Quensus

Intelligent water management

# LeakNet

## User Manual


English

Ver 7c

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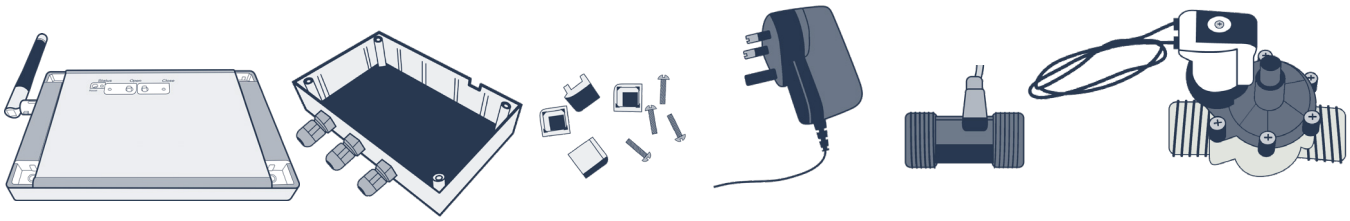
# QUICK START GUIDE



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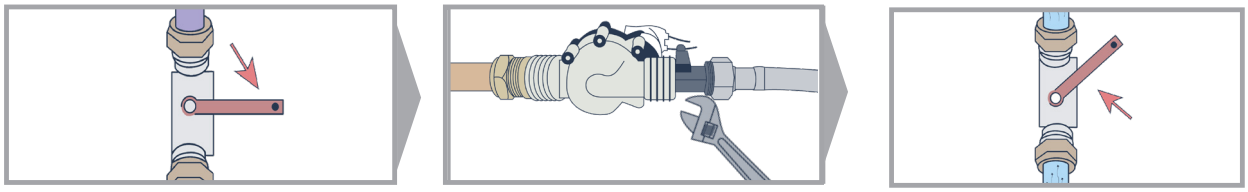

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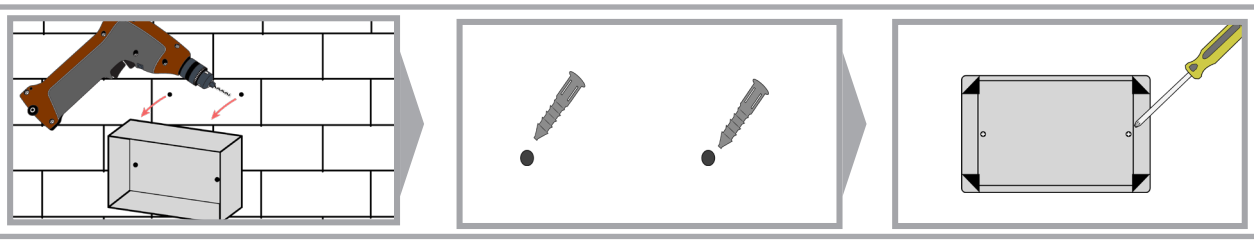

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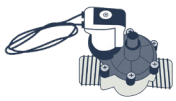

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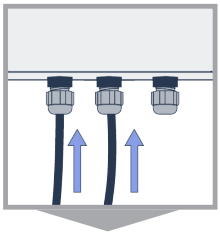

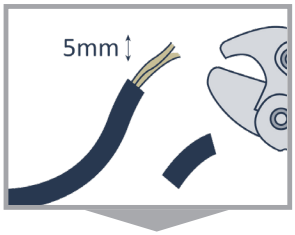


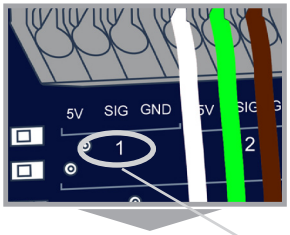


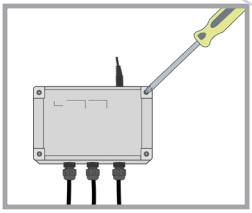


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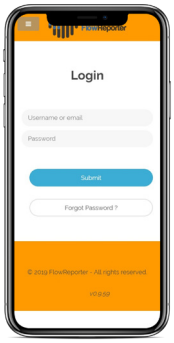
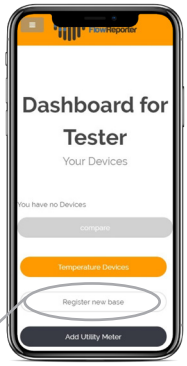
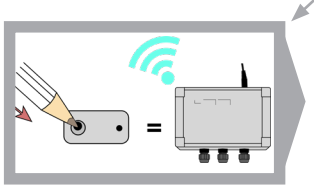
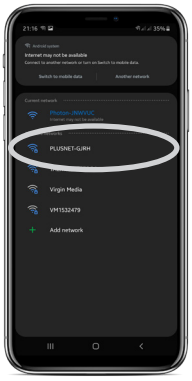
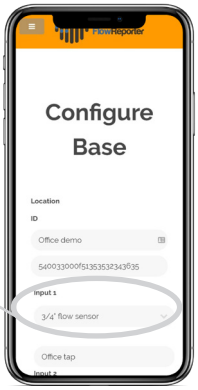
www.FlowReporter.com

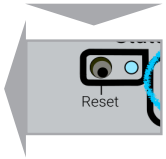


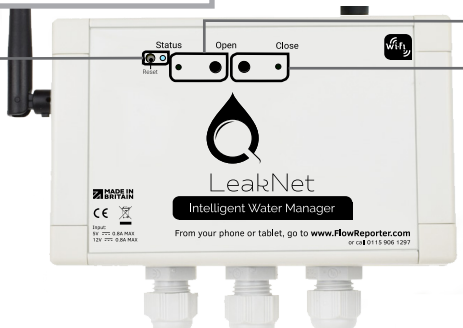



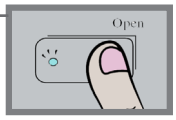



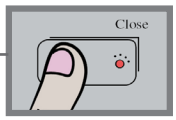




# CONTENTS

# INTRODUCTION

First of all, thank you, you have made an excellent decision to go with LeakNet, the complete online water management and leak detection system provided by Quensus.

Using LeakNet, water consumption can be visualised anytime from anywhere in the world. If a leak is detected, an alert is immediately sent to the user via email. If desired, LeakNet can automatically shut off the water supply, so no water damage is caused in the event of a leak.

The LeakNet Base (pictured) can connect up to 4 meters (no valve), so it has the potential to measure the water flow through 4 different pipes. Using 1 meter, a valve can also be connected to turn off the water supply. Almost any pipe size is accepted, and meters/valves supplied by Quensus come in standard sizes.

The LeakNet Base is mains supplied and contains the connection to the Internet via WiFi.


## Online capability

You will manage and monitor your LeakNet online using a service called FlowReporter.
Register for your account at www.FlowReporter.com.

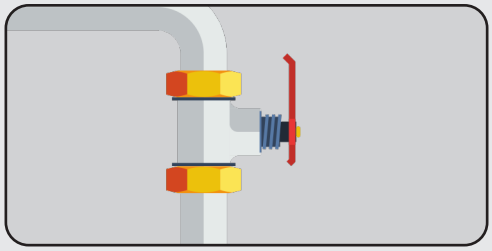
FlowReporter

### WARNING

If equipment is installed or used in a manner not specified in this document, the product may not work as expected, and the leak protection capabilities may be impaired. Please contact us if you have any problems or are unsure.

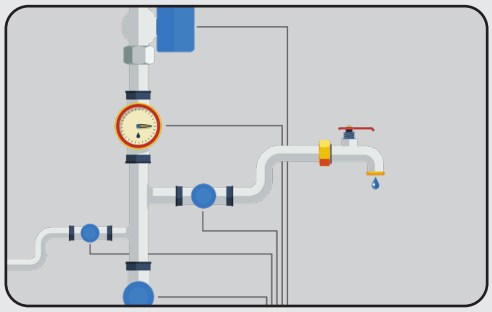
# INSTALLATION GUIDE

## Overview



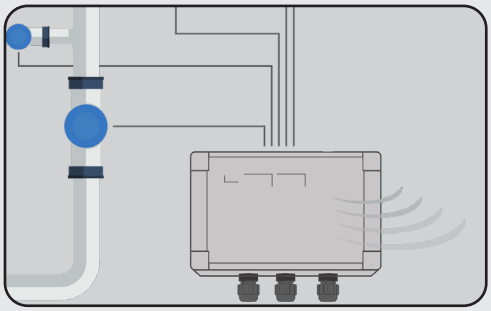
### 1. Find the stopcock

Decide where the LeakNet will be placed - this will normally be just after the stopcock, where the water enters the building. This will usually be coming up from the ground.



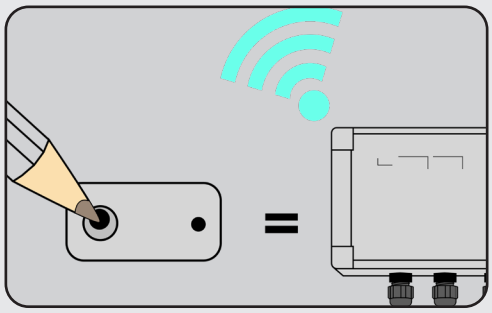
### 2. Install valve and meter

Make sure the valve (optional) and meter are facing the correct way (arrow pointing in the direction of flow) and install in the proposed location. Up to 3 more meters can also be installed.



### 3. Install the Base

Choose a location to mount the Base and check WiFi connectivity. Wire the cables from the meter(s) and valve to the Base, making sure to use the cable glands. Screw on the front of the Base, clip in the inserts which hide the screws, and then connect the power adaptor.



### 4. Connect to WiFi

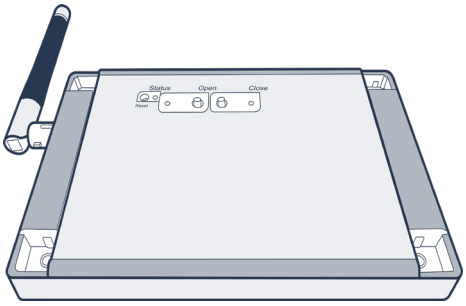
With the “Status” light flashing blue, use your smartphone to access www.FlowReporter.com online.
Login and select “Register new Base”. Follow the on-screen instructions. Configure the Base online by selecting the fittings used in the above step.


