Warning

For the FRA2 module make sure that the **FRA2 offset DAC range** property is set properly in the hardware setup. For FRA2 modules, the correct value is 5 V. For FRA2.V10 modules, the correct value is 10 V. Failure to set this value properly may result in faulty data at frequencies of 25 Hz and lower (refer to front panel labels of the FRA2 module on the instrument).

1.5 – Diagnostics

Nova includes a diagnostics tool that can be used to test the Autolab instrument. This tool is provided as a standalone application and can be accessed from the start menu, in the Autolab group (Start menu – All programs – Autolab – Tools).

The diagnostics tool can be used to troubleshoot an instrument or perform individual tests to verify the correct operation of the instrument. Depending on the instrument type, the following items are required:

- **µAutolab type II, µAutolab type III and µAutolab type III/FRA2:** the standard Autolab dummy cell. For the diagnostics test, the circuit (a) is used.
- **PGSTAT101 and M101 module:** the internal dummy cell is used during the test, no additional items are required.
- **Other PGSTATs:** the standard Autolab dummy cell and a 50 cm BNC cable. For the diagnostics test, the circuit (a) is used. The BNC cable must be connected between the ADC164 channel 2 and the DAC164 channel 2 on the front panel of the instrument[11].

Note

The PGSTAT302F must be tested in normal mode.

The Diagnostics application supports multiple Autolab instruments. When the application starts it detects all available instruments connected to the computer (see Figure 1.37).

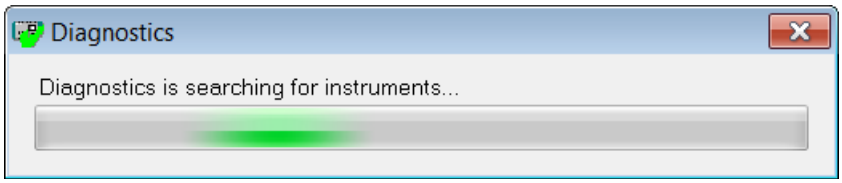

Figure 1.37 – The Diagnostics application automatically scans for all the connected instruments

[11] In the case of a PGSTAT with serial number not starting with AUT7 or AUT8, connect the BNC cable between DAC channel 4 and ADC channel 4.

If more than one instrument is detected, a selection menu is displayed before the Diagnostics starts (see Figure 1.38).

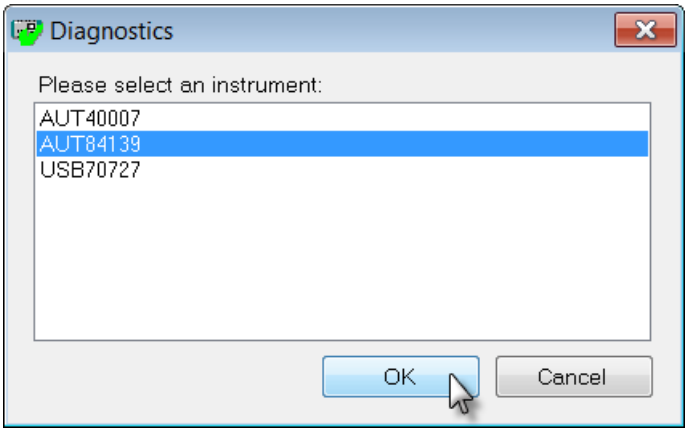

Figure 1.38 – A selection menu is displayed if more than one instrument is detected

The test can only be performed on a single instrument at a time. Select the instrument that needs to be tested and click the OK button to proceed.

When the diagnostics application is started with a Multi Autolab connected, the application will search for the available M101 modules installed in the Multi Autolab and will list the available modules as shown in Figure 1.39.

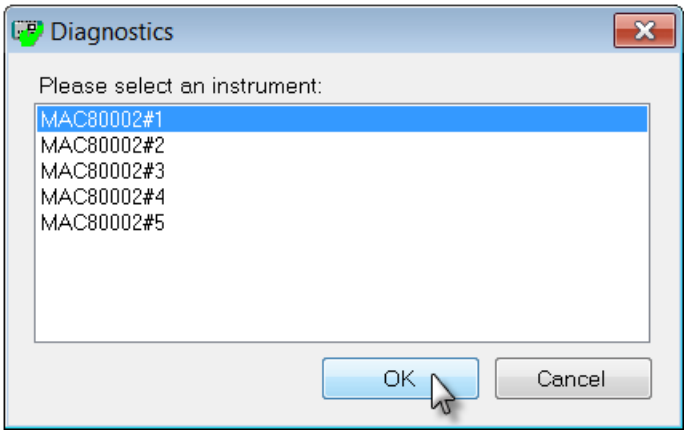

Figure 1.39 – A selection menu identifying the M101 modules by position is displayed when a Multi Autolab is detected by the diagnostics application

The test can only be performed on one channel at a time. Select the M101 module that needs to be tested and click the OK button to proceed.

