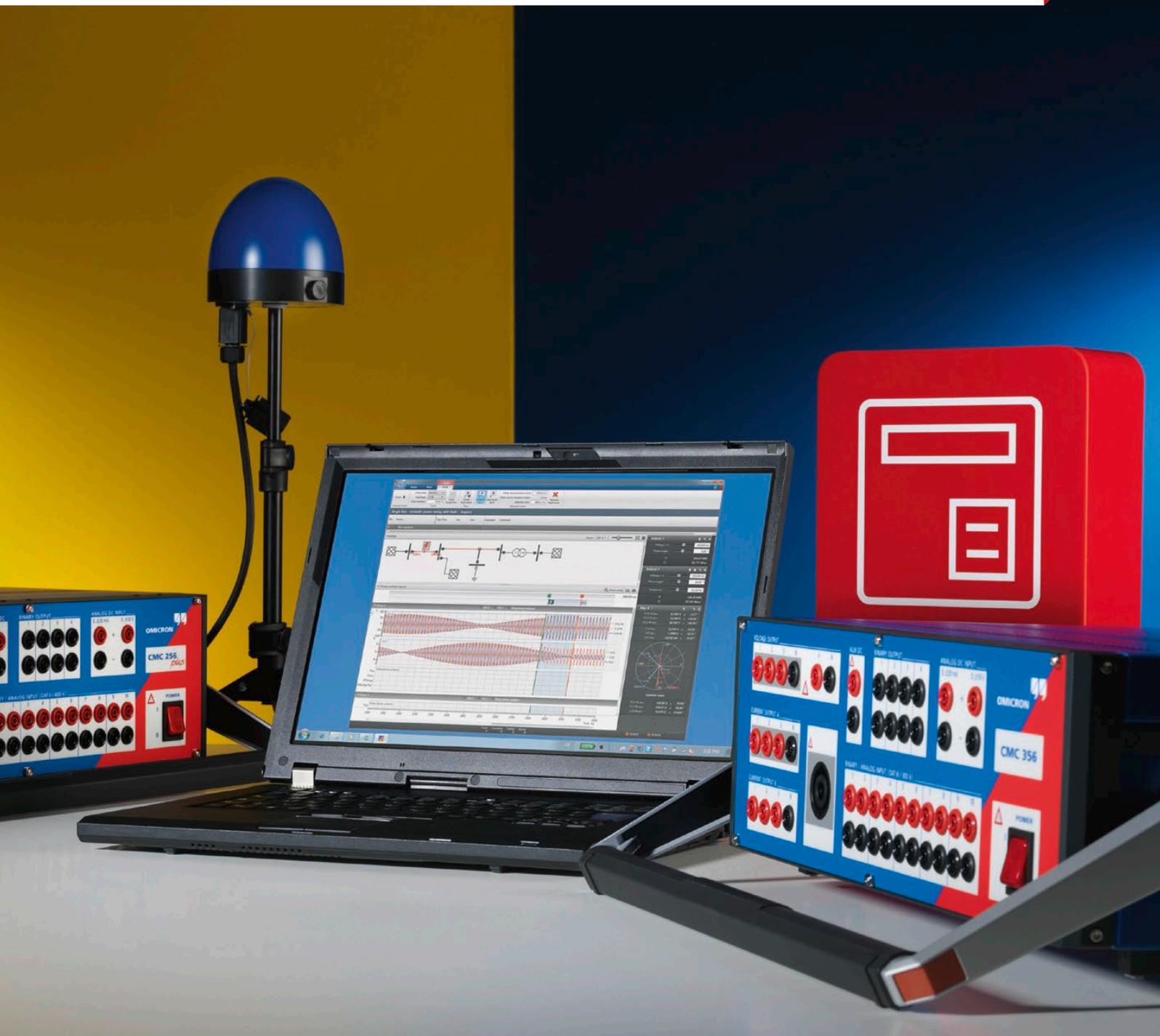


RelaySimTest

Easy to use software for simulation based,
distributed protection testing with CMC test sets



RelaySimTest – Test the whole system



RelaySimTest is a unique software for simulation-based, distributed protection testing in the field, using one or more CMC test sets.

Its application-oriented testing can reveal failures created during calculations as well as during setup of the relay or a protection scheme, requiring only a minimum of test steps.

