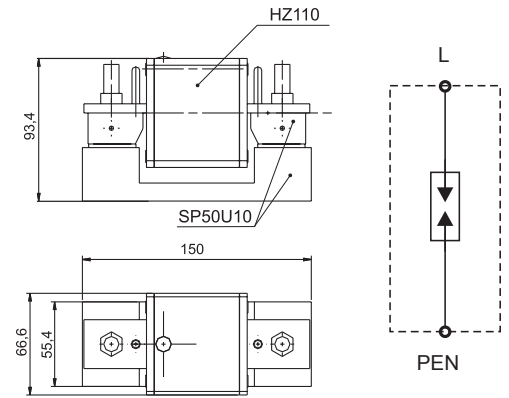


# Lightning arrester / spark gap / TYPE 1

TYPE 1 / CLASS I / TN-C / CE



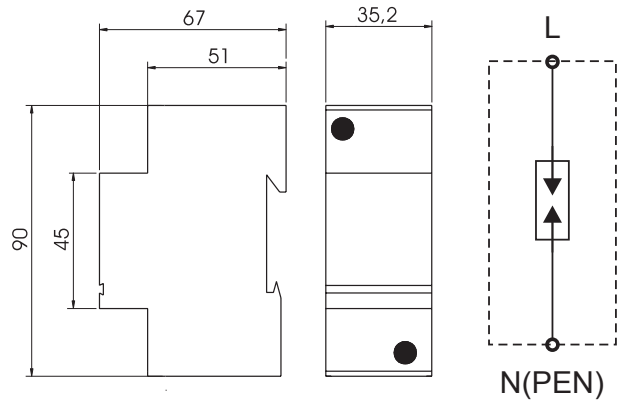
## HZ110 HZ110/500

HZ110 is a lightning arrester type 1 according to EN 61643-11 and IEC 61643-1. This is recommended for use in the Lightning Protection Zones Concept at the boundaries of LPZ 0 – 1 (according to IEC 1312-1 and EN 62305), where it provides the equipotential bonding and discharge of both, the lightning current and the switching surge, which are generated in power supply systems entering the building. The lightning arrester is constructed as an encapsulated, non-exhaust, multiple spark gap, which does not have any special requirements for installation in the main switchboards in terms of the gas exhaustion generated during the passage of the lightning current. HZ110 is mainly intended for use in the power lines, which are operated as a system TN-C.

| Type  |             | HZ110                   | HZ110/500           |
|---|-------------|-------------------------|---------------------|
| Test class according to EN 61643-11 ed.2 and IEC 61643-1                        |             | TYPE 1, CLASS I         |                     |
| Max. continuous operating voltage   | $U_C$       | 255 V AC                | 500 V AC            |
| Lightning impulse current (10/350)  | $I_{imp}$   | 110 kA                  |                     |
| - charge  | Q           | 55 As                   |                     |
| - specific energy   | W/R         | 3000 kJ/Ω               |                     |
| Nominal discharge current (8/20)  | $I_n$       | 50 kA                   |                     |
| Voltage protection level at $I_{imp}$   | $U_P$       | < 2,5 kV                |                     |
| Temporary overvoltage (TOV)   | $U_T$       | 334 V/5 s               | 690 V/5 s           |
| Response time   | $t_A$       | < 100 ns                |                     |
| Follow current interrupting rating at $U_C$                                     | $I_{fi}$    | 10 kA <sub>rms</sub>    | 8 kA <sub>rms</sub> |
| Max. back-up fuse   |             | 500 AgL/gG              |                     |
| Short-circuit withstand capability at max. back-up fuse                         | $I_p$       | 50 kA <sub>rms</sub>    |                     |
| LPZ   |             | 0-1                     |                     |
| Housing material  |             | Polyamid PA6, UL94 V-0  |                     |
| Protection type   |             | IP00                    |                     |
| Operating temperature range   | $\vartheta$ | -40°C ... +80 °C        |                     |
| Cross-section of the connected conductors (at tightening moment of clamps 8 Nm) |             | min. 50 mm <sup>2</sup> |                     |
| Mounting on   |             | holder SP50U10          |                     |
| Lifetime  |             | min. 100 000 h          |                     |
| Weight  | m           | 1000 g                  |                     |
| Article number  |             | 10 120                  | 10 125              |

