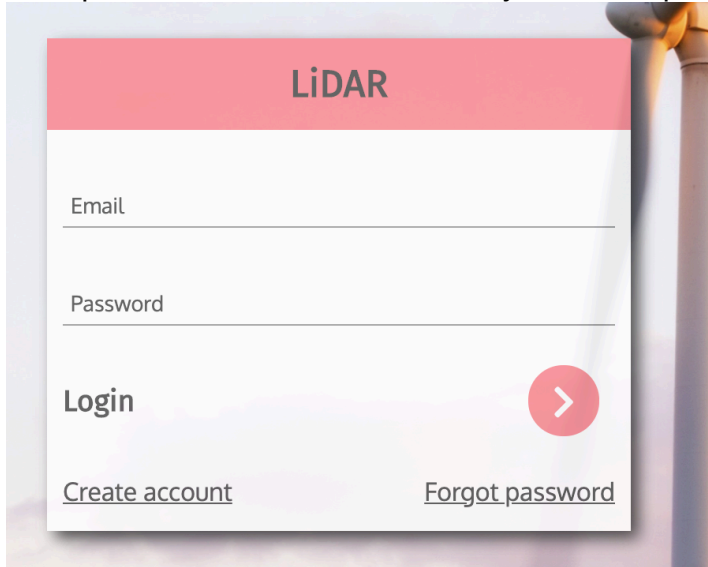


Floating LiDAR User Manual

Setting up your organisation:

Accessing the system:

You will be given a default admin login for the Floating LiDAR Validation System. Connect to <https://lidar.icedcoffee.dev>, and you will be prompted with a login screen.

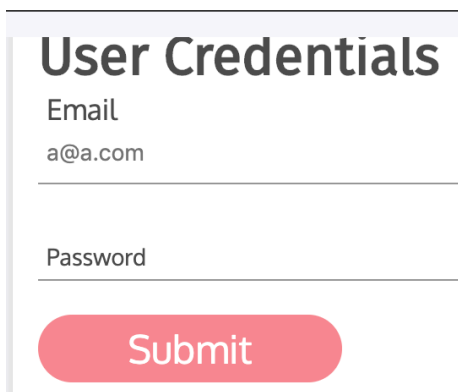
A login screen for the LiDAR system. It features a pink header with the word "LiDAR" in white. Below the header are two input fields for "Email" and "Password". A pink button with a white right-pointing arrow is labeled "Login". At the bottom, there are two links: "Create account" and "Forgot password". The background of the screen shows a blurred image of a LiDAR sensor.

Enter the admin email and password, and press the pink arrow to log in.

To maintain security, it is essential that you change the admin account's email and password immediately. Press the gear icon in the bottom left corner to access the settings menu.

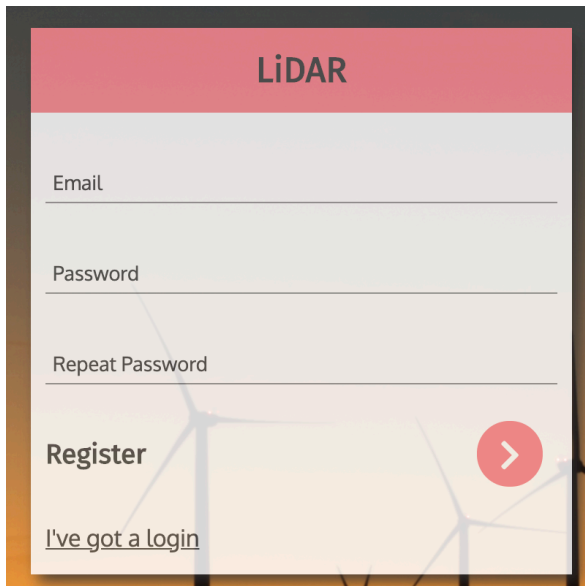


Enter your new email and password in the user credentials section at the top of the settings menu, and press submit.

A form titled "User Credentials" with a pink header. It contains two input fields for "Email" and "Password". The email field has the placeholder text "a@a.com". Below the fields is a pink button labeled "Submit".

