Integration of BioLogic Potentiostat with Hiden HPR-40 DEMS Mass Spectrometer

Cable connection allows Biologic EC-lab to send Trigger, Current and Potential to Hiden Software

Figure 1: The HIDEN - BioLogic Interface cable

The HIDEN HA-061-060 3 metre cable provides a connection between the DB9 AUX I/O of a BioLogic Potentiostat and AUX I/O of HIDEN RC Interface and makes it possible for the Potentiostat to trigger HIDEN software to start and have Potential and Current values displayed with MS data in real time in HIDEN software.

Reading Potential (Ewe) into HIDEN Software

Potential (Ewe) is available as Analog output using the E monitor pin of the BioLogic DB9 connector. This voltage is sent to Auxiliary 2 of the HIDEN RC Interface and can be read in all HIDEN software. The output signal is reversed with respect to EC-lab measured values.

The E monitor facility has a voltage range of ±2.5V centered on the starting voltage of a test. If a test is run that has a voltage spread of more than this range then the monitor will not send correct voltage to the HIDEN software. It would be possible to cover a wider voltage range by running tests in series.
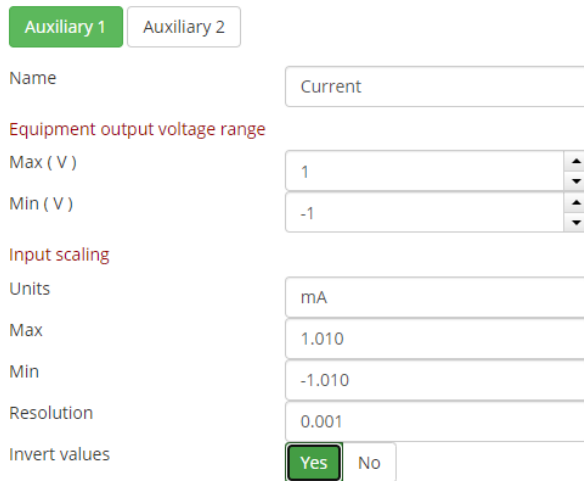
Reading Current (I) into HIDEN Software

Current (I) is available as Analog output using the I monitor pin of the BioLogic DB9 connector. This voltage is sent to Auxiliary 1 of the HIDEN RC Interface. The current to voltage conversion depends on the I range selected. For a standard board this is +/- 1V.
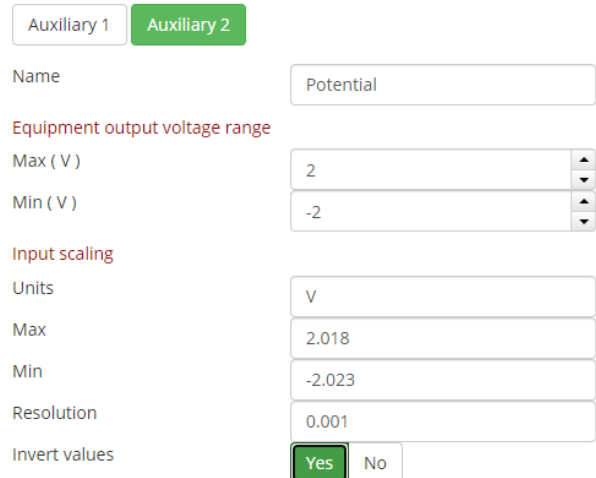
Configuration of Auxiliary Inputs

The Auxiliary Inputs must first be configured by following the procedure detailed in Hiden document HA-131-524 'HAL10 Configure Auxiliary Inputs Procedure'.

The appropriate values for the auxiliary inputs are detailed below.

Figure 2: Auxiliary 1 'Current' setup

Figure 3: Auxiliary 2 'Potential' setup

After re-interrogation, 'Current' and 'Potential' will be available as an input device and can be added as an external input to EGAsoft or QGA software using the 'Engineering Settings', 'External Inputs' options. Add the device names directly to the External Input box.

Setting up a Trigger in EC-LAB

The Trigger Out signal is sent from EC-lab to Hiden software to start and stop scans.

The trigger should be set up in an EC-Lab experiment with Trigger Out (TO) at the start of the Experiment. TO should be with 'Falling Edge'. The Trigger duration must be set to be > experiment time (including rest).

