

DOBLE PROTECTION SOLUTIONS

Manage Your Ecosystem of Asset, Engineering, Maintenance, and Regulatory Compliance Data



DOBLE POWERBASE™ ENTERPRISE ASSET AND TEST MANAGEMENT SYSTEM

INTEGRATE | STANDARDIZE | AUTOMATE



The power to interconnect data and processes from different systems to link the office and the field.



ASSET MANAGEMENT CHALLENGE: RELAYS



Some devices have data that is too specific for conventional asset management systems to track effectively. Case in point: protective relays.

Relays are the backbone of protection and control (P&C) but are unlike other P&C devices, or any other power system components for that matter. Relays vary not only by type and model but also by settings applied per any number of possible protection scheme requirements.

The engineering and testing systems used for bringing relays online and maintaining them only go so far when it comes to asset management. Workers are left with systems-of-systems that slow them down and obscure the big picture reflecting true asset performance.

THE SOLUTION: POWERBASE

Doble PowerBase™ offers universal asset and test data management that overcomes the complexity of tracking relay data.

PowerBase gives administrators, engineers, technicians and other stakeholders a secure interconnection that keeps them on-page with each other in the workflow, where mission-critical information they need is right at hand.



An asset and test

- performance management system
- data warehouse
- process automator

that

- centralizes information
- standardizes records
- clarifies asset health
- maintains consistency
- connects systems & teams

by tracking

- status
- settings and configurations
- procedures and results
- work assignments

for

- telecommunication, protection and control **engineers**
- test, inspection, and maintenance **technicians**
- **supervisors** and **managers**
- **operations technology administrators**
- **compliance officers**

WHAT IS POWERBASE?

Answer: The crucial link.

PowerBase connects the office and the field by uniting data from diverse O&M systems into uniform source-of-truth records that support teams across the enterprise.



Interfaces:

- to SAP, Maximo, Cascade, and other systems used in enterprise asset management.
- to Aspen, CAPE, SARA, or other P&C engineering software.
- to Protection Suite, RTS, Vanguard and other applications from Doble.
- API and SyncService for custom interfaces to any commercial or in-house system.

With PowerBase, tremendous flexibility is matched with power.

Device profiles and work assignments update in stride with test and maintenance outcomes. User profiles are tailored and secure. Reports peer into disparate types of data to reveal answers about asset performance and compliance audit readiness.

Proven tools give administrators and end users alike the capability they need to satisfy even their most challenging requirements. **PowerBase Web** is just one example, a feature that provides the same flexibility and power of the desktop version in a thin client interface that works with popular browsers. PowerBase Web is easy to provision and it keeps your existing security configurations intact.



WHY POWERBASE?

UNIVERSAL TRACKING

PowerBase is vendor-neutral and asset agnostic, letting you track power system components of any type as well as information assets such as event investigation records and substation inspection data.

CENTRAL, ORGANIZED RECORDS

Whatever you're tracking, PowerBase is a comprehensive data warehouse where storing and retrieving key details is just a few clicks away.

- Transformers
- Annunciators
- Switches – Line and Substation
- Communications Equipment
- Regulators
- IEDs / Relays
- GPS Clocks
- LTC Controllers
- Meters
- SCADA Equipment
- Transducers
- RTAC
- Fuses
- Arresters
- Capacitor Bank
- Test Equipment Inventory
- Circuit Switcher
- Computers
- Settings Calculation Sheets
- Battery Chargers
- Programmable Logic Controllers
- Digital Fault Recorders
- Satellite Clocks
- Circuit Breakers
- Universal Power Supply Modules
- Vacuum Circuit Reclosers
- **Any assets, devices, events, inspections, or other types of equipment or operational records**

DATA INTEGRITY

PowerBase gathers data from different sources onto a common platform where inconsistencies are easy to find and resolve.

AWARENESS

From system administrators and compliance officers to engineers and field technicians, PowerBase connects teams through shared data in a secure environment where workers collaborate and get notified of matters requiring their attention.

PRODUCTIVITY

PowerBase automation drives efficient audit readiness, settings-to-device consistency, integrated office-to-field maintenance processes, knowledge capture, and other crucial elements of your asset performance management program.

VISIBILITY

PowerBase provides macro- and micro-level resolution of asset status over the service lifecycle, including engineering and maintenance details like device setpoints applied and specific test and inspection procedures performed.