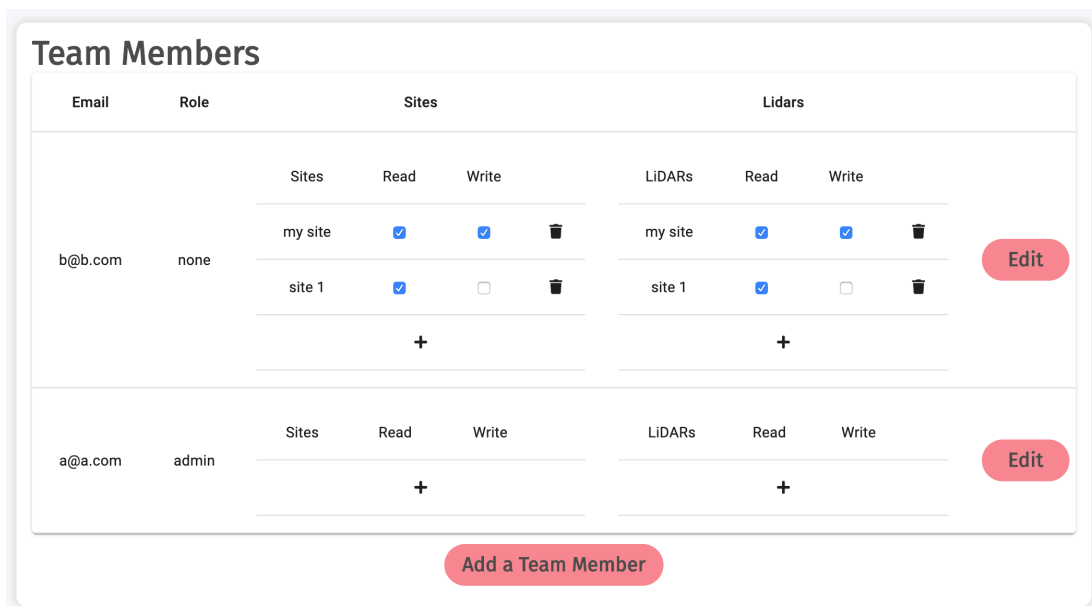
Adding users to the system:

Users first need to create an account. They should navigate to <https://lidar.icedcoffee.dev>, and press create account. They will be presented with this screen, where they should enter their email and password, and press the pink arrow.

A registration form for the LiDAR system. It has a pink header with the word "LiDAR". Below the header are three input fields: "Email", "Password", and "Repeat Password". At the bottom left is a "Register" button, and at the bottom right is a pink circular button with a white right-pointing arrow. Below the "Register" button is a link that says "I've got a login".

LiDAR	
Email	
Password	
Repeat Password	
Register	>
I've got a login	

This will take them to the LiDAR dashboard, but they will not be able to see or do anything. You will need to add them to your organisation and give them permissions. Find the team members section of settings.

A screenshot of the "Team Members" management interface. It shows a table with columns for Email, Role, Sites, and LiDars. The Sites and LiDars columns have sub-columns for Read and Write permissions, each with a checkbox and a trash icon. There are "Add" (+) buttons for each column and "Edit" buttons for each user row. At the bottom is an "Add a Team Member" button.

Email	Role	Sites			LiDars		
		Sites	Read	Write	LiDARS	Read	Write
b@b.com	none	my site	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	my site	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		+		+			
a@a.com	admin	+		+			

Add a Team Member

Press 'add a team member', then enter their email and role to add them to your organisation. Once you have added testing sites and LiDAR buoys, you can give users permission to use them by pressing the '+' buttons.

Members

Add Sites to

Site ✓ hi
hello
nbo

write ☐

Submit

+

+

Select the site to give the user access to from the drop-down menu, and press the checkboxes to set their permissions. Giving them read permission allows them to view data and KPIs from the mast and associated buoys. Giving them write permission allows them to edit the data.

Adding devices:

Find the organisation's sites and LiDARs section of the settings menu.

Organisation's sites

ID	Name	Description	Location	
1	site 1	a desc	Lat: 51.525633 Lng: -2.754732	
2	casio	a desc	Lat: 51.525633 Lng: -2.754732	

+

Organisation's LiDARs

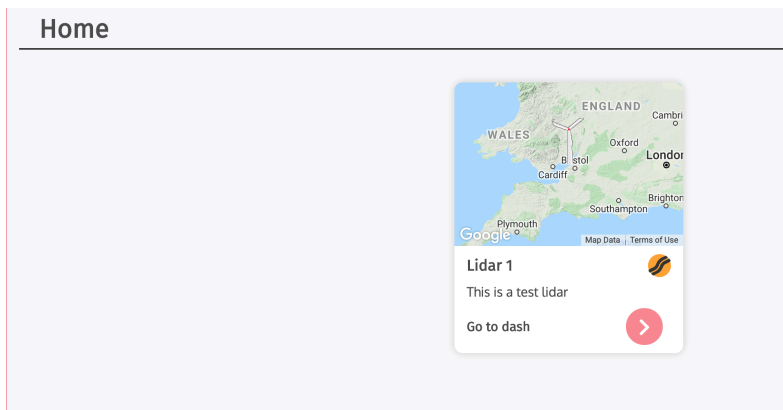
ID	Name	Description	Location	Site ID	
1	Lidar 1	This is a test lidar	Lat: 51.525633 Lng: -2.754732	1	

