

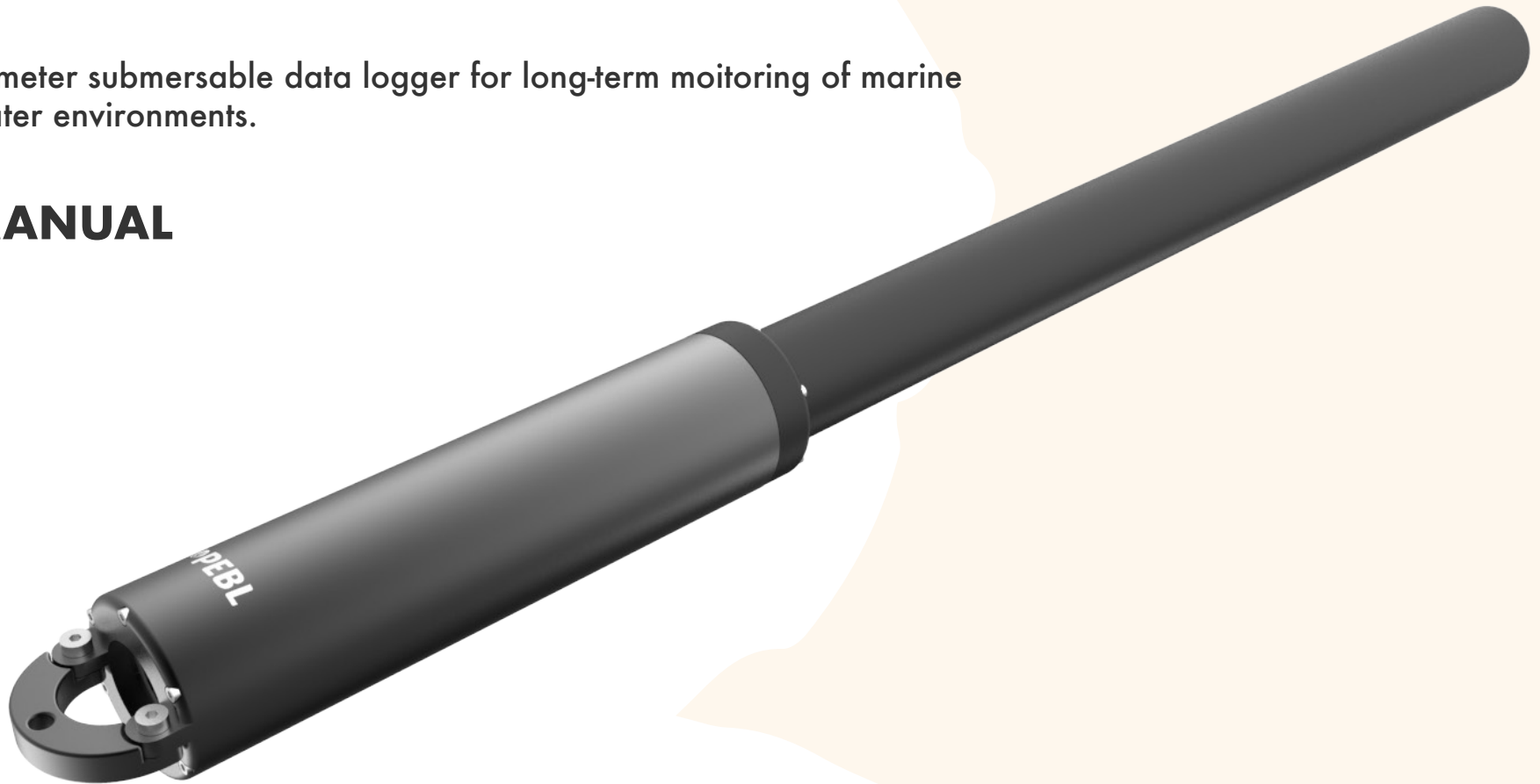


GROWPROBE

TEMPERATURE | TURBIDITY | CURRENT SPEED

A multiparameter submersible data logger for long-term monitoring of marine and freshwater environments.

