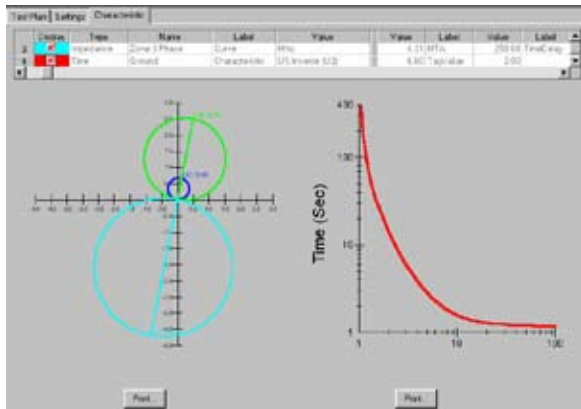# Doble® Protection Testing Software Suite

For automated testing of relays and power system protection schemes

Thousands of test engineers and technicians worldwide use the Doble Protection Testing Software Suite to test and verify their relay protection schemes – easily, accurately, and automatically.

Automate your testing with Doble's easy-to-use software. Power companies worldwide rely on the Doble Protection Testing Software Suite. Choose from a toolkit of easy-to-use applications, automate your testing for high accuracy and reliability – and keep your protection scheme operating at peak performance.

This versatile software suite allows test technicians to run a wide range of standard and special tests on all types of relays, as well as entire protection schemes. Depending on the modules you choose, you can:

• Test both electromechanical and micro-processor relays manually as well as automatically

• Verify entire protection scheme performance and settings

• Run steady state, dynamic state, and transient tests

• Verify accuracy of transducers and meters

• Conduct end-to-end simulations using the GPS satellite system to validate entire protection and communication schemes

Automated testing means ease of use, greater accuracy

Doble software brings a high degree of automation to the testing process.

The software lets you control Doble Power System Simulator (F2250 or F6000) through standard PCs and it is intuitive to learn and easy to use. You can easily create standard test routines for your technicians, using templates provided by Doble. The technician simply sets up the equipment, selects which tests to run, and clicks a button. Operator intervention is minimized, making the testing process much more efficient, repeatable and reliable.

At the same time, you have all the flexibility you need to customize tests and make manual adjustments in the field if required. You can easily create new tests, when necessary using Doble's graphical interfaces and standard test templates called macros.

IEC 61850 GSE Configurator Software

This software in conjunction with ProTesT/ F6 Test is intended for testing protection schemes and protective elements of Intelligent Electronic Devices (IED) that are IEC 61850-ready.

These IEC61850-ready IEDs can communicate via Generic Substation Events (GSE) messages. This software enables the F6150 simulator to support publishing (sending) and subscribing (receiving) two types of GSE messages. These two types of digital status information messages are Generic Substation Status Events (GSSE) and Generic Object-Oriented Status Events (GOOSE). Doble's GSE Configurator supports both types of messages over an Ethernet substation local area network.


You can generate GSE messages in three different ways:

• Discover messages published by IEDs connected to the network

• Create messages manually

• Import SCL files.

The entire testing process based on GSE messages has been made extremely simple by the Doble's GSE Configurator.

The industry's leading software for testing protection schemes

Advanced Testing Architecture
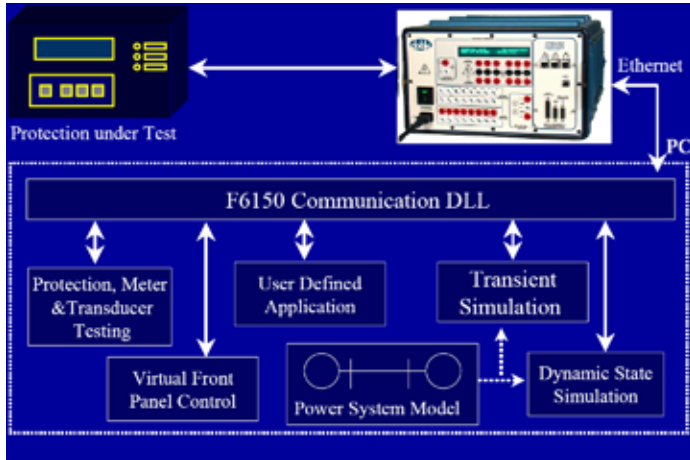
While the Doble Protection Testing Software Suite provides a full range of test software applications, you have complete flexibility to customize and design your own automated tests, if desired. Doble can provide you with the API's and other documentation you need to design your own test environment.

Control Panel software
Easy-to-use manual and interactive testing

Control Panel provides a virtual front panel for point-and-click control of all sources, inputs, outputs and timers. Operators can run a quick check of a protection scheme without an elaborate test plan.

