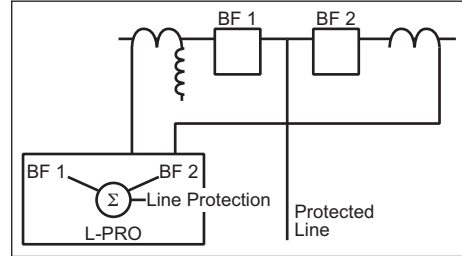


# L-PRO Line Protection Relay Understanding Ring Bus Capability



### Overview

L-PRO performs its line protection function with two sets of current inputs. Summation of individual line breaker currents is performed in the relay to generate line currents. As the current summation occurs after each breaker current passes through the L-PRO other IEDs can be supplied with line currents.

### Benefits

- Improves breaker maintenance by reviewing breaker performance for every breaker operation
- Reduces cost for breaker failure implementation by providing breaker failure as an integrated protection function
- Requires less wiring for current circuits and eliminates the need for auxiliary contact status points

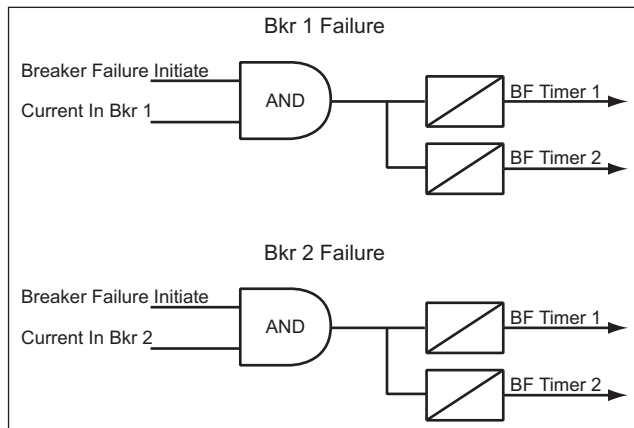
### Breaker Fail Functions Available

The outputs of each breaker failure relay have 2 output time delays. The first output can be used to re-trip the breaker with its second trip coil. The second output can be used to trip adjacent breakers.

Protection Trips from “L-PRO OR External BF Initiates” initiate the breaker failure schemes.

In addition to the breaker fail capability, ProLogic along with the individual breaker current devices 50LS1 and 50LS2 can be used to generate a Line Disconnect Open indication. This is done with a ProLogic statement such as “50LS1 OR 50LS2 AND NO Line 50 Overcurrent.”

The L-PRO (model 2100) Relay contains a powerful DSP that performs multiple high speed computations. Each breaker current as well as the calculated sum are shown as oscillographic quantities, clearly showing how each breaker has opened the magnitude of current interrupted.



### Summary

1. Breaker failure capability within the L-PRO is possible for ring bus applications.
2. Individual breaker current applications are recorded using 96 samples/cycle oscillography. Determine how long each breaker takes to open or close based on individual breaker currents.
3. Functions such as open disconnect are derived using individual breaker currents without the need of auxiliary contact inputs.