

SSF Relay

Sub-Synchronous Frequency Detection Using SELOGIC[®] Control Equations

Logic

The user programmable logic in the dedicated relay provides the

- Digital Filtering,
 - Frequency Calculator,
 - Peak Calculator, and
 - Security Timers
- needed for the solution.

- Works in various SEL-400 Series Relays
- Programmable for Specific Needs
- Set to Ride Through System Transients
- Record Events for Post Event Analysis
- Detects Traditional SSR and Non-traditional SSCI Events
- Requires a Dedicated Relay

Digital Filter

Microprocessor relays typically filter out all expected frequencies above the synchronous frequency (50/60Hz). Frequencies below this do not exist on the power grid except under specific conditions. These frequencies although attenuated, are still part of the relay's measured waveform. A custom digital filter applied in SELOGIC Control Equations isolates the sub-synchronous frequencies from the synchronous frequency.

Frequency Calculator

The frequency calculator provides security against normal switching conditions that create a sub-synchronous output of the digital filter. This algorithm is also used to gain frequencies attenuated by the embedded relay filtering.

Peak Calculator

The peak detector is user selectable and can determine the peak of a 10 Hz waveform in 100 ms. This is used to determine the magnitude of the waveform and can detect frequencies as low as 8 Hz using an SEL-421 Relay.

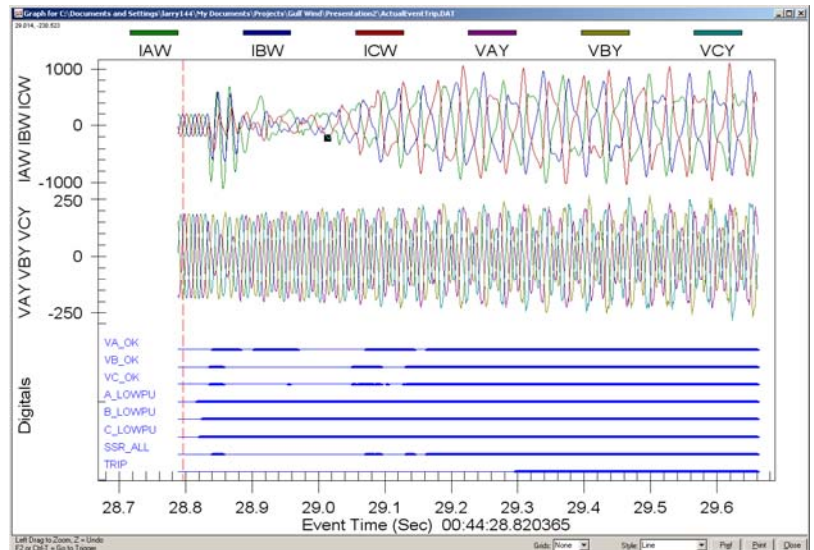
Security/Trip Timers

User selectable timers for multiple peak detection levels are used to provide coordination delay for various system conditions.

History

The logic was originally developed in 2009 to detect the sub-synchronous resonance interaction between a series compensated line and a wind farm.

Note that each use of the algorithm requires a license from RAI.



Your choice:

- Logic only
- Logic and Relay
- Logic, Relay and Application Assistance



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