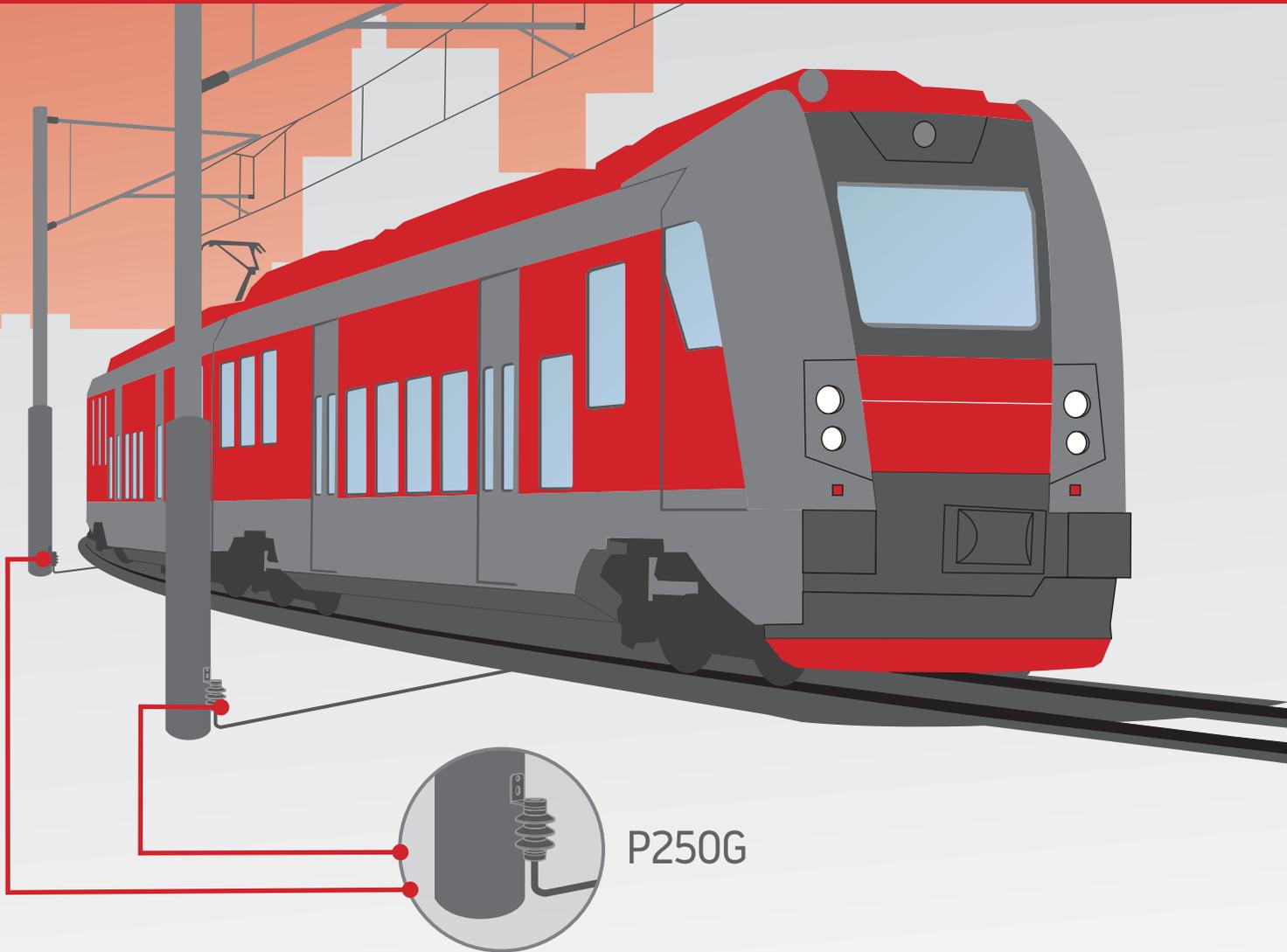


# LOW VOLTAGE LIMITERS FOR RAILWAY VEHICLES IN DC SYSTEMS

protection of non-live parts of metal structures in DC traction power supply systems



**P60G, P120G** - Insulation resistance > 2 G $\Omega$  (outdoor and indoor use)

**P60GI, P120GI** - Insulation resistance > 2 G $\Omega$  (indoor use)

**P250G, P400G** - Insulation resistance > 1 G $\Omega$  (outdoor and indoor use)

**P250GI, P400GI** - Insulation resistance > 1 G $\Omega$  (indoor use)

New types of low voltage limiters Type 1 VLD-F based on requirements of EN 50122-1: 2011, which are designed to protect the non-live parts of metallic structures in DC ev. AC traction power supply systems. They are used to effectively protect persons who may come into contact with these parts during lightning strikes or a defect of the tractive overhead line. The limiter has a high internal resistance when voltage on it is less than the nominal level its spark over voltage  $U_{VDC}$  and becomes conductive when this