Data Modules & Parsers

PROTECTION & CONTROL DEVICE CONFIGURATION FILE FORMATS

ABB abb_dpu2000_txt abb_mdar_set/spt abb_pcd_txt abb_relion_xrio	beckwith_tap beckwith_tpt Cooper (Eaton) cooper_cl6_csv cooper_form5_csv cooper_form6_txt cooper_form6_F6E/F6S	GE Multilin ge_multilin_169 ge_multilin_239 ge_multilin_269 ge_multilin_369 ge_multilin_469 ge_multilin_489 ge_multilin_735 ge_multilin_737 ge_multilin_745 ge_multilin_750 ge_multilin_760 ge_multilin_csv ge_multilin_urs	Protecta_txt Schneider micom_csv schneider_micom_xml schneider_micom_xrio schneider_sage_rtu_xml
Alstom_csv	ERLPhase_LPRO_lps		SEL sel_mdb sel_rdb
Areva_csv	GE ge_dgp ge_micom_xml ge_micom_xrio		Siemens siemens_digsi4_csv siemens_digsi4_xml siemens_digsi4_xrio siemens_digsi5_teax
Basler_bestcoms_csv	Generic .xrio	GEC	
Beckwith beckwith_cpt beckwith_htm beckwith_ips beckwith_spf beckwith_sup	Generic .xls		

IEC 61850

ICD
CID
IID
SSD
SCD
SED

PROTECTION TEST FILE FORMATS

Doble
PB Field_mdr/dbrts
Protection Suite_psx
RTS_mdr/dbrts
Omicron_generic_xrio

PROTECTION SYSTEM ENGINEERING DATA

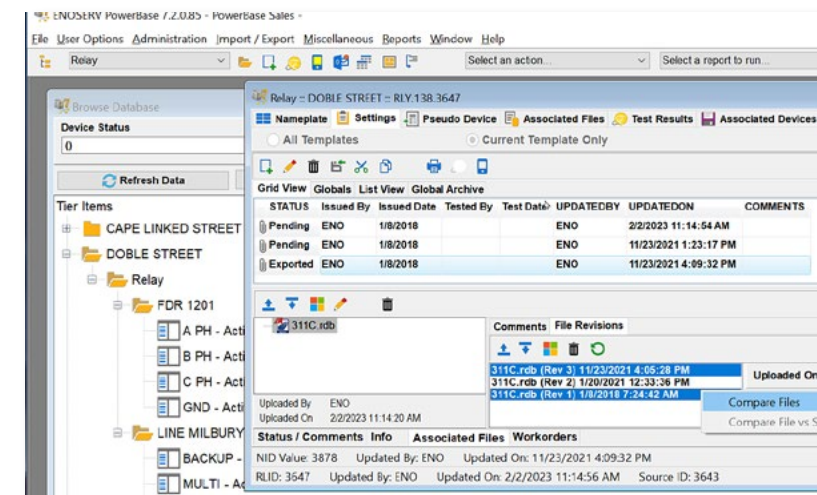
Aspen Oneliner
PSS CAPE

ELECTRICAL EQUIPMENT FILE FORMATS

Cables Elastimold_ESETTII_set Elastimold_ESETTIII_set/st3	Switch Controllers S&C 5800_csv S&C Intellicap_csv S&C Intellink_xdss/xspt
Capacitor Controllers Fischer Pierce_5400_xml	Vacuum Interrupters G&W_VIC_SSII_VI
Line Carrier Test Equipment Ametek_uplc_xml PowerComm PCM-5350_xml	Voltage Regulator Controllers ICMI Howard_uvr

SETTINGS AND CONFIGURATION MANAGEMENT

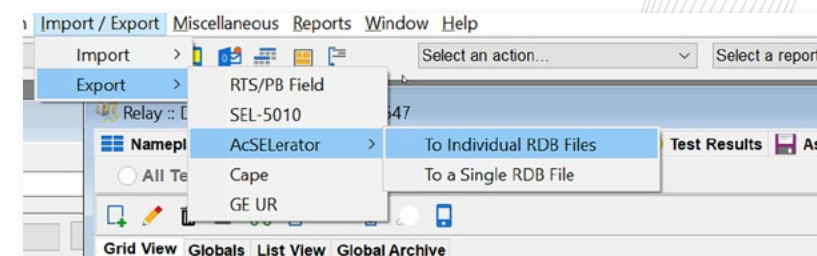
PowerBase manages settings and configuration data universally, giving you one location for tracking all models and styles of relays as well as other electrical devices.



