

# SPDs for data / signalling / telecommunication networks

## SPDs for video and coaxial lines



- Protection of coaxial video interfaces
- Radio or telecommunication lines (transmitters and receivers)
- SPDs for TV/SAT/CATV systems and receivers

- Line VL – surge arrester for video lines
- Line HX, ZX and FX – Lightning Current Arresters
- Line SX – Surge Arresters

# VL-B75 F/F

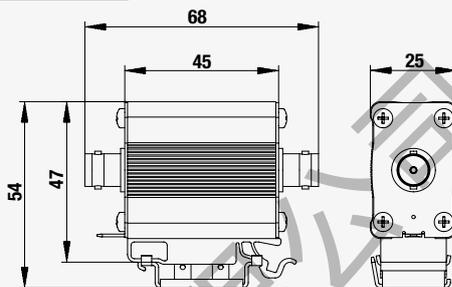
## SPDs for video distribution networks

BNC connectors, 75 Ω

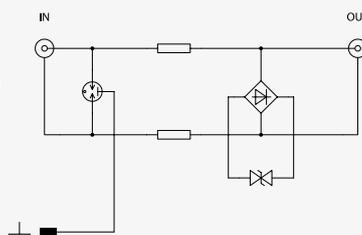
- combination of coarse and fine protection for video circuits
- installation close to protected equipment
- for protection of video systems, CCTV, etc. against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram

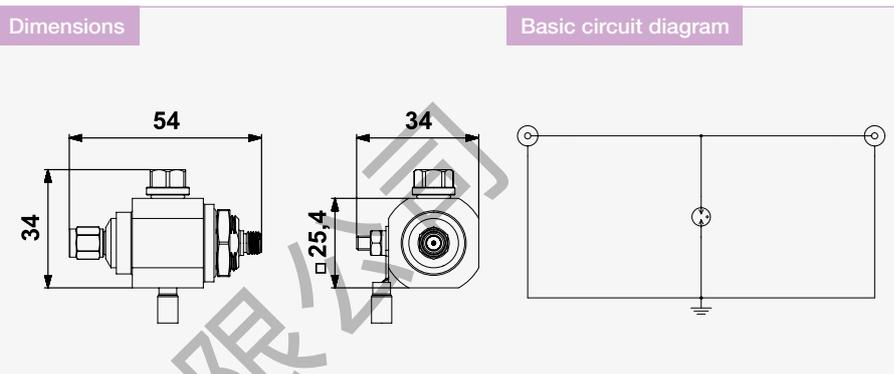


| Parameter / Type                                    | VL-B75 F/F                 |
|---|----------------------------|
| Location of SPD                                     | ST 2+3                     |
| Maximum operating voltage                           | $U_c$ 8,5 V DC             |
| Nominal load current at 25°C                        | $I_L$ 0,06 A               |
| C2 nominal discharge current (8/20 μs) core-SH      | $I_n$ 5 kA                 |
| C2 nominal discharge current (8/20 μs) SH-PE        | $I_n$ 5 kA                 |
| C2 voltage protection level mode core-SH at $I_n$   | $U_p$ 150 V                |
| C2 voltage protection level mode SH-PE at $I_n$     | $U_p$ 350 V                |
| C3 voltage protection level mode core-SH at 1 kV/μs | $U_p$ 35 V                 |
| C3 voltage protection level mode SH-PE at 1 kV/μs   | $U_p$ 350 V                |
| Response time core-SH                               | $t_a$ 1 ns                 |
| Response time SH-PE                                 | $t_a$ 100 ns               |
| Impedance   | $Z$ 75 Ω                   |
| Frequency range                                     | $f$ 0 - 150 MHz            |
| Connection (input-output)                           | BNC 75                     |
| Degree of protection                                | IP 20                      |
| Mounting  | DIN rail 35 mm             |
| Range of operating temperatures (min / max)         | -40 °C / 80 °C             |
| According to standard                               | EN 61643-21+A1,A2 / C2, C3 |
| Ordering number                                     | A03376                     |

