

SIGNAL IMPORT MODULE-HR (SIM-HR) INSTRUCTIONS

CATALOG NUMBER 750-0502

These instructions describe the function of a Signal Import Module – HR (SIM-HR), the installation procedures for both a pH electrode and other analog device, and software setup and programming. Be sure to keep this information with your BioLogic HR User’s Manual for future reference.

The SIM-HR is an analog-to-digital converter. It digitizes the input signal from a pH electrode and an additional analog device (such as an RI or fluorescence detector), then outputs the digital signal to the BioLogic HR Controller. Up to two SIMs-HR can be added to the BioLogic HR System. The SIM-HR accepts an analog signal range of –2.5V to +2.5V. The BNC connector is electrically compatible with any standard pH electrode. Moreover, both a pH electrode and an auxiliary analog device, such as an RI or fluorescence detector, can be used concurrently.

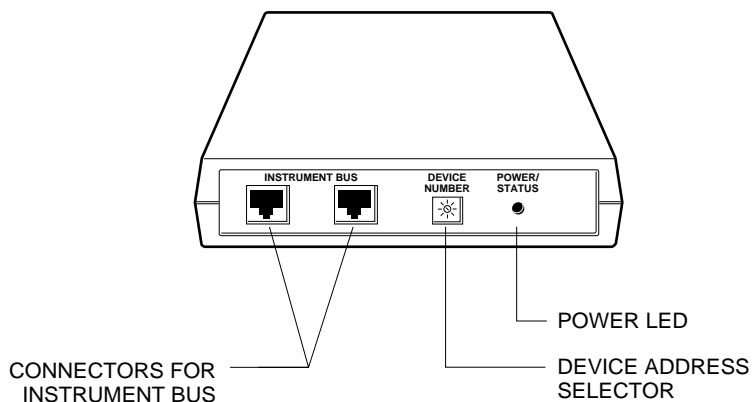
Although the BioLogic HR System can accept up to six signals (standard UV and Conductivity plus two analog signal inputs and two SIM-HR pH electrode inputs), four of the six signals may be displayed on the Run screen and the four input signals chosen in the Set-Up Editor are stored for post-run analysis and integration purposes.

The former SIM (catalog number 750-0501) and the current SIM-HR (catalog number 750-0502) can be used interchangeably. Both can be connected concurrently to the BioLogic HR Controller; one with device address 0, the other with 1. (Refer to Step 1.) However, the SIM-HR pH electrode connector is operational only with BioLogic software version 2.00 or later.

1. Connecting the Signal Import Module—HR.

Refer to Figures 1, 2, and 3.

- a. Select the device address for the SIM-HR. Using the Device Address selector on the rear panel, set the address to 0 or 1. It is not important which address you assign to a SIM-HR, as long as only device addresses 0 and 1 are used and, if two SIMs are present, they must have different addresses. In the BioLogic software, SIM1 refers to that SIM with address setting 1; SIM2 is that SIM with address setting 0.



***Figure 1 Rear panel of SIM-HR
showing ports for Instrument bus cables, device number selector and power light***

- b. Turn off the BioLogic HR System, and connect the instrument bus cable between the SIM-HR and the BioLogic HR Controller; connect another bus cable between the SIM-HR and the Workstation. If two SIMs-HR are used, then connect one SIM-HR to the Controller. Connect the other SIM-HR to the first SIM-HR, then connect the second SIM-HR to the Workstation. The SIM-HR receives power through the Controller's instrument bus port and does not need any additional power connection.

