

AWA: Advanced Winding Analyzer

Integrated Testing Capabilities

The AWA integrates a wide range of electrical tests which meet high quality standards. This instrument supports all major electric tests in a single field portable unit including surge, polarization index, DC HiPot, megohm and winding resistance. This instrument complies to IEEE recommendations.

Continuous Innovation

With the AWA, Baker Instrument Company, an SKF Group Company, continues to pioneer new breakthroughs that demonstrate our ongoing commitment to quality, reliability, and competitive advantage. The AWA is the result of over 40 years of designing and building winding

test instruments. It is the only tester available today that provides automatic pre-programmed tests and manual control tests in the same instrument.

The Power of Automation

The AWA has been designed around PC104 technology that allows the instrument to work efficiently without fans to cool the processor. This computer performs all requested tests, stores the results, and continuously monitors voltage levels while testing. If the computer detects a weakness in the insulation, the test is interrupted, the operator is alerted, and all test parameters at the time of the interruption are reported. The AWA performs this operation in microseconds with a higher degree of precision and safety than can be achieved through manual testing.

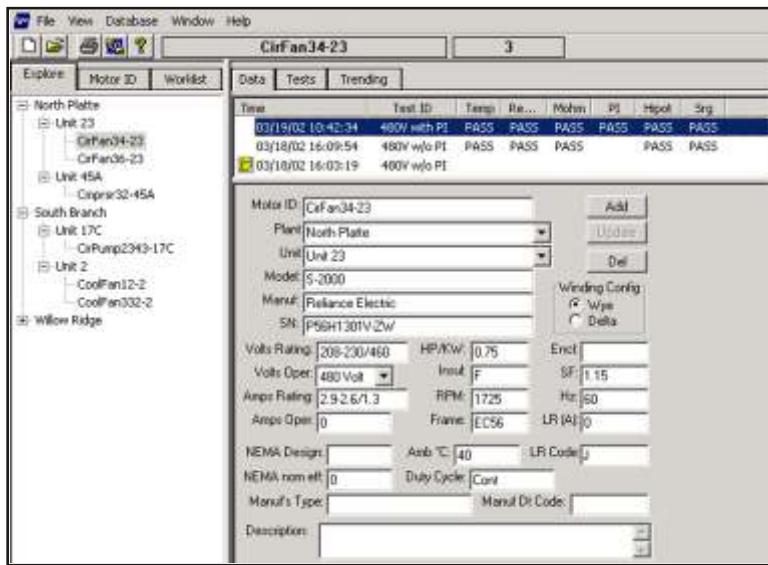


Automatic or Manual

The AWA gives you the option of automatic or manual testing. In manual mode, the system allows operator control over tests, voltage levels and data collection.

Pre-Programmed Operation

The AWA is the only high-voltage tester that can be pre-programmed in the office and implemented in the field. Pre-build work orders defining which motors to test, the order of execution, and parameters for each test including voltages, duration and pass-fail limits. Operators can then conduct tests in the field simply by connecting to the pre pro-programmed motor, ensuring a higher degree of reliability in testing procedures. This allows repeatable maintenance testing, which is vital to a successful PM program.



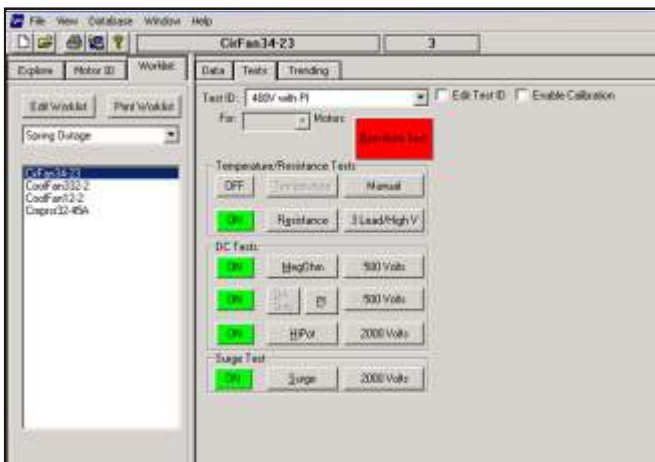
Advanced Data Collection

When testing is complete, results can be saved as part of each motor's permanent test record. This kind of documentation is critical to a successful reliability program. With the AWA, test results are collected, stored, recalled and managed using standard MS Access relational database format. Reports can be generated for trending, insurance records, or

Time	Test ID	Temp	Re...	Motor	PI	Hpot	Sig
03/19/02 10:42:34	480V with PI	PASS	PASS	PASS	PASS	PASS	PASS
03/18/02 16:09:54	480V w/o PI	PASS	PASS	PASS	PASS	PASS	PASS
03/18/02 16:03:19	480V w/o PI						