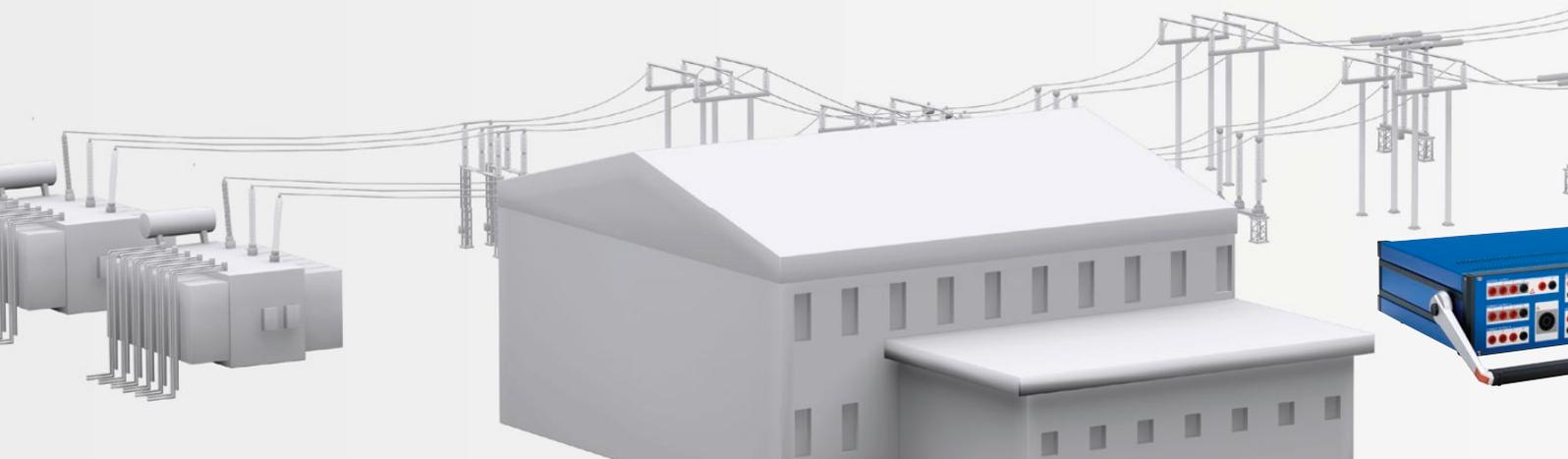
Test devices supported

- > CMC 356, CMC 353, CMC 256plus, CMC 850, CMC 256-6 (with NET-1 hardware and Power over Ethernet capability.)
- > CMGPS 588 for time-synchronized testing

Application oriented testing

Modern protective relays use complex algorithms and adapt to network and failures. Simple function tests are often no longer sufficient for testing such relays. RelaySimTest covers these new demands with a transient simulation of the primary power system.

Application-oriented tests are independent from relay type, manufacturer and detailed parameters. The protection behavior is the only thing that counts.



Distributed testing

With RelaySimTest, you can control all connected CMCs for the test from one PC. Remote CMCs can be controlled via a simple Internet connection.

This results in the simplest distributed testing possible for systems such as teleprotection or line differential protection, regardless of how many CMC test sets are used.

Automatically synchronized

Perform distributed tests the same way you do single-end shots, using the CMGPS 588 Grandmaster Clock – our plug-and-play solution to synchronize distributed injections.

Then everything runs smoothly: RelaySimTest calculates the required injection signals for all ends automatically, making troubleshooting of the network very efficient.

Having all CMCs controlled from one application, testing becomes easy. Comprehensive reports can be generated in a single place over the whole test, covering all relays.

Furthermore, RelaySimTest simulates relay-controlled breaker operations. With Iterative Closed-Loop simulation the testing of auto-recloser functions is possible – even in distributed protection systems.



