

Instruction Manual



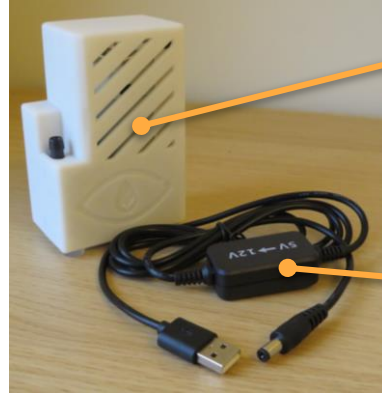
Contents



Imaging system

Incubator

Cartridge tray



Electric pump

Pump power cable



Power bank



70% ethanol spray



Charging cable & plug



Collection kit

Filtration cup lid

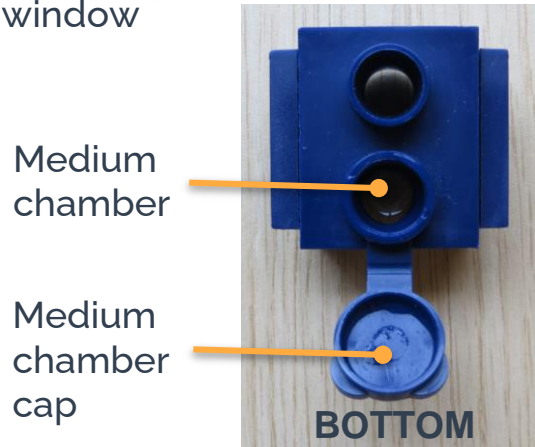
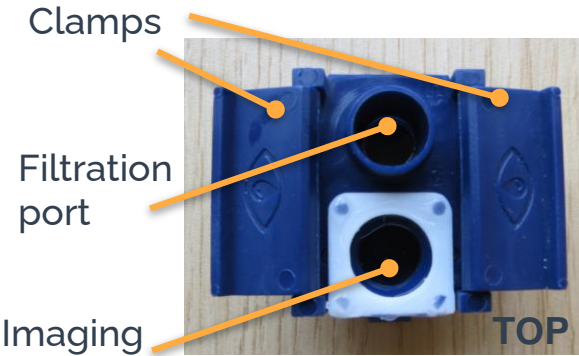
Filtration cup

Funnel

Collection cup

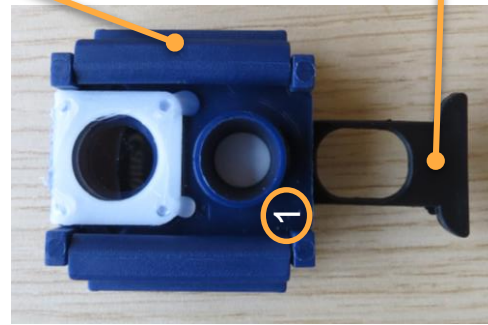
Collection cord

Contents

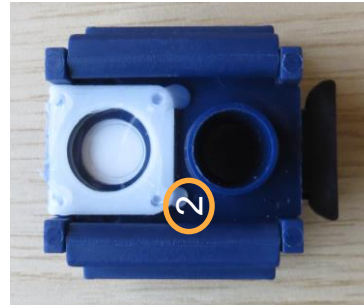


Cartridge

Slider



Filtration position (Position 1)



Incubation position (Position 2)

Growth membrane



Medium ampu



Cartridge and collection cup preparation



1 Spray the collection cup and the funnel with ethanol to sterilize. Wait at least 30 seconds to dry.



2 Collect a water sample using the collection cup and cord. Rinse the funnel with a small amount of sample water and set aside.



3a (a) Unwrap the cartridge with pre-inserted slider. Locate the slider into position 1 for filtration.

(b) Push the clamps of the cartridge down to lock the slider in position.



AFTER

Filtration system assembly

5



4a

Assemble the filtration unit by first putting the lid on the filtration cup.



