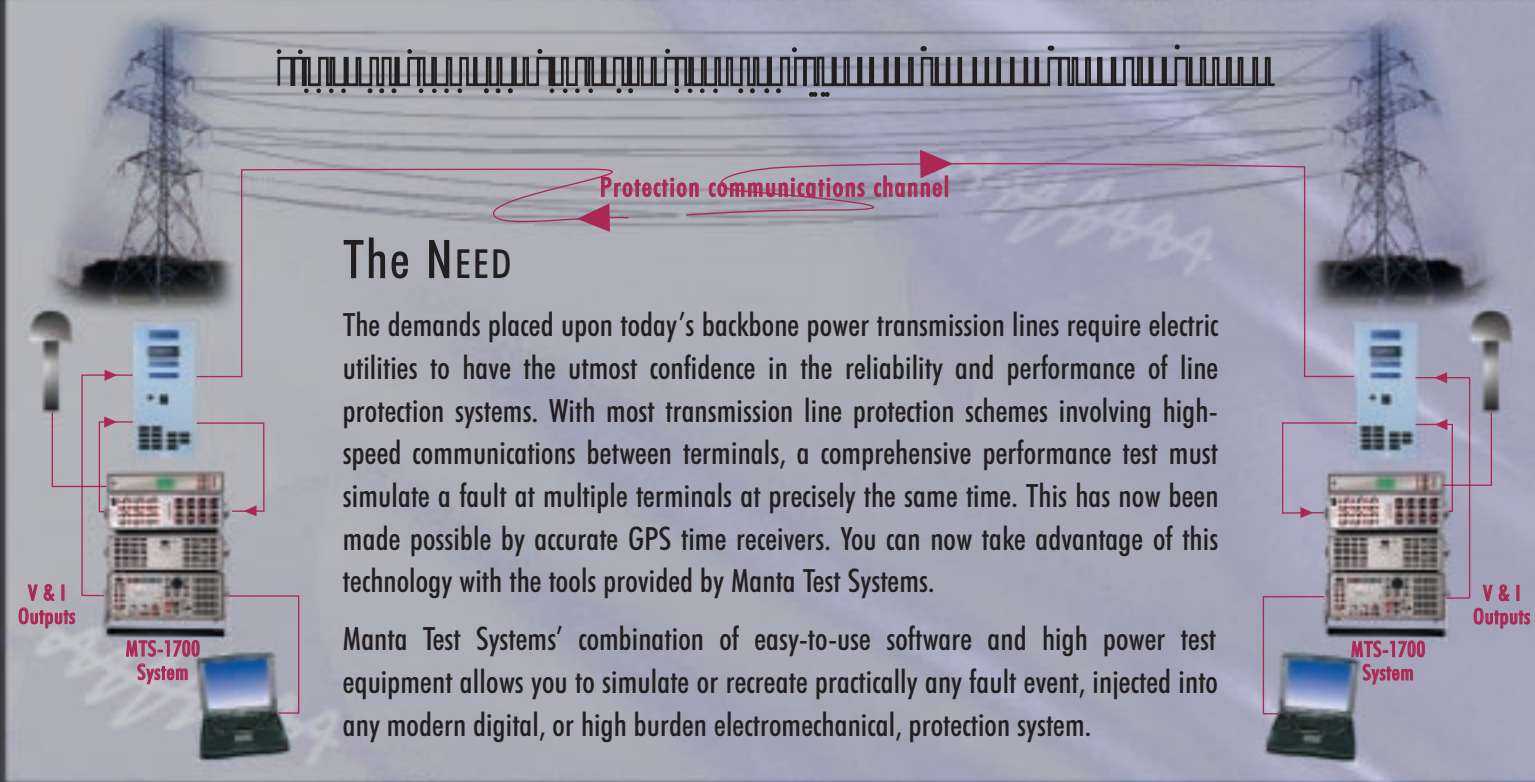




SATELLITE TIME SYNCHRONIZED END-TO-END TESTING SOLUTIONS



The NEED

The demands placed upon today's backbone power transmission lines require electric utilities to have the utmost confidence in the reliability and performance of line protection systems. With most transmission line protection schemes involving high-speed communications between terminals, a comprehensive performance test must simulate a fault at multiple terminals at precisely the same time. This has now been made possible by accurate GPS time receivers. You can now take advantage of this technology with the tools provided by Manta Test Systems.