+

Press the '+' buttons to add mast sites and LiDAR buoys. You will be prompted to enter the serial, optional description and location. For buoys, you will also be given a drop-down menu of mast sites, from which you select the mast for the buoy to be compared against.

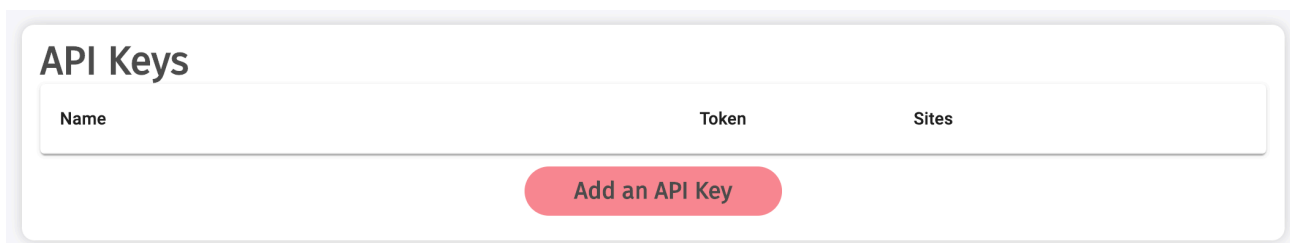
When you press the home button, they should now appear in the overview display.





Configuring device datasources:

Data is sent to the Floating LiDAR validation system directly from the devices. Each device needs an API key to allow it to send data. To make an API key, find API keys in the settings menu, and press 'add an api key'.



You will be prompted to give the key a name, and a drop-down menu will allow you to select a site to generate a key for. The key will have a random API token, which allows devices to send data.

Sites should send a post request to

`lidar.icedcoffee.dev/sites/{mast serial}/sendjson?token={API token}`

With {mast serial} replaced with the mast's serial code, and {API token} replaced with the token generated for that site's API key.

The body of the post request should be JSON, formatted in one of two ways:

To send a single sample:

```
{
  "timestamp": "2020-05-22T08:45:23Z" //Time sample was taken, ISO 8601
  "direction": {
    "h30": directionAt30m,
    "h40": directionAt40m,
    "h60": directionAt60m,
    "h80": directionAt80m,
    "h100": directionAt100m
  },
  "speed": {
    "h30": speedAt30m,
```

```

        "h40": speedAt40m,
        "h60": speedAt60m,
        "h80": speedAt80m,
        "h100": speedAt100m
    },
    "ti": {
        "h30": tiAt30m,
        "h40": tiAt40m,
        "h60": tiAt60m,
        "h80": tiAt80m,
        "h100": tiAt100m
    }
}

```

To send multiple samples:

```

{
    "samples": [
        sample0,
        sample1,
        sample2
    ]
}

```

Where each sample is formatted as the same as a single sample.

Buoys should send a post request to

`lidar.icedcoffee.dev/lidars/{buoy serial}/sendjson?token={API token}`

With {buoy serial} replaced with the buoy's serial code, and {API token} replaced with the token generated for that site's API key.

The body of the post request should be JSON, formatted in one of two ways:

To send a single sample:

```

{
    "timestamp": "2020-05-22T08:45:23Z" //Time sample was taken, ISO 8601
    "direction": {
        "h4": directionAt4m,
        "h30": directionAt30m,
        "h40": directionAt40m,
        "h40_ref": referenceDirectionAt40m,
        "h60": directionAt60m,
        "h80": directionAt80m,
        "h100": directionAt100m,
    }
}

```

```

        "h120": directionAt120m,
        "h140": directionAt140m,
        "h160": directionAt160m,
        "h180": directionAt180m,
        "h200": directionAt200m
    },
    "speed": {
        "h4": speedAt4m,
        "h30": speedAt30m,
        "h40": speedAt40m,
        "h40_ref": referenceSpeedAt40m,
        "h60": speedAt60m,
        "h80": speedAt80m,
        "h100": speedAt100m,
        "h120": speedAt120m,
        "h140": speedAt140m,
        "h160": speedAt160m,
        "h180": speedAt180m,
        "h200": speedAt200m
    },
    "ti": {
        "h30": tiAt30m,
        "h40": tiAt40m,
        "h40_ref": referenceTiAt40m,
        "h60": tiAt60m,
        "h80": tiAt80m,
        "h100": tiAt100m,
        "h120": tiAt120m,
        "h140": tiAt140m,
        "h160": tiAt160m,
        "h180": tiAt180m,
        "h200": tiAt200m
    }
}

