

AT5600 Wound Component Tester

Voltech™



The industry's number 1 solution for magnetics testing
Quality, reliability & productivity

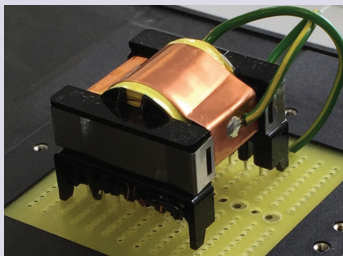
The only **magnetics tester** you'll ever need

The AT5600 from Voltech is a complete integrated test solution for wound components, delivering accuracy, speed and reliability without compromise. Building on Voltech's 30 years of experience in the field of magnetics testing, the AT5600 is an evolution of, and fully compatible with, our AT3600, the industry's most deployed magnetics tester.

The AT5600 allows 100% testing of any wound component on a single integrated unit. For both manufacturers of wound components and OEMs/ODMs performing incoming test, the AT5600 allows you to efficiently ensure quality and reliability, with rapid return on investment. And for customers upgrading from our field-proven AT3600 and ATi solutions, you'll find an easy transition, with no change in fixturing, and common test programs across platforms.

RAPID RETURN ON INVESTMENT

Whether you're automating a manual testing process for the first time or you're an existing Voltech customer upgrading from the AT3600, the

