



DEHN + SÖHNE

New Products for Process Industry



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Power Supply Systems
SPDs Class II



DEHNguard® IT 500 (FM)
Multipole Surge Arrester
for IT-Systems with $U_{L-L} = 500 \text{ V} / 50 \text{ Hz}$

Red / Line

Surge Arrester for the use in the Lightning Protection Zones Concept at the boundary of LPZ 0_B – 1 and more.

For the protection of low voltage consumer's installations against surges (in Overvoltage Protection Category III according to DIN VDE 0110-1:1997-04).
SPD Class II according to IEC 61643-1:1998-02. SPD Type 2 according to EN 61643-11:2001. **Ableiter der Anforderungsklasse C** according to E DIN VDE 0675-6:1989-11, -6/A1:1996-03.

- Complete prewired unit for IT-Systems with $U_{L-L} = 500 \text{ V} / 50 \text{ Hz}$, consisting of a base part and pluggable protective components
- **Energy coordination** possible with upstream lightning current arrester, e.g. **DEHNbloc**
- High discharge capacity due to powerful zinc oxide varistors
- Reliable control due to disconnection device "thermodynamic control" with dual monitoring
- Fault indication by red mark in the inspection window
- Multifunctional terminals for conductors and busbar connection

Version FM :

- At the response of the monitoring device (disconnection of the faulty SPD from mains due to overloads) the remote signalisation terminals are connected via a floating changeover contact
- Easy installation of the remote signalisation due to pluggable terminal

Versions:

DEHNguard IT 500: Complete unit for IT-Systems with $U_{L-L} = 500 \text{ V} / 50 \text{ Hz}$

DEHNguard IT 500 FM: with remote signalisation contact for monitoring device (floating changeover contact)

For further information on use, please see also installation instructions No. 1452.

| Type | Part No. |
|--------------|----------------|
| DG IT 500 | 900 516 |
| DG IT 500 FM | 900 546 |

Accessories:

Protection Module for DG IT 500 (FM)

Version suitable for DG IT 500 (FM).

The pluggable protective component can be exchanged without disconnection from mains and without removing the covering plate of the distribution board.

