Quick Setup Guide

# M300/M400 2G Quick Setup Guide

## For InSUS pH Single-Use Sensors

InSUS 307 InSUS 310

METTLER TOLEDO

# Content

# 1. Introduction

METTLER TOLEDO InSUS™ pH sensors are analog, gamma irradiation-sterilizable, pre-calibrated single-use pH sensors with an integrated Pt 1000 temperature probe. Please read through these instructions carefully before commissioning in order to ensure trouble-free use. Operation should be carried out only by trained personnel and staff who have read and understood the sensors' operating instructions.


Fig. 1: InSUS pH sensor (example)

| Pos. | Description |
|---|---|
| 1 | VP connector |
| 2 | Slope, Zero Point (offset) and sensor serial number |

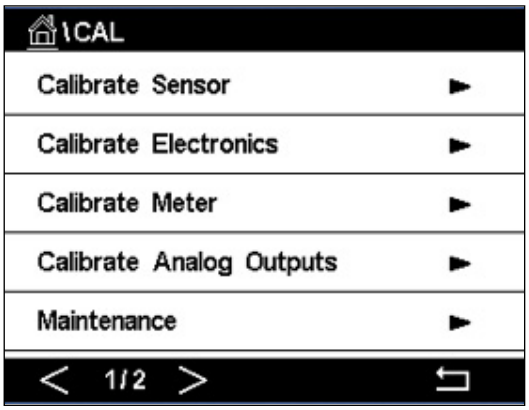
# 2. Installation

Connect the sensor to the pH transmitter with a VP6 cable. Observe the connection information that accompanies the cable or the transmitter and follow the wiring instructions for pH sensors with integrated **Pt 1000** temperature probe and **without solution ground.** Follow the instructions in the M300 or M400 transmitter manual to configure the measurement channel for an analog pH/ORP sensor with a Pt 1000 temperature probe.

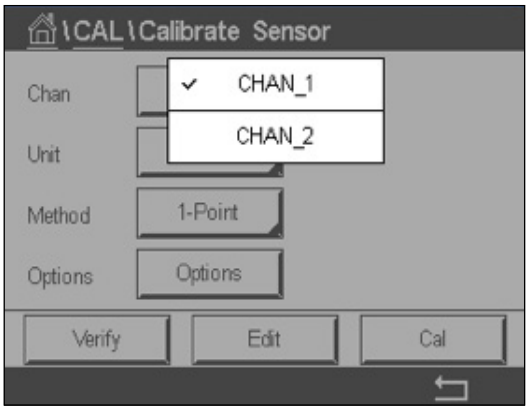
# 3. Data Entry of Pre-Calibrated pH Single-Use Sensor: Slope & Zero Point (Offset)

3.1 While the M300/M400 transmitter is in measurement mode, go to the calibration menu by selecting the calibration icon.