USER MANUAL



{PRODUCT SPECIFICATION}

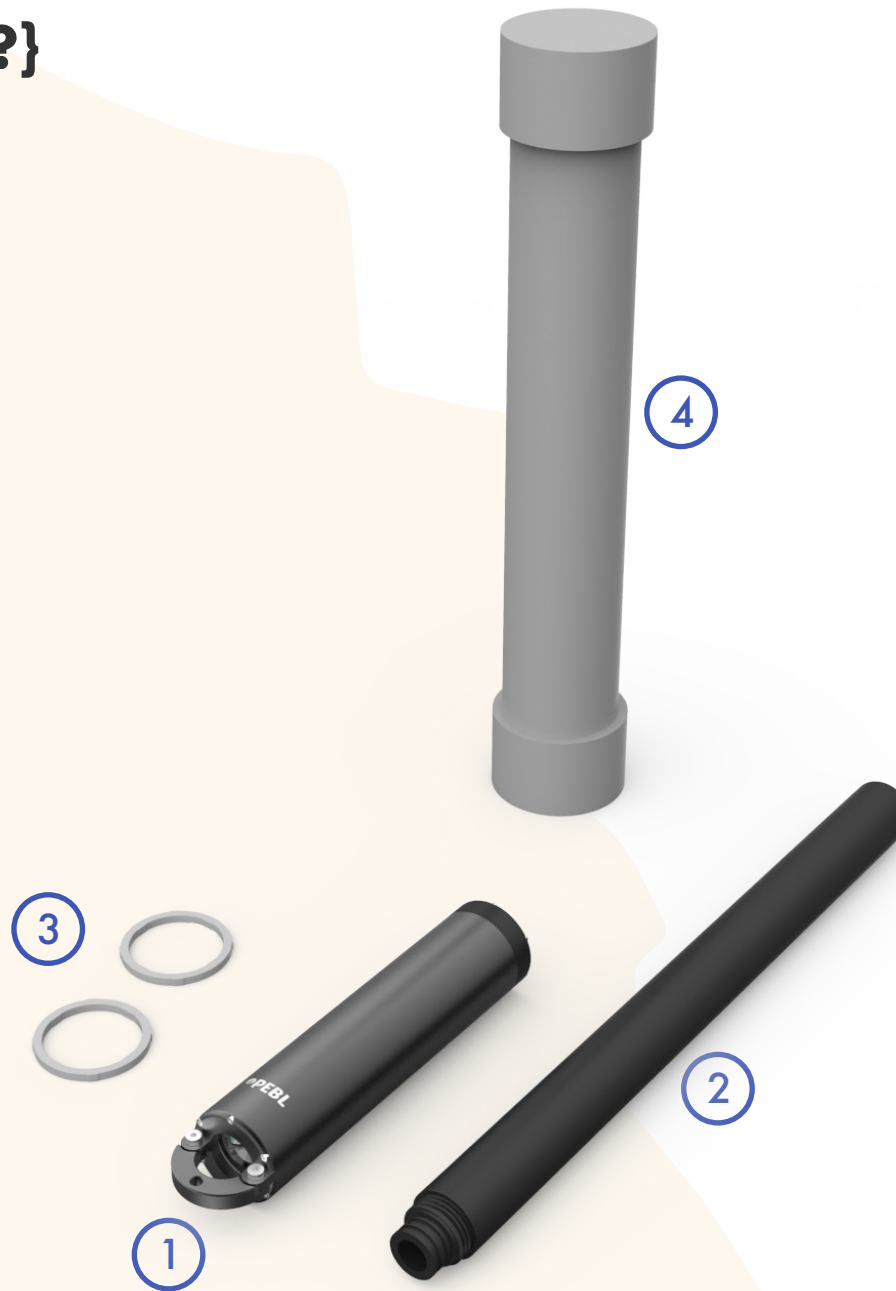
Temperature sensor	+0 C to +50 C Operating, 0.1C resolution.
Turbidity sensor	Light Sensor Measurement Range: 0-65550. Converted accuracy: 0-50NTU (± 5), 50+NTU (± 15).
Current speed	Current speed range: 0-2knots. Accuracy of measurement depends on measurement range. See current speed calibration curve.
Waterproof Housing	IP68 (rated to 60m depth).
Output file type	.CSV, comma separated.
Output file format	Two files will be output: 1) Raw data 2) Averaged data
Scheduling	The device can be programmed to sleep for a set time (RATE) and also programmed to take a set number of readings on wakeup (BURST). E.g. Wake up every 30 minutes and record 20 data points.
Memory Micro	SD Card 16GB.
Battery	12.8Ah Lithium Ion Battery (will last approximately 0 days taking measurements every 30 minutes).
Dimensions	55Øx720mm.

{WHAT'S IN THE BOX?}

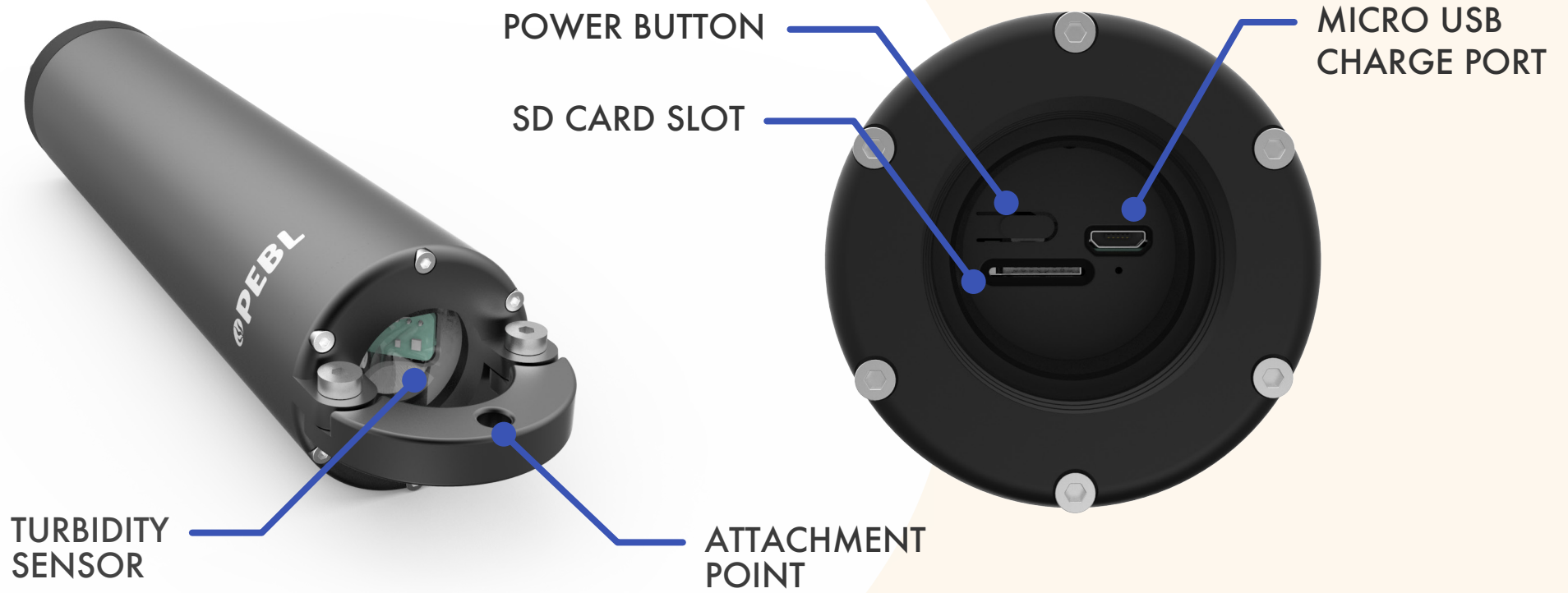
- 1) Main unit
- 2) Floatation pole
- 3) Calibration rings
- 4) Calibration vessel