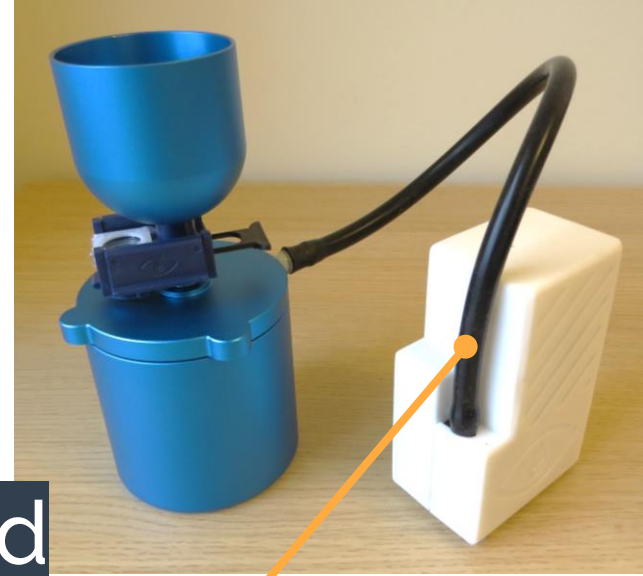
b

Next, connect the cartridge to the port on the filtration cup lid.



c

Then, connect the funnel to the cartridge.



d

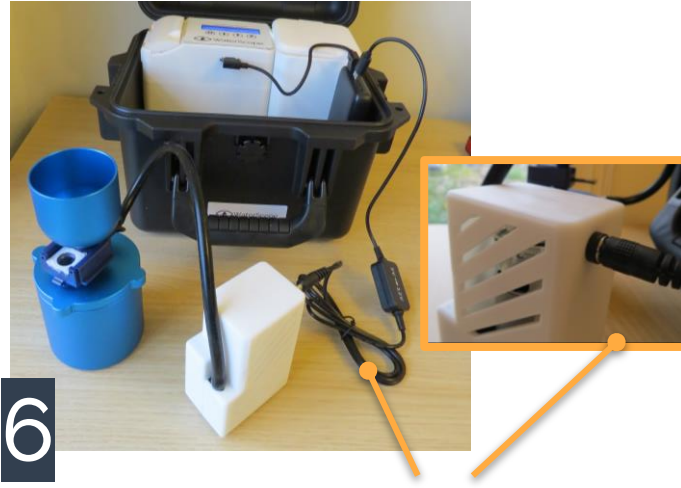
Finally, connect the electric pump to the filtration cup lid using the pump tubing. Make sure both tubing connections are tight by pushing firmly.

Sample collection & preparation



5

Using the collection cup, pour the water sample into the funnel. There are markings on the inside of the funnel to indicate:
 Drinking water = ~100mL
 Turbid/Dirty = ~10mL



6

Connect the electric pump to the power bank with its cable to switch it on. It will make a LOUD noise.

Wait **5-10 minutes** until all of the sample has been filtered. Unplug the pump to switch off and disconnect the tubing from the pump.



7

Plug in the power bank into the imaging system to turn it on. After booting, screen will display incubator temperature (current / target temp.), time running and test options.

Sample collection & preparation



8a

- (a) Lift the clamps of the cartridge to release the slider. Hold the funnel and push the slider to position 2 for incubation.
 (b) Close the clamps of the cartridge to secure the slider in place.



b

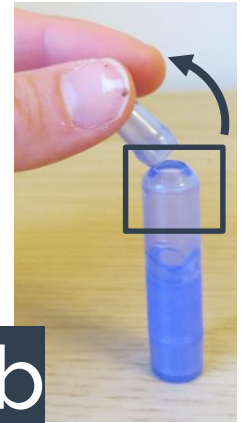


9

- Disassemble the filtration system, removing the cartridge, and dispose of the waste water.



10a



b

- Prepare the growth medium.
 (a) Remove the perforated tab on the medium ampule. Push the base up to pierce the internal seal and invert several times until powder dissolves. Spray with ethanol and wait 15 seconds.
 (b) Taking care not to touch around the indicated area, snap-off top.

Sample collection & preparation



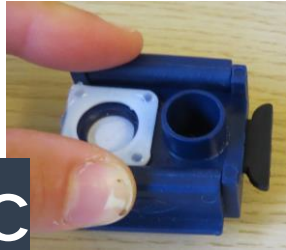
11a

Open the medium cap on the bottom of the cartridge. (a) Pour the medium from the ampule into the chamber, tapping gently to encourage flow if needed.

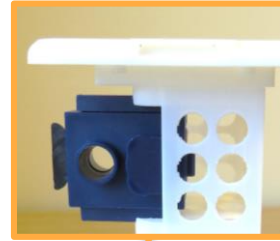
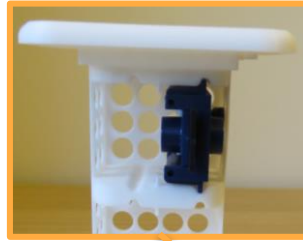
(b) Gently hold the cap in place (do not push) and (c) flip the cartridge over before pushing the cap until fully closed.



b

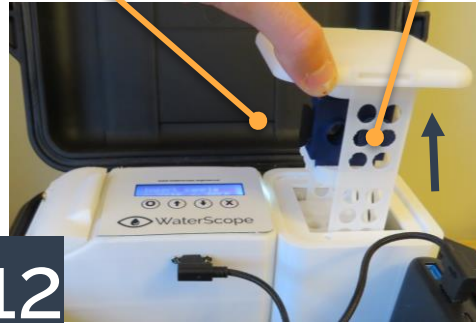


c



12

Open the incubator and slide the cartridge into the tray with the medium cap of the cartridge facing forward.