Note

Instruments with serial number beginning with AUT9 or with µ2AUT7, connected through an external USB interface, are identified by the serial number of the interface, USB7XXXX (see Figure 1.38). Instruments with an internal USB interface, or instruments with serial number beginning with AUT7 connected through an external USB interface, are identified by their own serial number.

When the application is ready, a series of tests can be performed on the selected instrument. In order to perform the tests properly, the hardware setup for the connected instrument must be defined. Select the Hardware option from the Select menu to define or verify the hardware configuration (see Figure 1.40).

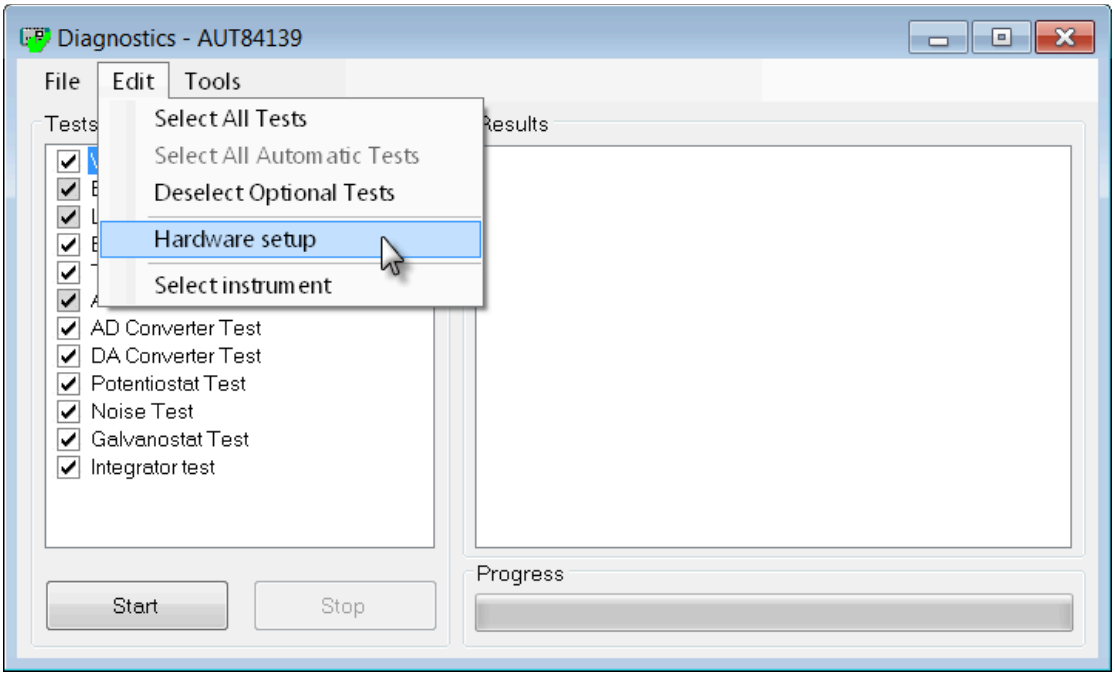

Figure 1.40 – Adjusting the hardware setup for the connected instrument (1/2)

The hardware setup window will be displayed. Adjust the hardware configuration for the connected instrument and press OK to save the changes.

Note

A specific hardware setup file is created and stored on the computer for each instrument.

- If the hardware setup for the connected instrument has already been defined in NOVA or in a previous diagnostics test, the hardware configuration file for the instrument will be automatically recovered and no adjustments will be necessary.
- If no hardware setup file is found for the connected instrument, the default setup is used (default: PGSTAT302N, no additional modules).

Pressing the start button will initiate all the selected tests. A visual reminder will be displayed at the beginning of the test, illustrating the connections required for the test (see Figure 1.41).

