



AUTOMATED RELAY TESTING AND MANAGEMENT SOLUTION

ARTMS^(R) Software

Increase system reliability and reduce misoperations by confirming correct relay operation via automated relay testing.

ARTMS software includes a powerful software engine that automates key tasks in the relay testing process. The software is available for purchase. Quanta Technology can also provide integration services for deployment of the ARTMS software.

An Improved Approach

ARTMS software automates and enhances your standard short-circuit software programs and testing tools to improve the accuracy and efficiency in relay testing. ARTMS software enables relays to be tested using a comprehensive automated set of test plans which generate test waveforms that simulate actual system conditions. **The conventional method for testing a relay does not allow for actual system conditions (including contingencies) to be considered because it uses simplified calculations to establish test points. Obtaining test points can be repetitive, time-consuming, and often limited to the number of varying conditions that can be considered for test.**

ARTMS simplifies and automates this process and generates complete system test plans using industry standard COMTRADE files.

Quanta Technology's ARTMS Software Benefits

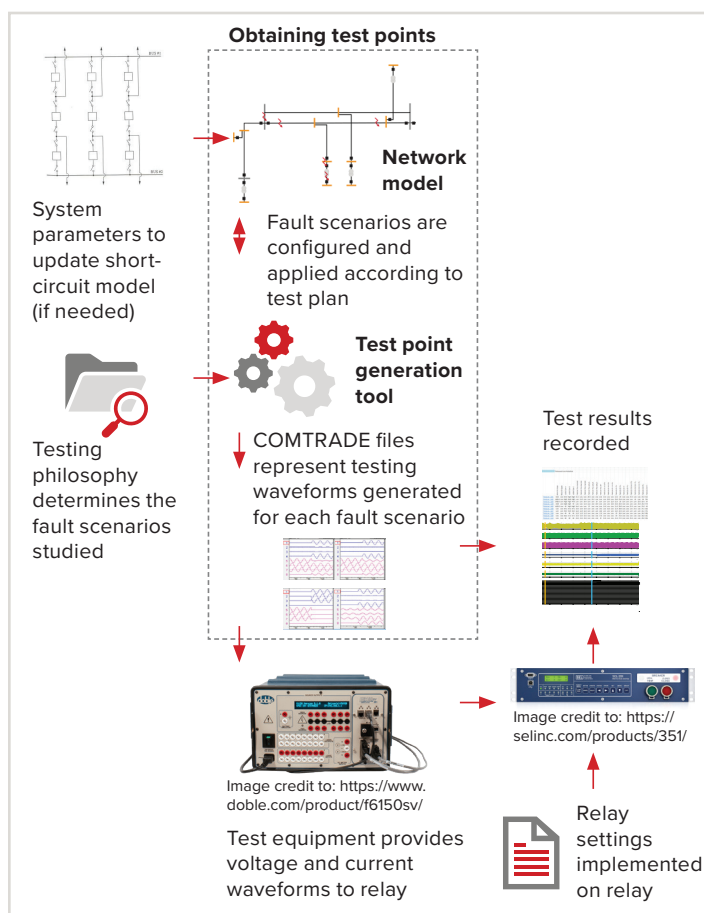
- Improved technical accuracy – generate standard COMTRADE waveforms versus simplified setpoint calculations.
- Flexible – customizable automation makes testing many different scenarios feasible.
- Compatibility with existing tools – COMTRADE files of waveforms outputs for each scenario are generated and can play back for the relay under test.

Technical Improvement from the Existing Method

- COMTRADE files include sinusoidal and decaying DC components.
- Generated fault currents and voltages are similar to those in real-world systems, due to higher accuracy in equipment modeling in utility short-circuit software.
- The software is appropriate for day-to-day testing of settings/logic and commissioning.

Process Improvement from the Existing Method

- The relay commissioning process can be further standardized.
- The process becomes faster and more cost and time efficient.
- Several COMTRADE files can be generated in one run.
- Tens or hundreds of test scenarios can be applied, and the relay can be tested more thoroughly.



