

- System Routines: (All)
- NEW SYSTEM ROUTES
 - 1ST STREET
 - 42ND STREET
 - 57TH STREET
 - 61ST STREET
 - KATY MILLS
 - MEMORIAL STREET
 - MISSION BEND
 - RELAY EXAMPLES
 - SHERIDAN STREET
 - WESTCHASE
 - YALE STREET
 - CHAMBERS SPRING CKT
 - MUSKOGEE TERMINAL
 - ALTERNATE
 - PRIMARY
 - SEL-321.FST
 - ONETA TERMINAL

Relay	CO-9	CO-11	CO-12
R-119303978	CO-9		
R-119303971	CO-9		
DR V-1	R-124427	SEL-351	3/4/2015
DR V-1	R-119302	CO-11	12/1/2015
DR V-1	R-119354	CO-9	11/16/2015
DR V-1	R-119303974	GE-L90	11/12/2015

Relay Testing This Month	
Completed 57	Scheduled 18

DOBLE PROTECTION SOFTWARE

Comprehensive solutions for verifying system protection

DOBLE ENGINEERING COMPANY



PROTECTION SOFTWARE SOLUTIONS



Whether you are testing electromechanical relays or state-of-the-art, IEC 61850 designs, Doble has the software you need to verify system protection.

Our office and field software options help you verify any protection and control circuit and simulate system conditions. Options are flexible so you can customize your testing program and adhere to your company's practices and procedures, while meeting regulatory requirements. Choose which combinations make sense for your organization.

PROTECTION ASSET & TEST DATABASE

PowerBase

PowerBase is the premier application for administrators to manage and report on protection asset maintenance and engineering records. It helps simplify NERC PRC-005 compliance and trending.

PowerBase is the core piece of your protection testing program: manage your workflows, connect with existing work management systems, automate activities, eliminate manual processes, maintain compliance and optimize efficiency within your organization.

CLIENT/SERVER DATABASE APPLICATION

Numerous workstation computers run PowerBase simultaneously from a single database that operates on a local or Doble-hosted server.

VENDOR-NEUTRAL DATABASE THAT HANDLES ANY POWER SYSTEM ASSET

PowerBase tracks maintenance on relays, CTs/VTs, breakers, transformers, batteries and any other asset. PowerBase features import and export modules for data transfer with other systems and testing tools.

SETTINGS MANAGEMENT WAREHOUSE

PowerBase houses and manages relay settings, allowing you to consolidate settings data from disparate applications, spreadsheets and files.

REPORT ENGINE

PowerBase features a powerful, user-friendly report generator. Reports can be configured to suit your business needs.

COMPLETE PROTECTION ASSET & COMPLIANCE DASHBOARD

Users can easily find information and see a dashboard presenting the whole maintenance picture. This is possible even with many workers and the variety of engineering and testing software products they use.



Select Relay
Device Status

Refresh Data Sort Columns Save Grid Order Reset Column Order

Search:

Substation Name	FasType	ID Number	Terminal	Phase	RL Manufacturer	Relay Style/Model	IEEE Device	Last Test Date	Next Test Date	Test Freq	Last Test Result	Prev Test Date	NERC Reportable
1ST STREET	HU	NA	XFMR 1 DFF	B PH	WHIABB	2908346A09	87T	7/28/2010	7/27/2013	36 PA/SS	36 PA/SS	8/14/2007	Yes
1ST STREET	HU	NA	XFMR 2 DFF	C PH	WHIABB	2908346A09	87T	7/15/2010	7/14/2013	36 PA/SS	36 PA/SS	8/5/2007	Yes
1ST STREET	HU	NA	XFMR 1 DFF	A PH	WHIABB	2908346A09	87T	8/14/2010	8/13/2013	36 PA/SS	36 PA/SS	7/6/2007	Yes
1ST STREET	HU	NA	XFMR 2 DFF	B PH	WHIABB	2908346A09	87T	8/2/2010	8/2/2013	36 PA/SS	36 PA/SS	8/20/2007	Yes
1ST STREET	HU	NA	XFMR 1 DFF	C PH	WHIABB	2908346A09	87T	8/15/2010	8/14/2013	36 PA/SS	36 PA/SS	7/19/2007	Yes
1ST STREET	HU	NA	XFMR 2 DFF	A PH	WHIABB	2908346A09	87T	8/17/2010	8/16/2013	36 PA/SS	36 PA/SS	7/12/2007	Yes
42ND STREET	HU	NA	XFMR 1 DFF	A PH	WHIABB	2908346A09	87T	10/22/2010	10/1/2013	36 PA/SS	36 PA/SS	11/10/2007	Yes
42ND STREET	HU	NA	XFMR 2 DFF	C PH	WHIABB	2908346A09	87T	11/20/2010	11/27/2013	36 PA/SS	36 PA/SS	10/23/2007	Yes
42ND STREET	HU	NA	XFMR 1 DFF	C PH	WHIABB	2908346A09	87T	11/11/2010	11/10/2013	36 PA/SS	36 PA/SS	11/28/2007	Yes
42ND STREET	HU	NA	XFMR 2 DFF	B PH	WHIABB	2908346A09	87T	10/23/2010	10/22/2013	36 PA/SS	36 PA/SS	11/11/2007	Yes
42ND STREET	HU	NA	XFMR 1 DFF	A PH	WHIABB	2908346A09	87T	11/23/2010	10/22/2013	36 PA/SS	36 PA/SS	11/11/2007	Yes
42ND STREET	HU	NA	XFMR 1 DFF	B PH	WHIABB	2908346A09	87T	11/10/2010	11/9/2013	36 PA/SS	36 PA/SS	11/27/2007	Yes
1ST STREET	CO-5	NA	XFMR 2 BU	ALARM	WHIABB	1875234A	50S1	7/21/2010	7/20/2013	36 PA/SS	36 PA/SS	8/17/2007	Yes
1ST STREET	CO-5	NA	XFMR 1 BU	ALARM	WHIABB	1875234A	50S1	8/14/2010	8/13/2013	36 PA/SS	36 PA/SS	7/6/2007	Yes
1ST STREET	CO-8	NA	XFMR 2 BU	A PH	WHIABB	1878043A	50S1	7/20/2010	7/20/2013	36 PA/SS	36 PA/SS	8/16/2007	Yes
1ST STREET	CO-8	NA	XFMR 1 BU	GND	WHIABB	1875286A	50S1	7/6/2010	7/6/2013	36 PA/SS	36 PA/SS	7/28/2007	Yes
1ST STREET	CO-8	NA	XFMR 1 BU	B PH	WHIABB	1878043A	50S1	7/21/2010	7/20/2013	36 PA/SS	36 PA/SS	8/7/2007	Yes
1ST STREET	CO-8	NA	XFMR 1 BU	C PH	WHIABB	1878043A	50S1	7/20/2010	7/1/2013	36 PA/SS	36 PA/SS	7/21/2007	Yes
1ST STREET	CO-8	NA	XFMR 2 BU	GND	WHIABB	1875286A	50S1	7/21/2010	7/20/2013	36 PA/SS	36 PA/SS	8/17/2007	Yes
1ST STREET	CO-8	NA	XFMR 1 BU	A PH	WHIABB	1878043A	50S1	8/7/2010	8/6/2013	36 PA/SS	36 PA/SS	7/2/2007	Yes
1ST STREET	CO-8	NA	XFMR 2 BU	B PH	WHIABB	1878043A	50S1	7/13/2010	7/11/2013	36 PA/SS	36 PA/SS	7/31/2007	Yes
1ST STREET	CO-8	NA	XFMR 2 BU	C PH	WHIABB	1878043A	50S1	8/17/2010	8/16/2013	36 PA/SS	36 PA/SS	7/13/2007	Yes
42ND STREET	CO-8	NA	XFMR 2 BU	B PH	WHIABB	1875267A	50S1	10/16/2010	10/17/2013	36 PA/SS	36 PA/SS	11/6/2007	Yes

166 Records

Open Device Cancel

DATABASE OF ALL ASSETS

Relay :: MEMORIAL STREET :: NA

Nameplate Settings Pseudo Device Associated Files RTS Test Results Associated Devices Fault Files

All Templates Current Template Only Assigned Template: TEMPLATE: SEL-321

Template: TEMPLATE: SEL-321

Grid View List View

Name Search: [] Name Sort: [] Archive Data: Display

Display Options: (Groups,Range,Formats,Comments)

GROUP	NAME	RANGE	FORMAT CODE	SETTING	COMMENTS
0	RELID			138KV MT120 INTER	
0	TRMID			PHARR LINE MERETT SL	
0	Z1MAG			0.35	
0	Z1ANG			74.24	
0	Z0MAG			1.08	
0	Z0ANG			78.21	
0	LOCAT			Y	
0	LL			2.19	
0	CTR			740.0	