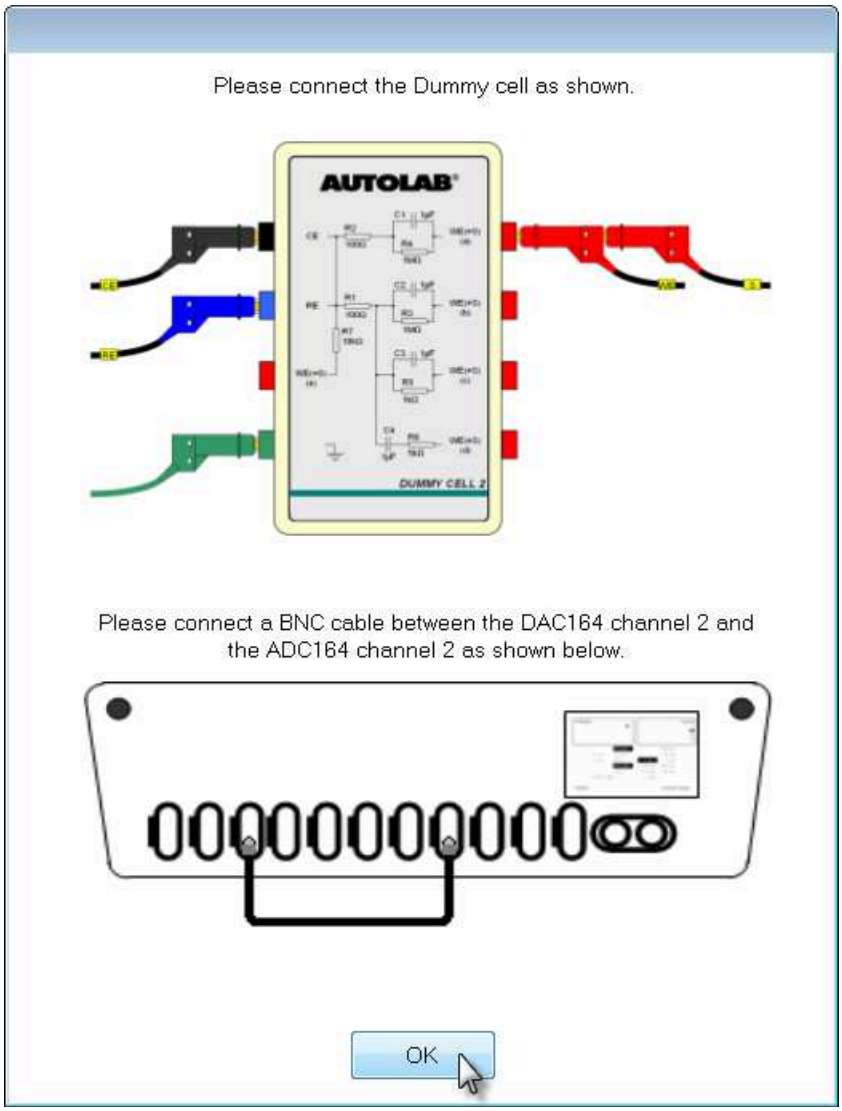

Figure 1.41 – A visual reminder is shown at the beginning of the Diagnostics test

During the test, the progress will be displayed and a successful test will be indicated by a green symbol (see Figure 1.42).

