SKF Static Motor Analyzer Baker DX Series

Unsurpassed value with the industry's widest range of electric motor test capabilities

Introduction

Electric motors will fail, sooner or later. Nearly half of all industrial motor failures result from internal electrical shorts caused by degraded insulation. In order to maximize its uptime and service life, a motor's winding and groundwall insulation must be tested regularly to monitor the condition of the insulation.

The SKF Static Motor Analyzer - Baker DX provides the industry's most comprehensive set of tests to analyze a motor's entire insulation system. Portable, powerful, and configurable to meet specific needs of motor shops, maintenance organizations and motor OEMs, the Baker DX series offers the best value in motor test equipment available today. These analyzers deliver superior test capabilities in an easy-to-use instrument.

Early, reliable problem detection

Baker DX series analyzers detect every common electrical problem with industrial motors. In both random and form wound coils and windings, a Baker DX can identify incorrect numbers of turns, wire gauges or wire material. It also detects open, reversed or unbalanced coils.

These analyzers find early indications of insulation weakness and faults in windings, between phases, coil-to-coil and in groundwall insulation. They can identify if contamination by chemicals, moisture, dust, dirt, etc., is impacting insulation strength. Finally, they detect problems with motor connections such as feed cable insulation weaknesses, unbalances, opens or high resistances.

Value-packed versatility

The Baker DX series comes in wide range of configurations and can be ordered with just the test capabilities needed. Such capabilities include winding insulation tests, groundwall insulation tests, low-voltage winding construction tests, maximum test voltage, number of leads, and color or black-and-white touchscreens.

Additional options include a partial discharge surge test, low-impedance coil testing and power pack connections.

The Baker DX series is covered by an optional product service plan, which protects your investment with extended coverage for calibrations, warranty repairs and world-class support beyond the factory warranty period.

Ease of use

Each Baker DX has an intuitive touchscreen user interface that makes it easy to perform any test. The lightweight, portable design enables use in the field as well as the shop. Reports are easy to generate and print via the USB interface.

Results can also be exported via a USB flash drive to PCs with optional Surveyor DX report generation software. These analyzers have a unique coil-test mode that enables rapid testing of hundreds of coils. Up to 400 coil test results can be saved in a single record on the Baker DX.

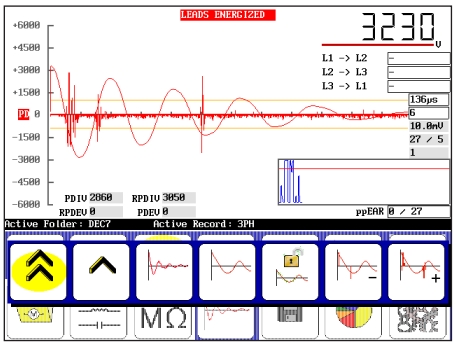
Comprehensive motor analysis with the Baker DX series

Failure modes	Winding resistance	IR test	DA/PI test	DC step voltage	DC HiPot	Surge	Surge PD	Induc-tance	Capa-citance	Impe-dance	RIC	Phase angle	D/Q
Weak insulation turn-turn						X	X						
Weak insulation phase-phase						X	X						X
Weak insulation coil-coil						X	X						X
Turn-turn shorts	X					X		X		X		X	
Phase-phase shorts	X					X		X		X		X	
Open coils	X					X		X		X		X	X
Reversed coils						X		X		X		X	
Unbalanced phases	X					X		X		X		X	
Weak ground wall insulation		X	X	X	X								
Dirty windings		X	X	X	X				X				
Moisture		X	X	X	X				X				
Feeder cables		X	X	X	X	X							
Motor lead line connections	X					X				X		X	X
Form coil defects						X	X	X		X		X	X
Rotor bar											X		

Find any motor problem

The Baker DX finds all common problems with an industrial motor's insulation or electrical systems. The industry-leading, standards-compliant range of tests it performs includes:

- Resistance
- Insulation resistance
- Dielectric absorption (DA)
- Polarization index (PI)
- Step voltage
- DC hipot
- Surge
- Surge PD (partial discharge)
- Inductance
- Capacitance
- Impedance
- Phase angle
- Rotor influence check (RIC)



