

HRG & LRG Neutral Grounding Resistor Solutions for Generators and Transformers

In industrial and commercial power systems, as many as 95% of electrical faults begin as a single-phase line-to-ground fault. Bender **High-Resistance Grounding (HRG)** systems reduce the damage and hazards caused by ground-faults. Bender's advanced HRG packages automatically and safely indicate the location of a ground fault. LRG solutions, often used on medium voltage systems help prevent damage to generators and transformers.

Features

- NGR monitoring for LRG and HRG packages
- Advanced Ground-fault protection that provides harmonic information for troubleshooting
- Wall mount and free standing packages
- AC/DC ground-fault detection
- Integrated web server, Modbus TCP/IP, and Modbus RTU
- HMI (Human-Machine Interface) that displays measured values and provides easy programming in selectable languages

Benefits

- ✓ **Protect generators** by limiting ground-fault current flow and damage, even when the generator breaker is open.
- ✓ **Improve safety** by monitoring the grounding connection.
- ✓ **Increase generator reliability** using HRG as mentioned in IEEE Std 3005.4.
- ✓ **Preventative Maintenance** with sensitive ground-fault detection levels to allow early warning of insulation degradation.

Neutral-Grounding Resistor Monitors



The **NGRM500** detects NGR failure and ground faults in high-resistance-grounded power systems. The **NGRM550** is used for low-resistance-grounded power systems.



The **NGRM700** and **NGRM750** offer unique packaging that allows easy installation of the base unit and a removable HMI for panel mounting.

Series 1



- Limits ground-fault current
- Pulsing ground-fault function
- Visual indicators
- Certifications - cULus listed to IEEE 57.32 and CSA 295
- Up to 12 feeders
- Compact wall-mount design

Series 2 - Intermediate



Features of Series 1 +

- Multi-channel fault detection
- Feeder Level AC/DC fault detection
- NGR connection monitoring
- Digital display
- Integrated web server
- Fieldbus communication
- Wall-mount or floor mount
- Up to 60 feeders
- Harmonic filtering

Series 3 - Advanced



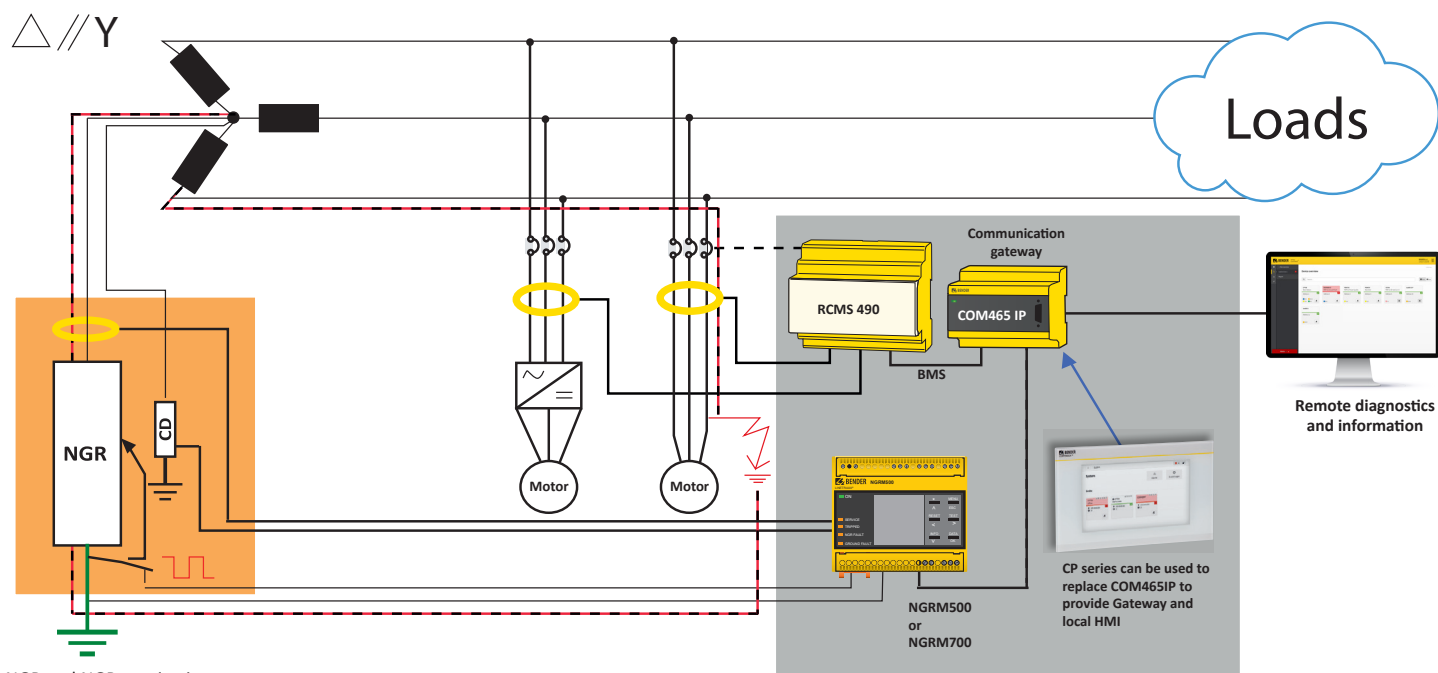
Features of Series 2 +

- Multi-fault prioritization
- Ground-fault location annunciation
- Simplified user interface
- Two bus-tie connections
- Up to 120 feeders
- AC/DC ground-fault protection
- Touch screen HMI

LRG



- Current range is 100s to 1,000s of amps
- Available for medium-voltage applications
- Optional NGRM for open detection and sensitive ground-fault detection
- Available with separate control enclosure for remote or local mounting



NGR and NGR monitoring components are often provided in separate enclosures.

Note: Maximum distance limited by CT and CT cable (typically 40 m with Bender recommended CT).

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