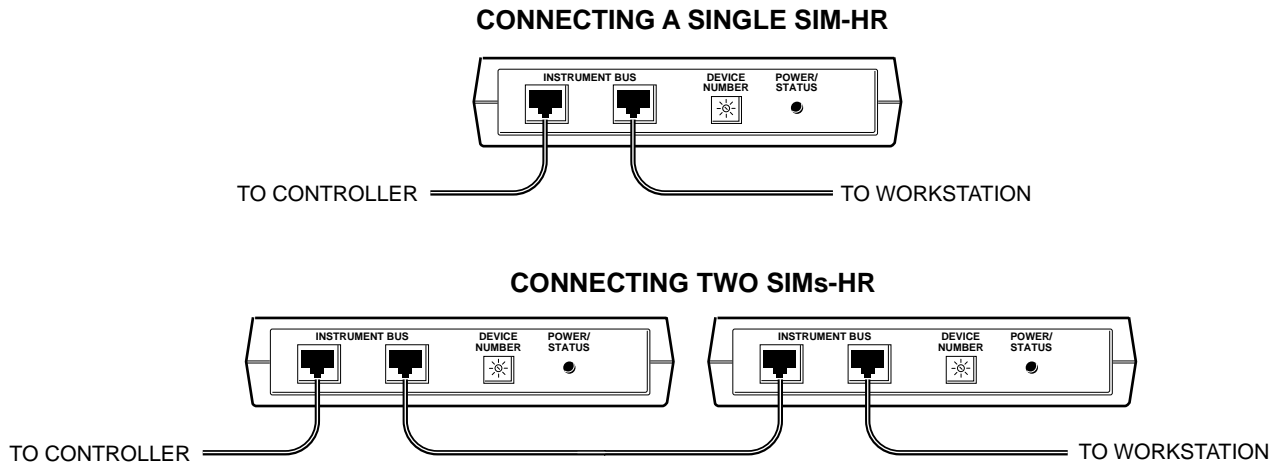


Figure 2. Connecting the SIM-HR to a BioLogic HR

- c. Connect the analog device's positive signal wire to Analog In (+) and the negative signal wire to Analog In (-). If a ground wire is also present, connect it to Ground (GND), which is shielded to improve a signal which might otherwise be noisy. The analog device will be displayed as either SIM1/SIG or SIM2/SIG in BioLogic software version 2.00 or higher.
- d. Connect a pH electrode directly into the BNC connector and give it a quarter turn to secure it. It will be displayed as either SIM1/pH or SIM2/pH in BioLogic software version 2.00 or higher.

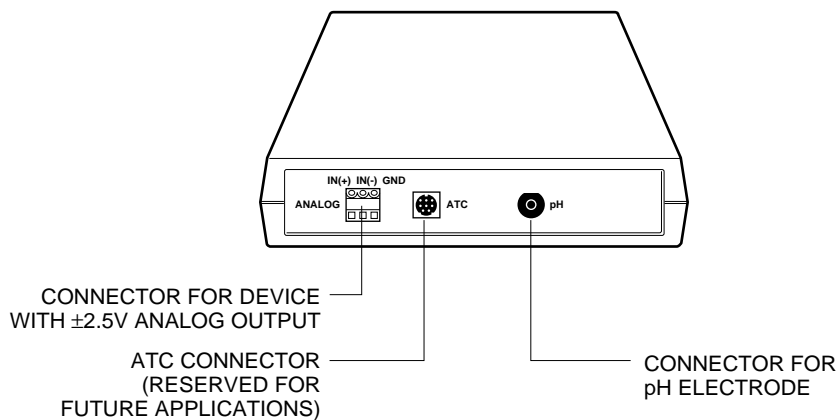


Figure 3. Front panel of SIM-HR showing connectors for Analog Device and pH Electrode

2. Turn on power to the BioLogic HR System and wait for the system software to start up.

The Manual screen will appear. From the Manual screen, verify that the SIM(s)-HR are connected, as indicated in the Signal Import Module panel. (Refer to Figure 4.) If there is no indication, then refer to the Troubleshooting section at the end of this document

