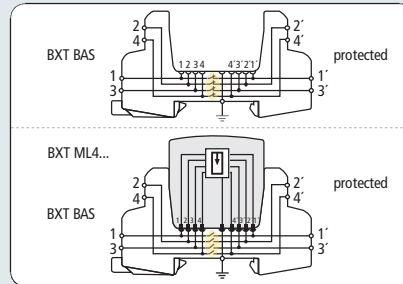
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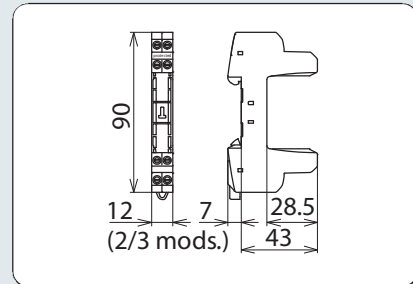
ATEX approval for BXT EXI \*)

\*) The certificates can be downloaded at www.dehn.de





Basic circuit diagram with and without module



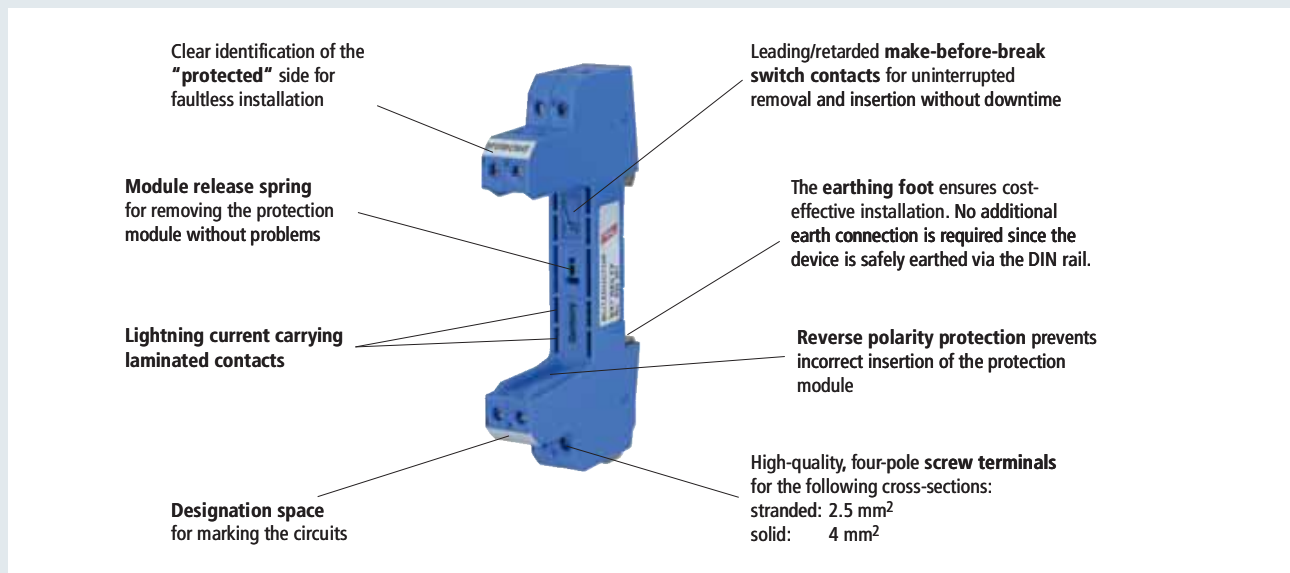
Dimension drawing BXT BAS EX

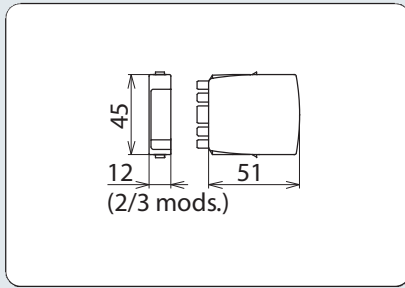
- Four-pole and universal base part for all types of intrinsically safe protection modules
- Insertion and removal without signal interruption
- Universal design without protection elements

BLITZDUCTOR XT base part for use as an extremely space-saving, four-pole, universal feed-through terminal for intrinsically safe circuits and for the insertion of the protection module without signal interruption. The snap-in mechanism at the supporting foot of the base part allows the device to be safely earthed via the DIN rail. As no components of the protective circuit are situated in the base part, maintenance operation is only required for the protection modules. ATEX.

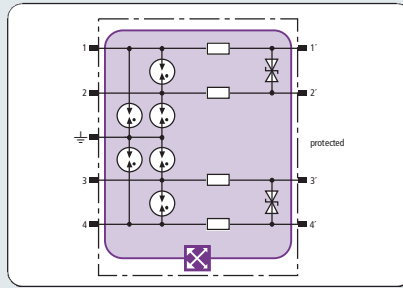
Type	BXT BAS EX
Part No.	920 301
Operating temperature range	-40°C...+80°C
Degree of protection	IP 20
For mounting on	35 mm DINs rail acc. to EN 60715
Connection (input/output)	screw / screw
Cross-sectional area, solid	0.08 - 4 mm <sup>2</sup>
Cross-sectional area, flexible	0.08 - 2.5 mm <sup>2</sup>
Tightening torque (terminals)	0.4 Nm
Earthing via	35 mm DIN rail acc. to EN 60715
Enclosure material	polyamide PA 6.6
Colour	blue
ATEX approvals (1)	KEMA 06ATEX0274 X: II 2 (1) G Ex ia [ia Ga] IIC T4, T5, T6 Gb *)
ATEX approvals (2)	KEMA 06ATEX0274 X: II 2 G Ex ib IIC T4, T5, T6, Gb *)
IECEX approvals (1)	DEK 11.0078X: Ex ia [ia Ga] IIC T4, T5, T6 Gb *)
IECEX approvals (2)	DEK 11.0078X: Ex ib IIC T4, T5, T6 Gb *)
Approvals	UL, CSA, GOST

\*) only in connection with an approved protection module





Dimension drawing BXT ML4 BD EX



Basic circuit diagram BXT ML4 BD EX



Space-saving LifeCheck-equipped surge arrester module for protecting two pairs in intrinsically safe measuring circuits and bus systems, meets FISCO requirements. ATEX. Insulation strength > 500 V line-earth.

If LifeCheck detects thermal or electrical overload, the arrester has to be replaced. This status is indicated contactlessly by DEHNrecord LC / MCM.

- For universal use, with LifeCheck SPD monitoring function
- Self-capacitance and self-inductance negligibly small
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher

Type	BXT ML4 BD EX 24
Part No.	920 381
SPD class	TYPE 2 P1
SPD monitoring	LifeCheck
Nominal voltage (U <sub>N</sub> )	24 V
Max. continuous operating d.c. voltage (U <sub>c</sub> )	33 V
Max. continuous operating a.c. voltage (U <sub>c</sub> )	23 V
Max. input voltage acc. to EN 60079-11 (U <sub>i</sub> )	30 V
Max. input current acc. to EN 60079-11 (I <sub>i</sub> )	0.5 A
D1 Total lightning impulse current (10/350 μs) (I <sub>imp</sub> )	4 kA
D1 Lightning impulse current (10/350 μs) per line (I <sub>imp</sub> )	1 kA
C2 Total nominal discharge current (8/20 μs) (I <sub>n</sub> )	20 kA
C2 Nominal discharge current (8/20 μs) per line (I <sub>n</sub> )	5 kA
Voltage protection level line-line for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 50 V
Voltage protection level line-PG for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 1300 V
Voltage protection level line-line for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 52 V
Voltage protection level line-PG for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 1400 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 45 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 1100 V
Series impedance per line	1.0 ohm
Cut-off frequency line-line (f <sub>c</sub> )	7.7 MHz
Capacitance line-line (C)	≤ 0.8 nF
Capacitance line-PG (C)	≤ 16 pF
Operating temperature range	-40°C...+80°C
Degree of protection (with plugged-in protection module)	IP 20
Plugs into	base part
Earthing via	base part
Enclosure material	polyamide PA 6.6
Colour	blue
Test standards	IEC 61643-21 / EN 61643-21, UL 497B
SIL classification	SIL2 / SIL3 *)
ATEX approvals (1)	KEMA 06ATEX0274 X: II 2 (1) G Ex ia [ia Ga] IIC T4, T5, T6 Gb
ATEX approvals (2)	KEMA 06ATEX0274 X: II 2 G Ex ib IIC T4, T5, T6, Gb
IECEx approvals (1)	DEK 11.0078X: Ex ia [ia Ga] IIC T4, T5, T6 Gb
IECEx approvals (2)	DEK 11.0078X: Ex ib IIC T4, T5, T6 Gb
Approvals	CSA, GOST

\*) For more detailed information, please refer to [www.dehn.de/en/sil/](http://www.dehn.de/en/sil/)

Accessories for BLITZDUCTOR® XT Ex (i) LifeCheck® Modules

DRC LC M3+

Portable device with LifeCheck sensor for flexible use. Fast and easy testing of LifeCheck-equipped arresters.

Type	DRC LC M3+
Part No.	910 653
Dimensions of storage case	340 x 275 x 83 mm



DRC MCM XT

DIN rail mounted device with integrated LifeCheck sensor for condition monitoring of max. 10 LifeCheck-equipped BXT arresters.

Type	DRC MCM XT
Part No.	910 695
Colour	grey



BXT BAS EX

Base part for use as a feed-through terminal in intrinsically safe circuits for the insertion of protection modules without signal interruption.

Type	BXT BAS EX
Part No.	920 301
Colour	blue

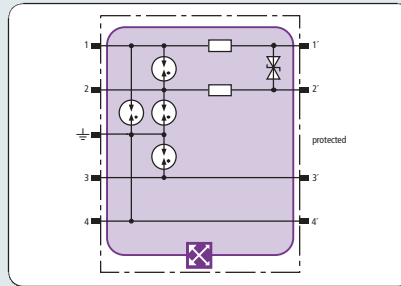


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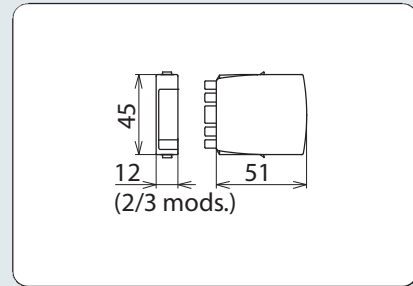


Presumably available in the second quarter 2012

- For universal use, with LifeCheck SPD monitoring function
- Self-capacitance and self-inductance negligibly small
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher



Basic circuit diagram BXT ML2 BD S EX



Dimension drawing BXT ML2 BD S EX

Space-saving LifeCheck-equipped surge arrester module for protecting one pair in intrinsically safe measuring circuits and bus systems, direct or indirect shield earthing.

Insulation strength > 500 V line-earth.

If LifeCheck detects thermal or electrical overload, the arrester has to be replaced. This status is indicated contactlessly by DEHNrecord LC / MCM.

Type	BXT ML2 BD S EX 24
Part No.	920 280
SPD class	TYPE 2 P1
SPD monitoring	LifeCheck
Nominal voltage (U <sub>N</sub> )	24 V
Max. continuous operating d.c. voltage (U <sub>c</sub> )	33 V
Max. continuous operating a.c. voltage (U <sub>e</sub> )	23.3 V
Max. input voltage acc. to EN 60079-11 (U <sub>i</sub> )	30 V
Max. input current acc. to EN 60079-11 (I <sub>i</sub> )	0.5 A
D1 Total lightning impulse current (10/350 μs) (I <sub>imp</sub> )	4 kA
D1 Lightning impulse current (10/350 μs) per line (I <sub>imp</sub> )	1 kA
C2 Total nominal discharge current (8/20 μs) (I <sub>n</sub> )	10 kA
C2 Nominal discharge current (8/20 μs) per line (I <sub>n</sub> )	5 kA
Voltage protection level line-line for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 50 V
Voltage protection level line-PG for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 1300 V
Voltage protection level line-line for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 52 V
Voltage protection level line-PG for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 1400 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 45 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 1100 V
Series impedance per line	1.0 ohm
Cut-off frequency line-line (f <sub>c</sub> )	6 MHz
Capacitance line-line (C)	≤ 1.0 nF
Capacitance line-PG (C)	≤ 16 pF
Operating temperature range	-40°C...+80°C
Degree of protection (with plugged-in protection module)	IP 20
Plugs into	base part
Earthing via	base part
Enclosure material	polyamide PA 6.6
Colour	blue
Test standards	IEC 61643-21 / EN 61643-21, UL 497B
ATEX approvals (1)	KEMA 06ATEX0274 X: II 2 (1) G Ex ia [ia Ga] IIC T4, T5, T6 Gb
ATEX approvals (2)	KEMA 06ATEX0274 X: II 2 G Ex ib IIC T4, T5, T6, Gb
IECEX approvals (1)	DEK 11.0078X: Ex ia [ia Ga] IIC T4, T5, T6 Gb
IECEX approvals (2)	DEK 11.0078X: Ex ib IIC T4, T5, T6 Gb

**Accessories for BLITZDUCTOR® XT Ex (i) LifeCheck® Modules**



**BXT BAS EX**

Base part for use as a feed-through terminal in intrinsically safe circuits for the insertion of protection modules without signal interruption.



