



How to test bonds » Wire Pull » test method

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11. Test method settings

i. Test definition

The test method allows you to program the test variables. The basic settings contain the test distance, the test speed and whether the test is destructive or non-destructive. There are many more settings though and advanced engineers can sometimes combine them in unexpected ways to solve their challenges in a smart way.

↓↑F
Pull test

Name

Test distance µm

Test speed µm/s

Hold time s

Pos. correction factor

Null sensor before test

Destructive

Touchdown

Enable tweezers

Fallback

Return to start position

Movement speed µm/s Include in graph

Enable auto hook

Enable loopheight

Measure pressure

Additional measurement results (calculated after the measurement)

- Peak force
- Average force
- Minimum force
- Force range
- Standard deviation force
- Peak energy
- Total energy

Basic pull test settings

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XYZTEC Netherlands

J.F. Kennedylaan 14-B
5981 XC Panningen
Netherlands ([map / route](#))
Tel: +31-77-3060920
Fax: +31-77-3060919
sales@xyztec.com
support@xyztec.com

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Bond testers

- Condor *Sigma*
- Condor *Sigma Lite*
- Condor *Sigma W12*
- Condor *150HF*

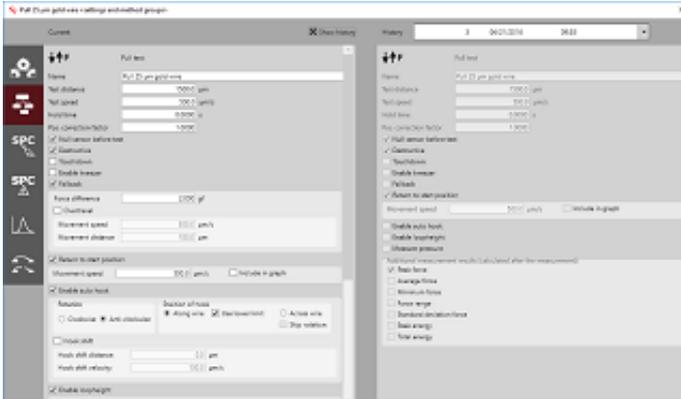
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The hold time is most relevant for non-destruct tests. Before almost every test type, you may want to null the sensor. The next settings all expand with more options when enabled.

A touchdown before the test, for example, which is mostly used for tweezer tests in case of pull, is defined by a landing force, maximum landing distance and a landing speed.



Previous test method settings are remembered behind a 'show history' checkbox. Click to zoom in.

If you define a fallback to determine the end of test, the force difference is the most relevant value to set. The bond tester will also give you the option of "overtravel", which is the distance moved after the fall back has been achieved. This is a useful way to clear the pulled wire away from the test area for failure mode analysis.

Pull tests can be performed with or without **auto hook** and be combined with **loop height measurements** and configured to output bond stress (pressure) data instead of force data. For all these options, additional settings are displayed only when in use.

The Condor Sigma uniquely has all the test settings in the same and right place and makes it easy to track what the user has been doing. Previous test method settings are remembered behind a 'show history' checkbox.

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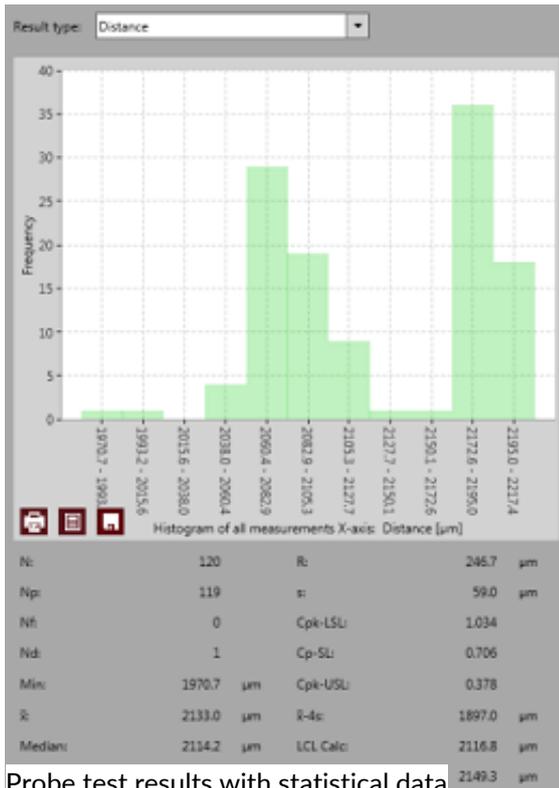
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Probe test results with statistical data

ii. Statistical Process Control (SPC)

