



**Operating Manual**  
English

**tristar**tester

12 Sep 2018

# tristartester

Thank you for purchasing tristar tester.

You have acquired the most advanced, precise and sophisticated tool to detect Tristar and Hydra IC failures on Apple Devices with Lightning Port (iPhone, iPad or iPod).

To read more about Tristar, Hydra and the causes and symptoms of their failures please visit our website **[www.tristartester.com](http://www.tristartester.com)**

The following pages describe tristar tester, it's usage and interpretation of result. If, however, you have any questions regarding usage, please feel free to contact our support team at **[info@tristartester.com](mailto:info@tristartester.com)**

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# tristartester

## General

### Power and Charging

The power switch is located on the left side of the tester.

Tristar tester comes with a built-on LiPo battery. The tester can be charged with a standard micro USB charger. A full charge takes around 30-60 minutes, depending on the charger. The device has a built-in overcharge-protection.

### Home screen

After powering on, the tester will prompt to connect a device. **Switch the target device OFF and connect it to the tester.** A successful connection will be detected by the tester.

If nothing happens after connecting a testing target, please check the connection of the lightning port assembly to the logicboard as well as the lightning port for obstacles or dirt.

### Menu Options

#### TEST

This will start the standard testing procedure including Dock Test, Tristar/Hydra Test, Battery Presence test.

→ Press and hold to start testing (**Note: Target device must be switched OFF**)

#### QUICKTEST

Same as TEST, except

Dock test runs quicker (same accuracy, but results are skipped earlier)  
Tristar/Hydra test is the same as in standard test mode  
Battery presence test will be skipped

→ Press and hold to start testing (**Note: Target device must be switched OFF**)

#### Warning Sign (after connecting testing target)

A warning sign with an exclamation mark indicates a serious short to ground in Tristar/Hydra. It is, however, recommended to run the full test to obtain more detailed information.

## Testing Sequence

### Dock Test

The first test will check all lightning port lines for connection. There is no further analysis involved. If this fails, you need to clean or replace the lightning port assembly or there is a problem with the onboard dock connector or one of the rails is broken.

### Tristar / Hydra Test

If the pretest passes, the testing sequence starts. The tester will put a reference voltage through each pin and measure the behaviour of the tested rail. If a device is okay, the test will be completed in around 20-30 seconds. Every faulty rail will however take longer to test (up to 15 seconds per rail) as the tester gives each rail the chance to settle and pass before failing it.

### Battery Presence Test

This test checks for battery presence.



**This is not a real battery test, so this test will not tell you if the battery is good or bad. It can only find disconnected or completely discharged batteries. Also, some models - mainly iPads - are not supported.**

#### Possible test results:

<b>ERROR</b>	Battery presence test could not be completed. This usually occurs if there is a short in Tristar/Hydra
<b>PRESENT</b>	A battery has been detected
<b>MISSING</b>	No battery has been detected <u>or</u> battery is completely discharged <u>or</u> target device does not support this test

### Ambiguous Results Warning

Tristar tester tries to interpret testing results by comparing measured data to it's embedded database. In some cases, results are ambiguous and a warning will appear, recommending to retake the test with a known-good Dock flex assembly.

*If the warning persists even after replacing the Dock flex assembly, please ignore this message.*

## Test results

After the testing sequence is completed, the tester will display the result.

### First row: Tristar/Hydra Result

**PASS!** Tristar/Hydra has passed the test. PP5V0\_USB (Tigris) is not shorted to ground.

*If there are still problems with standby power leakage, connection problems or other Tristar symptoms, the cause is most likely the battery or some other problem on the main logic board (MLB).*

**FAIL!** Tristar/Hydra and/or Tigris failed the test. Check interpretation and detailed results for more information.

*If rail 4 fails, there is a problem on PP5V0\_USB (usually short to ground). This may be caused by a faulty Tigris or another device on this rail. If any other rail fails, there is a problem in Tristar or Hydra. However, if only one of the Tristar rails fails, it is advised to replace the Dock Flex assembly and retest.*

### Second row: Battery test results

**CONN.** A battery has been detected (PRESENT)  
**ERROR** Battery presence test could not be completed  
**N.D.** Not Detected (MISSING).

### Third row: Interpretation summary

#### Check BATTERY or MLB (PASS)

The Tristar/Hydra test passed. If there are reported battery drain or charging issues, it is recommended to check the battery or to investigate the logic board (MLB) for further problems. **This is only a hint, not a result!**

#### Check TRISTAR/HYDRA (FAIL)

The Tristar/Hydra test has failed. Check detailed results and replace Tristar.

#### Check TIGRIS/MOSFET (FAIL)

There most likely is a short on PP5V0\_USB. Check Tigris, the MOSFETs and other components on this rail.

### Buttons

**MORE / BACK** Toggle result screen and detailed line results  
**EXIT** Reset tester to run the next test

## Expert Mode

Tristar tester features an Expert Mode, which enables more detailed results before, during and after testing.

### Enabling Expert Mode

To enable Expert Mode, hold the right button while powering up. After successful activation, an icon will appear in the upper right corner of the screen, showing „EXP“.

### Interpretation of test results

#### Dock Test

Dock Test uses simple diode mode measurements to check the Dock Flex assembly for proper connection to the MLB. Rail 1-3 and 5-7 are connected to Tristar/Hydra and should always give a result.

Rail 4 is connected to Tigris and may or may not give a result. If this rail is O/L (open line), this is not considered an error and will not fail Dock Test.

#### Tristar/Hydra Test

Tristar/Hydra Test results show a line of numbers, where the first number represents the measured return voltage on the respective rail. The ideal value is 1.45. However, tristar tester has a certain tolerance. Naturally, a certain tolerance is needed to avoid false fails. The higher the value, the more likely Tristar/Hydra is faulty.

**If the test passes but you are unsure about the result, take a look at these values. If they are far from the ideal, you might consider replacing Tristar/Hydra even if the test passed to be safe.**

### Disabling Expert Mode

Expert Mode will be enabled as long as tristar tester is powered on. To disable Expert Mode, turn tristar tester off and on.