Type	BXT BAS EX
Part No.	920 301
Colour	blue

**DRC MCM XT**

DIN rail mounted device with integrated LifeCheck sensor for condition monitoring of max. 10 LifeCheck-equipped BXT arresters.



Type	DRC MCM XT
Part No.	910 695
Colour	grey

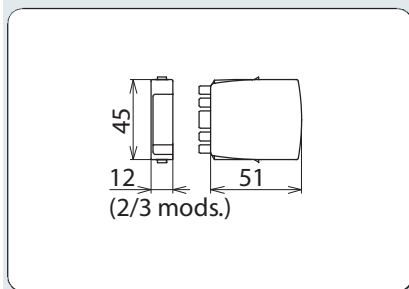
**DRC LC M3+**

Portable device with LifeCheck sensor for flexible use. Fast and easy testing of LifeCheck-equipped arresters.

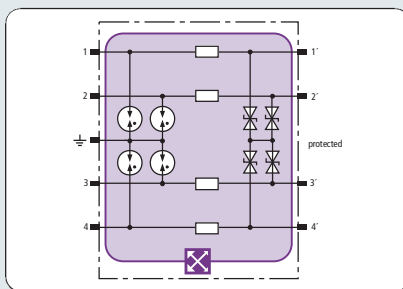


Type	DRC LC M3+
Part No.	910 653
Dimensions of storage case	340 x 275 x 83 mm

For "Accessories for BLITZDUCTOR XT Ex (i) LifeCheck modules", please also refer to pages 322/327/328/368/370.



Dimension drawing BXT ML4 BC EX



Basic circuit diagram BXT ML4 BC EX



Space-saving LifeCheck-equipped surge arrester module for protecting up to four unearthed single lines with common reference potential in intrinsically safe measuring circuits, meets FISCO requirements. ATEX. Insulation strength > 500 V line-earth.

If LifeCheck detects thermal or electrical overload, the arrester has to be replaced. This status is indicated contactlessly by DEHNrecord LC / MCM.

- For multi-wire measuring systems, with LifeCheck SPD monitoring device
- Self-capacitance and self-inductance negligibly small
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher

Type	BXT ML4 BC EX 24
Part No.	920 384
SPD class	TYPE 2 P1
SPD monitoring	LifeCheck
Nominal voltage (U <sub>N</sub> )	24 V
Max. continuous operating d.c. voltage (U <sub>c</sub> )	33 V
Max. continuous operating a.c. voltage (U <sub>c</sub> )	23.3 V
Max. input voltage acc. to EN 60079-11 (U <sub>i</sub> )	30 V
Max. input current acc. to EN 60079-11 (I <sub>i</sub> )	0.5 A
D1 Total lightning impulse current (10/350 μs) (I <sub>imp</sub> )	4 kA
D1 Lightning impulse current (10/350 μs) per line (I <sub>imp</sub> )	1 kA
C2 Total nominal discharge current (8/20 μs) (I <sub>n</sub> )	20 kA
C2 Nominal discharge current (8/20 μs) per line (I <sub>n</sub> )	5 kA
Voltage protection level line-line for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 53 V
Voltage protection level line-PG for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 1300 V
Voltage protection level line-line for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 55 V
Voltage protection level line-PG for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 1400 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 45 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 1100 V
Series impedance per line	1 ohm
Cut-off frequency line-line (f <sub>c</sub> )	6.4 MHz
Capacitance line-line (C)	≤ 0.8 nF
Capacitance line-PG (C)	≤ 16 pF
Operating temperature range	-40°C...+80°C
Degree of protection (with plugged-in protection module)	IP 20
Plugs into	base part
Earthing via	base part
Enclosure material	polyamide PA 6.6
Colour	blue
Test standards	IEC 61643-21 / EN 61643-21, UL 497B
SIL classification	SIL2 / SIL3 *)
ATEX approvals (1)	KEMA 06ATEX0274 X: II 2 (1) G Ex ia [ia Ga] IIC T4, T5, T6 Gb
ATEX approvals (2)	KEMA 06ATEX0274 X: II 2 G Ex ib IIC T4, T5, T6, Gb
IECEX approvals (1)	DEK 11.0078X: Ex ia [ia Ga] IIC T4, T5, T6 Gb
IECEX approvals (2)	DEK 11.0078X: Ex ib IIC T4, T5, T6 Gb
Approvals	CSA, GOST

\*) For more detailed information, please refer to [www.dehn.de/en/sil/](http://www.dehn.de/en/sil/)

Accessories for BLITZDUCTOR® XT Ex (i) LifeCheck® Modules

Test / Disconnection Module

Module for testing lines, plugs into BLITZDUCTOR XT base parts.

Type	BXT M4 T
Part No.	920 309
Colour	grey



Earthing Module

For direct earthing of lines connected to the BLITZDUCTOR XT base part.

Type	BXT M4 E
Part No.	920 308
Colour	grey

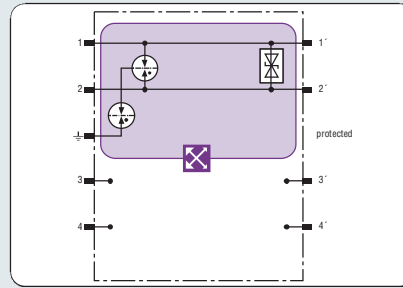


Partition

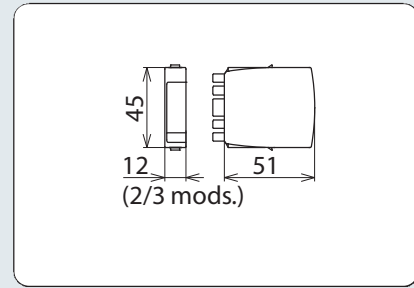
For DRC MCM XT

Type	TW DRC MCM EX
Part No.	910 697
Colour	blue





Basic circuit diagram BXT ML2 BD HF EX



Dimension drawing BXT ML2 BD HF EX

- For universal use, with LifeCheck SPD monitoring device
- Self-capacitance and self-inductance negligibly small
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher

Space-saving LifeCheck-equipped surge arrester module for protecting one pair in intrinsically safe measuring circuits and RS485 bus systems. Insulation strength > 500 V line-earth. If LifeCheck detects thermal and electrical overload, the arrester has to be replaced. This status is indicated contactlessly by DEHNrecord LC / MCM.

Type	BXT ML2 BD HF EX 6
Part No.	920 538
SPD class	TYPE 2 P1
SPD monitoring	LifeCheck
Nominal voltage (U <sub>N</sub> )	6 V
Max. continuous operating d.c. voltage (U <sub>c</sub> )	6 V
Max. continuous operating a.c. voltage (U <sub>e</sub> )	4.2 V
Max. input voltage acc. to EN 60079-11 (U <sub>i</sub> )	4.2 V
Max. input current acc. to EN 60079-11 (I <sub>i</sub> )	4.8 A
Max. input current acc. to EN 60079-11 (without protection module only up to 60°C) (I <sub>i</sub> )	4.8 A
D1 Lightning impulse current (10/350 μs) per line (I <sub>imp</sub> )	1 kA
C2 Total nominal discharge current (8/20 μs) (I <sub>n</sub> )	10 kA
C2 Nominal discharge current (8/20 μs) per line (I <sub>n</sub> )	5 kA
Voltage protection level line-line for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 35 V
Voltage protection level line-PG for I <sub>imp</sub> D1 (U <sub>p</sub> )	≤ 1600 V
Voltage protection level line-line for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 35 V
Voltage protection level line-PG for I <sub>n</sub> C2 (U <sub>p</sub> )	≤ 1800 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 20 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 1400 V
Cut-off frequency line-line (f <sub>c</sub> )	100 MHz
Capacitance line-line (C)	≤ 25 nF
Capacitance line-PG (C)	≤ 20 pF
Operating temperature range	-40°C...+80°C
Degree of protection (with plugged-in protection module)	IP 20
Plugs into	base part
Earthing via	base part
Enclosure material	polyamide PA 6.6
Colour	blue
Test standards	IEC 61643-21 / EN 61643-21
SIL classification	SIL2 *)
ATEX approvals (1)	KEMA 06ATEX0274 X: II 2 (1) G Ex ia [ia Ga] IIC T4, T5, T6 Gb
ATEX approvals (2)	KEMA 06ATEX0274 X: II 2 G Ex ib IIC T4, T5, T6, Gb
IECEX approvals (1)	DEK 11.0078X: Ex ia [ia Ga] IIC T4, T5, T6 Gb
IECEX approvals (2)	DEK 11.0078X: Ex ib IIC T4, T5, T6 Gb

\*) For more detailed information, please refer to [www.dehn.de/en/sil/](http://www.dehn.de/en/sil/)

**Accessories for BLITZDUCTOR® XT Ex (i) LifeCheck® Modules**



**BXT BAS EX**

Base part for use as a feed-through terminal in intrinsically safe circuits for the insertion of protection modules without signal interruption.



Type	BXT BAS EX
Part No.	920 301
Colour	blue

**DRC MCM XT**

DIN rail mounted device with integrated LifeCheck sensor for condition monitoring of max. 10 LifeCheck-equipped BXT arresters.



Type	DRC MCM XT
Part No.	910 695
Colour	grey

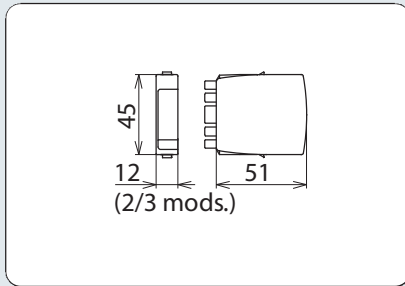
**DRC LC M3+**

Portable device with LifeCheck sensor for flexible use. Fast and easy testing of LifeCheck-equipped arresters.

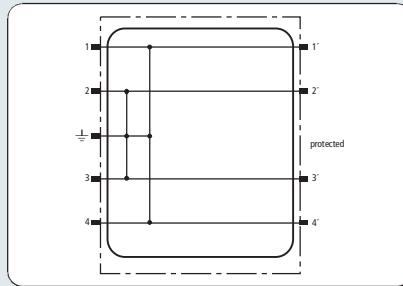


Type	DRC LC M3+
Part No.	910 653
Dimensions of storage case	340 x 275 x 83 mm

For "Accessories for BLITZDUCTOR XT Ex (i) LifeCheck modules", please also refer to pages 322/327/328/368/370.



Dimension drawing BXT M4 E



Basic circuit diagram BXT M4 E

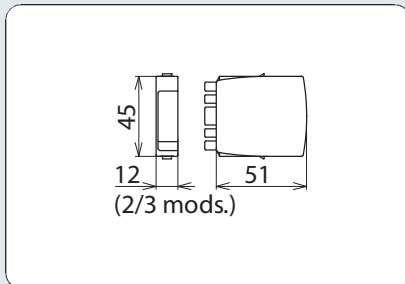


The plugged-in earthing module short-circuits all lines connected to the BLITZDUCTOR XT base part with PG. It directly earths unused wires, which are already connected to the base part.

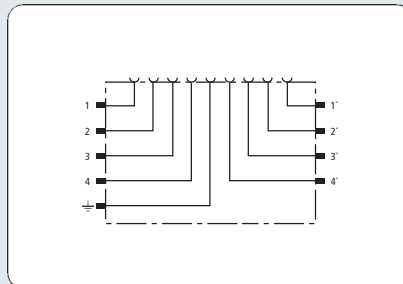
- To be plugged into BLITZDUCTOR XT base parts
- Easy handling
- Quick replacement when retrofitting a protection module

Type	BXT M4 E
Part No.	920 308
D1 Total lightning impulse current (10/350 μs) (I <sub>imp</sub> )	10 kA
Operating temperature range	-40°C...+80°C
Degree of protection (with plugged-in protection module)	IP 20
Plugs into	base part
Enclosure material	polyamide PA 6.6
Colour	grey

Test / Disconnection Module



Dimension drawing BXT M4 T



Basic circuit diagram BXT M4 T



The plugged-in test/disconnection module interrupts the cable run of the lines connected to the BLITZDUCTOR XT base part and leads them to a test socket at the front of the module. This allows to carry out measurements in the installation without removing the lines from the base part.

