



ATi

PRECISION TRANSFORMER AND PASSIVE COMPONENT TESTER



Voltech™

Industry Leader in Wound Component Testing

WHY PURCHASE THE AT*i*

LCR meters, inductance analyzers and component analyzers are used in most companies that manufacture wire wound and passive components.

For many years, these companies have had to build their own test solution equipment or work with systems integrators to overcome the difficulties frequently encountered in connecting the parts under test and analyzing test measurements.

With its built-in, 20-node Kelvin matrix, wide variety of available test parameters, LCR meter mode, test results software, user-friendly handler, OLE and barcode interfaces and its extensive frequency and measurement range, the AT*i* replaces the many different instruments previously required to test low-voltage wire wound and passive components. The AT*i* is your one test solution for low-voltage wire wound and passive components.

Test Results

The AT*i* has been designed with two RS232 ports, and it includes two Windows-based software packages—editor and server software.

AT*i* test results are sent to the server software and stored in a text-based, comma-separated, variable file format (CSV). This file can then be imported into a batch or SQC program, or any word processor or spreadsheet application.

Real-time statistical process analysis with OLE (Object Link Embedding) is a standard feature of the AT*i*. OLE2, the latest version of this transfer standard, is also fully supported by the AT*i* server software.

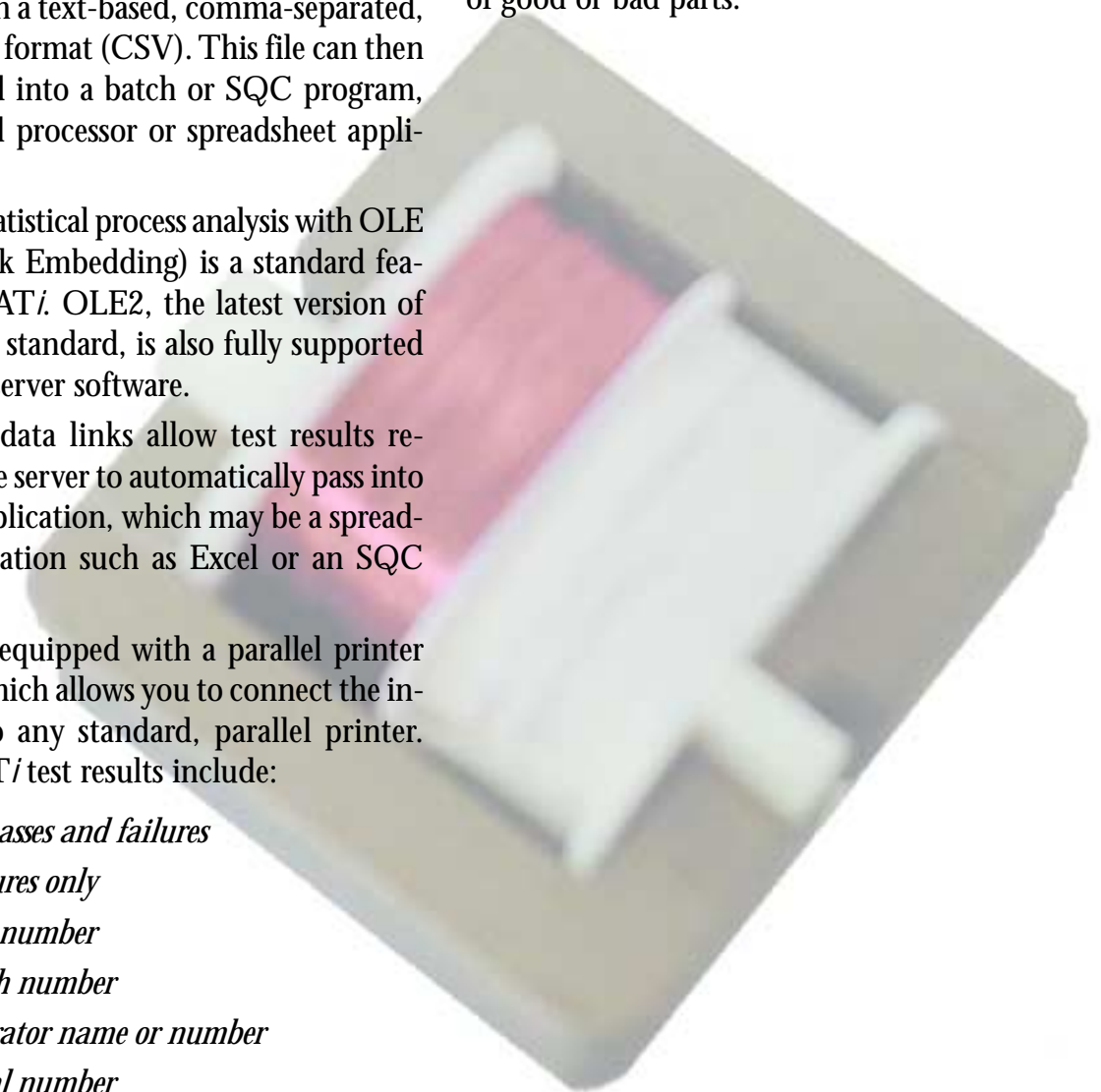
Embedded data links allow test results received by the server to automatically pass into a second application, which may be a spreadsheet application such as Excel or an SQC package.

