

CT-08 : GROUND-FAULT CURRENT TRANSFORMER LOCATION

A ground fault on a grounded system can be detected using a current-sensitive ground-fault monitor. The current transformer (CT) can be located either at the supply neutral or around the phase conductors.

The CT's in Figs. 1 and 2 measure current in the conductor that connects the supply neutral (X0) to ground. A CT at this location can detect a ground fault in any part of the system and is not subject to nuisance trips due to common-mode CT saturation or system charging current.

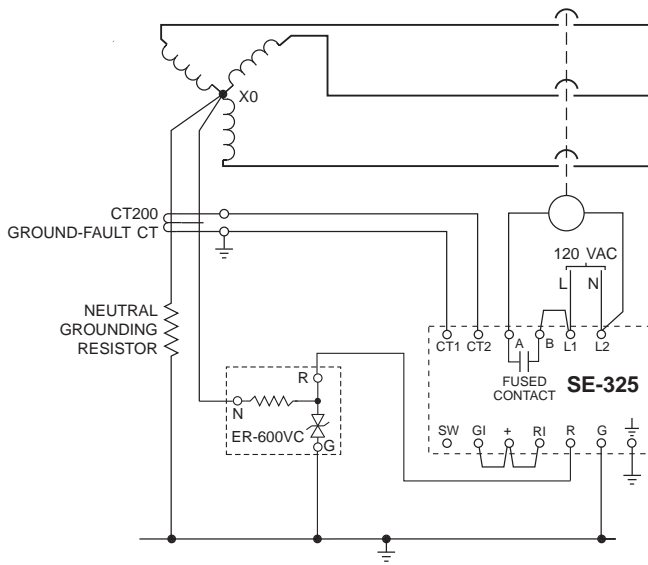


Figure 1: Neutral-Current Ground-Fault Detection on a Resistance-Grounded System

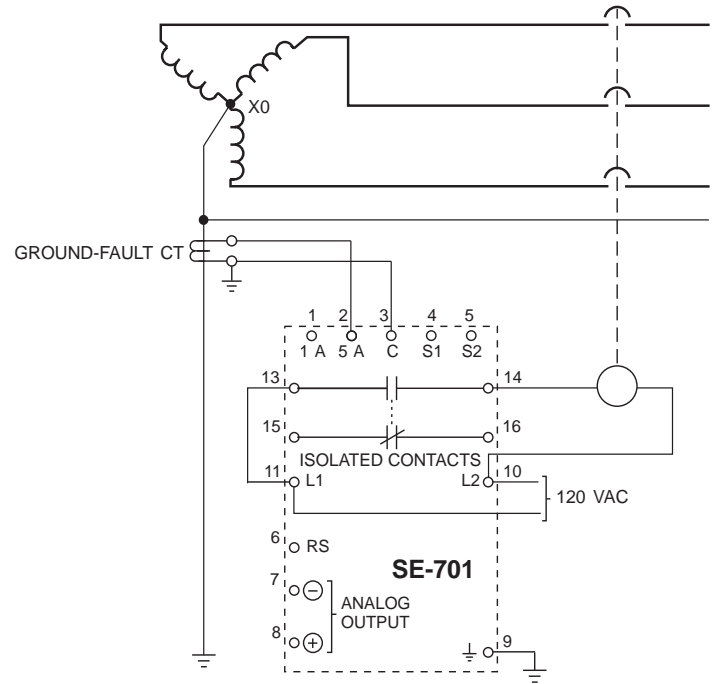


Figure 2: Neutral-Current Ground-Fault Detection on a Solidly Grounded Four-wire System

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The core-balance CT connections shown in Figs. 3 and 4 can be used for ground-fault detection and, to aid in ground-fault location, additional relays can be added on each feeder or load. When the fault is downstream of a CT, fault current is detected; a CT on an unfaulted feeder or load will not detect ground-fault current. To minimize the possibility of CT saturation, follow Technical Note CT-03 guidelines for conductor placement in the CT window and select a trip level and CT appropriate for the application. To eliminate the possibility of sympathetic tripping, select a current-pickup setting above the total system charging current.

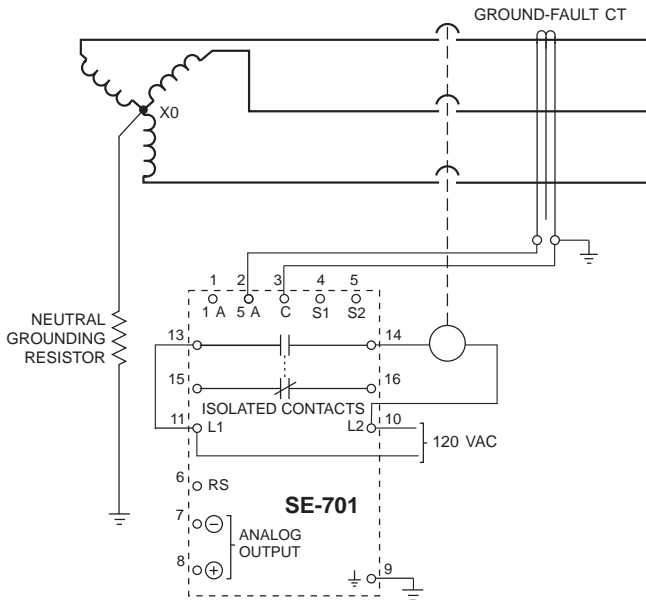


Figure 3: Core Balance Ground-Fault Detection on a Three-Wire System (Resistance Grounded or Solidly Grounded)

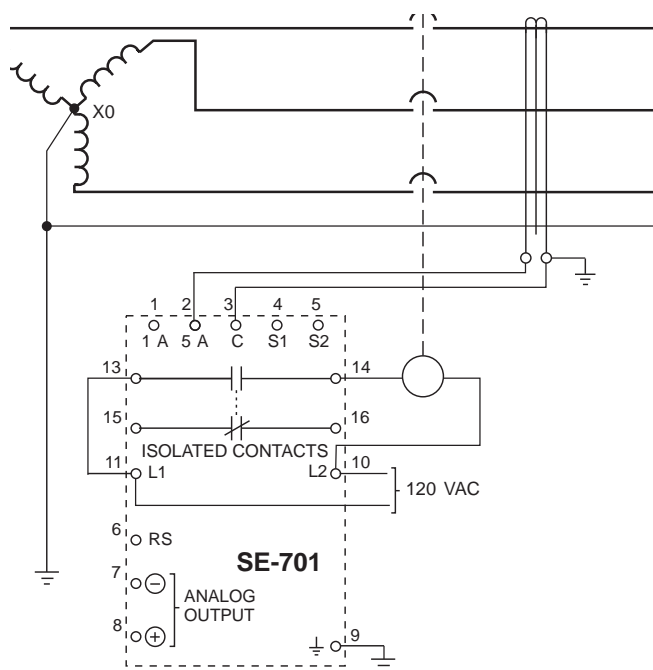


Figure 4: Core-Balance Ground-Fault Detection on a Four-wire System

CT burden can affect accuracy and should be considered when long CT lead lengths are required. Use manufacturer's data or field tests to verify accurate CT response; larger secondary conductors may be required to reduce the burden.