

Incyte

Quick Guide



HAMILTON 

HAMILTON WARRANTY

Please refer to the General Terms of Sales (GTS).

IMPORTANT NOTE

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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 mount the Incyte Sensor to the Pre-amplifier, the required calibration is described in the Cell Density Monitoring System Operating Instructions. Therefore 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 therein.



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

📄 NOTE: To ensure that you are using the newest version of the software, go to the «About» menu in the version you have installed. Compare the version listed here to the version available under www.hamiltoncompany.com/Arc_View_Update. If you are running a previous version, run an update as described in the «Cell Density Monitoring: Operating Instructions» Chapter 9.7.1.

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 Overview of the Incyte Sensor Unit

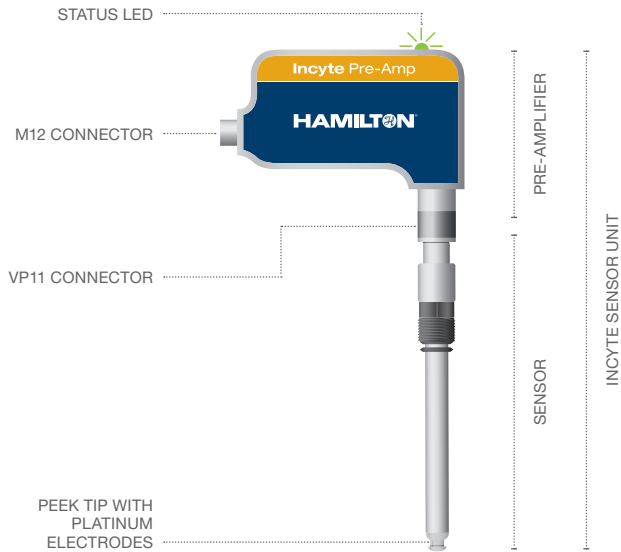


Figure 1: Incyte Sensor Unit assembled.

An Incyte Sensor Unit consists of a Pre-amplifier and a Sensor (Figure 1). The Pre-amplifier and the Sensor have been factory calibrated as a pair. They are connected together via a VP11 connector. A status LED, indicating whether the sensor is ready for measurement is available on top of the Incyte pre-amplifier. The Incyte Sensor Unit is available with a shaft diameter of 12 mm (DN12) or 25 mm (DN25). The measurement tip is made of PEEK and contains four platinum electrodes for permittivity measurement. All wetted parts are USP Class VI certified.



3 Connect the Sensor to the Pre-Amplifier

1. Unpack the Sensor and Pre-amplifier from the protective box.
2. Inspect for shipping damage or missing parts.
3. Align the pins of the M12 connector and connect the Pre-amplifier to the Arc View Controller using the Sensor Unit Cable.
4. Verify that the sensor's male VP connector and the Pre-amplifier's female VP connector are dry and clean.
5. Align the sensor VP head and the Pre-amplifier connector and connect the Sensor in the Pre-amplifier.
6. Hand-tighten the connecting nut of the Pre-amplifier's VP Connector to ensure a robust and waterproof seal (Figure 2).

⚠ ATTENTION! Make sure that the connecting nut is tightened by hand. Never use a wrench or another tool to tighten or loosen the nut.

⚠ ATTENTION! Do not use the Pre-amplifier as a lever to screw or unscrew the sensor. This may cause mechanical damage in the preamplifier. Always use the PG13.5 thread instead (Figure 2).

7. Switch on the Arc View Controller (the Status LED on the main screen turns green and an automated firmware update starts. The status LED of the Incyte Pre-amplifier (Figure 1) flashes green during this procedure).

NOTE: When receiving a new Sensor Unit, make sure to first connect it to the Arc View Controller in order to transfer the calibration data. Do not use the Pre-amplifier with another sensor before the calibration data has been transferred. If you do so the calibration data will be lost.

