Ground Fault Protection
Railway and Transit
Electrical Safety Solutions for Rail and Transit

Ensuring High Reliability
Rail and transit operators frequently encounter faults in electrical power systems, whether in the signaling system, heaters, or the rolling stock themselves. Electrical ground faults, if left unaddressed, can affect system uptime, and lead to signal failure, as well as risks to equipment and personnel. BENDER is a market leader in providing electrical safety solutions to the rail and transit industries. Our years of experience ensure that transportation technicians are provided with advance notification of ground faults and other electrical safety issues. Developing faults are identified in real-time, with notification provided remotely via integration into modern communication networks.

The BENDER Advantage
- Integratable solutions for virtually all rail and transit applications, including both in the vehicle as well as infrastructure
- Custom solutions for specific requirements
- Early detection of ground faults
- Preventative maintenance
- Effective system data management
- Integration into existing modern communication networks

### Devices

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**Signaling Systems**
Ground detection is vital in the proper operation of railroad and transit signaling. Ground fault current can be the difference between a signal relay improperly energizing or de-energizing, resulting in incorrect rail signals. While operating as ungrounded systems, signaling systems still require preventive measures in order to maintain proper relay energization. BENDER’s IRDH275 ground detector negates the need for frequent voltage and current testing by continuously monitoring the insulation resistance of the AC and/or DC system. Preventative alarm values allow for the early detection of leakage currents before the making/breaking capacity is reached. Alarm indicators and contacts are available if a ground occurs.

**Electric Switch Heaters**
Switch heaters require continuous operation, especially during hazardous weather conditions. A hazardous ground fault condition, which can be created by factors such as improper track grounding and wet areas, may cause little to no power to reach the heating resistor, thereby causing poor operation. The RCM420 ground detector continuously monitors for ground faults in a grounded heating system. Its compact size makes it perfect for heater control panels. Alarm contacts allow for external alarm indication.

**Inside the Locomotive / Car**
Electrical systems inside the train are as important as those outside the train. Systems such as lighting, floor heaters, and traction drives may be grounded or ungrounded, AC or DC, and single-phase or three-phase. A ground condition on any of these systems may cause shock hazards and/or damage to equipment. BENDER’s diverse selection of ground detectors covers a wide range of applications, including both grounded and ungrounded systems, single-phase AC, three-phase AC, and DC. Multi-branch units are available to offer individual monitoring of a large number of feeders, such as the RCMS series ground fault monitor for grounded AC/DC systems.
Solutions For Your Electrical Safety Needs
With our complete portfolio of relay protection products

For over 70 years, BENDER has been a leader in meeting electrical safety needs with our large portfolio of ground fault protection products. BENDER products enhance the safety of electrical systems and help to save money, reduce downtime, and give the peace of mind that your system is protected by the latest in electrical safety technology.

- Ground Fault Monitors and GFCIs for grounded and high-resistance grounded systems
- Ground Fault Detectors for ungrounded systems
- Voltage, Current, and Frequency Relays
- Remote Communication Solutions

**Ground Fault Protection for Ungrounded Systems**
- ISOMETER® Ground Detector Series
- EDS Ground Fault Location Systems

**Ground Fault Protection for Grounded Systems**
- RCM Series Ground Fault Monitors for Single-Phase and Three-Phase AC Systems
- RCMA Series Ground Fault Monitors for Single-Phase AC, Three-Phase AC, and DC Systems
- RCMS Series Multi-Channel Ground Fault Monitors for Single-Phase AC, Three-Phase AC, and DC Systems
- Lifeguard Series Ground Fault Circuit Interrupters for Single-Phase AC, Three-Phase AC, and DC Systems

**General Purpose Protection Relays**
- Undervoltage and Overvoltage Relays for AC and DC Systems
- Overfrequency and Underfrequency Relays
- Overcurrent and Undercurrent Relays for AC and DC Systems

**Communication Solutions**
- Standard Communication Converters for Ethernet, Modbus/TCP, and Modbus/RTU
- Customizable Visualization Capabilities
- Simple System Integration

Visit www.bender.org for information, tools, and more:
- Complete listings of products, documentation, datasheets, and technical information
- Knowledgebase of technical information answering your ground fault questions
- Product selection tools, including ground fault relays, current transformers, and more
- Local representative information

**BENDER**
The Power in Electrical Safety

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