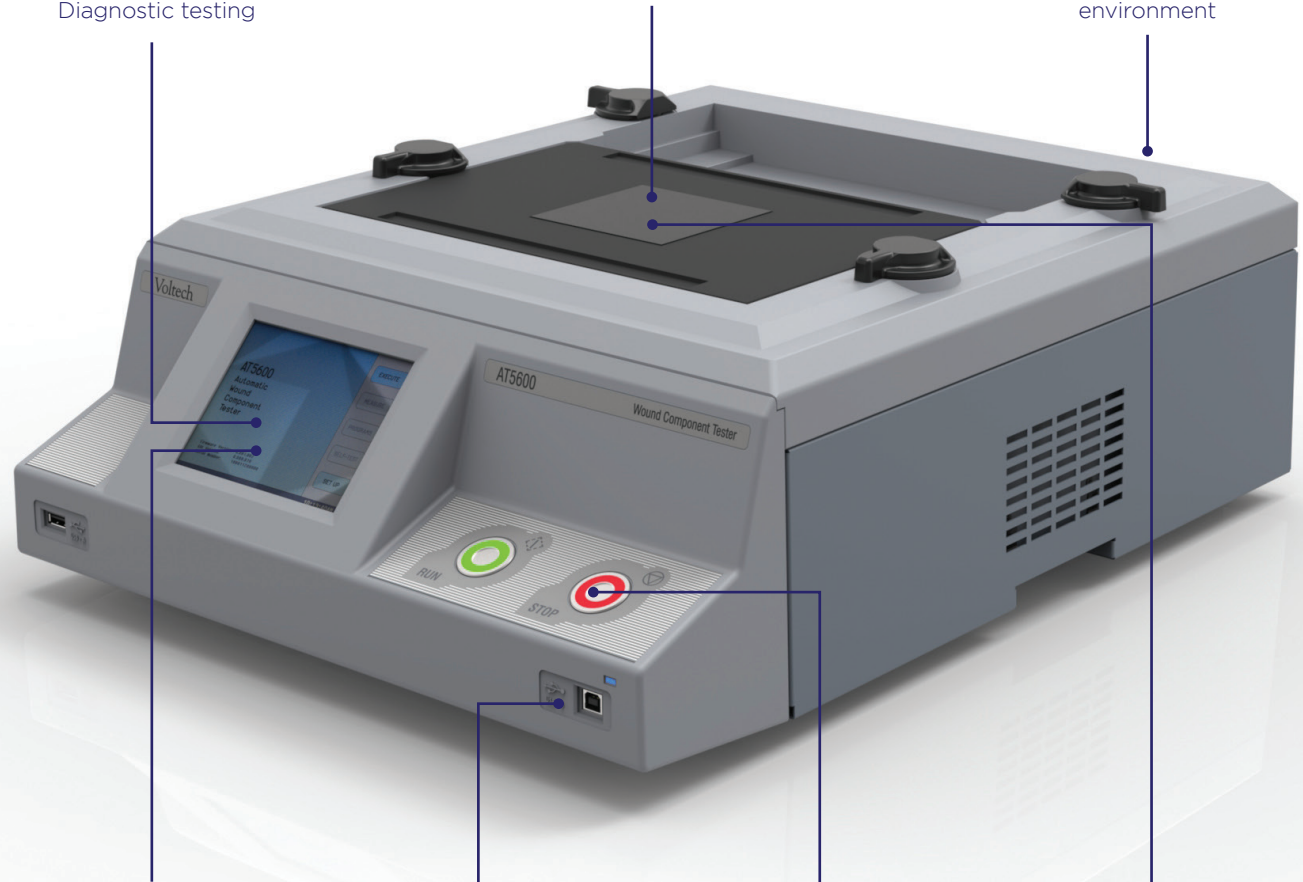


AT5600 is for you. Delivering twice the throughput of the AT3600, and ten times the efficiency of manual test strategies, the payback time, even for modest test volumes, could be less than a year.

New test options – over 40 different tests including Audit and Diagnostic testing

Simple fixturing – quick changeover, high productivity

Ethernet – faster communication and easier integration in the factory environment



Colour touch screen – ease of use, no wearing of buttons, longevity. Works with gloves

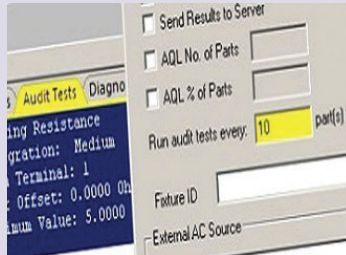
USB – high-speed communications

Piezo buttons – rugged, “wear free”, long life in manufacturing environment

Integral 20-node matrix – test 10 windings in 4-wire Kelvin mode

QUALITY

With new features like audit testing, full test reports and integrated communications interfaces, the AT5600 allows you to cost-effectively meet and exceed your customers' quality expectations while keeping a tight rein on costs, increasing value-add and profitability.



PRODUCTIVITY

The AT5600 uses advanced technologies to deliver double the test throughput of existing magnetics testing solutions. Optional "test on fail" capabilities provide even more efficiency, while an enhanced GUI and touchscreen maximize operator efficiency.

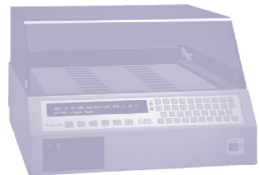


AT5600 at a glance

- Fast: 20 standard tests per second
- Superb accuracy
- Test ANY magnetic component: Ferrites, laminates, telecoms, SMPS transformer, EMC and other filters
- ANY combination of tests to suit your needs
- Integral 20 node matrix to test up to 10 windings in 4-wire Kelvin mode
- Integral 5kV AC / 7kV DC hi-pot
- Pass/fail, "audit test" and "test-on-fail" functions
- Four-wire connections throughout
- Voltech fixture system means no set up time for different transformer types
- Ethernet, RS232 and USB
- GUI with touch-screen
- Full results storage and program control; even program and monitor results over a network!
- Patented technology for core energization (improves test time)
- Patented technology for current measurement (improves accuracy)

A FIELD-PROVEN SOLUTION

The AT5600 builds on Voltech's world leadership in automatic wound component testing. We have a 30-year track record of excellence; and our AT3600 product is the industry's most deployed automatic tester.