PICTURED: Quanta Technology's ARTMS Software

CONTACT US:

919-334-3000

quanta-technology.com

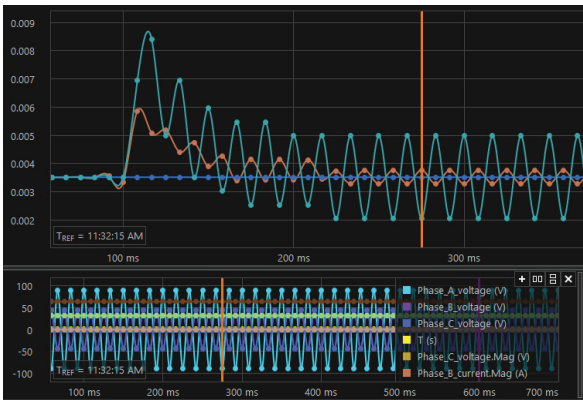
info@quanta-technology.com

[LinkedIn.com/company/quanta-technology](https://www.linkedin.com/company/quanta-technology)

Industry Employment of Automation-based Test Point Generation

Real-world use of this software at a large North American utility has yielded significant improvements to the relay commissioning process including:

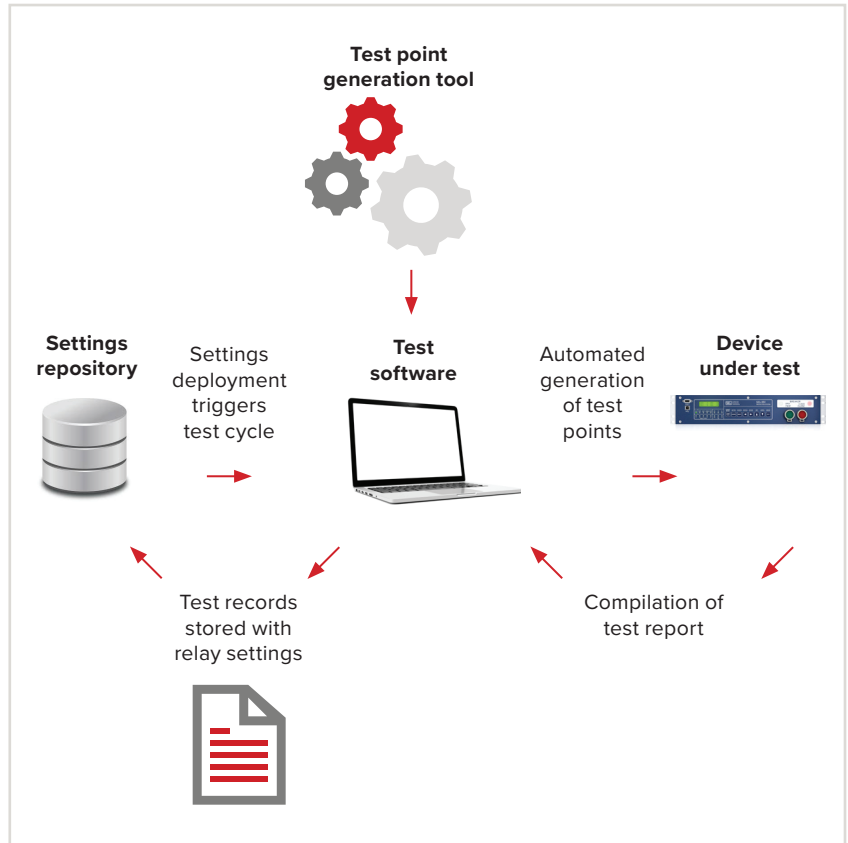
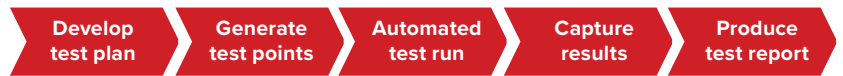
- Preemptive detection of setting errors: bus zones, stated capacity, supervision logic, and protection settings.
- Removal of potential human error in calculation of test points.
- Reduction in commissioning cost of 30-40%.
- Broad acceptance among field personnel.
- Easy integration with existing relay commissioning processes.



PICTURED: Waveform

Full-cycle Automated Testing and Commissioning

The relay testing process can be integrated further via industry-standard testing platforms as the management, automated execution, and record-keeping of test routines.



PICTURED: Full-cycle Automated Testing and Commissioning

Quanta Technology, LLC.
4020 Westchase Blvd.
Raleigh, North Carolina 27607

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CONTACT US:

919-334-3000

quanta-technology.com

info@quanta-technology.com

[LinkedIn.com/company/quanta-technology](https://www.linkedin.com/company/quanta-technology)