| Type | Part No. |
|-------|----------------|
| T 600 | 900 671 |

DG IT 500 FM



Protection Module T 600



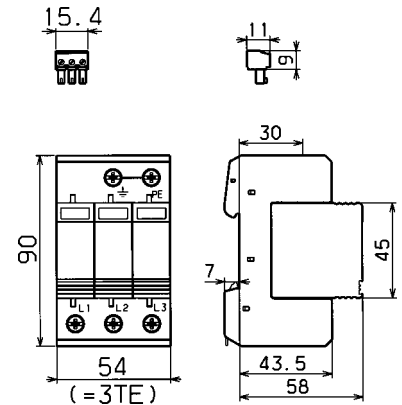


Power Supply Systems SPDs Class II

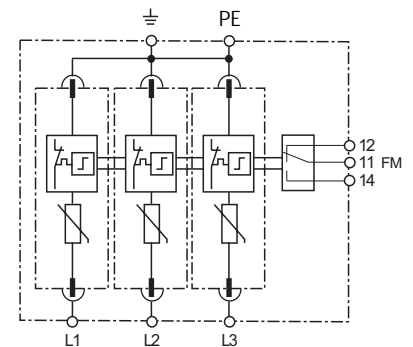


| Technical Data: | | |
|---|------------------|---|
| Type | | DG IT 500 (FM) |
| Nominal voltage | U_N | IT 500 V / 50 Hz |
| Rated voltage (max. continuous operating voltage) | U_c | 600 V / 50 Hz |
| Nominal discharge current (8/20) | $i_{sn} (I_n^*)$ | 15 kA |
| Max. discharge current (8/20) | I_{max} | 40 kA |
| Voltage protection level at 5 kA (8/20) at i_{sn} | U_p | $\leq 2.5 \text{ kV}$ $\leq 3 \text{ kV}$ |
| Response time | t_A | $\leq 25 \text{ ns}$ |
| Backup fuse (only required, if not already provided in mains) | | 100 A gL/gG |
| Short-circuit withstand capability at max. backup fuse | | 25 kA / 50 Hz |
| Operating temperature range | ϑ | $-40^\circ \text{ C} \dots +80^\circ \text{ C}$ |
| Cross sectional area | | min. 1.5 mm ² solid / flexible max. 35 mm ² stranded / 25 mm ² flexible |
| Mounting on | | DIN rail 35 mm in accordance with EN 50022 |
| Enclosure material | | red thermoplastic, UL94-V0 |
| Degree of protection | | IP 20 |
| Dimension | | 3 mods., DIN 43880 |
| Test standards | | IEC 61643-1:1998-02; EN 61643-11:2001 E DIN VDE 0675-6:1989-11, -6/A1:1996-03 |
| Additional Data for DG TNC 600 FM | | |
| Type of Remote signalisation contact | | changeover contact |
| Switching capacity | U_N/I_N | ac: 250 V / 0.5 A dc: 250 V / 0.1 A 125 V / 0.2 A 75 V / 0.5 A |
| Cross sectional area Remote signalisation terminals | | max. 1.5 mm ² solid / flexible |
| *) variant description according to EN 61643-11:2001 | | |

Dimension drawing DG IT 500 FM



Basic circuit diagram DG IT 500 FM





Lightning Protection Equipotential Bonding Isolating Spark Gaps and Components



EX EXFS C1 Isolating Spark Gap

For lightning protection equipotential bonding in accordance with IEC 61024-1 as well as for the use in IT installations in accordance with IEC 60364-5-54.

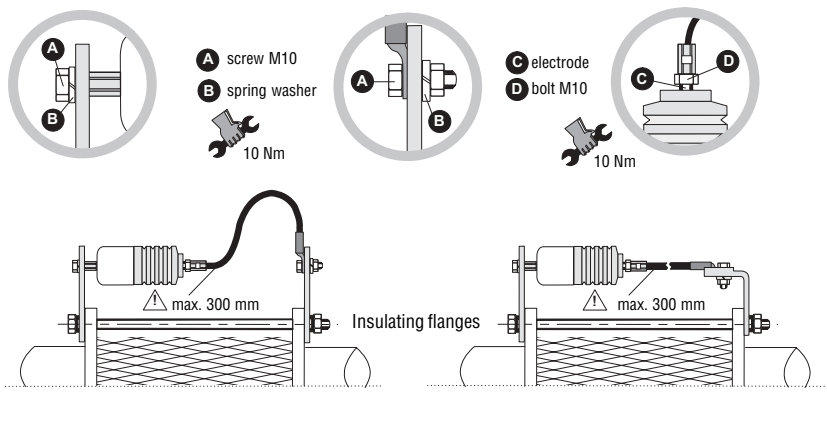
- Coupling of installation parts at direct and indirect lightning effects in explosive areas for lightning protection equipotential bonding.
- Coupling of normally separate installation parts (e. g. in case of corrosion risk)
- Bridging of proximities
- Bridging of insulating flanges, insulating screw glands/insulating couplings in cathodic protected conduit sections (in accordance with German AfK Recommendation No. 5)
- Especially low response voltage
- Version with extremely high current carrying capacity
- Fulfills the ATEX 100a Regulation
- Long lifetime
- No exhausting
- Fail-Safe Performance

For further information on use, please see also installation instructions No. 1429.