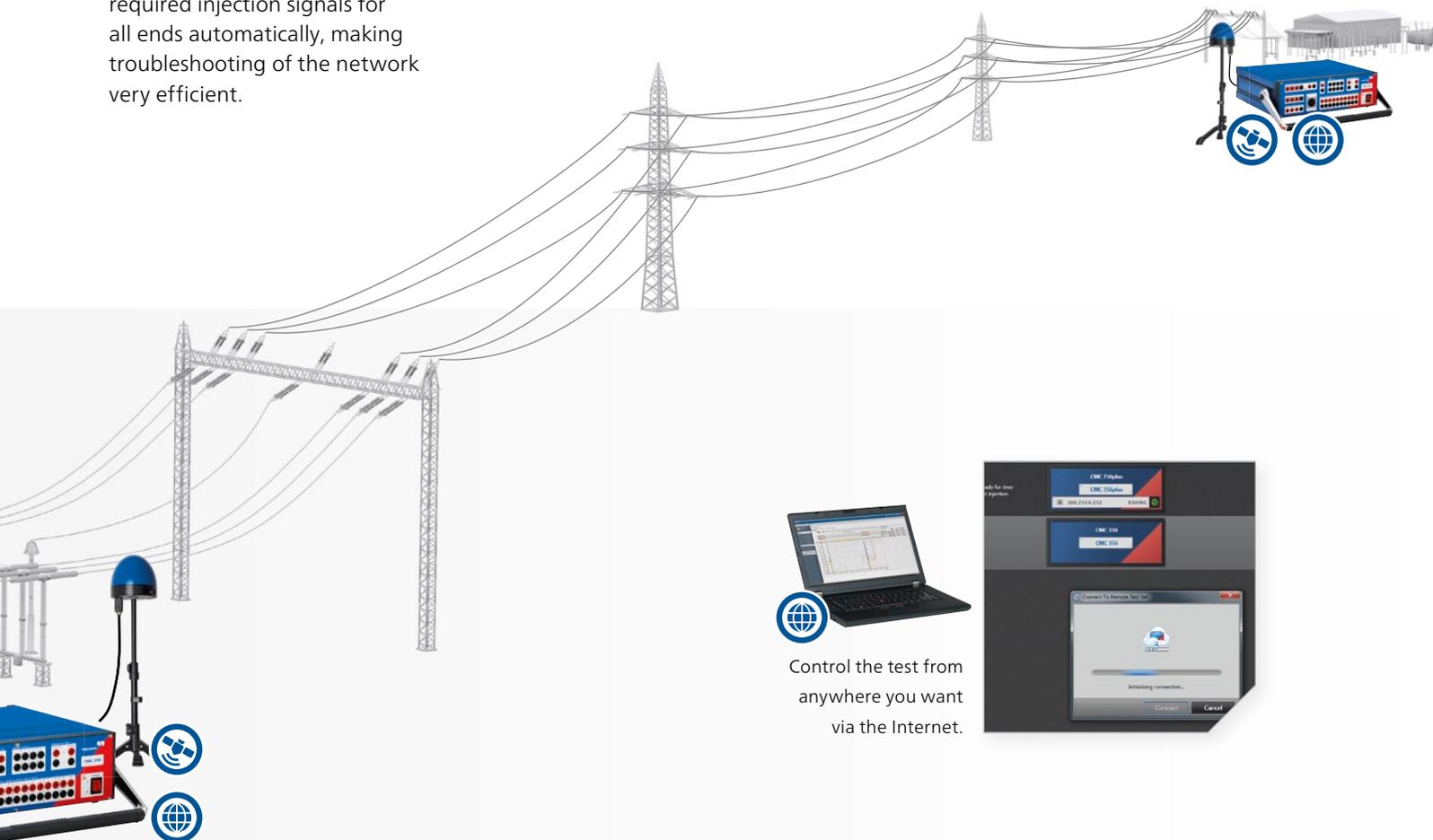
Remote control

Operate multiple CMCs remotely - no matter where you are. Our solution makes it easy to control the devices via the Internet.



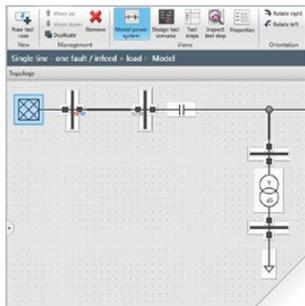
GPS synchronized

Synchronizing multiple CMCs is easy using the CMGPS 588 Grandmaster Clock.



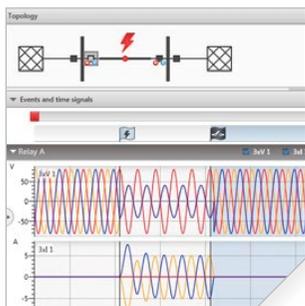
Test procedure

1 Model network



With the flexible grid editor, complex power networks can be modeled intuitively. Elements for lines, busbars, infeeds, loads, two-winding transformers, and more are available.

2 Define tests



RelaySimTest supports testing with extensive fault scenarios. This allows the simulation of realistic operating conditions for comprehensive tests.

3 Execute tests

No.	Status	Line fault 1	Line fault 2	Line fault 3	Line fault 4
1	Passed	L1-L2	L2-L3	L1-L3	2000 %
2	Passed	L1-L2	L2-L3	L1-L3	50.00 %
3	Passed	L1-L2	L2-L3	L1-L3	90.00 %
4	Passed	L1-L2-L3	L1-L2-L3	L1-L2-L3	2000 %
5	Passed	L1-L2-L3	L1-L2-L3	L1-L2-L3	50.00 %
6	Passed	L1-L2-L3	L1-L2-L3	L1-L2-L3	90.00 %

All test steps are executed automatically in a row, even with multiple distributed CMCs. Based on the time grading of the protection system, the trip times can be auto-assessed.

4 Create report

No.	Status	Executed	Comment
1	Passed	2014-01-08 10:43:18	
2	Passed	2014-01-08 10:55:30	

RelaySimTest automatically generates protocols for all tests performed. Furthermore, you can decide which parts are included in the test report.

