

## Abstract:

In conventional transmission line protection, a three – zone stepped directional distance system is used to provide the primary as well as remote backup protection. The voltage and current phasors needed by the distance relay for determining the impedance may be measured with integrated Phasor Measurement Unit. However, accuracy of this measurement may be affected by the power disturbances such as power swings and switching actions resulting in fast and slow DC offsets decaying and harmonics, etc. The quality of this measurement may cause mal-operation of distance relays which in turn may affect the reliability of the whole protective scheme. To mitigate these effects for improving the quality of measurements and hence the distance relay performance, this work proposes a new real-time digital filtering method for removing the unwanted DC offset and harmonics and hence improving SDFT algorithm. To validate the present method, the performance of developed distance relay is tested using signal generated by Simulink/MATLAB simulator under different conditions. The obtained simulation results are satisfactory.