### 5. Test online

Run a nearby tap. Online, select the name of your new Base, and then click “Close valve”. A few seconds later, the water will stop flowing. Click the sensor name, then “View” then “Real time” then “Open valve”. You will see the graph change as the water is turned on.

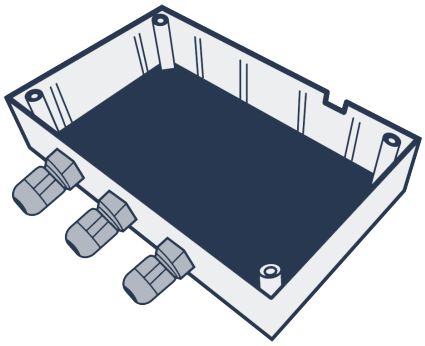
# INSTALLATION GUIDE

## Item checklist



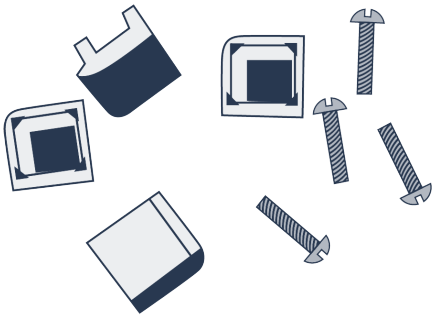

**LeakNet Base front**

With integrated circuit board.



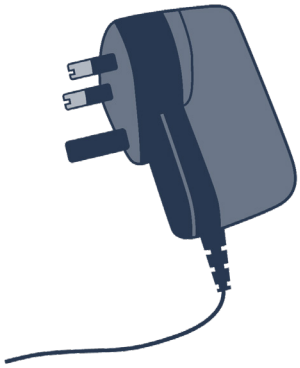
**LeakNet Base rear**

Wall mountable.



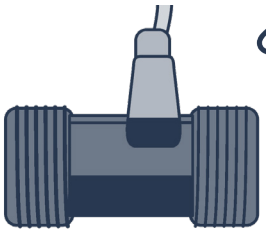
**Base screws and inserts**

To fasten the front of the Base to the rear of the Base.



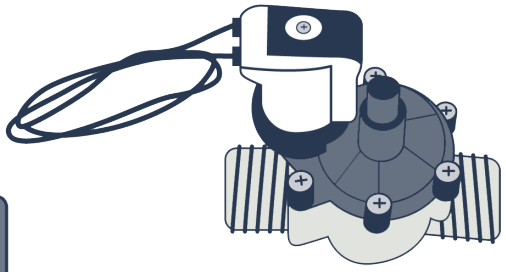
**Power adaptor**

Standard mains DC power adaptor.



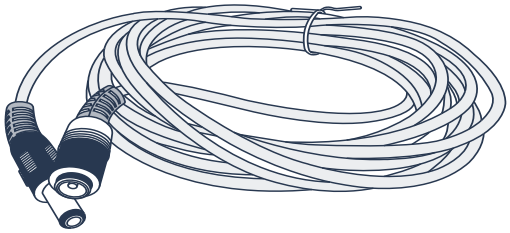
**Water meter**

To measure water flow. Different sizes are specified on page 12.



**Valve**

To turn off water flow. Different sizes are specified on page 12.



**DC extension cable (optional)**

To extend the reach of the power adaptor by 3m

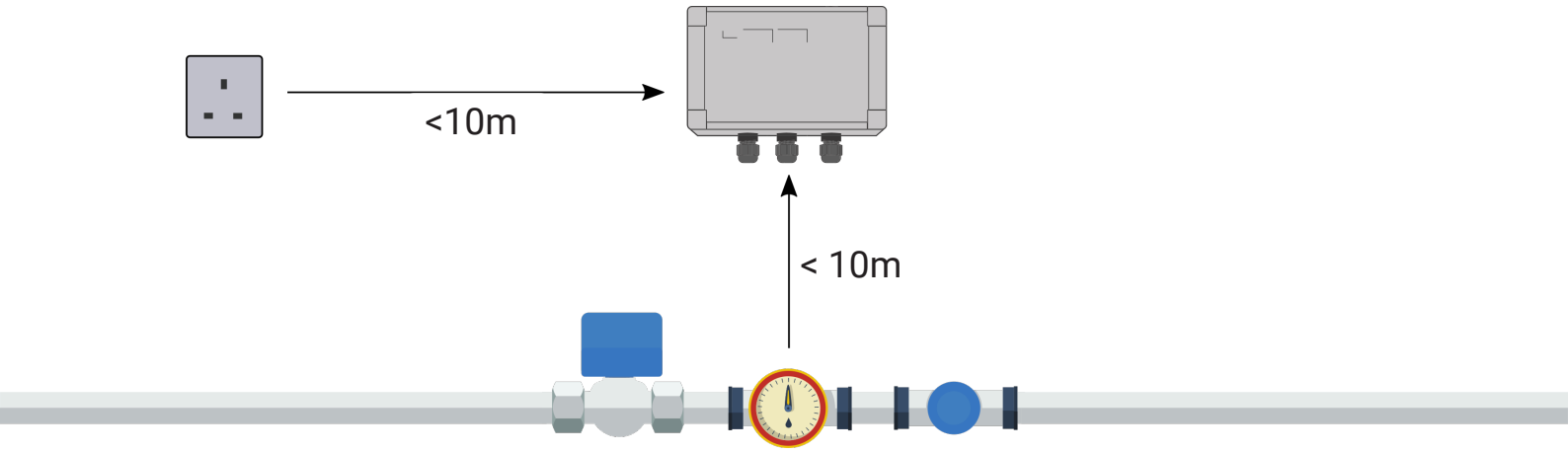
# INSTALLATION GUIDE

## Before you begin

The Base uses WiFi to communicate over the internet, and requires mains power.

Before installing, decide where the LeakNet Base will be located:

- Within 10 meters of plumbed fittings,
- Within 10 metres of a 100-240V 50/60 Hz mains socket,
- Within range of WiFi (use your mobile phone to check for WiFi signal). Also ensure you have access to the name of the WiFi connection and password.




**Location**

The Base should be wall-mounted and located no more than 10 meters aways from plumbed fittings.

**Power**

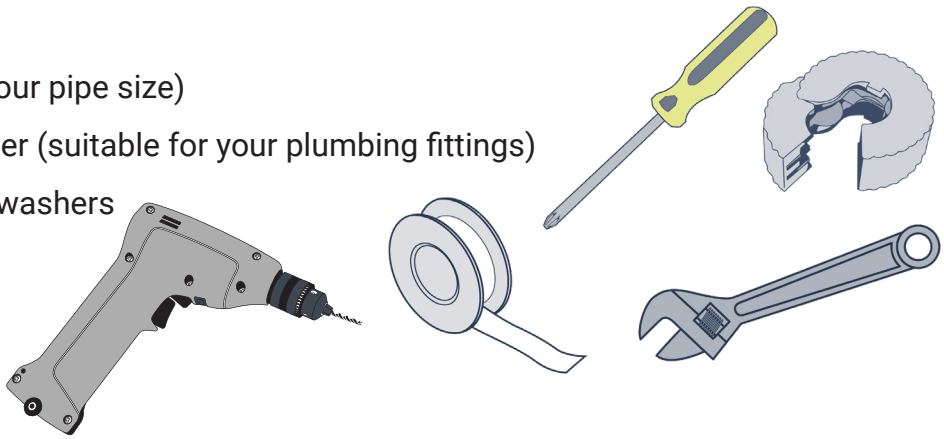
The Base should be located no more than 10 meters aways from a mains plug socket.

**WiFi**

The Base should be located within range of WiFi. Use a smartphone to check the connection is at least 2 bars.

## Tools required

- Phillips head screwdriver
- Pipe cutter (suitable for your pipe size)
- Adjustable wrench/spanner (suitable for your plumbing fittings)
- PTFE tape and/or rubber washers
- Drill (if wall mounting)



If WiFi is not available, a standard 3G router can be supplied to provide the wireless connection. Data rates are 4MB per day as a maximum.

# INSTALLATION GUIDE

## Plumbing instructions

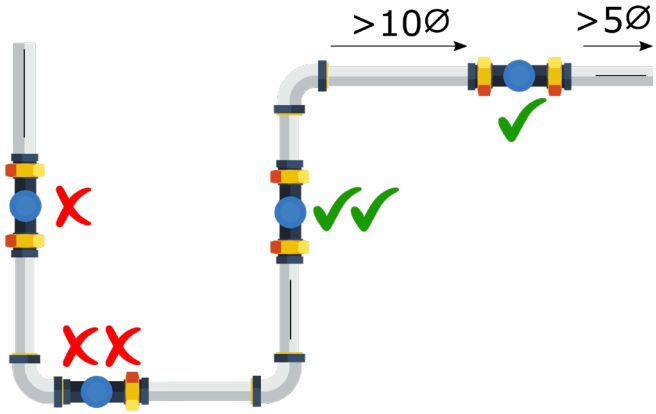
1. Choose location for meter and valve. They will usually be installed together, but try to place the meter as far upstream as possible.

The optimum conditions for placement of a meter are as follows:

a) Straight length of 10 pipe diameters upstream

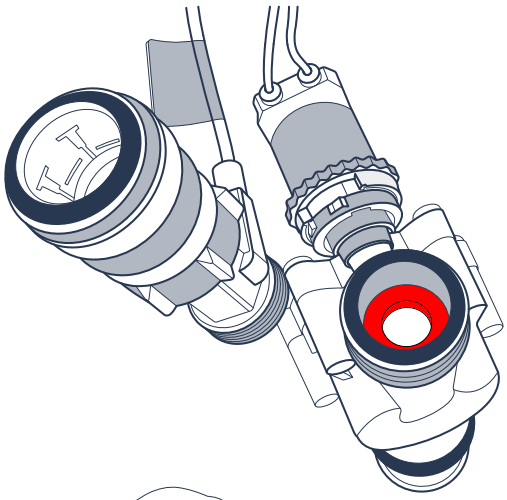
b) Straight length of 5 pipe diameters downstream

c) Direction of flow travelling upwards




Of course, it is usually very difficult to conform to all of these so if you don't manage it, do not worry, the meter will still work but very low flows may not get caught and accuracy will slightly decrease.