- Automatically run Reach, Pickup and Dropout tests quickly, accurately and without manual errors

- Perform operating time tests for up to eight separate events

- Graphical display shows real time voltage and current phasor relationships with drag-and-drop operation of each phasor

- Automatically switch phasor values for all fault types without wiring changes

- Test 3-phase protection distance relays for all types of faults with the click of a button
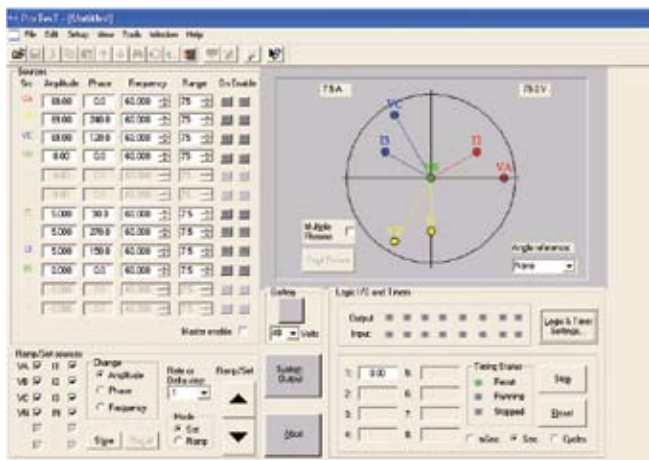

Designed for a world class instrument

The Doble Protection Testing Software Suite is designed specifically for the advanced F6150 Power System Simulator.

The F6150 is the only instrument with the high power, flexibility and software to perform full simulation tests on all types of relays as well as entire protection schemes. It's a complete single-box solution used by protection engineers worldwide to maintain system reliability.

Combined with the Doble Protection Testing Software Suite, the F6150 gives you all the tools needed to ensure power system protection scheme effectiveness and verify protection scheme settings throughout your power system.

## TransWin™: Transient Simulation Software
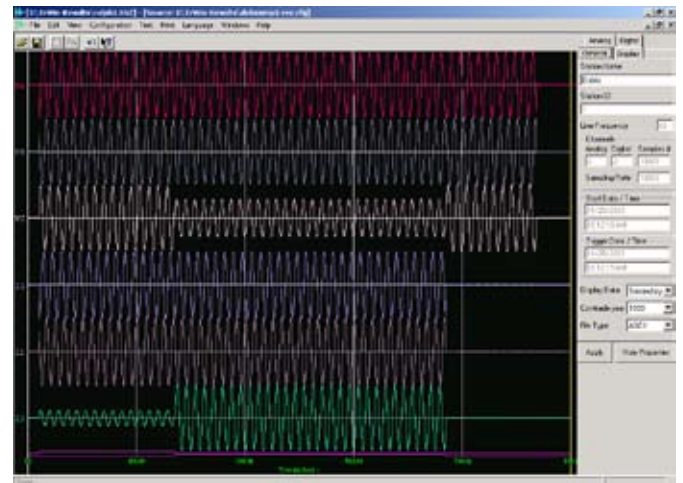
TransWin allows you to test protection schemes under true power system conditions.

With TransWin, you can:

- Replay COMTRADE files from digital relays, digital fault recorders, or EMTP/ATP computer models

- Edit and view transient data files with a point and click graphical interface

- Perform end-to-end transient simulations for performance evaluation of integrated protection and communication schemes

- Run dynamic simulation using State Simulation

- Perform recording of analog and digital signals

Meter Measurement Studio™ Software

The complete toolkit for all transducer and meter testing
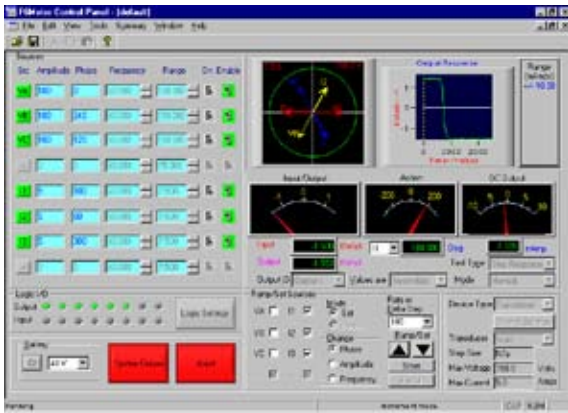
The Meter Measurement Studio permits high accuracy testing of meters and transducers without the need for reference standards and error detection equipment.

This graphical interface allows test engineers to quickly perform simple performance verification tests on meters and transducers. It also allows users to develop a library of automated testing based on their specific practices and test results, and customized reporting allows you to create test reports designed to meet your company's standards.

Fast, reliable testing

All meters and transducers (including multi-function transducers) can be tested in both manual and automated modes. The logical layout provides the test engineer or technician with all the relevant information without needing to switch screens or wait for printed reports. This makes testing faster and more reliable, simplifying the testing process.

Create manual tests easily

Meter Measurement Studio includes a Transducer and Metering Control Panel to perform manual style tests for quick performance evaluations. When creating a test, the technician is provided with standard nameplate format templates and sample wiring configurations to further make testing easier.

User-definable templates

Automation Modules provide user-definable templates that permit the creation of Test Plans that are easily implemented in the field. These Test Plans are stored in a database for easy access, reporting, and future testing.