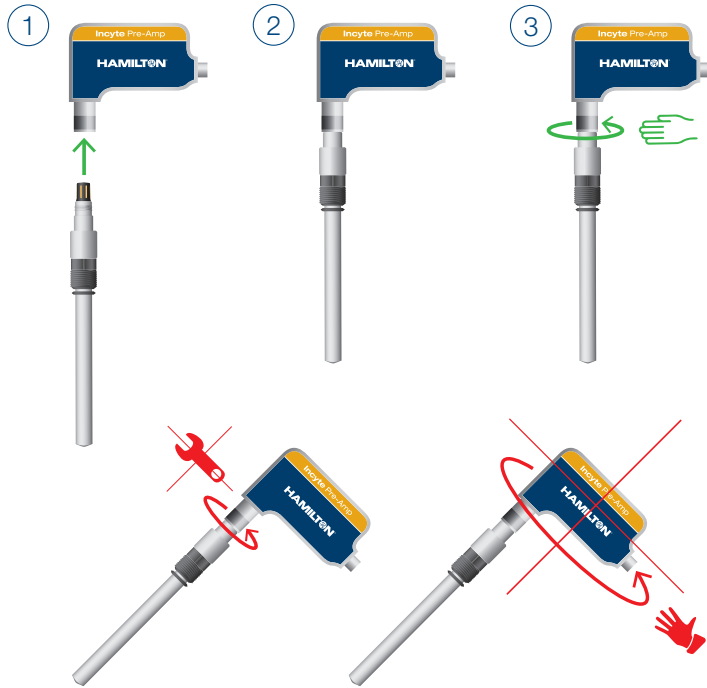


Figure 2: Connection of a Sensor Unit.



4 Calibrate the Incyte Unit

⚠ ATTENTION! A calibration of the Sensor Unit is mandatory if a new Sensor, respectively a new Pre-amplifier is connected to an existing counterpart.

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

1. Connect the Pre-amplifier 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.
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. The successful Calibration is indicated. If this procedure fails it is recommended to contact the local representative.
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.
13. Press Start and follow the instructions on the display.
14. The successful Calibration is indicated. If this procedure fails it is recommended to contact the local representative.
15. Choose the directory, where the Calibration Report should be stored and press Generate Calibration Report. The valid calibration is automatically saved in the memory of the Pre-amplifier.

5 Mount the Sensor in the Bioreactor

1. Select the most appropriate port for mounting the sensor (Figure 4). Choose a position where gas bubbles may not interfere with the measurement, for example in ports opposite to the sparger or at a significant distance. Gas bubbles interfere with the measurement and may cause reading errors. The electrodes of the Incyte sensor have to be kept at least 1 cm away from any solid parts, especially metallic ones. The electric field may be subject to interference and the measurement may be affected.
2. Insert the sensor in the port. Do not scratch the platinum electrodes while inserting them.
3. Verify the sensor orientation to make sure that the Pre-amplifier can

be mounted conveniently. The orientation notch of the sensor head is oriented opposite to the Pre-amplifier cable (Figure 5).

4. Tighten the connection nut by hand.

 **NOTE:** Various housings are available to custom fit your sensor in your installation.

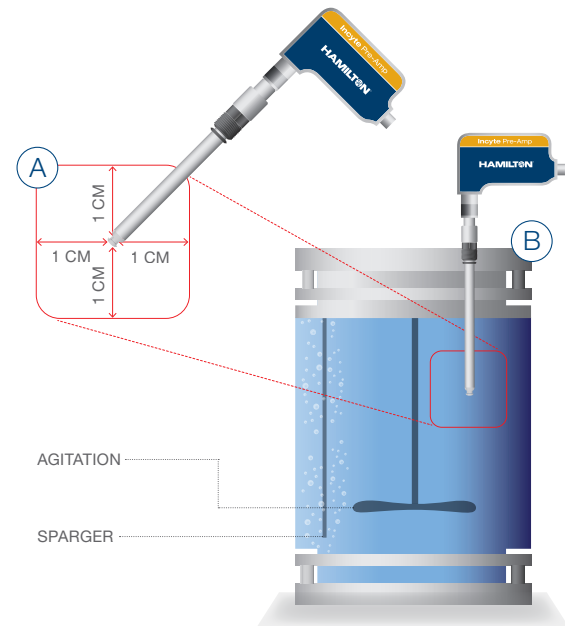


Figure 4: Mounting restrictions, A: Space requirements / B: Reactor mounting restrictions.