# HX-090 SMA F/M

Lightning current arrester for coaxial lines, ST1  
SMA connectors, 50 Ω

- lightning current arrester for coaxial line
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication equipment against impact of direct or indirect lightning strike
- suitable for the combined signal and power supply distribution



| Parameter / Type                                 | HX-090 SMA F/M |                                |
|--|----------------|--------------------------------|
| Location of SPD                                  |                | ST 1+2                         |
| Maximum operating voltage                        | $U_c$          | 70 V DC                        |
| Nominal load current at 25°C                     | $I_L$          | 6 A                            |
| C2 nominal discharge current (8/20 μs) core-PE   | $I_n$          | 10 kA                          |
| D1 impulse discharge current (10/350 μs) core-PE | $I_{imp}$      | 2,5 kA                         |
| Dynamic spark-over voltage at 1kV/μs             | $U_{dyn}$      | 700 V                          |
| Response time core-PE                            | $t_a$          | 100 ns                         |
| Impedance  | $Z$            | 50 Ω                           |
| Power (CW)                                       | $P$            | 40 W                           |
| Frequency range                                  | $f$            | 0 - 3,8 GHz                    |
| Insertion loss typ. (max.)                       | $A$            | 0,2 (0,4) dB                   |
| VSWR typ. (max.)                                 |                | 1,1 (1,2)                      |
| Connection (input-output)                        |                | SMA 50                         |
| Degree of protection                             |                | IP 66                          |
| Mounting   |                | panel (Ø 17mm) / HX holder     |
| Range of operating temperatures (min / max)      |                | -40 °C / 80 °C                 |
| According to standard                            |                | EN 61643-21+A1,A2 / D1, C2, C3 |
| Ordering number                                  |                | A04134                         |

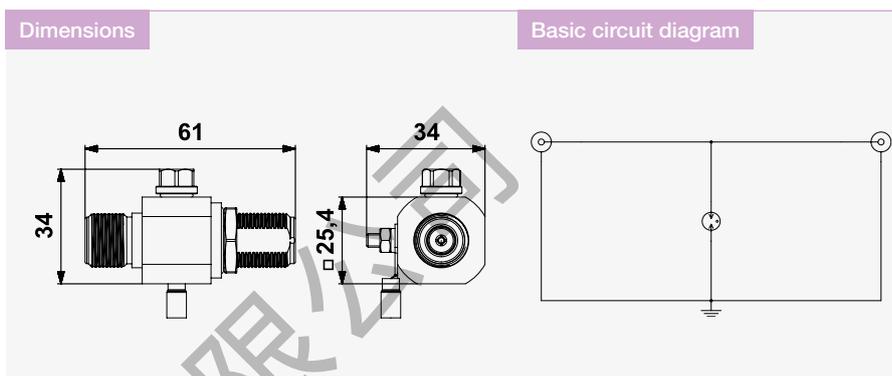
Data, signal and telecommunication networks

| Accessories | Ordering number | See page |
|-------------|-----------------|----------|
| HX Holder   | A01564          | 193      |

# HX-... N50 F/.

Lightning current arrester for coaxial lines, ST1  
N connectors, 50 Ω

- lightning current arrester for coaxial line
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication equipment against impact of direct or indirect lightning strike
- suitable for the combined signal and power supply distribution