Meter Measurement Studio Benefits:

- No additional equipment required
- Tests all meters and transducers
- Easy-to-use manual mode for rapid verification
- Database for storing test results and standardizing test procedures
- Standard and custom reporting

ProTesT™ Software

The comprehensive software test system for all protection relays schemes.

ProTesT is a comprehensive software test system designed for improved productivity and quality in performance testing and assessment of protection and protection schemes. ProTesT provides powerful database and reporting capabilities that give you better control and management of your testing and maintenance programs.
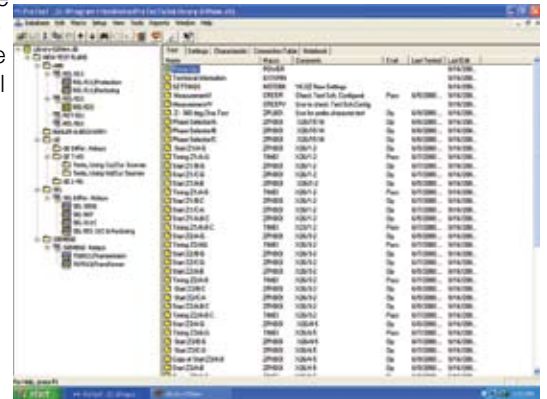
You can use ProTesT to perform virtually any test needed on your protection scheme, including:

- **Steady-state calibration** – Automates the testing of impedance, voltage, current, frequency and synchronizing relays using standard test templates, called MACROS.
- **Dynamic-state simulation** – Allows the assessment of protection scheme performance under actual power system conditions. Evaluate for load flow, fault resistance, cross country faults, current reversals and other specific power system events.
- **Transient simulation** – Controls playback of COMTRADE data for Transient Simulation tests. High playback rate (10kHz) accurately simulates true power system events including dc and high frequency components. Also available as a stand-alone software application TransWin.
- **End-to-end testing** – Synchronizes state simulation and transient simulation tests via Global Positioning System (GPS) for complete end-to-end testing of the protection scheme.

Generate test plans easily and automatically using protection settings

ProTesT allows the user to document the settings of the protection scheme along with the desired types of tests to be performed. Using this information, ProTesT generates the test plan automatically with the click of a button. If there are changes to the protection setting parameters, ProTesT automatically updates the test parameters to reflect these changes. ProTesT also allows for the fine-tuning of test parameters, combining the flexibility of the software with a high degree of automation.

ProTesT™ Software
Centralized database for improved system reliability

ProTesT employs an industry-standard SQL-compliant database for storing protection settings, test parameters and test results. ProTesT can synchronize test results from multiple test teams from different locations using its powerful import/export functionality. Users can maintain and improve their system reliability easily using the database synchronization capability.

Graphical interface for ease of use

ProTesT software is a menu-driven program that runs under Microsoft Windows 95/98/NT/2000/XP/Vista. It organizes protection test data in a tree view hierarchy–like folders in Microsoft Windows Explorer. The representation is simple, and provides an intuitive navigation and Windows standard point-and-click user interfaces.

Ready-to-use templates

ProTesT utilizes more than 50 standard test templates, called MACROS, for test automation which are grouped into Plans:

A Plan: for testing synchronizing Protection

I Plan: for testing over/under current Protection

V Plan: for testing over/under voltage Protection

F Plan: for testing over/under frequency Protection

Z Plan: for testing impedance Protection

T Plan: for transient waveform editing and Simulation testing

P Plan: for power system modeling for dynamic testing

The logical grouping of MACROS in the user friendly interface requires little time or effort to learn and allows quick creation of testing sequences or Test-Plans. These MACROS are ready to use as supplied or they can be easily modified to meet your specific needs.

Run multiple tests automatically

Using the AutoRun feature, you can run a series of tests automatically. Just select the series of tests from the test folder, and select AutoRun. You reduce test time and increase consistency by minimizing user intervention.

Powerful database and reporting capabilities

ProTesT includes a powerful database system that allows you to store historical test parameters and results for all protection throughout your system. You can easily document and report on all aspects of your protection settings, test methods, and test history. You can use this database at any time to generate standard summary test reports, or create your own, using ProTesT's industry-standard SQL database architecture.

ProTesT Benefits:

- Automate relay calibration tests
- Use standardized test plans
- Increased productivity reduces testing time
- Test complete protection scheme under realistic power system conditions
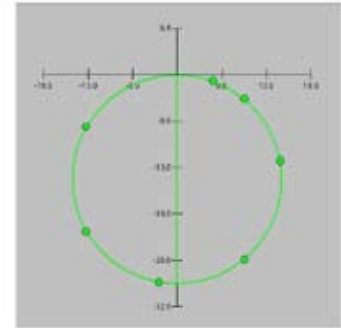
Protection User Group

All Doble clients using ProTesT software are invited to participate in the Protection User Group (PTUG), which holds meetings every year in a variety of locations. At the PTUG meetings, technical presentations are made, and extensive hands-on training sessions are offered. PTUG members are encouraged to provide feedback and product development recommendations to Doble so that we can continue to enhance our Protection offerings to best meet client needs.

Specifications are subject to change without notice.
For more information,
email fserieshelp@doble.com

www.doble.com