

### **New FREE feature for ALL USERS**

**Requires AT5600 Firmware v7.220 or later and AT Editor 3.56.7 or later**

**See AT5600 user manual 14.5.1.2 for full details**

The goal of the Kelvin check is to verify that there is continuity between the power and sense lines for all nodes that are used in the test program.

Over the course of running a large batch of parts, the Kelvin connections could potentially become contaminated with debris, varnish or could be simply misaligned to a specific part.

This pre-test of the connections provides a useful validation that each component is fitted properly before a test run, which provides the best confidence in the following testing, as it provides a check that the part is connected correctly before any testing commences.

It also provides the same check before compensation to make sure the compensation applied (for all later tests in a batch) is not bad, due to accidental bad connections during compensation.

The check is run before every normal test sequence, and so sits “before” the normal test program sequence.

Hence any bad results due to connections are not sent to the server, resulting in misleading false fail records.

The user then has the chance to correct any bad connections and resuming the test.

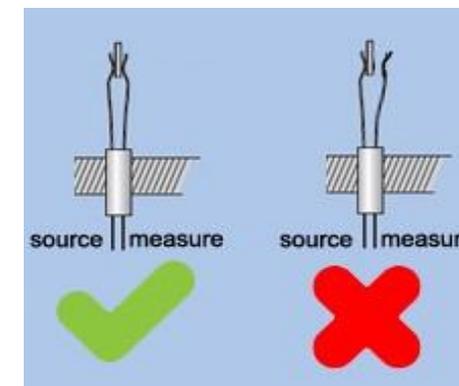
The Kelvin Precheck does not tell you anything about the actual transformer under test but does confirm that SOURCE and MEASURE nodes are connected to every pin used in the test.

Hence it is still valid to use the CTY or R tests to measure your actual winding resistances.

### **A - What Is Tested**

Any node (1-20) connected to a winding, core or screen terminal on the schematic is tested once, even if the terminal is not used in a test.

As the test is a very quick continuity check on each node, you will pay almost no time penalty for enabling the option.



## B - How a Kelvin Check is Performed

To perform the Kelvin check, each node has the sense line shorted to ground and the power line is energized with a low voltage. If the connection between the power and sense lines is poor, the easiest path for the current to take is through the current sensing shunt and a large current will be measured.

If the connection is strong, the current sensing shunt will be bypassed, and the measured current will be small.

Any resistance lower than 5 Ohms from power to sense will pass the test, and any resistance higher than 10 Ohms will fail the Kelvin check.

If there are one or more failures, a failure report will be shown which indicates which node number failed and a terminal name that corresponds to that node.

This screen then provides three options. The user can adjust their connections to resolve the issue and retry, ignore the failure and continue with testing, or ignore the failure and abort the testing.

In the case of retry and ignore, the execution is resumed by pressing the RUN button.

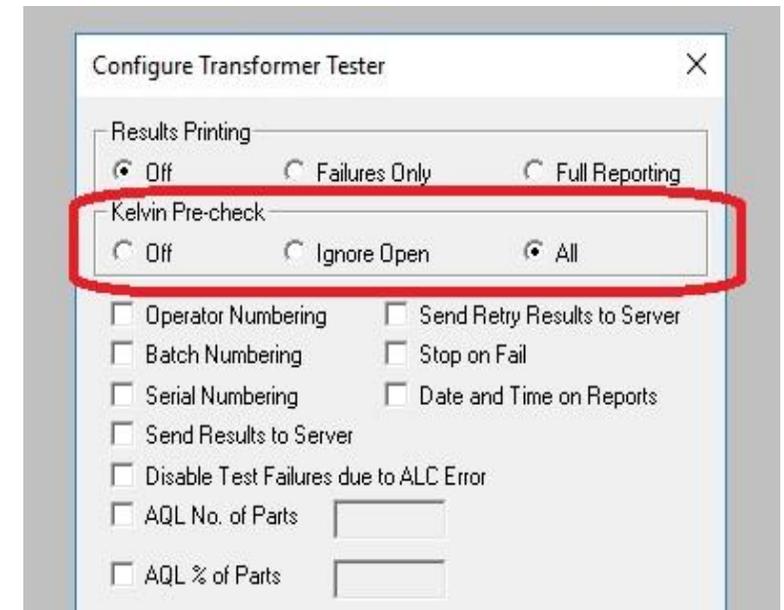
## C- How to enable the test option - Editor Settings

The AT Editor has three settings for performing the Kelvin Check in the Program options. They are as follows:

**Off** - This is the default state and what is used for older programs where the Kelvin check state is not specified. In this mode, no Kelvin checks are performed.

**Ignore Open** - This is a relaxed testing mode which requires the Kelvin check to pass during short circuit compensation, load compensation and test execution. Open circuit compensation will not have a Kelvin check. This mode is recommended if there is only low frequency testing, as you can simply remove the fixture to do open circuit compensation.

**All** - This mode is a strict testing that will execute the Kelvin check before any compensation or test execution. This mode is recommended to get the best connection reliability.



## D - Legacy Products (AT3600, ATi)

This test option is not available on the AT3600 or ATi.

However, programs with the Kelvin option enabled can still be used on these products, but the flag will simply be ignored.

This prevents users from maintaining two separate test programs, and maintains ATP program portability between unit type