Optional extras:

- Calibration fluids
- Attachment rope
- Inversion weights

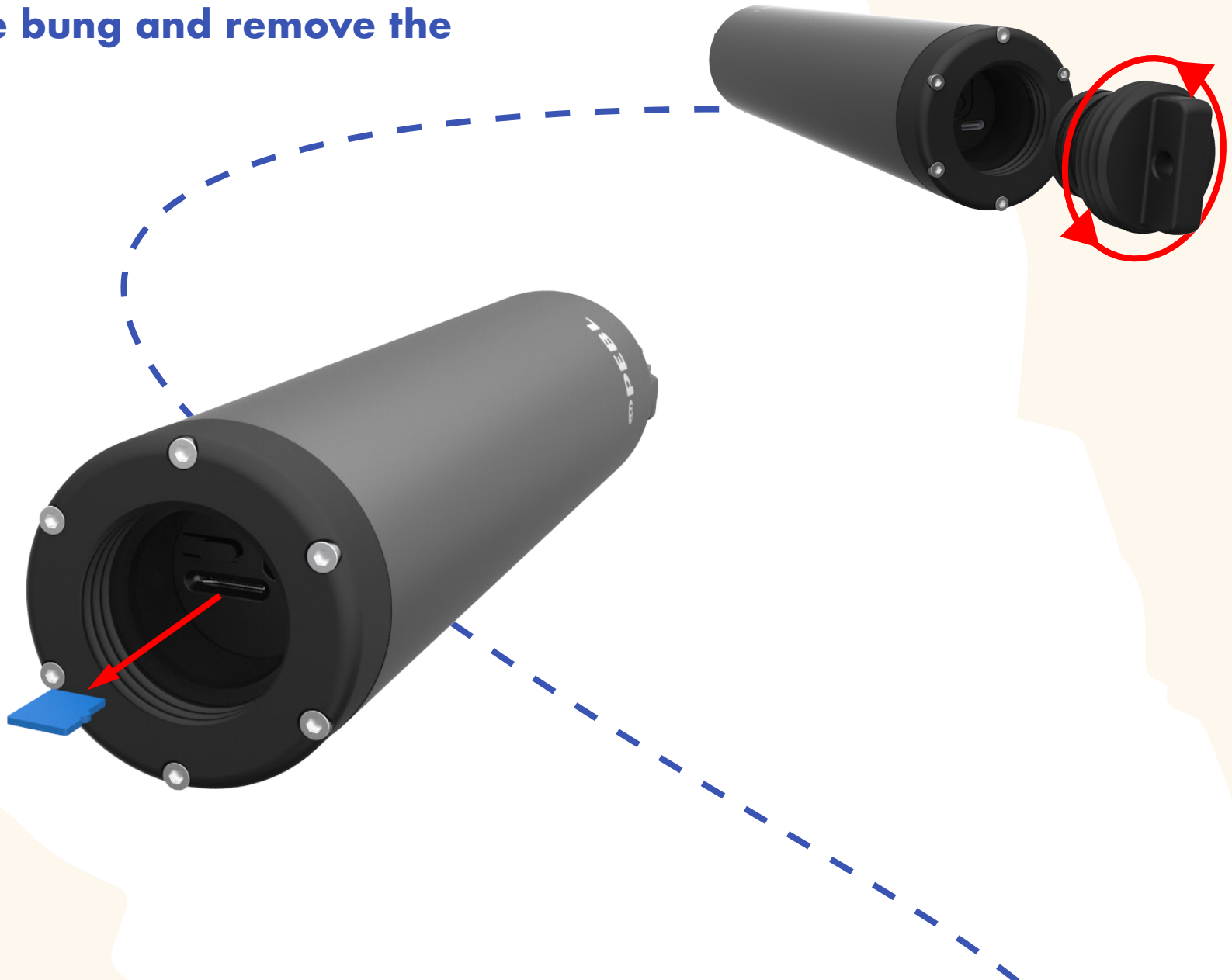


{GENERAL ARRANGEMENT}



{SETUP}

Unscrew the bung and remove the SD Card.



Insert SD card into computer and edit the “Config” files.

These files will be read by the Growprobe when the SD card is reinserted and used to connect the device to your local network and also to set up the data logging schedule.

BURST: Number of samples taken on each wakeup.

EMAIL: A confirmation email is sent to this address.

NAME: The individual name given to each device.

OTA: Used for software updates. Do not change this.