1991



1993



1996



2000

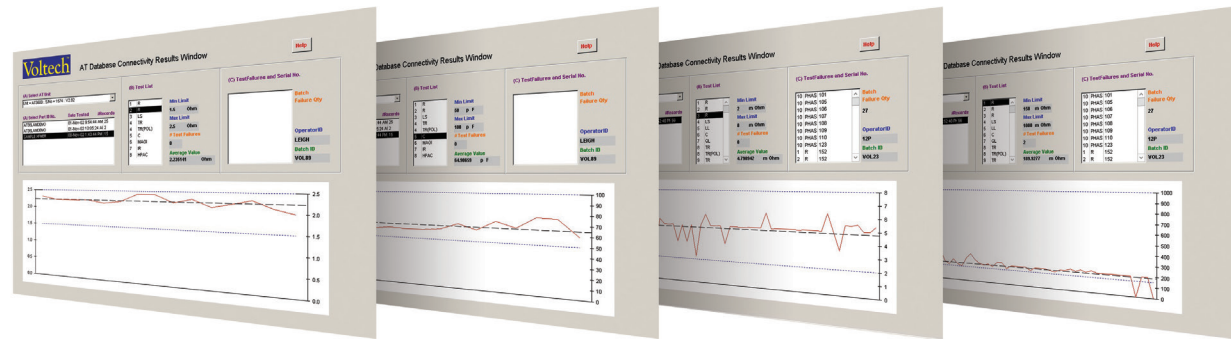


TODAY

Productivity, Quality, Compatibility

Based on field-proven technology and refined over 20 years of customer feedback, the AT5600 provides double the test speed and accuracy of previous magnetics and transformer testing solutions. Its highly efficient fixturing system allows instant change-over to a different bobbin type, minimizing part changeover and set-up times: and, because the system is common with our established AT3600 and ATi transformer testers, customers migrating to the AT5600 will be able to instantly use their existing fixtures without modification.

Patented technologies in areas such as impedance measurement, superior surge testing capabilities and 100% test at real operating voltages, allow you to not only implement pass-fail testing, but also to accurately characterize components within your manufacturing flow, for highest quality of results.



QUALITY AND TRACEABILITY

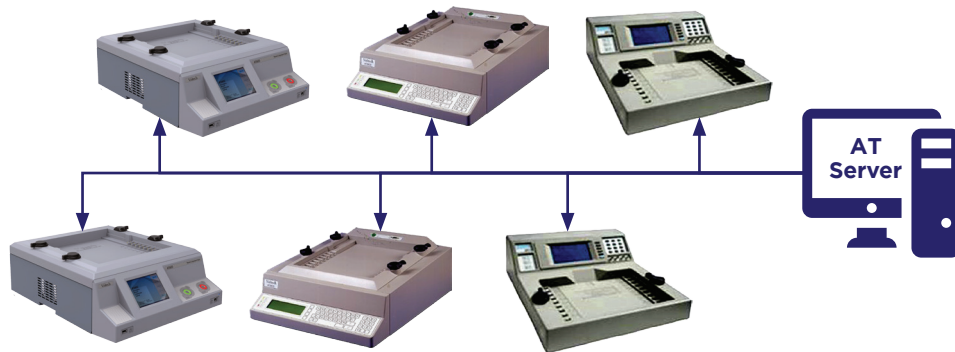
As well as efficiency and return-on-investment, the AT5600 also allows you to deliver the quality and traceability your customers demand. You can implement 100% test strategies with the test accuracy of a laboratory test instrument. And an automated process means inherent consistency.

We provide not just quality of results, but also quality of analysis. You can use our AT Server and database connectivity options to monitor trends over time, analyze results by batch number and even down to individual serial number.

A database connectivity option allows you to write all of your test results to an MDB or SQL server for real-time or offline analysis of results. Results are stored in four logically-organized database tables, allowing you to write your own queries and accurately track quality trends in your manufacturing flow.