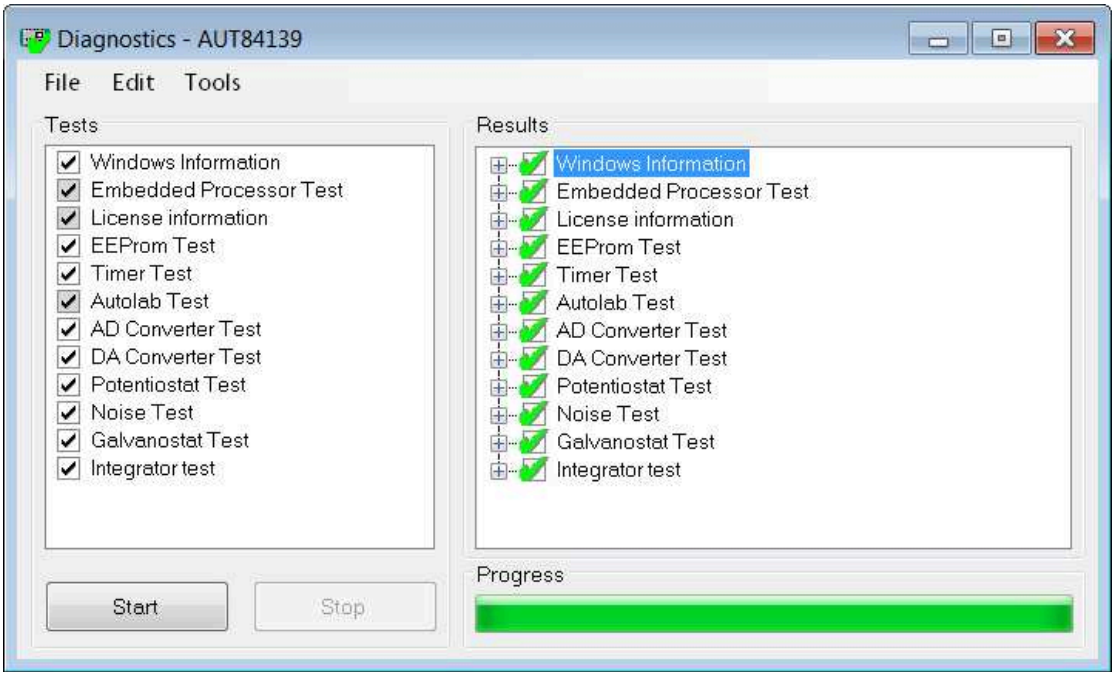

Figure 1.42 – The diagnostics report after all the tests have been performed successfully

If one or more of the tests fails, a red symbol will be used to indicate which test failed and what the problem is. Figure 1.43 shows the output of the diagnostics tool for a failed DA converter test.

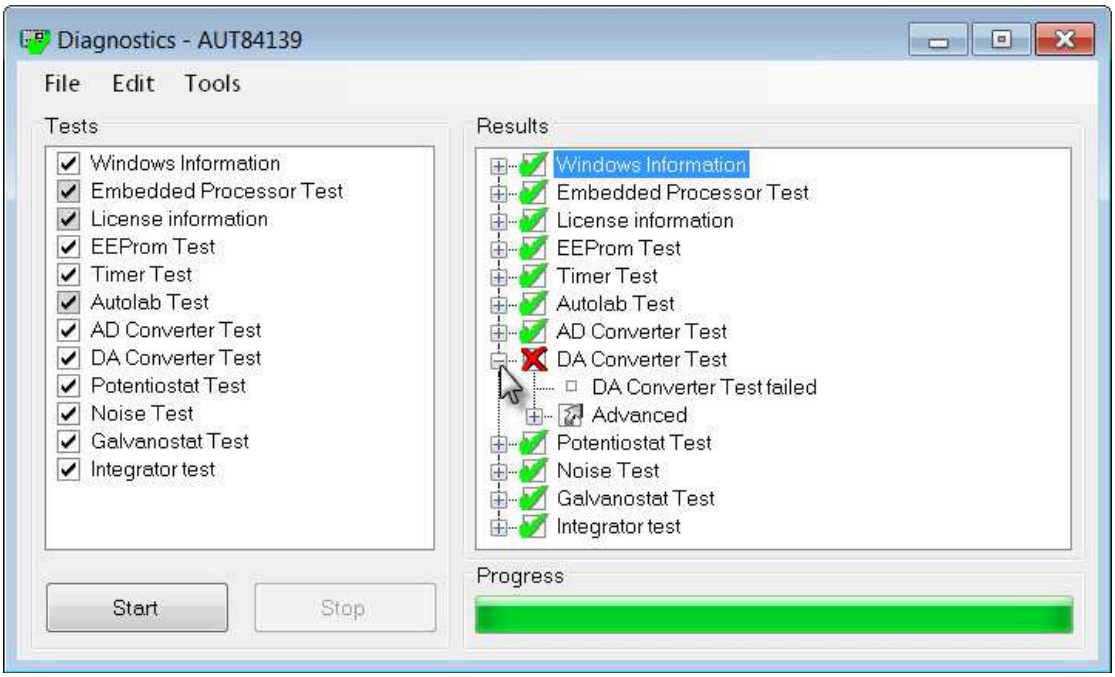

Figure 1.43 – A failed test will be indicated in the diagnostics tool

It is possible to print the test report or to save it as a text file by using the File menu and selecting the appropriate action (see Figure 1.44).

