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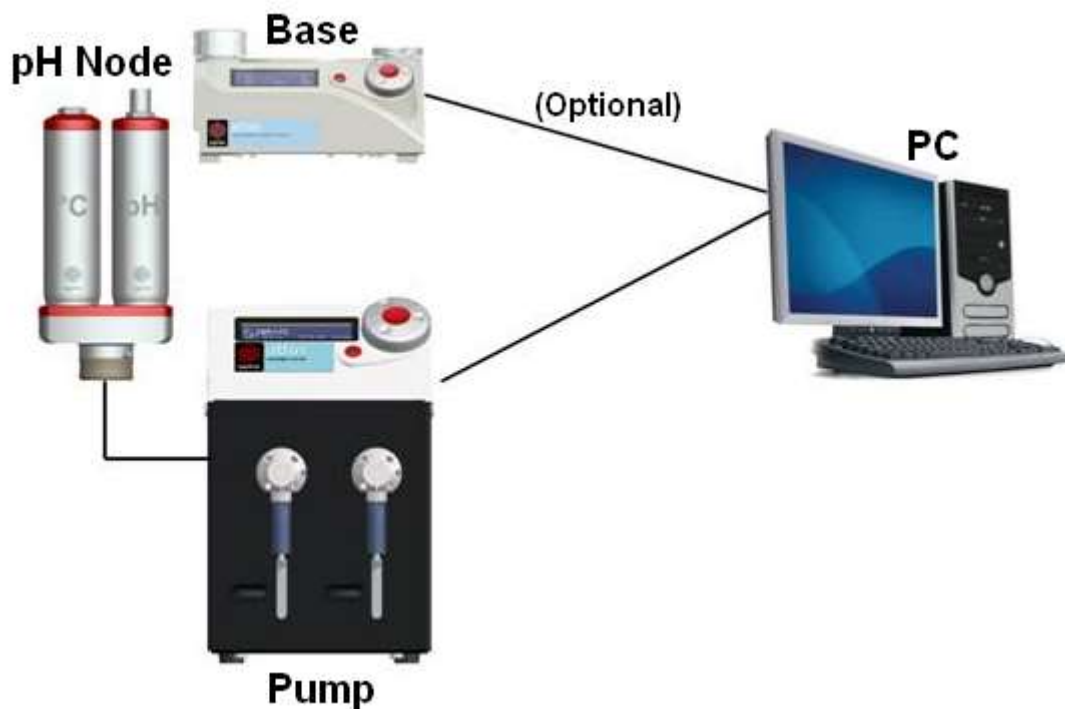
<b>System/Product</b>	Atlas
<b>Model/Module</b>	Syringe Pump
<b>Subject Type</b>	Operational Use
<b>Subject Version</b>	1.0
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## Technical Note – How To Setup And Use pH Control Function In Atlas

This document shows how to setup and use the pH control function of Atlas via software and when using hardware only.

### 1 Hardware Configuration

To use the pH control function, the associated hardware must be connected according to the schematic below.



The pH node is connected to the back of the pump via a node extension cable (Part Number: 2101023).

## 2 Checking the pH node is connected.

Select 'M' and press the dial.

```
PUMP1 | PUMP2 | →M←
STOPPED | STOPPED |
```

Select detected hardware and press the dial.

```
→2) DETECTED H/WARE
3) ADMINISTRATION
```

