SUPPLEMENT

to

The Autolab

Installation and Diagnostics Guide

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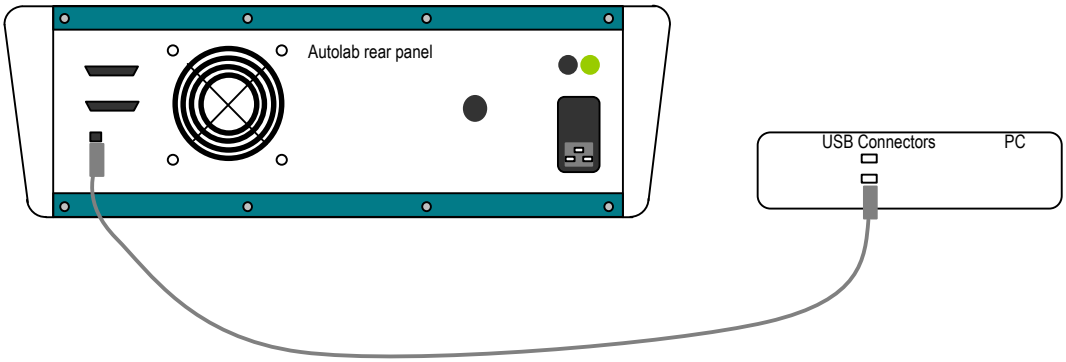
Table of contents

1. Autolab PGSTAT302N

The Autolab PGSTAT302N instrument is the replacement for the Autolab PGSTAT30. The main difference between the PGSTAT302N and PGSTAT30 is that the PGSTAT302N can deliver 2A current instead of the 1A current of the PGSTAT30. Furthermore the Autolab cabinet of the PGSTAT302N is changed. Everywhere you read PGSTAT30 in the Installation and Diagnostics Guide, you can read PGSTAT302N. The connections to the Autolab PGSTAT302N are described in the Appendix.

Rear panel Autolab PGSTAT302N with USB connection:



2. Test of SCAN250 module

The new SCAN250 module replaces the old SCANGEN module. The functionality in GPES is identical. The test as it is described in the Installation and Diagnostics Guide for the old module can be used for the new module. The result should be the same. Additional functionality of the module is possible with the NOVA software.

3. Test of BA module

The BA module can be used in two different modes:

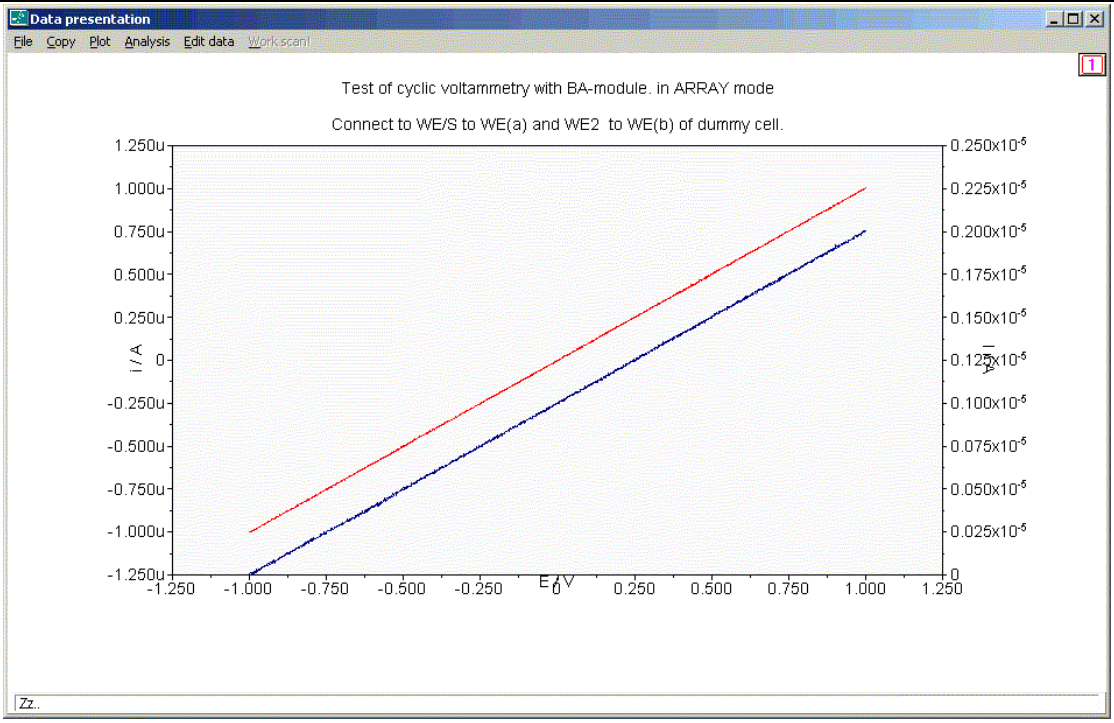
1. For applications where a second working electrode (WE2) is needed with a fixed potential (BIPOT mode),
2. For applications where a, so-called, scanning bipotentiostat is needed, where the potential of WE2 tracks that of WE1 (ARRAY mode).

The BA module has a software switch to select between BIPOT or ARRAY mode of operation.