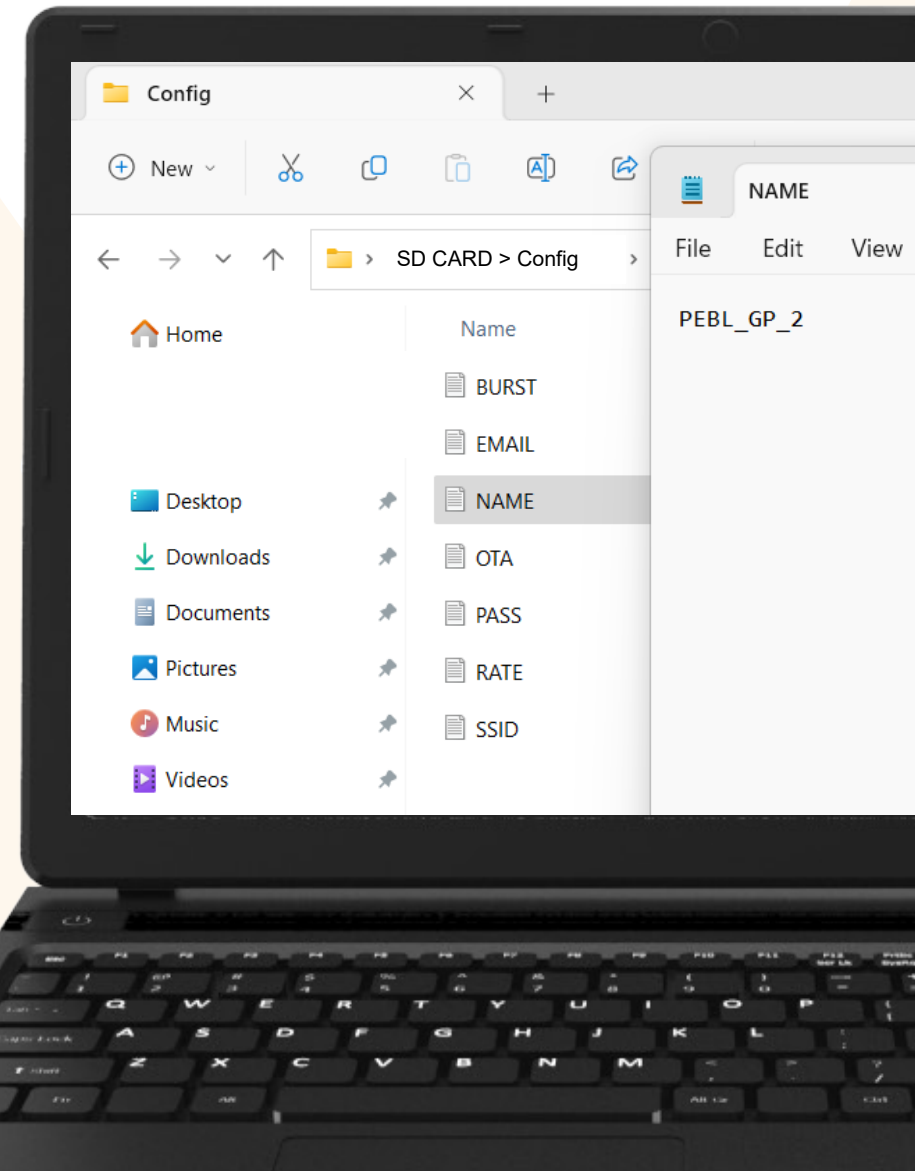
PASS: WiFi password for connecting device.

RATE: Time between each wakeup in seconds.

SSID: WiFi name for connecting device.

If Burst is 20 and Rate is 1800, the device will wake up every 30 minutes (1800 seconds) and take 20 readings. Both the raw data and the average of the 20 readings are output into separate .CSV files.

For first setup and calibration set RATE to 5.