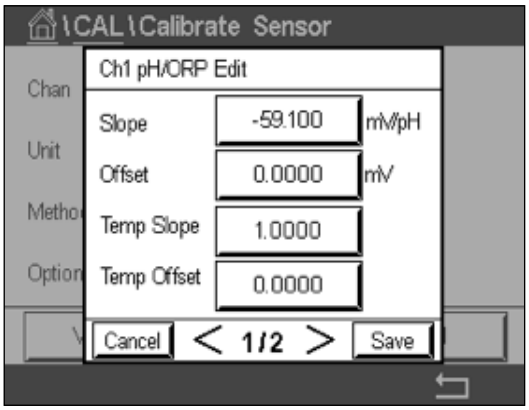
3.2 Press Calibrate Sensor




3.3 Select the measurement channel – only applicable for 2-channel transmitters.

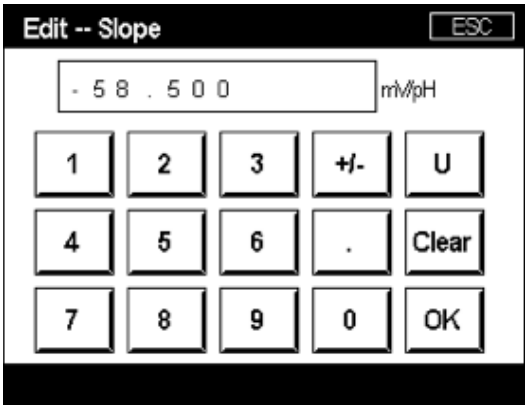



3.4 Press the **Edit** key.

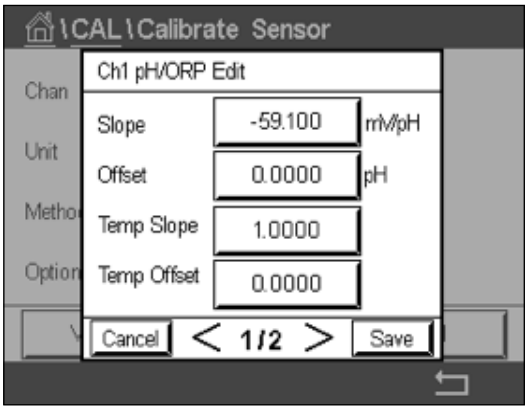


3.5 Locate the Slope and Zero Point (Offset) values found on the sensor label (Fig. 1) or on the sensor's Quality Certificate and use these for data entry. Press the slope value and use the keys to edit the value in mV/pH.

**Note:** If the slope value shows as %, press the U key to change the unit to mV/pH.

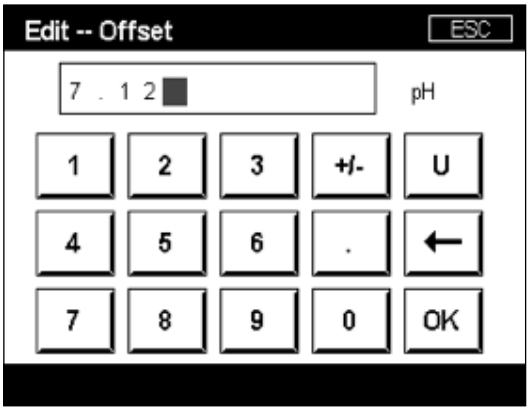



3.6 Press **OK** and continue with the Zero Point (Offset) by pressing the offset value.

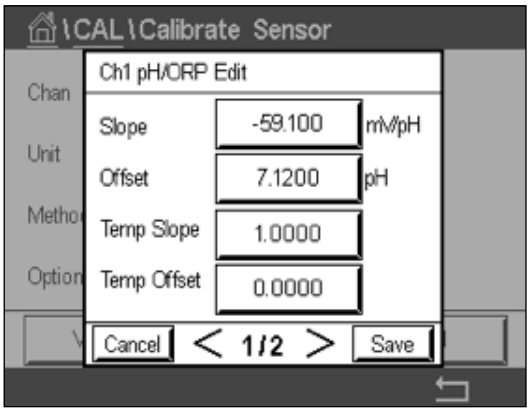



3.7 Edit the offset value.

**Note:** If the offset value shows as mV, press the U key to change the unit to pH.



3.8 Press **OK** and then **Save** to accept the data for slope and offset and to overwrite the previous calibration data.




If a warning message appears on the screen, please check the ISM /Sensor alarm settings as described in chapter 5 of this guide

# 4. Process Calibration

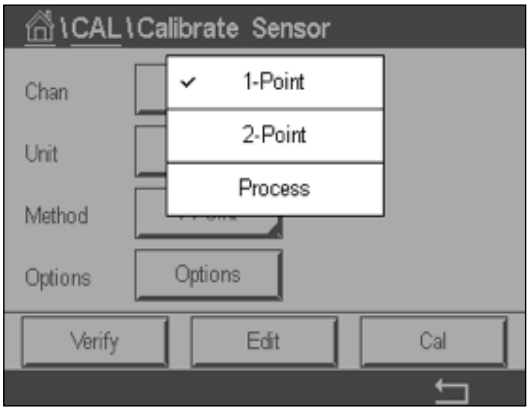
For highest measurement accuracy, a process calibration must be performed after the entry of the factory calibration data as described above. In a process calibration the pH value of an off-line grab sample is used to adjust the in-line measurement to that of the grab sample. This is a two-step procedure: Step 1 initiates the process calibration and stores the current pH value in the transmitter while a grab sample is taken. Step 2 is for entering the off-line value into the transmitter.

| Sensor type | Minimum wetting time |
|---|---|
| InSUS 307 | 20 minutes |
| InSUS 307 XSL | 120 minutes |
| InSUS 310 | 120 minutes |