AN INTEGRATED SOLUTION

The AT Server software allows you to connect multiple AT Series testers (including legacy ATi and AT3600 units) to a central programming and results server, providing a consolidated resource which allows simple program generation via our AT Editor, storage of measurement and test limits, and pass-fail information down to individual parameters and component batch or serial number. The AT5600 is equipped with Ethernet and USB interfaces, allowing fast communication and easy integration within the factory environment: but, like its predecessor the AT3600, it still includes RS232 connectivity for integration into existing networks.

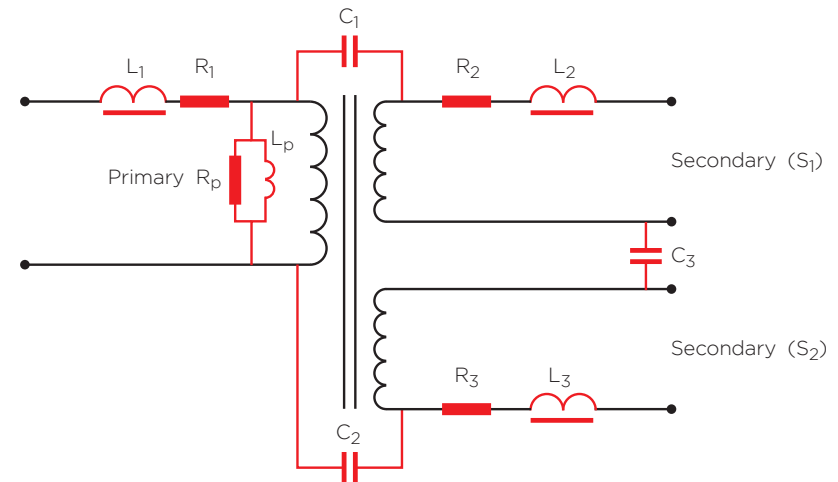


FOR DESIGN AND PRODUCTION

As well as integrating smoothly into your manufacturing operation, the AT5600 can help you at the engineering stage, with in-depth type testing of your design and pre-production prototypes, enabling you to validate your design to any applicable standards such as BS EN 61558, UL 1876 and UL 1441. The same test hardware can then be used for volume production, either using the full suite of tests, or a reduced test set with audit and test-on-fail provisions to maintain quality monitoring in manufacturing.

ASSURED RETURN ON INVESTMENT

At Voltech, we know that return on investment is the single most important factor that leads customers to choose our solutions. Test is a vital element in any manufacturing strategy: gone are the days when the occasional faulty component represented a forgivable transgression. And today, it's simply not cost-effective to hand-test wound components using the traditional combination of LCR meter, TR tester, Hipot tester, and substantial amounts of operator time. In just three seconds, the AT5600 can execute a typical wound component test suite that would take at least 30 seconds if performed manually. If you're testing 1M components a year, that's an annual saving in operator time of 7,500 hours - equating to four full-time test operatives, and a probable pay-back time that's measured in months, not years.



Any test, Any transformer

Uniquely in the market, the AT5600 can perform ALL of the tests required for multiple applications and any magnetic component type: from Hi-Pot and surge to magnetization, turns ratio, and winding resistance. The AT5600 really is the only magnetics tester you'll ever need!



