

Validation / Calibration **Incyte**

Quick Guide



HAMILTON  [®]

HAMILTON WARRANTY

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Intended Use

The Incyte Sensor Unit is designed to measure permittivity in a liquid medium. The permittivity may be correlated to the viable cell density. Incyte also measures conductivity. The measurement may be used for the control of bioprocess within the defined specifications (please see the Cell Density Monitoring Operating Instructions, Chapter 16).

About this Quick Guide

The Quick Guide will help the users to validate and calibrate the Incyte Unit. Every 6 months of running time a verification of the sensor calibration is requested. Calibration of a Sensor Unit is required if the Sensor Unit verification did not pass successfully or, if a new sensor respectively a new pre-amplifier is connected to an existing counterpart. The Quick Guide does not replace the Operating Instructions, which are available at www.hamiltoncompany.com. All further information such as Liability, the Safety Precautions, Disposal Instructions and the Operation description are available in the Operating Instructions.



⚠ ATTENTION! Complete Instructions are available in the Cell Density Monitoring System Operating Instructions, Ref 624702.

1 Hardware Compatibility

⚠ ATTENTION! Fogale devices are only partially compatible with Hamilton products.

Please do not combine Hamilton labelled Pre-Amplifier and sensors with a Control Unit having a software version below 3.0.

Evo200 and ibiomass cannot be updated with the current Hamilton Software.

2 Mount the Incyte Unit

1. Align the pins of the M12 connector and connect the Pre-amplifier to the Arc View Controller using the Sensor Unit Cable.
2. Verify that the sensor's male VP connector and the Pre-amplifier's female VP connector are dry and clean.
3. Align the sensor VP head and the Pre-amplifier connector and connect the Sensor in the Pre-amplifier.
4. Hand-tighten the connecting nut of the Pre-amplifier's VP Connector to ensure a robust and waterproof seal.

5. Mount the Unit in a stand and place in a 500 mL beaker (Figure 1). Select the most appropriate position for the sensor. The electrodes of the Incyte sensor have to be kept at least 1 cm away from the beaker wall.

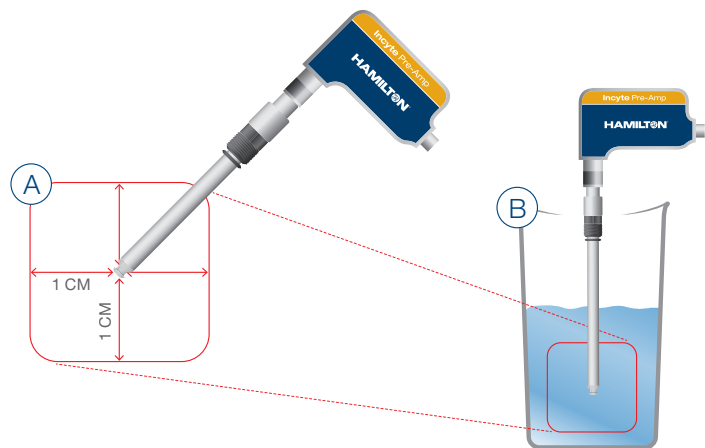


Figure 1: Mounting restrictions, A: Space requirements / B: Reactor mounting restrictions.

3 Verify the Incyte Sensor Unit

NOTE: The Capacitance Simulator (Ref 243743) and Hamilton 12880 $\mu\text{S}/\text{cm}$ Conductivity Standard (Ref 238988), formerly called Solution A, as well as a thermometer are needed to perform the Sensor Unit Verification.

1. Connect the Incyte Unit and power on the Arc View Controller and equilibrate for at least 30 minutes prior to starting the Verification Procedure.
2. Go to the Main Menu and enter the Calibration Menu. Select the Validation / Check Unit Calibration to start the Verification Procedure.
3. Select the channel. The sensor type is automatically detected.
4. Enter the user name.
5. Connect the Capacitance Simulator and press Test Pre-amplifier Calibration to start the Verification Procedure. The successful verification is indicated. If this procedure fails it is recommended to perform a calibration.
6. Connect the Incyte Sensor to the Pre-amplifier.
7. Select the Manual temperature correction mode. The Automatic mode is disabled.
8. Pour Hamilton 12880 $\mu\text{S}/\text{cm}$ Conductivity Standard in a clean beaker. Make sure the sensor mounting instructions are followed.
9. Measure the temperature of the Standard with an external thermometer. Enter the conductivity value according to the temperature correction table on the bottle of the Conductivity Standard.
10. Press Test Sensor Calibration to start the Verification. The successful Verification is indicated. If this procedure fails it is recommended to perform a calibration.

4 Calibrate the Incyte Sensor Unit

The Calibration procedure of an Incyte Sensor Unit is a five-step guided procedure. It takes about an hour to perform this procedure.