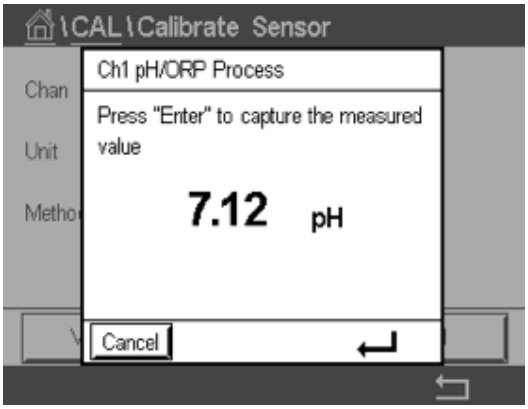
Table 1

**Important:** Prior to the process calibration, these sensors must be wetted in process liquid for a time equal to or greater than the values indicated in Table 1.

4.1 While in Measurement mode, go the calibration menu, select **Calibrate Sensor** and then press **Process.**

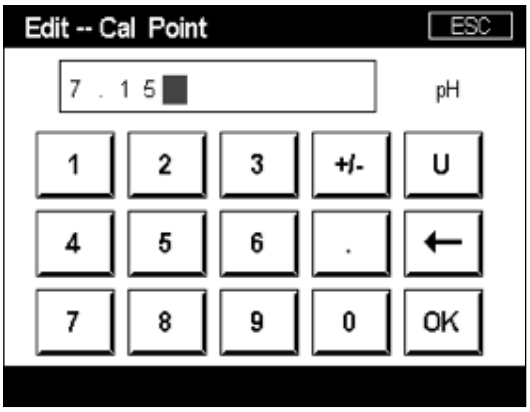



4.2 Press the **Cal** button, take a sample from the process and then press the **Enter** key to store the current measuring value.

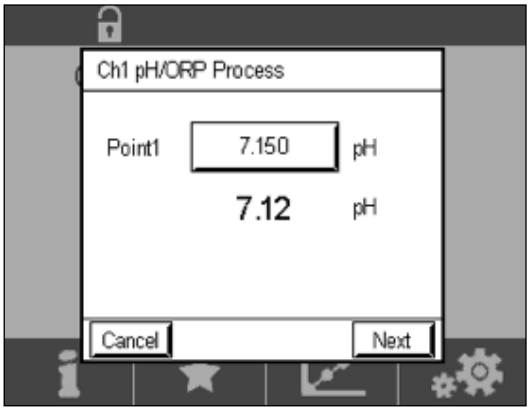



4.3 To show the ongoing calibration process, "P" blinks in the measurement and menu screen if the related channel is selected in the display.

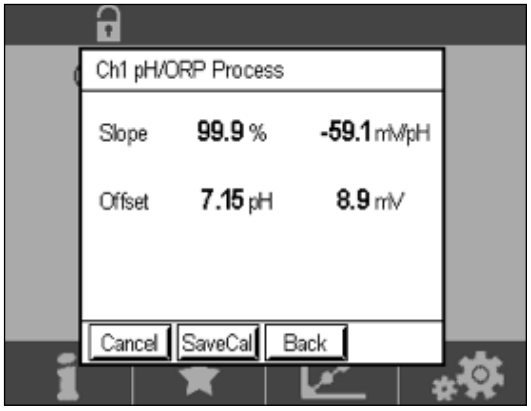
4.4 After determining the pH value of the sample, press the calibration icon in the measurement screen again. Enter the pH value of the sample and press **OK.**



4.5 Press the **Next** button to start the calculation of the calibration results.




4.6 The display shows the value for the slope and the offset resulting from the calibration. Press **SaveCal** to accept and to overwrite the previous calibration.



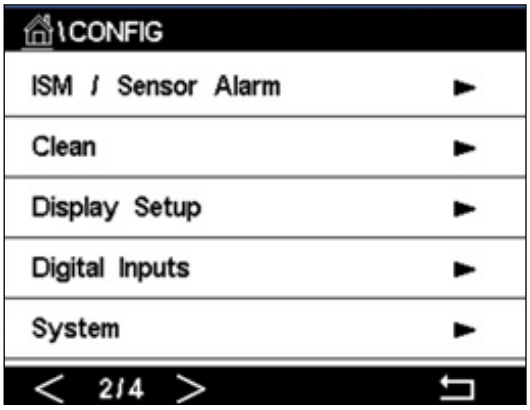
# 5. pH Membrane Glass Breakage – Alarm Activation

The detection of a pH membrane glass breakage can be linked to one of the transmitter's alarm relays. If set, the alarm will be activated if the glass membrane's resistance falls below 5 MΩ. A sensor with a broken pH membrane glass cannot be used for measurement purpose!