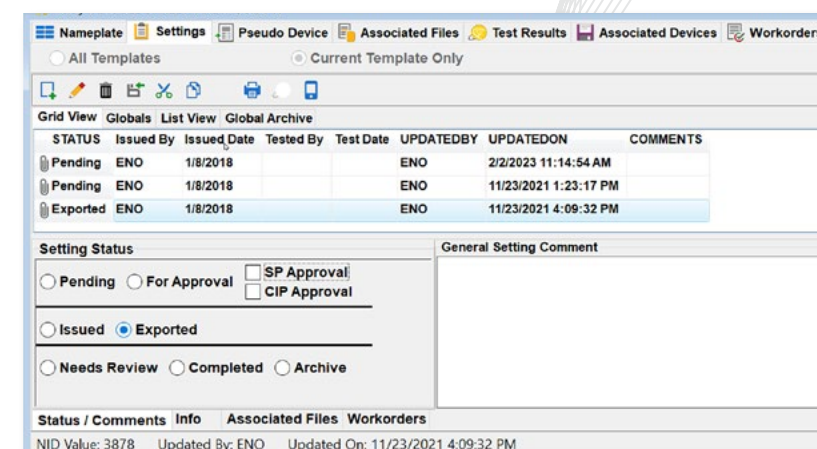
Settings can be tracked in table/grid format or in their native files.

Both the table/grid and native file approaches to settings control offer quick comparisons and reporting.

For editing settings, PowerBase launches relay vendor software and provides options for saving, overwriting, or discarding file revisions and logs that activity in the settings archive.



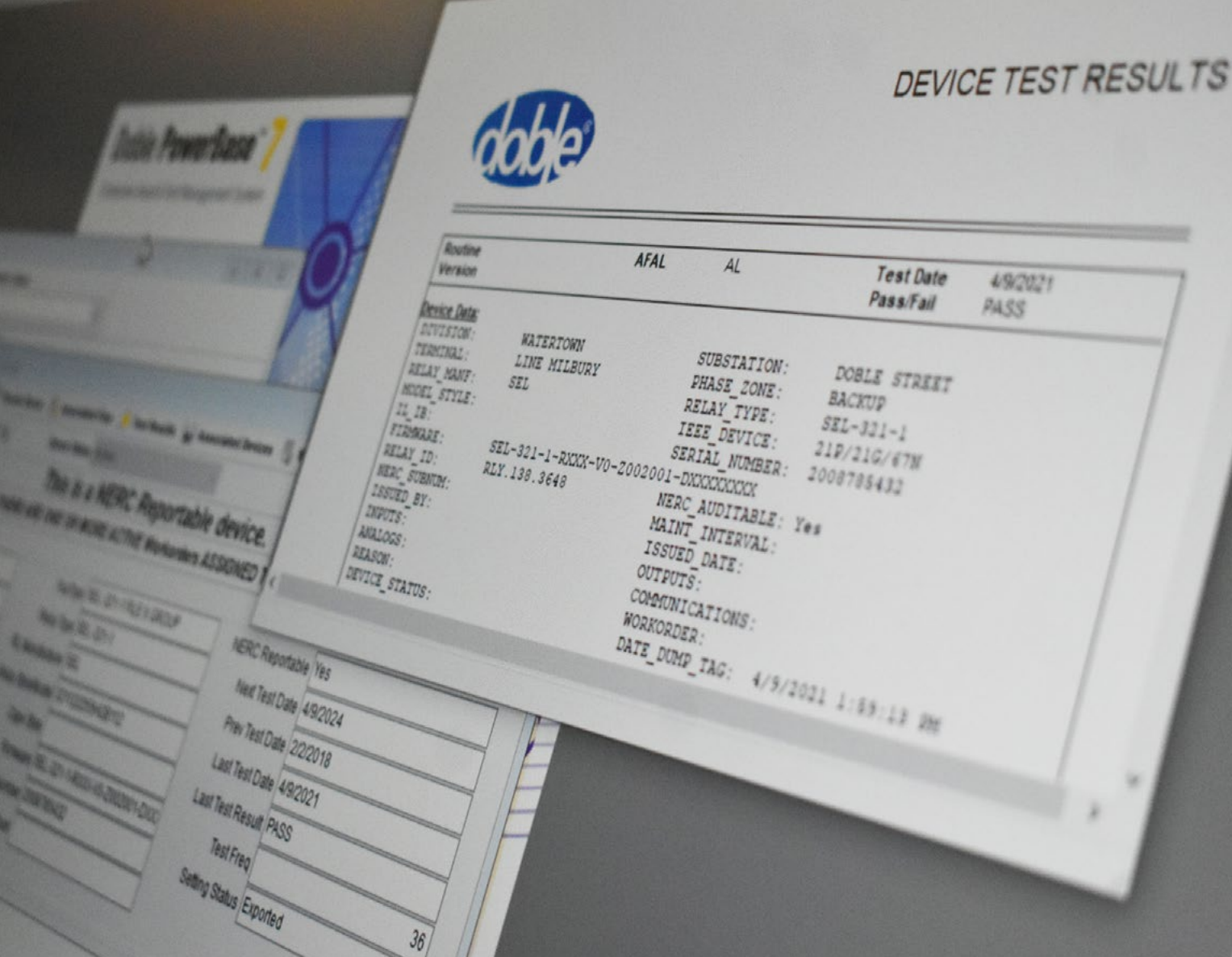
PowerBase offers settings import/export modules along with a large set of parsers that support an array of diverse file formats to automate data conversion operations.