Baker DX Surge PD results screen

Surge testing a stator is safe with the Baker DX

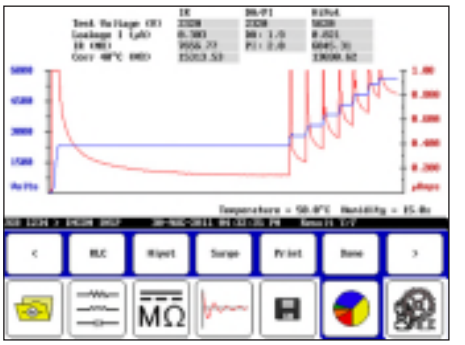
The Baker DX series' range of factory configurations enables a customer to specify the tests they want. These analyzers feature:

- 4 to 40 kV max test voltages to perform tests on a full spectrum of motor and coils (fractional horsepower motors on up to 40 megawatt generators)
- High- and low-voltage test capability in a single instrument to test motor circuit and insulation systems
- Intuitive graphical user interface with large, glove-friendly touch screen
- USB printer and flash drive interface for easy report printing and data transfer
- Coil mode enables rapid testing of coils and storage of all data

Fully document test results

Storage of test results data is easy with the Baker DX series' multi-test storage capabilities. The instrument has the ability to store multiple test results within a single folder. It automatically attaches a time and date stamp. The scroll function button makes it easy to quickly and easily review all data.

Reports, including motor nameplate data, can be printed on compatible printers via the USB port. Company logos can be imported and saved in the Baker DX software so every report has a logo of the user's choice at the top of the page. Test results are exportable to USB flash memory for data transfers, and report generation or data storage on a PC using the optional Surveyor DX software.



The Baker DX DC report screen

Partial discharge

Find winding insulation defects even earlier with the Baker DX Surge PD capability. This option captures inception, repetitive inception, repetitive extinction and extinction voltages of partial discharge (PD) in accordance with the IEC 61934 standard. PD waveforms and data are included in reports generated by the Baker DX and the Surveyor DX desktop PC software application.

DC motor testing

DC motor testing is quick and accurate using the Baker DX. The tester includes an armature test mode user interface and reporting function. Interpole and field coil test results are specially labeled. Bar-to-bar and span tests can be performed on a DC armature to thoroughly analyze for shorts, opens, unbalances, weak turn-to-turn insulation, unbalances in the coils, and damaged or misconnected equalizers. For the best armature diagnostics, the Baker DX can be used with the Baker ZTX low-impedance test accessory, which enables bar-to-bar testing on most DC armatures. The Baker ZTX lowers the maximum surge test voltage and increases the available surge current for testing very low impedance coils. The Baker DX-15A features integrated ZTX technology built into the instrument.

Performing armature tests is easy with the ATF5000 and Baker ZTX low-impedance component test accessories

World wide support

SKF Condition Monitoring provides world-class global technical support for its motor test and monitoring equipment. Whether it is for routine calibration, or repairs and upgrades for static or dynamic analyzers, our experienced technicians will return your equipment in top condition with fast turn-around and courteous service.

Contact SKF's motor test and monitoring product service at +1 800-523-7514 (in the U.S.), or +1 858-496-3627 from outside the U.S., or email our service department at service.cmcfc@skf.com.

Maximize value with training

Want to get the most out of your investment in your SKF analyzer? SKF Electric Motor Condition Monitoring provides training on static motor test and monitoring methods at its training center in Fort Collins, Colorado, USA, or at customer locations around the globe. Training courses include introductory and advanced seminars on static motor testing that allow you to get the most out of your SKF static motor analyzer.

For more information, or for reservations, send an email to salesEMCM@skf.com, or call +1 970-282-1200.

Sustained performance

Keep your Baker DX analyzer in top condition and extend its service life with SKF product support plans (PSPs). These plans assure worry-free use, calibration and maintenance of your SKF electric motor analyzer. They also provide real-time online and phone support. For more information about PSPs for electric motor test equipment, contact your local SKF sales representative.

For customers in the United States, call +1 970-282-1200; for global contacts, visit SKF's electric motor test and monitoring solutions website at www.skf.com/emcm.