13

Close the incubator, shut the case securely, and **set the case 'upright'**, with the handle at the top of the case. Leave incubating for required time in the shade.

Time	Result
7.5	Presence/absence
9	Semi-quantitative
13	Quantitative

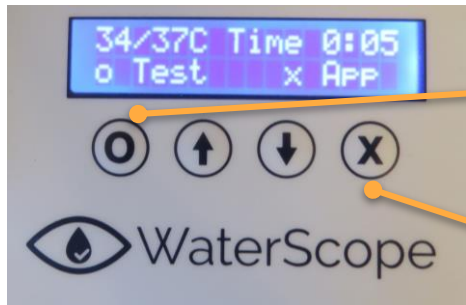
Sample analysis



14

After desired incubation time, remove the cartridge from the incubator. Open the imaging system chamber and slide the cartridge into the sample holder with the imaging window (top side) facing the screen. Close the imaging chamber lid.

EITHER



15a

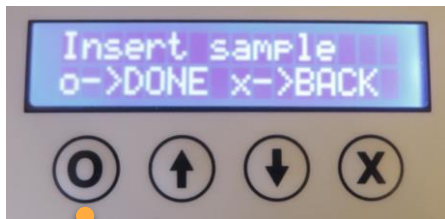
select 'Test' using the 'O' button on the imaging system. Follow the instructions on the screen of the imaging system to obtain results.

OR

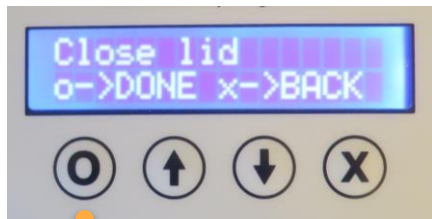
15b

select 'App' using the 'X' button on the imaging system. Follow the instructions on the app on mobile device to obtain result.

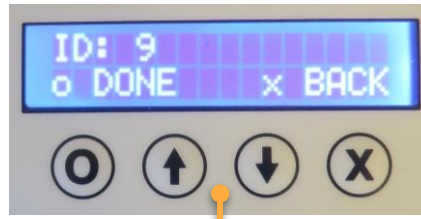
Sample analysis - Using the screen (15a)



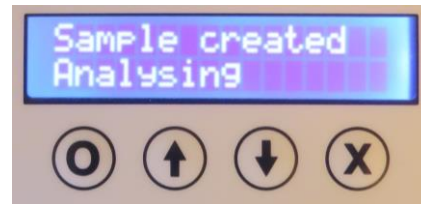
Select 'DONE' using the 'O' button



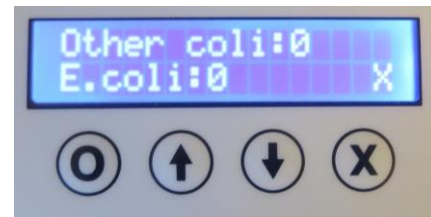
Select 'DONE' using the 'O' button



Use the arrow buttons to change sample ID as desired. Select 'DONE' using the 'O' button



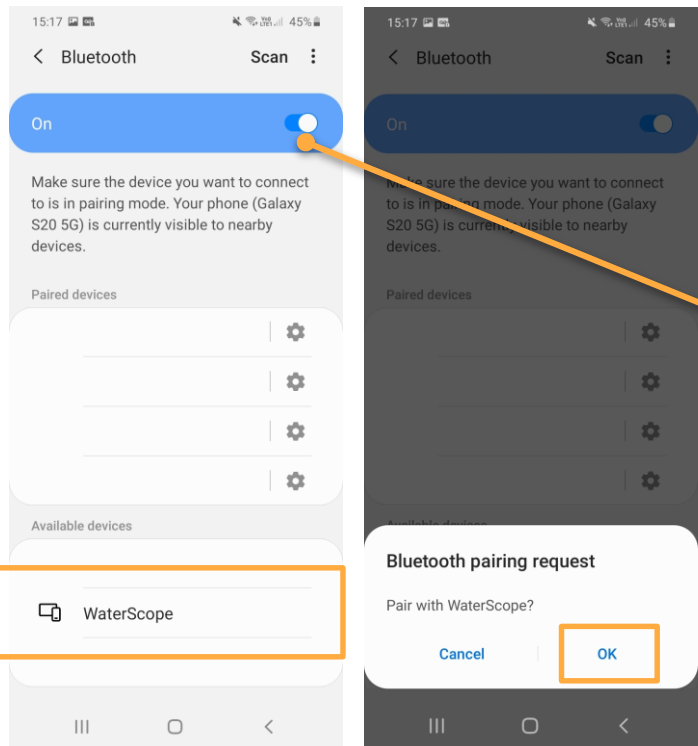
Wait ~8 min for imaging and analysis.