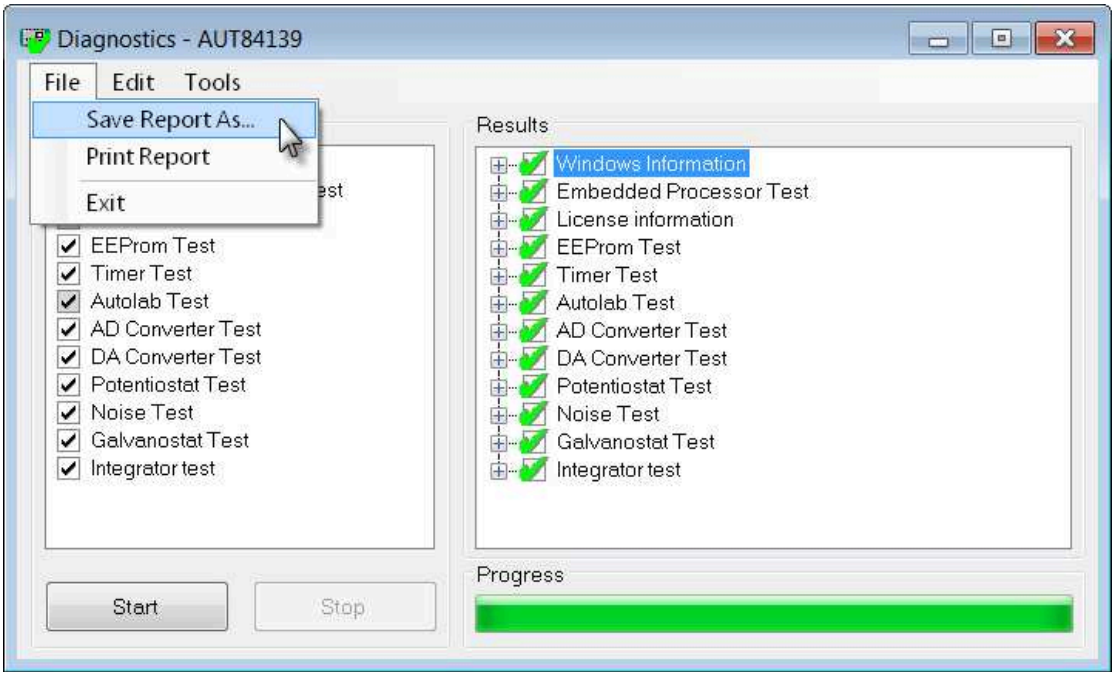

Figure 1.44 – It is possible to save or print the diagnostics report

Note

At the end of the test, it is possible to perform the diagnostics test on another device, if applicable. Use the Select instrument option from the Edit menu to restart the instrument detection (see Figure 1.45). The list of available devices will be displayed after the detection process is finished (see Figure 1.37 and Figure 1.38).

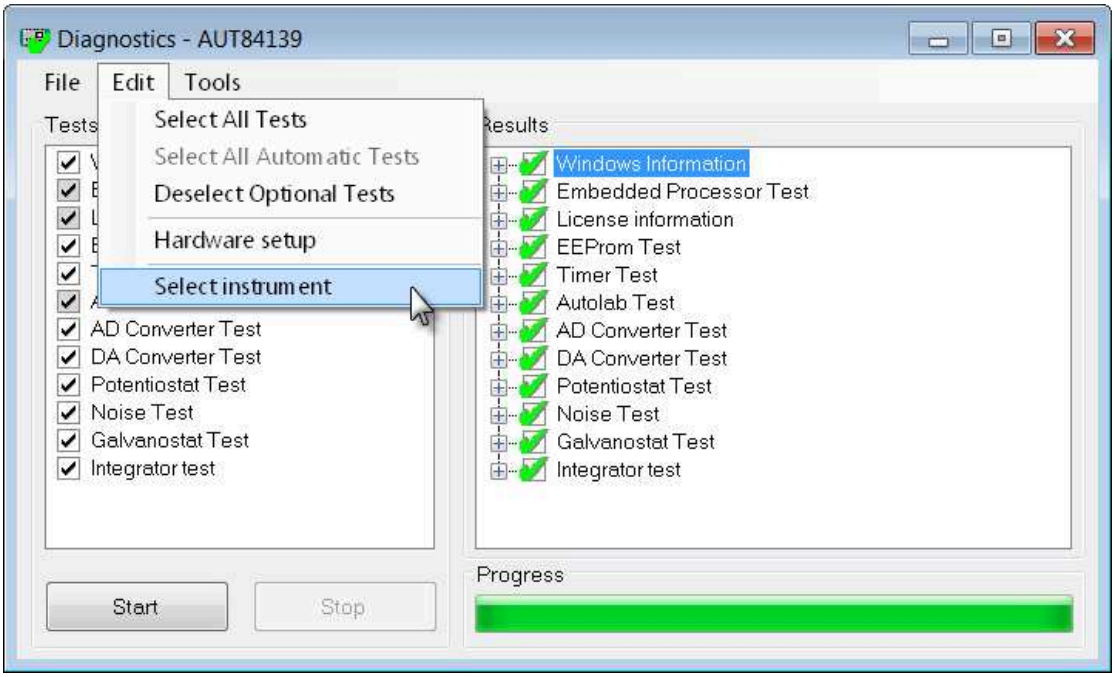

Figure 1.45 – It is possible to restart the instrument detection at the end of the test to diagnose another device

When a FI20-Integrator[12] is specified in the Hardware setup (for instruments with a FI20 module or an on-board integrator), a message will be displayed at the end of the Integrator test (see Figure 1.46).