The test as they are described in the Installation and Diagnostics Guide for the old BIPOT or ARRAY modules can be used for the new module. In addition to these tests the following extra test can be performed for the BA module in ARRAY mode:

Test for the BA module in ARRAY mode

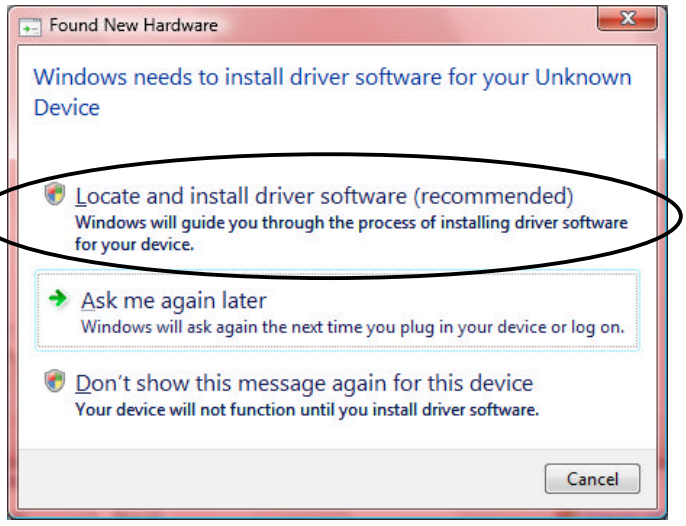
After the TESTBPOT.ICW test, load the procedure TESTARRY.ICW from the \AUTOLAB\TESTDATA folder. The connected dummy cell must be the same as for the old BIPOT or ARRAY. After the measurement, your graph should look like the following graph (after rescaling the right axis from 0 to 2.5e-6):

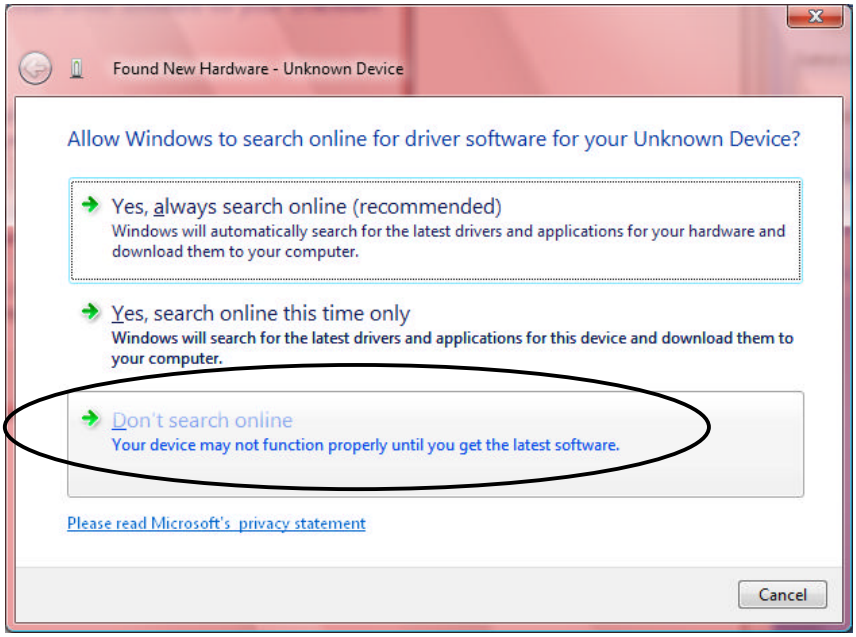


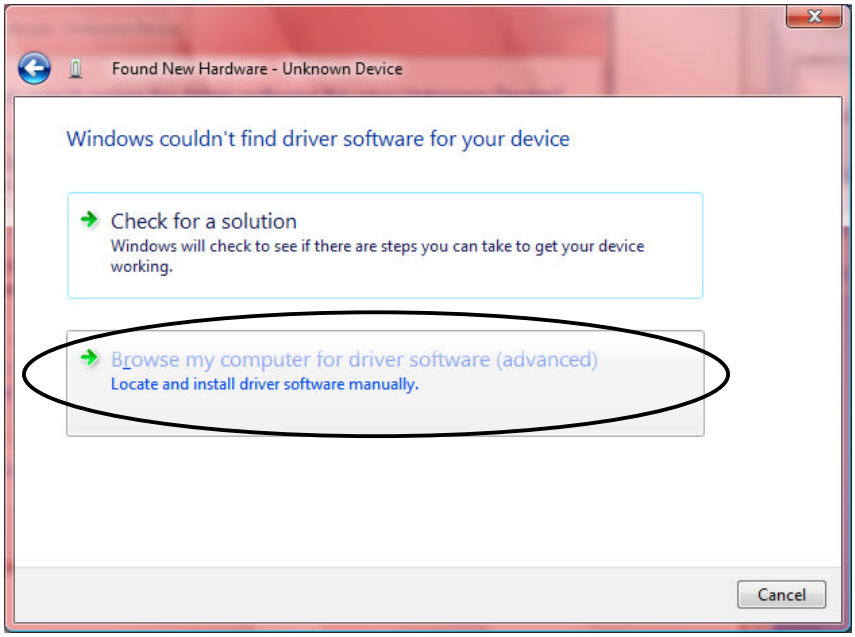
Plot TESTARRY demo-file.

