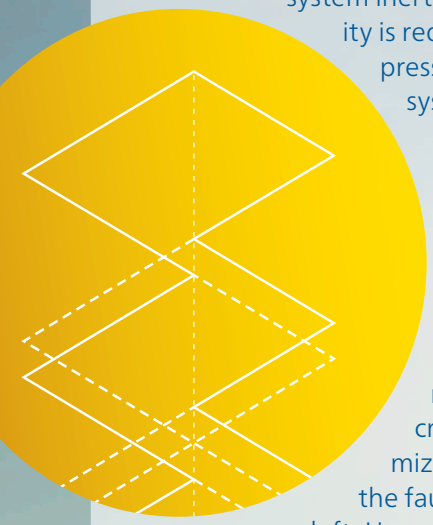
TWX1

Testing traveling wave relays

Tackling challenges

As renewable energy sources are added to the grid, system inertia and short circuit capability is reduced, placing increasing pressure on the protection system to clear faults rapidly.



Traveling wave relays provide the fastest tripping times currently available and therefore increase system stability. In addition, their high accuracy fault location maximizes maintenance crew efficiency and minimizes outage time by locating the fault faster. Only one question left: How do you effectively commission and maintain these systems?

TWX1 accessory

Until now, there was no solution on the market to test traveling-wave-based relays without setting changes, wiring changes, and needless complications. Nonetheless, thorough and efficient testing of this new technology is needed in order to meet internal and regulatory requirements.

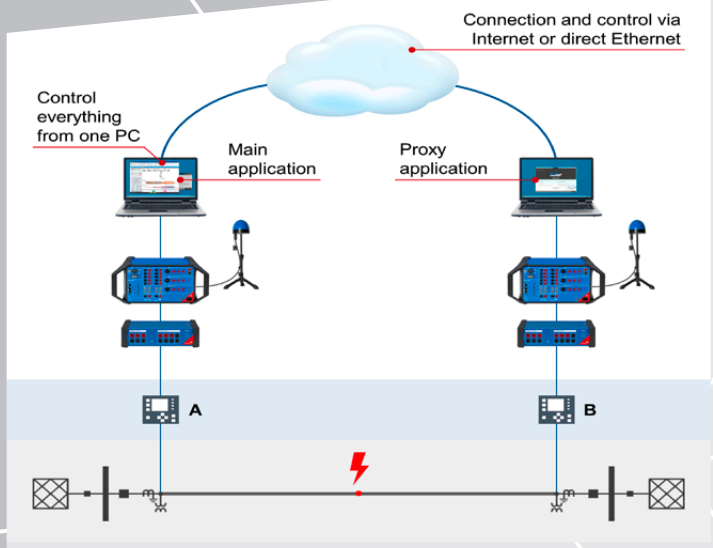
Traveling waves are almost moving at the speed of light, can your testing keep up?

And that's exactly what you'll be able to do with OMICRON's solution. Along with our existing CMC and CMGPS 588 equipment, TWX1 provides a cost efficient, practical and user-friendly field-testing solution. TWX1 makes testing traveling-wave-based relays as easy as any other type of protection relay.

Because the accessory is fully integrated with OMICRON's system-based RelaySimTest software, using TWX1 requires minimal additional expertise. In addition, no separate calculations by the user or rewiring during execution are necessary, even while varying fault type or location, or with complex topology such as parallel, tapped or inhomogeneous lines. With the push of a single button, the test procedures are executed, and all protection elements are tested simultaneously, avoiding any test modes and satisfying any supervision.

So how does it work?

In RelaySimTest, system and line data are entered. Desired test cases are selected by placing different fault types at desired locations in the power system model. The simulation then automatically calculates the transient signal and the traveling wave pulses.



On execution, the TWX1 accessory superimposes three phase voltage and current traveling wave pulses onto the transient signal provided by the CMC test set with nanosecond accuracy. For end-to-end tests, the complete execution can be controlled from one location, avoiding the need to coordinate every single test step via phone.

TWX1 integrates seamlessly with RelaySimTest and your CMC with NET-2 or NET-3 interface board. When used with a CMC 500, it is recommended to use the USX or USH test set variant with a type S convertible output module for the current outputs.

When using a CMC 430 test set, it is recommended to use the decoupling box TWL1 to improve the traveling wave timing accuracy.

In summation, testing traveling-wave-based relays does not require a new test set, just the TWX1 accessory to expand the scope of your CMC and you are fully prepared, even for the next generation of protection relays.

Test the future today. Opt for TWX1 from OMICRON.

www.omicronenergy.com/TWX1

Description	Item no.
TWX1 Accessory for testing traveling wave relays	P0006385
TWL1 Decoupling box for CMC 430	P0000287

Your benefits

- Control complete execution from one location
- No separate calculations
- No rewiring during execution
- Nanosecond precision
- Works for single-, double- and multi-ended TW systems
- Testing of all time domain elements w/o setting changes

More information at omicronenergy.com/TWX1