

Petri Dish pH and CO₂ Sensor — portable version

Symbols used in this manual



Warning. Information or instructions that are related to safety. Failure to follow these instructions may result in personal or third-party injury.



Caution. Important information or instructions related to the safe use of the equipment. Failure to follow these instructions may result in damage to equipment, samples or data.

Safety instructions



Warnings

- If the equipment is used in a manner not specified within the manual, the protection offered by the equipment may be impaired.
- Indoor use only.



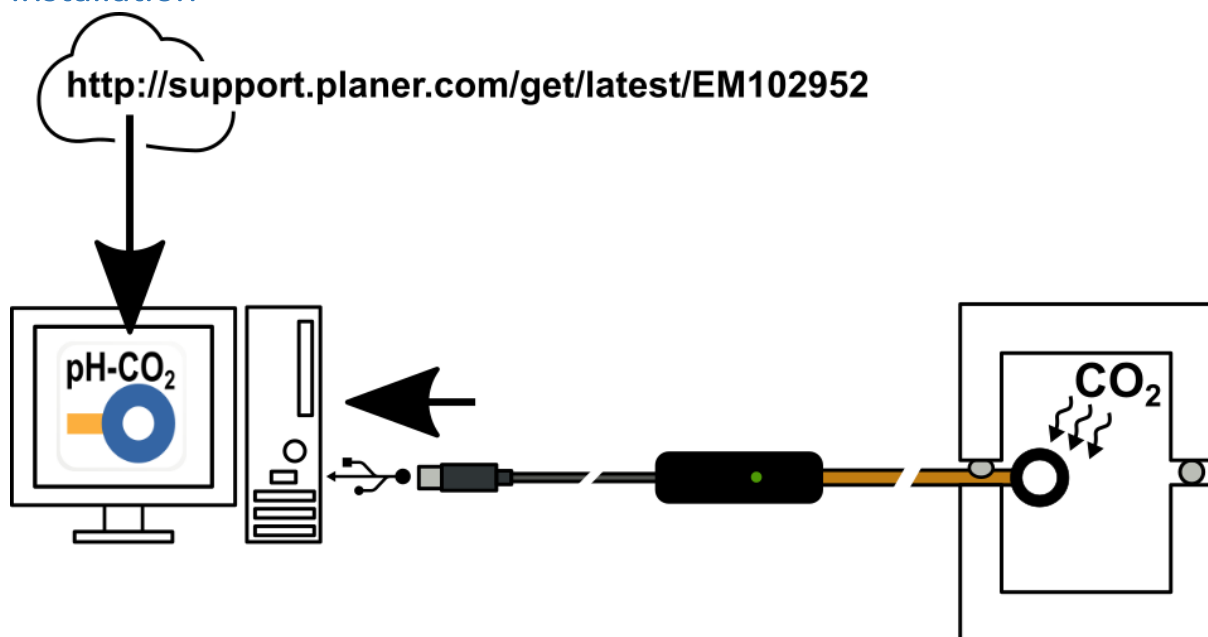
Cautions

- Servicing must be undertaken by suitably trained engineers.
- Maintenance by the user is limited to cleaning and decontamination.

Introduction

The Petri Dish pH and CO₂ Sensor is a small device designed to measure the CO₂ concentration inside incubators and environmental chambers. The portable version is connected to the USB port on your PC. The accompanying application will enable you to monitor the CO₂ levels and also derive the expected pH based upon the Henderson-Hasselbalch equation.