Whether studying lifecycle change histories in their entirety or tracking and responding to actions as they occur, the settings review and approval effort is greatly reduced.

Existing in-house processes can be easily modeled to capture stages of settings development, deployment, and completion in the intra-office/office-to-field workflow.





PowerBase is not just a data and records repository: it's a platform for work management where operations, engineering, and test systems intersect.

PowerBase can be linked to other software applications as necessary to create one location where teams can find the information and supporting files they need to stay updated during daily operations.

- Work Assignment Interface for configuring trackable workflow stages and tasks.
- Pseudo Device™ forms for capturing maintenance on ancillary components or systems associated to assets (breaker trip checks, comms checks, etc.).
- Live Testing directly from PowerBase asset records using RTS, PB Field, and Protection Suite. Offline options also available.
- Email Module and system messages for communicating actionable information.
- Administrative control over import/export operations and supervisory review/accept/reject functions over test results.
- Active Directory authentication, data partitioning, highly configurable user access controls, and seamless integration with the **Doble Transient Cyber Asset Program™**.

TEST AND MAINTENANCE MANAGEMENT

Doble PowerBase™ 7 Fastypes™ link specific nameplate and settings data directly to the correct test procedures in RTS, PB Field, and Protection Suite. By embedding required data and information directly into testing processes, PowerBase enables consistent, field-proven results that validate settings and other data of record.



The Merge Utility™ in **Doble RTS™** and PB Field software converts data between .mdr files and PowerBase. PB Live, a feature of RTS and PB Field versions 7.2 and later, establishes a connection to device records in PowerBase for seamless online and offline testing operations.



PB Field™ replicates the test routine and data entry form development features of RTS to provide manual control of external test systems universally and central field records management. PB Field preserves the use of existing in-house forms while also offering powerful tools for procedural, forms-based process intelligence in field operations.



PB Direct™ provides direct connectivity to PowerBase from **Doble Protection Suite™**, enabling efficient .psx file upload/download operations that ensure data integrity between systems. PB Direct preserves the use of existing .psx files and is a feature of Protection Suite Pro versions 5.1 and later.