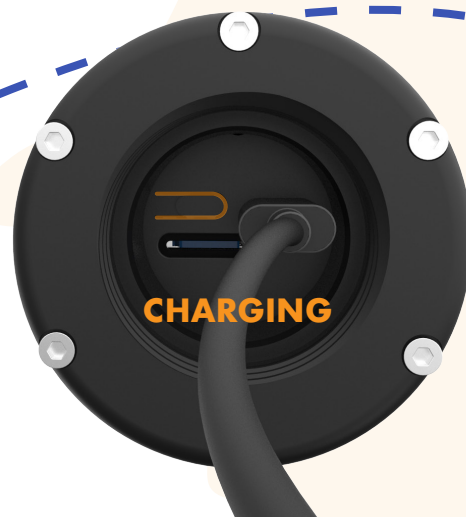
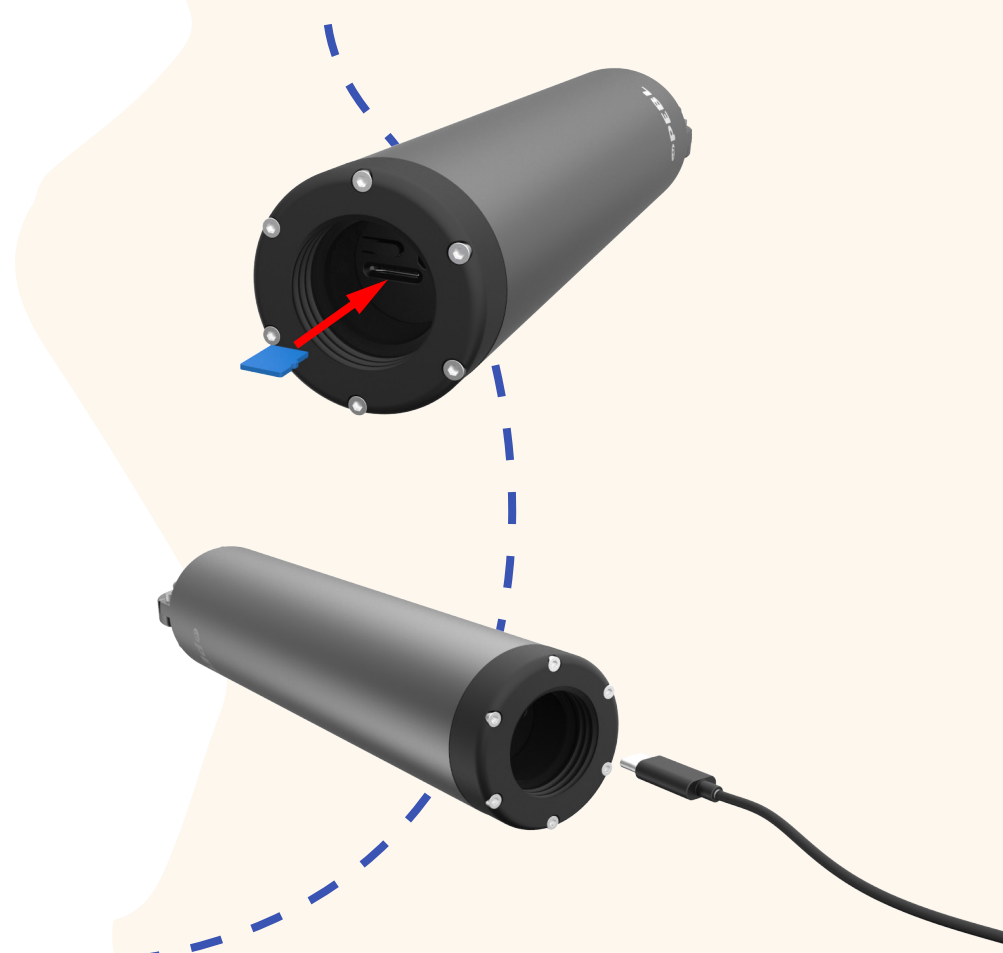


Reinsert the SD card into Growprobe, position close to WiFi router and plug micro USB cable into device.

When the cable is inserted, the LED will start to flash **Green**. If this doesn't happen, press the power button. The LED will then go **Purple** once it has connected to the WiFi and finally change to **Orange** which indicates the email has been sent and the device is now charging.

Removing and reinserting the SD Card will prompt the device to reconnect and resend the confirmation email.

A full charge cycle takes around eight hours and the LED will go **White** when it is complete. You do not need to wait for the device to be fully charged to begin logging.



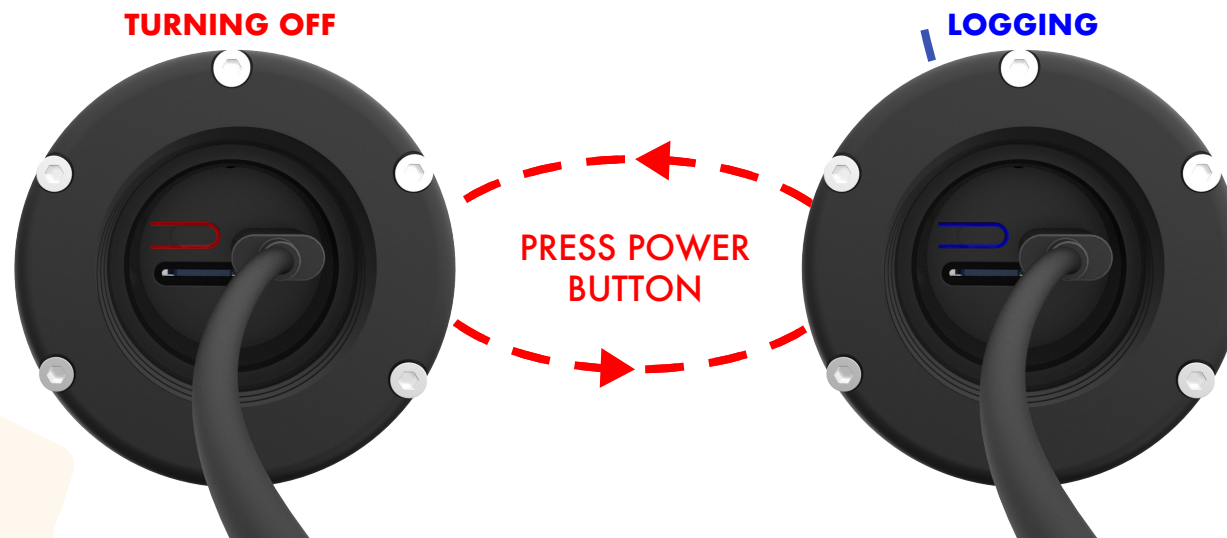
Once the email has been received and the cable is taken out, the device is now fully setup and in logging mode.

When the cable is removed you will see one of two LED states:

RED for 3 seconds: the device is successfully setup but turned OFF. If you press the power button, the device will light up Blue and begin logging.