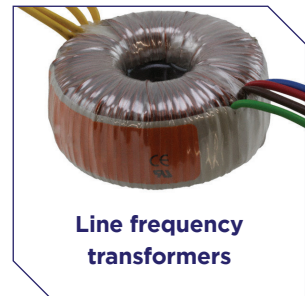
Ferrite Transformers



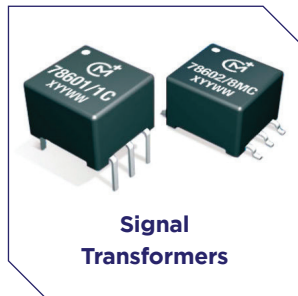
Laminate Transformers



Telecoms / Audio / Power over Ethernet transformers



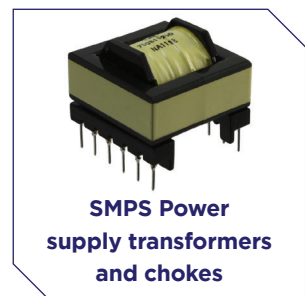
Line frequency transformers



Signal Transformers



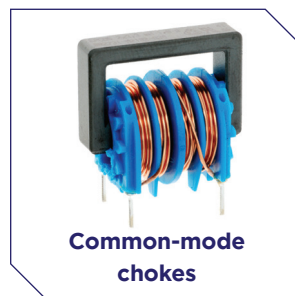
Instrument Current Transformers



SMPS Power supply transformers and chokes



Lighting transformers and chokes



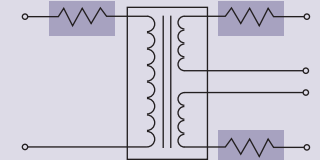
Common-mode chokes

OUR TEST CAPABILITY

The AT5600 provides a full range of tests tailored for any requirement. See the back page of this brochure for the full list!

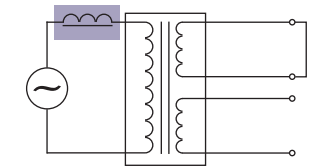
All the standard tests associated with a traditional LCR meter

- Resistance
- Inductance (with DC Bias up to 1A built in)
- Capacitance
- Impedance
- Quality Factor
- Dissipation factor



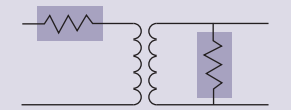
General Transformer tests

- Turns Ratio (by voltage or by inductance)
- Turns Phasing
- Open Circuit Voltage
- Magnetizing current
- Leakage inductance
- Interwinding Phase
- Wattage



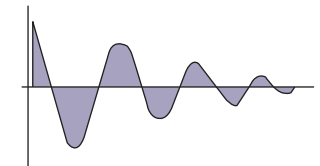
Audio and telecoms testing

- Longitudinal balance
- Insertion Loss
- Return Loss
- Frequency Response
- Phase angle



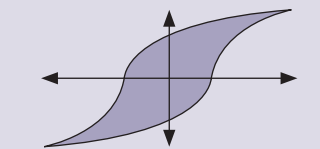
High Voltage and Stress tests to guarantee safety and longevity of your production output

- AC / DC Hipot tests
- Stress Wattage
- Surge testing
- Insulation resistance
- Leakage current



DC Bias testing

- Inductance with DC Bias
- Impedance with DC Bias
- Up to 1A with internal source, up to 25A with 1 DC1000, up to 500A with 20 DC1000s

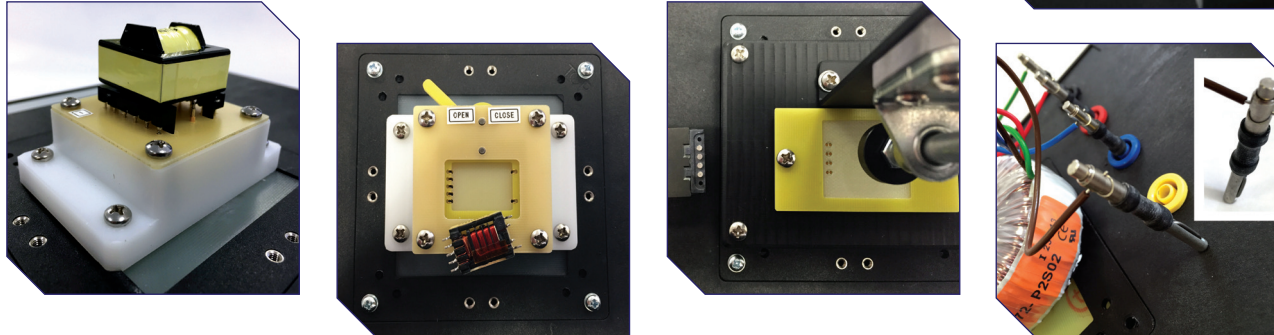


A **complete** transformer test solution

Voltech offers a range of accessories to help you build a truly productive transformer test solution that suits your requirements. Including fixturing, programming tools and signal sources, we have everything that you need.