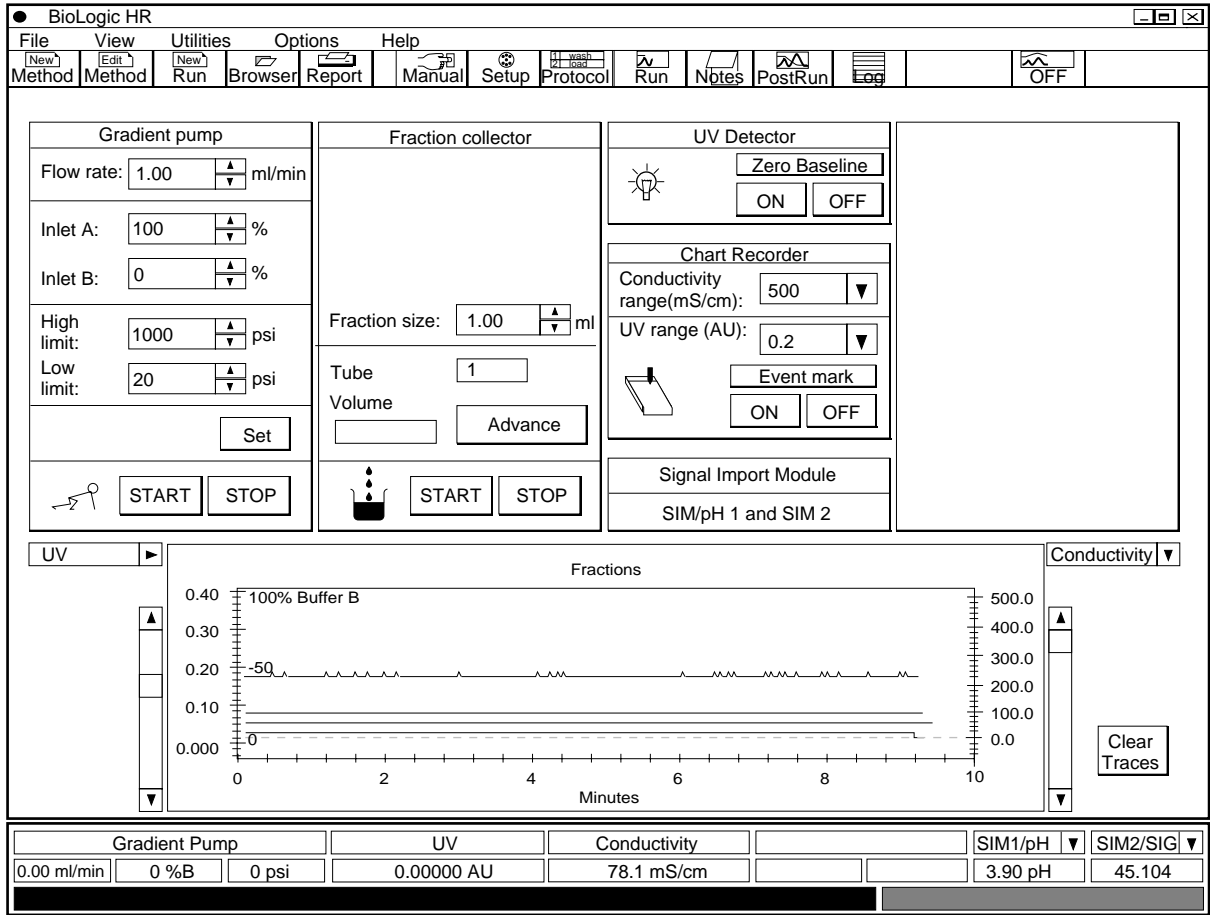


Figure 4. Manual Screen, showing confirmation that SIM 1 and SIM 2 are connected.

3. Customize the Manual screen chromatogram.

Refer to Figures 5 and 6.

For purposes of programming, BioLogic System software version 2.00 or greater distinguishes between a pH signal and an analog signal. A signal coming through the Analog port is recognized as either SIM1/SIG or SIM2/SIG. The pH signal coming through the BNC connector is recognized as either SIM1/pH or SIM2/pH.

- Up to four traces (signals) will be displayed when the Manual screen chromatogram is displayed. The voltage from each SIM/SIG and SIM/pH will be displayed in the status bar at the bottom right of the screen. If a value does not appear, there may be a cabling problem and the connections made in step 1 should be checked. If required, refer to the Troubleshooting section at the end of this document.
- To customize the x- and y-axis settings for each trace on the Manual screen chromatogram, click on the “Options” drop-down menu and choose “Chromatogram Settings.” Changing the x- and y-axis settings does not affect the integrity of the data; it affects only the way in which it is viewed in the Manual screen chromatogram.

