

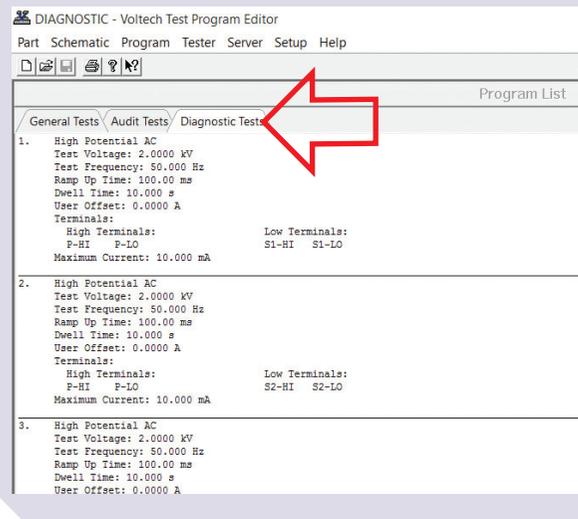
Diagnostic testing with the AT5600

Voltech

The AT5600 is the first in Voltech's range of magnetics testers to include an automatic diagnostic or "test on fail" function. This designates a set of additional tests to be run only if the main test program fails. Specifying diagnostic tests allows valuable failure-mode information to be captured and fed into your quality control system, while maintaining the productivity and throughput of the manufacturing line.

HOW DO I PROGRAM DIAGNOSTIC TESTS?

The latest version of Voltech's AT EDITOR software (V3.44.00 and above) makes it easy to specify diagnostic tests. You can specify any sequence of tests to be run in the event of a test failure in the main test program. Simply click on the "Diagnostic tests" tab and select the diagnostic test specifications you require.

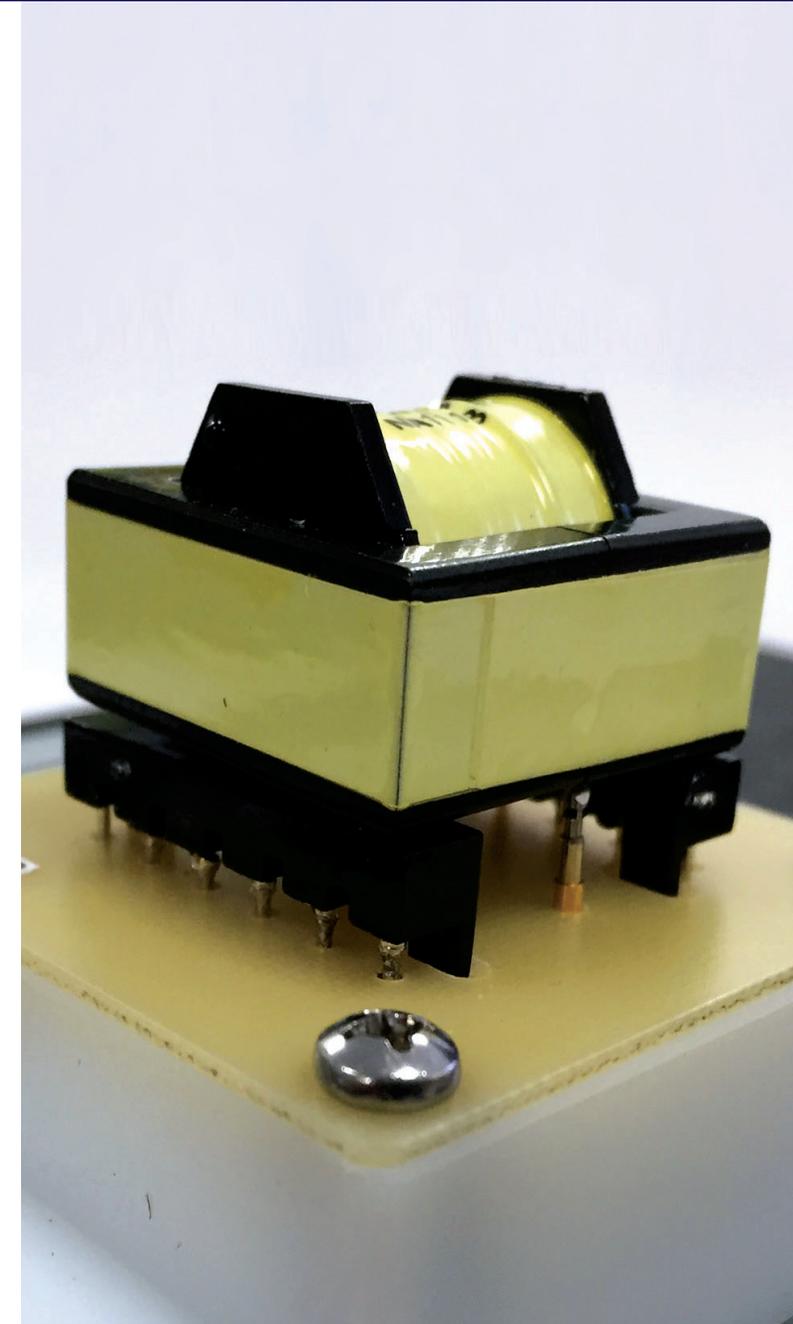
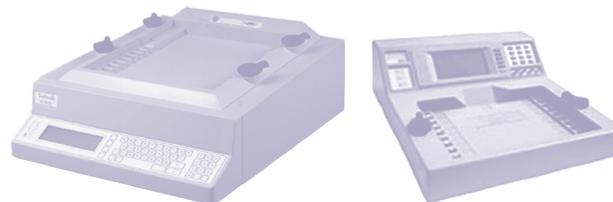


Will diagnostic testing work on my AT3600 / ATi tester?