Manta Test Systems' combination of easy-to-use software and high power test equipment allows you to simulate or recreate practically any fault event, injected into any modern digital, or high burden electromechanical, protection system.

The SOLUTION

- MTS-1710 Advanced Universal Protective Relay Test System
- MTS-1860 GPS Receiver Kit
- MTS-1800 MWave End-to-end Testing Software
- Portable computer
- OPTIONAL:
- MTS-1720 Two Channel Current Source (for full 3-phase current)
- MTS-1730 Digital Input/Output Signal Conditioner (recommended, for sequence of events recording of protection system outputs and digital stimulus of the protection system)
- MTS-1750 High Current Source
- MTS-1900 Software Utility Suite (for generation of realistic fault cases based on a system model, using Fault Builder Software)

The BENEFITS

- Completely verify performance of transmission line pilot protection schemes
- Simultaneously test protection logic, protection settings, auxiliary relays, communications equipment, communications channel, and fault locators
- Verify directional comparison, current/phase comparison, transfer tripping and loss-of-load (pilotless) schemes
- Measure total transmission time delays and uncover coordination problems
- Discover incorrect settings, intermittent equipment and misoperation problems
- Simulate difficult conditions such as current reversals
- Standardize tests for protection systems of different technology
- Reduce testing time and reduce outage time
- Achieve more effective routine testing by using results of end-to-end testing to direct predictive maintenance programs

MTS-1800 MWave End-to-end Testing Software:

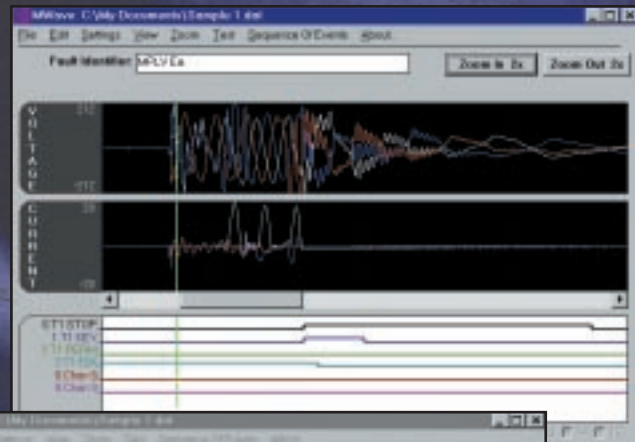
Our MWave software provides an intuitive graphical user interface to perform end-to-end testing. Facilities are built in to read/generate fault waveforms, download them to the test equipment, automatically configure the test equipment, program any digital stimulus to the protection system, initiate the test simultaneously at multiple terminals based on user directions, and analyze, print and save the test results.

The fault waveforms can be generated by MWave from user input parameters of amplitude, phase, frequency and durations, or read from COMTRADE fault files which may be transient recordings or fault waveforms from a computer simulation or study. Virtually any type of fault and fault waveform can be recreated.

- Very simple interface to perform time synchronized end-to-end testing
- Reads and plays back IEEE COMTRADE fault files
- Communicates directly to the GPS receiver
- Ability to generate multi-stage faults
- Displays digital sequence of events recorded during the tests using the MTS-1730

Typical tests which are performed include:

- In section fault with instantaneous trip
- Time delayed trip without communications channel
- In section fault with communications aided trip
- Forward out of section fault
- Switch onto fault
- Reverse fault
- Current reversal
- Weak infeed trip
- Echo keying



MTS-1860 GPS Receiver Kit:

- Interfaces directly to the MTS-1710
- <40ns RMS (150ns peak) timing accuracy
- Programmable to output trigger pulse for initiating a test at a user defined time
- IRIG B, E and H (DC level shift), IRIG B amplitude modulated, 1PPS, 1 KPPS, 10 KPPS, 100k PPS, 1 MPPS, 10 MPPS TTL outputs
- RS-232 communications interface and LCD + keypad manual interface
- Includes antenna with 50ft (15m) cable, shipping/carry case, manual and cable set to interface to the MTS-1710

Represented by:



We couldn't make it any easier



ISO 9001 Registered

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