EX EXFS C1 Isolating Spark Gap

| Type | Part No. |
|---------|----------|
| EXFS C1 | 923 070 |

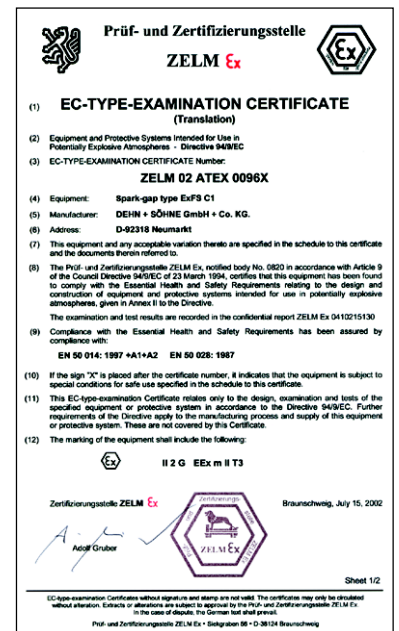
Horizontal Application EXFS C1



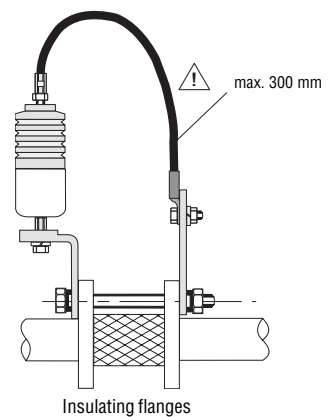
EXFS C1



EC Type Examination Certificate (Excerpt)




Vertical Application EXFS C1



Lightning Protection Equipotential Bonding Isolating Spark Gaps and Components



| Technical Data: | | |
|--|-------------|--|
| Nominal discharge current (8/20) | I_{sn} | 100 kA |
| Lightning impulse current | I_{imp} | 75 kA (10/350) |
| ac Sparkover voltage (50 Hz) | U_{aw} | ≤ 70 V |
| dc Sparkover voltage (100 V/s) | U_{ag} | ≤ 100 V |
| 100 % Lightning impulse sparkover voltage (1.2/50) | U_{as100} | ≤ 950 V |
| Insulation resistance (10 V and 100 V) | R_{isol} | $\geq 10^3$ M Ω |
| Degree of protection / Approval | |  II 2 G Type of protection EEx m II T3 in accordance with EN 50014, EN 50028 Certificate: ZELM 02 ATEX 0096X |
| Enclosure | | stainless steel, plastic |
| Connection | | threaded M10 bolt, M10 nut |
| Dimension | | $\varnothing 50$ mm, 160 mm long |
| Degree of protection | | IP 67 |

For the use of the isolating spark gap in installations with cathodic protection, the permanent voltage must not exceed the value of 50 V.

Accessories for EXFS C1 Isolating Spark Gap:

Connecting Cables

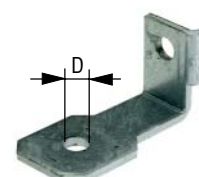
| Type | Cable Length | Part No. |
|--------------|--------------|----------------|
| AL EXFS L100 | 100 mm | 923 026 |
| AL EXFS L200 | 200 mm | 923 036 |
| AL EXFS L300 | 300 mm | 923 046 |

IF 1 and IF 3 Connection Bracket

| | | |
|------|--------|----------------|
| IF 1 | angled | 923 011 |
| IF 3 | flat | 923 016 |

For the installation at the insulating flange.
When ordering, please indicate the hole diameter „D“ required (max. 60 mm)
(„D“ is the bolt diameter of the bolted flange joint).

IF 1





Power Supply Systems
SPDs Class II



Netz-AK/1+1/ÜS/FM/Exd
2-pole Surge Arrester
for Explosive Areas

Red / Line

Surge Arrester in an (Ex) de II C Enclosure for the use in the Lightning Protection Zones Concept at the boundaries of LPZ 0_B – 1 and more.

For the protection of low voltage consumer's installations in explosive areas of LPZ 1 and 2 against surges (Overvoltage Category III according to DIN VDE 0110-1:1997-04). **SPD Class II** according to IEC 61643-1:1998-02. **SPD Type 2** according to EN 61643-11:2001. **Ableiter der Anforderungsklasse C** according to E DIN VDE 0675-6:1989-11, -6/A1:1996-03 and -6/A2:1996-10.

