MultiWE32: operating instructions

1. Connections

The MultiWE32 should be connected with the m/f HD15 connection cable from the IviumStat or CompactStat cell connector-socket to the MultiWE32 HD15-plug.
The unit must be powered with the external adapter.
The MultiWE32 D37 cell connector contains:
- 32 Working electrodes
- 1 Counter electrode
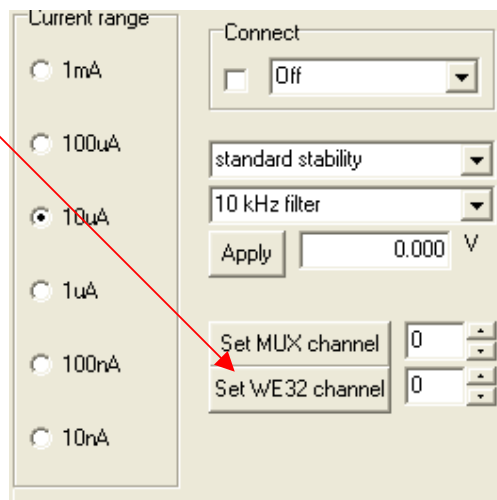- 1 Reference electrode
- 1 gnd connector

2. Operation

NB software 1.75 and firmware 154, or higher required

In the IviumSoft program, the MultiWE32 functions must first be activated, by entering the configuration. Connect the IviumStat / CompactStat instrument, in the menu bar go to Options/Options and check the MultWE32 checkbox.

The MultiWE32 can be operated in 2 modes:

1. **Sequential mode**: All available potentiostatic methods can be run in this mode.

   Before the method is started the user can select the channel number from the Direct Control tabsheet. Its operation is similar to the HiMUX multiplexer. The selected channel will be measured, however, note that the potential is applied to all channels simultaneously.

   Channel selection can be automated in the Batchmode, similar to the HiMUX . The Loop command has a property "SetWE32ToIndex" that will set the channel nr to the loopcounter.

Alternatively, the channelnr can be set directly with the DirectCommand property "SetWE32channel"

Set Line[2] properties			
	Value		Unit
+SetMuxChannel	☐	Off	
+SetWE32Channel	☑	On	
channel		29	
+SetDAC	☐	Off	
+SetDigOut	☐	Off	
+WaitForDigin1	☐	Off	
Wait		5	s

.

2. **Simultaneous mode**: To acquire measurement from all 32 channels simultaneously. It is available for the following techniques: LSV standard, CV standard and CA standard.

This is activated with the "WE32_allchannels" method property, in Advanced mode. When checked, the current for all 32 working electrodes are recorded. Each scan will therefore produce 32 curves. Individual curves can be stored with "save data", while all 32 scans can be stored in a single file with "save dataset".

|		
+AUX	☐ Off	
+Modules	☐ Off	
WE32_allchannels	☑ On	

3. Applying a potential with the MultiWE32

By default, the electrodes of the MultiWE32 act similar to a Bipotentiostat in Scanning mode. This means that the potential that is selected by the user is applied on all working electrodes at the same time. For example, when a CV is run, all 32 working electrodes will be sweeping at the same speed.

As an advanced feature, it is possible to give each working electrode an individual offset. This offset is subtracted from the base-potential. Offsets are intended to apply fixed potential differences between the 32 working electrodes, which remain constant during a scan. Note that the value for the real-time potential in the software measurement window, and the graph axis, will only show the "base-potential" (the potential/potential range selected by user), thus this potential does not include the offset-part. The offset potentials for each WE are stored in the datafile/method parameters.

The offset potentials can be defined in the Method parameters: selecting "We32_offset" will open a dialog screen that will allow the operator to set independent offsets for each electrode, either manually or with a distribution function (within a range of -2 V to 2 V). In this example figure, a linear distribution is applied from –1V to +1V. Suppose the basepotential is scanned from 0 to 1V, the WE[1] will sweep from 1V to 2V, and WE[32] would sweep from –1V to 0V.

To show the scans for all WE's in the graph, tick the box "WE32_allchannels" in the method parameters.
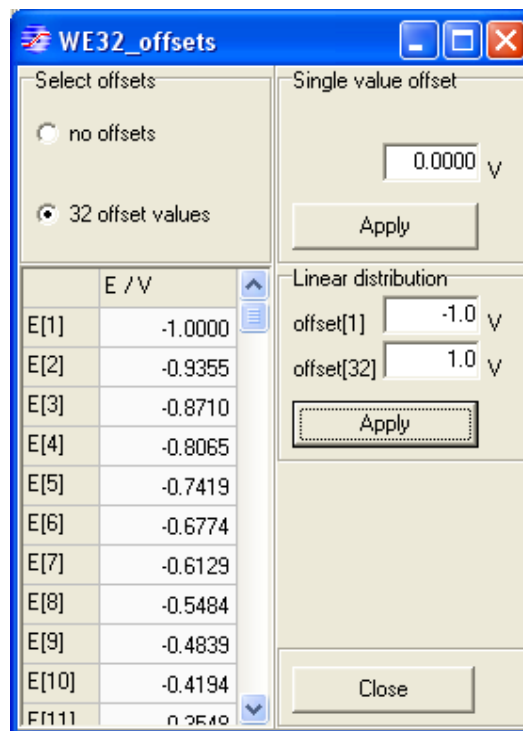
Note that when a MultiWE32 is used, there is no primary (base) electrode. For most applications, the offset potentials would remain at 0V, because potential manipulations are more conveniently done by setting the base potential.