- To be plugged into BLITZDUCTOR XT base parts
- Easy maintenance and troubleshooting
- Measuring lines included

Type	BXT M4 T
Part No.	920 309
Max. continuous operating d.c. voltage (U <sub>c</sub> )	180 V
Max. continuous operating a.c. voltage (U <sub>c</sub> )	127 V
Nominal current at 80° C (I <sub>n</sub> )	1.0 A
Volume resistance	0.1 ohms
Operating temperature range	-40°C ... +80°C
Degree of protection (with plugged-in protection module)	IP 20
Plugs into	base part
Test sockets	gold-plated, 1 mm
Enclosure material	polyamide PA 6.6
Colour	grey
Accessories	2 measuring lines (1 m), protective bag

Labelling System 1-50

SPDs for Use in Potentially Explosive Atmospheres

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



- Abrasion-proof
- Pre-printed

Plate with 2x plate numbers from 1 to 50 for labelling BXT base parts or modules

Type	BS 1 50 BXT
Part No.	920 399
Dimensions (W x H)	11 x 4 mm

Labelling System BA1-BA15

BA1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10
BA2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10
BA3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10
BA4	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10
BA5	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	5.10
BA6	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	6.10
BA7	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	7.10
BA8	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	8.10
BA9	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10
BA10	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	10.10
BA11	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	11.10
BA12	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	12.10
BA13	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	13.10
BA14	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	14.10
BA15	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	15.10

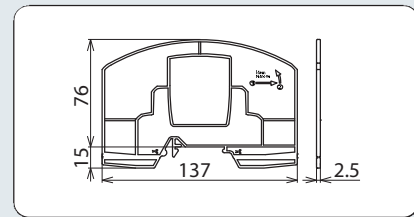


- For DRC MCM XT condition monitoring system
- Abrasion-proof
- Transparent

2x 165 adhesive labels for labelling DRC MCM XT monitoring devices with their bus address (BA1 to BA15) and BXT base parts or modules with consecutive numbers (1.1-1.10 to 15.1-15.10)

Type	BS BA1 BA15 BXT
Part No.	920 398
Dimensions (W x H)	13 x 7 mm

Partition



Dimension drawing of the partition

- Allows devices for non-intrinsically circuits to be placed directly next to Ex i circuits (space gain)
- Increase of the thread measure to  $\geq 50$  mm in accordance with EN 60079-11
- Suitable for mounting rails with a height of 7.5 mm and 15 mm
- Easy installation by simply snapping the partition onto a DIN rail

Certain installation instructions have to be observed when using BLITZDUCTOR XT Ex (i) surge protective devices in intrinsically safe circuits. In accordance with EN 60079-11;2007 a minimum distance (thread measure) of  $\geq 50$  mm must be maintained between intrinsically and non-intrinsically safe circuits (connecting parts, e.g. terminals)!

When using the Ex i partition of type TW DRC MCM EX, this distance is also maintained if the surge protective devices are arranged directly next to one other. Ideally suited for use in conjunction with DRC MCM XT for monitoring the condition of BXT modules.

Type	TW DRC MCM EX
Part No.	910 697
Material	polyamide PA 6.6
Colour	blue
For mounting on	35 mm DIN rails according to EN 60715





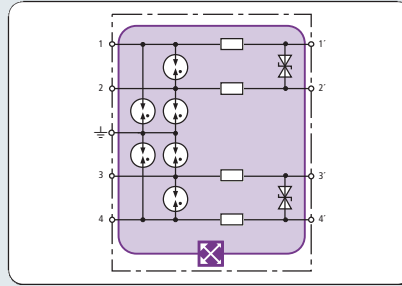
- Prewired unit
- Built-in arrester, tested to ATEX and FISCO requirements
- Other customised versions available on request



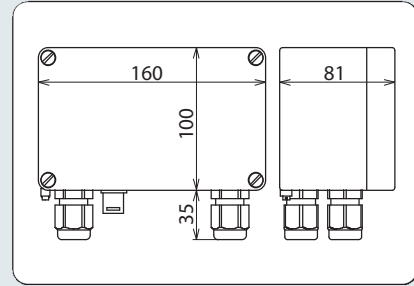
ITAK for use in intrinsically safe circuits

ITAK stands for the German designation "Informationstechnik-Anschaltkasten" [English: switchbox for information technology systems]. Typically, ITAKs are a combination of enclosure, arresters and terminals or shield terminals. These switchboxes can be tailored to customer

needs. Our standard product range includes e.g. ITAK EXI BXT 24, a combination of ALGA 5 X enclosure and BXT BD EX 24 arrester for protecting two intrinsically safe measuring circuits in outdoor areas. The enclosure is also available without arrester.



Basic circuit diagram ITAK EXI BXT



Dimension drawing ITAK EXI BXT

- **Prewired unit for two Ex(i) circuits**
- **Self-capacitance and self-inductance negligibly small**
- **For installation in conformity with the lightning protection zones concept at the boundaries from  $0_B - 2$  and higher**

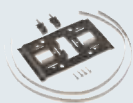
Prewired BXT ML4 BD EX 24 and BXT BAS EX surge arrester unit completely mounted in a junction box for intrinsically safe measuring circuits, meets FISCO requirements.

Type	ITAK EXI BXT 24
Part No.	989 408
SPD class	TYPE 2 P1
SPD monitoring system	LifeCheck
Nominal voltage ( $U_N$ )	24 V
Max. continuous operating d.c. voltage ( $U_C$ )	33 V
Max. input voltage acc. to EN 60079-11 ( $U_i$ )	30 V
Max. input current acc. EN 60079-11 ( $I_i$ )	0.5 A
Total nominal discharge current (8/20 $\mu$ s) ( $I_n$ )	20 kA
Nominal discharge current (8/20 $\mu$ s) per line ( $I_{n1}$ )	5 kA
Voltage protection level line-line for $I_n$ C2 ( $U_p$ )	$\leq 52$ V
Voltage protection level line-PG for $I_n$ C2 ( $U_p$ )	$\leq 1400$ V
Voltage protection level line-line at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 45$ V
Voltage protection level line-PG at 1 kV/ $\mu$ s C3 ( $U_p$ )	$\leq 1100$ V
Series impedance per line	1.0 ohm
Cut-off frequency line-line ( $f_G$ )	7.7 MHz
Capacitance line-line (C)	0.8 nF
Operating temperature range	-40°C...+80°C
Degree of protection	IP 65
For mounting on	walls in Ex zones 1, 2
Connection (input/output)	cable gland (M20 x 1.5)
Cross-sectional area, solid	0.08 - 4 mm <sup>2</sup>
Cross-sectional area, flexible	0.08 - 2.5 mm <sup>2</sup>
Cross-sectional area (equipotential bonding)	4 mm <sup>2</sup>
Tightening torque (terminals)	0.4 Nm
Earthing via	screw terminal on enclosure panel
Enclosure material	grey aluminium
Test standards for installed BXT	IEC 61643-21 / EN 61643-21
Approvals for installed BXT	ATEX, CSA

## Accessory for ITAK Ex (i)

### Mounting Set

For fixing ALGA 5 X enclosures at masts and pipes



Type	MS ALGA 5 X
Part No.	906 059
Enclosure material	StSt

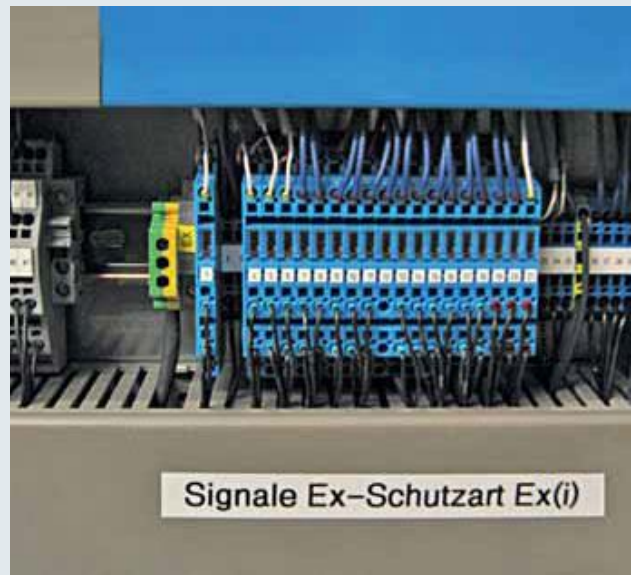


- Extremely space-saving (only 6 mm in width)
- Spring-loaded connection system
- ATEX and FISCO approval

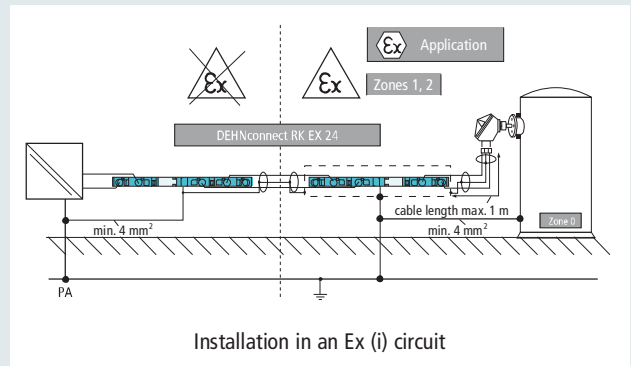
DEHNconnect RK MD EX is a terminal block of 6 mm width with integrated surge protection for intrinsically safe circuits. The five cage clamp terminals protect two lines each and additional equipotential bonding with terminal equipment can be established. The snap-in fixing mechanism at the supporting foot of the base part allows the arrester to be safely earthed via the DIN rail. As the enclosure of the arrester is open to one side to minimise the width, it is advisable to use an end plate at the end of each terminal block.



DCO RK MD EX with end plate



Two-pole terminal block of 6 mm width with integrated surge protection and cage clamp terminal. Earthing via DIN rail or terminal.



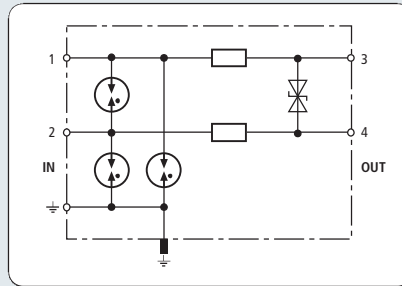
Installation in an Ex (i) circuit



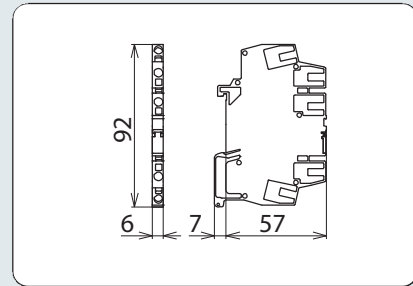
ATEX approval for DCO RK MD EX \*)

\*) The certificates can be downloaded at [www.dehn.de](http://www.dehn.de)





Basic circuit diagram DCO RK MD EX



Dimension drawing DCO RK MD EX

- For universal use
- Self-capacitance and self-inductance negligibly small
- For installation in conformity with the lightning protection zones concept at the boundaries from 0<sub>B</sub> – 2 and higher

Surge arrester with energy-coordinated low-capacitance protective circuit for protecting intrinsically safe measuring circuits and bus systems, meets FISCO requirements. Insulation strength > 500 V to earth.