- For the use in explosive areas of LPZ 1 and 2
- Unit in an (Ex) de II C Enclosure for the installation in enclosures of protection type Increased Safety "e" according to EN 50014
- Complete prewired unit
- Energy-coordination possible with upstream Lightning Current Arrester, e.g. DEHNport
- High discharge capacity due to powerful zinc oxide varistors / spark gaps (DEHNgap- and DEHNgap C/T Technology)
- Reliable control due to disconnection device "thermodynamic control" with dual monitoring
- With remote signalisation contact for control device (floating changeover contact)

For further information on use, please see also installation instructions No. 1199/S Serial No. 4225.

| Type | Serial No. | Part No. |
|-----------------------|------------|-----------|
| Netz-AK/1+1/ÜS/FM/Exd | 4225 | 989 405/S |

Netz-AK/1+1/ÜS/FM/Exd





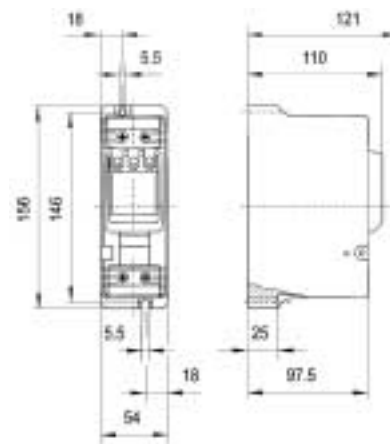
Power Supply Systems SPDs Class II



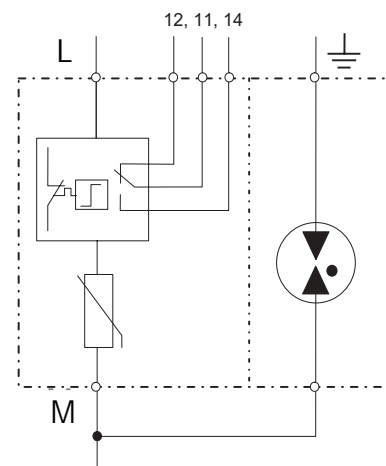
| Technical Data: | | | |
|---|------------------|---|---------------|
| Type | | L-M | M-PE |
| Nominal voltage | U_N | 24 V dc | |
| Rated voltage (max. continuous operating voltage) | U_c | 75 V ac 100 V dc | |
| Nominal discharge current (8/20) | $i_{sn} (I_n^*)$ | 20 kA | |
| Max. discharge current (8/20) | I_{max} | 40 kA | |
| Voltage protection level at 5 kA (8/20) at i_{sn} | U_p | ≤ 350 V ≤ 450 V | |
| Lightning impulse sparkover voltage 1.2/50 | | | ≤ 1500 V |
| Response time | t_A | ≤ 25 ns | ≤ 100 ns |
| Backup fuse (only required, if not already provided in mains) | | 125 A gL/gG | |
| Short-circuit withstand capability at max. backup fuse | | 50 kA / 50 Hz | |
| Operating temperature range | ϑ | $-40^\circ\text{C} \dots +40^\circ\text{C}$ | |
| Insulation resistance | R_{isol} | $> 10^3$ M Ω | |
| Cross-sectional area | | min. 1.5 mm ² solid / flexible max. 6 mm ² stranded / 10 mm ² solid | |
| Enclosure material | | Epoxy Resin or Polyester Resin | |
| Dimension W x H x L | | 54 x 156 x 110 mm | |
| Explosion protection | | EEx de II C | |
| Degree of protection: Enclosure Terminals | | IP 54 IP 20 | |
| Certification No. | | PTB Nr. Ex-94.C.1064 U | |
| Test standards | | IEC 61643-1:1998-02; EN 61643-11:2001; E DIN VDE 0675-6:1989-11, -6/A1:1996-03 and -6/A2:1996-10 | |
| Additional Data for Remote Signalisation Contact | | | |
| Type of Remote Signalisation Contact | | Changeover Contact | |
| Switching capacity | U_N/I_N | ac: 250 V / 0.5 A dc: 250 V / 0.1 A 125 V / 0.2 A 75 V / 0.5 A | |
| Cross-sectional area Remote signalisation terminals | | min. 0.75 mm ² solid / flexible max. 1.5 mm ² stranded / 2.5 mm ² solid | |