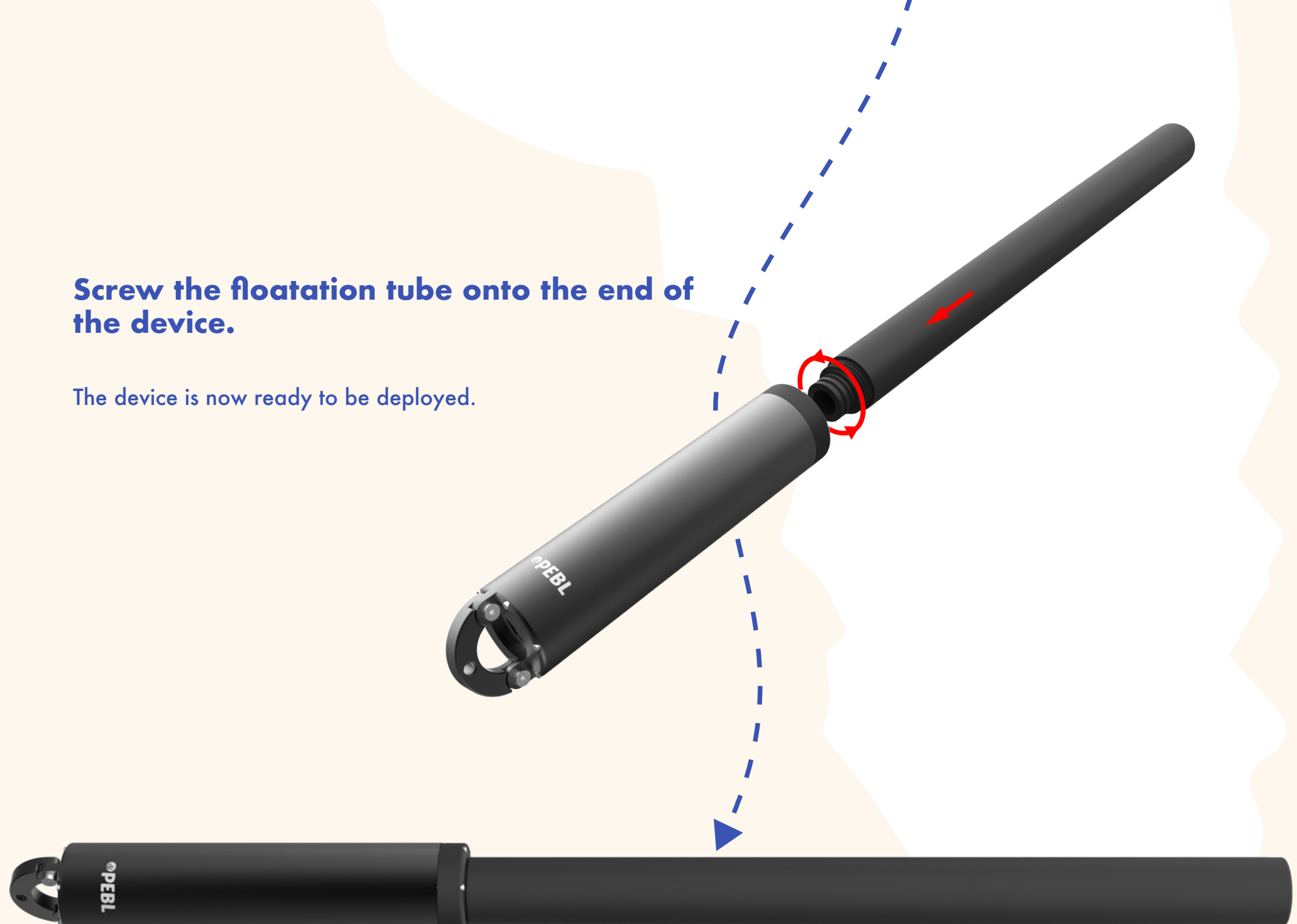
BLUE for 3 seconds: the device is ON and logging has begun. The Blue LED will flash every time the device wakes up to take a reading. If for the first setup you have set the RATE to 5 seconds, you should see the Blue LED flashing regularly.

Note: The LED will only light up Red after a full logging cycle is complete, so if the RATE is set to 30 minutes, don't expect to see the LED light Red for 30 minutes when turning off.



Screw the floatation tube onto the end of the device.

The device is now ready to be deployed.