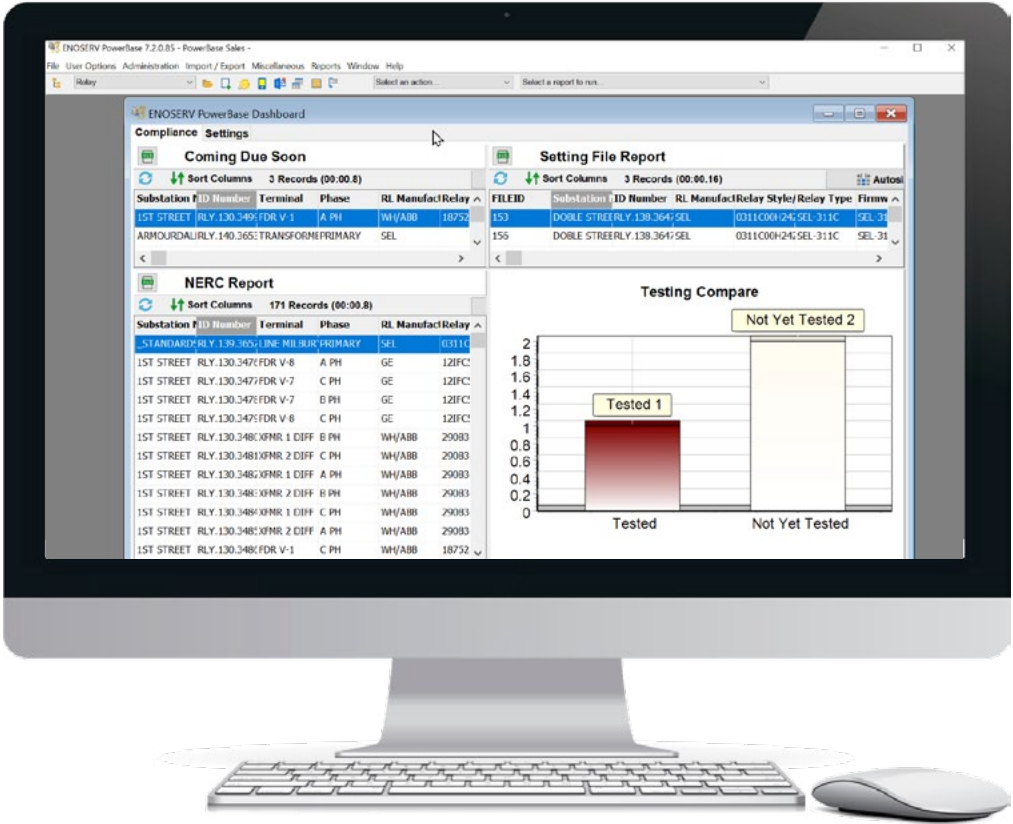




TRACKING AND REPORTING

If it's in PowerBase, it's easy to find and keep an eye on. Users have quick access to the data and information that matters to them presented in formats that make sense.

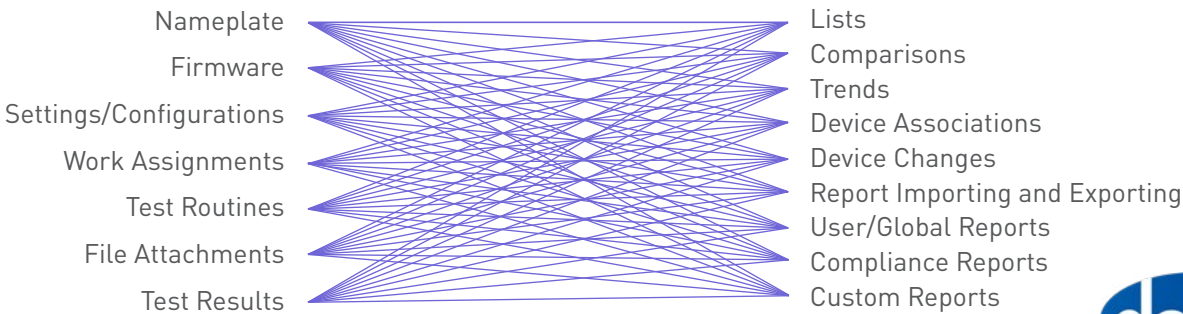
PowerBase associates entire histories of tests performed in RTS, PB Field and Protection Suite software—records that contain compliance evidence and confirm settings and firmware on configurable devices such as relays—to corresponding points in time in nameplate, settings, and work assignment datasets. With organized and collated records, users can configure views and analytics to monitor asset performance and to prepare for compliance audits efficiently.