Test Data	Test Date	Test Time	Temp Status	Winding Test	Insul Status	Ball L1	Ball L2	Ball L3	L-L 1-2	L-L 2-3	L-L 3-1	Coil 1	Coil 2	Coil 3	Delta R. Ho...	MegOhm St...	Motor-Volts...	Motor-Curr...	Motor-Resist	Motor-AC I...	PI Status	PI-Volt (V)	DA Ratio	PI Ratio	Hpot Status
Test Date	03/19/02	13:53:02	480V w/o PI	No Test	No Test	2.729	2.716	2.708				1.827	1.810	1.800	0.800	PASS	510	0.4	1275		No Test	No Test	No Test		No Test
Test Time	03/19/02	13:41:07	480V w/o PI	No Test	No Test																				
Temp Status	No Test	No Test	No Test																						
Winding Test	No Test	No Test																							
Insul Status	No Test	No Test																							
Ball L1																									
Ball L2																									
Ball L3																									
L-L 1-2																									
L-L 2-3																									
L-L 3-1																									
Coil 1																									
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Coil 3																									
Delta R. Ho...																									
MegOhm St...	No Test	No Test																							
Motor-Volts...																									
Motor-Curr...																									
Motor-Resist																									
Motor-AC I...																									
PI Status	No Test	No Test																							
PI-Volt (V)																									
DA Ratio																									
PI Ratio																									
Hpot Status	No Test	No Test																							

guarantee and warranty requirements for customers through the AWA software or MS Word file formats. These database files make it easy to transfer information to maintenance management software or other database tools and Access is ODBC compliant.



Turn-to-Turn Testing

The AWA incorporates the most advanced inter-turn capabilities ever offered in a field portable instrument. Computer control and waveform monitoring are dramatic enhancements of the manually controlled instruments previously available.

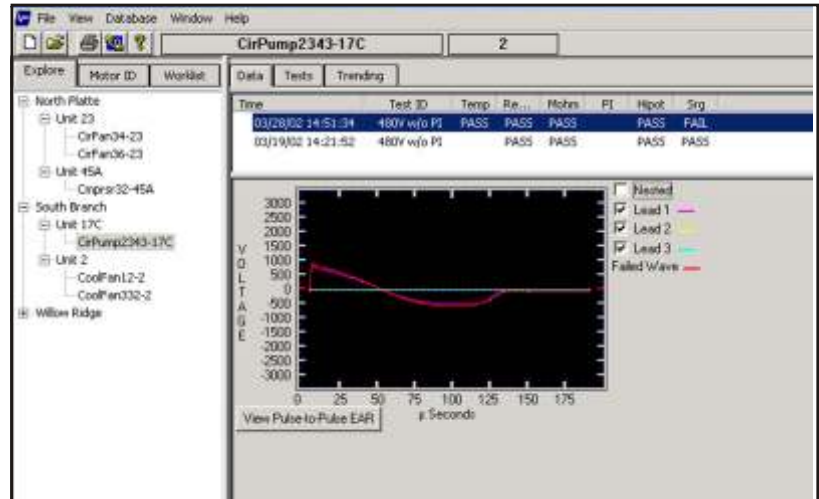
As with the DC HiPot test, the AWA begins surge generation at low voltage. Each pulse applied to the winding is digitized and the resultant waveform is compared to previous waveforms to detect any sign of turn-to-turn shorting. Comparison is done by the patented Pulse to Pulse Error Area Ratio (PP-EAR) Technique. This method is sensitive to less than a 1% variance between coils. In addition, shorts among windings in parallel can be located, something that was never possible before by visually comparing waveforms. With the AWA, fewer pulses are applied to the winding, reducing the power required to perform the surge test. Since each and every pulse is analyzed, it becomes the new reference waveform as test voltage is increased up to the specific withstand level. If no turn-to-turn shorting is detected, the final pulse waveform is stored as the reference waveform for all subsequent future tests. You will know exactly what the waveform should look like next year or five years from now. As with previous version of the AWA, this instrument is IEEE 522 compliant.

Features

- AWA IV - HO - High Output Unit for heavy duty testing (low turn-count windings) call for more specifics.
- Universal Power Supply: 85VAC-265VAC, no cooling fan needed.
- Case Outer Dimensions: (AWA IV) 16" x 8" x 21" , 42 lbs, (AWA 2.2) 15" x 8" x 8" , 18 lbs.
- Surge test all units IEEE522 compliant.
- Meg-ohm, DA, PI, Stepped DC, and DC HiPot tests to AWAIV-12000V, AWA 2.2 - 2150V, with 4 ranges of measurement 100/10/1/.1 microamp, 1000/100/10/1

microamp overcurrent trip levels. Maximum reading of Meg-ohm = 50,000 Meg-ohms. DC power supply is regulated to .01%. (IEEE compliant).