{TURBIDITY CALIBRATION}

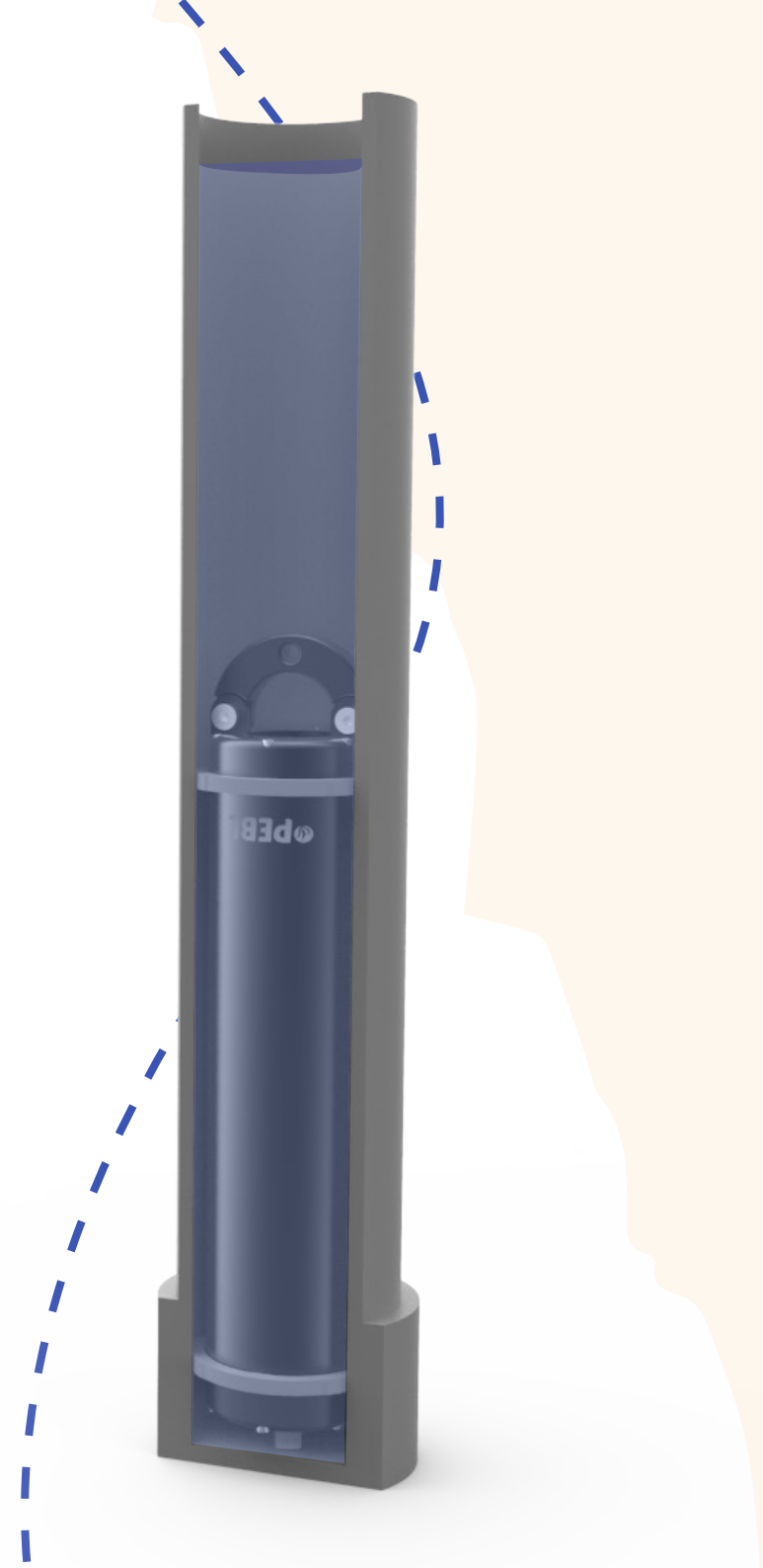
Setup the device as above using 5 for RATE and 20 for BURST.

Screw the bung into the device and attach the calibration rings as shown.



Lower the device into the Calibration Tube, pour 1 Litre of distilled water into the tube and put the lid on the tube.

We recommend leaving the device for 3-5 minutes in each calibration solution.



Remove the distilled water and then pour the turbid fluid into the tube.

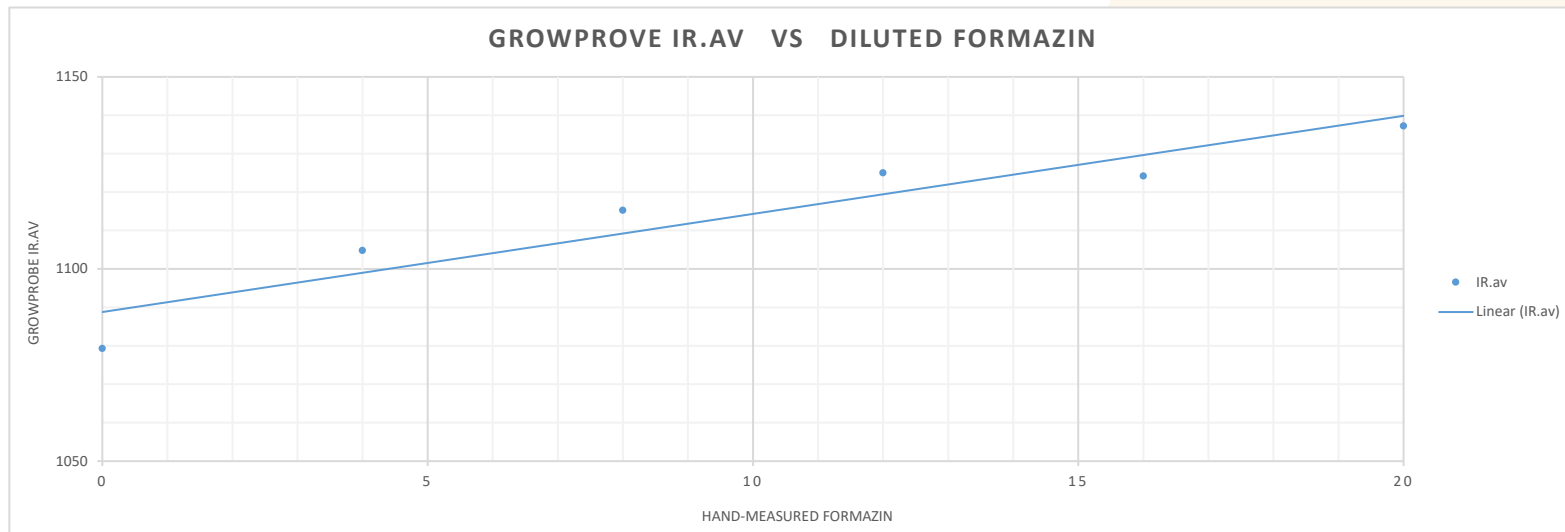
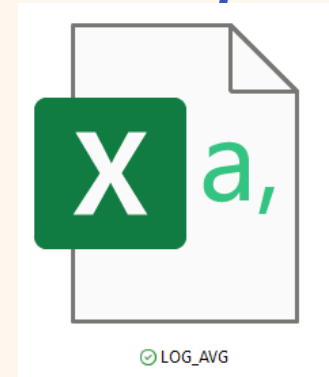
The turbid calibration fluid should be the maximum expected FNU/NTU on the deployment location. For most coastal areas 40NTU is sufficient, but for estuaries it can be 500FNU or higher.