Power and utility companies that are subject to North America Electric Reliability Corporation (NERC) regulations are using PowerBase to track and comply with these and other standards:

- | | |
|---------|---|
| CIP-002 | BES (Bulk Electric System) Cyber System Categorization |
| CIP-008 | Incident Reporting and Response Planning |
| CIP-010 | Configuration Change Management and Vulnerability Assessments |
| CIP-011 | Information Protection |
| FAC-008 | Facility Ratings |
| PRC-004 | Misoperation Identification and Correction |
| PRC-005 | Protection System Maintenance and Testing |
| PRC-006 | Automatic Underfrequency Load Shedding |
| PRC-019 | Coordination of GU or Plant Capabilities, Voltage Regulating Controls, and Protection |
| PRC-023 | Transmission Relay Loadability |
| PRC-024 | Generator Frequency and Voltage Settings |
| PRC-025 | Generator Relay Loadability |
| PRC-027 | Coordination During Faults |

Using the **Report Generator**, many kinds of reports can be created that leverage the power of data to help you know your next move. Reports can be saved per individual users or shared collectively, and any report as well as messages and notifications can be added to a user's dashboard for keeping important matters top of mind.



LICENSE INFORMATION

License
Perpetual, on-premises, with renewable software maintenance and support. Scaled by user seats and asset quantities.

User Seats
Concurrent seats (simultaneous thick client connections to the database). Sold in quantity blocks.

Assets
Universal (any type of equipment or power system component can be tracked). Sold in quantity blocks.

- Three levels:**
- Nameplate – asset identification and status data only
 - Basic– adds test management that supports RTS, PB Field and Protection Suite
 - Pro – adds settings management for configurable devices such as relays and IEDs

Modules to Protection Engineering Software
Link PowerBase settings data to system models in these protection engineering software products. Fixed price per module.

Aspen OneLiner
The Aspen OneLiner interface is an Active X control launched within the Aspen OneLiner program. The purpose is to extract settings from PowerBase and bring them into the OneLiner database. Implementation of the Aspen OneLiner module may require professional services provided separately by Aspen, Inc.

PSS CAPE
The PSS CAPE module moves settings to and from the PSS CAPE Neutral Interface software option (available from Siemens) and builds PSS CAPE settings forms in PowerBase.

Modules for Relay Settings File Data
Maintain accuracy and save time when working with data contained in these proprietary configuration software files. Fixed price per module.

- Beckwith Becoware Module (.ips/.tpt)
- GE Enervista Module (.urs)
- SEL 5010 Relay Assistant and 5030 AcSELerator Module (.mdb/.rdb)

PowerBase Web
Supplement concurrent user seats with PowerBase Web thin clients and have anytime, anywhere access whether working remotely or during times when the desktop version is offline or unavailable. The modern interface is mobile friendly, works with popular browsers, and offers thoughtful user preference selections throughout. PowerBase Web is an included feature of the PowerBase system that allows unlimited end users at no additional licensing cost.

PB Field Module
Drive universal testing and inspections from PowerBase with PB Field software on your field computers. PB Field combines manual data entry forms and the ability to launch any test system into powerful test execution and result management regardless of different procedures, personnel, and equipment in play. Import/export functions between PowerBase and PB Field convert nameplate, settings, work assignment, and results data between systems. Price scaled by quantity of user keys.

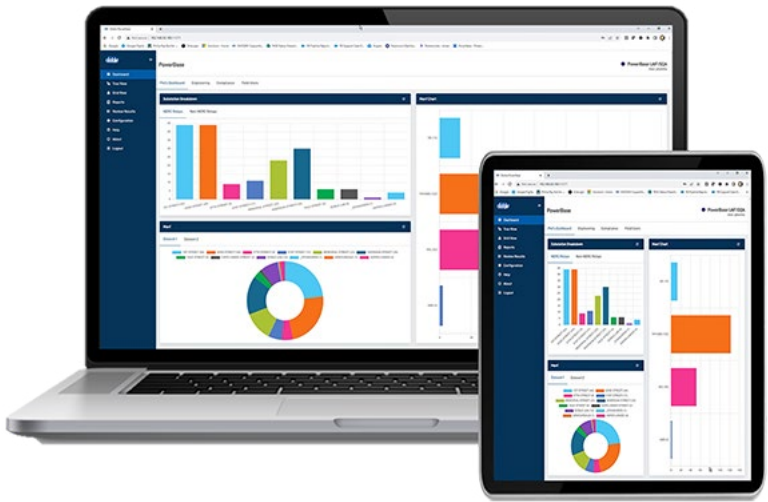
PowerBase API
The PowerBase API enables custom linking to PowerBase data from external software. Price scaled by device quantities.

