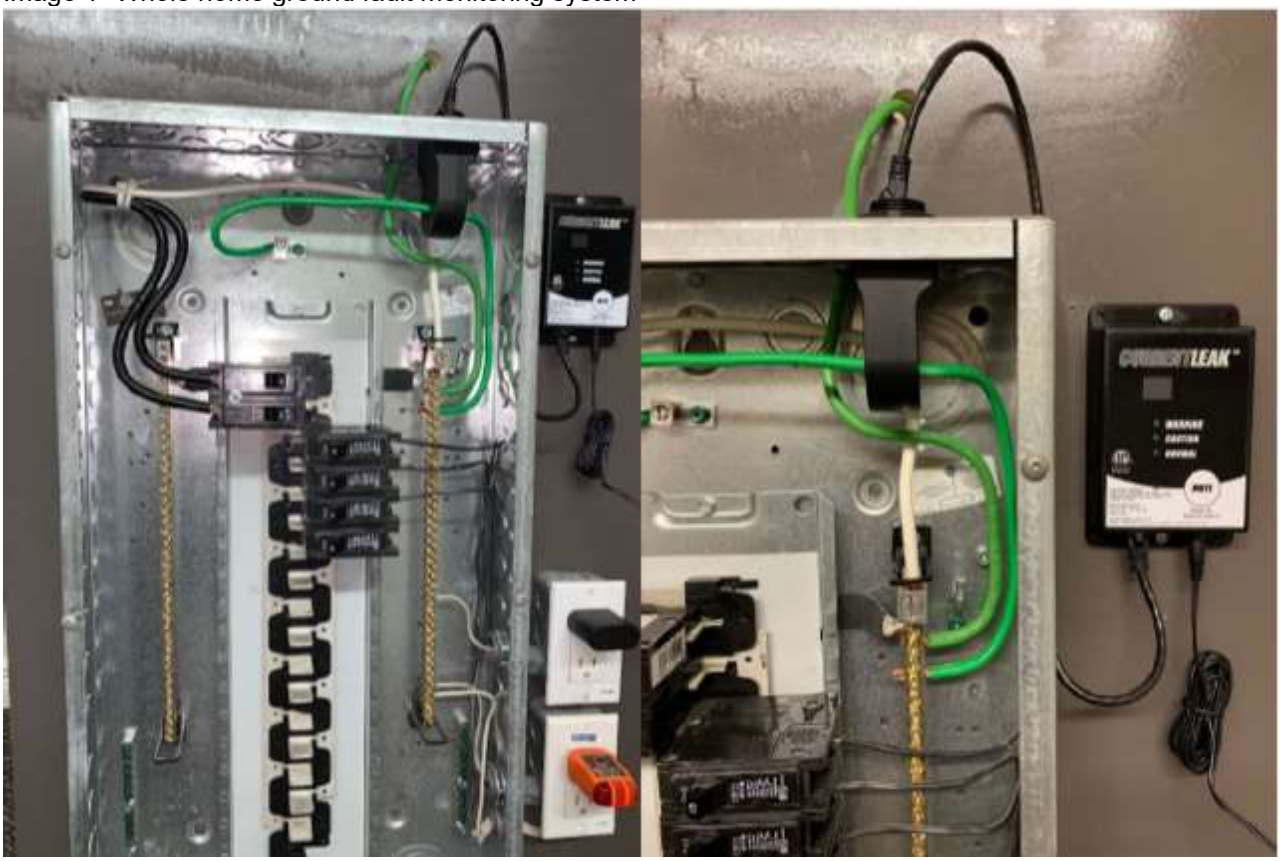
ESA Bulletin – Ground Fault Monitoring

2-024, 2-034, 10-210, 10-614 Whole Home Ground Fault Monitoring

Background:
This question arises from a product intended to monitor for ground faults for an entire dwelling where a combination service panel is the main service equipment. It requires removal of the mandatory factory installed neutral bond connection that is a requirement for service equipment. Since a combination service panel does not provide access to the line and neutral conductors downstream from the neutral bond and ahead of the branch circuits, it is necessary to monitor the system bond jumper for downstream ground fault currents. By removing the factory installed system bond jumper (neutral bond) and replacing it with a field installed one sized as per Rule 10-614 it is possible to have sufficient length to route it through a current transformer (CT) which connects to a monitoring and alarm device. It is intended to improve safety in the home by monitoring all circuits collectively and alert the occupant to the presence of ground faults.

Image 1- Whole home ground fault monitoring system



Question:
Is it permitted to remove the mandatory neutral bond (system bond jumper) from a combination service panelboard and replace it with a field installed system bond jumper for the purpose of monitoring for downstream ground faults?

Answer:
Yes, notwithstanding Rules 2-024 and 2-034, it can be permitted if replaced by a field installed system bond jumper as required by Rule 10-210 c) and sized as per Rule 10-614 2).
Note: Adequate means shall be provided within the service compartment, as part of the equipment, to terminate both ends of the field installed system bond jumper.

Rationale:
The neutral bond (system bond jumper) is mandatory to be installed at the factory for service equipment and is a critical connection. Removing this connection when the combination panel is to be used as service equipment is to alter certified equipment.
Replacing it with a field installed system bond jumper sized as per Rule 10-614 would meet the same safety objective, and allow for the added feature of monitoring the connection for downstream ground faults by a current transformer.

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