

## Product Note P6A



### mPDA User Guide

---

The mPDA-module facilitates the connection to the peripheral port and allows simultaneous recording of 2 different bipolar high-ohmic external voltages, such as voltage monitors, reference or pH electrodes.



#### 1. Connection

Insert the M-DB37 connector into the peripheral port connector of the CompactStat or IviumStat. Connect the banana plugs to the signal to be measured; channel 1 is indicated by a '1' on the corresponding red and black banana; channel 2 is indicated by a '2' on the corresponding red and black banana. The red bananas are the channel+ and the black bananas are the channel-.

#### 2. Capability

A mPDA module has 2 differential high-ohmic analog inputs:

- Each channel can measure the difference between + and - inputs up to +/-10V
- The maximum allowed common mode voltage is +/-12V. This means that the potential of the inputs may be 12V different from the instrument gnd (Agnd)
- Each input + and - has a very high input resistance:  $> 10^{12}$  Ohm

**Note that there always must be a relation between in the inputs and Agnd. It is incorrect to keep the inputs "free floating", because these may end up at very high voltages due to the high-ohmic character of the inputs (charge can accumulate because leakage is small).** However, in practical real measurements, this is almost never an issue, because normally electrodes are put in connecting solutions or cells are put in series, etc. If the primary electrodes (WE/CE, etc.) are used, the relation with Agnd is already established. However if the primary electrodes are not used, the (green) gnd connection must be connected to some point of the experimental setup.

### 3. Operation

#### Measurements/data acquisition:

The analog inputs can be recorded both in the Direct mode and during methods. The actual measured values are shown in the IviumSoft in the range of -2V to +2V, i.e. the actual measured voltage is scaled down to fit in this voltage range. This means that a measured voltage of +10V is shown as +2V and a measured voltage of -10V is shown as -2V, etc.

#### Direct Mode:

In the **Direct mode** the analog channels can be measured from the PDA-tab (leave the selected number of PDA-units to '1' in the top left of the PDA-tab). Click on the "Read units" button and both channels will be measured and the data will be displayed in the table. Every time the "Read units" button is clicked both analog channels will be measured.

Note that since the mPDA only has 2 channels, only the readings for ch1 and ch2 are valid (although channels 1 – 8 are displayed, no values will appear at channels 3 - 8).

#### Method Mode:

To measure the analog input channels of the mPDA in the **Method mode** (during methods) proceed as follows:

- Select the desired method,
- Activate the advanced method parameters,
- In the method parameters check the box next to "Modules" to show "on", and check the box next to "PDA" to show "on"
- In the method parameters next to "Analog inputs" select the number of inputs to be 2.
- Optionally:  
In the method parameters clicking next to "Data Options" opens a pop-up window. In the "Analog Inputs" tab, a transformation can be entered. This transformation will be applied to the measured data.
- In the "Result graph" window click the "Ain" to the left of the graph. This will open an extra graph<sup>1</sup> on top of the primary result graph, that shows the analog input data.
- When the experiment is started, the analog inputs will be measured simultaneously with the primary signal (and at the same sample rate).

### 3. Calibration

Calibration of the mPDA is not required.



www.ivium.com

---

<sup>1</sup> Two graphs will appear when in the "Data options" the result data is distributed over two plots.