FIXTURING

Successful testing of any electronic component requires an effective electrical connection to the device under test. The AT5600 shares the same reliable, easy-to-use, high quality fixturing system as our popular AT3600 and ATi transformer testers. If you're migrating to the AT5600 you'll be able to instantly use your existing fixtures without modification - and benefit from the immediate increase in testing speed the AT5600 brings.



DC1000 BIAS CURRENT SOURCE

The popular DC1000 DC Bias current source can be used with the AT5600 to extend the DC Bias testing of components that will be employed in high current DC power supplies and DC-to-DC converters. Each DC1000A provides bias current of up to 25A: up to 20 units can be connected for a maximum current of 500A DC.



AC INTERFACE FIXTURE

The AC Interface Fixture extends the test capability of the AT5600 to 600V, 10A, allowing a variety of third-party AC sources to provide the test signal.



This versatile accessory is designed to integrate either a step-up transformer or an external AC source when tests require voltage and power levels above the capacity of the AT3600's internal generator. It fits directly into the extended fixture bay of the AT5600 and provides all of the required connection terminals, control circuits, safety switching and digital communication interfaces.

AT5600 specifications

Description		Measurement Range	Test Signal	Test Frequency	Basic Accuracy
Low Voltage Tests					
CTY	Continuity	10kΩ to 10MΩ	n/a	n/a	n/a
R	DC Resistance	10uΩ to 10MΩ	n/a	n/a	0.10%
LS	Inductance (series circuit)	1nH to 1MH	1mV to 5V	20Hz-3MHz	0.05%
LP	Inductance (parallel circuit)	1nH to 1MH	1mV to 5V	20Hz-3MHz	0.05%
QL	Quality Factor	0.001 to 1000	1mV to 5V	20Hz-3MHz	0.50%
D	Dissipation Factor	0.001 to 1000	1mV to 5V	20Hz-3MHz	0.50%
RLS	Equivalent Series Resistance	10uΩ to 10MΩ	1mV to 5V	20Hz-3MHz	0.05%
RLP	Equivalent Parallel Resistance	10uΩ to 10MΩ	1mV to 5V	20Hz-3MHz	0.05%
LL	Leakage Inductance	1nH to 1kH	1mV to 5V	20Hz-3MHz	0.10%
C	Inter-winding Capacitance	100fF to 1mF	1mV to 5V	20Hz-3MHz	0.10%
TR	Turns Ratio and Phasing	1:100k to 100k:1	1mV to 5V	20Hz-3MHz	0.10%
TRL	Turns Ratio by Inductance	30:1 to 1:30	1mV to 5V	20Hz-3MHz	0.10%
LVOC	Low Voltage Open Circuit	100uV to 650V	1mV to 5V	20Hz-3MHz	0.10%
LSB	Inductance with Bias (Series) DC Bias	1nH to 1MH	1mV to 5V	20Hz-3MHz	0.05%
LPB	Inductance with Bias (Parallel) DC Bias	1nH to 1MH	1mV to 5V	20Hz-3MHz	0.05%
R2	DC Resistance Match	1:1000 to 1000:1	n/a	n/a	0.20%
L2	Inductance Match	1:10000 to 10000:1	1mV to 5V	20Hz-3MHz	0.10%
C2	Inter-winding Capacitance Match	1:1000 to 1000:1	1mV to 5V	20Hz-3MHz	0.20%