- Kelvin resistance bridge-relay matrix, with 9 amps (AWA IV), 5 amps (AWA 2.2) maximum applied DC current source. Kelvin

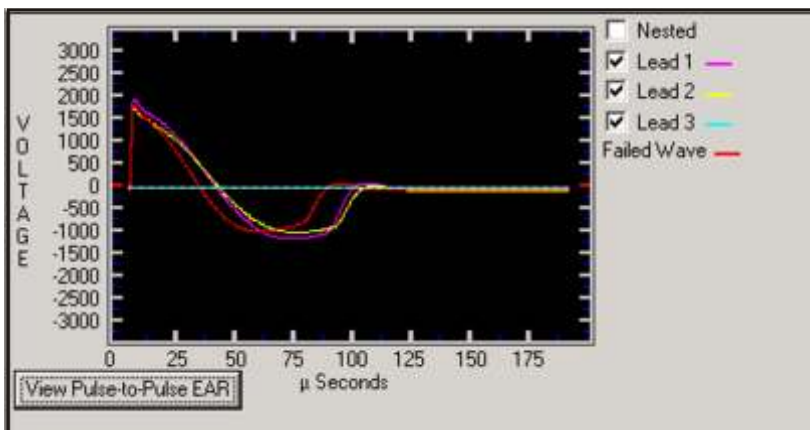


relay-matrix is comprised of a separate, removable set of (3-AWAIV, 2-AWA2.2)kelvin clips. Unit high voltage leads retains the ability to perform test sequence; however, for low resistances, the Kelvin test leads are used. (IEEE compliant).

- MS Windows operating system with Pentium class computer
- AWA software generates MS Word Reports.
- Removable keyboard and mouse (not required for testing).
- ELO touch screen for ease of operation during field testing.
- USB for data transfer.
- RJ45 ethernet access plug for Cat5 ethernet connection.
- Operates with optional 30kV Power Pack - AWA IV only.
- Shock mounted internal chassis, with Hard Drive shock mounting.
- External floppy disk drive and CDROM drive, both with USB interface.
- PC104 system board with 100% optically isolated signal/readout and controls for high voltage circuitry.
- High resolution color LCD with high color display capacity.
- Improved Testing Capabilities:
 - Continuous ramped HiPot (IEEE 95)
 - Programmable Stepped HiPot (IEEE 95)
 - Enhanced reference Surge waveform
 - Improved PI/DA test (IEEE 43)
 - Improved DC HiPot (IEEE 95)
 - Improved Resistance test (IEEE 118)
 - More sensitive Surge test (IEEE 522)

Specifications

Surge Test Output Voltage Max Output Current Pulse Energy Storage Capacitance Sweep Range Volts Division Repetition Rate Voltage Measurement & Accuracy	AWAIV-12 0-12000 V 400 amps 2.88 joules .04 μ F 2.5 - 2000 μ s/Div 500/1000/2000/3000 5Hz \pm 12%	AWAIV-12HO 0-12000 V 400+ amps 7.2 joules .1 μ F 2.5-200 μ s/Div 500/1000/2000/3000 5Hz \pm 12%	AWAIV-6 0-6000V 350 amps 0.72 joules .04 μ F 2.5-200 μ s/Div 500/1000/2000/3000 5Hz \pm 12%	AWAIV-4 0-4250V 350 amps .9 joules .1 μ F 2.5-200 μ s/Div 500/1000/2000/3000 5Hz \pm 12%	AWAIV-2 0-2160 Vs 200 amps .2 joules .1 μ F 2.5-200 μ s/Div 500/1000/2000/3000 5Hz \pm 12%
DC HiPot Test Output Voltage Max Output Current Current Resolution Over-Current Trip Settings Full Scale Voltage & Current Measurement & Accuracy Meg-ohm Accuracy Max Meg-ohm Reading	0-12000 V 1000 μ Amps .1, 1, 10, 100 μ A/Div 1, 10, 100, 1000 μ A \pm 5% \pm 10% 50000M	0-12000 V 1000 μ Amps .1, 10, 100, 1000 μ A/Div 1, 10, 100, 1000 μ A \pm 5% \pm 10% 50000M	0-6000 V 1000 μ Amps .1, 10, 100, 1000 μ A/Div 1, 10, 100, 1000 μ A \pm 5% \pm 10% 50000M	0-4250 V 1000 μ Amps .1, 10, 100, 1000 μ A 1, 10, 100, 1000 μ A \pm 5% \pm 10% 50000M	0-2160 V 1000 μ Amps .1, 10, 100, 1000 μ A 1, 10, 100, 1000 μ A \pm 5% \pm 10% 50000M
Resistance Measurements	.001 - 50	.001 - 50	.001 - 50	.001 - 100	.001 - 100
Physical Characteristics Weight Dimensions (WxHxD) Power Requirements	42 lbs 16" x 8" x 21" 85-264 VAC 50/60 HZ @ 2.5 amps	50 lbs 16" x 8" x 21" 85-264 VAC 50/60 HZ @2.5 amps	42 lbs 16" x 8" x 21" 85-264 VAC 50/60 HZ @ 2.5 amps	18 lbs 15" x 8" x 8" 85-264 VAC 50/60 Hz @ 2.5 amps	18 lbs 15" x 8" x 8" 85-264 VAC 50/60 Hz @ 2.5 amps



Example Fail Surge Waveform



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