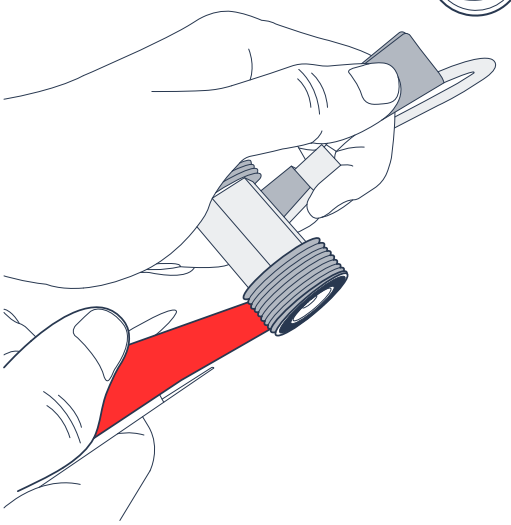
2. Assemble all fittings.



With **pushfit fittings**, use a rubber washer to make watertight connections. Make sure the rubber washer is clean, and hand tighten.

With **compression fittings**, use about 20 turns of PTFE tape around the thread (wrapping around clockwise), and then use a wrench to tighten.

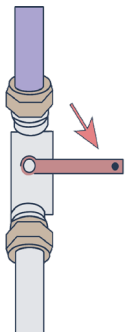
Watertight connections between the valve and meter can easily be achieved using 3 rubber washers or 25 turns of PTFE tape.



If you are in any doubt, we recommend professional installation by a qualified plumber.

# INSTALLATION GUIDE

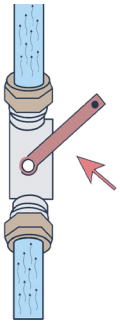
## Plumbing instructions (continued)



3. Turn the water supply off and drain the system (or up until the next stopcock downstream).

4. Remove any dried paint on the pipes where the connections will be fitted.

5. Plumb in the fittings, making sure the arrows on the fittings match the direction of water flow. *For the best accuracy, if using a solenoid valve, it should be placed downstream of meter.*

6. Make sure the pipes and fittings are assembled securely, and turn the water supply on.

7. Check for leaks and tighten any fittings.

8. *Optional: Earth bond either side of the installation together if necessary. Ask a qualified electrician if you are unsure.*

9. *Optional: Re-lag the pipework for insulation against freezing.*

# INSTALLATION GUIDE

## Wall-mounting instructions

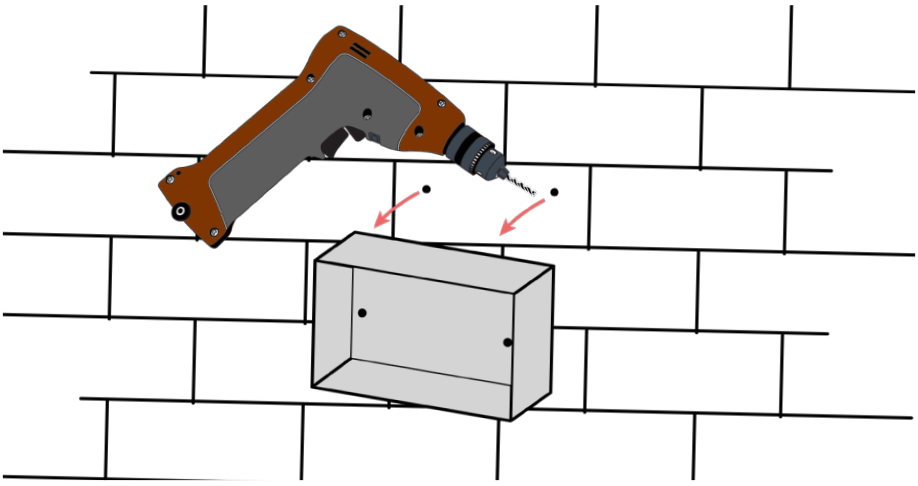
LeakNet should be wall mounted with 5mm screws at a minimum. Make sure the appropriate wall plugs are used and that the length of the screws are not long enough to protrude the other side of the wall.

1. Position the LeakNet Base rear on the wall. To ensure maximum WiFi exposure, position the Base at least 30cm away from metal objects, including pipes, and other electronics.

2. Using the appropriate drill bit, drill through the plastic enclosure and wall.

3. Remove the LeakNet Base rear and insert wall plugs.

4. Replace the LeakNet Base rear and screw into the wall plugs.

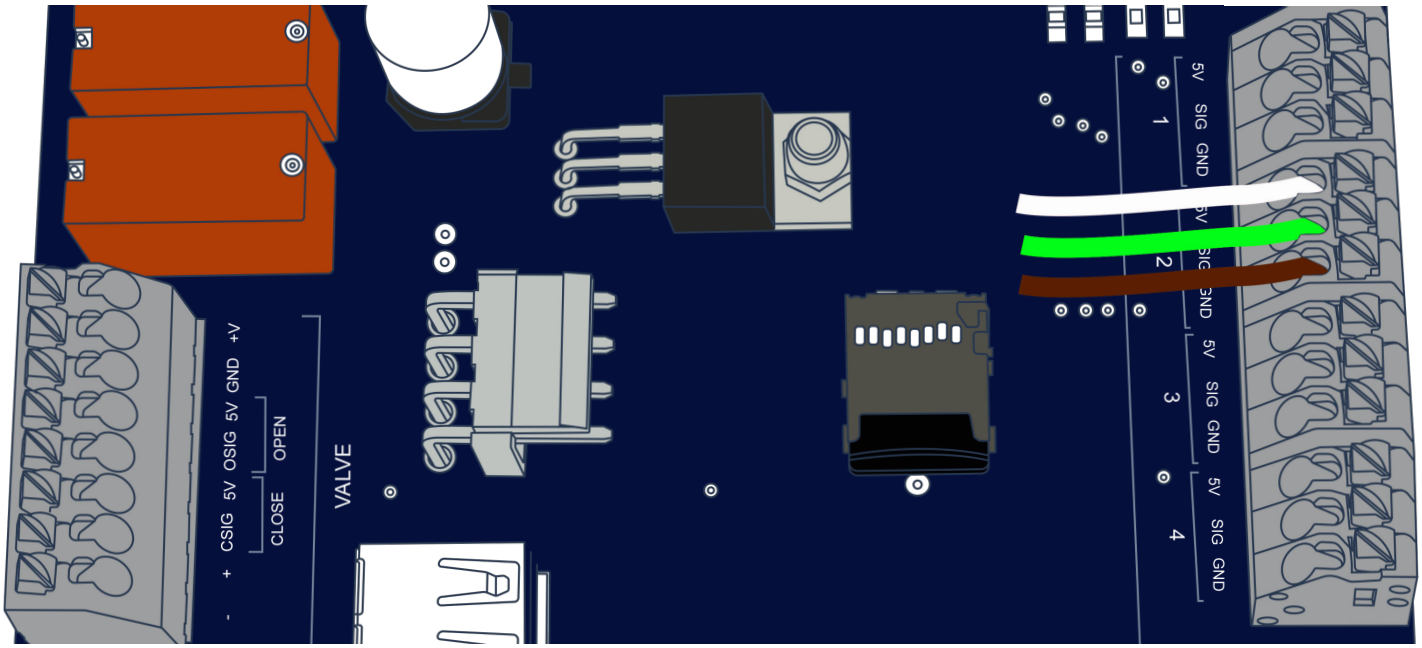


The LeakNet Base and its power supply are not waterproof and should be installed in an appropriately safe place. The plug socket should remain accessible after installation in case of emergency.

# INSTALLATION GUIDE

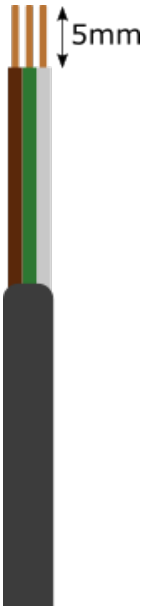
## Wiring instructions

Up to 4 water meters or 1 valve and 1 meter can be connected to the circuit board terminal blocks, as pictured below. The exact wiring will depend on your configuration.




1. Thread the wires coming from the meter(s) and valve through the cable glands.
2. Take 5mm insulation off each wire so the bare conductor can slot into the terminal blocks.
3. For each wire, press the terminal block button down and insert into hole, then release button. Use the wiring guide on the next page to determine the correct holes to use. Each input will have an associated position (1, 2, 3, 4). If only one water meter is used, use terminal block 1.

   If the cable does not reach, you can extend the length up to 10m with suitably shielded cable, laid away from power cables.
4. Finally, place the LeakNet Base front onto the wall-mounted back, screw into place and use the plastic inserts to hide the screws.




## Power

A suitable DC power adapter will be supplied with the kit. If the distance to the nearest plug socket is more than 1m, an extension cable is also provided to extend the reach by an extra 3 metres.

# INSTALLATION GUIDE

## Wiring instructions

### Wiring guide for water meters and valves

The wires will go to different positions in the LeakNet Base depending on the peripheral you are connecting.