| Parameter / Type                                 | HX-090 N50 F/F                 | HX-090 N50 F/M                 | HX-230 N50 F/F                 | HX-230 N50 F/M                 |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Location of SPD                                  | ST 1+2                         | ST 1+2                         | ST 1+2                         | ST 1+2                         |
| Maximum operating voltage                        | $U_c$ 70 V DC                  | 70 V DC                        | 180 V DC                       | 180 V DC                       |
| Nominal load current at 25°C                     | $I_L$ 6 A                      | 6 A                            | 6 A                            | 6 A                            |
| C2 nominal discharge current (8/20 μs) core-PE   | $I_n$ 10 kA                    | 10 kA                          | 10 kA                          | 10 kA                          |
| D1 impulse discharge current (10/350 μs) core-PE | $I_{imp}$ 2,5 kA               | 2,5 kA                         | 2,5 kA                         | 2,5 kA                         |
| Dynamic spark-over voltage at 1 kV/μs            | $U_{dyn}$ 700 V                | 700 V                          | 800 V                          | 800 V                          |
| Response time core-PE                            | $t_a$ 100 ns                   | 100 ns                         | 100 ns                         | 100 ns                         |
| Impedance  | Z 50 Ω                         | 50 Ω                           | 50 Ω                           | 50 Ω                           |
| Power (CW)                                       | P 40 W                         | 40 W                           | 295 W                          | 295 W                          |
| Frequency range                                  | f 0 - 3,8 GHz                  | 0 - 3,8 GHz                    | 0 - 3,8 GHz                    | 0 - 3,8 GHz                    |
| Insertion loss typ. (max.)                       | A 0,2 (0,4) dB                 | 0,2 (0,4) dB                   | 0,2 (0,4) dB                   | 0,2 (0,4) dB                   |
| VSWR typ. (max.)                                 | 1,1 (1,2)                      | 1,1 (1,2)                      | 1,1 (1,2)                      | 1,1 (1,2)                      |
| Connection (input-output)                        | N 50                           | N 50                           | N 50                           | N 50                           |
| Degree of protection                             | IP 66                          | IP 66                          | IP 66                          | IP 66                          |
| Mounting   | panel (∅ 17 mm) / HX holder    |
| Range of operating temperatures (min / max)      | -40 °C / 80 °C                 |
| According to standard                            | EN 61643-21+A1,A2 / D1, C2, C3 |
| Ordering number                                  | A03405                         | A03346                         | A03511                         | A03510                         |

Data, signal and telecommunication networks

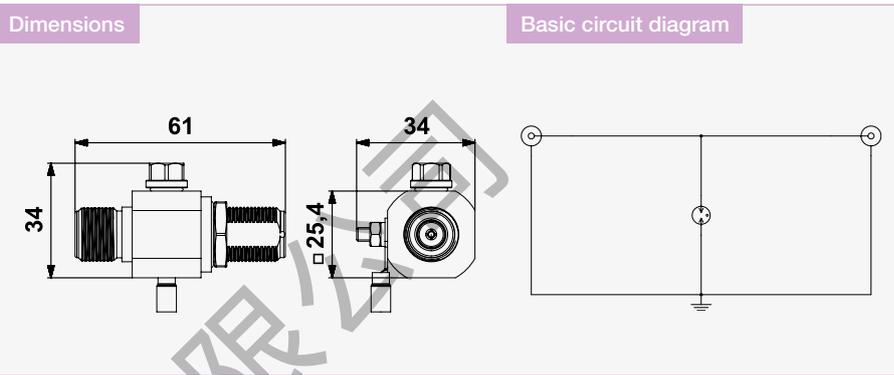
| Accessories | Ordering number | See page |
|-------------|-----------------|----------|
| HX Holder   | A01564          | 193      |

# HX-... N50 F/.

NEW

Lightning current arrester for coaxial lines, ST1  
N connectors, 50 Ω

- lightning current arrester for coaxial line
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication equipment against impact of direct or indirect lightning strike
- suitable for the combined signal and power supply distribution



