

MSFET3330 DEMOKIT QUICK INSTALLATION GUIDE

STEP 1: MSREF CONDITIONING

The first step is the conditioning of the reference electrode (MSREF). This is done by submerging the electrode tip in the measurement solution.

Depending on the type of MSREF (PVC or PVA electrolyte), the conditioning can take up to 24h. More information on the electrode conditioning can be found in the MSREF datasheet.

We recommend conditioning of the MSREF in combination with the MSFET (interface is switched on). Recording the sensor output will give information on when the system is conditioned.

Contact

MICROSENS SA

EPFL Innovation Park, Bat. D

1015 Lausanne

Switzerland

info@microsens.ch

www.microsens.ch

STEP 3. INSTALLATION

The drivers for the USB digital interface are usually automatically found and installed upon the first connection of the interface to the PC.

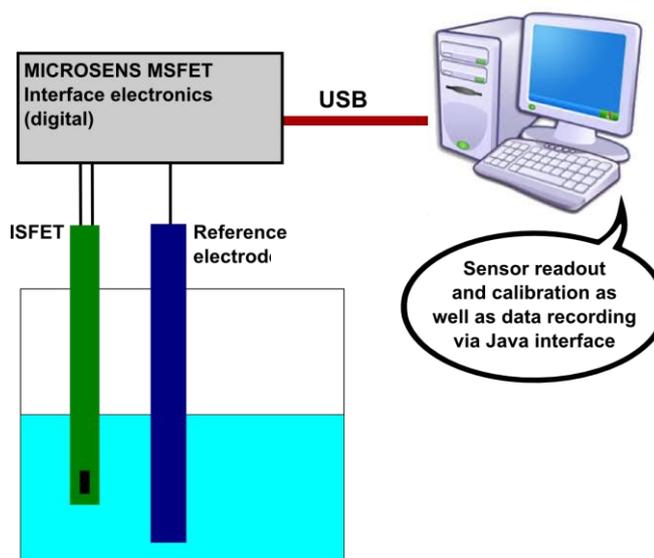
The graphical user interface can be downloaded from the “MSFET Measurement Kit” product website:

<https://www.microsens.ch/products/msfet-measurement-kit>

STEP 2. DEMOKIT SETUP

The MSFET3330 USB Interface is powered through the USB bus of a PC. Simply plug the MSFET3330 USB Interface into a USB port (directly or with a cable) and wait for the USB COM port drivers to install. Note the COM port the MSFET USB Interface is assigned by the PC. You can also find this information in your PC’s device manager. More information can be found in the MSFET3330 USB Interface datasheet.

How to connect the elements of the MSFET3330 USB Demokit:



The MSFET3330 connector has three wires and a mono-directional connector. When disconnecting the connector from the MSFET3330, take care not to pull the wires but to use the tool provided with the measurement kit.

The MSREF is connected to the blue socket. The output voltage **V_{sg}** can either be measured using a multimeter or via a PC using a data acquisition interface (DAQ) and a corresponding user interface (such as LabView).

Unzip the files and start the program by double clicking on **MSFET_Interface_GUI.jar**. In some cases you might need to install the most recent java runtimes (<https://java.com/de/download/>).

Q: How to calibrate the MSFET3330?

The MSFET3330 can be calibrated using commercial pH buffers. We recommend calibrating using buffers corresponding to the solution you want to monitor in your application. For calibration the MSFET3330 (together with the MSREF) is dipped into the calibration buffer for 10-15min and the sensor output is recorded. This is repeated for at least two other calibration buffers. The required commands for calibration via the PC interface is explained in more detail in the interface manual. The recorded values allow the automatic determination of the MSFET3330 offset voltage V_{off} and pH-sensitivity S . Using these parameters the subsequent measurement can be directly converted into the corresponding pH values.

For the calibration we recommend starting with a center value pH_c to determine the offset voltage $V_{off} = V_{sg}@pH_c$ and to determine S via the other calibration points selected from the upper and lower limits of the range. This will increase the precision of the pH measurements.

The pH can then be calculated using the calibration parameters (pH_c , V_{off} and S):

$$pH = \frac{V_{sg} [mV] - V_{off} [mV]}{S \left[\frac{mV}{UpH} \right]} + pH_c$$

Q: What to do when the output signal V_{sg} does not stabilize?

When starting from a new MSFET3330 the stabilization time can take a bit longer than 15min, especially in buffers with low ionic strength (low salt content). Our recommendation is to calibrate the MSFET3330 in buffers of sufficient ionic strength (at least 10mM salt content). In the startup-phase of the MSFET3330 and the MSREF a drift of up to 1mV/h can occur after initial stabilization. The usual drift is between -1 and -5mV/day (= 0.02 and 0.1 UpH/day) depending on MSREF and ionic strength.

IMPORTANT:

Wear ESD protection when handling the MSFET3330.

Do not leave the MSFET3330 in the air while powered. Only unplug the MSFET3330 when the interface is off.