Settings Status: Pending, Completed, Deployed, Approved, Tested, Historical

General Setting Comment: ELEMENT 50G1 FOUND TO OPERATE AT 7% UNDER ACTUAL SETTING. THIS IS TYPICAL FOR ALL 60G ELEMENTS OF THE SEL-321 RELAY SET AT THE MINIMUM VALUE OF 0.500 AMP. TOLERANCES FOR THE 50G1 WERE LEFT AS +/- 5%, SO THE TEST WAS GIVEN A FAIL, BUT THE OVERALL ROUTINE WAS GIVEN A PASS AS THE ACTUAL OPERATION VALUE IS EXPECTED BASED ON PREVIOUS TESTING PRACTICES OF THE SEL-321.

Status / Comments Info Associated Files WorkOrders

NID Value: 3812 Updated By: ENO Updated On: 3/15/2013 3:43:38 PM Archive Log ID: 673

RLID: 3602 Updated By: ENO Updated On: 3/15/2013 3:43:38 PM Source ID: 0

RELAY SETTINGS MANAGEMENT

New Results Sort Columns 201 Records (09:00:7)

Substation Name	Relay Type	ID Number	Relay Type	Last Test Date	Last Test Res
1ST STREET	FDR V-2	R-119356	CO-9	6/28/2016	FAIL
1ST STREET	FDR V-2	R-119337	CO-9	6/28/2016	PASS
42ND STREET	BKR 300	R-120359	SEL-421	4/27/2016	FAIL
1ST STREET	BKR 101	R-1193082	CO-9	4/12/2016	PASS
1ST STREET	BKR 101	R-11930412	CO-9	4/12/2016	PASS
1ST STREET	TEST	R-11930326	CO-9	3/14/2016	PASS
1ST STREET	FDR V-4	R-11930378	CO-9	3/30/2016	PASS
1ST STREET	FDR V-4	R-11930371	CO-9	3/30/2016	PASS
MEMORIAL STREET PALMHURST LINE	SEL-351	R-124427	SEL-351	2/4/2016	FAIL
1ST STREET	FDR V-4	R-119302	CO-11	12/1/2015	PASS
1ST STREET	FDR V-4	R-119354	CO-9	11/16/2015	PASS
1ST STREET	FDR V-4	R-11930374	GE-L90	11/12/2015	