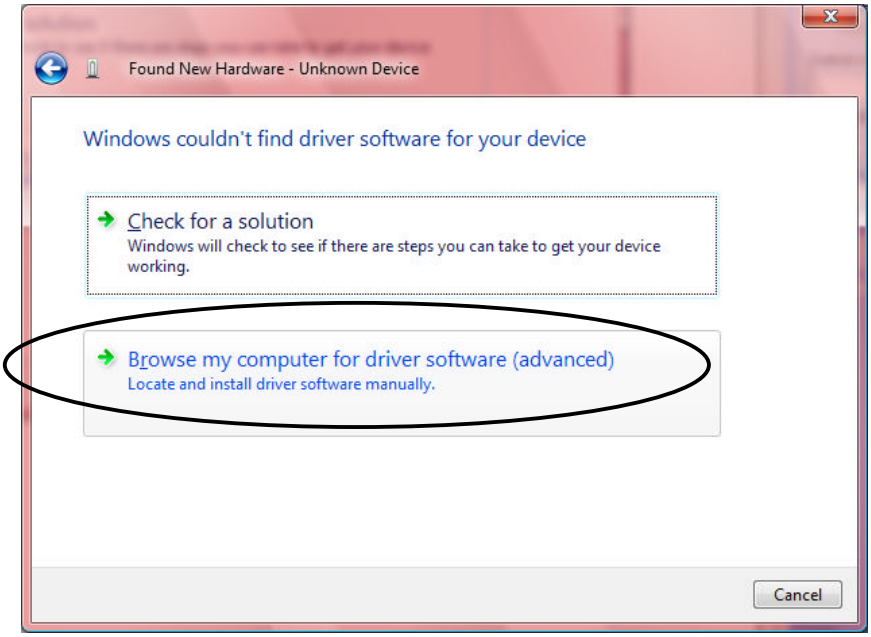
4. Installation procedure for Windows Vista

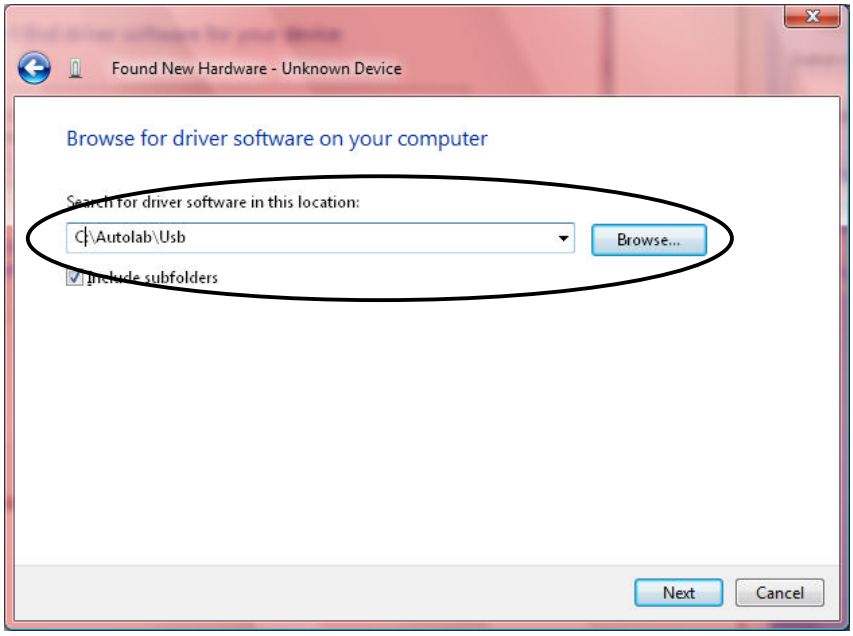
The installation procedure of the Autolab software under Windows Vista is similar to the procedure under Windows XP, except for the layout of the Windows. The installation of the USB drivers is explained. Select the indicated options:

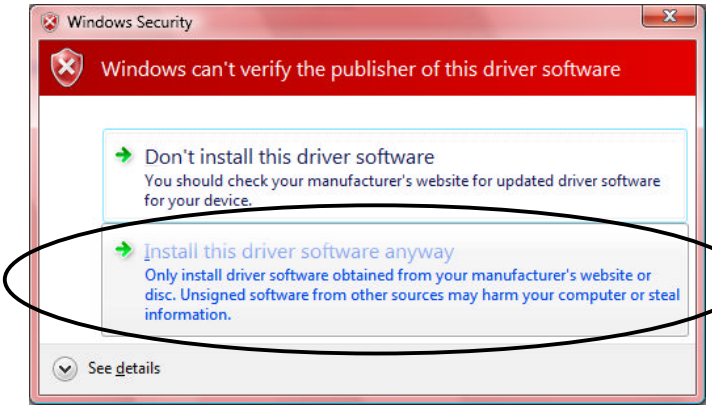



Found New Hardware - Unknown Device
Allow Windows to search online for driver software for your Unknown Device?
Yes, always search online (recommended)
Windows will automatically search for the latest drivers and applications for your hardware and download them to your computer.
Yes, search online this time only
Windows will search for the latest drivers and applications for this device and download them to your computer.
Don't search online
Your device may not function properly until you get the latest software.
Please read Microsoft's privacy statement
Cancel


Found New Hardware - Unknown Device
Windows couldn't find driver software for your device
Check for a solution
Windows will check to see if there are steps you can take to get your device working.
Browse my computer for driver software (advanced)
Locate and install driver software manually.
Cancel







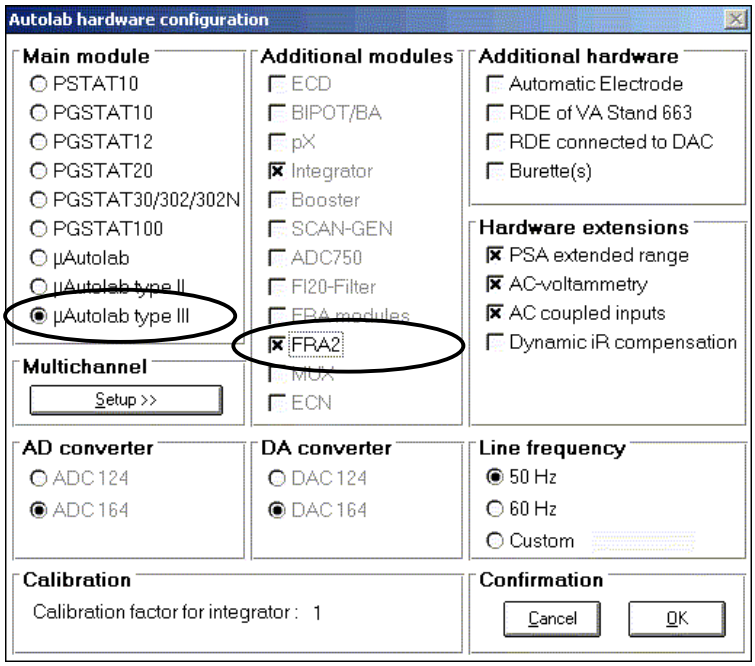
Now the USB drivers are installed properly and the Autolab interface software can be started.