**P600G** - Insulation resistance > 1 G $\Omega$  (outdoor and indoor use)

**P600GI** - Insulation resistance > 1 G $\Omega$  (indoor use)

Power gas discharge tube (GDT) designed for potential equalisation on the installation components of buildings or technological units,

level is exceeded. In case of failure arising from a contact between live parts of the power system and traction conductive portion unintentionally associated with return path limiter protects illegal contact voltage that becomes conductive and causes the power is turned off. According to EN 50122-1: 2011, this type of limiter is recommended primarily for connection between the protected area and return circuit in overhead line areas (or pantograph areas) that may be in contact with live conductors or damaged current collector, then the support structures pylons which can become live due to a fault isolation. After re-applied voltage drops below of its nominal level spark over voltage  $U_{VDC}$  the limiter returns to the non-conducting state again.

which are not electrically connected to each other (according to EN 62305: 2011). It is recommended primarily for bridging of insulated flanges and insulated threaded joints in the pipeline cathodic protected parts of industrial technology.

# LOW VOLTAGE LIMITERS FOR RAILWAY VEHICLES IN DC SYSTEMS

protection of non-live parts of metal structures in DC traction power supply systems

Insulation resistance > 2 GΩ  
outdoor and indoor use



DC sparkover voltage P60G = 60 VDC ± 20 %, P120G = 120 VDC ± 20 %

P60G and P120G - are new types of low voltage limiters Type 1 VLD-F based on requirements of EN 50122-1: 2011, which are designed to protect the non-live parts of metallic structures in DC or AC traction power supply systems. They are used to effectively protect persons who may come into contact with these parts during lightning strikes or in case of a defect of the tractive overhead line.

According to EN 50122-1: 2011, this type of limiter is recommended mainly for the connection between the protected part and return circuit in the overhead line areas (or pantograph areas) that may be in contact with the conductors or damaged current collector, then on the support structures pylons which can become live due to an insulation failure.

Insulation resistance > 2 GΩ  
indoor use



DC sparkover voltage P60GI = 60 VDC ± 20 %, P120GI = 120 VDC ± 20 %

P60GI and P120GI - are new types of low voltage limiters Type 1 VLD-F based on requirements of EN 50122-1: 2011, which are designed to protect the non-live parts of metallic structures in DC or AC traction power supply systems. They are used to effectively protect persons who may come into contact with these parts during lightning strikes or in case of a defect of the tractive overhead line.

According to EN 50122-1: 2011, this type of limiter is recommended mainly for the connection between the protected part and return circuit in the overhead line areas (or pantograph areas) that may be in contact with the conductors or damaged current collector, then on the support structures pylons which can become live due to an insulation failure.

Insulation resistance > 1 GΩ  
outdoor and indoor use



DC sparkover voltage P250G = 250 VDC ± 20 %, P400G = 400 VDC ± 20 %

P250G and P400G - are new types of low voltage limiters Type 1 VLD-F based on requirements of EN 50122-1: 2011, which are designed to protect the non-live parts of metallic structures in DC or AC traction power supply systems. They are used to effectively protect persons who may come into contact with these parts during lightning strikes or in case of a defect of the tractive overhead line.

According to EN 50122-1: 2011, this type of limiter is recommended mainly for the connection between the protected part and return circuit in the overhead line areas (or pantograph areas) that may be in contact with the conductors or damaged current collector, then on the support structures pylons which can become live due to an insulation failure.

Insulation resistance > 1 GΩ  
indoor use



DC sparkover voltage P250GI = 250 VDC ± 20 %, P400GI = 400 VDC ± 20 %

P250GI and P400GI - are new types of low voltage limiters Type 1 VLD-F based on requirements of EN 50122-1: 2011, which are designed to protect the non-live parts of metallic structures in DC or AC traction power supply systems. They are used to effectively protect persons who may come into contact with these parts during lightning strikes or in case of a defect of the tractive overhead line.

According to EN 50122-1: 2011, this type of limiter is recommended mainly for the connection between the protected part and return circuit in the overhead line areas (or pantograph areas) that may be in contact with the conductors or damaged current collector, then on the support structures pylons which can become live due to an insulation failure.

Insulation resistance > 1 GΩ  
outdoor and indoor use



DC sparkover voltage 600 V ÷ 1000 V

P600G a power gas discharge tube (GDT) designed for potential equalisation on the installation components of buildings or technological units, which are not electrically connected to each other (according to EN 62305: 2011). It is recommended primarily for bridging of insulated flanges and insulated threaded joints in the

pipeline cathodic protected parts of industrial technology. If between these parts arise some potential difference greater than 600V, GDT immediately ignites for a temporary period and both parts electrically interconnects (typical internal resistance initialized P600G is 0,001 ÷ 0,002 Ω).

Insulation resistance > 1 GΩ  
indoor use



DC sparkover voltage 600 V ÷ 1000 V

P600GI a power gas discharge tube (GDT) designed for potential equalisation on the installation components of buildings or technological units, which are not electrically connected to each other (according to EN 62305: 2011). It is recommended primarily for bridging of insulated flanges and insulated threaded joints in the

pipeline cathodic protected parts of industrial technology. If between these parts arise some potential difference greater than 600V, GDT immediately ignites for a temporary period and both parts electrically interconnects (typical internal resistance initialized P600G is 0,001 ÷ 0,002 Ω).

