SYNCHROWAVE® Event
Software

Powerfully simple event analysis software

- Diagnose relay behavior during a power system fault.
- Time-align event reports from multiple relays for comparison and analysis.
- Create custom calculations, and plot the results for immediate analysis feedback.
- Gain insight into relay protection performance with advanced mho, Alpha Plane, and Bewley diagrams.
Learn quickly. Easily access all SYNCHROWAVE Event features with the right-click menu.

Analyze relay event data. Plot relay oscillography, display phasor magnitudes and angles, and monitor the digital status. Navigate through events with integrated zoom and pan functionality.

Compare measurements. Drag cursors throughout the event report to compare measurements.

Search for signals. Quickly add analog and digital signals to charts by filtering signals as you type in the search bar.

Perform calculations. Create equations to analyze specific trip conditions. Instantly plot calculation results for quick event analysis. The built-in function library creates endless calculation possibilities.
Upgrade for Additional Analysis Capability

Wide-Area Analysis
SEL-5078-2 SYNCHROWAVE Central Software allows you to combine real-time streaming data, archived data, and relay event data. This provides a time-synchronized wide-area view of your system for visualization and analysis.

Analyze Synchrophasor Data
Monitor synchrophasor data in real time or offline with an easy-to-use web client interface.

Correlate Relay Events to System-Wide Events
Quickly correlate relay events with system disturbances. Automate relay event retrieval with ACSELEATOR TEAM® SEL-5045 Software.

Automatic Event Collection
ACSELEATOR TEAM Software automates the collection and reporting of power system data from multiple devices for easy access. Optionally, combine TEAM with SYNCHROWAVE Central to fully automate event report retrieval and display.

Accelerate Event Analysis
Easily automate collection and grouping of event reports from multiple devices into one database. Spend less time gathering and more time analyzing the information generated by your devices.

Reduce Costs
Improve efficiency by eliminating time spent in the field manually collecting data from devices.

Additional Features
- Frequency Spectral Analysis
- Customizable Layouts
- Data Export to .CSV
- Relay Settings Viewing
- Screen Capture Printing
- Harmonic Analysis
- Alpha Plane

Time-align event reports. Easily coordinate event report times for accurate comparison and analysis of signals from multiple relays or past event reports.

Add event reports. Load a new event report, or add an event report to the current analysis session. Event COMTRADE, compressed ASCII (.CEV), event report (.EVE), and traveling-wave file formats are supported.
Visualize Distance Elements

Mho Circle Analysis
Analyze distance element operation with the mho circle diagram. The mho circle diagram provides an impedance plane on which to plot apparent impedance and distance element characteristics.

Choose your zone. Quickly turn on and off each of the distance element zones.

Pinpoint the impedance. Drag the cursor throughout the event to see the apparent impedance. The yellow dot indicator shows you where the impedance is on the plane.

See the mho characteristic move. See the distance element as the relay sees it. Observe how the mho circle characteristic moves in response to changes in the polarizing voltage.

SUPPORTED RELAYS
SEL-411L Advanced Line Differential Protection, Automation, and Control System
SEL-421 Protection, Automation, and Control System
SEL-311C Transmission Protection System
SEL-311L Line Current Differential System
SEL-321 Phase and Ground Distance Relay
**Build Relay Analysis Templates**

**Simplify Event Analysis Setup**
Create one or many custom layouts for performing analysis. Save layouts as general or relay-specific templates. Relay-specific templates automatically load when opening a new event report from that type of relay.

**Create More Analysis Space**
Build analysis layouts that complement the default layout.

**Begin Analysis From Where You Left Off**
Reopen a relay event report, and SYNCHROWAVE Event will bring that prior event analysis session back to its previous state.
See Traveling Waves

Advanced Fault Location Visualization

The SEL-T400L Time-Domain Line Protection and SEL-411L can record traveling-wave data in order to provide highly accurate fault locating. SYNCHROWAVE Event generates a Bewley lattice diagram from the traveling-wave data to enable visualization, analysis, and understanding of the traveling waves recorded for an event.

For more information on traveling-wave fault locating, see the technical paper “Locating Faults by the Traveling Waves They Launch,” available at selinc.com.

Refine parameters.
Easily adjust the line length based on updates from the field. Use multiple peak locations to adjust the wave propagation speed to compensate for line sag, air temperature, and humidity. Feed this information back into relay settings for improved relay operation.

Pinpoint the reflection.
See the traveling-wave arrivals detected by the SEL-T400L or SEL-411L at the terminal. The Bewley diagram shows the traveling wave’s propagation path along the transmission line and reflections from fault and line terminals.
Identify the fault point. The fault location is represented by the vertical grey bar. From this point, traveling waves are launched in each direction.

Locate single-ended faults. Visualize the pulse propagation through the fault after reflecting off a terminal. The strength of through-fault pulses gives an indication of the fault strength when only single-ended fault data are available. The timing of a pulse arrival after propagating through the fault enables the adjustment of the wave propagation speed.

Locate double-ended faults. Easily import and coordinate traveling-wave event reports from SEL-T400L or SEL-411L Relays on both ends of the line. Remove fault location ambiguity, and have more freedom when choosing which signals to use for compensation to the wave propagation speed.
## Software Specifications

### General

**Supported Operating Systems**
Microsoft® Windows® 7 or 10, 32- or 64-bit

**Event File Support**
- COMTRADE
- Compressed ASCII (.CEV)
- Event report (.EVE)
- Traveling wave

## Product Comparison

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<td><strong>License</strong></td>
<td>Full</td>
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<tr>
<td><strong>Price</strong></td>
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<td>Free</td>
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<tr>
<td>Enhanced GUI</td>
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<td>●</td>
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<td>Multiple Event Report Analysis</td>
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<td>Harmonic Analysis</td>
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