| Parameter / Type                                 |           | HX-350-N50 F/F                 | HX-350-N50 F/M                 | HX-470-N50 F/F                 | HX-470-N50 F/M                 |
|--|-----------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Location of SPD                                  |           | ST 1+2                         | ST 1+2                         | ST 1+2                         | ST 1+2                         |
| Maximum operating voltage                        | $U_c$     | 250 V DC                       | 250 V DC                       | 360 V DC                       | 360 V DC                       |
| Nominal load current at 25°C                     | $I_L$     | 6 A                            | 6 A                            | 6 A                            | 6 A                            |
| C2 nominal discharge current (8/20 μs) core-PE   | $I_n$     | 10 kA                          | 10 kA                          | 10 kA                          | 10 kA                          |
| D1 impulse discharge current (10/350 μs) core-PE | $I_{imp}$ | 2,5 kA                         | 2,5 kA                         | 2,5 kA                         | 2,5 kA                         |
| Dynamic spark-over voltage at 1 kV/μs            | $U_{dyn}$ | 900 V                          | 900 V                          | 980 V                          | 980 V                          |
| Response time core-PE                            | $t_a$     | 100 ns                         | 100 ns                         | 100 ns                         | 100 ns                         |
| Impedance  | $Z$       | 50 Ω                           | 50 Ω                           | 50 Ω                           | 50 Ω                           |
| Power (CW)                                       | $P$       | 570 W                          | 570 W                          | 1175 W                         | 1175 W                         |
| Frequency range                                  | $f$       | 0 - 3,5 GHz                    | 0 - 3,5 GHz                    | 0 - 2,3 GHz                    | 0 - 2,3 GHz                    |
| Insertion loss typ. (max.)                       | $A$       | 0,2 (0,4) dB                   | 0,2 (0,4) dB                   | 0,2 (0,4) dB                   | 0,2 (0,4) dB                   |
| VSWR typ. (max.)                                 |           | 1,1 (1,2)                      | 1,1 (1,2)                      | 1,1 (1,2)                      | 1,1 (1,2)                      |
| Connection (input-output)                        |           | N 50                           | N 50                           | N 50                           | N 50                           |
| Degree of protection                             |           | IP 66                          | IP 66                          | IP 66                          | IP 66                          |
| Mounting   |           | panel (∅ 17 mm) / HX holder    |
| Range of operating temperatures (min / max)      |           | -40 °C / 80 °C                 |
| According to standard                            |           | EN 61643-21+A1,A2 / D1, C2, C3 |
| Ordering number                                  |           | A06703                         | A06704                         | A06555                         | A06556                         |

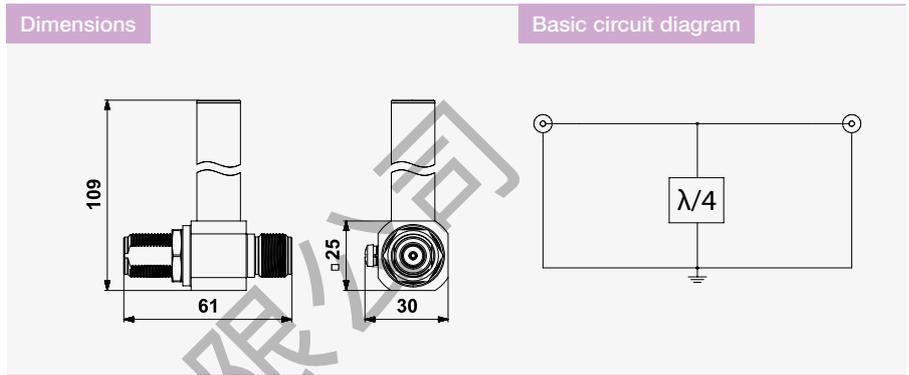
Data, signal and telecommunication networks

| Accessories | Ordering number | See page |
|-------------|-----------------|----------|
| HX Holder   | A01564          | 193      |

# ZX-0,44-N50-F/F

**Lightning current arrester for coaxial lines, ST1**  
connectors N 50 Ω, λ/4 short circuit impedance transformer

- lightning current arrester uses λ/4 short circuit impedance transformer
- installation at the boundary of LPZ 0 and LPZ 1 zones (or higher) at the line entry into building
- for protection of coaxial radio lines and telecommunication devices against impact of direct or indirect lightning strike
- it works like band-pass (filter) for a relatively narrow frequency spectrum around the base frequency, outside of this spectrum it works like a short circuit (not suitable for combination with power supply)



| Parameter / Type                                 | ZX-0,44-N50-F/F |                                |
|--|-----------------|--------------------------------|
| Location of SPD                                  | ST 1+2+3        |                                |
| C2 nominal discharge current (8/20 μs) core-PE   | $I_n$           | 20 kA                          |
| D1 impulse discharge current (10/350 μs) core-PE | $I_{imp}$       | 5 kA                           |
| Dynamic spark-over voltage at 1 kV/μs            | $U_{dyn}$       | 0,25 V                         |
| Response time core-PE                            | $t_a$           | 1 ns                           |
| Impedance  | Z               | 50 Ω                           |
| Power (CW)                                       | P               | 2000 W                         |
| Frequency range*                                 | f               | 390 - 490 MHz                  |
| Insertion loss typ. (max.)                       | A               | 0,1 (0,2) dB                   |
| VSWR typ. (max.)                                 |                 | 1,1 (1,2)                      |
| Connection (input-output)                        |                 | N 50                           |
| Degree of protection                             |                 | IP 66                          |
| Mounting   |                 | panel (Ø 17 mm) / HX holder    |
| Range of operating temperatures (min / max)      |                 | -40 °C / 80 °C                 |
| According to standard                            |                 | EN 61643-21+A1,A2 / D1, C2, C3 |
| Ordering number                                  |                 | A06207                         |