The AT*i* is equipped with a parallel printer interface, which allows you to connect the instrument to any standard, parallel printer. Printable AT*i* test results include:

- *All passes and failures*
- *Failures only*
- *Part number*
- *Batch number*
- *Operator name or number*
- *Serial number*

Ease of Use

All it takes, is a simple touch of the AT*i*'s capacitive disks or footswitch, and an unskilled operator can 100% functionally test wire wound or passive components in seconds. A pass or fail light and an audible signal quickly notify the operator of good or bad parts.





AT3600



ATi

DESIGNED FOR COMPATIBILITY

The AT*i* is part of Voltech's AT family of automatic testers. These testers share the same fixture construction, PC editor and server software as well as accessories. The AT*i* and the AT3600, for example, can share the same server application, which allows the user of these two instruments to recall test programs and record test results on both automatic testers simultaneously.

AC Hipot	✓ (up to 5.5kV)	X
DC Hipot	✓ (up to 7kV)	X
Magnetizing Current	✓ (up to 270V)	X
Open Circuit Voltage	✓ (up to 270V)	X
Stress Wattage (Induced Voltage)	✓ (up to 270V)	X
Wattage (Core Loss)	✓ (up to 270V)	X
Leakage Current	✓ (up to 270V)	X
Surge Test	✓ (up to 5kV)	X
Continuity	✓	✓
DC Resistance	✓	✓
AC Resistance—Series Circuit	✓	✓
AC Resistance—Parallel Circuit	✓	✓
Inductance—Series Circuit	✓	✓
Inductance—Parallel Circuit	✓	✓
Inductance—Series Circuit with Bias	✓	✓
Inductance—Parallel Circuit with Bias	✓	✓
Interwinding Capacitance	✓	✓
Quality Factor	✓	✓
Dissipation Factor	✓	✓
Magnitude of Complex Impedance Z	✓	✓
Complex Impedance with Bias	✓	✓
Angle of Complex Impedance	✓	✓
Turns Ratio and Phase (+ or -) by Voltage	✓	✓
Insulation Resistance	✓ (up to 7000V)	✓ (up to 500V)
Leakage Inductance	✓	✓
Leakage Inductance with User Offset	✓	✓
Inductance Match	✓	✓
Capacitance Match	✓	✓
Turns Ratio by Inductance	✓	✓
Interwinding Phase	✓	✓
General Longitudinal Balance	✓	✓
Longitudinal Balance	✓	✓
Insertion Loss	✓	✓
Return Loss	✓	✓
Low Voltage Open Circuit	✓	✓
Trim Adjustable Part	✓	✓
User Port Relay Control	✓	✓

Note: X means AT3600 option only



The AT*i* shares test fixtures, PC test editor and results server software, interface ports and accessories with the AT3600.

LABORATORY-GRADE LCR METER

As well as executing complex test sequences at high speed on multiple windings, the AT/ can make simple LCR meter measurements on a component or single winding directly from the front panel. It takes only a few intuitive button presses, and the AT/ is ready to accurately test components in laboratory-grade LCR meter mode without being connected to a PC server or using the program editor.

