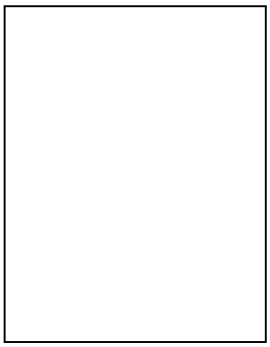
C12-Redox potential measuring / eH meter

Principle :
eH measures the quantity of oxidations and reductions in a solution ; it is a voltage measure.
As pH meter sensors, eh sensor consists of 2 electrodes, combined or separated :
- reference electrode ; contrary to pH meter reference, there are a lot of sorts of references : calomel, silver (Ag , AgCl), Hg_2SO_4…
The measured potential must be recalculated in comparison to the standard hydrogen electrode ($E° H^+ / H_2 = 0$ V).

Read the notice :
- to know if the indicated value is already expressed in comparison to standard hydrogen electrode
- if it is not, to know the difference with the standard hydrogen electrode :
for example :
* add 248mV if the reference is calomel at 20°C, + 244.4 mV at 25 °C
* add 199mV if the reference is Ag , AgCl, at 25°C….
- measuring electrode : platinum wire

Calibration :
Two kinds of buffers :
* quinhydrone 1 g . L^{-1} in pH 4 buffer : at 25°C :
E H^+ / H_2 = 462 mV
E calomel = 218 mV
* Fe^{2+} / Fe^{3+} :
- ferrous ammonium sulphate [$Fe(NH_4)_2 (SO_4)_2 , 6H_20$] : 39,2g (M = 392 $g.mol^{-1}$)
- ferric ammonium sulphate [$FeNH_4 (SO_4)_2 , 12H_20$] : 48,2 g (M = 482 $g.mol^{-1}$)
in 700 mL distillated water
add 28.1 mL concentrated sulphuric acid ([H_2SO_4]final = 0.5M)
Fill up to 1L with distillated water
In this buffer, Fe^{2+} = Fer^{3+} = 0.1mol / L
Then E = E° = 0.68V at 25°C
Read potential with reference:
- calomel : 0.68 – 0.244 = 0.436 V
- AgCl 3.5M : 0.68 – 0.199 = 0.481 V
- AgCl 1M : 0.68 – 0.236 = 0.444V

Maintenance : regular sensor mechanic cleaning
Field of application : waste waters, activated sludge, sludge methane fermentation…



400 total nitrification
C removal

250 partial nitrification

denitrification

150

50 important anaerobiosis