\* Frequency range according to tuning

Data, signal and telecommunication networks

|  |                    |                        |                 |
|--|--------------------|------------------------|-----------------|
|  | <b>Accessories</b> | <b>Ordering number</b> | <b>See page</b> |
|  | HX Holder          | A01564                 | 193             |

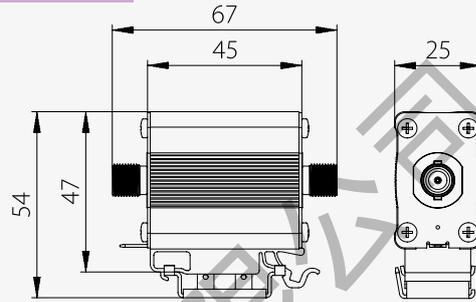
# FX-... .75 T F/F

**Lightning current arrester for coaxial lines, ST1**  
F connectors, 75 Ω

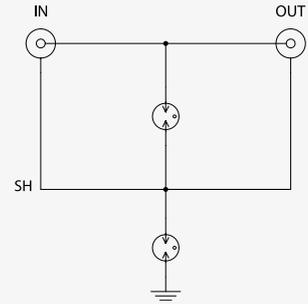
- lightning current arrester with floating shielding (separated by GDT)
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of coaxial lines of TV and CCTV systems, suitable as the 1st level of surge for protection in coordination with the SX type
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



| Parameter / Type                                    |           | FX-090 B75 T F/F           | FX-090 F75 T F/F           | FX-230 F75 T F/F           |
|---|-----------|----------------------------|----------------------------|----------------------------|
| Location of SPD                                     |           | ST 1                       | ST 1                       | ST 1                       |
| Maximum operating voltage                           | $U_c$     | 70 V DC                    | 70 V DC                    | 180 V DC                   |
| Nominal load current at 25°C                        | $I_L$     | 4 A                        | 4 A                        | 4 A                        |
| C2 nominal discharge current (8/20 μs) core-SH      | $I_n$     | 10 kA                      | 10 kA                      | 10 kA                      |
| C2 nominal discharge current (8/20 μs) SH-PE        | $I_n$     | 10 kA                      | 10 kA                      | 10 kA                      |
| D1 impulse discharge current (10/350 μs) core-SH    | $I_{imp}$ | 2,5 kA                     | 2,5 kA                     | 2,5 kA                     |
| D1 impulse discharge current (10/350 μs) SH-PE      | $I_{imp}$ | 2,5 kA                     | 2,5 kA                     | 2,5 kA                     |
| C3 voltage protection level mode core-SH at 1 kV/μs | $U_p$     | 1 200 V                    | 1 200 V                    | 1 200 V                    |
| C3 voltage protection level mode SH-PE at 1 kV/μs   | $U_p$     | 1 200 V                    | 1 200 V                    | 1 200 V                    |
| Response time core-SH                               | $t_a$     | 100 ns                     | 100 ns                     | 100 ns                     |
| Response time SH-PE                                 | $t_a$     | 100 ns                     | 100 ns                     | 100 ns                     |
| Impedance   | $Z$       | 75 Ω                       | 75 Ω                       | 75 Ω                       |
| Frequency range                                     | $f$       | 0 - 2,15 GHz               | 0 - 2,15 GHz               | 0 - 2,15 GHz               |
| Insertion loss typ. (max.)                          | $A$       | 0,6 dB (1 dB)              | 0,6 dB (1 dB)              | 0,6 dB (1 dB)              |
| VSWR typ. (max.)                                    |           | 1,2 (1,5)                  | 1,2 (1,5)                  | 1,2 (1,5)                  |
| Connection (input-output)                           |           | BNC 75                     | F 75                       | F 75                       |
| Degree of protection                                |           | IP 20                      | IP 20                      | IP 20                      |
| Mounting  |           | DIN rail 35 mm             | DIN rail 35 mm             | DIN rail 35 mm             |
| Range of operating temperatures (min / max)         |           | -40 °C / 80 °C             | -40 °C / 80 °C             | -40 °C / 80 °C             |
| According to standard                               |           | EN 61643-21+A1,A2 / D1, C2 | EN 61643-21+A1,A2 / D1, C2 | EN 61643-21+A1,A2 / D1, C2 |
| Ordering number                                     |           | A03385                     | A03387                     | A03392                     |

