Application Note

Substation Automation and Protection Division

Phase Comparison Relay REL352 Loss of Channel Options

Introduction

This note discusses loss of channel options for the REL352 relay and it's effect on reliability and dependability of the system.

Loss of channel

The REL352 phase comparison relay is a communications dependent relay. Communications between the local and remote terminals plays a vital role in the operation of the relay. There are conditions, especially when using the powerline carrier channel, where the signal may be shunted to ground by an internal fault. In other instances, some channel equipment failure may result in channel loss.

Response to loss of channel

The REL352 relay has an optional distance back up package that can be purchased. If this option is purchased, upon loss of channel the relay will switch to a zone-2 and zone-3 distance relay. If this option is not purchased, the REL352 can be configured as a directional overcurrent (if voltages are applied to the relay) or non-directional overcurrent relay if voltages not applied.

One further option is available. That is, the **UNBLOCK TRIP** setting. UNBLOCK TRIP enables the relay to trip for 150 ms after a loss of channel if ITA2 is picked up. This is a dependability feature built in for power line carrier applications. Given that the power line carrier will be lost during a severe internal fault, the UNBLOCK TRIP option lets the relay trip for these faults.

As usual, increasing the dependability of the system sacrifices some security. That is, as long as the ITA2 is picked up the relay is "armed " to trip on loss of channel. Even though a change detector is involved in the relay logic which prevents the relay from tripping under steady state load (if ITA2 is set less than maximum load), on an external fault with loss of channel the relay can misoperate. For this reason, caution should be used when making this setting.

Contributed by:
Roger A. Hedding
Revision 0, 12/30/99

ABB, Inc.
7036 Snowdrift Road
Allentown, PA 18106
800-634-6005 Fax 610-395-1055
Email: powerful.ideas@us.abb.com
Web: www.abb.com/substationautomation