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Three Wire RFL a Simpler Alternative

Traditionally technicians have been slow to adopt Resistive Fault Locate (RFL)

They site complexity of multiple hook-ups, depending on fault type, time involved placing straps and how much faster it is to switch the customer to another cable pair. There are two basic hook-ups for RFL depending on the fault. If both conductors are faulted (for example, a SHORT) a separate good pair is used to locate the fault. This requires 4 of the 5 test set leads to be attached correctly and strapped correctly at the far end. For single sided faults (for example GROUND or BATTERY CROSS on one conductor) single pair hook-up is used. This requires 3 of the 5 test leads to be attached correctly and strapped correctly at the far end.

Another method of locating both fault types with the same hook-up is “Three Wire RFL.” There are many advantages and one limitation in using Three Wire RFL. The hook-up is always the same; the OneExpert DSL Three Wire RFL needs one GOOD conductor with continuity to the strap and back to the test set. Ideally, the third conductor would be the same gauge and length as the fault conductors. The reason for this, four results are returned for any RFL test; Distance to strap (DTS), distance from strap to fault (DSTF), distance to fault (DTF) and fault size. Using a third conductor of the same gauge and length, all four results will be accurate.

However, there will be instances where the third conductor will not be the same gauge or length. In this case both distance to strap and distance from strap to fault will not be reliable. **However, Distant to the Fault remains accurate as does fault size.** Understanding this technique reduces any RFL hook up to one simple to remember procedure. Red and Green across the fault, Black to a good wire any gauge or length and a strap from Black to Red. Results for DTF remain as accurate as with any other hookup.

To help visualize this simple hook-up ask “what is my fault in contact with?” For short circuits the fault is across Tip and Ring. Conversely for Grounded or Battery cross the fault is from conductor to Ground. Think in terms of lead colour; Red and Green across the fault and Black to a good wire.



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Shorted cable pair (fig 1)

- Red lead and Green lead are connected to the cable pair at the near end
- Black is connected to any Good wire regardless of gauge
- Strap Black to Red at the far end

Battery Cross or Ground (fig 2)

- Red lead connected to the grounded or crossed conductor
- Green lead connect to ground
- Black is connected to any Good wire regardless of gauge
- Strap Black to Red at the far end

Figure 1



Cable Pair

Short

Figure 2



Cable Pair

Ground / Battery Cross

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