# FX-090-F75 F/F

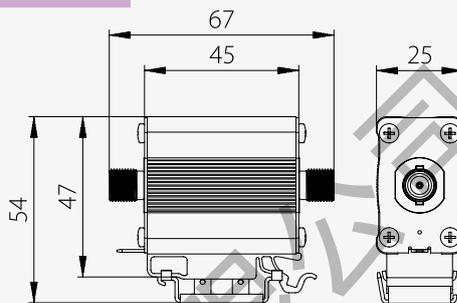
NEW

Lightning current arrester for coaxial lines, ST1  
F connectors, 75 Ω

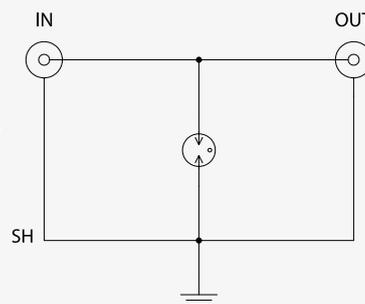
- lightning current arrester with grounded shielding
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of coaxial lines of TV and CCTV systems, suitable as the 1st level of surge for protection in coordination with the SX type
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



| Parameter / Type                                    | FX-090-F75 F/F |                            |
|---|----------------|----------------------------|
| Location of SPD                                     | ST 1           |                            |
| Maximum operating voltage                           | $U_c$          | 70 V DC                    |
| Nominal load current at 25°C                        | $I_L$          | 4 A                        |
| C2 nominal discharge current (8/20 μs) core-PE      | $I_n$          | 10 kA                      |
| D1 impulse discharge current (10/350 μs) core-PE    | $I_{imp}$      | 2,5 kA                     |
| C3 voltage protection level mode core-PE at 1 kV/μs | $U_p$          | 1 200 V                    |
| Response time core-PE                               | $t_s$          | 100 ns                     |
| Impedance   | $Z$            | 75 Ω                       |
| Frequency range                                     | $f$            | 0 - 2,3 GHz                |
| Insertion loss typ. (max.)                          | $A$            | 0,6 dB (1 dB)              |
| VSWR typ. (max.)                                    |                | 1,2 (1,5)                  |
| Connection (input-output)                           |                | F 75                       |
| Degree of protection                                |                | IP 20                      |
| Mounting  |                | DIN rail 35 mm             |
| Range of operating temperatures (min / max)         |                | -40 °C / 80 °C             |
| According to standard                               |                | EN 61643-21+A1,A2 / D1, C2 |
| Ordering number                                     |                | A04212                     |

Data, signal and telecommunication networks



Accessories

Grounding block F75

Ordering number

B14893

See page

193

# SX-090-B50 F/F

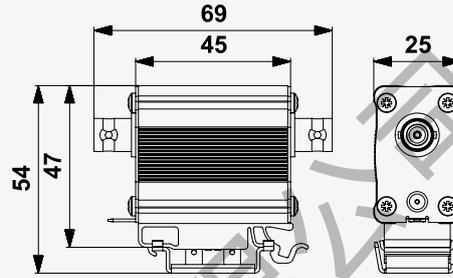
NEW

Surge arrester for coaxial lines, ST2  
BNC connectors, 50 Ω

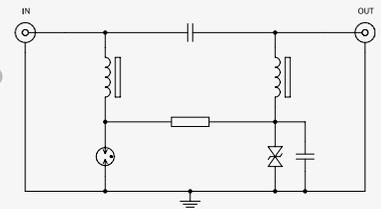
- surge arrester, shielding connected to protective grounding
- installation close to protected equipment
- for fine protection of sensitive professional receivers inputs (GPS, SAT,...) against surge overvoltage
- suitable for combined RF and DC distribution via coaxial cable
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