Select the node from the list of hardware and press the dial

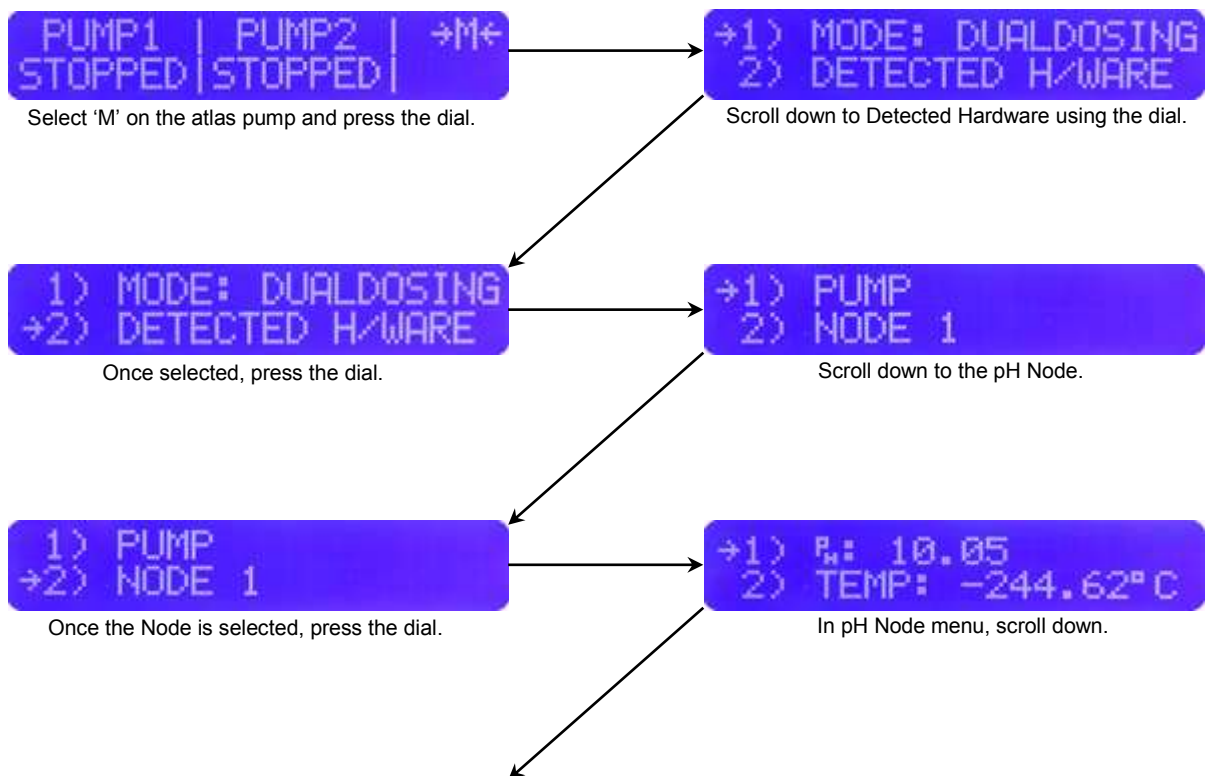
```
1) PUMP
→2) NODE 1
```

The sensor information from the node will be displayed.

```
→1) PH: 6.57
2) TEMP: -246.44° C
```

## 3 Calibrate pH Node

To ensure the best result and performance, it is recommended that the pH node is calibrated using buffer solutions of your choice prior to running any experiments.



```
2) TEMP: -244.62° C
→3) CALIBRATE >>
```

```
PH 10.05 -244.62° C
EXIT →CALIBRATE←
```

### Calibrate pH Node (Continued)

```
ENTER SOLUTION TEMP
→ 20.0 ←
```

Enter the temperature of the buffer solutions and press the dial.

```
ENTER PH OF SOLN. 1
→ 4.0 ←
```

Enter the pH of the first chosen buffer solution and press the dial.

```
PUT SENSOR IN SOLN 1
AND PRESS DIAL
```

Press the dial once more to set first calibration point.

```
WAITING FOR STABLE
READING... *
```

Please wait while the sensor takes a reading.

```
ENTER PH OF SOLN. 2
→ 10.0 ←
```

Enter the pH of the second chosen buffer solution and press the dial.

```
PUT SENSOR IN SOLN 2
AND PRESS DIAL
```

Press the dial once more to set second calibration point.

```
WAITING FOR STABLE
READING... *
```

Please wait while the sensor takes a reading.

```
WRITING CALIBRATION
*
```

The calibration will then be written to the pH Node.

```
PH 10.01 -244.59° C
→EXIT← CALIBRATE
```

Select EXIT to end the calibration procedure.