Baker DX-12 with the Baker PP40 power pack

Physical specifications

- Internal memory: 2 GB
- Printer interface: USB/PCL 3 type printer
- External connectors: RLC leads, footswitch, remote E-stop safety lights, SKF power pack, ground
- User interface: 8-in color or black and white VGA touch screen

What's in the box

- Power cord
- USB flash drive with trial Surveyor DX desktop PC software
- User manual (on USB flash drive)
- Test leads

Optional accessories

- Surveyor DX report generation software (for use on personal computers)
- Baker PP24, PP30, PP40 and PP85 power packs
- Baker ZTX low-impedance test accessory
- ATF5000 bar-to-bar armature test fixture
- Foot switch
- Extension leads
- USB compatible printer
- Durable fabric backpack case
- Safety lights

SKF Static Motor Analyzer – Baker DX series specifications

Model-specific tests	4 and 6 kV models	6 kV HO model	12 kV model	12 kV HO model	Baker DX-15/15A 15 kV models
DC tests					
Voltage accuracy:	3%	3%	3%	3%	3%
Maximum resistance:[1]	> 25/50 GΩ	> 50 GΩ	> 75 GΩ	> 75 GΩ	> 100 GΩ
Current accuracy:	5%	5%	5%	5%	5%
Minimum resistance:	1 MΩ	1 MΩ	5 MΩ	5 MΩ	5 MΩ
Maximum output current:	5 mA	5 mA	5 mA	10 mA	8.3 mA
Over-current trip:	1,2 mA	1,2 mA	1,2 mA	1,2 mA	1,2 mA
Surge					
Capacitor size (nF):	40	100	40	100	100
Surge energy:	0,32 J / 0,72 J	1,8 J	2,88 J	7,2 J	11,25 J
Short circuit current:	280 A /340 A	450 A	600 A	800 A	700 A / 2000 A
65 µH load voltage:	4 kV / 6 kV	6 kV	12 kV	12 kV	15 kV / 1,5 kV
Surge voltage accuracy:[2]	12%	12%	12%	12%	12%

Tests (all models)

Surge PD

Inception and extinction voltages (PDIV, PDEV):	Measured per IEC 61934
Repetitive inception and extinction voltages (RIPDV, REPDV):	Measured per IEC 61934
Programmable PD threshold range:	1,0 mV – 999 mV
PD time resolution (per pixel):	10 nS – 50 µS

Resistance

Source voltage, maximum:	3,9 V
Source current:	600 mA
100 to 10 000 Ω:	3% accuracy
0,2 to 100 Ω:	2% accuracy
0,002 to 0,2 Ω:	4%, ±1 mΩ

Capacitance

Source voltage, maximum:	3,9 V
Source current, maximum:	600 mA
Source frequency:	4 000 Hz
0,04 to 2,6 µF at 4 000 Hz:	3% accuracy
2,6 to 26 µF at 4 000 Hz:	5% accuracy

Inductance

Source voltage, maximum:	3,9 V
Source current, maximum:	600 mA
Source frequency:	50 to 4 000 Hz
1 000 to 5 000 mH at 120 Hz:	15% accuracy
100 to 1 000 mH at 120 Hz:	8% accuracy
0,05 to 100 mH at 1 kHz:	5% accuracy

Impedance

Source voltage, maximum:	3,9 V
Source current, maximum:	600 mA
Source frequency:	50 to 4 000 Hz
0,15 to 10 000 Ω at 60 Hz:	3% accuracy
0,01 to 0,15 Ω at 60 Hz:	3% accuracy
Phase accuracy at 60 Hz:	< 2 degrees

Physical specifications	4/6/12 kV, 6/12 kV HO models	DX-15 model	DX-15A model
Dimensions:	42 cm x 20 cm x 45 cm *(16,5 in x 8 in x 17,7 in)*	47 cm x 20 cm x 56 cm *(18,5 in x 8 in x 22 in)*	47 cm x 20 cm x 56 cm *(18,5 in x 8 in x 22 in)*
Weight:	15,4 kg *(34 lbs)*	22,7 kg *(50 lbs)*	25 kg *(55 lbs)*

Compliant with IEEE 43, 95, 118, 522; also with IEC 34, 60034, 61934 (as applicable).

1) Test current must be greater than 100 nA, and test voltage must be less than 75 percent of maximum voltage

2) Surge voltage accuracy meets/based on Z540 Standard four times measurement uncertainty (calibrated within three percent)

SKF USA, Inc.
Electric Motor Condition Monitoring
4812 McMurry Avenue, Fort Collins, CO 80525 USA
T: +1 970-282-1200 – +1 800-752-8272 F: +1 970-282-1010

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