5. µAutolab type III

In the Installation and Diagnostics Guide the µAutolab type II is explained. The µAutolab type III is functionally the same as the µAutolab type II except for the connection to the PC. The µAutolab type III has a built in USB interface and should therefore be connected as described on page 12 of the Installation and Diagnostics Guide. The rest of the explanation for the µAutolab type II also holds for the µAutolab type III. Make sure you have selected the µAutolab type III in the Hardware Setup (see next paragraph of this document).

6. µAutolab type III/FRA2

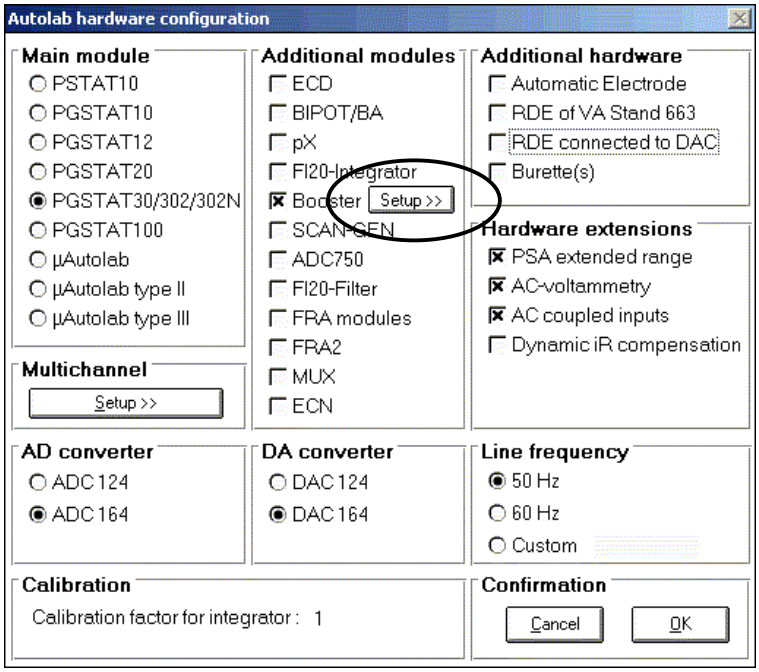
A new instrument is the µAutolab type III/FRA2. To test the FRA2 functionality of this instrument, follow the instructions explained in paragraph 13.2. In the Hardware Setup you have to specify a FRA2 with Autolab type III.



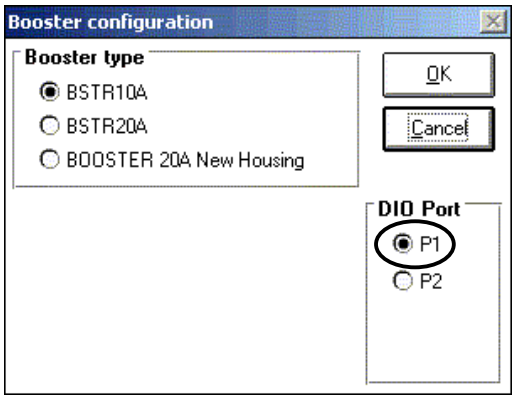
7. Test of BSTR10A

The BSTR10A is now shipped with a special Testcell to test its functionality. In this paragraph this test is explained. In addition to the test mentioned in the Installation and Diagnostics Guide you can perform the following test:

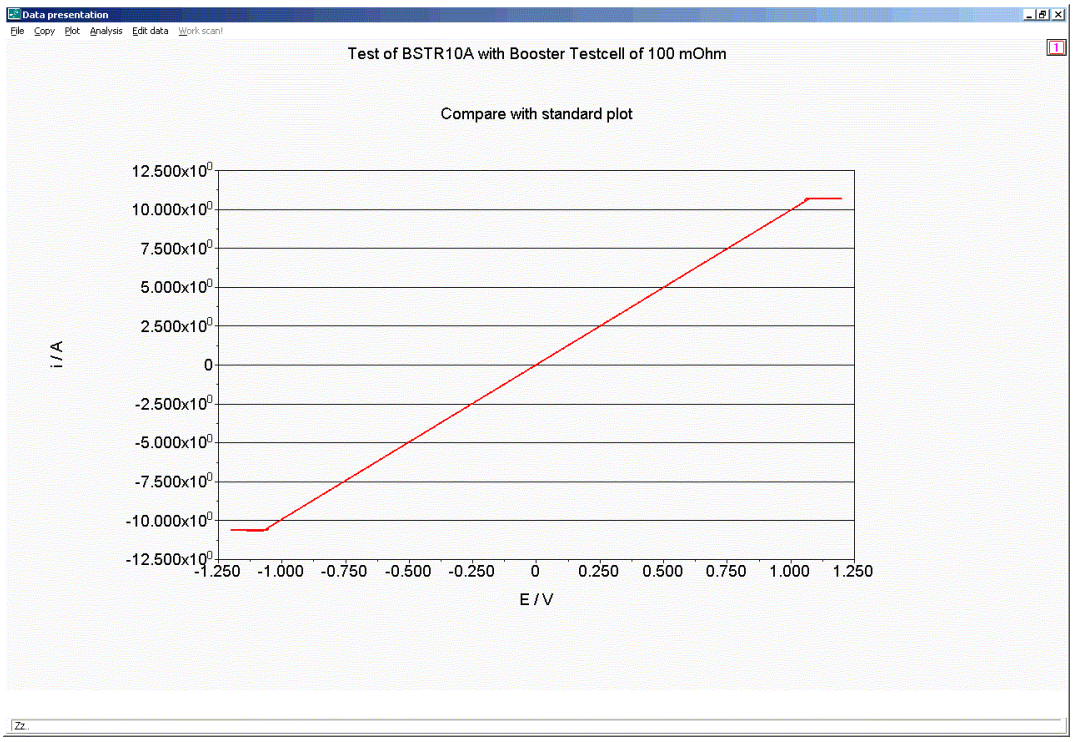
- Connect the BSTR10A as described in the chapter about Additional Equipment and turn the Autolab and BSTR10A on.
- Check the Hardware Setup, select the Booster and press the Setup button.



