

RelaySimTest

What's New in Version 4.00

Compared to Version 3.40



1 Interactive System Simulation

The Interactive System Simulation is a completely new test case type, which is available to all RelaySimTest customers with a CMC test set with NET-2 interface or an ARCO 400. No additional license is required. Like the Test Universe module QuickCMC, the Interactive System Simulation can continuously output the current state of the power system simulation. By changing settings, breaker and disconnector positions and adding faults, the output values will change throughout execution. Trip and close commands from the IEDs will also be integrated as breaker open and close events in non-real time¹.

Like Quick CMC the Interactive System Simulation is a Swiss army knife in your system-based testing workflow. Some of the potential applications we anticipate:

- Wiring, metering, and functional checks especially in setups with multiple test sets
- Training facilities where technicians are trained to operate IEDs under realistic system conditions
- Testing of long running restoration schemes
- Providing realistic system conditions for resilience testing of PAC systems under cyber attacks

The screenshot displays the RelaySimTest software interface for an interactive system simulation. The main window shows a power system diagram with four bays (A, B, C, D) and various components like busbars, field units, and circuit breakers. A red lightning bolt indicates a fault on Busbar A. The interface is divided into several panels:

- Dashboard (State 1):** Shows current test set output for four circuit breakers (CT A, CT B, CT C, CT D). Each entry includes primary and secondary current values and phase angles.
- Power system (State 1):** A schematic diagram of the power system with a fault on Busbar A. A yellow box labeled "State Switch" is overlaid on the diagram.
- Live monitor (Analog outputs):** Shows active state (1) and analog outputs for Field Unit A and Field Unit B, including primary and secondary current values.
- Event list (00:58.2150):** A log of events such as Node fault 1, Breaker Failure, and Trip events with timestamps. A yellow box labeled "Event List" is overlaid on this panel.
- Settings (State 1):** Configuration options for the Central Unit, including static binary inputs and binary output signals.

At the bottom left, a status bar shows "Test steps: 25 Failed: 0 Executed: 0 Issues: 0". A "Stop" button is visible at the bottom center.

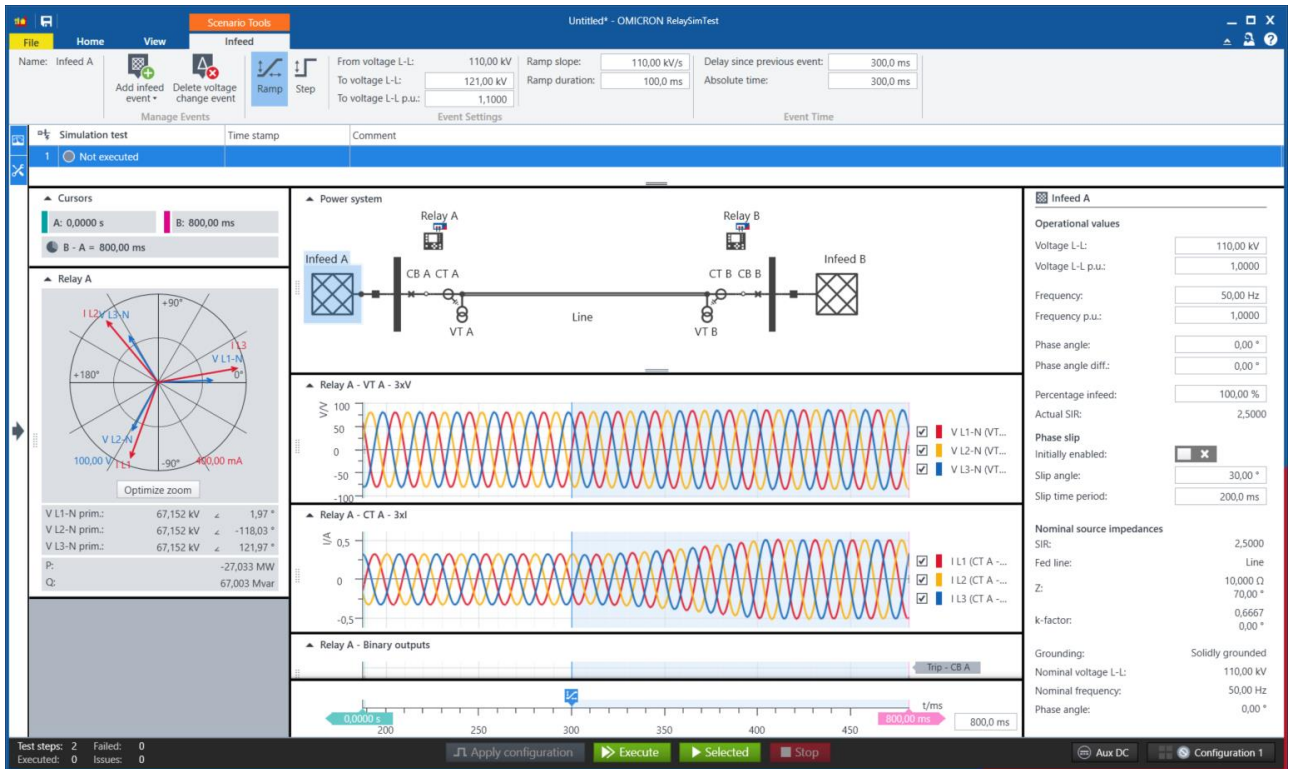
2 Infeed Step and Ramp Events

With RelaySimTest 4.0 you can ramp or step up/down the voltage of an infeed. This can be used for:

- Triggering overexcitation on transformers (advanced transformer license required)
- Testing over- and undervoltage protection schemes

In future releases, we will add further step and ramp events for frequency and phase angle, which then can be used, for example, for ROCOF protection scheme testing.

¹ The time between an IED command and a change in output values varies between 1 s and 5 s.



3 Other Improvements

3.1 Stable Power Swing Simulation with Phase Slip Event

A phase slip event can now be triggered at any time of the test sequence, without the need to add special infeeds and breaker events. We strongly recommend using this new functionality and avoid the previous method using the corresponding infeed settings.

3.2 New Widgets


- Apparent power and reactive power can now be displayed in the relay widget.
- A fault widget is now available. This is useful in compensated networks to visualize the compensated residual current and the remaining voltage at the fault location.

3.3 Sampled Values Improvements

- The calculated residual current and neutral voltage can be scaled via a factor without having to add a dedicated neutral CT or VT.
- Optional fields are now automatically simulated according to the imported SCL file.

3.4 Performance Improvements & Bug Fixes

Several performance improvements and bug fixes were included in this release.



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and detailed contact information of our
worldwide offices please visit our website.

www.omicronenergy.com

Subject to change without notice.