We recommend leaving the device for 3-5 minutes in each calibration solution.

For best results, repeat this process. Also, ensure this process is completed for every Growprobe unit if multiple devices are owned.



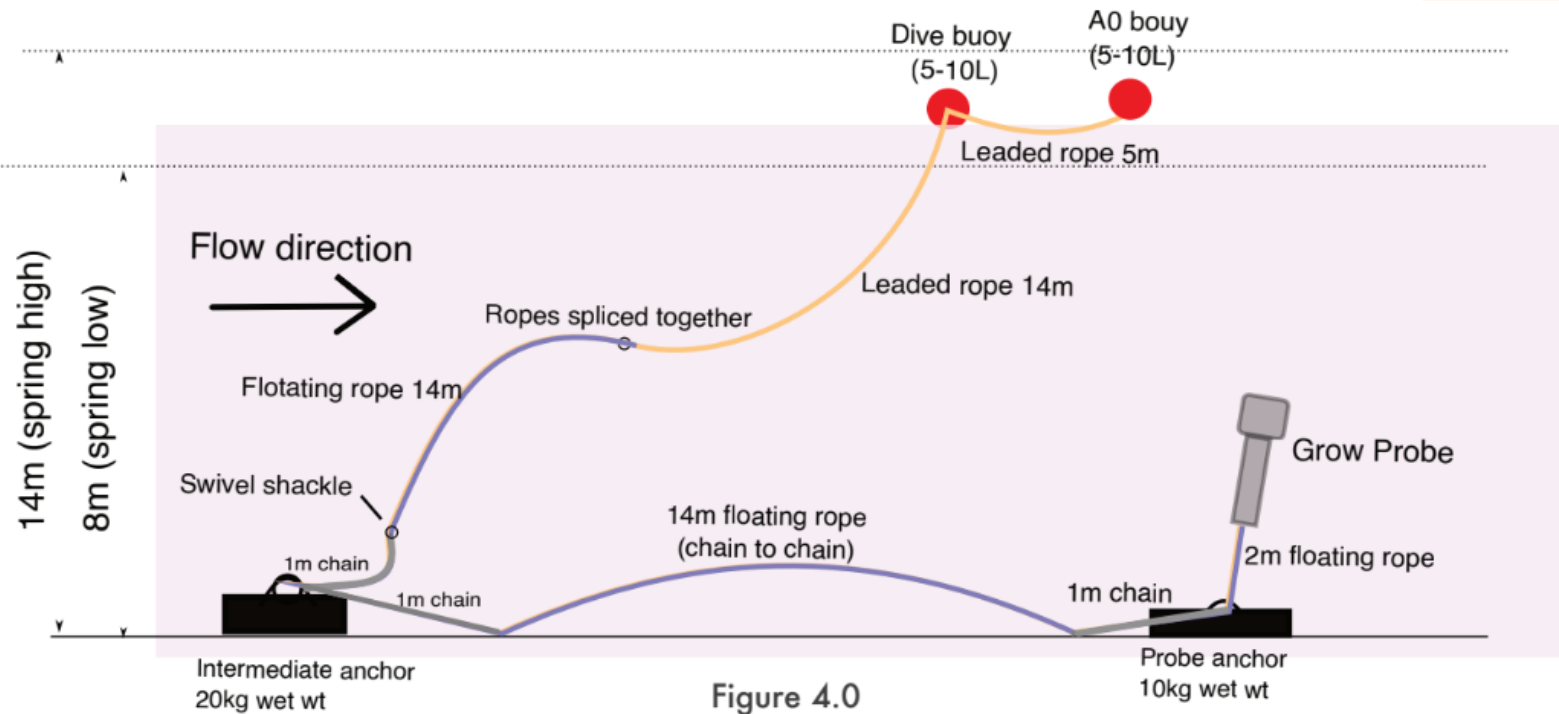
Use the IR data on LOG_AV to create a calibration gradient for each device.



{EXAMPLE RIGGING}

Below is an example rigging for a medium flow (<math><1.5\text{m/s}</math>) environment.

It is essential to decouple all wave action from the device. For higher flow sites, the weights will need to be increased.



{MAINTENANCE}

ANTI-FOULING

To clean off any fouling on the Growprobe, we recommend submerging the device in Virkon (agricultural bleach). Dilute to manufacturers specification and leave submerged for 24 hours before rinsing in distilled water. This should ideally be performed as soon as the device is brought back onto land.

SILICA GEL

The silica gel sachet should be replaced every 6 months to ensure the electronics are protected from condensation inside the enclosure.

O-RING SEALS

it is recommended that the seals are kept greased at all times. Any silicone grease can be used. We use Nitecore SG7 Silicone Grease purely for the reason that it is clear.

HELP AND SUPPORT

PEBL is committed to providing aftercare support for all of its products and services. If any further assistance is required regarding the use of our products then please get in touch via email to Christian@PEBL-CIC.co.uk.

{LED STATUS LOOKUP}