SynchroGrid SARA API
This API exchanges settings data between PowerBase and SynchroGrid SARA software which correlates them to Aspen and PSS CAPE system models and performs verifications that are automated and provide evidence for compliance to **NERC PRC-027** R1 & R2 requirements. The SynchroGrid SARA API is fixed price. The available SARA software modules that work with the API are priced separately per user seat: Transmission Line Settings Development Module, Autotransformer Setting Development Module, Wide Area Coordination Module.

Cascade Interface
Use the Cascade Interface to access relay settings and test results in PowerBase from your Cascade APM/CMMS environment, and to maintain device data and work order consistency between systems. Price scaled by quantity of Cascade equipment locations.

SyncService™ External Synchronization
The SyncService program runs as a Windows service for 24-hour polling/synchronization of data between PowerBase and neutral database tables. Scripts can be written as necessary to push/pull data from the neutral tables and process as desired. The neutral tables may reside within the PowerBase database or can be created externally on a different platform (Oracle and SQL Server are supported). Price determined per project.

The SyncService external sync interface could be used for processing work orders generated from an external source (SAP, Maximo, PeopleSoft, or others) or data forwarding to a neutral database after work orders are processed in PowerBase.



IMPLEMENTATIONS

Doble transfers knowledge to customer project teams who in turn achieve milestones in-house. Web-based consulting and training workshops led by Doble prepare customer administrators and end users to complete the deliverables scoped in the Statement of Work (SOW) that defines their company’s PowerBase implementation project.

Doble has designed this approach from years of successful PowerBase implementations at companies large and small with diverse priorities and situations whether in electric power delivery or commercial and industrial operations.



Tier 1 Professional Services

- General training and consulting.
Examples include:
- Project goals and success definitions
 - System design and configuration
 - Standard data conversion and system population
 - Administrator and key user training (train-the-trainer approach)

Tier 2 Professional Services

- Technical consulting over complex project deliverables.
Examples include:
- Custom system integrations
 - Custom report development
 - Complex data conversion and system population

SYSTEM REQUIREMENTS

Database Server	
Supported Database Versions	Oracle 10g Oracle 11g Oracle 12c Oracle 19c Microsoft SQL Server 2008 R2 Microsoft SQL Server 2012 Microsoft SQL Server 2019 Microsoft SQL Server 2022
Supported Operating Systems	Please refer to your database platform documentation.
Hardware Requirements	Please refer to your database platform documentation. Average PowerBase databases vary from 5 to 10 GB on Oracle. Optimal memory, speed and space requirements can vary depending on number of concurrent users, frequency of data imports/exports, and volume of attached files.
Client Machine Hardware	
Physical Memory	256 MB
Disk space	300 MB
Operating System	Windows 11, Windows 10, Windows 8, Windows 7 (64 and 32 bit)
Client Machine Software	
Database Client w/ OLE DB Provider	Oracle 10g
(PowerBase Requires the 32 Bit Versions of the Client Software)	Oracle 10g Oracle 11g Oracle 12c Oracle 19c Microsoft SQL Server 2008 R2 Microsoft SQL Server 2012 Microsoft SQL Server 2019 Microsoft SQL Server 2022

CUSTOMER SUPPORT

Since the first release in 1996, the voice of the customer has led the direction developers have taken PowerBase. Today, PowerBase is a proven, feature-rich data management solution with high quality support thanks to unique requirements met one-customer-at-a-time.

PowerBase maintenance and support entitles customers to technical assistance via email, phone, or web meetings, and includes free attendance to monthly user group web sessions and the annual **Doble Protection Seminar**.



Doble PowerBase™ 7

DYNAMIC. CONFIGURABLE. POWERFUL.

A universal asset manager that connects data, workers, processes, and systems in your enterprise.

- Nameplate, Events, Investigations, Maintenance
- Settings and Configurations
- Test Procedures and Results
- Files and Documentation
- Work Assignments
- Compliance Evidence



CONTACT A DOBLE REPRESENTATIVE TO LEARN MORE
www.doble.com/powerbase