PRODUCT INFORMATION
Surge arresters and low voltage limiting devices for d.c. railway networks

References:
- VDV Recommendation 525: Overvoltage Protection for Traction Power Supply Systems of DC Urban Rail Systems
- EN 50526-2 Railway applications – Fixed installations – D.C. surge arresters and voltage limiting devices – Part 2: Voltage limiting devices
- Application guidelines: Overvoltage protection – Metal oxide surge arresters in railway facilities, ABB Switzerland Ltd., Wettingen/Switzerland.

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Overvoltage protection of direct current railway networks

The most effective protection of the electrical equipment against transient overvoltages is the use of gapless metal-oxide surge arresters (MO-arresters) with silicone housing.

The descriptions A1 and A2 define the function of the MO-arresters.

Function A1: Overvoltage protection of the equipment and apparatus connected to the traction supply voltage. The MO-arresters are connected between the traction supply voltage (overhead contact line) and the earth or return circuit (running rails).

Function A2: Overvoltage protection for apparatus connected to the running rails. The MO-arrester is connected between the running rails and the earth or between the terminals of secondary equipment along the track.

Voltage Limiting Device (VLD)
Protection against unacceptable high touch voltages. The VLD is connected between the earth and the running rails.

Recommended places of installation of MO-arresters A1
- On rolling stock at the current collector on the roof of the traction vehicle
- Along the overhead contact line
  - at each feeding point
  - at the ends of feeding sections and the terminus
  - at current taps, e.g. for switch heaters
  - Along line sections often hit by lightning
  - poles on long and high bridges
  - poles of elevated or exposed lines
  - In substations
  - at the feeder lines

Recommended places of installation of Voltage Limiting Devices ABB type HVL
- In substations between return cables and foundation earth electrodes
- Along the line between an earthed pole and running rails or between running rails and a track of reinforced concrete as structure earth
- At bridge railings between touchable conducting parts and structure earth
- Between metallic construction of waiting shelter and running rail
- In workshops and depots

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**Technical data**

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<th>POLIM-C..HD</th>
<th>POLIM-H..ND</th>
<th>POLIM-H..SD</th>
<th>POLIM-R..1ND</th>
<th>POLIM-R..2ND</th>
<th>POLIM-X..ND</th>
<th>POLIM 4.5 ID</th>
<th>HVL</th>
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<td>Nominal voltage $U_n$</td>
<td>up to 3 kV</td>
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<td>up to 3 kV</td>
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<td>Arrester class</td>
<td>DC-A</td>
<td>DC-B</td>
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<td>DC-C</td>
<td>DC-C</td>
<td>Class 2.2</td>
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<td>Charge transfer capability $Q_t$</td>
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<td>2.5 As</td>
<td>2.5 As</td>
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<td>Nominal discharge current $I_n$</td>
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<td>Rolling stock</td>
<td>Overhead contact line</td>
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<td>Overhead contact line</td>
<td>Substation</td>
<td>Substation</td>
<td>Return line</td>
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<td>Both AC and DC</td>
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1. Overhead contact line
2. Running rails
3. Superstructure
4. Earth

* The arrester with Function A2 can alternatively be connected to the running rails.