- Select BSTR10A and the correct DIO port and press OK.



- Exit the Hardware Setup and start GPES. Load the TestBSTR10A.icw (Cyclic voltammetry) procedure from the C:\Autolab\TestData folder.
- Connect the special BSTR10A Testcell of 100 mOhm
- Press start
- You should obtain a result similar to the following graph.



The line should pass through the origin and the overload should start at a level of more then 10A and less then –10A (current limits). During the test the Iovl led will illuminate shortly. The absolute value of the slope and the length of the flat lines can vary from instrument to instrument.

8. Installation and test of the Booster20A

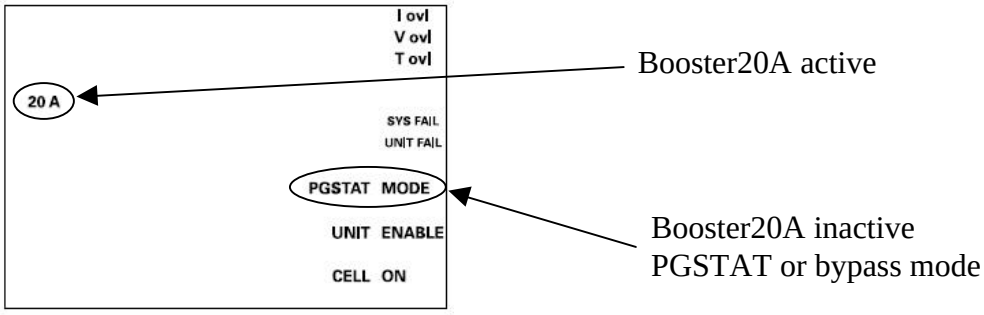
The BSTR20A in the Installation and Diagnostics Guide is obsolete. The new Booster20A is described below. The serial numbers of the new Booster20A are beginning with serial number “MSB7”. The Booster20A is used in combination with the PGSTAT30, 302 or 302N. The instrument can be placed on top of the Autolab cabinet.

Switching sequence:
It is important to switch on the Autolab first and then the Booster20A. To switch off, first switch off the Booster20A and then the Autolab. Essentially the Booster20A should be off when the Autolab is off. Switching in a different order cannot harm the instruments, however unexpected communication errors may occur.

When switching on the power of the Booster20A, the manual cell switch (front, left) will be 'off'. After initialising the instrument by starting the measurement software, the manual switch on the front of the instrument must be set in 'on' position manually, The LED will illuminate. If the switch is 'off', this will be detected by the measurement software.

As long as the Booster20A is connected to the PGSTAT, the manual cell switch of the PGSTAT30 must be 'on'. Otherwise the PGSTAT will show a voltage overload and the electrochemical cell may get an uncontrolled potential. This may lead to damage to the working electrode.

The Booster20A is capable of delivering 20 A output current only if the ‘20A’ LED is on. If the Booster20A is connected but not required, the 'PGSTAT MODE' LED will be shown. In this mode, the cell cable from the PGSTAT is internally connected directly to the cell. Please note that the cell switch of the Booster20A must be 'on'. Otherwise the PGSTAT will be disconnected from the cell.



The Iovl LED is shown in case the output current is close to 20 A. The Vovl LED lights up when the output voltage reaches its maximum of 20 V.
When only low currents have to be measured, it is advised to disconnect the Booster20A and make a direct connection from the PGSTAT to the cell.

The Display of the PGSTAT30 and PGSTAT302 is disabled in ‘booster active’ mode. With the PGSTAT302N the proper Voltage and Current are shown in the Display.

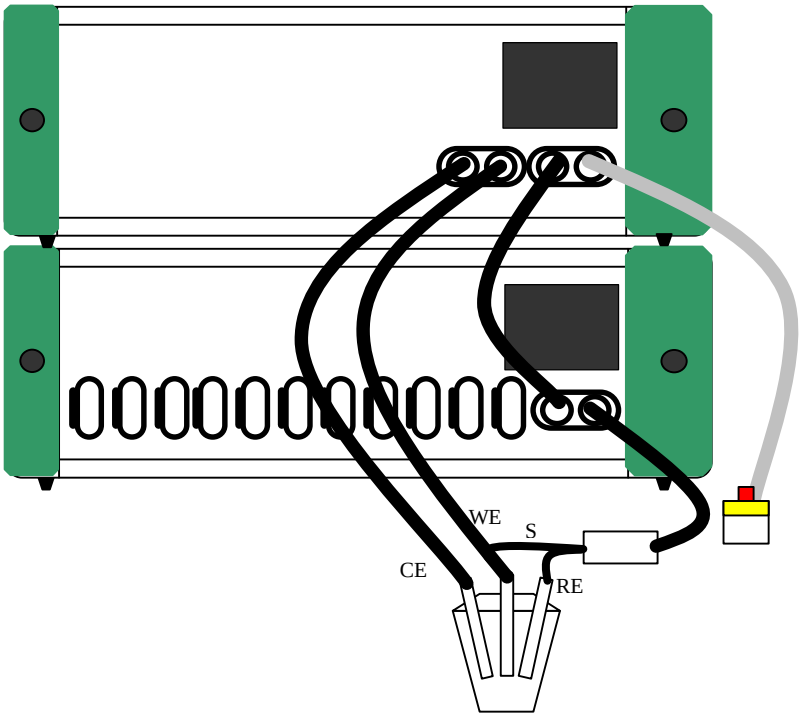
The Booster20A module can be controlled with the GPES-program for cyclic voltammetry and with the program for the chrono-methods. Also the FRA software supports the Booster20A.