Yearly Workorder Status

Completed 82.04% Open 17.96%

Relay Testing This Month

Completed 57 Scheduled 13

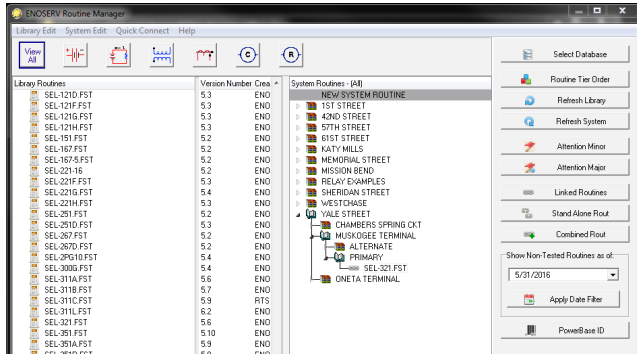
Test Percent Error

10% Error

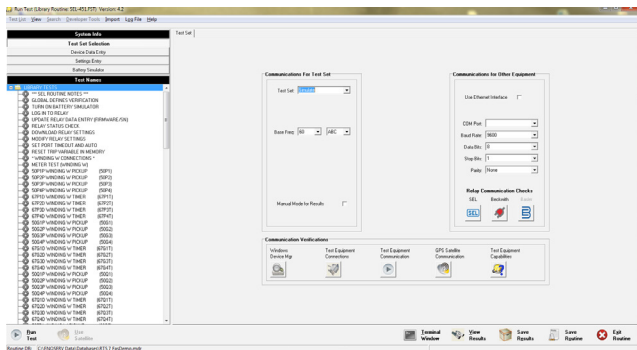
CUSTOMIZED DASHBOARDS TO TRACK DATA

PROTECTION TESTING SOFTWARE

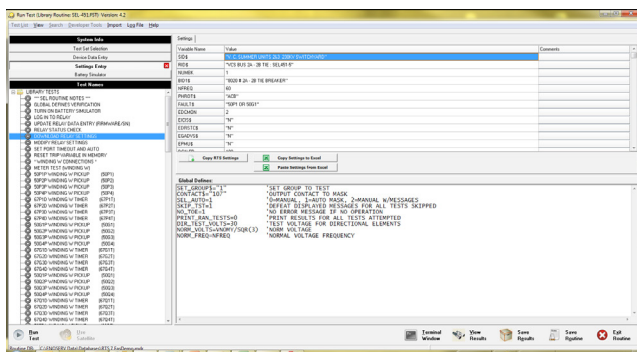
Doble offers a variety of software options for basic through complex testing requirements. Choose the software or combination of software that best fits your protection testing program.



SELECT YOUR TEST FROM THE LIBRARY



SET UP EQUIPMENT & RELAY COMMUNICATIONS



RUN TEST

RTS

RTS is ideal for testing and capturing data during commissioning and field performance/compliance testing.

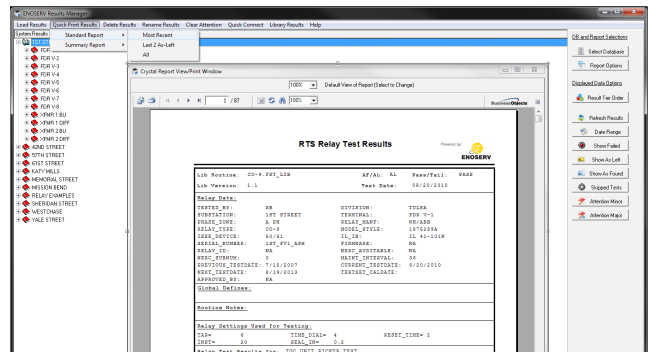
RTS is a vendor-neutral software which allows you to connect to a variety of relay test sets in your test equipment inventory.

RTS features powerful automation tools that reduce complexity. It offers an extensive relay test plan library to quickly perform standardized tests. Your teams will save time thanks to the robust communication tools that help automate and simplify testing.

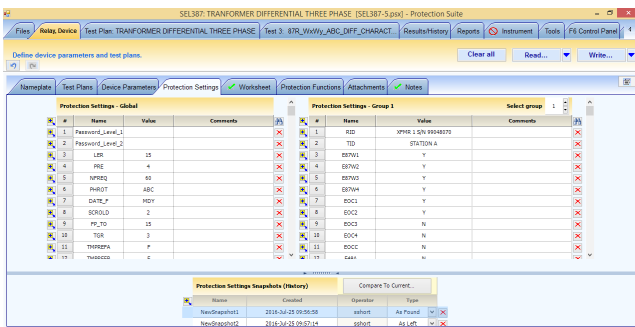
You can also make test plan modifications in one location by quickly editing in the library, which updates hundreds of relay test plans.

RTS can also capture and store important maintenance information for CTs/VTs, DC control circuitry, communication systems and more.

RTS works seamlessly with PowerBase as your complete protection testing program from the field to the office.



GENERATE YOUR REPORT



IMPORT RELAY SETTINGS

Protection Suite

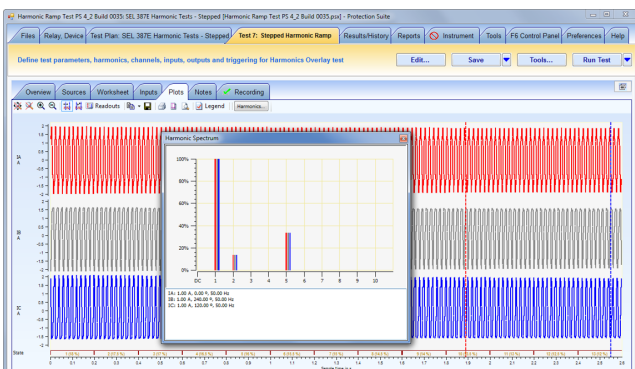
Protection Suite software is a complete, no-compromise, protection testing solution. Run manual and automated tests for protection-scheme verification, including IEC 61850 sampled values and GOOSE schemes.

With changes in technology, you need a software tool that allows you to test old and new types of devices. Protection Suite is your solution with its time-tested static, dynamic and digital test routines. Quickly create tests with the basic wizard tool and power system models.