*) variant description according to EN 61643-11:2001

Dimension drawing
Netz-AK/1+1/US/FM/Exd



Basic circuit diagram
Netz-AK/1+1/US/FM/Exd





Information Technology Systems
SPDs in Modular Terminal Block Systems



BLITZDUCTOR® VT KKS
Lightning Current Arrester for
Cathodic Corrosion Protection Systems

The impressed protective circuit and the voltage measuring circuit are protected against surge impulses due to atmospheric discharges (lightning) or switching operations (in power supply systems).

The devices are designed for the operation at admissible contact voltages up to 65 V ac between conduit and earth. If this value is exceeded, the relevant regulations on protection against contact have to be observed and further measures have to be taken.

The devices can be overloaded by overcurrents as a result of mains faults (short circuits or earth faults).

An overload of the branch line-earth is signalled by the integrated remote signalisation contact.

Type ALD 75: for the protection of the impressed protective circuit

Type APD 36: for the protection of the sensor measuring circuit

For further information on use, please also see installation instructions No. 1442.

| Type | Part No. |
|----------------|----------|
| BVT KKS ALD 75 | 918 420 |
| BVT KKS APD 36 | 918 421 |

BVT KKS ALD 75



BVT KKS APD 36



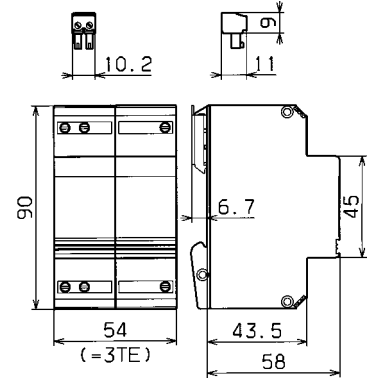
Information Technology Systems
SPDs in Modular Terminal Block Systems



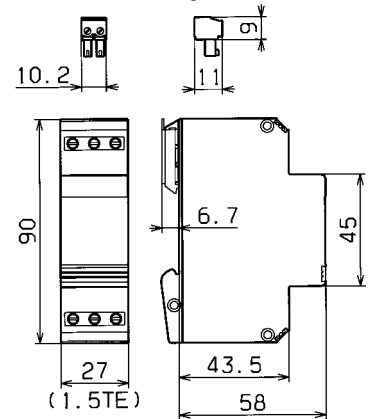
| Technical Data: | | | |
|--|------------------|--|--|
| BLITZDUCTOR VT KKS | | ALD 75 | APD 36 |
| Nominal voltage | U_N | 70 V- | 36 V- |
| Rated voltage (max. continuous operating voltage) | U_c | 75 V- | 36.8 V- |
| Nominal current | I_N | 12 A | 50 mA |
| Nominal discharge current (8/20) | $i_{sn} (I_n^*)$ | 20 kA (per line) 40 kA (total) | |
| Lightning impulse current (10/350) | I_{imp} | 3.5 kA (per line) 7 kA (total) | |
| Discharge a.c. (1 s, 50 Hz) | | 20 A | |
| Voltage protection level at i_{imp} | U_p | ≤ 400 V | ≤ 65 V (line/line) ≤ 800 V (line/PG) |
| at 1 kV/ μ s | | ≤ 350 V | ≤ 48 V (line/line) ≤ 600 V (line/PG) |
| Coordination characteristics | | XX 1 | |
| Response time | t_A | ≤ 25 ns | ≤ 1 ns (line/line) ≤ 100 ns (line/PG) |
| Bandwidth | f_G | 1 MHz | 4.5 dB at 1 MHz (100 Ω) |
| Series impedance / line | R | 5 μ H | 70 Ω |
| Parasitic capacitance | C | ≤ 2 nF | ≤ 1 nF (line/line) ≤ 10 pF (line/PG) |
| Operating temperature range | ϑ | - 40° C ... + 80° C | |
| Category tested in accordance with IEC 61643-21:2000 | | A2, B2, C2, C3, D1 | |
| Cross sectional area | | min. 0.5 mm ² solid / flexible max. 4 mm ² flexible / 6 mm ² solid | |
| Mounting on | | DIN rail 35 mm in acc. with EN 50022 | |
| Enclosure material | | Red thermoplastic | Yellow thermoplastic |
| Degree of protection | | IP 20 | |
| Type of remote signalisation contact | | Break contact | |
| Switching capacity | U_N/U_N | ac: 250 V / 0.5 A dc: 250 V / 0.1 A 125 V / 0.2 A 75 V / 0.5 A | |
| Cross sectional area remote signalisation terminals | | max. 1.5 mm ² solid / flexible | |