Connect the Booster20A in the following manner:

- Exit the Autolab software,
- Switch off the Booster20A and the PGSTAT30/302/302N,

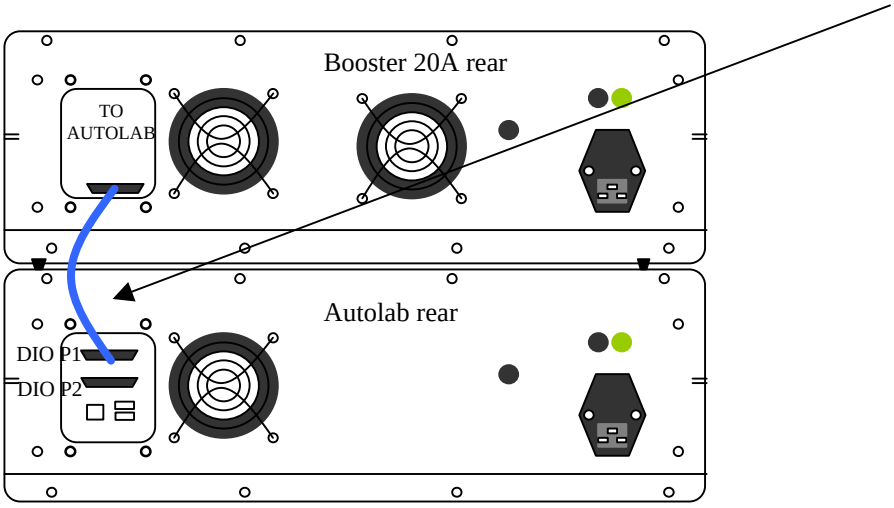
Front side connections:

- When disconnecting the cables, avoid contacting the pins of the cell cable connectors to prevent damage due to static discharge,
- Disconnect the WE/CE cell cable from the PGSTAT30/302/302N,
- Connect the cable with the connectors on both sides to the Booster20A “to PGSTAT” connection on one side and the CE/WE connection on the PGSTAT on the other side. (Thick black cable in drawing below),
- **Connect the cable with the emergency stop button to the connector “Emergency stop” on the Booster20A (gray cable in drawing below). If this cable is not connected, or if the Emergency button is in the “down” position, the Booster20A cell can not be switched on,**
- The WE and CE cables coming from the Booster20A, and the RE and S cables coming from the differential amplifier of the PGSTAT30/302/302N, can now be used to connect to the electrodes.

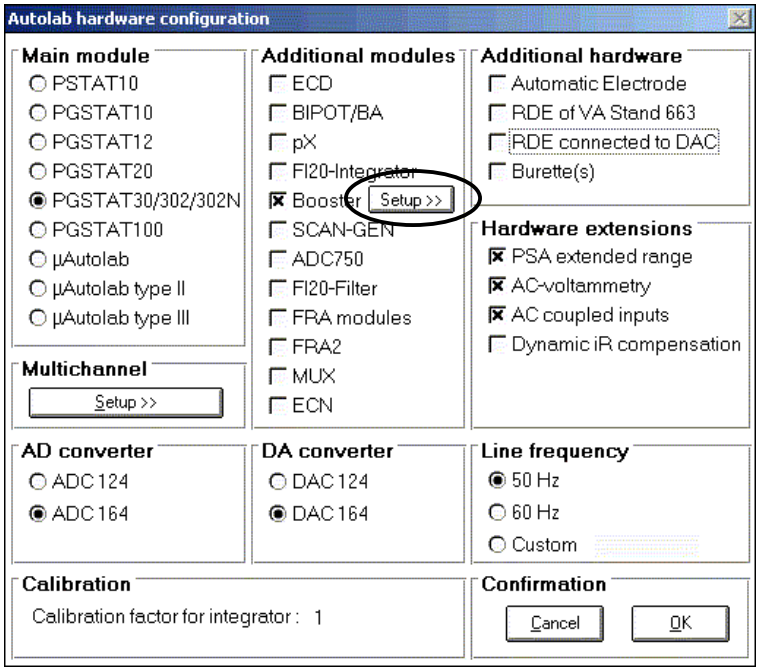


Rear side connections:

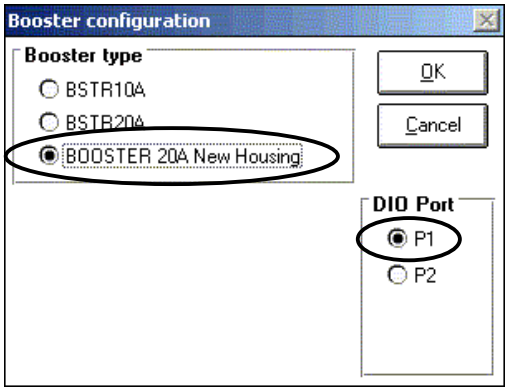
- The 25 pin parallel cable delivered with the Booster20A is connected to the "TO AUTOLAB" connector on the Booster20A on one side and to the DIO P1 or P2 connector on the Autolab on the other side, as indicated in the drawing.