# Lightning arrester / spark gap / TYPE 1

TYPE 1 / CLASS I / TN-C / CE



HS50-50

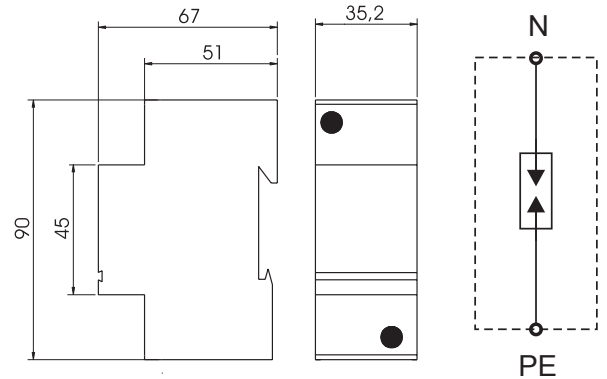
HS55

HS50-50, HS50-50 DS and HS55 are the lightning arresters type 1 according to EN 61643-11 and IEC 61643-1. These are recommended for use in the Lightning Protection Zones Concept at the boundaries of LPZ 0 – 1 (according to IEC 1312-1 and EN 62305), where they provide the equipotential bonding and discharge of both, the lightning current and the switching surge, which are generated in power supply systems entering the building. The lightning arresters are constructed as the encapsulated, non-exhaust, multiple spark gaps, which do not have any special requirements for installation in the main switchboards in terms of the gas exhaustion generated during the passage of the lightning current. They are mainly intended for use in the power lines, which are operated as a system TN-C. For TNS and TT systems it is necessary to combine these arresters with single spark gap lightning arrester HS100 (or JK110). The main usage of the HS lightning arresters is in those objects, which belong according to EN 62305 to the protective level LPL I.

| Type  |             | HS50-50   | HS55      |
|---|-------------|---|-----------|
| Test class according to EN 61643-11 ed.2 and IEC 61643-1                        |             | TYPE 1, CLASS I   |           |
| Max. continuous operating voltage   | $U_C$       | 255 V AC  | 440 V AC  |
| Lightning impulse current (10/350)  | $I_{imp}$   | 50 kA   |           |
| - charge  | Q           | 25 As   |           |
| - specific energy   | W/R         | 600 kJ/Ω  |           |
| Nominal discharge current (8/20)  | $I_n$       | 50 kA   |           |
| Voltage protection level at $I_{imp}$   | $U_p$       | < 2 kV  | < 2,5 kV  |
| Temporary overvoltage (TOV)   | $U_T$       | 334 V/5 s   | 690 V/5 s |
| Response time   | $t_A$       | < 100 ns  |           |
| Follow current interrupting rating at $U_C$                                     | $I_{fi}$    | 3 kA <sub>rms</sub>                                     |           |
| Max. back-up fuse   |             | 500 AgL/gG  |           |
| Short-circuit withstand capability at max. back-up fuse                         | $I_p$       | 25 kA <sub>rms</sub>                                    |           |
| LPZ   |             | 0-1   |           |
| Housing material  |             | Polyamid PA6, UL94 V-0                                  |           |
| Protection type   |             | IP20  |           |
| Operating temperature range   | $\vartheta$ | -40°C ... +80 °C  |           |
| Cross-section of the connected conductors (at tightening moment of clamps 4 Nm) |             | 35 mm <sup>2</sup> (solid)<br>25 mm <sup>2</sup> (wire) |           |
| Mounting on   |             | DIN rail 35 mm  |           |
| Lifetime  |             | min.100 000 h   |           |
| Weight  | m           | 225 g   |           |
| Article number  |             | 10 090  | 10 055    |

# Lightning arrester / total spark gap / TYPE 1

TYPE 1 / CLASS I / TN-S / TT / CE



HS100

JK110

HS100 and JK110 are the total current spark gaps type 1 according to EN 61643-11 and IEC 61643-1. These are recommended for use in the Lightning Zones Concept at the boundaries of LPZ 0 - 1 (according to IEC 1312-1 and EN 62305), where they provide the equipotential bonding and discharge of both, the lightning current and the switching surge, which are generated in power supply systems entering the building. The lightning arresters are constructed as the encapsulated, non-exhaust, multiple spark gaps, which do not have any special requirements for installation in the main switchboards in terms of the gas exhaustion generated during the passage of the lightning current.