**3/4” water meter**

White - 5V

Green - SIG

Brown - GND

**1” water meter**

White - 5V

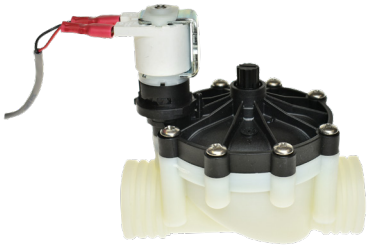
Green - SIG

Brown - GND

**2” water meter**

White - SIG

Brown - GND



**Solenoid valve**

Red +

Black -

**Motorised valve**

Use 5 core cable according to the following table (connections from the bottom up):

| **LeakNet connection** | - | + | CSIG | 5v | OSIG |
|---|---|---|---|---|---|
| **Cable colour** | Black | Red | Brown | White | Grey |

# INSTALLATION GUIDE

## Wiring instructions

### Record of installed meters and valves

Make a note of the inputs and valve here:

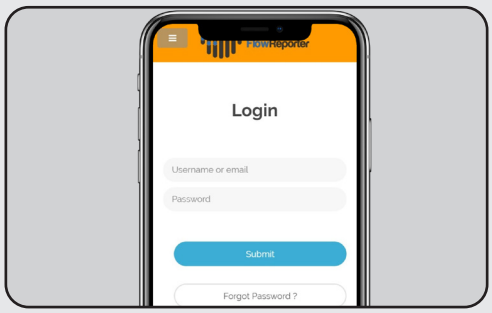
| Input # | Type | Name |
|---|---|---|
| **e.g.** | 1” meter | Kitchen |
| **1** | | |
| **2** | | |
| **3** | | |
| **4** | | |

| Valve type (circle) |
|---|
| None |
| Solenoid |
| Motorised |

# INSTALLATION GUIDE

## Connecting to the internet

These steps are to be performed by a computer or smartphone with WiFi capability. The entire process uses an internet browser.

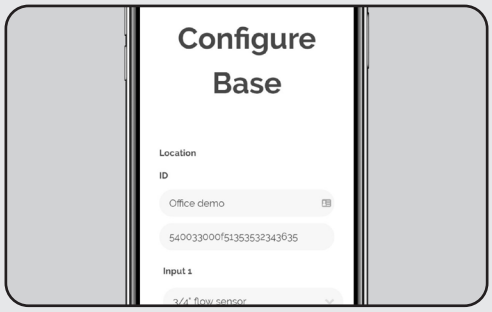



### 1. Login online

Open up a new browser window and register for an account at **www.FlowReporter.com**.
Once you have an account, log in.

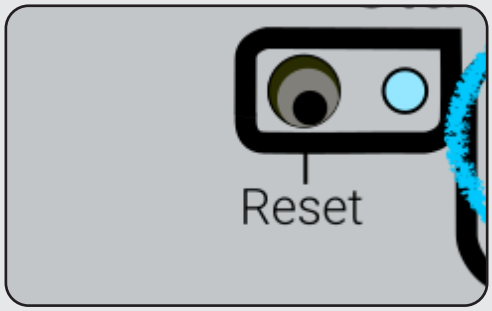

### 2. Register new Base

Connect the Base to WiFi by clicking “Register new Base” and follow the on-screen instructions.
You will be asked to connect to the new WiFi hotspot that the Base creates, so it is important you know how to change WiFi on your smartphone/computer.




### 3. Configure the Base

Configure the Base online by selecting the fittings used (as recorded on page 12).
The Base will then restart with the new configuration.



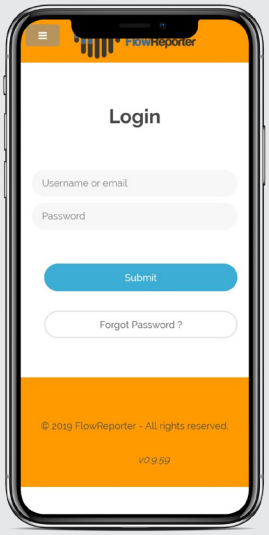

### 4. Wait for Base to update

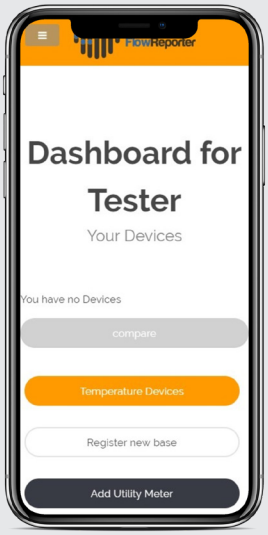
Wait 1 minute for the Base to update. The “Status” LED will start breathing light blue when it has finished updating.

# INSTALLATION GUIDE

## Connecting to the internet - in detail

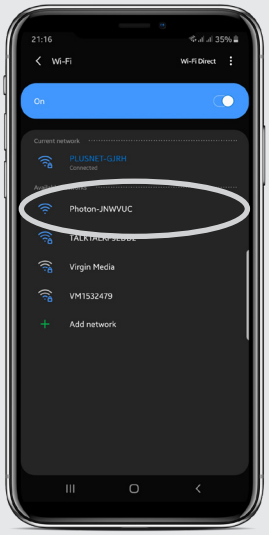
Details of each step can be found below (for Android devices - Apple/Windows users will have very similar steps). Note that this process can also be done on a laptop in a web browser.

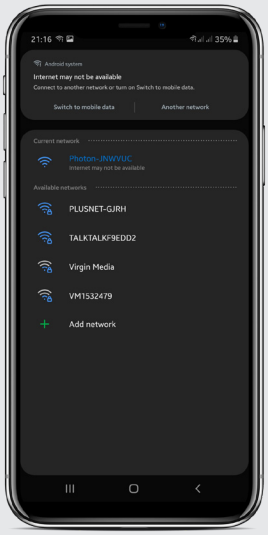


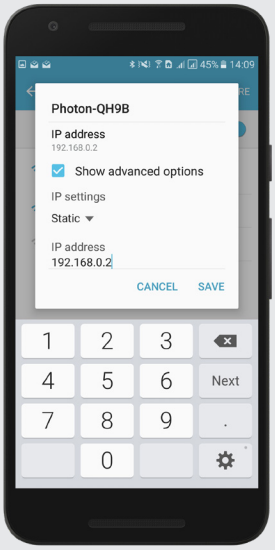


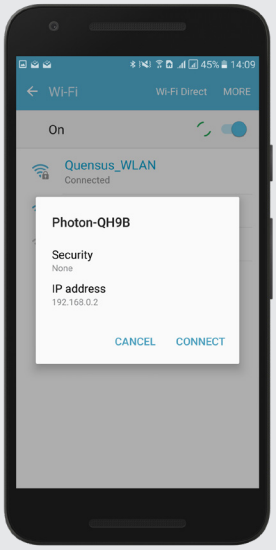
Open up a new browser window and register for an account at **www.FlowReporter.com**.
Once you have an account, log in and click “Register new Base”.




Plug-in the LeakNet base and make sure the “Status” light is blinking blue. If it isn’t, press and hold the “Status” button until it does (you may need a pen to get to it).
You will now need to connect to the new WiFi hotspot it creates, so go to your WiFi settings to connect to the new WiFi hotspot. It will look similar to Photon-ABCD on your network list.

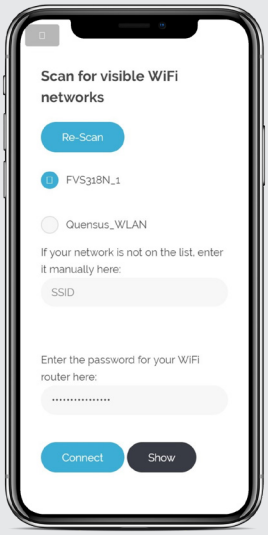


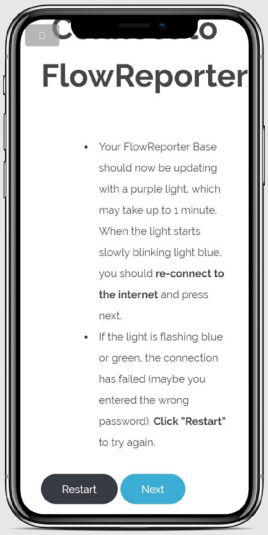




If this fails, try turning your WiFi off and on again, go back to the main Dashboard page, restart the Base and try again from scratch.
If still not working, set your IP address to 192.168.0.2 when connecting to the base, instead of using DHCP. To do this, go to your WiFi settings, tap and hold the Photon-ABCD network until a box appears. Select “Manage network settings”, then “Show advanced options”. Choose “Static” from the “IP settings” menu, and input 192.168.0.2 as the IP address. Finish by selecting “SAVE”.
Now try registering the new Base.

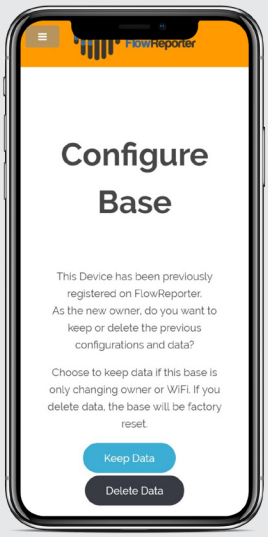
# INSTALLATION GUIDE

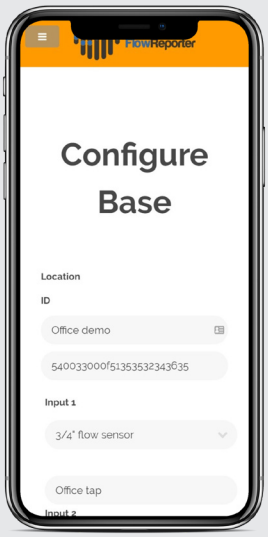
## Connecting to the internet - in detail (continued)

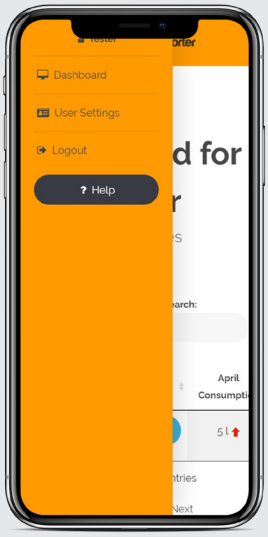




Return to the web browser and click “Next”. The screen should change to show the device scanning the area for other WiFi hotspots (if not, refer to the previous page). A few seconds later, a list of available hotspots will appear. Select your hotspot and type in the password. If the network is hidden, select “Hidden” and manually type the name/SSID of the hidden network.
Wait a few seconds, if the “Status” light is flashing dark blue or green, the connection failed and you should press “Restart”.