Type	DCO RK MD EX 24
Part No.	919 960
SPD class	TYPE 2 P1
Nominal voltage (U <sub>N</sub> )	24 V
Max. continuous operating d.c. voltage (U <sub>C</sub> )	33 V
Max. continuous operating a.c. voltage (U <sub>C</sub> )	23 V
Max. input voltage acc. to EN 60079-11 (U <sub>I</sub> )	30 V
Max. input current acc. to EN 60079-11 (I <sub>I</sub> )	0.5 A
Nominal current (I <sub>N</sub> )	0.5 A
C2 Total nominal discharge current (8/20 μs) (I <sub>N</sub> )	10 kA
C2 Nominal discharge current (8/20 μs) per line (I <sub>N</sub> )	5 kA
Voltage protection level line-line for I <sub>N</sub> C2 (U <sub>p</sub> )	≤ 50 V
Voltage protection level line-PG for I <sub>N</sub> C2 (U <sub>p</sub> )	≤ 1500 V
Voltage protection level line-line at 1 kV/μs C3 (U <sub>p</sub> )	≤ 45 V
Voltage protection level line-PG at 1 kV/μs C3 (U <sub>p</sub> )	≤ 1400 V
Series impedance per line	1.8 ohms
Cut-off frequency line-line (f <sub>C</sub> )	6 MHz
Capacitance line-line (C)	≤ 1 nF
Capacitance line-PG (C)	≤ 6 pF
Operating temperature range	-40°C...+80°C
Degree of protection	IP 00, with cover IP 20
For mounting on	35 mm DIN rails acc. to EN 60715
Connection (input/output)	spring / spring
Cross-sectional area, solid	0.08 - 2.5 mm <sup>2</sup>
Cross-sectional area, flexible	0.08 - 2.5 mm <sup>2</sup>
Earthing via	DIN rail / terminal
Enclosure material	polyamide PA 6.6
Colour	blue
Test standards	IEC 61643-21 / EN 61643-21
SIL classification	SIL2 / SIL3 *)
ATEX approvals	KEMA 09ATEX0124 X: II 2 (1) G Ex ia IIC T4 ... T6
Approvals	GOST

\*) For more detailed information, please refer to [www.dehn.de/en/sil/](http://www.dehn.de/en/sil/)

Accessory for DEHNconnect RK Ex (i)

Jumper Bar

Multipole jumper bar for DCO RK



Type	KB 10 DCO RK
Part No.	919 880
Poles	10

Quick Labelling System, vertical Imprint

Plate with 2x plate numbers from 1 to 50 for DCO RK, vertical imprint



Type	BS 1 50 S DCO RK
Part No.	919 976
Material	plastic

Accessory for DEHNconnect RK Ex (i)

End Plate



Type	AD DCO RK BL
Part No.	919 978
Enclosure material	polyamide PA 6.6
Colour	blue

Quick Labelling System, horizontal Imprint

Plate with 2x plate numbers from 1 to 50 for DCO RK, horizontal imprint



Type	BS 1 50 DCO RK
Part No.	919 977
Material	plastic

## Accessory for Terminal Block Systems

- Lightning-impulse-current-tested up to 10 kA (10/350  $\mu$ s)
- Corrosion-resistant stainless steel
- Spring element ensures permanent shield connection



Lightning current carrying shield connection system for anchor bars. A slipping spring element compensates the yield of the cable materials used.

The lightning-impulse-current-tested shield connection system is specifically used on anchor bars. As, in the course of time, the conductor materials are subject to a yield, this yield is compensated by a slipping spring

element. The shield connection can also be isolated from local potential by means of an adequate insulating element.

This very robust shield connection system is particularly suited for cables with medium-sized diameters. It has been tested with lightning currents and is approved for nuclear plants.

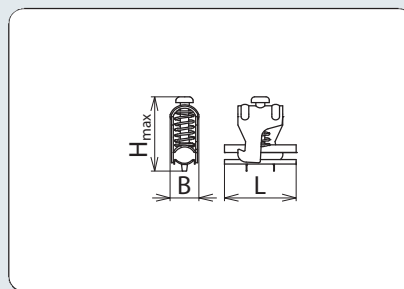


Shield connection system on anchor bar



Shield Terminals

Accessory for Terminal Block Systems



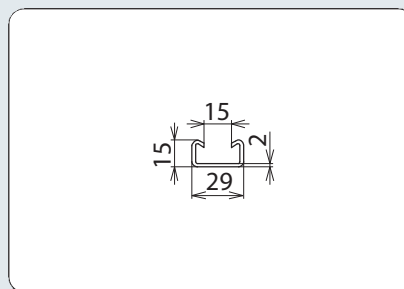
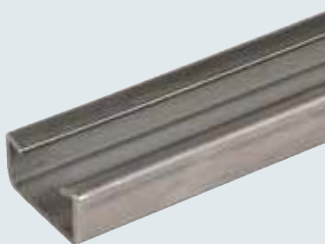
Dimension drawing SAK

- System for anchor bars which is capable of carrying lightning currents
- Large-area shield contact
- Compensates the yield of cable materials

Shield terminals for earthing cable shields on anchor bars. Suitable for lightning equipotential bonding. Can be subsequently installed without interrupting the cable shield or requiring tools for installation. Approved for use in nuclear plants with TÜV test certificate ETL 10/PB 301/97 (TÜV = German Technical Inspectorate).

Type	SAK 10 AS V4A	SAK 14 AS V4A	SAK 18 AS V4A	SAK 21 AS V4A	SAK 26 AS V4A	SAK 33 AS V4A
Part No.	308 403	308 404	308 405	308 406	308 407	308 408
Lightning impulse current capacity (10/350 µs)	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
Clamping range (Rd)	5 - 10 mm	8 - 14 mm	13 - 18 mm	17 - 21 mm	19 - 26 mm	25 - 33 mm
Material	StSt	StSt	StSt	StSt	StSt	StSt
Spring pressure	21 - 27 N	30 - 76 N	34 - 73 N	30 - 63 N	90 - 124 N	76 - 137 N
For mounting on	anchor bars	anchor bars	anchor bars	anchor bars	anchor bars	anchor bars
Dimensions (W x L x H)	16 x 40 x 48 mm	19.5 x 40 x 50 mm	24 x 40 x 56 mm	29 x 40 x 59 mm	36.5 x 40 x 74 mm	45 x 40 x 82 mm
Approvals	ETL 10/PB 301/97	ETL 10/PB 301/97	ETL 10/PB 301/97	ETL 10/PB 301/97	ETL 10/PB 301/97	ETL 10/PB 301/97

Anchor Bar

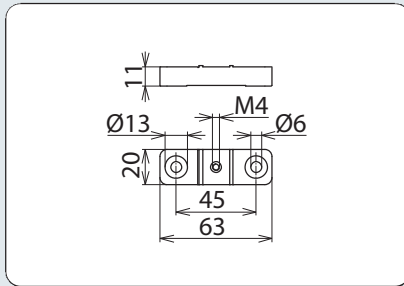


Dimension drawing AS SAK 1000 V2A

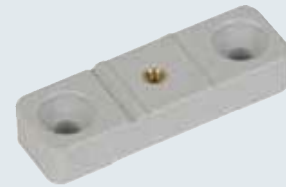
- Can be cut to length according to requirements

Mounting rail for earthing and fixing shield terminals.

Type	AS SAK 1000 V2A
Part No.	308 421
Material	StSt
Dimensions (W x L x H)	29 x 1000 x 15 mm
Approvals	ETL 10/PB 301/97



Dimension drawing ST AS SAK K

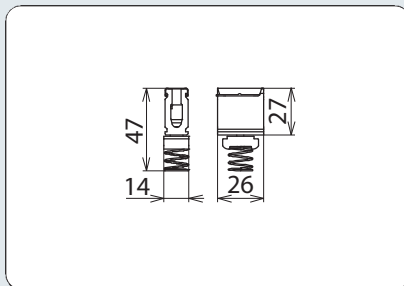


Busbar support for insulated fixing of AS SAK 1000 V2A anchor bars, with M4 threaded bushing.

- Non-conductive connection between the mounting plate and the anchor bar
- Equipotential bonding via AK 16 AS SAK MS terminal

Type	ST AS SAK K
Part No.	308 425
Material	plastic
Approvals	ETL 10/PB 301/97

Terminal



Dimension drawing AK 16 AS SAK MS



For connecting equipotential bonding conductors to AS SAK 1000 V2A anchor bars.

- Space-saving
- Two fixing screws for conductors included

Type	AK 16 AS SAK MS
Part No.	308 411
Cross-sectional area, solid	16 mm <sup>2</sup>
For mounting on	anchor bars
Approvals	ETL 10/PB 301/97





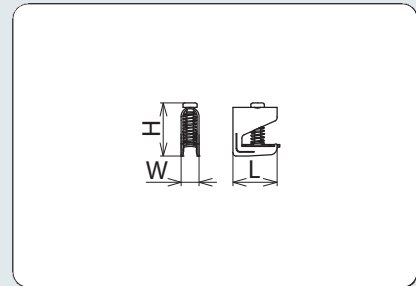
- Lightning-impulse-current-tested up to 5 kA (10/350  $\mu$ s)
- Corrosion-resistant stainless steel
- Spring element ensures permanent shield connection

Lightning current carrying DIN rail mounted shield connection system, ideally suited for small cables. Slipping spring element compensates the yield of the cable materials.

The lightning-impulse-current-tested DIN rail mounted shield connection system for a wide range of applications is ideally suited for small cable diameters such as bus cables. As, in the course of time, the conductor

materials are subject to a yield, this is compensated by a slipping spring element. The shield connection can also be isolated from local potential by means of an adequate insulating element.

## Shield Terminals



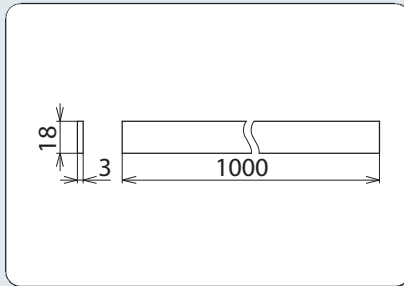
Dimension drawing SAK

- Lightning current carrying system for busbars
- Large-area shield contact
- Compensates the yield of cable materials

Shield terminals for earthing cable shields on busbars (18x3). Suitable for lightning equipotential bonding. Can be subsequently installed without interrupting the cable shield or requiring tools for installation.

Type	SAK 6.5 SN MS	SAK 11 SN MS
Part No.	919 010	919 011
Lightning impulse current capacity (10/350 $\mu$ s)	5 kA	5 kA
Clamping range (Rd)	1.5 - 6.5 mm	5 - 11 mm
Material	nickel-plated brass	nickel-plated brass
Spring pressure	8 - 13 N	22 - 31 N
For mounting on	SN 18x3 CU 1000	SN 18x3 CU 1000
Dimensions (W x L x H)	10 x 25 x 40 mm	17 x 25 x 47 mm





Dimension drawing SN 18X3 CU 1000

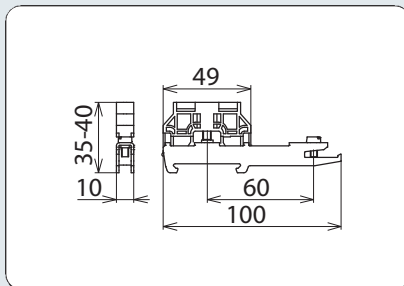


Mounting rail for shield terminals. Can be mounted onto busbar supports.

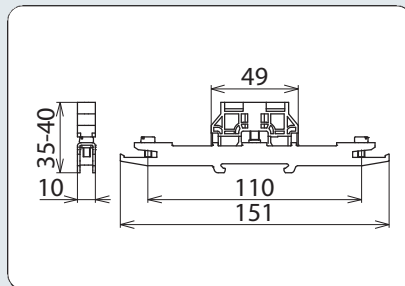
- Can be cut to length according to requirements
- Can be mounted onto busbar supports

Type	SN 18X3 CU 1000
Part No.	919 016
Material	tin-plated copper
For mounting on	busbar supports
Dimensions (W x L x H)	18 x 1000 x 3 mm

Rail Support



Dimension drawing SH1 18X3 ST



Dimension drawing SH2 18X3 ST



Rail support suitable for DIN rail mounting. Low-impedance connection of the shield terminals to the DIN rail via the busbar.