They are intended for use in TN-S and TT systems. HS100 and JK110 are to be installed only between N and PE in modifications of 3+1 or 1+1.

| Type  |             | HS100   | JK110     |
|---|-------------|---|-----------|
| Test class according to EN 61643-11 ed.2 and IEC 61643-1                        |             | TYPE 1, CLASS I   |           |
| Max. continuous operating voltage   | $U_C$       | 255 V AC  |           |
| Lightning impulse current (10/350)  | $I_{imp}$   | 100 kA  | 110 kA    |
| - charge  | Q           | 50 As   | 55 As     |
| - specific energy   | W/R         | 2500 kJ/Ω   | 3000 kJ/Ω |
| Nominal discharge current (8/20)  | $I_n$       | 75 kA   |           |
| Voltage protection level at $I_{imp}$   | $U_P$       | < 2 kV  |           |
| Temporary overvoltage (TOV)   | $U_T$       | 1200 V / 0,2 s  |           |
| Response time   | $t_A$       | < 100 ns  |           |
| Follow current interrupting rating at $U_C$                                     | $I_{fi}$    | 100 A <sub>rms</sub>                                    |           |
| LPZ   |             | 0-1   |           |
| Housing material  |             | Polyamid PA6, UL94 V-0                                  |           |
| Protection type   |             | IP20  |           |
| Operating temperature range   | $\vartheta$ | -40°C ... +80 °C  |           |
| Cross-section of the connected conductors (at tightening moment of clamps 4 Nm) |             | 35 mm <sup>2</sup> (solid)<br>25 mm <sup>2</sup> (wire) |           |
| Mounting on   |             | DIN rail 35 mm  |           |
| Lifetime  |             | min.100 000 h   |           |
| Weight  | m           | 360 g   |           |
| Article number  |             | 10 100  | 10 110    |

Application table

| Type      | Art. No. | TE | Weight (g) | No. of poles | Connection | $I_{imp}$ (kA) | $U_c$ (V) | Mode of protection |
|-----------|----------|----|------------|--------------|------------|----------------|-----------|--------------------|
| HZ110     | 10 120   | -  | 1000       | 1            | 1+0        | 110            | 255       | L/N, L/PEN, L/PE   |
| HZ110/500 | 10 125   | -  | 1000       | 1            | 1+0        | 110            | 500       | L/N, L/PEN, L/PE   |
| HS50-50   | 10 090   | 2  | 225        | 1            | 1+0        | 50             | 255       | L/N, L/PEN, L/PE   |
| HS55      | 10 055   | 2  | 225        | 1            | 1+0        | 50             | 440       | L/N, L/PEN, L/PE   |
| HS100     | 10 100   | 2  | 360        | 1            | 0+1        | 100            | 255       | N/PE               |
| JK110     | 10 110   | 2  | 360        | 1            | 0+1        | 110            | 255       | N/PE               |

| Type  | Consisting of       | TE | Weight (g) | No. of poles | Connection | $I_{total}$ (kA) | Application  |
|---|---------------------|----|------------|--------------|------------|------------------|--|
| <b>Recommended sets for TN-C system</b>         |                     |    |            |              |            |                  |  |
| HS50-50/3+0                                     | 3xHS50-50           | 6  | 675        | 3            | 3+0        | 150              | Transformers, main switchboard and before electrometer |
| HS55/3+0  | 3xHS55              | 6  | 675        | 3            | 3+0        | 150              | Transformers and main switchboard                      |
| <b>Recommended sets for TN-S system</b>         |                     |    |            |              |            |                  |  |
| HS50-50/4+0                                     | 4xHS50-50           | 6  | 900        | 4            | 4+0        | 200              | Transformers, main switchboard and before electrometer |
| HS55/4+0  | 4xHS55              | 6  | 900        | 4            | 4+0        | 200              | Transformers and main switchboard                      |
| <b>Recommended sets for TN-S and TT systems</b> |                     |    |            |              |            |                  |  |
| HS50-50/3+1                                     | 3xHS50-50 + 1xHS100 | 8  | 1035       | 4            | 3+1        | 100              | Transformers, main switchboard and before electrometer |
| HS55/3+1  | 3xHS55 + 1xJK110    | 8  | 1035       | 4            | 3+1        | 110              | Transformers and main switchboard                      |

TE - diving unit (17,5 mm)