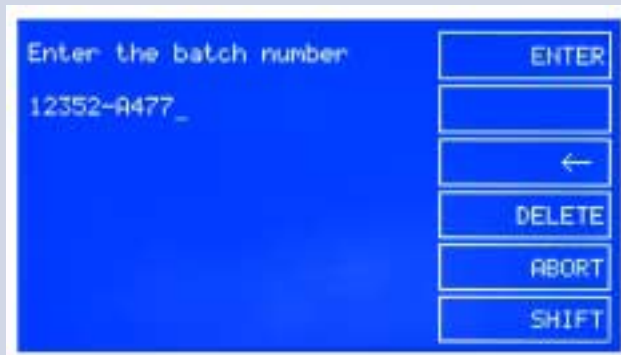
Press the LCR soft key, and the AT/ immediately begins to make measurements. In the menu display, the top soft key allows the AT/ operator to move through the primary measuring options L, C and Z—inductance, capacitance and AC impedance. The options for soft key number 2 change according to the measuring option chosen on the top level of the menu display. In the examples on the right, the selected measuring combinations are L and Q, inductance and quality factor, C and D, interwinding capacitance and dissipation factor, and Z and Rs-X, magnitude of complex impedance and resistance and reactance.

Available test combinations are:

Soft key 1	Soft key 2
L	Q, D, Rs
C	D, Q, Rs
Z	θ , Rs-X, Q, D

The active measurement combination is shown in reverse video, and the test results are displayed with five significant figures, using standard engineering notation and symbols for the units of measurement.





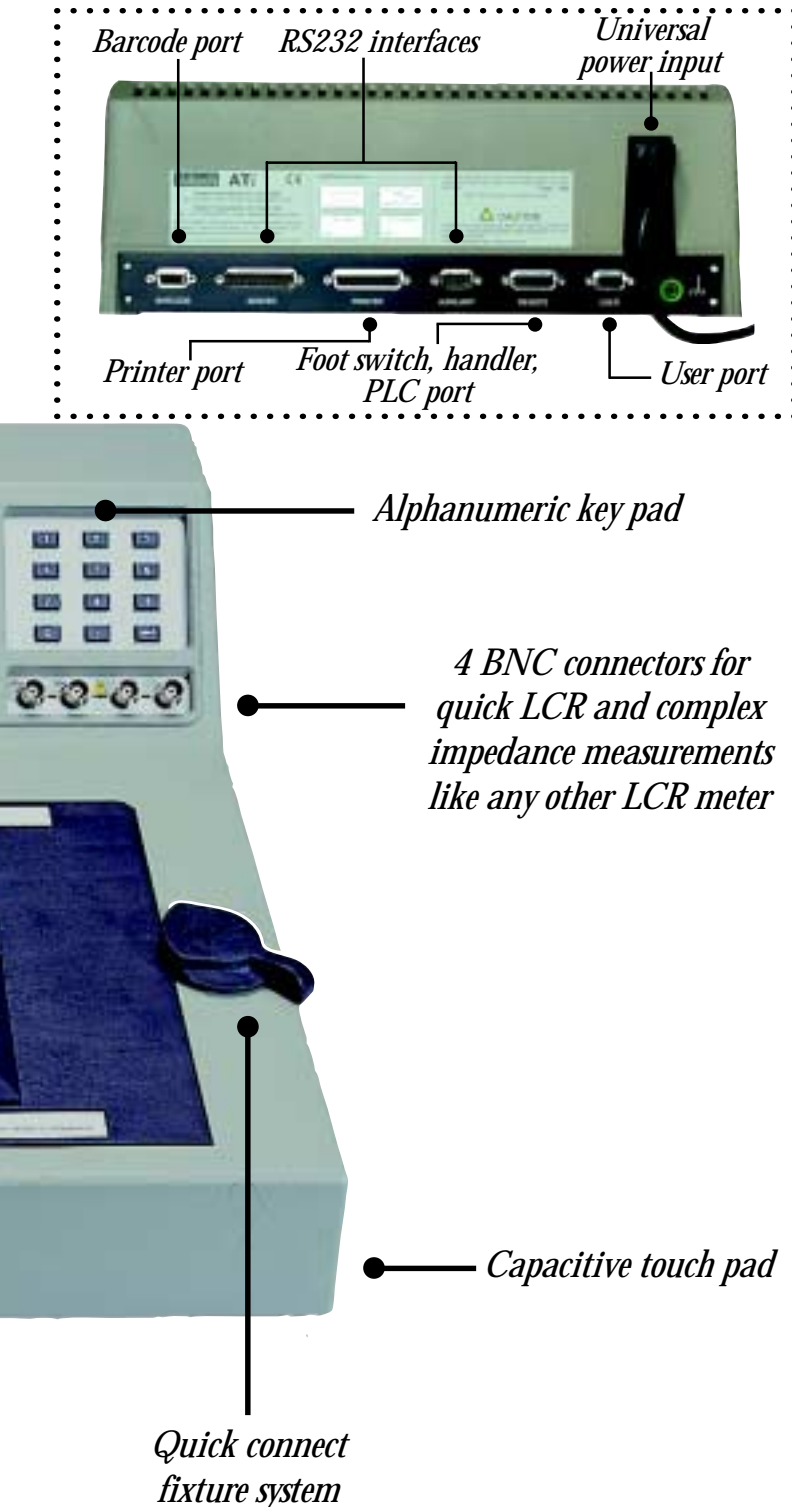
In high-speed production mode, the AT/ operator first chooses from a variety of available test programs. The test programs can be created easily using the AT editor software and stored inside the AT/ or archived on the PC server that is connected to the instrument.