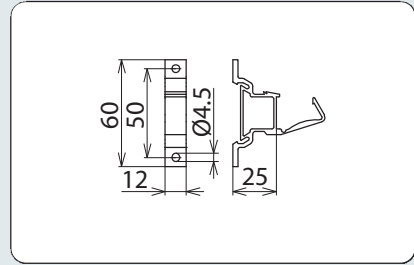
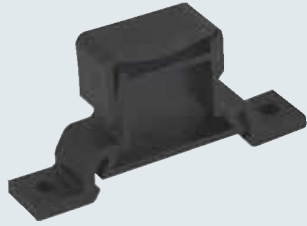
- Extremely space-saving
- With one or two-sided contact
- For 35 mm DIN rails acc. to EN 60715

Type	SH1 18X3 ST	SH2 18X3 ST
Part No.	919 012	919 013
Version	one-sided contact	two-sided contact
Material	tin-plated steel	tin-plated steel
For mounting on	35 mm DIN rails acc. to EN 60715	35 mm DIN rails acc. to EN 60715



Insulated Rail Support

Accessory for Terminal Block Systems



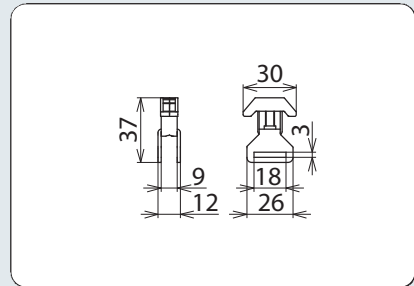
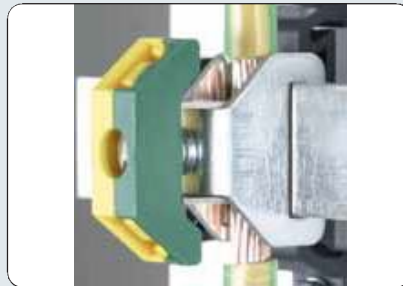
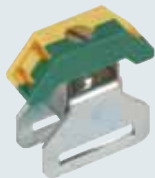
Dimension drawing SH 18X3 K

- Non-conductive connection between busbar and DIN rail
- Equipotential bonding via AK 35 SN 18X3 GG terminal

Rail support for DIN rail mounting or screw connection.

Type	SH 18X3 K
Part No.	919 014
Material	plastic
Colour	black
For mounting on	DIN rails or mounting plates

Terminal



Dimension drawing AK 35 SN 18X3 GG

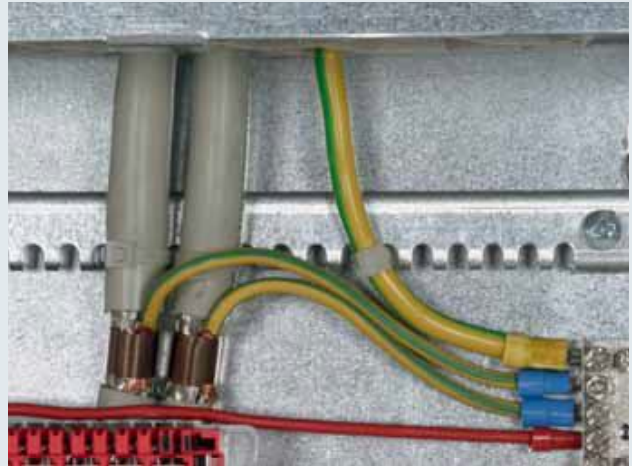
- Wide cross-sectional area
- For insulated shield construction with SH 18X3 K

Particularly suited for indirect shield earthing.

Type	AK 35 SN 18X3 GG
Part No.	919 015
Cross-sectional area, solid	35 mm <sup>2</sup>
For mounting on	busbars

Accessory for Terminal Block Systems

- Lightning-impulse-current-tested up to 10 kA (10/350  $\mu$ s)
- Extremely space-saving
- Spring element ensures permanent shield connection



Extremely space-saving shield connection system for use as constant force spring. A spring element compensates the yield of the cable materials.

The shields of the incoming information and power supply lines can be contacted by means of SA KRF constant force springs in a space-saving and lightning current carrying way. As, in the course of time, the conductor

materials are subject to a yield, this yield is compensated by a spring element. To permanently protect the clamping point from corrosion, constant force springs are wrapped with a self-bonding SKB rubber tape.



Test certificate for constant force spring of type SA KRF ...



## Constant Force Spring

Accessory for Terminal Block Systems



- For solderless connection of a conductor to the shield
- For use with all plastic and lead-sheathed cables
- Also suitable for steel-reinforced lead-sheathed cables

Constant force springs allow solderless shield connections for equipotential bonding or lightning equipotential bonding. They can be installed subsequently without interrupting the line shield or requiring tools for installation. Approved for nuclear plants according to TÜV Certificate No. T12-04-ETL003 (TÜV = German Technical Inspectorate).

Type SA KRF ...	10 V2A	15 V2A	22 V2A	29 V2A	37 V2A	50 V2A	70 V2A	94 V2A
Part No.	919 031	919 032	919 033	919 034	919 035	919 036	919 037	919 038
Lightning impulse current capacity (10/350 µs)	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
Clamping range (Rd)	4 - 10 mm	9 - 15 mm	14 - 22 mm	18.5 - 29 mm	23.5 - 37 mm	31 - 50 mm	44 - 70 mm	58 - 94 mm
Material	StSt	StSt	StSt	StSt	StSt	StSt	StSt	StSt
Colour	bare surface	bare surface	bare surface	bare surface	bare surface	bare surface	bare surface	bare surface
For mounting on	cable shields	cable shields	cable shields	cable shields	cable shields	cable shields	cable shields	cable shields
Approvals	T12-04-ETL 003	T12-04-ETL003	T12-04-ETL003	T12-04-ETL003	T12-04-ETL003	T12-04-ETL003	T12-04-ETL003	T12-04-ETL003

## Self-bonding Rubber Tape

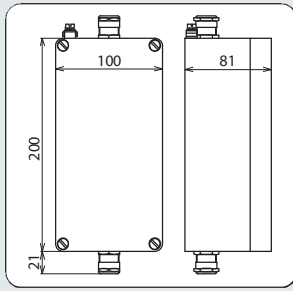


- Self-bonding
- Flexible

Roll with 9 m self-bonding rubber tape for wrapping around constant force springs for permanent corrosion protection.

Type	SKB 19 9M SW
Part No.	919 030
Colour	black
Tape dimensions (W x L)	19 mm x 9 m

Aluminium Enclosure



Dimension drawing of an aluminium enclosure

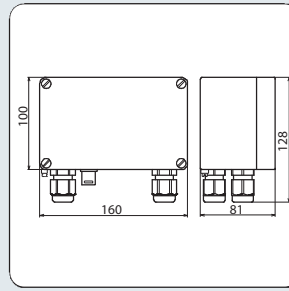


- DIN rail integrated
- Different types available on request

For the installation of DIN rail mounted devices. With two brass glands PG 11.

Type	ALGA 5
Part No.	906 055
Degree of protection	IP 65
For mounting on	walls
Dimensions (W x H x D)	100 x 200 x 81 mm
Capacity	6 modules
Enclosure material	aluminium

Aluminium Enclosure for Ex(i) Surge Arresters



Dimension drawing of an aluminium enclosure for Ex(i) surge arresters

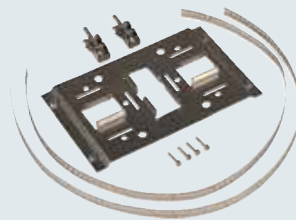


- DIN rail integrated
- All cables entering from below

With four plastic glands M20 x 1.5, sealable, pressure compensating membranes.

Type	ALGA 5 X
Part No.	906 058
Degree of protection	IP 65
For mounting on	walls
Dimensions (W x H x D)	160 x 100 x 85 mm
Capacity	6 modules
Enclosure material	aluminium

Mounting Set

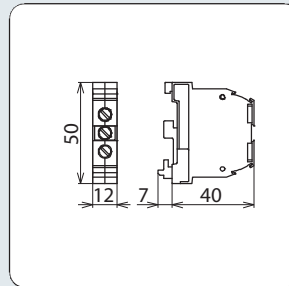


- Stainless steel
- For harsh environmental conditions

For fixing ALGA 5 X enclosures at masts and pipes.

Type	MS ALGA 5 X
Part No.	906 059
For mounting on	masts, pipes with a diameter of 25 to 140 mm
Enclosure material	StSt

Protective Conductor Terminal



Dimension drawing of a protective conductor terminal



- Capable of carrying lightning current

For earthing DIN rails

Type	SLK 16
Part No.	910 099
Cross-sectional area, flexible	6 - 16 mm <sup>2</sup>
Cross-sectional area, solid	6 - 25 mm <sup>2</sup>
For mounting on	DIN rails acc. to EN 60715
Enclosure material	polyamide 6.6
Colour	green/yellow





## Isolating Spark Gaps

For lightning equipotential bonding

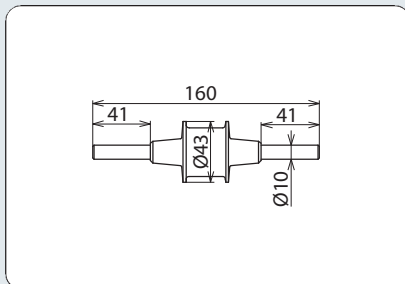
- For indirect connection/earthing of functionally isolated installation parts under lightning conditions
- For lightning equipotential bonding according to IEC 62305
- With corrosion-resistant stainless steel connections
- For building, outdoor, damp room and underground installation
- Extremely heavy-duty devices



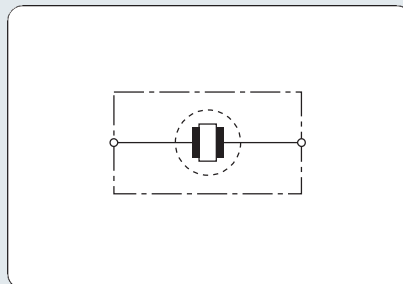
TFS: High-capacity isolating spark gap  
KFSU: Isolating spark gap

For lightning equipotential bonding according to IEC 62305 as well as for use in IT installations according to IEC 60364-5-54.

TFS / KFSU



Dimension drawing TFS / KFSU



Basic circuit diagram TFS / KFSU



Isolating spark gaps with plastic coating and two stainless steel connections (Rd 10 mm)

- For indirect connection/earthing of functionally isolated installation parts under lightning conditions
- For lightning equipotential bonding according to IEC 62305
- For installation in buildings, outdoors, in damp rooms as well as for underground installation

Type	TFS	KFSU
Part No.	923 023	923 021
Lightning impulse current (10/350 $\mu$ s) ( $I_{imp}$ )	100 kA	—
Class of lightning current carrying capability acc. to EN 50164-3	H	—
Nominal discharge current (8/20 $\mu$ s) ( $I_n$ )	100 kA	100 kA
Rated power-frequency withstand voltage (50 Hz) ( $U_{wAC}$ )	300 V	300 V
Lightning impulse sparkover voltage ( $U_{r,imp}$ )	$\leq 4$ kV	$\leq 4$ kV
Power frequency sparkover voltage (50 Hz) ( $U_{sw}$ )	$\leq 2.5$ kV	$\leq 2.5$ kV
Operating temperature range ( $T_U$ )	-20°C...+80°C	-20°C...+80°C
Degree of protection	IP 65	IP 65
Length	160 mm	160 mm
Diameter of the enclosure	43 mm	43 mm
Enclosure material	steel/plastic coating	steel/plastic coating
Connection	Rd 10 mm	Rd 10 mm
Material (connection)	stainless steel	stainless steel



ATEX and IECEx-certified isolating spark gap for lightning equipotential bonding according to IEC 62305 with flexible conductor connection

- For indirect connection/earthing of functionally isolated parts of installations under lightning conditions
- For lightning equipotential bonding according to IEC 62305 in hazardous areas (zone 2)
- Corrosion-resistant zinc die-cast enclosure with plastic cover and flexible conductor connection
- For bridging insulating pieces, insulating flanges etc. in cathodically protected pipe sections
- Extremely heavy-duty device
- Approval according to ATEX directive 94/9/EC and IECEx

EXFS L ...: Isolating spark gap for use in hazardous areas with flexible connecting cable

EXFS KU: Isolating spark gap for use in hazardous areas with two 1.5 m long connecting cables for underground installation

Ex isolating spark gaps of the EXFS L / EXFS KU product family are used when electrically conductive parts of installations cannot be directly interconnected in hazardous areas, for example, in case of cathodically protected pipeline sections.

ATEX and IECEx-certified EXFS L and EXFS KU spark gaps provide approved and tested safety in accordance with harmonised European standards.

The arc-resistant tungsten-copper electrodes ensure a long service life of the Ex spark gaps.

The approved EXFS L type with flexible conductor connection quickly adapts to any application environment. The prewired spark gaps feature connecting cables of different lengths with cable lug, screw and M10 nut. The flat or angled connection brackets (IF), which are available as accessory, allow to easily connect the spark gap to pipeline flanges. The EXFS KU type is enclosed in a moisture-proof PVC enclosure and is ideally suited for underground installation on insulating couplings.



ATEX approval for EXFS (download at [www.dehn.de](http://www.dehn.de))



**IECEx Certificate of Conformity**

INTERNATIONAL ELECTROTECHNICAL COMMISSION  
IEC Certification Scheme for Explosive Atmospheres

Certificate No.: IECEx DEK 11.0063X Issue No. 0 Certificate history

Status: Current

Date of Issue: 2011-10-12 Page 1 of 3

Applicant: **DEHN + SÖHNE GmbH + Co. KG**  
Hans-Dehn-Strasse 1  
D-82318 Neumarkt / Opl.,  
Germany

Electrical Apparatus: Isolating Spark Gap series EXFS  
Optional accessory:

Type of Protection: Ex nC

Marking: Ex nC RC T4 Gc  
Approved for issue on behalf of the IECEx Certification Body: C.G. von Ex

Position: Certification Manager

Signature: *[Signature]*  
(for printed version)

Date: 2011-10-12

1. This certificate and schedule may only be reproduced in full.  
2. This certificate is not transferrable and remains the property of the issuing body.  
3. The status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by: **DEKRA Certification B.V.**  
Steinweg 378  
6812 AR Arnhem  
The Netherlands  
All testing, inspection, auditing and certification activities of the former KEMA Quality are an integral part of the DEKRA Certification Group.



**IECEx Certificate of Conformity**

Certificate No.: IECEx DEK 11.0063X Issue No. 0

Date of Issue: 2011-10-12 Page 2 of 3

Manufacturer: **DEHN + SÖHNE GmbH + Co. KG**  
Hans-Dehn-Strasse 1  
D-82318 Neumarkt / Opl.,  
Germany

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard (as below) and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx (S) and Operational Documents as amended.

**STANDARDS:**  
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:  
IEC 60079-0 : 2007-10 Explosive atmospheres - Part 0: Equipment - General requirements  
Edition: 3  
IEC 60079-15 : 2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n".  
Edition: 4

This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

**TEST & ASSESSMENT REPORTS:**  
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:  
Test Report: NL/DEKEX/1111.0063/01

Quality Assessment Report:  
NL/NSW/GAR/08.0063/02

**IECEx Certificate of Conformity**

Certificate No.: IECEx DEK 11.0063X Issue No. 0

Date of Issue: 2011-10-12 Page 3 of 3

**Schedule**

**EQUIPMENT:**  
Equipment and systems covered by this certificate are as follows:  
The Isolating Spark Gap Types EXFS L 100 (923 080), EXFS L 200 (923 061), EXFS L 300 (923 062), EXFS L ... (special lengths) and EXFS KU (923 010) are used for indirect connection / earthing of functionally isolated conductive system parts in potentially explosive gas atmospheres.

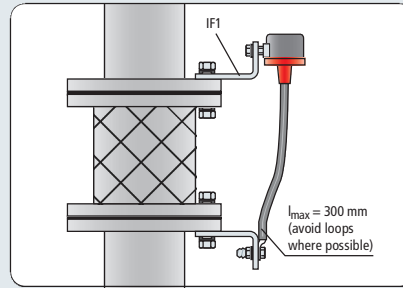
**Electrical data:**  
Rated Power frequency withstand voltage (50 Hz): U = 300 V;  
input sparkover voltage (1,2/50 µs): U<sub>i</sub> <= 2.5 kV;  
Lightning impulse current (10/350 µs): I = 50 kA.

**CONDITIONS OF CERTIFICATION: YES as shown below:**  
Ambient temperature range -20 °C to +60 °C.

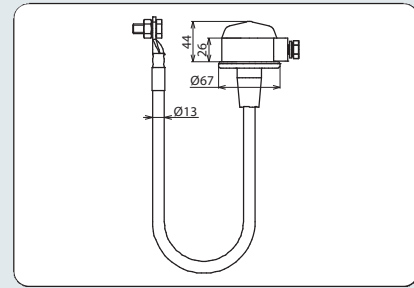
IECEx approval for EXFS (download at [www.dehn.de](http://www.dehn.de))

EXFS L

Isolating Spark Gaps



Installation of EXFS L



Dimension drawing EXFS L

- For indirect connection/earthing of functionally isolated parts of installations under lightning conditions
- For lightning equipotential bonding according to IEC 62305 in hazardous areas (zone 2)
- Approval according to ATEX directive 94/9/EC and IECEx

Ex isolating spark gap for aboveground installation

Type	EXFS L100	EXFS L200	EXFS L300
Part No.	923 060	923 061	923 062
Lightning impulse current (10/350 µs) ( $I_{imp}$ )	50 kA	50 kA	50 kA
Class of lightning current carrying capability acc. to EN 50164-3	N	N	N
Nominal discharge current (8/20 µs) current (8/20) ( $I_n$ )	100 kA	100 kA	100 kA
Rated power-frequency withstand voltage (50 Hz) ( $U_{wAC}$ )	300 V	300 V	300 V
Lightning impulse sparkover voltage ( $U_{r imp}$ )	≤ 2.5 kV	≤ 2.5 kV	≤ 2.5 kV
Power frequency sparkover voltage (50 Hz) ( $U_{aw}$ )	≤ 1.2 kV	≤ 1.2 kV	≤ 1.2 kV
Operating temperature range ( $T_U$ )	-20°C...+80°C	-20°C...+80°C	-20°C...+80°C
Degree of protection	IP 54	IP 54	IP 54
ATEX approvals	DEKRA 11ATEX0146 X	DEKRA 11ATEX0146 X	DEKRA 11ATEX0146 X
Ex marking according to EN 60079-0 and EN 60079-15: gas	II 3 G Ex nC IIC T4 Gc	II 3 G Ex nC IIC T4 Gc	II 3 G Ex nC IIC T4 Gc
IECEx approvals	IECEx DEK 11.0063X	IECEx DEK 11.0063X	IECEx DEK 11.0063X
Ex marking according to EN 60079-0 and EN 60079-15: gas	Ex nC IIC T4 Gc	Ex nC IIC T4 Gc	Ex nC IIC T4 Gc
Enclosure length	90 mm	90 mm	90 mm
Enclosure diameter	63 mm	63 mm	63 mm
Enclosure material	zinc die-cast, plastic	zinc die-cast, plastic	zinc die-cast, plastic
Connecting cable	H01N2-D 25 mm <sup>2</sup> with cable lug and screw/nut (M10)	H01N2-D 25 mm <sup>2</sup> with cable lug and screw/nut (M10)	H01N2-D 25 mm <sup>2</sup> with cable lug and screw/nut (M10)
Cable length	100 mm	200 mm	300 mm
Suitable for flange size	20-130 mm	120-230 mm	220-320 mm

Accessory for EXFS L / EXFS KU

Pair of angled Connection Brackets - IF 1 -

Pair of angled connection brackets for EXFS ...; diameter corresponds to the bolt diameter of the bolted flange joint (d1 up to max. 62 mm, please indicate the diameter required when placing your order)



Type	IF1
Part No.	923 011
Type	angled
Material	St/tZn
Max. bore diameter d1	62 mm

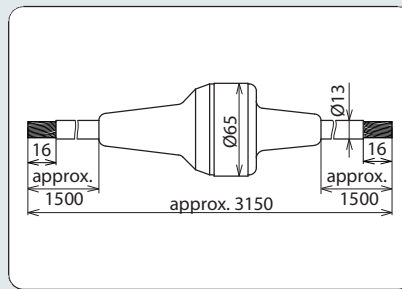
Accessory for EXFS L / EXFS KU

Pair of flat Connection Brackets - IF 3 -

Pair of flat connection brackets for EXFS ...; diameter corresponds to the bolt diameter of the bolted flange joint (d1 up to max. 42 mm, please indicate the diameter required when placing your order)



Type	IF3
Part No.	923 016
Type	flat
Material	St/tZn
Max. bore diameter d1	42 mm



Dimension drawing EXFS KU



Ex isolating spark gap with connecting cables for aboveground and underground installation; with water-proof sheath; may be shortened for short cable lengths

- For indirect connection/earthing of functionally isolated parts of installations under lightning conditions
- For lightning equipotential bonding according to IEC 62305 in hazardous areas (zone 2)
- Approval according to ATEX directive 94/9/EC and IECEx

Type	EXFS KU
Part No.	923 019
Lightning impulse current (10/350 $\mu$ s) ( $I_{imp}$ )	50 kA
Class of lightning current carrying capability acc. to EN 50164-3	N
Nominal discharge current (8/20 $\mu$ s) current (8/20) ( $I_n$ )	100 kA
Rated power-frequency withstand voltage (50 Hz) ( $U_{wAC}$ )	300 V
Lightning impulse sparkover voltage ( $U_{r imp}$ )	$\leq 2.5$ kV
Power frequency sparkover voltage (50 Hz) ( $U_{aw}$ )	$\leq 1.2$ kV
Operating temperature range ( $T_U$ )	-20°C...+80°C
Degree of protection	IP 67
ATEX approvals	DEKRA 11ATEX0146 X
Ex marking according to EN 60079-0 and EN 60079-15: gas	II 3 G Ex nC IIC T4 Gc
IECEx approvals	IECEx DEK 11.0063X
Ex marking according to EN 60079-0 and EN 60079-15: gas	Ex nC IIC T4 Gc
Enclosure length	90 mm
Enclosure diameter	63 mm
Enclosure material	zinc die-cast, plastic
Connecting cable	NYJ-J-1x25 mm <sup>2</sup>
Cable length	2x approx. 1.5 m



ATEX and IECEx-certified isolating spark gap with low sparkover voltage for lightning equipotential bonding according to IEC 62305

- For indirect connection/earthing of functionally isolated parts of installations under lightning conditions
- Device for lightning equipotential bonding according to IEC 62305 in hazardous areas
- For bridging insulating pieces, insulating flanges etc. in cathodically protected pipe sections
- For safe installation in Ex zone 1 (gas) or 21 (dust)
- Especially low sparkover voltage
- Especially high a.c. current withstand capability
- Approval according to "ATEX Directive" 94/9/EC and IECEx

**EXFS 100:** Isolating spark gap for use in hazardous areas with plastic sheath and M10 threaded bushings

**EXFS 100 KU:** Isolating spark gap for use in hazardous areas with two 2 m long connecting cables for underground installation

The Ex isolating spark gaps of the EXFS 100 / EXFS 100 KU product family are used when conductive installation components situated in hazardous areas cannot be connected directly with each other.

The spark gaps with low sparkover voltage are especially efficient for isolated parts of installations with low insulation resistance.

No special requirements have to be observed for safe application in zone 1 (gases) or zone 21 (dusts).

With a maximum lightning impulse current of 100 kA (10/350 µs), EXFS 100 and EXFS 100 KU meet class H according to EN 50164-3 "Lightning Protection Components (LPC) – Part 3: Requirements for isolating spark gaps".

The ATEX and IECEx-certified EXFS 100 and EXFS 100 KU spark gaps provide approved safety according to harmonised European standards.

For connecting EXFS 100 spark gaps, prewired connecting cables of different lengths are available as accessory.

Flat and angled connection brackets (IF) allow to easily connect the spark gaps to pipe flanges.



EXFS 100 KU types are enclosed by a moisture-proof plastic sheath and are therefore ideally suited for underground installation on insulating couplings.



ATEX approvals for EXFS 100 (download at [www.dehn.de](http://www.dehn.de))

**IECEx Certificate of Conformity**

INTERNATIONAL ELECTROTECHNICAL COMMISSION  
IEC Certification Scheme for Explosive Atmospheres  
for full and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx KEM 08.0001X Issue No.: 2 Certificate history:  
Issue No. 2 (2011-11-08)  
Issue No. 1 (2009-11-18)  
Issue No. 0 (2008-0-18)

Date of issue: 2011-11-08 Page 1 of 4

Applicant: **DEHN + SÖHNE GmbH + Co. KG**  
Horn-Dehn-Strasse 1  
D-92318 Neunkirchen,  
Germany

Electrical Apparatus: **Isolating Spark Gap type EXFS 100 and type EXFS 100 KU**  
Optional accessory:

Type of Protection: **Ex d, Ex ID**

Marking: **Ex d IIC T8 Gb  
Ex Ib IIC T8°C Db IP 66/7**

Approved for issue on behalf of the IECEx: M. Enthaus  
Certification Body: Certification Manager

Signature: *[Signature]*  
Date: **2011-11-08**

1. This certificate and schedule may only be reproduced in full.  
2. This certificate is not transferable and remains the property of the issuing body.  
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by: **DEKRA Certification B.V.**  
Ulrichssteeg 370  
8812 GP Amstelveen  
The Netherlands  
All testing, inspection, auditing and certification activities of the former KEMA Quality are an integral part of the DEKRA Certification Group.



