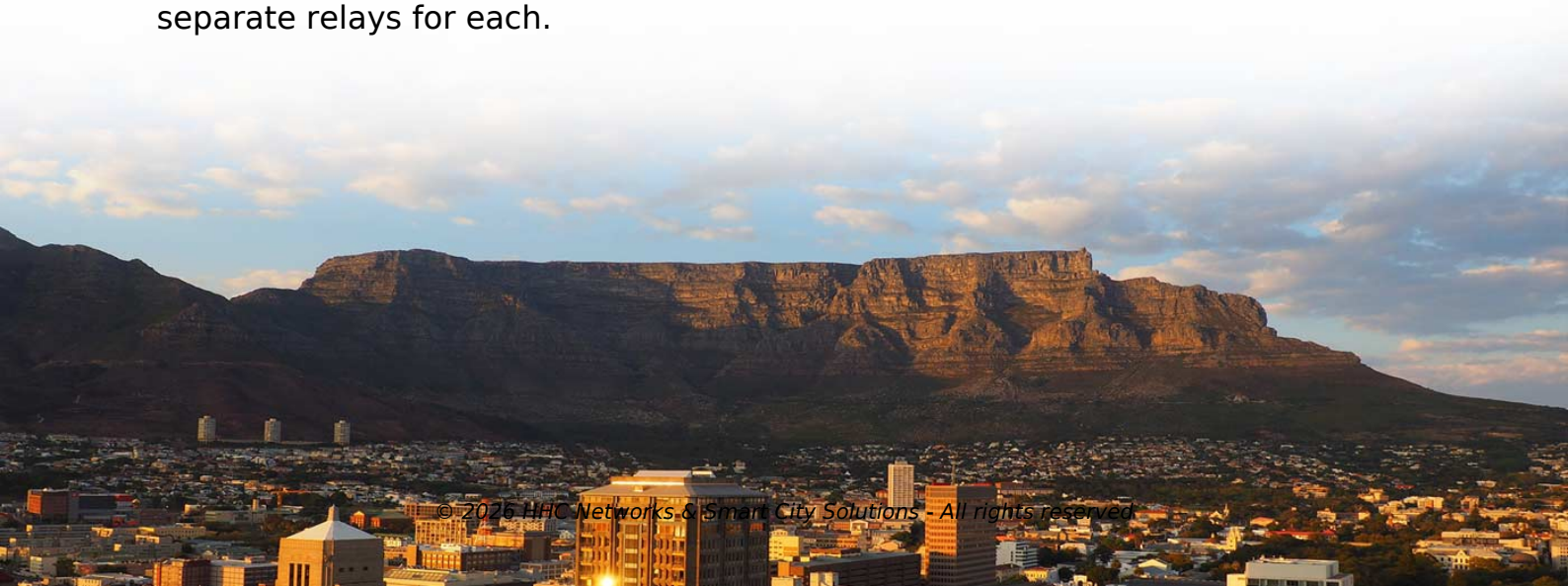
Relay protection impedance conversion

Overview

Relays measure secondary impedance, so we convert using: Zsecondary=Zprimary× (CTratio/VTratio) Example: Zsecondary= (5+j20)×500/1200=2. Zone Settings (Practical Example) 2. 1 Zone 1 (Instantaneous, 80-85% Reach) Purpose: Fast tripping for faults within. Distance relays uses voltage and current to calculate the impedance to the point of fault. They are used for direct tripping (Zone 1), in directional comparison pilot schemes, and in step distance protection schemes. This protection scheme is used for both phase and ground faults, but it uses separate relays for each.



Relay protection impedance conversion

Typical line protection distance relays require knowledge of transmission line positive- and zero-sequence impedances. It is sufficient for the algorithms in distance relays to approximate ...

Distance protection relays measure impedance to detect faults by comparing the measured impedance to a set value. They are used to protect transmission lines and provide faster, more selective ...

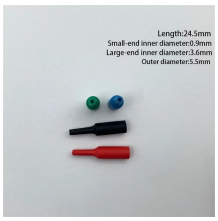
A distance relay may fix the MTA by design by using the positive-sequence line impedance (Z1) angle, or it may allow setting the MTA independently from the line impedance angle.

The relay (SEL-787) use the transformer MVA rating as a common reference point, TAP scaling converts all sec-ondary currents entering the relay from the two windings to per unit values, thus ...

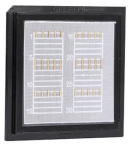
For two-terminal lines where the remote station is a ring bus or breaker-and-one-half scheme including breaker failure protection, set the relay to reach 110% of the sum of the protected line impedance and ...

Distance relays measure impedance (Z = V/I) to detect faults. The settings are based on: Line impedance (primary & secondary values).

You should dynamically test impedance relays by drawing the characteristic for all zones and applying faults on either side of the zone boundaries at the desired tolerances. Impedance protection is ...



More specifically, the relay operates depending upon the impedance between the point of fault and the point where relay is installed. These relays are known as distance relay or impedance ...



The different calculated impedance values are caused in particular by the different representations of the ground impedance matching. This paper describes the underlying algorithms and their impact on ...

Calculation Example: This calculator provides the basic calculations for setting the impedance reach of a distance protection relay. It calculates the line impedance, converts it to relay ...

Line impedance values are typically entered in relay secondary impedance values. Primary line impedance can be converted to secondary values by following equation.

Contact Us

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