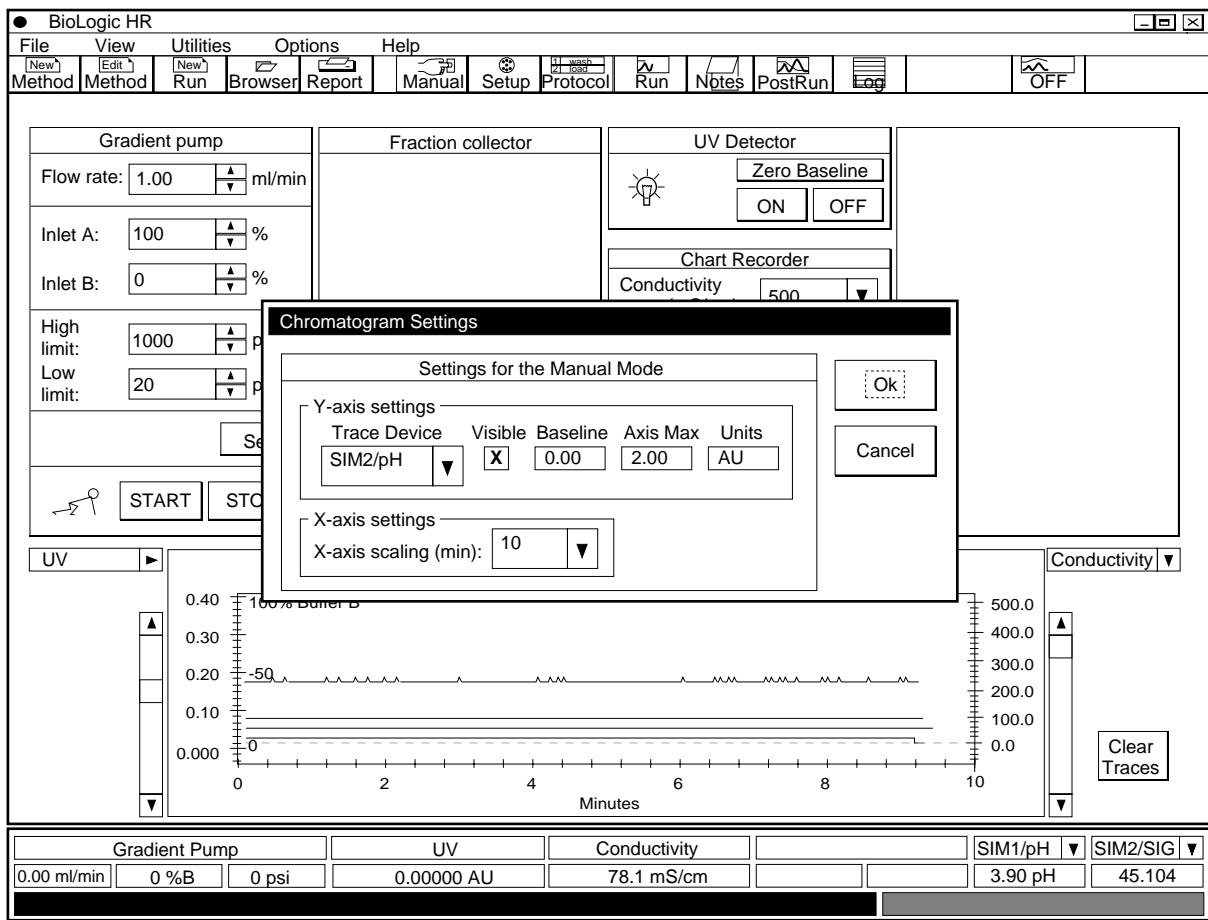


Figure 5. Manual Screen, showing SIM 1/pH and SIM 2/SIG voltage values and the Chromatogram Settings dialog box for customizing x- and y-axes for the Manual screen chromatogram.

- c. To select how the incoming data is to be handled, select “Manual Setup” from the “Utilities” drop down menu. The example shown is for a fluorescence detector. Note that this information does not affect the Run parameters for the fluorescence detector; it affects only how the incoming data is to be handled in the Manual screen chromatogram. Set the Units and the minimum and maximum for the Units Range and the Device Output Range (volts). Refer to the analog device’s documentation for information on output voltages. Figure 6 shows the Manual Setup for a fluorescence detector on SIM2. The Unit of measure is Fluorescence, and the Units Range is 0.1 to 250, and the monitor’s Device Output Range (volts) is 0 to 1 volt.

