Product recommendations for light rail applications

PMA Conduits and braids for light rail vehicle applications

Improved performance and safety for the rail industry with PMA cable protection solutions from ABB.

On the carriage roof, couplings and intercar jumper connections
- **PCSL**: PA12 - Medium-duty conduit for continuous dynamic and static applications:
  - Very good mechanical and impact strength even at low temperatures and dry conditions
  - Excellent flexibility and fatigue / reversed bending
  - In black colour excellent weathering and UV resistance
- **PLR**: PA6 - Medium-duty conduit for static and “light” dynamic applications:
  - Good pressure resistance and mechanical properties
  - Very good fire safety characteristic

Under carriages and on bogies
- **PCS**: PA12 - Heavy-duty conduit for applications continuously in motion and static applications:
  - Very good mechanical and impact strength even at low temperatures and dry conditions
  - Excellent flexibility and fatigue / reversed bending
  - In black excellent weathering and UV resistance
- **VCS**: PA6 - Medium-duty conduit preferably for static applications:
  - Good ductility, mechanical characteristics and impact strength

Inside carriages and in the passenger zone
- **PLR**: PA6 - Medium-duty conduit for static and “light” dynamic applications:
  - Good pressure resistance and mechanical properties
  - Very good fire safety characteristic
- **VAML**: PA6 - Medium-duty conduit preferably for static applications:
  - Complies with highest internal fire safety regulations regarding smoke and toxicity

Cable bundling and abrasion protection
- **F.66 / C.66 / L.66**: PA6.6 Braids - Braids for bundling and protection of electrical wires
- **F.PX / L.PX**: Polyester - Braids for bundling and protection of electrical wires
- **G.PX**: Polyester - Open, self rewinding construction for fast installation
Outdoor applications

- **PMAFIX VNZ with metric or PG thread**: IP68 GT one piece connectors with strain relief and metal thread for dynamically loaded connections or increased ingress protection requirements between dry and wet areas, e.g. for air conditioning systems, bogies, couplings, waggon transitions

- **PMAFIX VIR with metric thread or VIZR with PG thread**: IP68 GT one piece connectors with metal female thread, e.g. for round pin plug connections or transitions to steel tubes

- **PMAFIX VNV (straight) with metric or PG thread**
  - **PMAFIX VBV (90°) with metric or PG thread**: IP68 GT one piece connectors with metal thread for standard connections in outdoor applications (to cases, plates, grommets etc.) with increased ingress protection requirements, e.g. for air conditioning systems, bogies, couplings, brake systems

- **MAVI with metric thread / MAVIK with metric thread**: IP68 special / positioning elbow adapter made from nickel-plated aluminium for optimal wiring especially for dynamically loaded connections, e.g. for air conditioning systems, bogies, couplings

- **IP69K water impact protection WPS for IP68 connectors**: with NW 10 to 48 additional protection against high pressure water jets at the conduit/fitting connection, e.g. for air conditioning systems, bogies, couplings, waggon transitions

Indoor applications

- **IP68 GT one piece connectors** with polyamide or metal thread, metric or PG for increased ingress protection requirements, e.g. for passenger zone, driver’s cab

- **IP66 connectors** with polyamide thread, metric or PG, e.g. for passenger zone, driver’s cab and general indoor application areas

Fire Safety Certificates are available for many of these conduits according to NF F 16 101/102, DIN 5510, BS 6853, EN 45545, UL 94, ASTM.

Possible alternatives: Depending on project and application area further PMA products may be suitable for traction applications (XSOL, PIS, VAM, VOH). Please contact the local PMA specialist or PMA AG, CH-8610 Uster for further application engineering support. Use of grey products for the passenger zone may help to differentiate from products for outdoor applications where black is recommended. For technical details and specifications please see our technical data sheets on [www.pma.ch](http://www.pma.ch)

The connectors are made from self-extinguishing plastics which are free from halogens and cadmium. If fittings with strain relief are used for several conductors without a multiple sealing insert, we recommend the use of plumber’s teflon tape or a commercial thread sealing product (e.g. Loctite) on the screw thread. Users of PMA products should make their own evaluation to determine the suitability of each product for the specific application. If PMA products are used in conjunction with non PMA products, all product liability claims will be rejected. Please contact the local PMA specialist or PMA AG, CH-8610 Uster for further application engineering support.