A new experiment cannot be started until the previous trigger duration has elapsed.
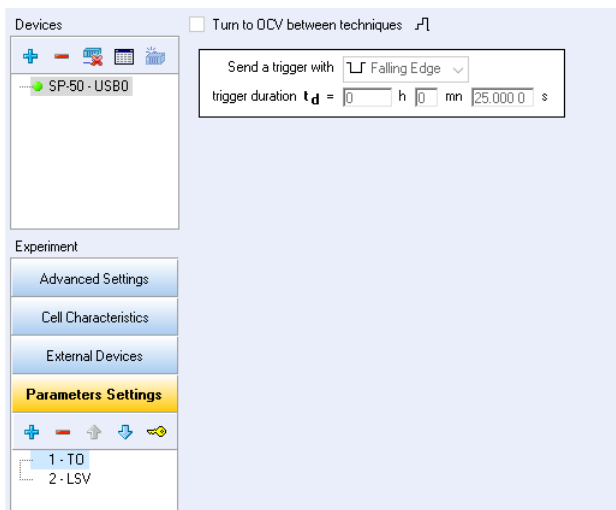

Figure 4: EC-Lab experiment Trigger Out settings

Setting up a Trigger in Hiden Software

A scan can be started and stopped in all Hiden Software.

In MASsoft a 'Start Stop' automation event is required to control the scan. This is normally available in the 'Templates' section of the Control Tabs. In QGA 2 software, the 'Trigger Input' dropdown should be set to IO4 and the 'Triggering' box ticked.
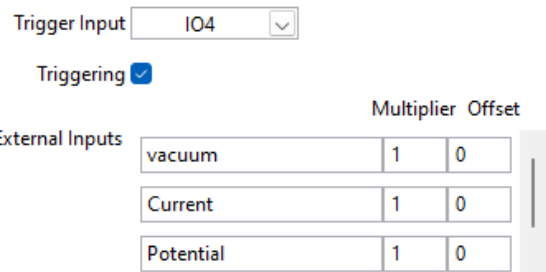

Figure 5: QGA External Input Settings

The EC-Lab experiment can then be started and the currently selected QGA setup will begin at the same time. When the TO duration time is reached the scan will stop.

A scan can also be triggered in EGAsoft. For details, use the Help buttons within EGAsoft software.

Chart 1: Example of EGAsoft presentation of MS signal v's Potential v's Time
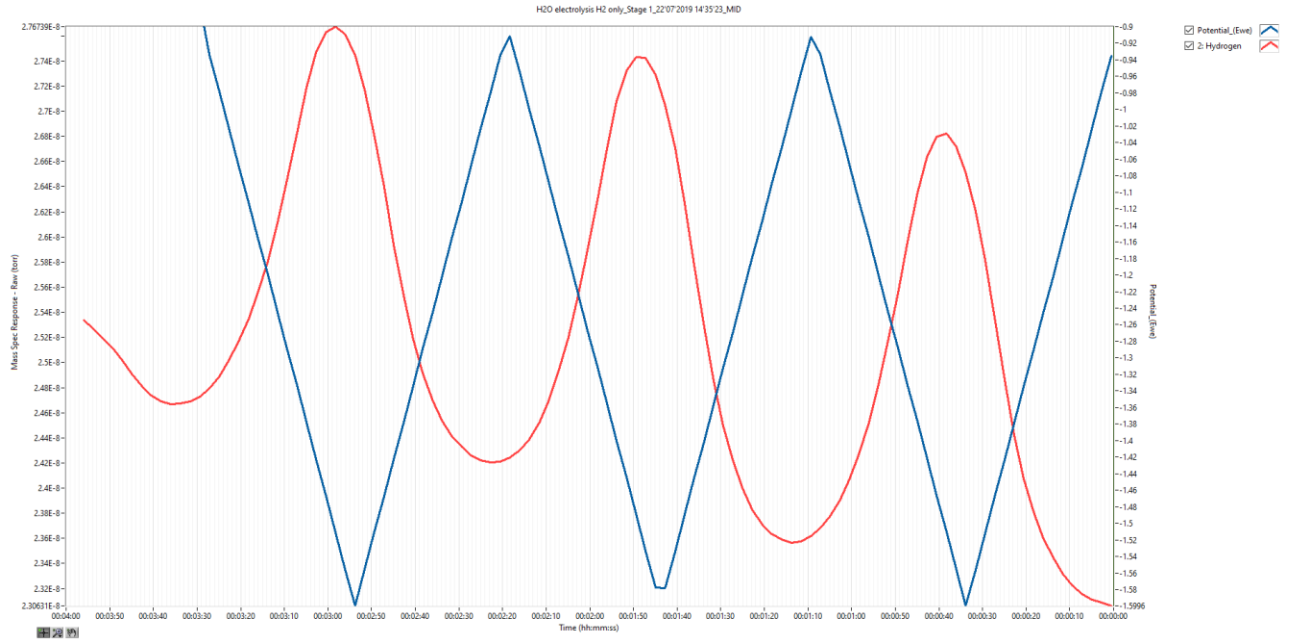

Chart 2: Example of EGAsoft presentation of MS signal v's Potential v's Current