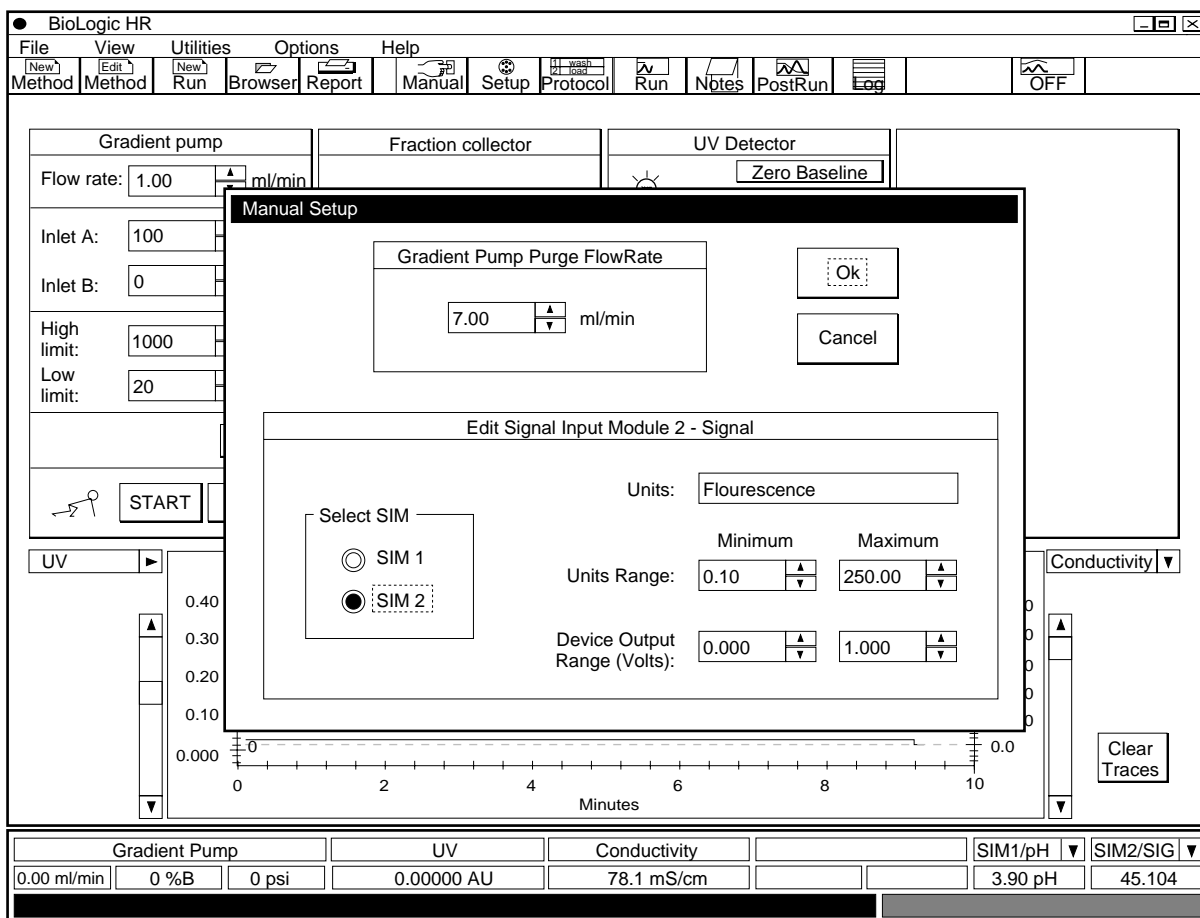


Figure 6. Manual Setup Dialog Box, showing how to customize data input only for the Manual screen chromatogram

4. Program a Method to use the SIM-HR/Signal Import (SIM/SIG).

Refer to Figure 7.

- In the Method Setup Editor screen, select either SIM 1 Signal or SIM 2 Signal. This brings up the Edit Signal Import Module panel, which allows you to customize what appears on the Run screen chromatogram axes and prepares the BioLogic HR System to acquire additional data.
- In the Edit Signal Import Module panel, the SIM-HR is identified by its “Device Address.” Recall that SIM 1 has an address of 1; SIM 2, 0.
- To select how the in-coming data is to be handled during a Run, set the Units and the minimum and maximum for the Units Range and Device Output Range (volts). Refer to the analog device’s documentation for information on output voltages.

Figure 7 shows the Setup for a fluorescence detector on SIM 2. The Unit of measure is fluorescence, the Units Range is 0.1 to 250, and the monitor’s Device Output Range (volts) is 0 to 1 volts.