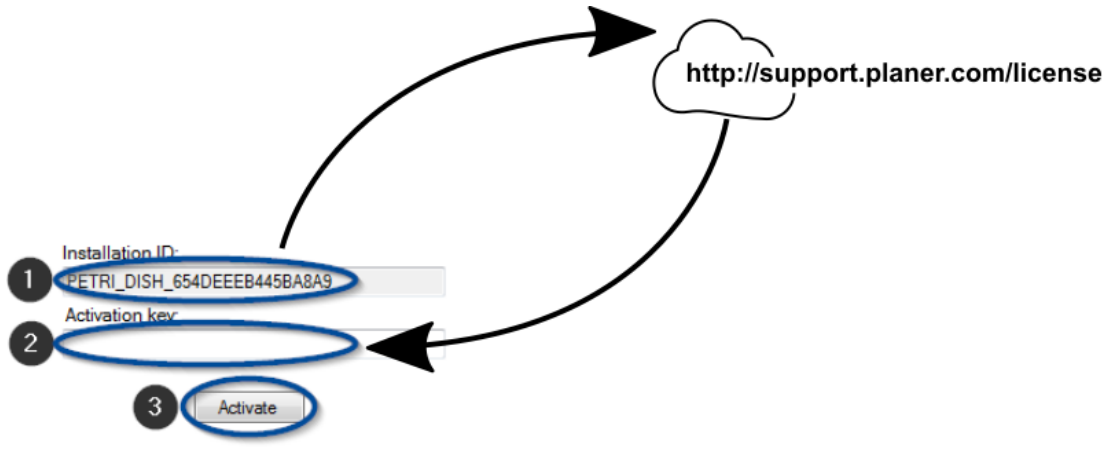
Installation



Operation

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Planer PetriSense pH and CO₂ Monitor V2.1.195

Serial Port: #1 Assembly SN:
 #2 Assembly SN:

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LogFile
 Comments:
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— #1 - CO₂ % — #1 - pH — #2 - CO₂ % — #2 - pH

Sampling: 5 s

Monitor Sensor
 #1 CO₂ % pH
 #2 CO₂ % pH

Statistics
 Sensor #1 - CO₂ %
 Max:
 Mean:
 Min:

Cursor
 X: Y: CO₂

Username: Administrator | Copyright © 2016 Planer plc | Normal version - Activated

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Assembly SN:
 Assembly SN:

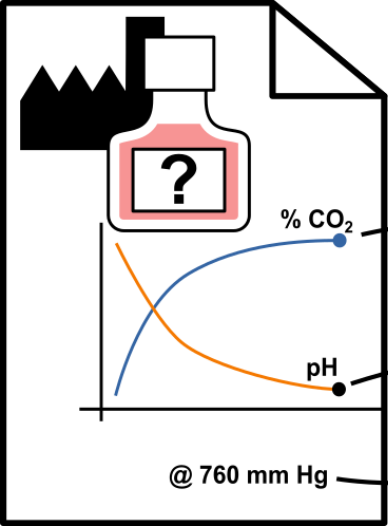
Calibrate | **Configure** | Users | Guide | About

Comments:
 er:

— #1 - CO₂ % — #1 - pH — #2 - C

7	<p>Monitor Calibrate Configure Users Guide About</p> <p>User Details</p> <p>Current user: Administrator Account type: Administrator</p> <p>Change Password</p> <p>.....</p> <p>1 2</p>
8	<p>Serial Port</p> <p>#1 [COM2] Your Label Assembly SN: []</p> <p>#2 COM4 Your Label Assembly SN: []</p> <p>COM1</p> <p>COM15</p> <p>COM16</p> <p>COM17</p> <p>COM2</p> <p>COM3</p> <p>Comments</p> <p>Folder</p> <p>Monitor Calibrate Configure Users Guide About</p>
9	<p>Serial Port</p> <p>#1 COM2 Your Label Assembly SN: []</p> <p>#2 [] Your Label Assembly SN: []</p> <p>Connect</p> <p>Monitor Calibrate Configure Users Guide About</p> <p>LogFile</p> <p>Comments</p> <p>Folder</p>
10	<p>Serial Port</p> <p>#1 COM2 Your Label Assembly SN: Invalid SN</p> <p>#2 [] Your Label Assembly SN: []</p> <p>Monitor Calibrate Configure Users Guide About</p> <p>LogFile</p> <p>Comments</p> <p>Folder</p>
11	<p>Petri Dish pH and CO₂ Monitor</p> <p>Altitude Derive Parameters</p> <p>If you do not know the normal pressure, enter the height above sea level of your location.</p>

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Altitude Derive Parameters

The Henderson-Hasselbalch equation uses two values that need to be obtained from the media manufacturer. These are the pK_a of the acid dissociation constant, pK_a , and the concentration of $NaHCO_3$. If these are not available, suitable constants can be calculated if the target pH at a specified CO_2 concentration is known. The resulting values from the derivation will be normalised to an $NaHCO_3$ concentration of 25 mmol/L.

