Guideform Specification

Bender Specification for UL1053 AC/DC Ground Fault Relay Detection/ Location System

a. Provide ground-fault monitoring for up to twelve separate systems or channels in grounded and high-resistance grounded, AC/DC ground fault sensing, single-phase or three-phase systems. Provided solution shall also be compatible with systems that contain power conversion equipment, such as variable frequency drives, inverters, and other power conversion equipment without requiring additional relays for both AC, AC/DC, and DC Ground Fault detection.

b. Each channel shall an have an independently adjustable trip value. For AC systems, the trip value is adjustable from 6 mA to 20 A. For DC and mixed AC/DC systems, the trip value is adjustable from 10 mA to 10 A. Each channel is individually monitored with a connected current transformer, available in a wide range of sizes, shapes, and core types. This relay shall have the capability to be utilized for main and/or branch ground fault location detection. Relay will not function in the event of lost or damaged CT Sensor connection.

c. Three separate time delays shall be available - a pickup delay, startup delay, and delay on reset. Advanced harmonics analysis and filtering options allow for tailoring use to specific application requirements.

d. The on-board LCD display shall indicate a detailed system overview, including a chart showing measured ground-fault current in real-time, individual alarm messages for each channel, and an easy-to-use menu for adjusting settings. Advanced harmonics analysis and filtering options allow for tailoring the relay's monitoring capabilities to specific application requirements.

e. Two configurable Form-C (SPDT) outputs trigger on alarm activation. Additionally, each channel (up to 12 per relay) shall be provided with an individual Form-A (SPST) output. These contacts shall have the capability to be set to trip on main alarm or pre-alarm (10-100% of main alarm). The relay shall be compatible with communication gateways for connecting to Ethernet and Modbus networks.

f. Functions and features:

- Multi-channel ground-fault protection for solidly and high-resistance grounded AC and DC systems, single-phase and three-phase
- Meets or exceeds code requirements for ground-fault detection on grounded AC and DC systems where applicable.
- Individually monitor up to twelve systems / circuits from one relay
- Detailed digital display showing measured values in real-time.
- Individually adjustable trip values, as low as 6 mA and as high as 20 A
- Connects to current transformers available in a wide range of sizes, shapes, and core types
- On-board test and reset button with connections for external activation.
- Adjustable time delays (pickup, startup, on reset)
- Latching or non-latching operation
- Two Form-C (SPDT) alarm outputs, operating normally energized (failsafe) or de-energized (non-failsafe)
- Twelve Form-A (SPST) alarm outputs, individually configurable for each monitoring channel
- Compatible with communication gateways for connection to Ethernet or Modbus networks

g. For Applications below provide the UL1053 Ground Fault relays that meet the above specification:

- Ground fault monitoring on grounded and high-resistance grounded AC/DC systems
- Systems with variable frequency drives, inverters, and other power conversion equipment
- General purpose DC systems, per NEC 250.167(B)
- General power distribution
- Motors and motor control centers
- Control systems
- Heat trace systems, per NEC 427.22 and CEC 62-116
- Solar arrays, per NEC 690.41(B) (2017 edition), NEC 690.5 (2014 edition), and CEC 64-064(4)
- Energy storage systems

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