⚠ ATTENTION! Do not disconnect the Unit from the Arc View Controller, or the Sensor from the Pre-amplifier during the Calibration procedure.

📄 NOTE: Make sure to prepare following equipment in addition to the Val/Cal Kit: stirrer-plate, thermometer

1. Connect the Unit and power on the Arc View Controller and equilibrate for at least 30 minutes prior to starting the Calibration procedure.
2. Go to the Main Menu and enter the Calibration Menu. Select Calibrate Unit to start the Calibration procedure.
3. Select the channel. The sensor type is automatically detected.
4. Enter the user name and press start (Figure 2).

The screenshot shows the 'Calibrate probe' screen. On the left is a vertical navigation bar with buttons: 'Validate Check Probe Calibration', 'Calibrate probe', 'Load Calibration File', and 'Main menu'. The main area is titled 'Calibrate probe' and contains two sections: 'Channel selection Procedure' with instructions to select a channel (Channel 1 or Channel 2) and 'Calibrate probe Procedure' with instructions to enter a user name and click a button to start calibration. There are input fields for 'User name' and 'Type probe', and 'Start' and 'Cancel' buttons.

Figure 2: Start of the sensor unit calibration.

5. Connect the Capacitance Simulator and press Test Pre-amplifier Calibration to start the Calibration procedure. The successful test is indicated. If this procedure fails it is recommended to contact the local representative.
6. Replace the Simulator by the Incyte Sensor and Press measure in air to calibrate at zero conductivity. If this procedure fails it is recommended to contact the local representative.
7. Select Manual temperature correction mode. The Automatic mode is disabled.
8. Pour Hamilton 12880 $\mu\text{S}/\text{cm}$ Conductivity Standard in a clean beaker. Make sure the sensor mounting instructions are followed.
9. Measure the temperature of the Standard with an external thermometer. Enter the conductivity value according to the temperature correction table on the bottle of the Conductivity Standard.
10. Press Calibrate sensor constant to start the Calibration (Figure 3). The successful Calibration is indicated. If this procedure fails it is recommended to contact the local representative.

The screenshot shows the 'Calibrate probe' screen at Step 3. The left navigation bar is the same as in Figure 2. The main area is titled 'Calibrate probe' and contains a 'User name' field, a 'Type probe' dropdown (set to 'Capa'), and 'Start' and 'Cancel' buttons. Below this is 'Step3: Calibrate probe constant' with a table for 'Measured conductivity' and 'Expected conductivity'. The 'Measured conductivity' is set to '-0.000'. Below the table are instructions to place the sensor electrodes in solution A and select the temperature correction mode (Manual or Automatic). The 'Manual' mode is selected with a checked checkbox. There are also instructions to enter the conductivity of solution A in mS/cm. At the bottom, there is a 'Calibrate probe constant' button and a 'Wait' label. The 'Main menu', 'Back', and 'Next' buttons are at the very bottom.

Figure 3: Calibration of the Sensor Constant.



11. Rinse the Sensor with deionized water.
12. Pour 150 mL deionized water in a clean beaker. In the following steps 1 to 30 mL of Solution B is added gradually to the deionized water. Press start (Figure 4).
13. Add the required amount of Solution B. Press Start.

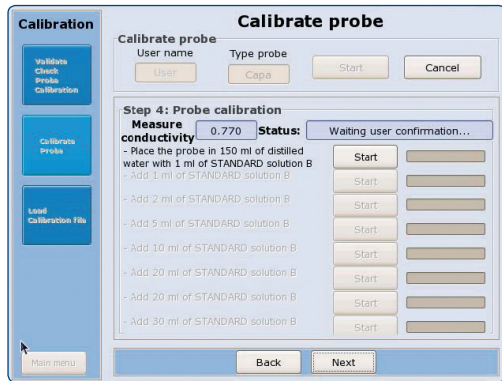


Figure 4: Incyte Sensor Calibration.

15. The successful Calibration is indicated. If this procedure fails it is recommended to contact the local representative.
16. Choose the directory, where the Calibration Report should be stored and press Generate Calibration Report (Figure 5). The valid calibration is automatically saved in the memory of the Pre-amplifier.

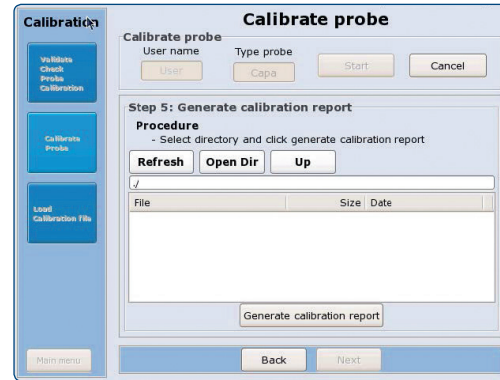


Figure 5: Generation of a Calibration Report.





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