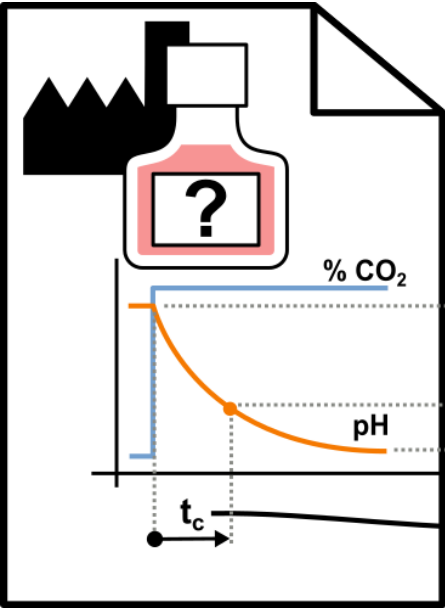
Media design pH: 7.35 1

%CO₂ at which pH applies: 5.50 3 %

Pressure at which pH applies: 760 2 mmHg

Calculate 4

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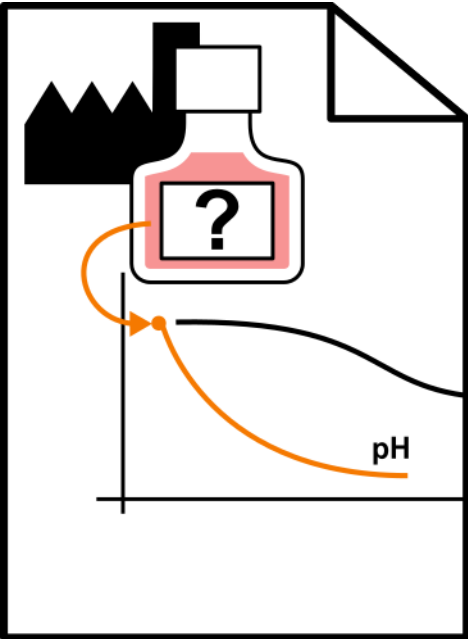


Atmospheric pressure (P_a): 760 mm Hg Get Set

pH recovery time constant: 864 s Get Set

Starting pH of media: 8.00 Get Set

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Atmospheric pressure (P_a): 760 mm Hg Get Set

pH recovery time constant: 8640 s Get Set

Starting pH of media: 8.00 Get Set

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Altitude Derive Parameters

The Henderson-Hasselbalch equation uses two values that need to be obtained from the media manufacturer. These are the pK_a of the acid dissociation constant, pK_a , and the concentration of $NaHCO_3$. If these are not available, suitable constants can be calculated if the target pH at a specified CO_2 concentration is known. The resulting values from the derivation will be normalised to an $NaHCO_3$ concentration of 25 mmol/L.

Media design pH: 9.00
 % CO_2 at which pH applies: 4.00 %
 Pressure at which pH applies: 681 mmHg
 Calculate

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Altitude Derive Parameters

If you do not know the normal pressure, enter the height above sea level of your location.

Altitude: 500
 Calculate

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Get All Set All Load Config Save Config Defaults Clear Log

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pH Conversion
 Colog of acid dissociation constant (pK_a): 6.10 Get Set
 Concentration of $NaHCO_3$: 25.00 mmol/L Get Set

Alarms
 Low alarm limit: 0.00 C
 High alarm limit: 10.00 C

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Calibration

The unit should be calibrated every two weeks using the air calibration below. The unit should be calibrated annually in a known calibration gas by an authorised service provider.

Air calibration

1. Remove the sensor from the CO₂ environment.
2. Allow to stand in air for 5 minutes.
3. In the *PetriSense pH and CO₂ Monitor* select the *Calibrate* tab.
4. Select *In Air*.
5. Set the *Pressure* to your current laboratory pressure.
6. Click *Calibrate*.

Cleaning

1. Disconnect from the power supply.
2. Gently wipe with a damp cloth and sterile water.
3. Wait 2 minutes.
4. Allow to dry.

Disinfection

1. Disconnect from the power supply.
2. Gently wipe with a damp cloth and sterile water.
3. Wait 2 minutes.
4. Repeat steps 2 and 3, three more times.
5. Clean surfaces with a 70 % isopropyl alcohol wipe.
6. Wait 15 minutes.
7. Gently wipe with a damp cloth and sterile water
8. Allow to dry.

Specifications

Dimensions	Ø35 x 11.5 mm
Operating temperature	10 °C to 42 °C
Operating relative humidity (non-condensing)	Sensor: 0 % to 95 % System: < 80 % up to 31 °C, decreasing linearly to 50 % at 40 °C
Storage temperature	-40 °C to 80 °C
Storage relative humidity (non-condensing)	5 % to 95 %
Sensor type	Infrared
Measurement range	0 % to 20 % CO ₂
Accuracy	±200 ppm or ±5 % of reading, whichever is greater. ±0.02 % absolute/day
Connection	USB 2.0 standard-A