| Parameter / Type  | SX-090-B50 F/F |                                |
|---|----------------|--------------------------------|
| Location of SPD   | ST 1+2+3       |                                |
| Maximum operating voltage   | $U_c$          | 26 V DC                        |
| Nominal load current at 25°C  | $I_L$          | 0,7 A                          |
| C2 nominal discharge current (8/20 μs) core-PE                      | $I_n$          | 2,5 kA                         |
| D1 impulse discharge current (10/350 μs) core-PE                    | $I_{imp}$      | 0,5 kA                         |
| C2 voltage protection level mode core-PE at $I_n$                   | $U_p$          | 700 V                          |
| C3 voltage protection level mode core-PE at $I_n = 100 A (10/1000)$ | $U_p$          | 85 V                           |
| Response time core-PE   | $t_d$          | 1 ns                           |
| Impedance   | $Z$            | 50 Ω                           |
| Frequency range   | $f$            | 0 - 3 GHz                      |
| Insertion loss typ. (max.)  | $A$            | 1,5 (3,0) dB                   |
| VSWR typ. (max.)  |                | 1,2 (1,3)                      |
| Connection (input-output)   |                | BNC 50                         |
| Degree of protection  |                | IP 20                          |
| Mounting  |                | DIN rail 35 mm                 |
| Range of operating temperatures (min / max)                         |                | -40 °C / 70 °C                 |
| According to standard   |                | EN 61643-21+A1,A2 / D1, C2, C3 |
| Ordering number   |                | A04157                         |

# SX-090 F75 F/F

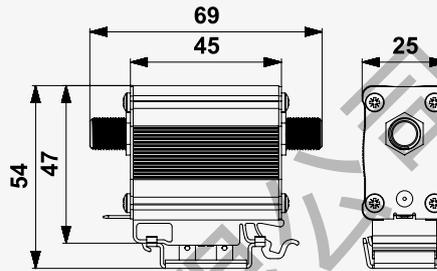
NEW

Surge arrester for coaxial lines, ST2  
F connectors, 75 Ω

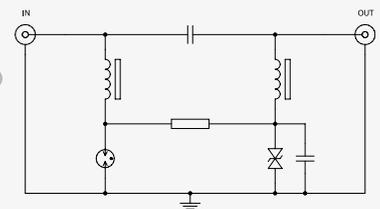
- surge arrester, shielding connected to protective grounding
- installation close to protected equipment
- for fine protection of coaxial inputs of TV and CCTV systems against surge voltage, suitable as the 2nd level of surge protection in coordination with the FX type
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



| Parameter / Type  | SX-090-F75 F/F |                                |
|---|----------------|--------------------------------|
| Location of SPD   | ST 1+2+3       |                                |
| Maximum operating voltage   | $U_c$          | 26 V DC                        |
| Nominal load current at 25°C  | $I_L$          | 0,7 A                          |
| C2 nominal discharge current (8/20 μs) core-PE                      | $I_n$          | 2,5 kA                         |
| D1 impulse discharge current (10/350 μs) core-PE                    | $I_{imp}$      | 0,5 kA                         |
| C2 voltage protection level mode core-PE at $I_n$                   | $U_p$          | 700 V                          |
| C3 voltage protection level mode core-PE at $I_n = 100 A (10/1000)$ | $U_p$          | 85 V                           |
| Response time core-PE   | $t_d$          | 1 ns                           |
| Impedance   | $Z$            | 75 Ω                           |
| Frequency range   | $f$            | 0 - 2,3 GHz                    |
| Insertion loss typ. (max.)  | $A$            | 1,5 (3,0) dB                   |
| VSWR typ. (max.)  |                | 1,5 (2,0)                      |
| Connection (input-output)   |                | F 75                           |
| Degree of protection  |                | IP 20                          |
| Mounting  |                | DIN rail 35 mm                 |
| Range of operating temperatures (min / max)                         |                | -40 °C / 70 °C                 |
| According to standard   |                | EN 61643-21+A1,A2 / D1, C2, C3 |
| Ordering number   |                | A04158                         |



Accessories

Grounding block F75

Ordering number

B14893

See page

193