After connecting all cables, but before starting the software, the settings in Hardware Setup need to be set. Select the Hardware Setup from the Autolab applications program group, select the Booster and press the appearing Setup button.

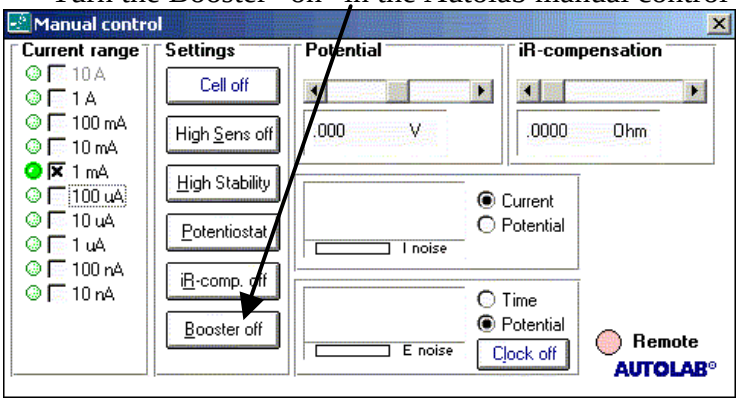


Select BOOSTER 20A New Housing and the correct DIO port and press OK.

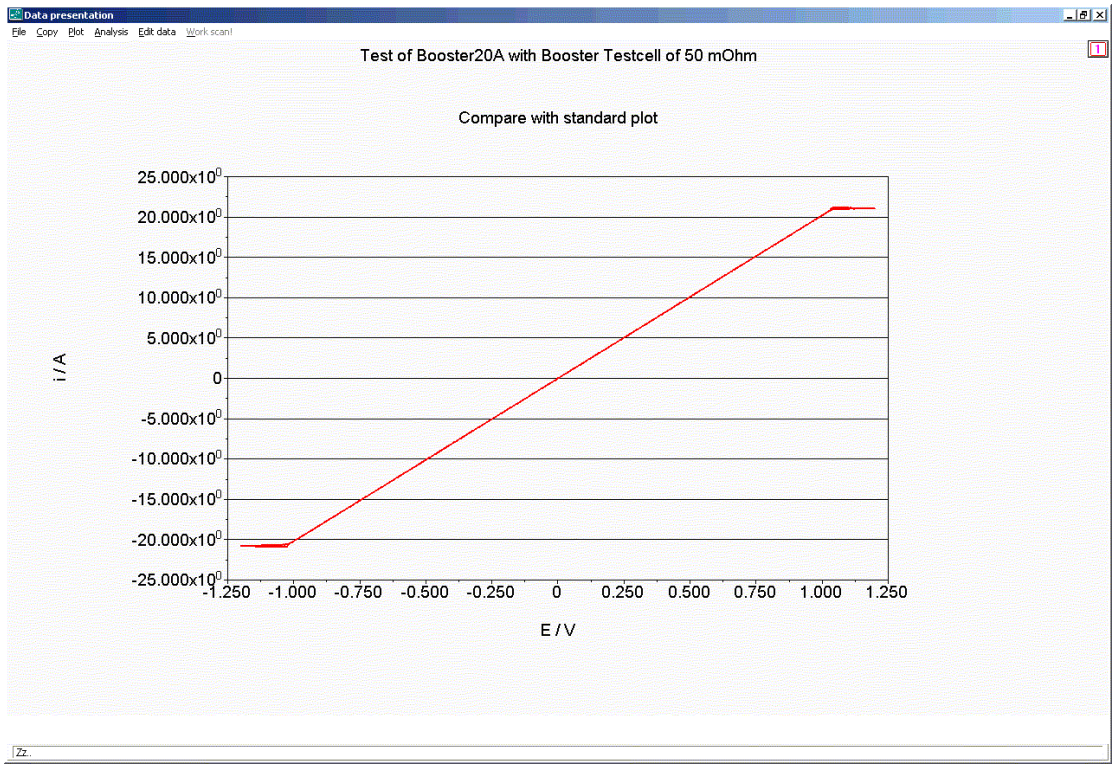


After installation a test can be run on the Booster20A Testcell.

- Connect the cell cables as indicated on the Booster20A Testcell.
- Open GPES, open the procedure TestBooster20A.icw (for Cyclic voltammetry) from the C:\Autolab\TestData folder.
- Turn the Booster "on" in the Autolab manual control window.