GBAL	General Longitudinal Balance	0db to 100dB	1mV to 5V	20Hz-3MHz	0.5dB
LBAL	Longitudinal Balance	0db to 100dB	1mV to 5V	20Hz-3MHz	0.5dB
ILOS	Insertion Loss	100 dB to -100dB	1mV to 5V	20Hz-3MHz	0.5dB
RESP	Frequency Response	100 dB to -100dB	1mV to 5V	20Hz-3MHz	1.0dB
RLOS	Return Loss	100 dB to -100dB	1mV to 5V	20Hz-3MHz	n/a
ZB	Impedance, Impedance + Bias	1mΩ to 1MΩ	1mV to 5V	20Hz-3MHz	0.20%
ANGL	Impedance Phase Angle	360 deg to -360 deg	1mV to 5V	20Hz-3MHz	0.05 deg
PHAS	Inter-winding Phase Angle	360 deg to -360 deg	1mV to 5V	20Hz-3MHz	0.05 deg
OUT	Output to User Port	n/a	n/a	n/a	n/a
High Voltage Tests					
HPAC	Hi-Pot (AC)	10uA to 30mA	100V to 5kV	50Hz-1kHz	3.00%
HPDC	Hi-Pot (DC)	1uA to 3mA	100V to 7kV	n/a	3.20%
ACRT	Hi-Pot Ramp (AC)	10uA to 5mA	100V to 5kV	50Hz-1kHz	3.00%
DCRT	Hi-Pot Ramp (DC)	1uA to 3mA	100V to 7kV	n/a	3.20%
ACVB	Voltage Break down (AC)	10uA to 5mA	100V to 5kV	50Hz-1kHz	3.00%
DCVB	Voltage Break down (DC)	10uA to 3mA	100V to 7kV	n/a	3.20%
IR	Insulation Resistance	1MΩ to 100GΩ	100V to 7kV	n/a	1%
SURG	Surge Stress	1mVs to 1kVs	100V to 5kV	n/a	3.00%
ILK	Leakage Current	1uA to 10mA	1V to 270V	20Hz-1500Hz	0.50%
VOC	Open Circuit Voltage	100uV to 650V	1V to 270V	20Hz-1500Hz	0.10%
MAGI	Magnetizing Current	1uA to 2A	1V to 270V	20Hz-1500Hz	0.10%
WATT	Wattage	1mW to 40W	1V to 270V	20Hz-1500Hz	0.30%
STRW	Stress Wattage	1mW to 40W	1V to 270V	20Hz-1500Hz	1%
DC1000A Tests					
LSBX	Inductance with External Bias (Series)	1nH to 1MH	1mV to 5V	20Hz-3MHz	0.05%
LPBX	Inductance with External Bias (Parallel)	1nH to 1MH	1mV to 5V	20Hz-3MHz	0.05%
ZBX	Impedance with External Bias	1mΩ to 1MΩ	1mV to 5V	20Hz-3MHz	0.20%
AC Interface Fixture Tests					
VOCX	O/C Voltage (External Source)	100uV to 650V	1mV to 600V	20Hz-5kHz	0.10%
MAGX	Magnetizing Current (External Source)	10uA to 10A	1mV to 600V	20Hz-5kHz	0.10%
WATX	Wattage (External Source)	1mW to 6kW	1mV to 600V	20Hz-5kHz	1%
STRX	Stress Wattage (External Source)	1mW to 6kW	1mV to 600V	20Hz-5kHz	1%

General, environmental

Line input

IEC 3-pin socket
100-127V / 200-240V / 45-65Hz / 150VA Max
Fuse 2.00 AT

Dielectric strength

2kV AC 50Hz for 1 minute, line input to case
Storage Temperature -40° to +70°C

Operating temperature

0° to 40°C

Humidity

10 to 90% RH non-condensing

Available models

- **AT5600 Standard** - choose any 14 tests from the test listing. Additional tests can be added later by entry of a simple key code.
- **AT5600 Gold** - Get all available tests from day one for maximum future proofing.

Mechanical

Height; 18 cm
Width; 44 cm
Depth; 56 cm
Weight; 18 kg



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