Key features

- > Integrated transient network model for simulation of realistic fault signals
- > Ready-to-use templates for networks with up to two relays, and flexible editor for more complex test cases
- > Models for lines, busbars, infeeds (sources), loads, two-winding transformers, and more
- > Modeling of isolated and compensated networks (transient ground fault scenarios)
- > Relay-controlled breaker operation for trip (3-phase and 1-phase) and close
- > Iterative Closed-Loop simulation (for example, for auto-reclose functions)
- > Control of remote CMCs via a safe Internet connection from your PC (only out-going HTTP traffic required)
- > Leverage available Internet access of mobile computers in the fields (for example, UMTS, mobile hotspot feature of Smartphones, ...)

Simulations

- > Line capacitances, stray capacitances and series capacitances
- > Mutual coupling of lines
- > L-N, L-L, L-L-N, L-L-L and L-L-L-N faults with variable arc resistances
- > Complex scenarios with multiple, evolving, and cross-country faults
- > Stable and unstable power-swing scenarios
- > Circuit breaker auxiliary contacts (CB52a and CB52b)

Software packages

Order no.

One license for RelaySimTest

VESM6007

Package for distributed testing, including two licenses for RelaySimTest plus two CMGPS 588

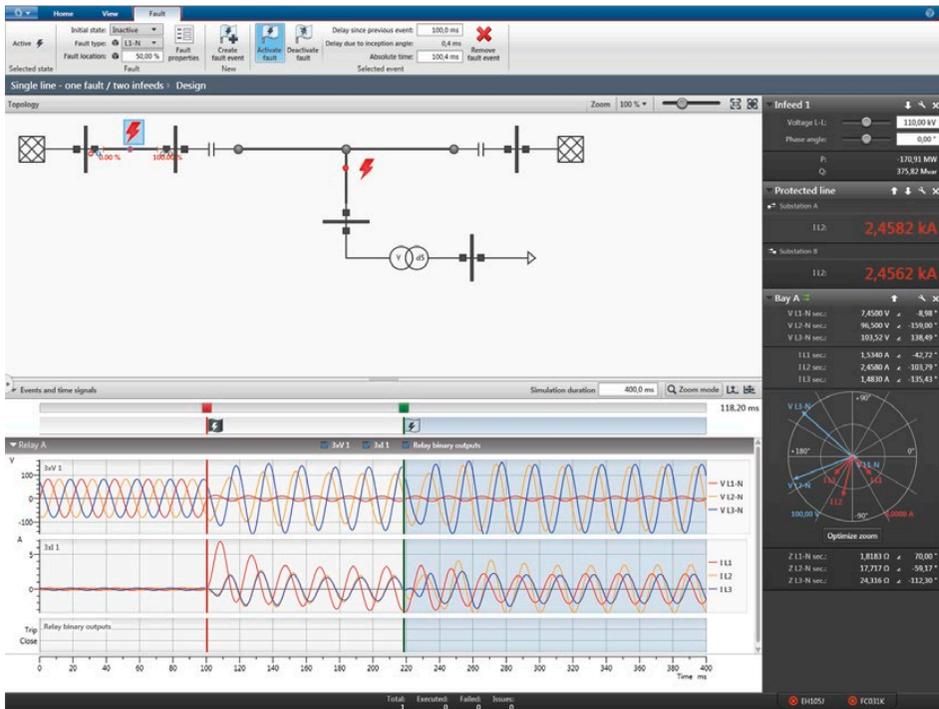
VESM6009

Easy and flexible

Predefined templates enable a fast and easy start for standard testing situations. With the flexible grid editor even more complex power networks and fault scenarios can be modeled conveniently.

To test the relay, you can do a single shot or create multiple shots with varied parameters (for example, fault type, fault location, etc.). Afterwards, test results can be automatically assessed according to a simple time grading of the protected lines.

RelaySimTest is perfectly capable of simulating steady-state values and transient signals even without a CMC connected.



Easy to work with from predefined protection systems to more complex networks. The more you need, the more you can choose.



Your benefits

- > Application-oriented testing of protection system independent of relay type and manufacturer.
- > Distributed testing made easy by controlling multiple CMCs from one application via any Internet access.
- > Testing of advanced relay functions for example, power swings, transient ground faults, capacitive line phenomena, complex teleprotection and adaptive protection schemes.

OMICRON is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products allows users to assess the condition of the primary and secondary equipment on their systems with complete confidence. Services offered in the area of consulting, commissioning, testing, diagnosis and training make the product range complete.

Customers in more than 140 countries rely on the company's ability to supply leading-edge technology of excellent quality. Service centers on all continents provide a broad base of knowledge and extraordinary customer support. All of this together with our strong network of sales partners is what has made our company a market leader in the electrical power industry.

For more information, additional literature, and detailed contact information of our worldwide offices please visit our website.