*) variant description according to EN 61643-11:2001

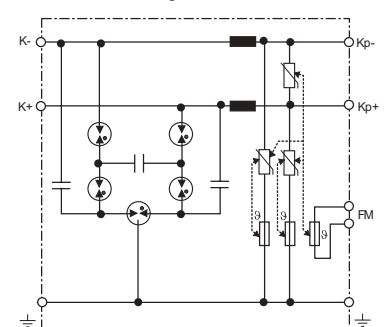
Dimension drawing BVT KKS ALD 75



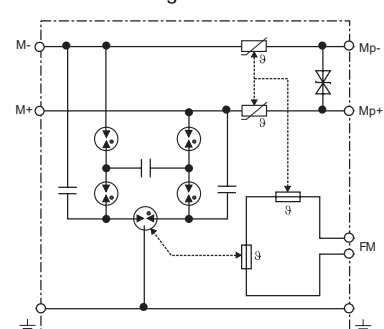
Dimension drawing BVT KKS APD 36



Basic circuit diagram BVT KKS ALD 75



Basic circuit diagram BVT KKS APD 36





DEHNpipe Surge Arrester

Water-proof and corrosion-resistant protective device for outside areas to be screwed into field devices with 2 conductor metrology (e.g. 4 – 20 mA). Also suitable for retrofitting due to its installation between the field device and the cable gland (not included in delivery – see accessories). For the use in the Lightning Protection Zones Concept at the boundaries of LPZ 0_B – 2.

- Also suitable for transmitters with only one connection
- Option of indirect shield earthing
- Supports the shield earthing concept depending on the cable gland (see accessories)
- Optional earthing via field device or earthing ring (see accessories)

For further information on use, please see also installation instructions No. 1460.

Device for the protection of an earth potential free operated two-core conductor as well as balanced interfaces in accordance with NAMUR NE 21.

| Type | Version | Part No. |
|----------------|---------|----------------|
| DPI MD 24 M 2S | 24 V– | 929 941 |

Accessories:

Cable Gland

M20 x 1.5, IP68, nicked brass, if no shield earthing is required at the installation or an indirect shield earthing via a gas-filled down conductor.

| | | |
|----------------|------------------------------------|----------------|
| KV M20 MS 8 | Outer cable diameter 5.0 – 8.0 mm | 929 985 |
| KV M20 MS 10.5 | Outer cable diameter 7.0 – 10.5 mm | 929 984 |

EMC Cable Gland

M20 x 1.5, IP 68, nicked brass, if a direct shield earthing is required at the installation (fixed electrical connection).

| | | |
|-----------------|------------------------------------|----------------|
| KV S M20 MS 9.5 | Outer cable diameter 6.5 – 9.5 mm | 929 982 |
| KV S M20 MS 13 | Outer cable diameter 9.0 – 13.0 mm | 929 981 |

MV Earthing Ring

nicked, with flat plug and lock nut, if no earthing is possible via the enclosure of the field device (e.g. plastic enclosure).

| | | |
|------------|--|----------------|
| ER DPI M20 | | 929 996 |
|------------|--|----------------|

DPI MD 24 M 2S



KV M20 MS ...



