

Fault Detection



Fault detection and protection coordination can be enhanced using accurate sensors distributed across the medium voltage grid, particularly where distributed generation sources are connected.

The Localising of faults in an efficient and timely manner is the capability few utilities have today, especially in their underground networks. The 3M Sensored Cable Accessories are a key component in enabling many methods of fault locating due to the analogue nature of the outputs and the capability for the current sensor to measure the high current conditions present during a fault without magnetic saturation.

The waveforms generated by a fault and measured by the device can be sampled at a high frequency and analysed using signal locating methods including time-domain reflectometry (TDR) and time-domain transmissometry (TDT). These analytical methods work upon the basis that captured waveforms are affected by the impedance of the conductor(s) the signal travels along. Coupling these measurements with time stamps and a network model including knowledge of cable lengths and impedance allows for fault locating using real time data.

With a 3M™ Sensored Cable Accessory and the appropriate integrated electronic devices placed throughout an electrical grid, faults can be measured from multiple locations and triangulated with a small margin of error. As the complexity of the medium voltage grid increases with more branches and interconnections, the 3M Sensored Cable Accessories are easily retrofitted throughout the grid to provide additional measurement points, that help to increase the accuracy of fault locating (or even self healing grid applications) in a cost effective and efficient manner.