NOTE: For mounting from a side-port ensure that the notch of the sensor head is mounted in a horizontal position facing upwards. Any angle of inclination may lead to an influence of the measurement.

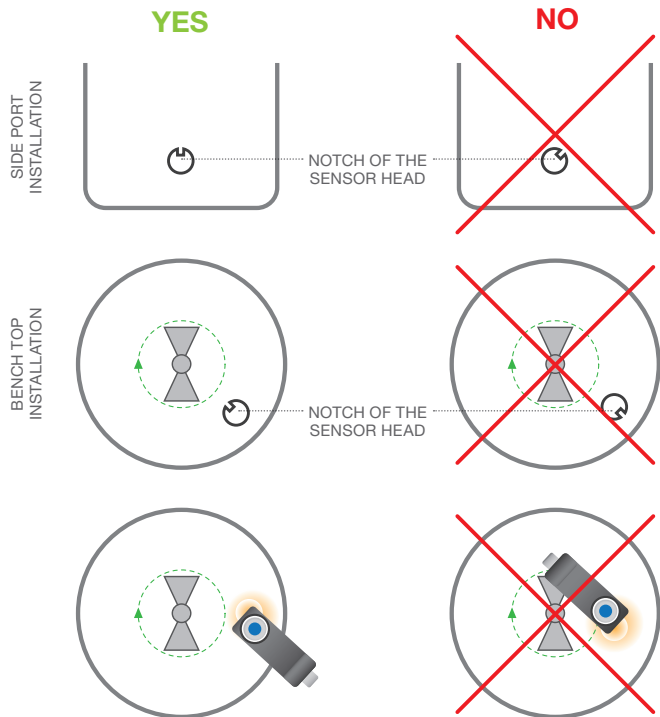



Figure 5: Mounting position of the Pre-amplifier.

6 Operation of Incyte

1. Verify that the Status Indicator on the Run Menu of the Arc View Controller and the status LED of the Pre-amplifier (Figure 1) are green.
2. Go to the Measure Settings Menu. Choose the measurement mode, from the predefined settings:
 - Cell culture > fmes = 1000kHz, fhigh = 10MHz, signal integration = HIGH
 - Yeast/fungi > fmes = 2000kHz, fhigh = 10MHz, signal integration = HIGH
 - Bacteria > fmes = 1000kHz, fhigh = 10MHz, signal integration = HIGH
3. Enter the user password if one has been defined. Press OK.
4. Go to the Culture Settings Menu and press the Record Button.
5. Enter the user password if one has been defined. Press OK.
6. Follow the guided procedure to start recording the Culture file. Define the directory to save the file, per default it is the home directory. Select the acquisition time, enter the optional name of the Culture file. Add possible comments and the user name.
7. The Record Button is now disabled, and the information relative to the Culture and the Culture File appears in the Culture Settings Menu. The Floppy Icon on the Channel Tab (Figure 10) also confirms that the measurements are being recorded.
8. Go to the Scan Settings Menu and activate the Frequency Scan.
9. Enter the User password if one has been defined. Press OK.
10. Equilibrate the Incyte Sensor in culture medium, for at least 30 minutes prior to product calibration and inoculation.
11. Go to the Measure Settings Menu and press the Mark Zero Button to perform a product calibration.

12. Enter the User password if one has been defined. Press OK.
13. Select automatic. The cell density measurement is now compensated for an offset shown in the measurement values above the Main Graph on the Run Menu.

 **NOTE:** Please refer to Chapter 7 in the Cell Density Monitoring Instructions for the detailed information.

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