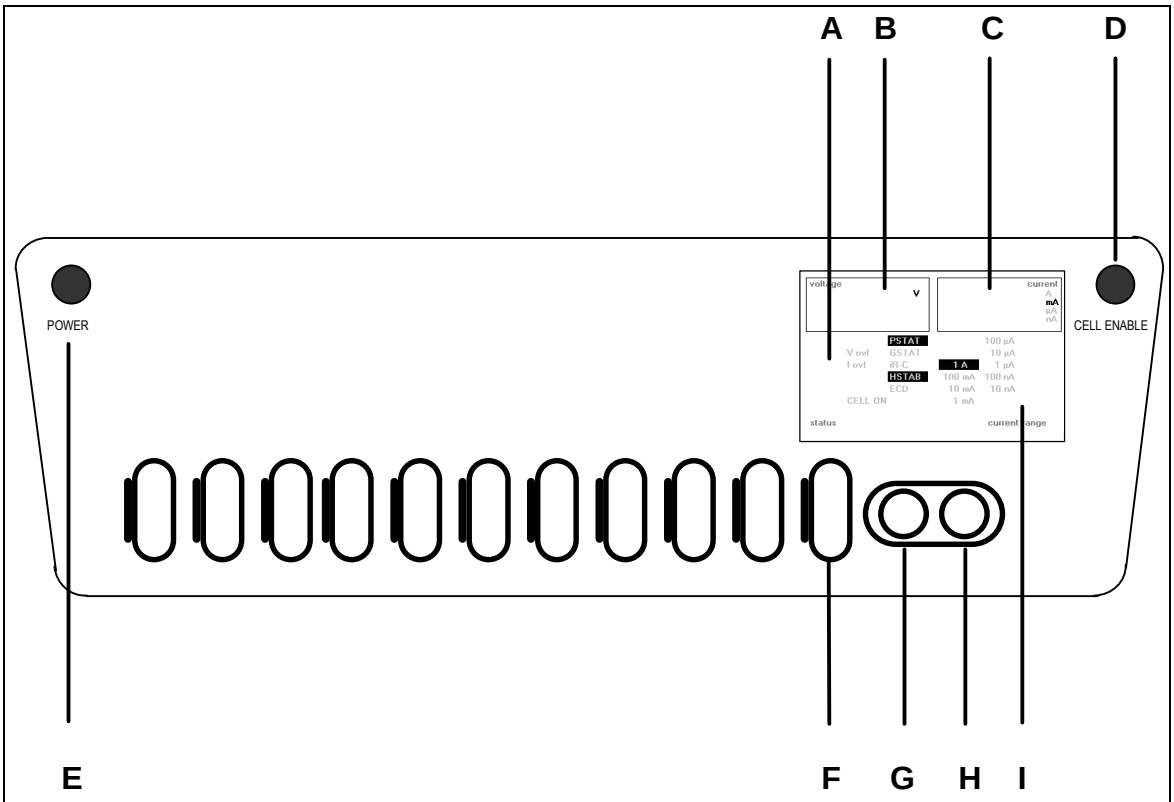
- Start the measurement.
- You should obtain a result similar to the following graph.



The line should be a straight line through the origin and the flattening should start at a level of more then 20A and less then –20A (current limits). During the test the Iovl led will illuminate shortly. The absolute value of the slope and the length of the flat lines can vary from instrument to instrument.

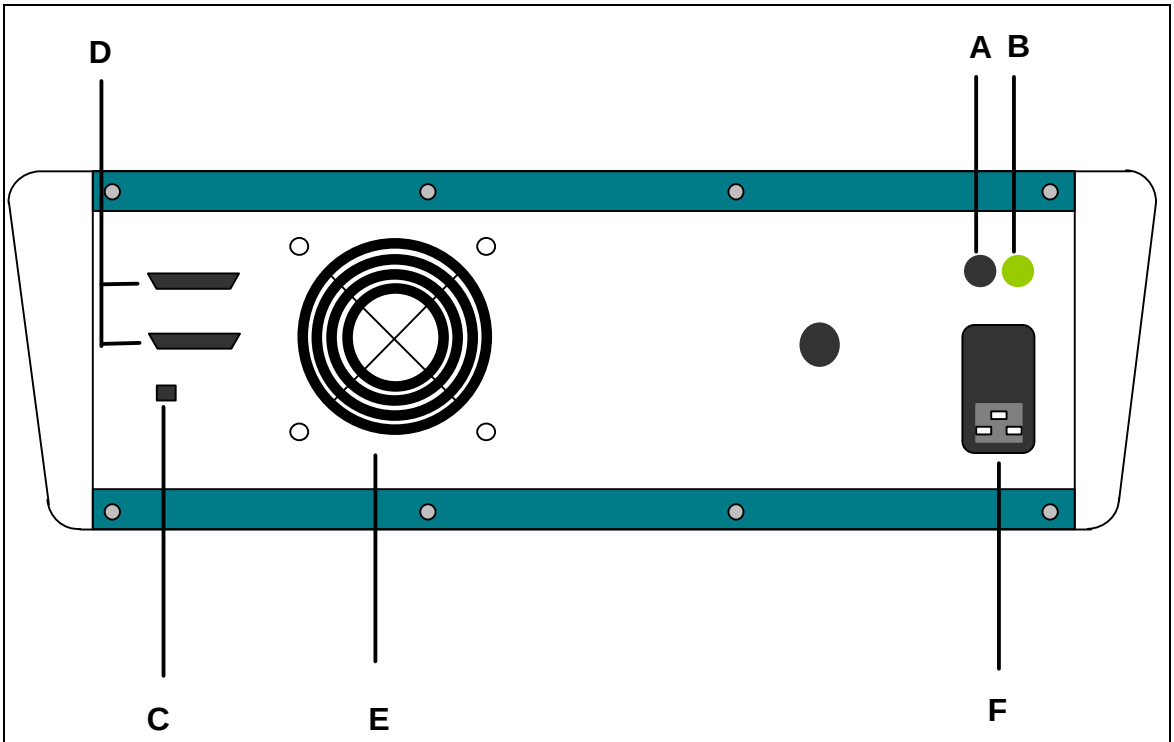
Please note: for fuel cell applications it is possible to modify the cabling as described in the application note “Fra measurements with Booster 20A at higher amplitude” to perform impedance measurements with amplitudes greater than 1.5 A.

Appendix. Connections to the Autolab PGSTAT302N



A : PGSTAT302N status
B : cell voltage indicator
C : cell current indicator
D : cell on/off switch
E : power switch
F : ground connector & monitor cable connector
G : cell cable connector for WE and CE
H : cell cable connector for RE and S
I : indicator for current range

The front panel of the Autolab PGSTAT302N.



A : analog ground connector
B : protective earth connector
C : USB cable connector
D : digital port 1 and digital port 2
E : fan opening
F : power cord connector with fuse box and voltage selector

The rear panel of the Autolab PGSTAT302N.