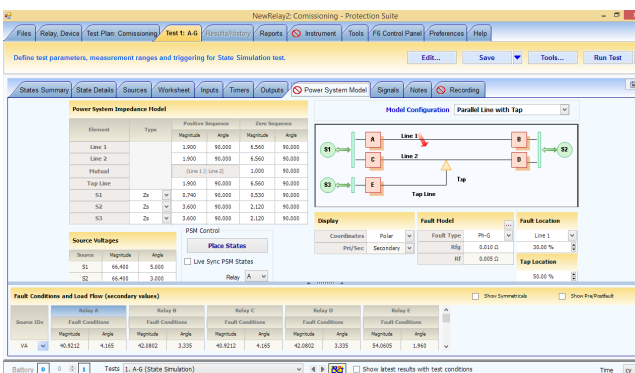
Protection Suite offers users the capability to control and manipulate test types, giving users multiple ways of testing and proving a device. Simulate realistic system conditions and power quality issues, such as flicker and harmonic in-rush, using the transient wave generator.

Protection Suite is used with Doble's F-series test equipment; it also connects with PowerBase to create a comprehensive data-management system for storing, trending, system planning analysis and for reporting to regulatory agencies.

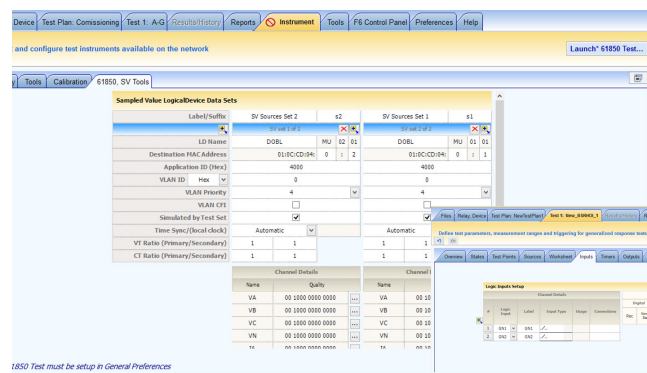
Protection Suite is available in a number of levels. Mix and match the levels that are appropriate for your organization's testing and reporting requirements.