**IECEx Certificate of Conformity**

Certificate No.: IECEx KEM 08.0001X Issue No.: 2  
Date of issue: 2011-11-08 Page 2 of 4

Manufacturer: **DEHN + SÖHNE GmbH + Co. KG**  
Horn-Dehn-Strasse 1  
D-92318 Neunkirchen,  
Germany

Manufacturing location(s):

This certificate is issued on verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard (set below) and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx QI and Operational Documents as amended.

**STANDARDS:**  
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2007-18 Explosive atmospheres - Part 0: Equipment - General requirements  
Edition 0  
IEC 60079-1 : 2007-04 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosure "d"  
Edition 4  
IEC 60079-31 : 2006 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "T"  
Edition 1

This Certificate does not indicate compliance with additional safety and performance requirements other than those expressly included in the Standards listed above.

**TEST & ASSESSMENT REPORTS:**  
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report: NLXEMEXTR08.0001X NLXEMEXTR08.0001X NLXEMEXTR08.0001X

Quality Assessment Report: NLXEMEXTR08.0001X

**IECEx Certificate of Conformity**

Certificate No.: IECEx KEM 08.0001X Issue No.: 2  
Date of issue: 2011-11-08 Page 3 of 4

**Schedule**

**EQUIPMENT:**  
Equipment and systems covered by this certificate are as follows:  
Isolating Spark Gap type EXFS 100 and type EXFS 100 KU provides galvanic isolation between parts of electrical installations. In case of an increasing potential difference e.g. caused by a lightning strike, the isolation will be absorbed by ignition of the spark gap and the building of a low-resistance connection.  
Ambient temperature range for type EXFS 100: -20 °C ... +60 °C  
for type EXFS 100 KU: -40 °C ... +60 °C

**Electrical data:**  
Rated power frequency withstand voltage (50 Hz) U<sub>i</sub> = 250 V ac  
Inputs spark over voltage (1.2/50 µs) U<sub>i</sub> at 250 V  
Lightning inputs current (10/350 µs) I = 100 kA

**Note:**  
The electrical data is not in the scope of IECEx certification.

**CONDITIONS OF CERTIFICATION: YES as shown below:**  
For type EXFS 100: -20 °C to +60 °C and for type EXFS 100 KU: -40 °C to +60 °C.

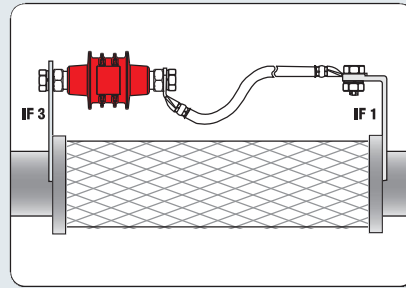
**IECEx Certificate of Conformity**

Certificate No.: IECEx KEM 08.0001X Issue No.: 2  
Date of issue: 2011-11-08 Page 4 of 4

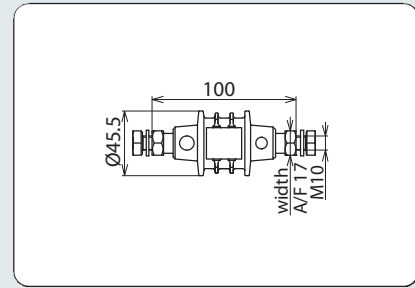
**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):**

Issue 2:  
Extended temperature range of EXFS 100 KU and  
Updated standard issue(s)

IECEx approvals for EXFS 100 (download at [www.dehn.de](http://www.dehn.de))



Installation of EXFS 100



Dimension drawing EXFS 100

- For indirect connection/earthing of functionally isolated parts of installations under lightning conditions
- Device for lightning equipotential bonding according to IEC 62305 in hazardous areas
- Approval according to "ATEX Directive" 94/9/EC and IECEx

Isolating spark gap for use in hazardous areas with plastic sheath and M10 threaded screws

Type	EXFS 100
Part No.	923 100
Lightning impulse current (10/350 μs) (I <sub>imp</sub> )	100 kA
Class of lightning current carrying capability acc. to EN 50164-3	H
Nominal discharge current (8/20 μs) (I <sub>n</sub> )	100 kA
Rated power-frequency withstand voltage (50 Hz) (U <sub>wAC</sub> )	250 V
Lightning impulse sparkover voltage (U <sub>r imp</sub> )	≤ 1.25 kV
Power-frequency sparkover voltage (50 Hz) (U <sub>aw</sub> )	≤ 0.5 kV
Rated discharge current (50 Hz) (I <sub>max</sub> )	500 A / 0.5 sec. (T <sub>U</sub> ≤ 45°C)
Operating temperature range (T <sub>U</sub> )	-20°C...+60°C
Degree of protection	IP 67
ATEX approvals	DEKRA 11ATEX0178 X
Ex marking according to EN 60079-0 and EN 60079-1: gas	II 2 G Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31: dust	II 2 D Ex tb IIIC T80 °C Db IP 66/67
IECEX approvals	IECEX KEM 09.0051X
Ex marking according to EN 60079-0 and EN 60079-1: gas	Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31: dust	Ex tb IIIC T80°C Db IP 66/67
Enclosure length	100 mm
Enclosure diameter	45.5 mm
Enclosure material	plastic sheath
Connection of enclosure	M10 threaded bushing, 2x M10x25 mm, 2x spring washer

Accessory for EXFS L / EXFS KU

Pair of angled Connection Brackets - IF 1 -

Pair of angled connection brackets for EXFS ...; diameter corresponds to the bolt diameter of the bolted flange joint (d1 up to max. 62 mm, please indicate the diameter required when placing your order)



Type	IF1
Part No.	923 011
Type	angled
Material	St/tZn
Max. bore diameter d1	62 mm

Pair of flat Connection Brackets - IF 3 -

Pair of flat connection brackets for EXFS ...; diameter corresponds to the bolt diameter of the bolted flange joint (d1 up to max. 42 mm, please indicate the diameter required when placing your order)



Type	IF3
Part No.	923 016
Type	flat
Material	St/tZn
Max. bore diameter d1	42 mm

Accessory for EXFS 100 / EXFS 100 KU

EXFS 100: Connecting Cable, Cu 25 mm<sup>2</sup>

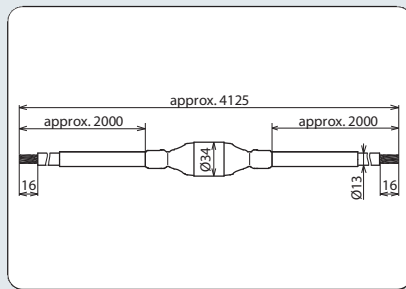
Connecting cable for EXFS 100; two cable lugs (Ø10.5 mm), screw, nut, and spring washer



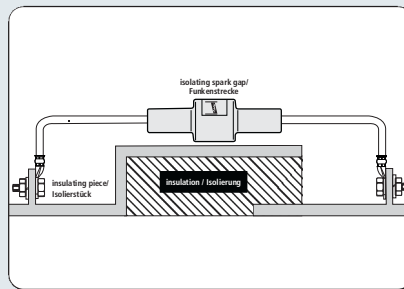
Type AL EXFS ...	L100 KS	L200 KS	L300 KS
Part No.	923 025	923 035	923 045
Cable lug material	Cu/gal Sn	Cu/gal Sn	Cu/gal Sn
Cross-section	25 mm <sup>2</sup>	25 mm <sup>2</sup>	25 mm <sup>2</sup>
Cable length	100 mm	200 mm	300 mm

## Isolating Spark Gaps

EXFS 100 KU



Dimension drawing EXFS 100 KU



Installation of EXFS 100 KU



Ex isolating spark gap with connecting cable for aboveground and underground installation; with water-proof sheath; may be shortened for short cable lengths

- For indirect connection/earthing of functionally isolated parts of installations under lightning conditions
- Device for lightning equipotential bonding according to IEC 62305 in hazardous areas
- Approval according to "ATEX Directive" 94/9/EC and IECEx

Type	EXFS 100 KU
Part No.	923 101
Lightning impulse current (10/350 $\mu$ s) ( $I_{imp}$ )	100 kA
Class of lightning current carrying capability acc. to EN 50164-3	H
Nominal discharge current (8/20 $\mu$ s) ( $I_n$ )	100 kA
Rated power-frequency withstand voltage (50 Hz) ( $U_{wAC}$ )	250 V
Lightning impulse sparkover voltage ( $U_{r imp}$ )	$\leq 1.25$ kV
Power-frequency sparkover voltage (50 Hz) ( $U_{aw}$ )	$\leq 0.5$ kV
Rated discharge current (50 Hz) ( $I_{max}$ )	500 A / 0.5 sec. ( $T_U \leq 45^\circ\text{C}$ )
Operating temperature range ( $T_U$ )	$-40^\circ\text{C} \dots +60^\circ\text{C}$
Temperature range during installation	$-5^\circ\text{C} \dots +50^\circ\text{C}$
Degree of protection	IP 67
ATEX approvals	DEKRA 11ATEX0178 X
Ex marking according to EN 60079-0 and EN 60079-1: gas	II 2 G Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31: dust	II 2 D Ex tb IIIC T80 °C Db IP 66/67
IECEx approvals	IECEx KEM 09.0051X
Ex marking according to EN 60079-0 and EN 60079-1: gas	Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31: dust	Ex tb IIIC T80°C Db IP 66/67
Enclosure length	123 mm
Enclosure diameter	34 mm
Enclosure material	water-proof plastic sheath
Connecting cable	NYJ-J-1x25 mm <sup>2</sup>
Cable length	2x approx. 2 m



Pipe clamp for electrical contacting of pipes in explosion-hazard areas for implementing of lightning equipotential bonding according to EN 62305-3 (DIN VDE 0185-305-3)

So far equipotential bonding and lightning equipotential bonding of pipes in explosion-hazard areas has been implemented by means of welded or threaded bushing connections. Using clamps was only permitted if evidence of no ignition sparking in case of lightning current loading was provided. Such proof has now been rendered for a pipe clamp by DEHN + SÖHNE. In compliance with and tested according to EN 50164-1 (VDE 0185-201) title English: Lightning Protection Components (LPC) - Part 1: Requirements for connection components in a potentially explosive atmosphere (clamps and connectors), the sample passed the test for no occurrence of ignition sparks at a lightning current loading of up to 50 kA (10/350  $\mu$ s). This new pipe clamp for explosion-risk areas not only ensures the safe electrical contact by means of two contact clips, but also



Applied at a StSt pipe

- Usable in potentially explosive atmospheres Ex zones 1 and 2 (gases, vapours, mists) as well as Ex zones 21 and 22 (dusts)
- Tested according to explosion group IIB
- Time-saving installation – no need to deactivate systems/areas for welding or drilling works

- EX BRS 27: Clamping range from  $\varnothing$ 6 mm to 26.9 mm ( $\frac{3}{4}$ " )
- EX BRS 90: Clamping range from  $\varnothing$ 26.9 mm ( $\frac{3}{4}$ " ) to 88.9 mm (3" )
- EX BRS 300: Clamping range from  $\varnothing$ 88.9 mm (3" ) to 300 mm
- EX BRS 500: Clamping range from  $\varnothing$ 300 to 500 mm

Separate clamping body: Clamping range from  $\varnothing$ 26.9 mm ( $\frac{3}{4}$ " ) to 500 mm

the adequate mechanical fixing by an electrically insulated clamping body.

The Ex pipe clamp provides following connection possibilities

- round conductors made of Cu, St/tZn, Al, StSt with  $\varnothing$ 8/10 mm or stranded copper conductors, cross-section 16-35 mm<sup>2</sup>, with E-Cu crimping cable lug (DIN 46235)
- flat copper conductors with minimum dimensions of 20x2.5 mm and a bore of  $\varnothing$ 10.5 mm

More details in installation instructions No. 1599.



DEHN + SÖHNE

**DECLARATION OF MANUFACTURER**

**Product:** Pipe clamp for explosive zones

**Product description:** Part No. 540 821  
Part No. 540 801  
Part No. 540 803  
Part No. 540 805  
Part No. 540 810

**Manufacturer:** DEHN + SÖHNE GmbH + Co.KG.  
Hans-Dehn-Str. 1  
92318 Neumarkt i.d.OPf., Germany

**Application:**

The pipe clamp for explosive zones is used for connecting pipes of different materials and diameters to the lightning equipotential bonding structure in explosive atmospheres.