Like all other test methods such as push, peel, shear and probe, the engineer can set SPC warnings for the pull method. Depending on the measurement result the measurement can include a warning or a fail and the operator can be forced to enter a remark. The software can even block the tester until an engineer checks the results and releases the tester to continue. This advanced functionality is only available on the **Condor Sigma bond tester**.

The test method settings also include a spectrum of statistical values. Of course everything from simple mean or median calculation to Cpk values, lower and upper spec limits are crucial for most quality assurance processes.

iii. Data analysis

In order to make the right decisions based on the test results, sometimes more analysis is required. It is a great help when the bond tester assists in this process by, for example, storing pictures and/or videos of before, during and after the test with the measurement data and grading info ([this how-to lists the most common failure modes on the next page](#)).

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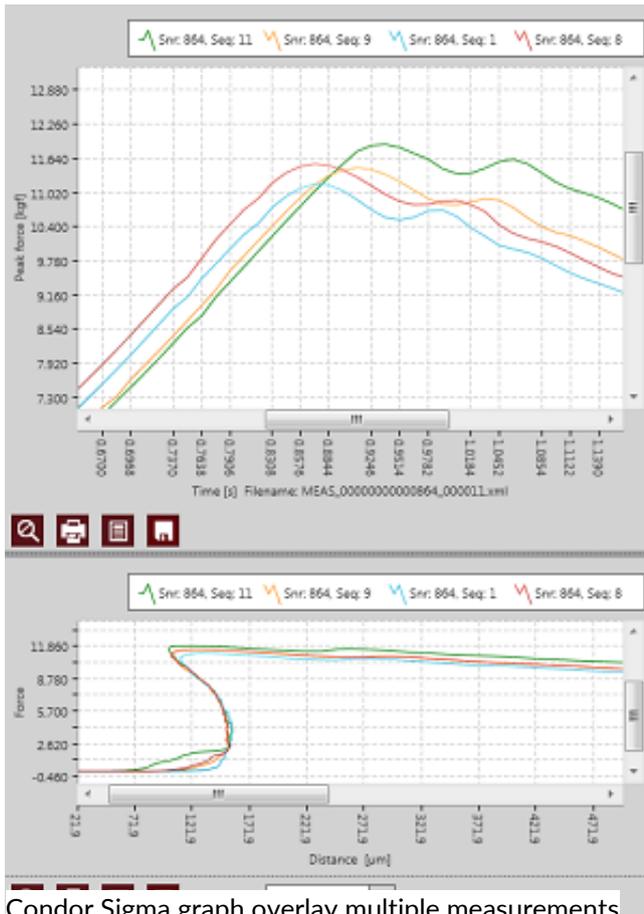
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Condor Sigma graph overlay multiple measurements

The **Condor Sigma software** comes with a sophisticated query screen, which allows the engineer to sift through massive quantities of data. Also very helpful is the possibility to overlay the force or hysteresis graphs for multiple measurements. This makes comparing the graphs from multiple measurements possible. Forms also offer an auto filter feature that will only show the measurements and samples for a specific field value or set of field values.

Some company procedures require strict data collection. An auto print feature automatically prints the selected report for this dataset as a pdf file when a certain number of samples has been reached.

iv. Data export

It may be important to export your data to external systems. Make sure to take your measurements with a bondtester which can export standard reports in the file format (like XLS, DOC, PPT, PDF, XPS, CSV, XML, DBF, etc.) that you need. Also, it is very useful to be able to create your own export format, without having to rely on third parties.

Continue to read:

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Next page: Failure modes

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