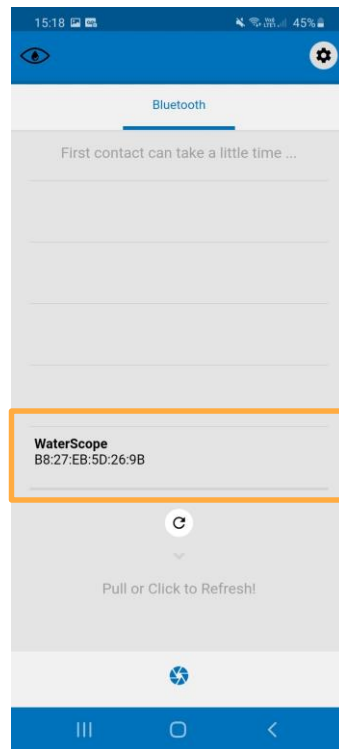
Results will be displayed on the screen. Refer to **Results guide** on page 14.

Sample analysis – Using the app (15b)

The WaterScope app can be downloaded from the Google Play store for Android phones. In order to connect to your WaterScope device, Bluetooth must be enabled in your device settings.

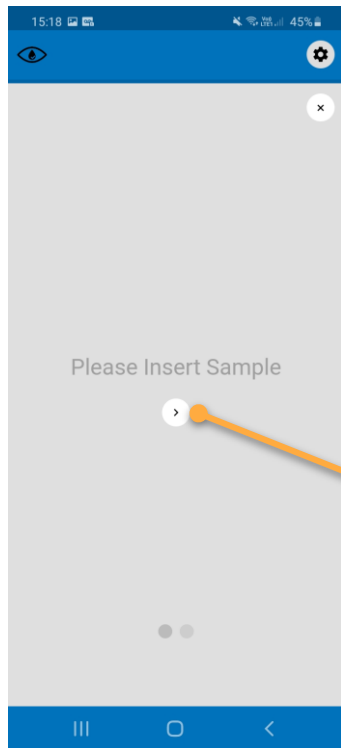


Pair your phone with the WaterScope system in your phone 'Settings'. Turn on Bluetooth and select the WaterScope system from the list of 'Available devices'. Select 'OK' when prompted.

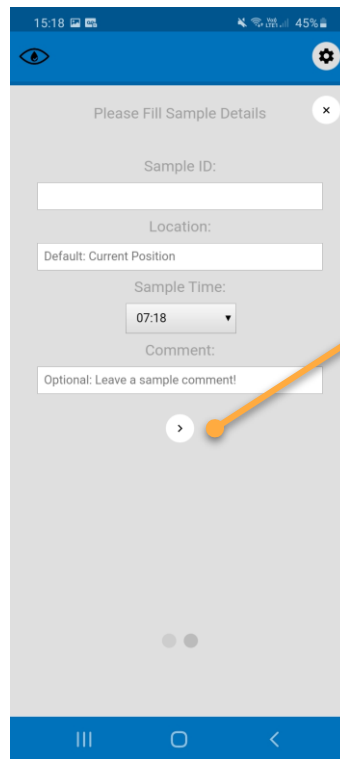


Return to the WaterScope app and refresh the page by swiping down. Select 'WaterScope' from the devices list.