The Diagnostic Test Feature is available only on the AT5600. It is not offered by the AT3600 or ATi.

However, you can still use test programs developed for the AT5600 with previous generation Voltech equipment. The main test program will run on the older testers, and the Diagnostic Tests will simply be ignored.

This common programming approach simplifies test program generation and maintenance, and makes it easy to build test environments that contain any mix of AT5600, AT3600 or ATi testers.



WHY SHOULD I USE DIAGNOSTIC TESTS?

Your production test strategy will be designed for maximum throughput and productivity in the manufacturing line. But in the event of a unit failing the tests in the main program, your quality control system will need more detailed information about the reasons for the failure.

USE CASE: TESTING A TRANSFORMER WITH MULTIPLE SECONDARIES

A common high-productivity test strategy for a transformer with multiple secondaries is to perform simultaneous Hipot tests between the primary and all three secondaries. But if a unit fails that test, you'll want to go further and ascertain which winding is faulty.

For example, a mains supply transformer might have a primary and three secondaries, used to convert 240V to 15V, 12V and 5V.

A traditional test strategy would perform a Hipot test between the primary and each secondary in a sequential fashion, to verify the safety conformance of the unit (Figure 1). Safety standards typically specify a dwell time for such tests, requiring perhaps 10 seconds per test, and a total Hipot test time of 30 seconds.

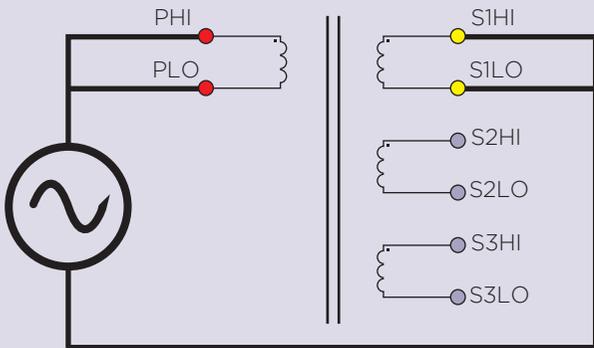


Figure 1: Traditional test strategy

A higher productivity strategy would be to use the AT5600 to execute all three Hipot tests simultaneously, cutting routine test time from 30 to 10 seconds per unit (Figure 2).

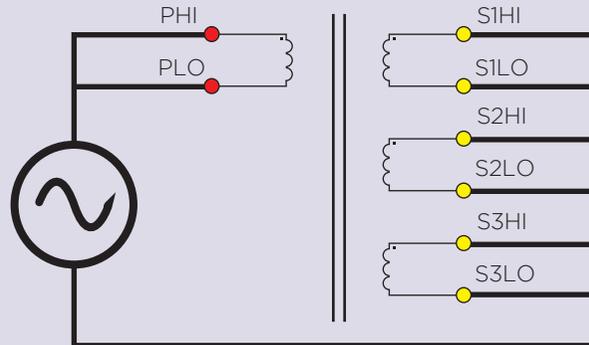


Figure 2: Simultaneous Hipot testing

If the device passes, no additional action is required. Should the unit fail, the AT5600 Diagnostic Test feature can be used to qualify, investigate or understand the problem.

In this way the AT5600 provides “the best of both worlds”: fast safety testing: accurate diagnostics and QA information for failures.

USE CASE: TESTING MULTIPLE DISCRETE TRANSFORMERS

The AT5600 allows up to 20 four-wire connections; it is therefore possible to simultaneously test five simple two-winding, four-pin transformers (for example pulse transformers) using an appropriate test fixture. This not only cuts test time, it makes loading the parts to the fixture more time efficient (Figure 3).

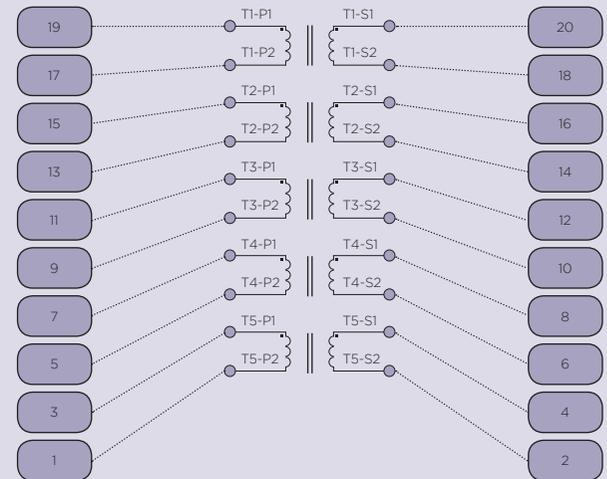


Figure 3: Testing multiple discrete components

In this case the main test program would be designed to exercise the transformers individually for the simpler (and faster) resistance, series inductance and turns ratio measurements; and then run tests (such as Hipot) that require dwell times simultaneously on all five devices (ie all primaries as HI to all secondaries as LO). Only if the combined test fails is it necessary to run individual Hipot tests, to detect which of the parts caused the failure.