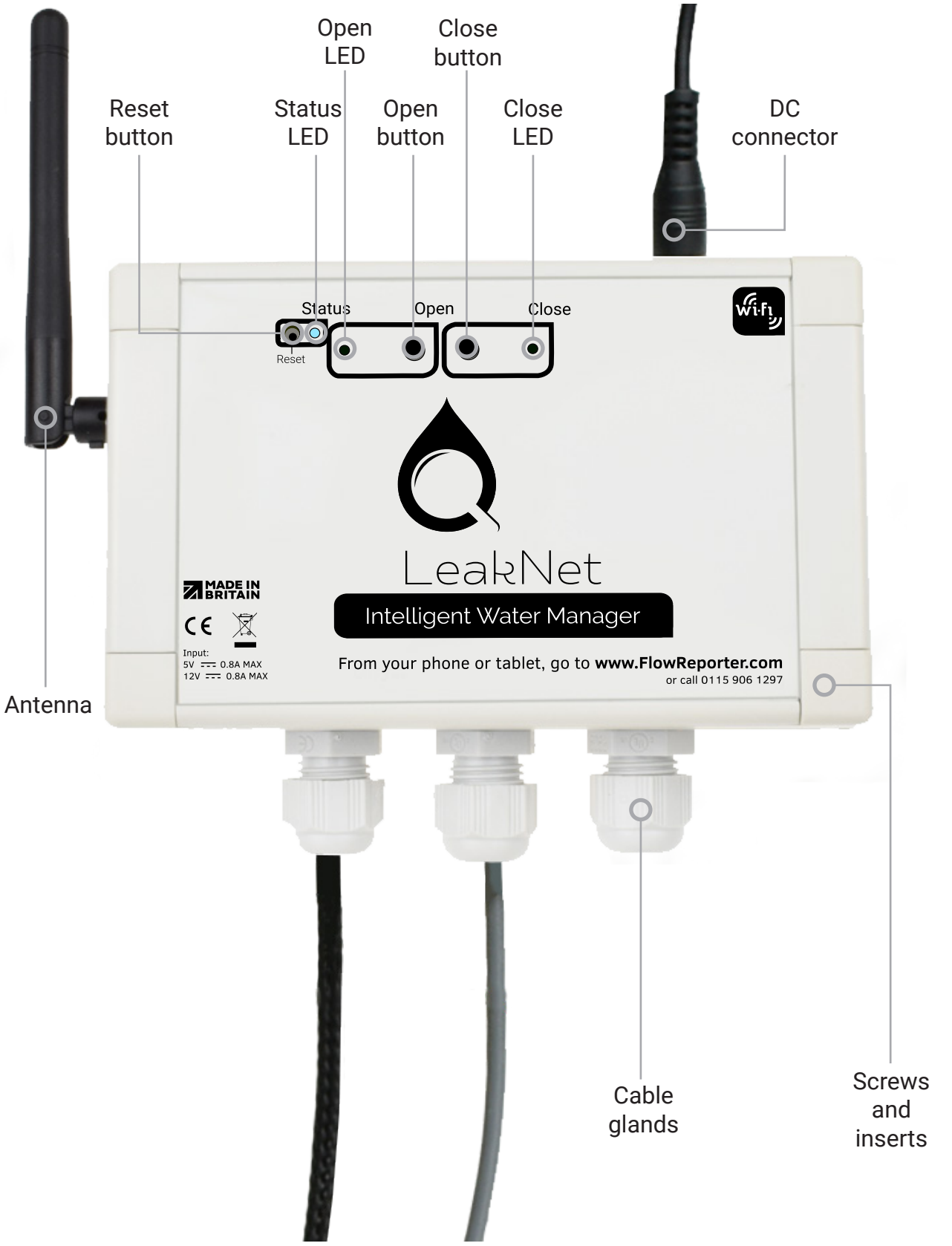

Make sure you’re connected back online, and the “Status” light is slowly breathing light blue, then select “Next”. If the Base has been registered before, you will be asked whether you’d like to keep the previous settings and data.
Configure the Base online by selecting the fittings used (as recorded on page 12). Make sure to give memorable names to the inputs for future reference.
Save the settings, then wait 5 seconds for the Base to restart with the new configuration.



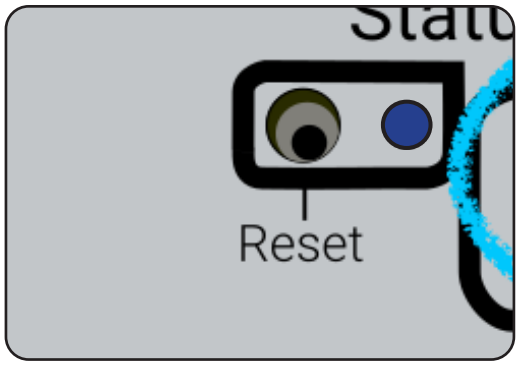

Return to your dashboard by clicking the drawer icon (in the top left) and click “Dashboard”. You will see your new devices on your dashboard.
Test the configuration by running a nearby tap, then click “Close valve” and check the water stops flowing. Click “View” then “Real time” then “Open valve”. You will see the graph change as the water is turned back on.
Congratulations! You are all set.

## LeakNet Base

On the front of the Base, you will see LEDs (lights), buttons and connections.

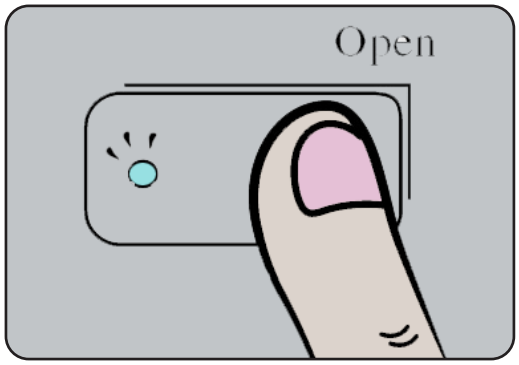


## Using the buttons and LEDs



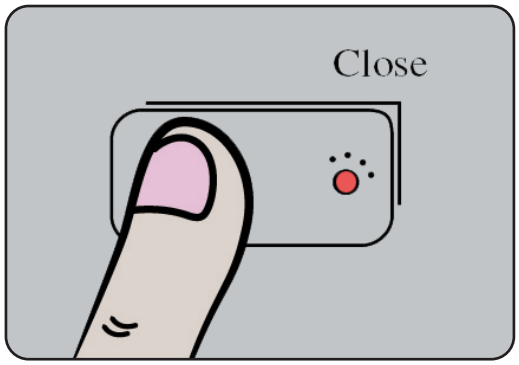

### 1. Status

To connect the Base to a new WiFi access point, use a sharp object, such as a pen, to hold down the “Status” button for around 4 seconds until the “Status” LED flashes dark blue.



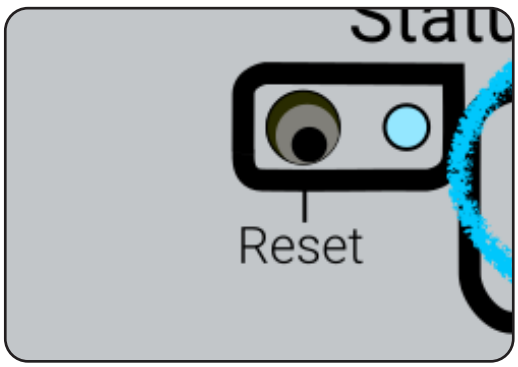

### 2. Open

To open the valve, hold the “Open” button until the “Open” LED shows blue and you hear water flowing. This should take at maximum 1 second for a solenoid valve, and 15 seconds for a motorised valve.




### 3. Close

To close the valve, hold the “Close” button until the “Close” LED shows red and you hear the water stop flowing. This should take at maximum 1 second for a solenoid valve, and 15 seconds for a motorised valve.




### 4. Status

The “Status” light indicates the status of the internet connection:

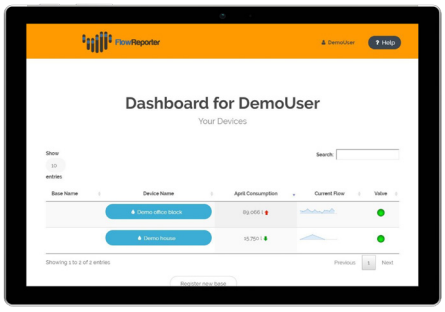
- Breathing light blue: Normal operation – connected to the internet
- Flashing dark blue: Waiting for WiFi credentials
- Flashing green: Connecting to WiFi
- Flashing light blue: Connecting to the internet
- Flashing purple: Updating to new software
- Flashing red: Error

# USER MANUAL

## Overview of software

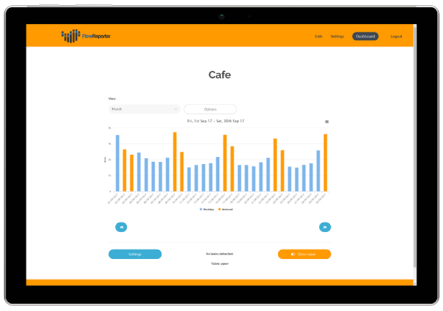
LeakNet works in conjunction with a web application, which can be found at: **www.FlowReporter.com**.

The software is constantly being updated, so some of the following screens may change. For the most up-to-date documentation, please click the “help” button in the menu bar.



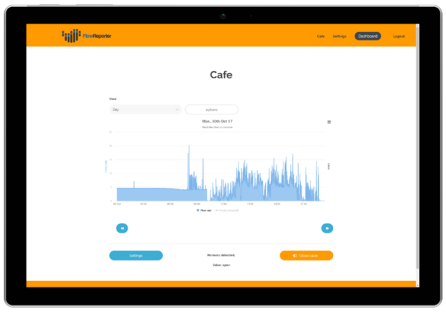

### Your dashboard

After logging in, you will see your dashboard. This contains all the Bases you own, then all the devices shared with you. Click on one to bring up the monthly view.




### Monthly view

This bar chart shows the water consumption over the last month, split by day. Click on a day to bring up the daily view.