Sample analysis – Using the app (15b)



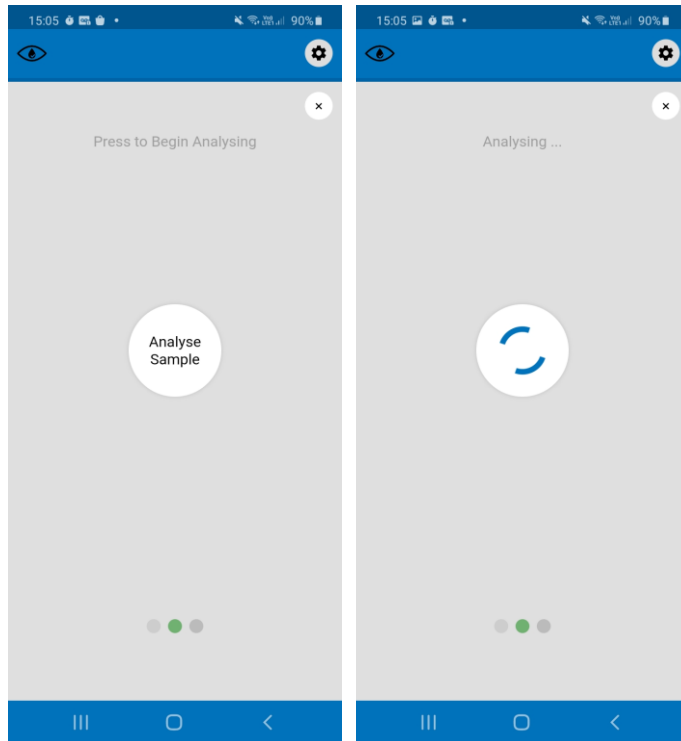
Once a connection is established, the app automatically moves to the 'Insert Sample' page. Insert a sample into the imaging system, then swipe right or tap the button to move to the next step.



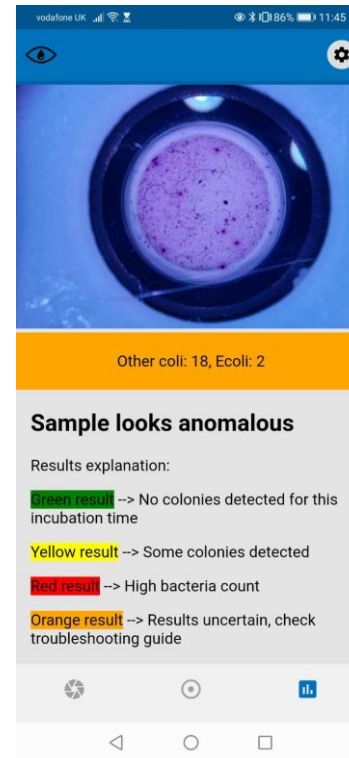
Enter the sample details. Sample ID, location and time must be entered before moving to the next step by swiping right or tapping the button. Leaving a comment is optional.

The sample location will use your device's location by default. When requested, allow the WaterScope app to access location to use this feature.

Sample analysis – Using the app (15b)



Press the 'Analyse Sample' button to begin the analysis process.



When the analysis has finished, the app will automatically move to the results page.

The results page shows the microscope image and the colony count results for E. coli and other coliforms.

Click save image to save both the raw and process image to your camera roll.

Results guide

Results screen shows a colony count or a message to user

- a. No light inside imaging chamber and E.coli: count shown on screen
- b. Red light inside imaging chamber: one of two options described below:

Results screen reads 'Sample overgrown'.

Visually check the cartridge to see if:

- a. The sample pad looks blue/pink → Sample has high bacteria count. Repeat water test but reduce volume tested (1:10 dilution suggested).

Results screen reads 'Sample anomalous':

Visually check the cartridge to see if:

- a. The glass cover of the imaging window is foggy → Defogging step failed. Re-run analysis (step 15) to repeat defogging.
- b. The medium has changed color by opening the medium cap → If so, medium contamination is preventing growth on the membrane. Repeat the test, remembering to spray the ampule with 70% ethanol before opening. Do not touch the sterilised surface nor the inside of the medium chamber.

After sample analysis

Sample disposal

Remove slider from cartridge and spray with ethanol. Reinsert into cartridge and clamp securely for disposal into appropriate waste container.

Power and charging

The system can operate on battery power for a full incubation cycle (13+ hours). After use, charge the power bank using the charging cable and plug. It should take ~ 12 hr to reach full charge.

While the power bank is charging, the system can be powered from mains power by plugging the imaging system into the charging plug. The filtration pump can also be powered from this plug if needed.

Storage

Store the system out of the sun when not in use.

Troubleshooting guide

What to do if...

Water sample isn't filtering or taking a long time.

Check tubing connections to pump and filtration cup lid are secure and that all connections between the cartridge and the filtration system are pushed tightly together.

Medium leaks out the side of the cartridge when added.

Check that slider is positioned correctly and clamps are securely locked down. It should not be possible to move the slider when clamped. Repeat medium addition, making sure to gently hold the medium cap in place and flip the cartridge over to imaging window side up before pressing the cap to close it fully.