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AQUAREAD
water monitoring instruments

CALIBRATION GUIDE BGA-PE

OBJECTIVE

Procedure for calibrating the BGA-PE sensor.

PREPARATORY STEPS

- **Check**

Ensure that the BGA-PE sensor has been correctly assigned to the AUX socket number it's fitted to. Not applicable if using AP/AS-PRO. Ensure that the probes end cap is clean and fitted during calibration and when taking measurements in the field. Failure to use the end cap will lead to incorrect calibration and erroneous readings in the field.

- **Required Items**
- RHOD-CAL calibration stock solution (200g/L Rhodamine WT dye)
- Accurate weighing scales.
- Weighing boat.
- Volumetric flask, 1L.
- Accurate pipette, 0-100µL range.
- Pure water (for example mineral water). This must have a conductivity of over 5uS/cm

- **Note on correlation**

There is no direct correlation between Rhodamine concentration and the concentration of BGA-PE cells/ml. Rhodamine is used as a convenient dye for setting the sensitivity of the sensor. The subsequent display of BGA-PE in terms of cell/mL is a generalisation based on research and experience. The only way to obtain a true value in terms of cells/mL is to correlate the values from the Sonde to quantitative data that has been obtained by laboratory analysis of grab samples, then to apply a Grab Sample Factor.

- **Preparation**

The probe, RHOD-CAL and pure water should be left on the bench overnight so that their temperatures can equilibrate.

- **Equipment**
- Aquaprobe.
- Calibration instrument; Aquameter / Bluelink / Aquacal PC software
- RHOD-CAL solution.
- Accurate weighing scales
- Weighing boat

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- Volumetric flask, 1L
- Accurate pipette, 0-100µL range.

- **Serial Dilution**

200g/L stock → 8µg/L is recommended to be done as a two-step dilution procedure.

Step 1: weigh out 0.5g of 200g/L stock solution in a weigh boat and add this to 1L of pure water in a volumetric flask, use some of the water from the 1L flask to rinse the weigh boat so no stock Rhodamine remains on the boat. Put a lid on the 1L flask and invert 10 times. This step results in a 1 in 2000 dilution of the stock, at this point the 1L flask will contain a 100mg/L solution.

Step 2: Transfer 80µl of the 100mg/L solution to a 1L volumetric flask and top up to 1L with pure water. Put a lid on the 1L flask and invert 10 times. This step results in a 1 in 12500 dilution of the solution from step 1. The concentration of this solution is 8µg/L. This solution can now be used as Point 2 calibration of the BGA-PE sensor.

The value output by the probe directly after calibration should be approximately 200,000 cells/mL at 20ºC (this value will vary with temperature). The dilute solution can be stored in a dark bottle in a refrigerator for up to five days. After that time it must be discarded.

OPERATING MODE

CALIBRATION

Calibration guidance will assume you are using an Aquameter, procedure will be similar when using Bluelink or AquaCal.

Procedure, 0 calibration:

1. Pour the pure water down the side of the calibration vessel so that air bubbles aren't introduced to the liquid. Ensure there is at least 10cm of liquid in the calibration vessel.
2. Put the probe into the pure water. If the probe does not have a cleaning arm tap the probe on the bottom multiple times to dislodge bubbles, after you have put it in the liquid and right before starting the calibration. If your probe does have a wiper, run a clean cycle after you put it in the liquid and right before starting the calibration.
3. Leave the probe to sit in the water for two minutes to stabilise.
4. To start the calibration, press the MENU key then select Calibration>Full Cal>AUX ELETRODES>BGA-PE to enter the BGA-PE calibration screen.
5. Move the cursor downwards to point 1, which is the 0 calibration.
6. Press the OK button on the Aquameter to begin the calibration process.
7. A calibration report value will be displayed after the calibration is complete, it is useful to record these values for troubleshooting purposes.

Procedure, 8µg/L calibration:

1. Pour the 8µg/L rhodamine dilution down the side of the calibration vessel so that air bubbles aren't introduced to the liquid. Ensure there is at least 10cm of liquid in the calibration vessel.
2. Put the probe into the rhodamine dilution. If the probe does not have a cleaning arm tap the probe on the bottom multiple times to dislodge bubbles, after you have put it in the liquid and right before starting the calibration. If your probe does have a wiper, run a clean cycle after you put it in the liquid and right before starting the calibration.
3. Leave the probe to sit in the rhodamine dilution for two minutes to stabilise.
4. To start the calibration, press the MENU key then select Calibration>Full Cal>AUX ELETRODES>BGA-PE to enter the BGA-PE calibration screen.
5. Move the cursor downwards to point 2, which is the 8µg/L calibration.
6. Press the OK button on the Aquameter to begin the calibration process.
7. A calibration report value will be displayed after the calibration is complete, it is useful to record these values for troubleshooting purposes.

CONTROL

Check the calibration report value is within the acceptable range.
The acceptable range for the 0% calibration is >2300mV – 2600mV
The acceptable range for the 8µg/L calibration is >2300mV – 3200mV.

Once calibration is complete press the escape button until you can see the live readings. Check that the BGA-PE readings is displaying a value **close to 200,000µg/l** at 20 degrees C. This value will vary with temperature.

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Dated	Revision	Document evolutions	Author
02/07/25	0	Creation	CP
04/07/25	1	Review and fine adjustment	GP

Notes

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