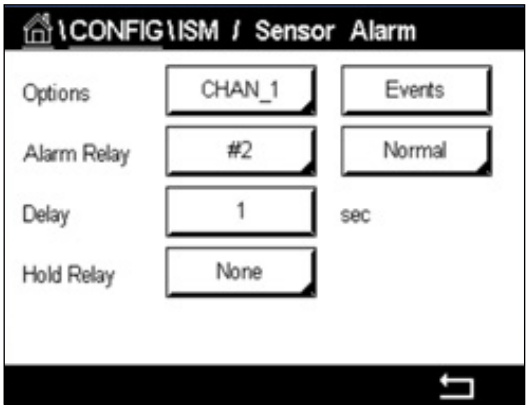
**To set the alarm:**

5.1 While the transmitter is in measurement mode, go to the Configuration menu by selecting the configuration icon.

5.2 Press **"ISM / Sensor Alarm"**

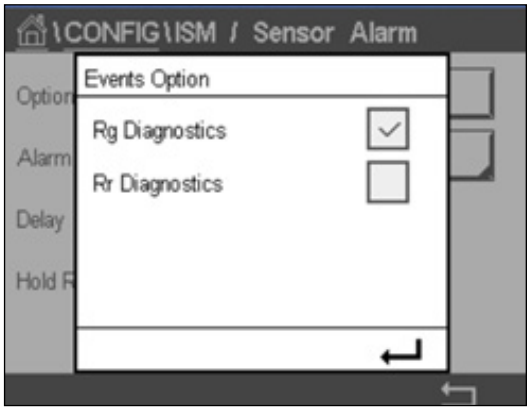



5.3 Select the measurement channel – only applicable for 2-channel transmitters.
Press **"Events"**.

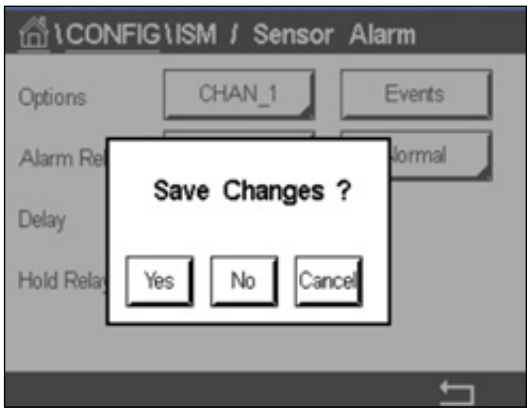


5.4 Activate **Rg Diagnostics** (glass resistance diagnostics) and press the **Enter** key.

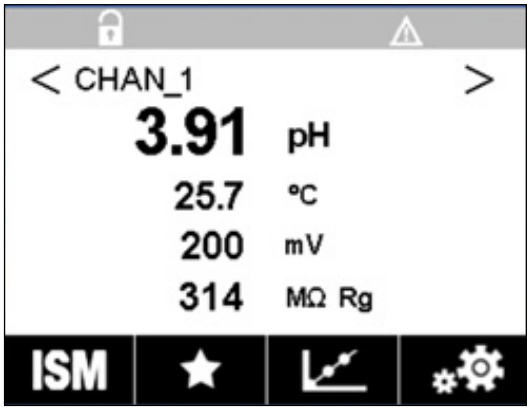
**Note:** Do not activate the Rr Diagnostics for InSUS 307 and InSUS 310 pH sensors!




5.5 Press **the return arrow** two times and press **Yes** to save the change.




**Note:** If the Rg Diagnostics is activated, a warning indication will appear on top of the measurement screen directly after the entry of Factory Slope and Offset data.
**This warning will disappear after a Process Calibration has been performed.**




**Example:** Warning indication at top of the measurement screen.

# Notes

# The information you want
## is at www.mt.com/pro

The METTLER TOLEDO Process Analytics website contains a vast amount of up-to-date information on all our products and services. Content is localized for your country and tailored to suit your selections. Simple layout allows you to quickly find the information and features you are looking for.


- Learn about our most recent product developments
- Register for free webinars
- Request further information on products and services
- Obtain a quote quickly and easily
- Download our latest white papers
- Read case studies relevant to your industry
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