In the example on the left, the operator chooses from a list of user-defined program names including capacitor, filter, inductor, telecom or transformer. Using the list option, as in this example, is the most convenient way to enter a program name. Alternatively, the operator may enter program names manually, by using the AT/'s alphanumeric keypad, or by swiping a barcode. Next, the operator may choose to enter additional data, including batch number, serial number or operator name. These data will be included with the test results that are sent to the PC server, and they may be included with printed production reports, etc. Finally, the AT/ operator executes the entire test sequence by simply pressing the RUN soft key, touching one of the AT/'s capacitive disks or pressing the footswitch. When the component has been tested, the AT/'s front panel clearly indicates PASS or FAIL of the tested part.

The AT/ is very easy to use, but it is a complex instrument that can be installed and operated in many different ways. In addition to quickly and accurately executing LCR-type tests without additional programming, the AT/ can be fully functional in a high-speed production environment, where larger quantities of multiple windings have to be tested quickly and reliably.



KEY FEATURES AND BENEFITS



- ✓ 20Hz to 3MHz frequency range
- ✓ 0.05% basic measurement accuracy
- ✓ Unlimited sequential pass/fail testing
- ✓ 4-BNC connectors for quick front-panel measurements
- ✓ Built-in 20-node Kelvin matrix for high-speed production testing
- ✓ Programmable voltage or current drive
- ✓ Large, fluorescent back-lit graphical display
- ✓ Software easily upgradeable via direct RS232 download
- ✓ Built-in capacitive touch pads
- ✓ Wide measurement range (e.g. $10\mu\Omega$ – $10M\Omega$ DC resistance)
- ✓ Lead and fixture compensation
- ✓ Over 100 programs stored internally
- ✓ Three programmable integration settings
- ✓ Unique, low-cost fixture platform
- ✓ Fastest production tester in the world
- ✓ OLE drivers

AT/i STANDARD PACKAGE

If you are looking to purchase an impedance analyzer, inductance analyzer, precision LCR meter or a component analyzer, then you should seriously consider the AT*i*, because it does it all and more—for less.

The AT*i* is your ideal test solution for wirewound and passive components. It offers a large selection of complex measurement parameters, a built-in matrix for testing multiple components or devices with multiple leads at one time, has a test frequency between 20Hz and 3MHz, and it features one of the industry's most user-friendly platforms.

Included with the AT*i* Standard Package are currently 16 test parameters, one blank fixture plate, RS232 cables, a power cord, Voltech's Windows-based PC editor and server software and a user manual. Optional tests can be purchased at any time and easily field-installed.


Tests

C	Interwinding Capacitance
CTY	Continuity
R	DC Resistance
RLP	AC Resistance—Parallel Circuit
RLS	AC Resistance—Series Circuit
Z	Magnitude of Complex Impedance
LP	Inductance—Parallel Circuit
LS	Inductance—Series Circuit
LPB	Inductance w/Bias—Parallel Circuit
LSB	Inductance w/Bias—Series Circuit
QL	Quality Factor
ANGL	Angle of Complex Impedance
TR	Turns Ratio and Phase by Voltage
IR	Insulation Resistance (up to 500V)
ZB	Complex Impedance with Bias
D	Dissipation Factor

C2	Capacitance Match
GBAL	General Longitudinal Balance
L2	Inductance Match
ILOS	Insertion Loss
LL	Leakage Inductance
LLO	Leakage Inductance w/User Offset
LBAL	Longitudinal Balance
OUT	User Port Relay Control
PHAS	Interwinding Phase
RLOS	Return Loss
TRL	Turns Ration by Inductance
TRIM	Trim Adjustable Part
LVOC	Low Voltage Open Circuit

And more to come... (including THD, resonant frequency, logical branding, resistance match, etc.)