## 4 pH Control Via Hardware

### 4.1 Change pump to pH control Mode

```
PUMP1 | PUMP2 | →M←
STOPPED|STOPPED|
```

Select 'M' on the atlas pump and press the dial.

```
→1) MODE: DUALDOSING
2) DETECTED H/WARE
```

Select item 1 and press the dial. The mode type will start flashing.

```

→1) MODE: PH CONTROL
  2) DETECTED H/WARE
    
```

```

PH 10.0/None      M
A>B      →ADVANCED←
    
```

## 4.2 Configure pH Control Parameters

```

PH 10.0/None      M
A>B      →ADVANCED←
    
```

Select ADVANCED and press the dial.

```

1) PUMP
→2) CONFIGURATION
    
```

Select CONFIGURATION and press the dial.

### CONFIGURATION Menu

```

→1) PUMP 1: ACID
  2) PUMP 2: BASE
    
```

```

3) DEAD ZONE: 1.0
→4) RATE: 2.50ml/min
    
```

```

5) MAX VOL: NONE
→6) TIME: NONE
    
```

### Key

- 1) Select pH component of pump 1.
- 2) Select pH component of pump 2.
- 3) ± pH range of target pH where pump is inactive.
- 4) Flow rate of pH components
- 5) Max volume limit of pH component dose.
- 6) Max time pH control will be active.

## 4.3 Run pH Control

```

1) PUMP
→2) CONFIGURATION
    
```

Use Item 1 to prime the pump channels with the pH components in preparation for the experiment.

```

→PH← 10.0/None      M
      A>B      ADVANCED
    
```

```

→PH← 9.9/ 4.5      M
      A>B      ADVANCED
    
```

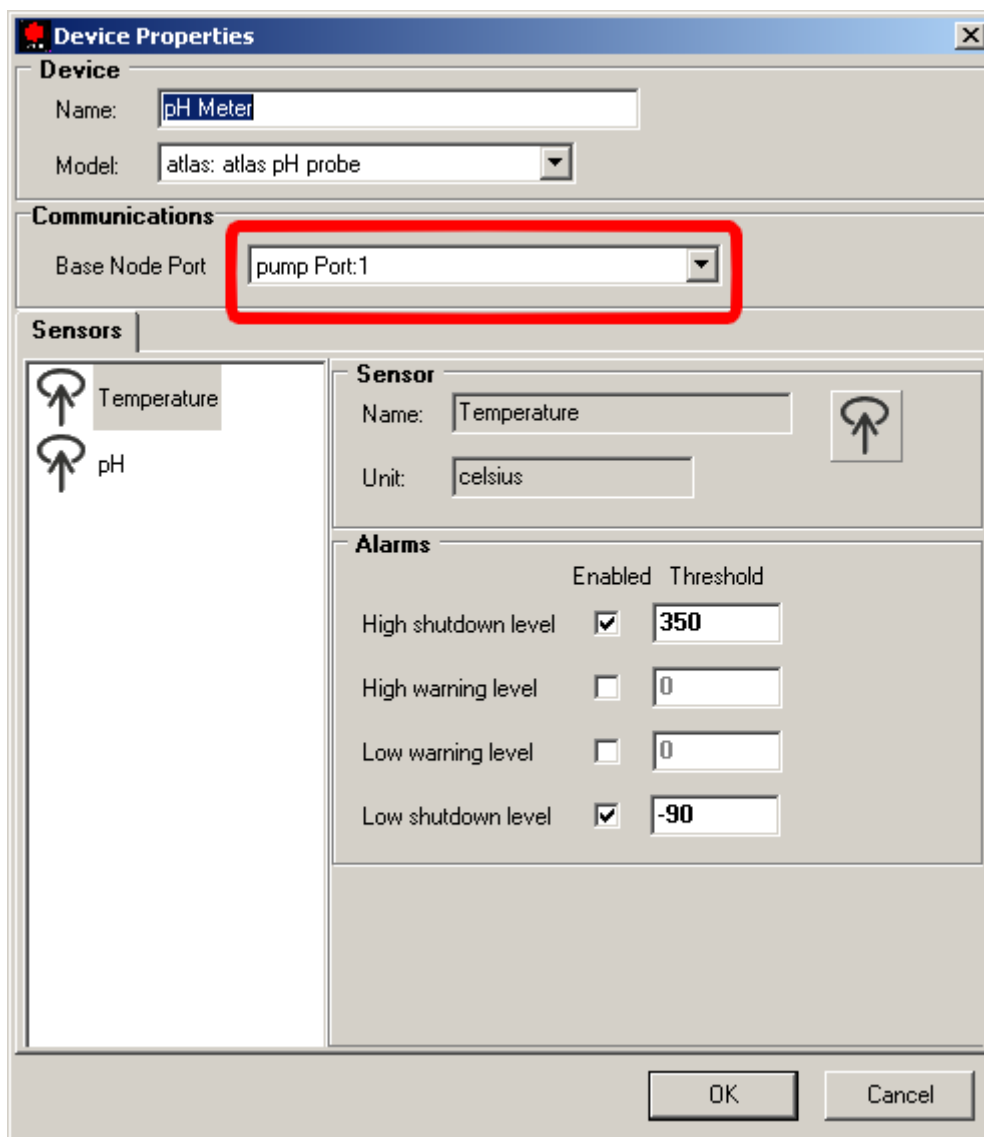
Select pH and press the dial. The display will then show the current pH and flash for the user to set the desired pH. Press the dial again to start the pH control based on the setting set above.