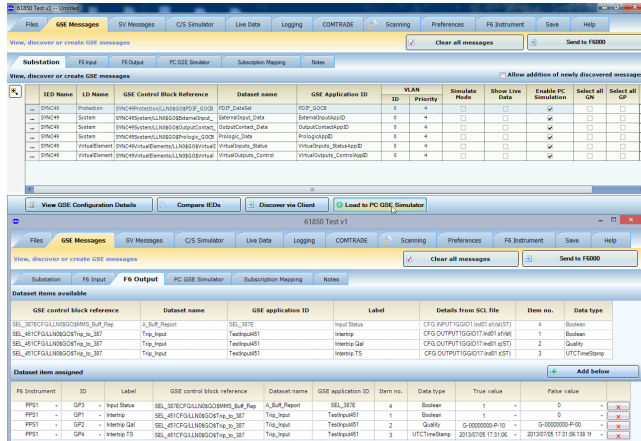
RUN SPECIALIZED TESTS



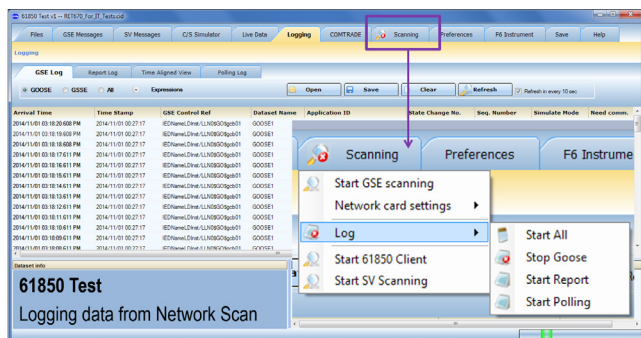
POWER SYSTEM MODELS



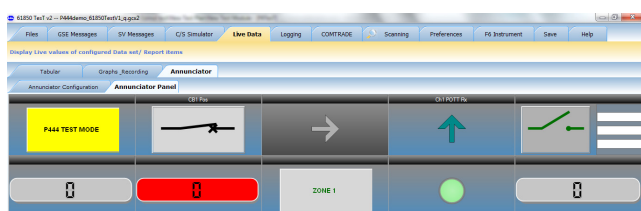
IEC 61850 COMPLIANT TESTING



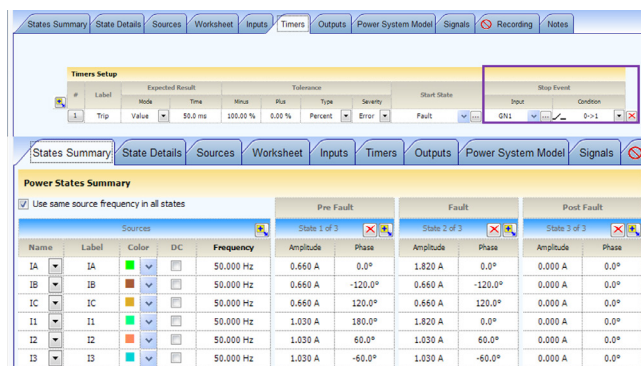
DISCOVER GOOSE MESSAGES & CONFIGURE F6150SV FOR GOOSE PUBLISHING & SUBSCRIPTION



SCANNING & LOGGING



ANNUNCIATOR PANEL HELPS VISUALIZE TEST



TESTING WITH GOOSE MESSAGES

61850 Test

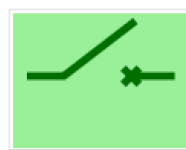
Simulate, monitor and test IEDs on your digital substation network with 61850 TestT.

Use with Doble's F6150sv and Protection Suite software to apply sampled values (SV) and generic substation event (GSE) simulations to functionally test and receive status messages from substation devices. Create fault conditions to verify control scheme coordination to ensure proper design of IED logic.

Use this IEC 61850 test software to identify and map logical nodes or objects to virtual inputs on the F6150sv. Then use Doble's Protection Suite testing software to verify the performance of your protection system.

Read SCL files or discover IEDs in the network, and configure the F6150sv for GOOSE message subscription and publishing in preparation for testing. Use the live data, annunciator and logging features to visualize the test.

Use the built-in client simulator to read reports, request information from IEDs, and test the control functions such as closing a circuit breaker with interlock checking and synchro-check.



Open

IED: DOBLE
Logical Device: C1CB
Control Object: CSW11.ST.Pos
Control Model: SBO with enhanced security

Enable expert features

Control parameters

Originator Category: station-control

Originator Identity: 00

Control Number: 1

Check Interlocking

Check Synchronism

Test

Value: Close

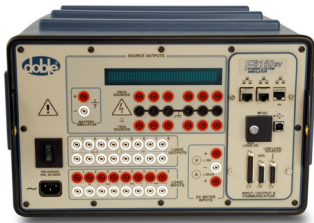
Operate Time: 2016-07-20 07:36:25.8

Select Operate Cancel

Status

Timestamp	Status	C...	Addcause
2016-07-20 07:34:56.260	Select command issued succe...	122	Success
2016-07-20 07:35:06.112	Operate command failed	2	Blocked...
2016-07-20 07:35:14.694	Select command issued succe...	122	Success

CLIENT SIMULATOR BREAKER CONTROL



F6150sv*
Power System Simulator



F6350e
External Amplifier



F6052
Universal Time Synchronizer

PROTECTION HARDWARE

Doble's F-Series power system simulators are the industry's trusted diagnostic device for protection testing.

Testing requirements can vary from team to team and company to company.

That's why Doble's F-series power system simulators are customizable. Choose what functions you need in order to perform testing of protection devices and schemes.

You can maximize your testing capabilities with accessories for communication, amplification, calibration and more.

From manual testing through to high burden testing, choose the options and accessories that make sense for your budget and business requirements.

**The F6150sv is UCAIUG IEC 61850 certified Level A by DNV-GL for:
- IEC 61850 Server (GOOSE Publisher/Subscriber), Editions 1 and 2
- IEC 61850 Sampled Values 9-2LE Publisher, Edition 1*



DUC
Doble Universal Controller



F6080
Field Calibration Unit

PROTECTION TRAINING



We offer a wide range of protection training courses that will help prepare you for a modern grid, power plant and industrial facility.

Training courses are presented in an easy to understand format with real life case studies and examples for a truly unique training experience.

Choose which courses are right for you and your team.

Classes are geared towards engineers, technicians, supervisors and managers who are involved with protection assets.

Learn more at
events.doble.com/protection

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Doble Engineering Company

Worldwide Headquarters | 85 Walnut Street, Watertown, MA 02472 USA

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