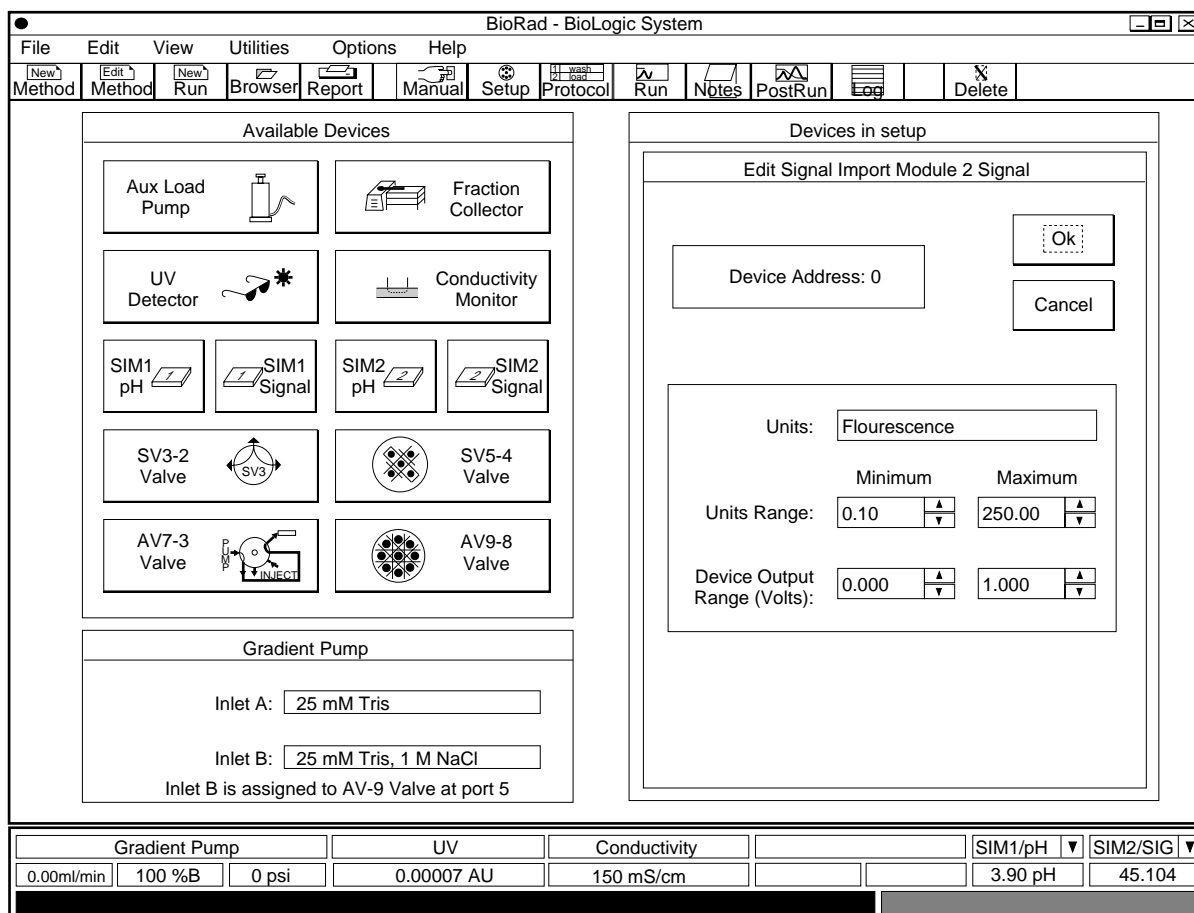


Figure 7. Setup Editor Screen, showing setup information for a fluorescence detector.

- Select the OK button on the screen to close the Edit Signal Import Module panel. Note that the SIM2/SIG icon in the “Available devices” box is now greyed, indicating that the Analog port on SIM 2 is being used as a device in the Setup Editor.

5. Program a Method to use the SIM-HR/pH Input (SIM/pH).

Refer to Figure 8.

- a. In the Method Setup Editor, select SIM 1 pH or SIM 2 pH.
- b. The pH electrode is automatically included as a Device in Setup. Note that the SIM2/pH icon is now greyed, indicating that the pH port on SIM 2 is being used as a device in the Setup editor.