ER DPI M20



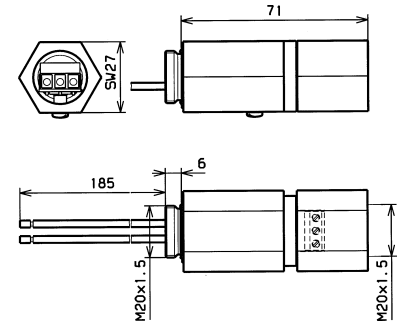


Information Technology Systems
SPDs for Field Devices

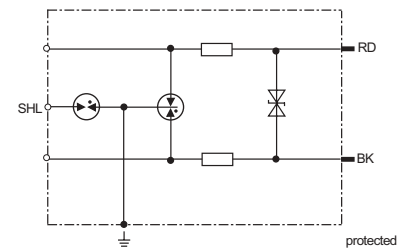


| Technical Data: | | |
|---|-------------|---|
| Type | | DPI MD 24 M 2S |
| Part No. | | 929 941 |
| Nominal voltage | U_N | 24 V– |
| Rated voltage (max. continuous operating voltage) | U_c | 34.8 V– 24.5 V~ |
| Nominal current | I_L | 0.5 A |
| Nom. discharge current (8/20) per line per pair Shield / PG | i_n | 5 kA 10 kA 20 kA |
| Voltage protection level at i_n line / line line / PG Shield / PG | U_p | ≤ 65 V ≤ 650 V ≤ 650 V |
| Voltage protection level at 1kV/ μ s line / line line / PG Shield / PG | U_p | ≤ 50 V ≤ 500 V ≤ 600 V |
| Coordination characteristics | | X 1 |
| Response times line / line line / PG Shield / PG | t_A | ≤ 1 ns ≤ 100 ns ≤ 100 ns |
| Bandwidth unbalanced balanced | f_G | — 14 MHz |
| Series impedance / line | R | 2.2 Ω |
| Capacity line / line line / PG Shield / PG | C | ≤ 400 pF ≤ 20 pF ≤ 15 pF |
| Operating temperature range | ϑ | - 40° ... +80° |
| Category tested in accordance with IEC 61643-21:2000 | | A2, B2, C2, C3, D1 |
| Cross-sectional area Input | | up to 1.5 mm ² flexible / up to 2.5 mm ² solid |
| Terminal lead Output | | 1.5 mm ² flexible, length 200 mm |
| Degree of protection | | IP 67 (after installation of the enclosure) |
| Enclosure | | Stainless Steel V2A |
| Enclosure input output | | M20 x 1.5 female screw terminal M20 x 1.5 male screw terminal |
| Earthing | | via enclosure or earthing ring (accessories) |
| Installation of the enclosure input side output side | | cable gland M20 x 1.5 field device M20 x 1.5 |

Dimension drawing DPI MD 24 M 2S



Basic circuit diagram DPI MD 24 M 2S





BLITZDUCTOR® VT
Surge Arrester

Yellow / Line

Surge Arrester for the installation on DIN rails for the protection of modems in switchgears. Can be connected via RJ45 sockets or screw-type terminals. The RJ45 sockets can also support RJ12 plugs. For the use in the Lightning Protection Zones Concept at LPZ 0_B – 1 and 1 – 2.

| Type | Application | Connection | |
|----------|---|--|--|
| | | Input | Protected Output |
| BVT ISDN | ISDN S ₀ | RJ45 | RJ45 and 4 parallel wired screw-type terminals |
| BVT TC 1 | Analog modems, ADSL, ISDN U _{K0} , | RJ45 and 2 parallel wired screw-type terminals | RJ45 and 2 parallel wired screw-type terminals |

For further information on use, please see also installation instructions No. 1426.

