The 64 Low Resistance Ground Structure Relay from Balfour Beatty Rail is designed to protect equipment enclosures and alert personnel to “ground” and “hot” (current leakage) fault conditions in DC switchgear and rectifiers. Low resistance relays provide optimum performance and operational reliability for heavy or light rail applications and feature solid state components, rugged construction, and a self-diagnostic feature.

Features

- <60 ohm Ground Trip
- 250 mA maximum Hot Trip
- Self-monitoring (loss of power causes annunciation)
- 24VDC, 48VDC and 125VDC power supply
- Transient surge protection

Description

Type 64 Low Resistance Ground Structure Relay alerts personnel through visual and alarm output contacts when a DC switchgear structure or rectifier becomes grounded through a breach in the insulation system between the structure and earth ground. Annunciation occurs when the current/voltage sensing trip system has been by-passed by grounding or when the relay’s self diagnostics feature determines that an internal failure has occurred. The relay also alerts personnel when a leakage or fault occurs between the bus and structure (“hot structure”). Normally, the output is connected to a lockout relay to automatically de-energize the entire station. The hot structure function detects both AC and DC leakages and faults.

The relay consists of two parts:

Sensor

The sensor converts current to voltage and provides connection terminals for the switchgear ground and the station ground (4/0 minimum cable recommended). The sensor provides sensing of low-level currents but does not allow dangerous voltages to develop, even under fault conditions.

Electronic Relay

The electronic relay functions with the sensor. It contains connections for 125 volts DC power input, “Grounded Structure” annunciation and “Structure Leakage” annunciation and trip. (See specifications).
The Low Resistance Ground Structure Relay provides maximum ground fault protection for structures, such as this 3000 KW Extra Heavy Duty Power Rectifier.

Operating Conditions

- Supply voltage: 24VDC, 48VDC, 125VDC
- Sensor (may be paralleled for higher current): 30,000 ampere momentary without allowing dangerous voltage on switchgear
- Supply current: 25mA (125VDC input power)
- Ambient temperature: -20°C to + 55°C
- Structure applied voltage ~1 VAC
- Ground Trip: <60 ohm
- Output contact rating - ground: 1A, 150VDC (max. 20W switching)

- Hot Trip: 250 mA maximum
- Output contact rating - hot: 5A continuous, 50A surge, 150VDC

“Grounded Structure” - (64G) occurs when insulation between structure and earth ground is breached. “Structure Leakage” - (64 Annunciation and Trip) functions when leakage occurs between bus and structure. Low Resistance Ground Structure Relay provides maximum ground fault protection for structures.