29 Standard Tests



C	Interwinding Capacitance
C2	Capacitance Match
CTY	Continuity
R	DC Resistance
RLP	AC Resistance—Parallel Circuit
RLS	AC Resistance—Series Circuit
GBAL	General Longitudinal Balance
Z	Magnitude of Complex Impedance
LP	Inductance—Parallel Circuit
LS	Inductance—Series Circuit
LPB	Inductance w/Bias—Parallel Circuit
L2	Inductance Match
ILOS	Insertion Loss
LL	Leakage Inductance
LLO	Leakage Inductance w/User Offset
LBAL	Longitudinal Balance
OUT	User Port Relay Control
LSB	Inductance w/Bias—Series Circuit
QL	Quality Factor
ANGL	Angle of Complex Impedance
PHAS	Interwinding Phase
RLOS	Return Loss
TR	Turns Ratio and Phase by Voltage
TRL	Turns Ration by Inductance
TRIM	Trim Adjustable Part
IR	Insulation Resistance (up to 500V)
ZB	Complex Impedance with Bias
D	Dissipation Factor
LVOC	Low Voltage Open Circuit

And more to come...

The AT/i Gold Package includes every test parameter currently available for the instrument, five blank fixture plates, one universal plate, RS232 cables, a power cord, a test connection lead set, Voltech's Windows-based PC editor and server software and a user manual.

Choosing the AT/i Gold Package can save you thousands of dollars compared to buying the AT/i Standard Package and adding additional test parameters and accessories individually.

To date, no product in the industry can match the unparalleled speed, parameter selection, accuracy, upgradeability and price of the Gold Package AT/i.

PACKAGE SPECIFICATIONS

Tests	Gold AT/i	Standard AT/i	LCR Meter Mode	Measurement Range	Test Signal	Test Frequency	Basic Accuracy
Interwinding Capacitance	✓	✓		100pF – 1mF	1mV – 5V	20Hz – 3MHz	0.1%
Continuity	✓	✓		10kΩ – 10MΩ	n/a	n/a	n/a
DC Resistance	✓	✓	✓	10μΩ – 10MΩ	n/a	n/a	0.1%
AC Resistance—Parallel Circuit	✓	✓	✓	10μΩ – 10MΩ	20Hz – 3MHz	20Hz – 3MHz	0.05%
AC Resistance—Series Circuit	✓	✓	✓	10μΩ – 10MΩ	20Hz – 3MHz	20Hz – 3MHz	0.05%
Magnitude of Complex Impedance	✓	✓	✓	1mΩ – 1MΩ	20Hz – 3MHz	20Hz – 3MHz	0.2%
Inductance—Parallel Circuit	✓	✓	✓	1nH – 1MH	1mV – 5V	20Hz – 3MHz	0.05%
Inductance—Series Circuit	✓	✓	✓	1nH – 1MH	1mV – 5V	20Hz – 3MHz	0.05%
Inductance with Bias—Parallel Circuit	✓	✓		1nH – 1MH	1mV – 5V	20Hz – 3MHz	0.05%
Inductance with Bias—Series Circuit	✓	✓		1nH – 1MH	1mV – 5V	20Hz – 3MHz	0.05%
Quality Factor	✓	✓	✓	0.001 – 1000	1mV – 5V	20Hz – 3MHz	0.5%
Angle of Complex Impedance	✓	✓	✓	-360° – +360°	1mV – 5V	20Hz – 3MHz	0.05°
Turns Ratio and Phase by Voltage	✓	✓		1:100k – 100k:1	1mV – 5V	20Hz – 3MHz	0.1%
Insulation Resistance	✓	✓	✓	1MΩ – 10GΩ	100V – 500V	n/a	1%
Complex Impedance with Bias	✓	✓		1mΩ – 1MΩ	1mV – 5V	20Hz – 3MHz	0.2%
Dissipation Factor	✓	✓	✓	0.001 – 1000	1mV – 5V	20Hz – 3MHz	0.5%
Capacitance Match	✓	<i>optional</i>		100pF – 1mF	1mV – 5V	20Hz – 3MHz	0.2%
General Longitudinal Balance	✓	<i>optional</i>		0dB – 100dB	1mV – 5V	20Hz – 3MHz	0.5db
Inductance Match	✓	<i>optional</i>		1:10000 – 10000:1	1mV – 5V	20Hz – 3MHz	0.1%
Insertion Loss	✓	<i>optional</i>		-100dB – 100dB	1mV – 5V	20Hz – 3MHz	0.5db
Leakage Inductance	✓	<i>optional</i>		1nH – 1kH	20μA – 100mA	20Hz – 3MHz	0.1%
Leakage Inductance with User Offset	✓	<i>optional</i>		1nH – 1kH	20μA – 100mA	20Hz – 3MHz	0.1%
Longitudinal Balance	✓	<i>optional</i>		0dB – 100dB	1mV – 5V	20Hz – 3MHz	0.5db
User Port Relay Control	✓	<i>optional</i>		n/a	n/a	n/a	n/a
Interwinding Phase	✓	<i>optional</i>		-360° – +360°	1mV – 5V	20Hz – 3MHz	0.05°
Return Loss	✓	<i>optional</i>		-100dB – 100dB	1mV – 5V	20Hz – 3MHz	0.2%
Turns Ratio by Inductance	✓	<i>optional</i>		30:1 – 1:30	1mV – 5V	20Hz – 3MHz	0.1%
Trim Adjustable Part	✓	<i>optional</i>		n/a	n/a	n/a	n/a
Low Voltage Open Circuit	✓	<i>optional</i>		100μV – 50V	1mV – 5V	20Hz – 3MHz	0.1%
Capacitance—Parallel Circuit	LCR Mode	LCR Mode	✓	100pF – 1mF	1mV – 5V	20Hz – 3MHz	0.1%
Capacitance—Series Circuit	LCR Mode	LCR Mode	✓	100pF – 1mF	1mV – 5V	20Hz – 3MHz	0.1%
Reactance	LCR Mode	LCR Mode	✓	1mΩ – 1MΩ	1mV – 5V	20Hz – 3MHz	0.1%