BLITZDUCTOR® VT

| Type | Part No. |
|----------|----------------|
| BVT ISDN | 918 410 |
| BVT TC 1 | 918 411 |

BVT ISDN



BVT TC 1



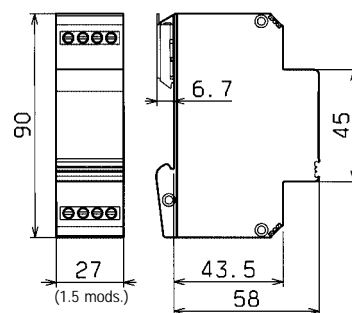


Information Technology Systems SPDs for Modular Terminal Block Systems

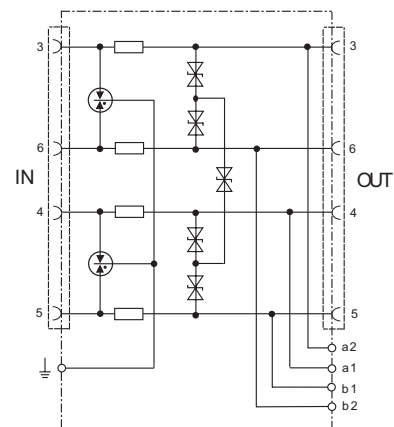


| Technical Data: | | | |
|--|-------------|---|--|
| Type | | BVT ISDN | BVT TC 1 |
| Nominal voltage | U_N | 5 V dc (line/line) 40 V dc (pair/pair) | 130 V dc (line/line) |
| Rated voltage (max. continuous operating voltage) | U_c | 7.5 V dc (line/line) 60 V dc (pair/pair) | 170 V dc (line/line) |
| Nominal current | I_N | 200 mA | |
| Lightning impulse current (10/350) Category D1 | I_{imp} | 1 kA (line) | |
| Nominal discharge current (8/20) via RJ45 connection | i_{sn} | 2.5 kA (line) 10 kA (total) | 2.5 kA (line) 5 kA (total) |
| Voltage protection level at i_{sn} | U_p | ≤ 30 V (line/line) ≤ 600 V (line/PG) | ≤ 275 V (line/line) ≤ 600 V (line/PG) |
| at 1 kV/ μ s | | ≤ 17 V (line/line) ≤ 600 V (line/PG) | ≤ 240 V (line/line) ≤ 600 V (line/PG) |
| Coordination characteristics | | X 1 | X 2 |
| Response time | t_A | ≤ 1 ns (line/line) ≤ 100 ns (line/PG) | |
| Bandwidth | f_G | 1.7 MHz | 17 MHz |
| For data transmission rates up to | v_s | 2 MBit/s | — |
| Series impedance / line | R | 1.0 Ω | 4.7 Ω |
| Capacity | C | ≤ 3.3 nF | ≤ 300 pF |
| Operating temperature range | ϑ | - 40° C ... + 80° C | |
| Category tested in accordance with IEC 61643-21:2000 | | A2, B2, C2, C3, D1 | |
| Assignment | | 2 two-core conductors 3/6 4/5 | 1 two-core conductor 4/5 |
| Cross-sectional area | | min. 0.14 mm ² flexible max. 2.5 mm ² flexible | |
| Mounting on | | 35 mm DIN rail in accordance with EN 50022 | |
| Material | | yellow thermoplastic | |
| Voltage protection level | | IP 10 | |

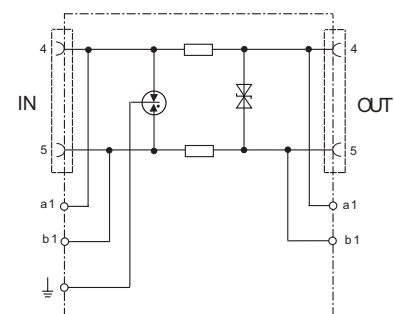
Dimension drawing BVT ...



Basic circuit diagram BVT ISDN



Basic circuit diagram BVT TC 1



DEHN protects Pipelines



DEHN + SÖHNE

Systems to be protected against lightning and surges:

- Measuring and Control System
- Fire Alarm System
- Intruder Alarm System
- Refueling System
- Pump Stations

Surge and Lightning Protection for hazardous areas by DEHN.