```

}

To send multiple samples:

```

{
    "samples": [
        sample0,

```

```

    sample1,
    sample2
  ]
}

```

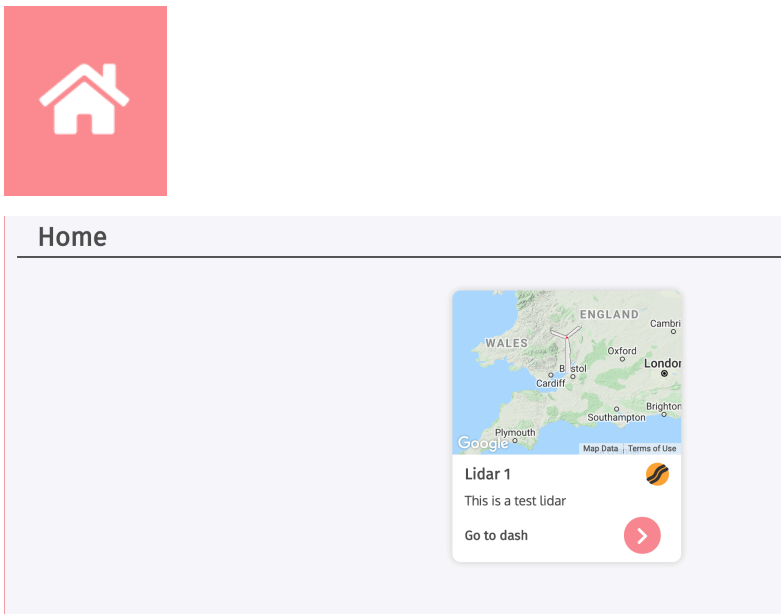
Where each sample is formatted as the same as a single sample.

Each device must send its samples in chronological order.









Using the system:

Viewing KPIs:

When you press the home button, an overview of buoys is displayed.



Pressing the pink arrow takes you to the KPI overview, which shows the KPIs recorded for that buoy at different heights, as well as an indicator of whether the KPIs are currently passing.

Key Performance Indicators:			
ti  R Squared h80 0.99615441111251849 h60 0.9691182009808708 h40 0.9811009068436437 h100 0.9767458887648214 More details 	speed  R Squared h80 0.9794485734423874 h60 0.9966203145485234 h40 0.9984802046508079 h100 0.9728369265164813 More details 	direction  R Squared h80 0.979795529584619 h60 0.9669616603296559 h40 0.941661587662653 h100 0.9634125113342582 More details 	Maintenance Visits  Scheduled Visits 0 Unscheduled Visits 0 More details 

Pressing the pink arrow on a card shows any KPIs that don't fit onto the overview.

KPI:

rSqr

0.9961544111251849
0.9691182009808708
0.9811009068436437
0.9767458887648214

slope

1.025106595932782
0.9837861015303974
1.0253900679850367
1.0453243957861142

Manually uploading data:

It is also possible to upload data manually, as CSV files. The data should be sent in chronological order, including with respect to any data that may be sent directly from devices. Failing to do this may cause data to be lost or KPIs to be calculated incorrectly.

Dashboard

Google

Lidar 1

This is a test lidar

Key Performance Indicators:

ti

R Squared

h80	0.9715477564787548
h60	0.9867263100520882
h40	0.954841131779041
h100	0.9679483696388074

More details

speed

R Squared

h80	0.9981234757495865
h60	0.9872059349003742
h40	0.9678141953838402
h100	0.9685584492728065

More details

direction

R Squared

h80	0.9860361250229173
h60	0.980855053991584
h40	0.9517190407269319
h100	0.973329747373498

More details

Maintenance Visits

Scheduled Visits	0
Unscheduled Visits	0

More details

To upload a csv, press the '+' in the bottom left corner.

Upload data

No file selected.

Upload

0.9867263100520882	h60	0.9872059349003742	h60	0
--------------------	-----	--------------------	-----	---

An upload data dialog box will appear, allowing you to select a CSV from your computer. See the example CSV's for the correct header format.