Accuracies based on operating temperature of 23°C ±5°C. Whilst every care has been taken in compiling the information in this publication, Voltech Instruments cannot accept legal liability for any inaccuracies. Voltech Instruments has an intensive program of design and development which may alter product specification. Voltech Instruments reserves the right to alter specification without notice and whenever necessary to ensure optimum performance from its product range.



Custom Test Fixtures

Wilco Control Service is Voltech's strategic partner in the manufacture of customized test fixtures for use with Voltech's line of transformer testers.

Universal Plate

The universal plate is used along with the test connection package. The test connection package includes 10 Kelvin clips, 10 micro clips, 10 alligator clips and 10 speaker clips. The universal plate is key for testing small lots, prototype parts and flying lead devices.



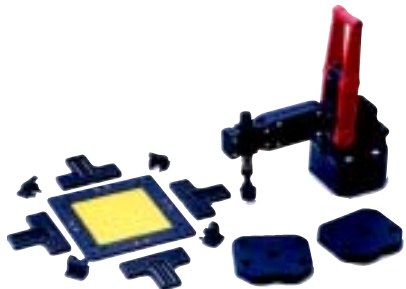
Blank Fixture Plate

Voltech's blank plates and custom fixture kits allow you to quickly and easily build fixtures for devices that are surface-mount through hole pins or flying leads.



Standard Fixture Kits

Voltech offers a range of standard fixture components to suit a broad range of standard bobbin pitches and component packages.



Barcode Reader

Part numbers, serial numbers, batch codes and operator numbers can be entered quickly and efficiently by using the barcode reader. A barcode port is standard on the AT/.

Footswitch

The AT/'s dedicated remote port accepts a footswitch for hand-free operation and provides signals for interfacing process controllers.



Calibration System

Voltech's calibration system calibrates its testers to full specification, reducing down-time because return to a service center is not needed.



AT3600 Tester

Should your needs entail higher voltage or power measurements, including AC and DC hipot, consider Voltech's AT3600 tester.



TOP FIVE REASONS TO PURCHASE THE AT*i*

- 1 VERSATILITY**
The AT*i* can be installed and operated in many different ways. It is suitable for both manual and robotic production.
- 2 EASE OF USE**
Using the AT*i*'s Windows-based PC editor and server software requires no software programming skills or experience.
- 3 ACCURACY**
The AT*i*'s basic accuracy is an impressive 0.05% for measurements from 1nH-1MH, 20Hz-3MHz, 1mV-5V, 20 μ A-100mA and a DC bias up to 1A.
- 4 CROSS-COMPATIBILITY**
The AT*i* is part of Voltech's AT family of automatic transformer testers. It shares fixtures, software and accessories with the AT3600.
- 5 UPGRADEABILITY**
The AT*i* is easily upgradeable. New tests and algorithms can be added on through software parameter upgrade modules (SPMs). There is no need to return the tester to a service center.



Voltech Instruments, Inc.

Represented by:

