

# PowerDB™ Pro

## Acceptance & Maintenance Test Data Management Software

Job: DEMO-JOB, 8/12/2004 - Rev: PowerDB Admin - 12/7/2010 11:06:52 AM - PowerDB

File Edit View Tools Forms Help

Sample

(Press F1 for form operation instructions)

**TRANSFORMER TURNS RATIO TEST**

CUSTOMER: County Co-op ADDRESS: 2832 West Street, Midland TX USER: HomeTown Utility ADDRESS: 1122 State Road North, Peabody TX 77778 DATE: 8/12/2004 AMBIENT TEMPERATURE: 75% HUMIDITY: 75% PLANT LOCATION: SUBSTATION: AL123 POSITION: MAIN TRANSFORMER

TEST FREQUENCY: 60 HZ COMMENTS:

Print High Tap Voltage: 337.730 Last High Tap Voltage: 337.730 Number of Tests: 3

H	R	X	Volts	Test Voltage	Calculated Ratio	Actual Ratio	% error	Sec. mV	Phase (Degrees)
R1 (1)	375.730	80	8.678	0.669	0.669	0.0	0.0	0.0	
R2 (2)	375.730	80	8.678	0.669	0.669	0.0	0.0	0.0	
X1 (1)	375.730	80	8.678	0.669	0.669	0.0	0.0	0.0	

- Windows-based PC software available in four editions
- Interfaces to instruments via either Serial RS232, Ethernet, or USB flash drive (depending on instrument)
- Allows user to set up test routines in advance of testing
- Allows analysis, comparison and trending of data
- Merge test results between field and office databases
- Customize reports for professional data presentation

### DESCRIPTION

**PowerDB** is a powerful software package providing data management for each of your acceptance and maintenance testing jobs. Data can be imported from various sources, acquired directly from test instruments, or entered manually. Test results for all electrical apparatus are synchronized to your company's central database. Result and summary reports can be easily generated. PowerDB provides a simple and consistent user interface to many Megger instruments including the DELTA2000, DELTA3000 and DELTA4000 Power Factor Test Sets, 3-Phase TTR, earth testers and 5 and 10kV insulation testers.

### Full Database Capabilities

- Test results are brought together into a single database file for easy retrieval and review.
- An entire organization's results can be synchronized into a single database, scalable to Microsoft SQL Server.
- One-step report generation maximizes timeliness and facilitates NERC/FERC compliance audits.
- Easily trend results over time and compare to all other similar assets.
- Track maintenance intervals and generate work orders for scheduled retests.
- Merge results from multiple test instruments with data imports from other sources to facilitate queries and sorting.
- Maintain calibration data for test instruments.

### Test Forms

Designed from a ground up approach, PowerDB utilizes over 280 industry standard test forms that have been developed and used by industry specialists. Test data entry screens and printed forms are identical allowing intuitive operation. What you see on the screen is what is printed in the reports. Entire test documentation packages consisting of test reports, comment & deficiency summaries, table of contents and field service reports are created with a single step. Once created, reports can be delivered electronically via email, CD-ROM or web server using a standard PDF distiller. Test forms are designed for the majority of the electrical apparatus on the market today. PowerDB currently supports the following devices:

- |                      |                       |                      |
|----------------------|-----------------------|----------------------|
| ■ Batteries          | ■ Grid Tests          | ■ Relays             |
| ■ Bushings           | ■ Transformers        | ■ Rotating Machinery |
| ■ Cables             | ■ Infrared Inspection | ■ Switchboards       |
| ■ Circuit Breakers   | ■ Insulation Fluids   | ■ Transfer Switches  |
| ■ Coordination Data  | ■ Loadbreak Switches  | ■ Voltage Regulators |
| ■ Disconnects        | ■ Motor Control       | ■ Watthour Meters    |
| ■ Generators         | ■ Power Factor Tests  | ■ Transducers        |
| ■ Ground Fault Tests |                       |                      |
| ■ Ground Mat/        |                       |                      |

The software will perform extensive information processing including equation calculations, temperature correction and charting. Data trending for predictive failure analysis is accomplished by charting historical results, stored in PowerDB or imported from other party's proprietary database software, for any piece of equipment.

**INSULATION TESTS TWO-WINDING TRANSFORMERS**

CUSTOMER: County Co-op  
ADDRESS: 7833 West Road, Midland TX  
USER: Hometown Utility  
DATE: 4/30/2010  
SUBSTATION: A-123  
POSITION: MAIN TRANSFORMER

TEST FREQUENCY: ☐ 1000V ☐ 5000V ☐ 10000V

TRANSFORMER OVERALL TEST RESULTS

TEST NO.	TEST TYPE	TEST VALUE	TEST UNIT	TEST RESULT	TEST PASS
1	Chg + Chg	10.00	10.00	10.00	10.00
2	Chg + Chg	10.00	10.00	10.00	10.00

Figure 1: Data Entry & Automated Control of Megger DELTA Test Sets

PowerDB provides a powerful editor to create or customize forms. No database knowledge is required. Simply drag-and-drop tables, text boxes, images, charts, and more into a form. VBScript® can be used to define calculations, use lookup tables, and even interface with other applications. Sections common to multiple forms, such as logos, headers and footers, can be defined once and included in many forms. Also, one change updates all forms where it is used.

PowerDB further provides test instrument control as well as data acquisition and supports many popular Megger products including:

- BITE and TORQUE Battery Test Sets
- DELTA2000/3000/4000 Power Factor Test Sets
- TTR, MTO and MCT Transformer Test Sets
- DLRO Low Resistance Ohmmeters
- PULSAR, MPRT and SMRT Protective Relay Test Sets
- 5 and 10 kV Insulation Resistance Test Sets

### Test Documentation

Test Result documentation in PowerDB is accomplished in three ways:

- Manual data entry
- Importing data from other sources
- Data acquisition from test instruments

Manual data entry is done on screens identical in layout to the printed test forms (importing data can be done from files designed for PowerDB by a test equipment manufacturer or analysis laboratory). PowerDB test forms can also be designed to interact with other testing applications, such as Megger's Advanced Visual Test Software, AVTS. This interaction allows the population of test forms in PowerDB as tests are performed by the other application. Finally, data fields can also be populated by direct communication with popular Megger instruments as well as other brands of test equipment.

### Trending

PowerDB allows on-the-fly trending of any test point. See Figure 2. Historical values for the particular equipment are shown in blue with connecting lines. All values for similar equipment are shown in red. A 2-sigma statistical deviation band is shown as thin horizontal lines on the



Figure 2: Trending (On-the-fly)

chart. A table above the trend chart lists all of the data values, as well as the test date and equipment location. Any record in this list may be selected to open the associated data set with the detailed test results. This can be used to identify stray test values and review the test form to see what corrective actions were taken.

PowerDB can also import historical values for a piece of equipment from other third party proprietary database software allowing a seamless transition across software packages and/or test and measurement equipment.

### Report Generation

Report generation in PowerDB for a group of tested equipment is done in one simple step. Customizable sorting allows adjustment of the test form order. Forms can be suppressed and page numbering adjusted. Supporting reports, such as the comment and deficiency summaries, can also be selected for printing at the same time. All test forms and supporting reports are sent to the printer in a single print job. Figure 3 shows the results ordering and print dialog.

**PowerDB - Print Job Results (# DEMO-JOB)**

#	Weight	Suppr.	Page	Substation	Position	Form Family
1	100		1	A-123	MAIN TRANSFORMER	INFRARED
2	100		3	A-123	MAIN TRANSFORMER	INSULATION TESTS
3	100		7	A-123	MAIN TRANSFORMER	TRANSFORMERS
4	100		9	A-123	MAIN TRANSFORMER	TRANSFORMERS
5	100		10	A-123	MAIN TRANSFORMER	TRANSFORMERS
6	100		12	A-123	MAIN TRANSFORMER	TRANSFORMERS
7	100		13	A-123	RELAY PANEL	RELAYS
8	100		14	A-123	RELAY PANEL	RELAYS
9	100		15	B-456	PP-2 BREAKER	CIRCUIT BREAKER
10	100		16	B-456	PP-2 BREAKER	CIRCUIT BREAKER
11	100		17	B-456	PP-2 MOTOR	ROTATING MACHINERY
12	100		18	C-888	PP-22 FEEDER	CABLES
13	100		20	DEMO EAST SUB	BANK 1	GROUND MAT (EARTH) GROUNDING TES...
14	100		21	DEMO EAST SUB	BANK 1	GROUND MAT (EARTH) GROUNDING TES...
15	100		24	FINFEATHER	TECH AREA BLOWER	MOTOR CONTROL
16	100		27	MAYWOOD	CONTROL_SCADA BATTERY	BATTERIES

**Report Pieces**

☒ Table of Contents ☒ Data Sheets ☒ Comment Summary ☒ Deficiency Summary

☐ Comment/Deficiency (Combined Report) ☐ Job Type ☐ Job Productivity ☐ Cover Letter Form ☐ Cover Sheet

**Data Range**

☒ All Reports ☐ Print Selection (Indicate 0 in far left column)

**Additional Specifications**

☒ Number Pages ☐ Include Page Count ☐ Redistribute Weights

Export Comments & Deficiencies to Word Save & Print Save & Close Cancel

Figure 3: Results Ordering and Printing

**PowerDB** Deficiency Summary  
Job #DEMO-JOB

Customer: County Co-op  
User: Homebryn Utility

Plant: 1000 Industrial Blvd. Page: 4  
Substation: A-123 Date: 4/30/2010  
Position: MAIN TRANSFORMER  
Equipment: 27650 - PF TWO-WINDING TRANSFORMERS

DEFICIENCIES: Leaking oil on cooling fan wind

Plant: 1000 Industrial Blvd. Page: 8  
Substation: A-123 Date: 10/15/2009  
Position: MAIN TRANSFORMER  
Equipment: 27650 - CURRENT TRANSFORMER TEST

DEFICIENCIES: Oil level appears to be insufficient - needs replacement

Figure 4: Deficiency Summary Report

Comment and deficiency summary reports provide quick access to information collected across all equipment tested on a job. It also allows managers to review significant notes without looking at hundreds of pages of test sheets. An example of a deficiency summary is shown in Figure 4.

In addition to generating reports directly through PowerDB, a web server is available which allows users to view reports on demand from anywhere. Only information pertinent to the particular web-access user is presented online.

## COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM SUPPORT

Many electrical utilities have invested in CMMS systems, such as Digital Inspection's Cascade and MRO Software's MAXIMO. Due to test instrument specific software packages and hand-written test results, these firms often struggle to get test data into their systems. PowerDB allows you to link easily with the CMMS system so that the system can pre-populate the PowerDB equipment database, send PowerDB all work orders, add forms based on the job plans, and even return the measurement points, obtained from a multitude of test sets, back to the CMMS system.

Megger works directly with your CMMS personnel to integrate your data into your internal CMMS system.

## Other Available Editions

**PowerDB ONBOARD** only runs directly on specific Megger test instruments, and the forms are the instrument's user interface. Test results are transferred with a standard USB drive and can then be read into other PowerDB versions.

**PowerDB Lite** is free software allowing you to use a subset of PowerDB test forms with Megger instruments.

**PowerDB Advanced** allows control of the STVI form and provides for results to be saved to files for all test forms provided. Also allows data trending capabilities and supports non-Megger instruments.

COMPARISON GUIDE	PowerDB Edition			
	ONBOARD	LITE	ADVANCED	PRO
Runs in a hardened embedded environment	■			
Navigate with arrow and enter keys (no mouse)	■			
Manage data files with internal drive and USB drive	■			
Uses a subset of PowerDB Pro forms applicable to your instrument	■	■		
Files can import into PowerDB Pro	■	■	■	
Relay/Breaker/Recloser curve library	■	■	■	■
Completed forms are saved as files to your computer	■	■	■	■
Associates current test data with historical results	■	■	■	■
Control Megger instruments and download test data		■	■	■
Control non-Megger instruments			■	■
280+ industry standard test forms are provided			■	■
Advanced Relay Form			■	■
Trend historical results for asset for predictive failure analysis			■	■
Trend historical results for asset against other similar assets				■
Database functionality to manage data for all electrical equipment				■
One step report generation				■
Summarize noted comments and/or deficiencies				■
Trigger work order and maintenance schedules				■
Synchronize results from field to master database				■
Synchronize results with other testers				■
Form editor allows test sheets to be created or customized				■
Import data from other software packages				■
Maintain calibration data for test instruments				■



**FEATURES AND BENEFITS**■ **280+ Industry Standard Test Forms Are Provided**

Developed and used over 20 years by industry specialists.

■ **Data Trending for Predictive Failure Analysis**

Chart historical results for any piece of equipment.

■ **Built-in Information Processing**

Equation calculations, temperature correction factors, charting.

■ **Create New Forms or Customize Our Forms**

Powerful forms editor is integrated, no database knowledge needed.

■ **One-Step Generation of Entire Client Documentation Package**

Test forms, comment & deficiency summaries, table of contents, field service reports.

■ **Deliver Reports Electronically**

Via email, via cd, via web server, using standard PDF distiller.

■ **Work Order Generation**

Trigger work orders through test schedule reports.

■ **Job Tracking to Organize Contract Information**

Job test data, reports, quickly search and sort historical data.

■ **Distributed Data Management**

Create subsets of data for field testing, merge results with another database.

■ **Powerful Results Report Ordering**

Sort by standard fields, sort by any fields you define, easy manual page ordering.

■ **Test Data Entry Screens and Printed Forms Are Identical**

What you see on the screen is what is printed in the reports, streamlines data entry.

■ **Import Data From Other Sources**

Weidmann-ACTI, Doble, Oncor, TJH2b, SD Myers, Megger AVTS, ProActiv, Alber Cellcorder, Vanguard, and more.

■ **Test Instrument Control and Data Acquisition**

Megger SMRT, PULSAR, MPRT, DLRO200, DELTA2000, 3000 and 4000 units, 3 Phase TTR, 5 and 10kV Megger Insulation Test Sets, TORDEL, ODEK, SVERKER, OTS Series, MCT Series, BVM, MTO, Doble F2000, SMC Relay Test Set, Phenix, ETI-20, Fluke ScopeMeter, and more.

**Optional Add-ons****PowerDB Data Hosting Service**

Data Hosting is a service provided by PowerDB, giving subscribers a high level of data security and backup protection. Your master database with all test results and data is stored in a secure Tier 2 data center with a

redundant backup system located 200 miles away. Data Hosting benefits users by:

- Reducing computer hardware requirements for storing data
- Eliminating cost of SQL Server upgrade
- Minimizing internal IT support
- Data and test results protected from loss due to equipment failure or other disaster
- High speed reliable internet access for data synchronization

For a one-time setup fee and a monthly subscription, PowerDB will set up your SQL master database, provide a Synchronization Server for world-wide connectivity, and maintain all backups and data restoration files.

**Microsoft SQL Server Upgrade**

The SQL Server upgrade option functions identically to the Access version but supports larger databases and provides a substantial performance increase. PowerDB can seamlessly interact with Access field databases and SQL master databases.

**On Site Training**

A two day training course can be provided at your facility. Training includes data entry, trending, report generation, data synchronization and forms design.

**CMMS Integration**

For a flat fee, a PowerDB programmer will aid you in integrating a data exchange service between PowerDB and your CMMS system (or any other system). This service includes up to one week of on-site integration.

**RECOMMENDED PC SYSTEM REQUIREMENTS**

Windows® 7/XP/Vista. 2 GHz PC with 2GB RAM

**ORDERING INFORMATION**

Item (Qty)	Cat. No.
PowerDB Pro Software – 1st copy	DB1001
PowerDB Pro Software – 1st copy w/USB	DB1001S
PowerDB Pro Software – 2-5 each copy	DB1002
PowerDB Pro Software – 2-5 each copy w/USB	DB1002S
PowerDB Pro Software – 6+ each copy	DB1003
PowerDB Pro Software – 6+ each copy w/USB	DB1003S
PowerDB Pro SQL Server Version	DB1005
PowerDB Pro Custom Forms – per page	DB2001
PowerDB Pro CMMS Integration	DB2002
PowerDB Advanced Software	DB1011
PowerDB Advanced Software w/USB	DB1011S
PowerDB Software Training	DB3000
Database Hosting	DB2004

PowerDB is a trademark of PowerDB, Inc., a subsidiary of Megger

**UK**  
Archcliffe Road, Dover  
CT17 9EN England  
T (0) 1 304 502101  
F (0) 1 304 207342

**UNITED STATES**  
4271 Bronze Way  
Dallas, TX 75237-1019 USA  
T 1 800 723 2861  
T 1 214 333 3201  
F 1 214 331 7399

**OTHER TECHNICAL SALES OFFICES**  
Norristown USA, Toronto CANADA,  
Mumbai INDIA, Trappes FRANCE,  
Sydney AUSTRALIA,  
Madrid SPAIN and  
The Kingdom of BAHRAIN.

**ISO STATEMENT**  
Registered to ISO 9001:1994 Reg no. Q 09250  
Registered to ISO 14001 Reg no. EMS 61597  
**POWERDB\_DS\_en\_V11**  
**www.megger.com**  
Megger is a registered trademark