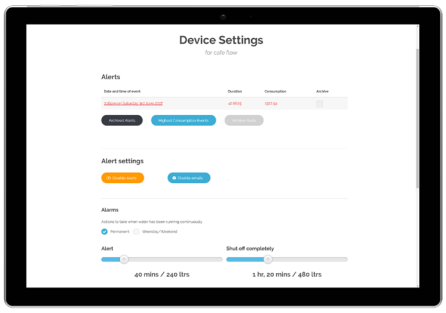



### Daily view

This shows more detailed flow rates throughout the day, split into seconds. You can highlight the graph with the mouse (or pinch the screen) to zoom in.

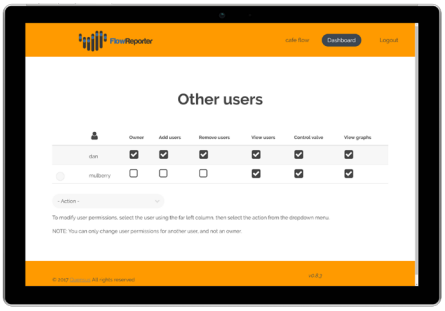

### Events view

In the events view, you will see the ratio of water consumption split into time intervals. We can click the slices and break down the usage further. With this tool, we can see the amount of water that certain events consume, such as a toilet flushing.




### Thresholds and alerts

Under settings, you can set your thresholds for when alerts are sent. There are 2 thresholds, one for alerting, and one for turning the water off. In both cases, when water has exceeded the threshold, everyone who has access will be alerted by email.



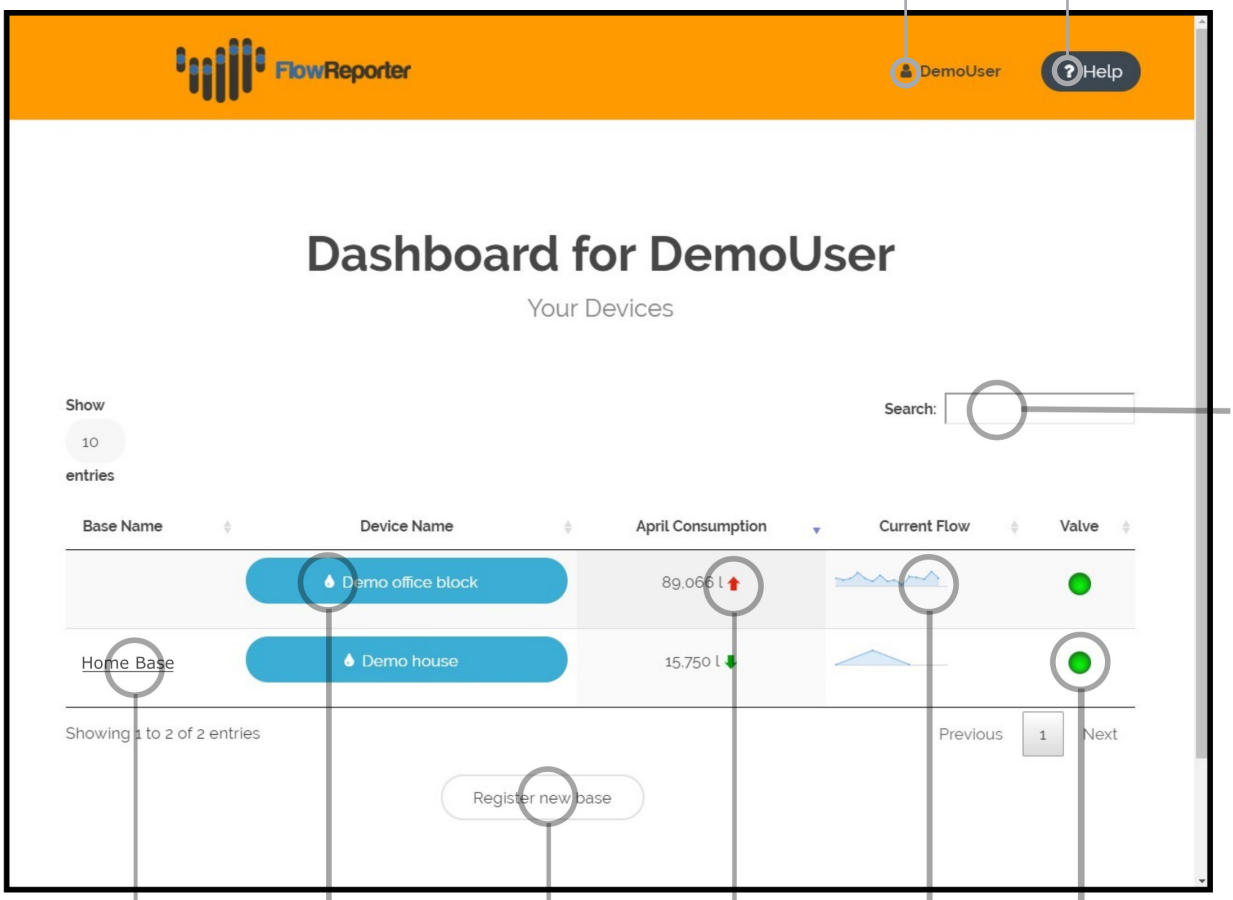

### Sharing access

You can send anyone access to a device under settings. After they click the link in the email they will have access to the data and will be able to control the valve by default. You can then modify these permissions under settings.

# USER MANUAL

## Dashboard

After logging in, you will see a list of Base devices which you have access to (either owned or shared):




### User settings
Click to change settings related to you as a user such as email, phone, and email

### Help
Click to go to the online documentation, contact, FAQ and forums

### Search
Find your device quickly from just one letter

### Base name
Click to configure Base

### Device name
Click for graphs

### Register new Base
Click to configure WiFi connection for a new or existing Base

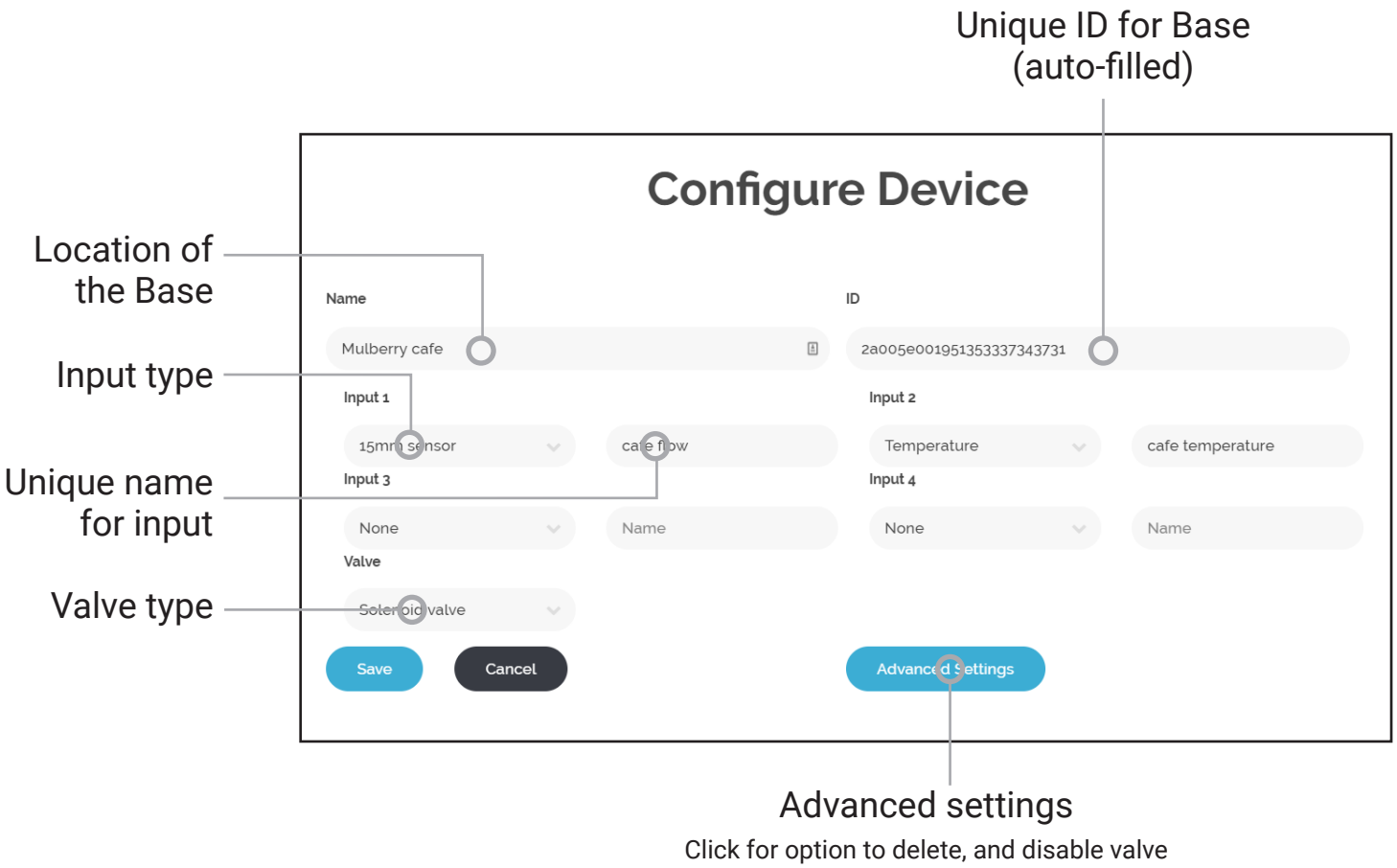
### Month consumption
Shows last full month consumption and comparison with previous month

### Current flow
Shows the current flow (within the last few minutes) - scroll over for detail

### Valve status
Green indicates an open valve (water able to flow), red indicates a closed valve (water shut off)

## Configure Base

Clicking a Base device from the dashboard will bring you to Configure Base, which allows you to modify inputs, their names and connected valve:



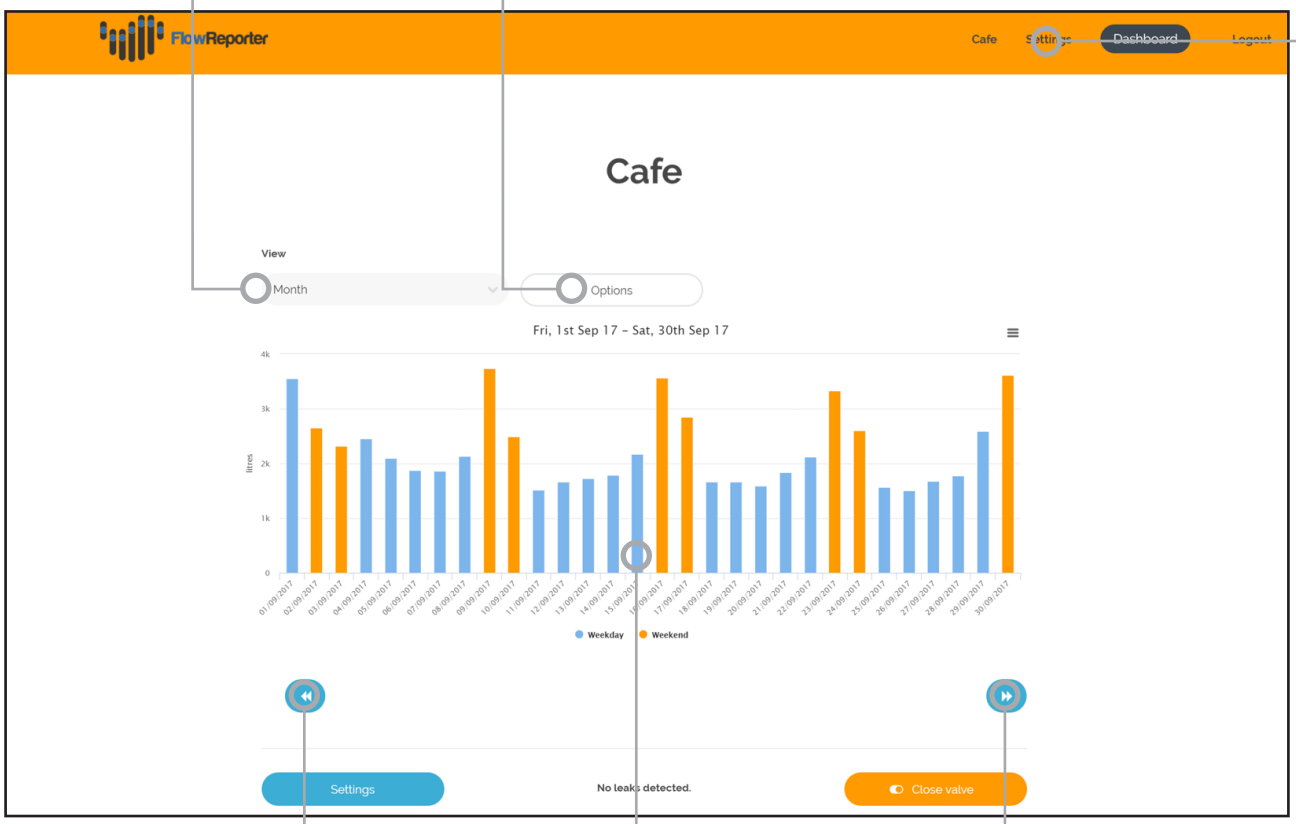

*Depending on the exact product you have, this screen may have less options as the product will have a set preconfiguration to make it easier to program.*

## Graphs

After selecting a flow input, you will see a graph of the consumption for the current month:

**View**
Choose to view graph of real-time, day, month or year consumption

**Options**
Click to expand further viewing options such as units, events view, and custom time frame



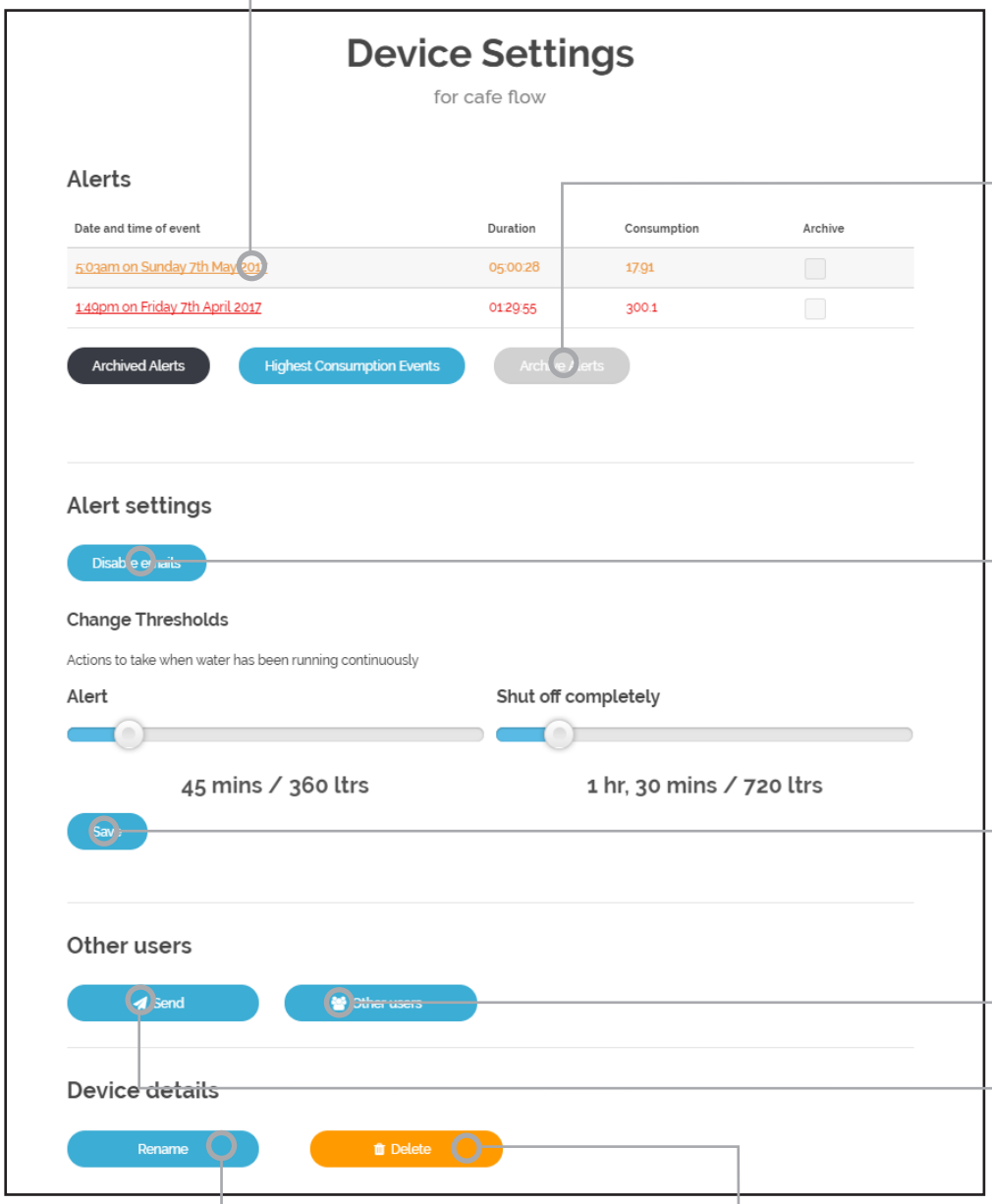

**Back 1 month**

**Daily view**
Click the bar of a day to view more detailed flowrates

**Forward 1 month**

## Device settings

After clicking device settings, you will see the following screen. Depending on your permissions, some sections and buttons may not be visible:




### Alerts

Orange text shows minor alerts, red text show major alerts (where the water was shut off) - click to view detailed graph of event

### Archive

Remove alerts from this page by checking the boxes and clicking “archive alerts” - these alerts will then be moved to “archived alerts”

### Disable emails

If emails are disabled, you will not be notified when alerts are raised - other users who have access will not be affected

### Change thresholds

The sliders can be dragged to the desired threshold point - click save to register any changes

### Other users

View, delete and modify the permissions given to shared users

### Send

Share access to this device with anyone via their email address

### Rename

Click to rename the device as it appears in your dashboard

### Delete

Delete your access to this device - if you are the owner, this will also delete the device for all other users

## Thresholds and alerts

An alert is sent if either of the thresholds have been exceeded. Exceeding the “alert” threshold sends a minor alert, and exceeding the “shut off” threshold sends a major alert and shuts off the water.