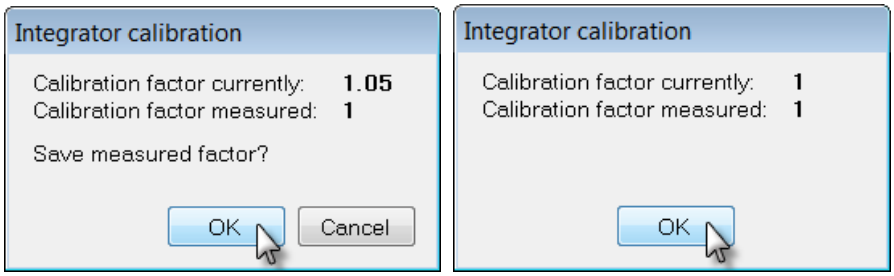

Figure 1.46 – The value of the measured Integrator calibration factor is displayed at the end of the integrator test (left: calibration factor different from stored value, right: calibration factor unchanged)

Click OK to save the measured value in the hardware setup file of the instrument.

[12] The determination of the integrator calibration factor does not replace the full test of the module. Please refer to Sections 1.6.9-1.6.11 or to the Module test document, available from the Help menu for more information on the complete test of the FI20-Integrator.

1.5.1 – Autolab Firmware Update

For some instruments, a firmware update may be required. If this is the case of the connected instrument, a message will be displayed during the Diagnostics test (see Figure 1.47).

During Diagnostics, an update message will be displayed if the outdated firmware is detected. Clicking the Yes button when prompted will silently update the firmware (see Figure 1.47).

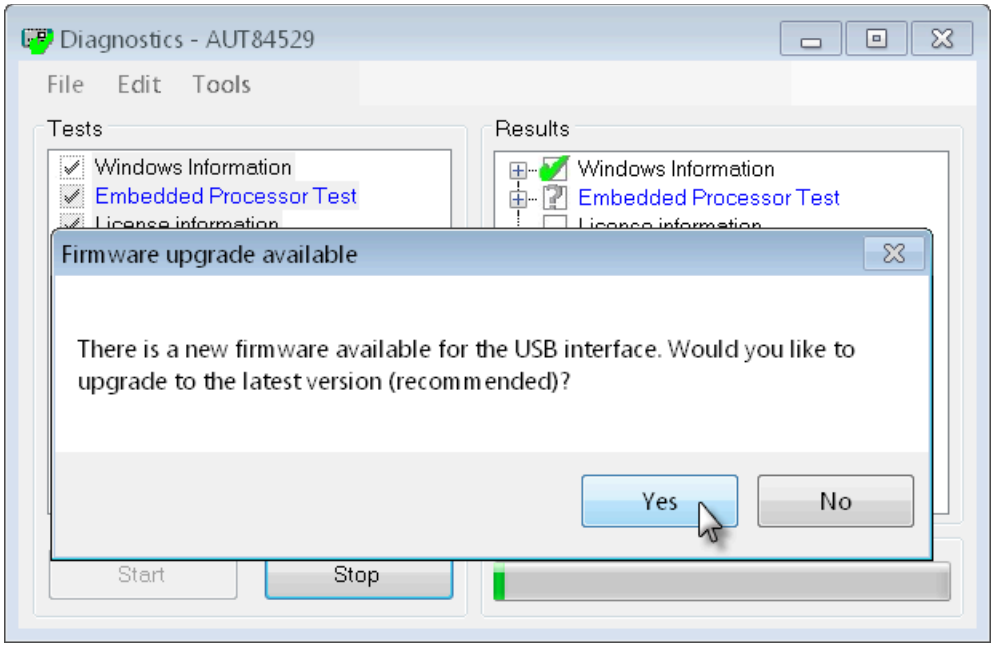

Figure 1.47 – An upgrade message is displayed when the outdated firmware is detected

The firmware update is permanent and needs to be carried out only once. The update will take about five seconds.