## 5 pH Control Via PC Software

Plug the pH node via a node extension cable into the back of the atlas syringe pump.

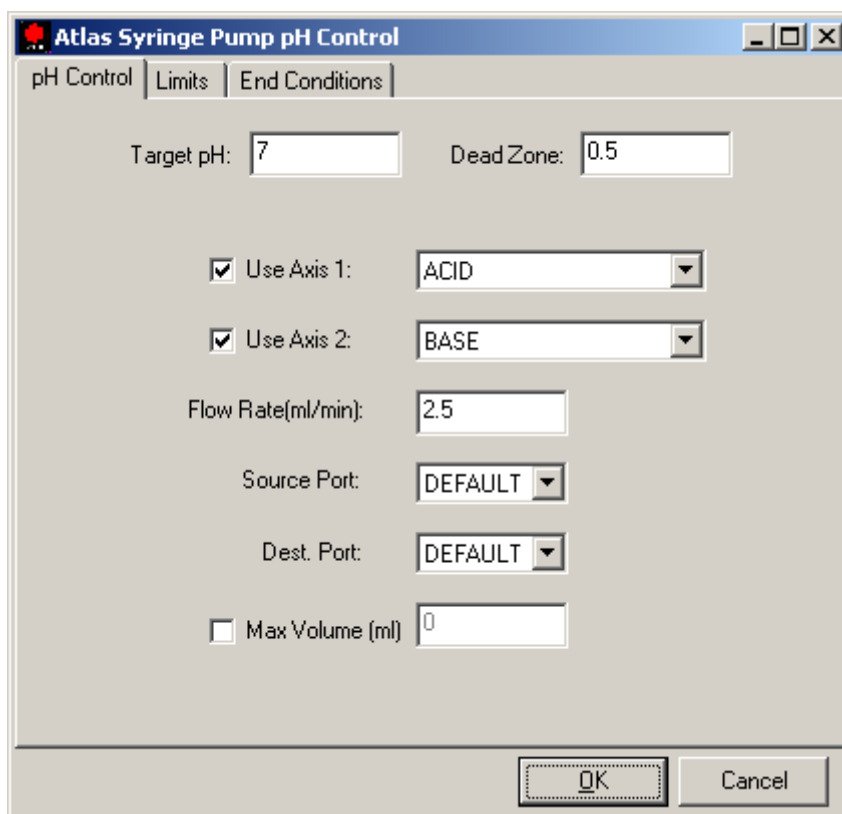
Start the atlas software and ensure you have a Syrris Syringe pump and pH node on the apparatus screen.

Ensure that the correct node port is selected in the pH node device properties.



In the run view, drag and drop the pH control action  into the recipe window.

Fill in the details of the control window and click OK for the pH control step to be added to the recipe.



**Atlas Syringe Pump pH Control**

pH Control | Limits | End Conditions

Target pH: 7      Dead Zone: 0.5

Use Axis 1: ACID

Use Axis 2: BASE

Flow Rate(ml/min): 2.5

Source Port: DEFAULT

Dest. Port: DEFAULT

Max Volume (ml) 0

OK      Cancel

The field details are the same as the pH control parameters in the atlas Syringe pump menu.