Here is an example situation where the flow of water begins at 17:30 and the thresholds are

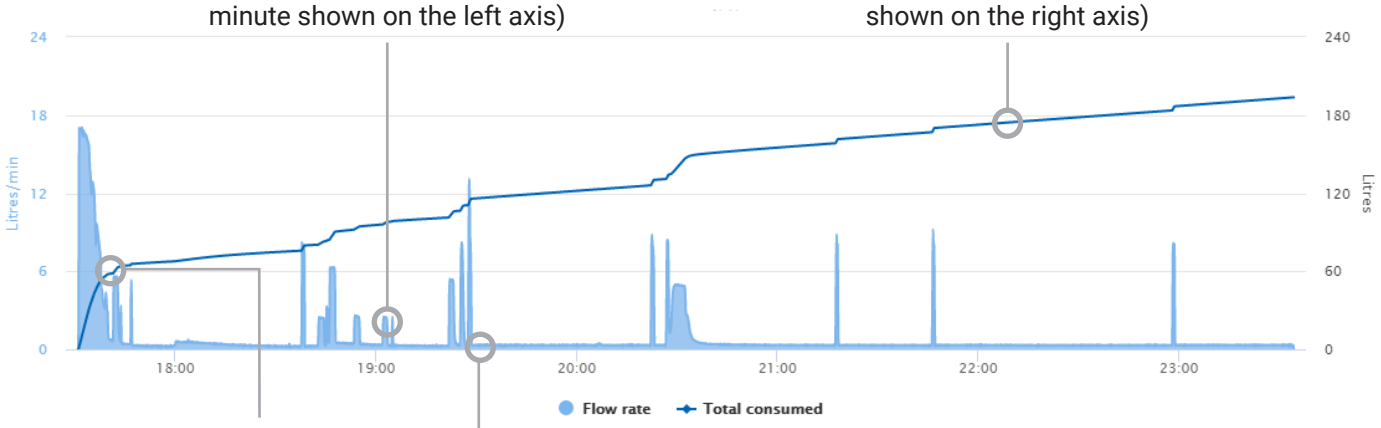
1. Alert threshold = 30 minutes or 60 litres
2. Shut off threshold = 2 hours or 240 litres

### Flow rate

This line shows the current flow rate at a point in time (in litres per minute shown on the left axis)

### Total consumed

This line shows the total amount of water consumed so far ( in litres shown on the right axis)




### Minor alert

At this point in time, there has been 60 litres of continuous flow, therefore exceeding the first threshold

### Major alert

At this point in time, there has been 2 hours of continuous flow, therefore exceeding the second threshold

## Disable the valve

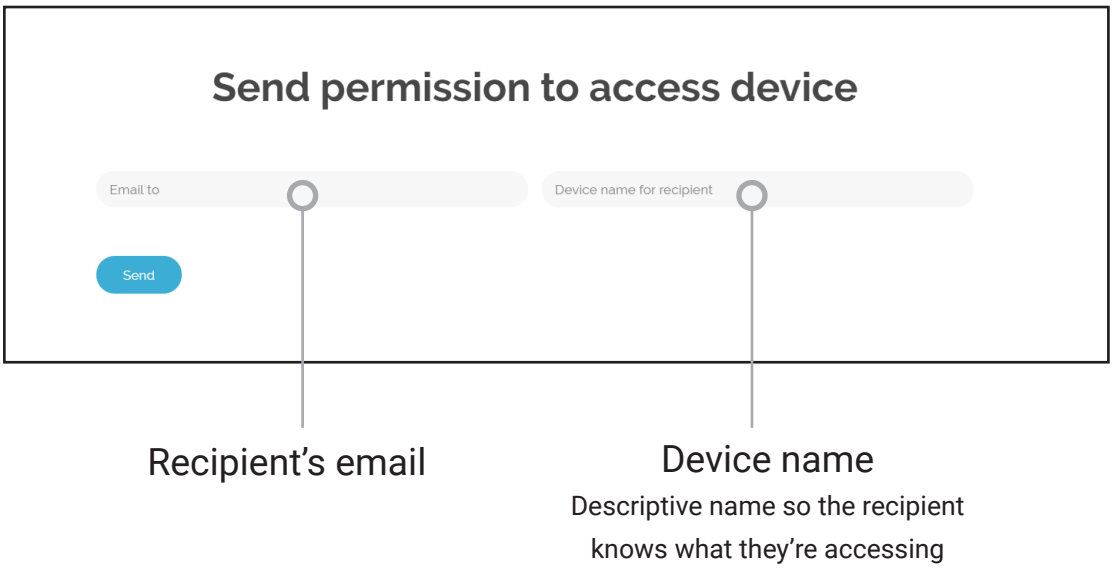
Normally, the valve would close and the water would be turned off after a major alert, however there may be times when you expect an exceptional amount of water usage and do not want the water to turn off.

In these cases, you can either disable the valve before the expected time of usage (shown on page 21), or click the link in the minor alert which disables the valve for that event only.

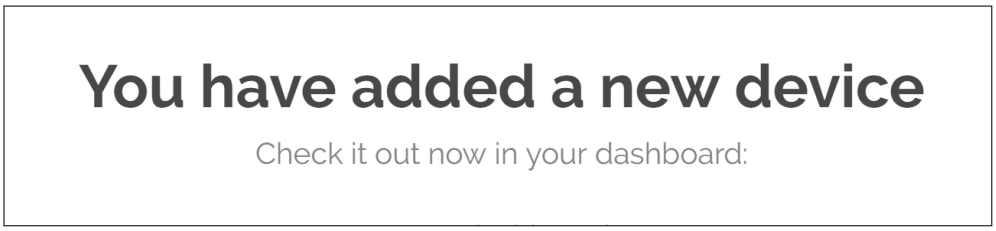
Note: All users who have permission to control the valve will receive alerts with a link to disable the valve for that event.

## Sharing access

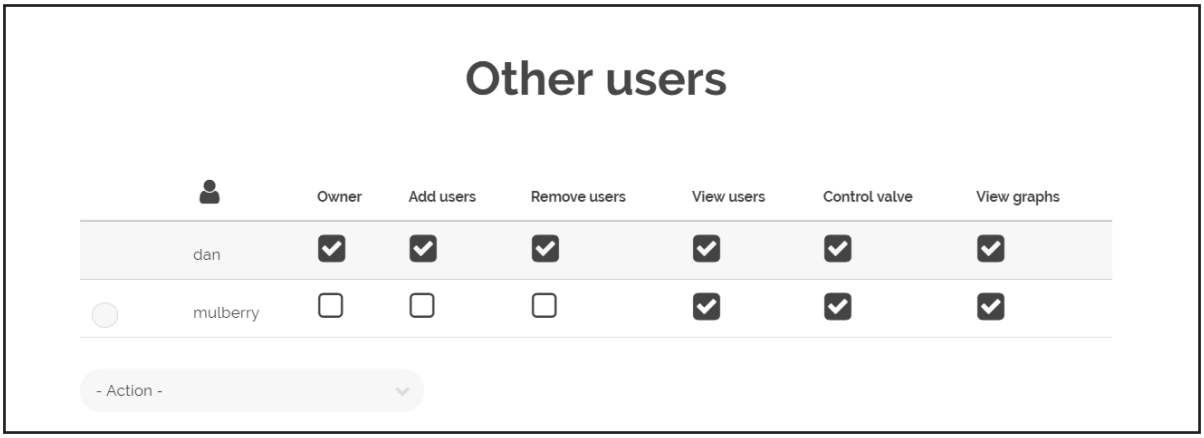
To send access to another user, you must know their email address:




The recipient will receive an email with a link to accept access to the device (if not, make sure to check the spam folder). They must have registered on the website with that same email address before they can accept access. Once they are logged in and have clicked the email link, they will see:




By default, they will be able to view other users, control the connected valve, and view graphs. You can modify these permissions under device settings. Other permissions include the ability to add and remove users (which includes modifying permissions). Owners can only be changed by re-registering the Base device.



# SPECIFICATIONS

## Base unit

| | |
|---|---|
| **Dimensions** | 14.5cm x 11.2cm x 4.7cm |
| **Weight** | 230g |
| **Enclosure material** | ABS |
| **Connectivity** | WiFi IEEE 802.11 b/g/n |
| **Power** | 12V DC 0.8A max |

## Water Meters

Maximum number of meters supported per LeakNet Base = 4.

| Thread | Nominal diameter (DN) | Nominal flowrate | Pulses per litre (at nominal flowrate) |
|---|---|---|---|
| 3/4” BSP male | 11mm | 1.8 m3/h | 330 |
| 1” BSP male | 20mm | 3.6 m3/h | 119 |
| 2” BSP male | 40mm | 16 m3/h | 1 |

## Valves

Maximum number of valves supported per LeakNet Base = 1.

| Valve type | Thread | Nominal diameter (DN) | Power |
|---|---|---|---|
| None | - | - | 12V DC 0.2A max |
| Solenoid | 3/4” BSP male | 11mm | 12V DC 0.8A max |
| Solenoid | 1” BSP female | 25mm | 12V DC 0.8A max |
| Motorised | 2” BSP female | 50mm | 12V DC 1.6A max |

# MAINTENANCE

The LeakNet Base has been designed to be maintenance-free, however the sensors and valves may naturally wear after time. Should the sensors or valves fail, contact Quensus for a replacement.

## Troubleshooting

The “Status” light colour indicates the current status of the device:

| “Status” LED colour | Problem | Solutions |
|---|---|---|
| **Slowly pulsing light blue** | None - the device is in normal operation. | The device has internet connectivity. If no data is showing after running water, check the input wiring connections. |
| **Flashing dark blue** | Device requires WiFi credentials to connect online. | Follow the “Connect to WiFi” stage of the installation section. |
| | | If no WiFi is available, use a 3G router instead. |
| **Flashing green** | Device is attempting to connect to WiFi. With good WiFi signal, this stage should take no more than 10 seconds. | Make sure there is some room around the LeakNet Base. It should be at least 30cm away from metal objects and other electronics. If the status does not change whilst suspended in the middle of the room, then the WiFi signal is too weak. |
| | | Try reducing the distance between the LeakNet Base and the WiFi router, or use a WiFi booster. |
| **Flashing light blue** | The device is connected to WiFi and is now trying to send signals over the internet. This stage should take no more than 5 seconds. | Check your internet connection. Is there internet access on other devices connected to the same WiFi? |
| | | Make sure your firewall is not blocking port 5683. |
| **Flashing purple** | The device is updating software. This stage should take no more than 2 minutes. | After waiting 5 minutes to complete, restart the device by turning the power off and then on again. Temporarily move the Base unit closer to WiFi source. |
| **2 orange flashes** | Internet connection does not meet requirements. | Make sure you are not using Enterprise WiFi which needs further login stages or a user account. |
| **Flashing white/ nothing showing** | Short circuit, or no power | Check plug socket is operational by plugging something else in to test. |
| | | Remove meter and valve cable connections and retry. |
| **Flashing red** | Hardware problem | Please contact Quensus if you experience this. Try recording the number of flashes after the SOS signal (3 short flashes – 3 long flashes – 3 short flashes) which will help us determine the exact fault. |

If the problem persists, contact Quensus using the contact details on the back page of this manual.

## Cleaning

A damp cloth is recommended for cleaning the LeakNet Base.

# TECHNICAL SUPPORT

**Please contact Quensus if you require any technical assistance using the details below.**

Quensus

Intelligent water management

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