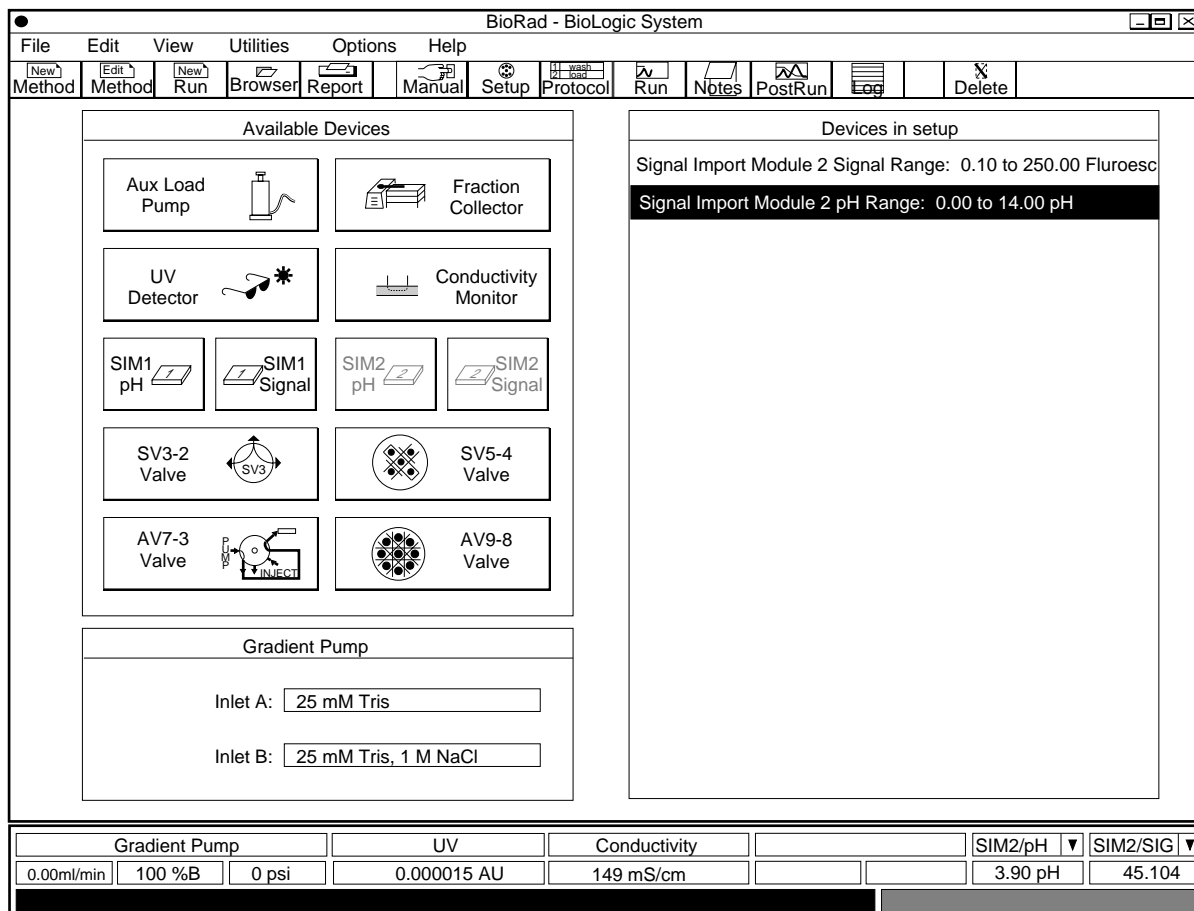


Figure 8. Setup Editor Screen, showing setup information for both a pH electrode and fluorescence detector with SIM 2.

Troubleshooting

If there is no indication that the SIM-HR is connected, check the following:

- a. A green light on the rear of the SIM-HR should glow steadily, indicating that the SIM-HR is receiving power.
- b. If the green light is not on, check that all instrument bus cable connections are secure.
- c. Verify that the correct device address (either 0 or 1) has been selected. If two SIMs are being used, make sure they have different address settings.
- d. If all the above has been checked and the SIM-HR still fails to operate, then replace the SIM-HR.

Technical Assistance

For additional help, contact your local Bio-Rad representative. In the United States, call Technical Service at 1-800-4BIORAD.

Ordering Information

750-0502	Signal Import Module – HR (SIM-HR)
750-0503	pH electrode, replacement
750-0504	flow cell, replacement
750-0505	BioLogic HR pH Monitor
750-0650	System Cable 17, 4 feet (1.2m)
750-0651	System Cable 18, 12 feet (3.7m)
750-0652	System Cable 19, 30 feet (9.2m)
750-0653	System Cable 21, 100 feet (30m)