Lightning currents are discharged without formation of sparks as specified in the technical data sheet.

We herewith confirm that the pipe clamp for explosive zones is suitable for the use in explosive zones 1 and 2 (gas, vapour, mist) and explosive zones 21 and 22 (combustible dust) in connection with the installation instructions, Publication No. 1599, "Pipe Clamp for explosive zones" and is tested according to explosion group IIB.

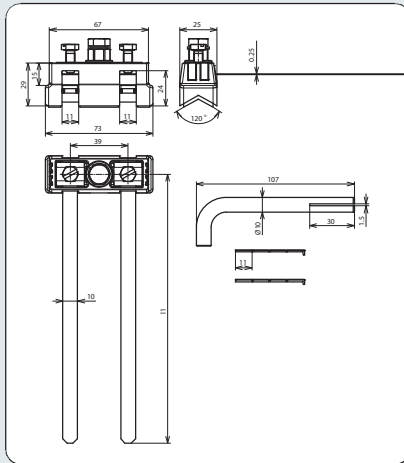
Pipe clamps for explosive zones have no own potential source of ignition (mechanical device) and are thus not subject to the European directive 94/9/EG.

Therefore certification according to the European directive 94/9/EG is **not legally admissible and not necessary** with respect to explosion protection.

Neumarkt i.d.OPf., 12 Okt. 2009  
Dr.-Ing. Ralph Brocke  
Director R&D

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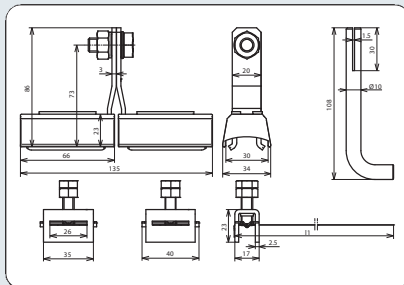




Dimension drawing EXFS 100 KU

Clamping range  $\varnothing 6-26,9$  mm (3/4")

Type	EX BRS 27
Part No.	540 821
Lightning impulse current (10/350) Cu $\varnothing 6-12$ mm ( $I_{imp}$ )	10 kA
Lightning impulse current (10/350) Cu $\varnothing 12-26.9$ mm (3/4") ( $I_{imp}$ )	20 kA
Lightning impulse current (10/350) Cu $\varnothing 26.9$ mm (3/4") ( $I_{imp}$ )	25 kA
Lightning impulse current (10/350) St/tZn $\varnothing 17.2-26.9$ mm (3/4") ( $I_{imp}$ )	25 kA
Lightning impulse current (10/350) StSt $\varnothing 6-12$ mm ( $I_{imp}$ )	10 kA
Lightning impulse current (10/350) StSt $\varnothing 12-26.9$ mm (3/4") ( $I_{imp}$ )	12 kA
Lightning impulse current (10/350) StSt $\varnothing 26.9$ mm (3/4") ( $I_{imp}$ )	25 kA
Terminal	M8
Clamping range of pipe $\varnothing$	6-26.9 (3/4") mm
Material of clamping body	polyamide
Material of grip head/tensioning strap	StSt
Material of contact clip	brass/gal Sn
Standard	DIN EN 50164-1



Dimension drawing EX BRS

## Type EX BRS 90 / 300 / 500



Type EX BRS 90 (Part No. 540 801)  
Clamping range  $\varnothing 26.9$  (3/4") to 88.9 mm (3")

Type EX BRS 300 (Part No. 540 803)  
Clamping range  $\varnothing 88.9$  mm (3") to 300 mm

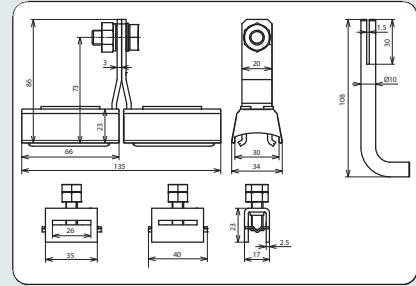
Type EX BRS 500 (Part No. 540 805)  
Clamping range  $\varnothing 300$  to 500 mm

Type	EX BRS 90	EX BRS 300	EX BRS 500
Part No.	540 801	540 803	540 805
Lightning impulse current (10/350) Cu ( $I_{imp}$ )	50 kA	50 kA	—
Lightning impulse current (10/350) St/tZn ( $I_{imp}$ )	50 kA	50 kA	—
Lightning impulse current (10/350) St/bare ( $I_{imp}$ )	—	—	50 kA
Lightning impulse current (10/350) StSt ( $I_{imp}$ )	25 kA	50 kA	50 kA
Terminal	M10	M10	M10
Clamping range of pipe $\varnothing$	26.9 (3/4") - 88.9 (3") mm	88.9 (3") - 300 mm	300 - 500 mm
Material of clamping body	polyamide	polyamide	polyamide
Material of grip head/tensioning strap	StSt	StSt	StSt
Material of contact clip	Cu/gal Sn	Cu/gal Sn	Cu/gal Sn
Standard	EN 50164-1	EN 50164-1	EN 50164-1

Separate clamping body



For use with endless tensioning strap (Part No. 540 901), clamping ranges from Ø26.9 mm (3/4") to 500 mm



Part No.	540 810
Lightning impulse current (10/350) Cu ( $I_{imp}$ )	50 kA
Lightning impulse current (10/350) St/tZn ( $I_{imp}$ )	50 kA
Lightning impulse current (10/350) StSt ( $I_{imp}$ )	25 kA
Terminal	M10
Clamping range of pipe Ø	26.9 (3/4") - 500 mm
Material of clamping body	polyamide
Material of grip head/tensioning strap	StSt
Material of contact clip	Cu/gal Sn
Standard	EN 50164-1

Accessory for Pipe Clamps for Explosion Hazard Areas

Tensioning Strap



Part No.	540 901
Material	StSt
Dimensions of strap (w x d)	...x25x0.3 mm
Length	100 m

## Isolating Spark Gaps

## Voltage limiting device

- Electrical isolation of insulated track sections and earthed parts of installations
- Safe equipotential bonding in case of a short circuit or earth fault at the overhead contact line due to high-current-resistant welding of the electrodes
- Discharge of lightning surges without formation of short circuits due to lightning-resistant SDS ... voltage limiting device
- Short-circuit withstand capability up to 25 kA<sub>rms</sub> /100 ms; 36 kA<sub>rms</sub> /75 ms



#### SDS ....: Cylindrical SDS spark gap unit for use with rail adapter Siemens No. 8WL6503-xx

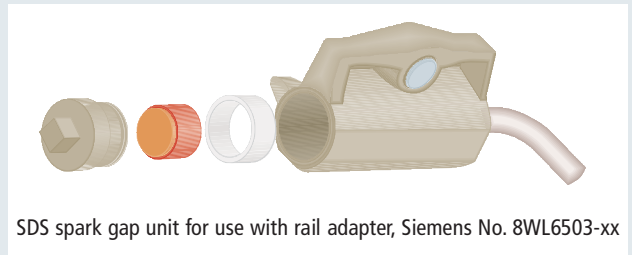
DIN EN 50122-1 describes the use of voltage limiting devices for d.c. and a.c. traction systems for so-called "open traction system earthing" of conductive components of overhead contact lines and current collectors. In order to prevent the occurrence of hazardous surges between the insulated tracks or track sections of electric railways and earthed parts of the installation, voltage limiting devices (SDS ...) are used.

Their function is to permanently connect parts of the installation in the overhead contact line and current collector areas to the return conductor as soon as the threshold voltage is exceeded.

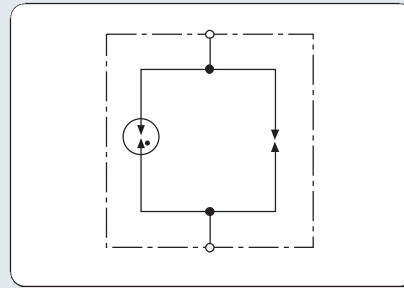
In case of atmospheric overvoltages, the lightning-resistant SDS ... voltage limiting device is capable of returning to its initial state after discharging the impulse current. Only if the specified lightning current load is exceeded, a permanent short-circuit is initiated by heavy-current-resistant welding of the electrodes and the fuse link has to be replaced.

The SDS voltage limiting device consists of a spark gap unit and the respective connecting kit for direct connection to the rail or overhead contact line tower.

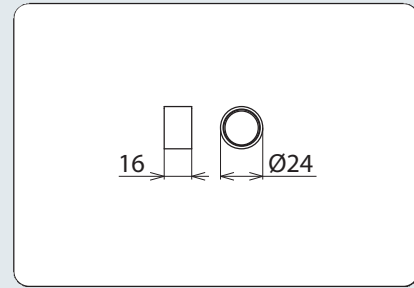
The spark gap unit of type SDS 1 (Part No. 923 110) developed by DEHN + SÖHNE has also been approved by the German Federal Railway Authority (EBA).



SDS spark gap unit for use with rail adapter, Siemens No. 8WL6503-xx



Basic circuit diagram SDS ...



Dimension drawing SDS ...

- Electrical isolation of insulated track sections and earthed parts of installations
- Safe equipotential bonding due to high-current-resistant welding of the electrodes in case of a short-circuit or earth fault at the overhead contact line
- Discharge of surges without short-circuit formation

Spark gap unit for a power-frequency sparkover voltage of 940 V

Type	SDS 1	SDS 2	SDS 3	SDS 4	SDS 5
Part No.	923 110	923 117	923 116	923 118	923 119
Power frequency sparkover voltage ( $U_{aw}$ )	≤ 940 V	—	—	—	—
d.c. sparkover voltage ( $U_{ag}$ )	600 V +/- 20 %	350 V +/- 20 %	550 V	230 V +/- 20 %	120 V +/- 20 %
Impulse sparkover voltage	≤ 1400 V (1 kV/μs)	≤ 900 V (1 kV/μs)	≤ 1000 V (1 kV/μs)	≤ 650 V (1 kV/μs)	≤ 600 V (1 kV/μs)
Self-extinguishing capability	300 A / 65 V	—	—	—	—
Lightning current discharge capacity (10/350 μs) 0,1x / 0,5x / 1x	5 kA	2 kA	2.5 kA	2.5 kA	2 kA
Lightning current withstand capability (10/350 μs)	25 kA	25 kA	25 kA	25 kA	25 kA
Impulse current discharge capacity (8/20 μs) 0,1x / 0,5x / 1x	—	—	—	20 kA	20 kA
Safe short-circuit due to welding of the electrodes for alternating currents @ 100 ms	≥ 1.5 kA / 1000 V / 100 ms	—	—	—	—
Safe short-circuit due to welding of the electrodes for alternating currents @ 30 ms	≥ 2.5 kA / 1000 V / 30 ms	—	—	—	—
Safe short-circuit due to welding of the electrodes for direct currents	≥ 750 A / 250 ms	≥ 600 A / 250 ms	—	≥ 600 A / 250 ms	≥ 600 A / 250 ms
Short-circuit withstand capability	25 kA <sub>rms</sub> / 100 ms; 36 kA <sub>rms</sub> / 75 ms	25 kA <sub>rms</sub> / 100 ms; 36 kA <sub>rms</sub> / 75 ms	25 kA <sub>rms</sub> / 100 ms; —	25 kA <sub>rms</sub> / 100 ms; 36 kA <sub>rms</sub> / 75 ms	25 kA <sub>rms</sub> / 100 ms; 36 kA <sub>rms</sub> / 75 ms
Long-term current	1 kA <sub>rms</sub> for t ≤ 120 s	1 kA <sub>rms</sub> for t ≤ 120 s	—	1 kA <sub>rms</sub> for t ≤ 120 s	1 kA <sub>rms</sub> for t ≤ 120 s
Leakage current ( $I_L$ )	< 1 μA for 100 V dc	< 1 μA for 100 V dc	—	< 1 μA for 100 V dc	< 1 μA for 100 V dc
Operating temperature range ( $T_U$ )	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C
For mounting on	voltage breakdown protectors/SIEMENS rail adapters No. 8WL6503-xx				
Tightening torque of the fuse link in the busbar adapter	15 Nm	15 Nm	15 Nm	15 Nm	15 Nm
Approvals	EBA	—	—	—	—
DB Drawing No.	4 Ebs 15.13.20 Blatt 2	—	—	—	—