



# FC 6100 Sensor

Sensor Instruction Manual

January 2019 - V1.0

## **About the FC6100**

The Design Reality FC6100 constantly monitors your actions, via its onboard sensor array, and alerts you to potential issues with your RPE fit, this provides you the confidence that your RPE is working and fits adequately to your facial morphology.

## Read Me First

- Please read this manual before using the FC6100 Device to ensure safe and proper use
- Use the FC6100 for its intended purpose only. Using the device for other purposes other than instructed may cause injury
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
  - This device may not cause harmful interference.
  - This device must accept any interference received, including interference that may cause undesired operation.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

# Contents

Device Introduction	5
Device Assembly	7
Powering the Device On/Off	11
Windows PC Install	13
Connecting Device To The App	18
Home Screen Function	23
Preforming a Fitcheck	33
Alarms	40
Charging Your Device	51
Technical Specifications	53



# Device Introduction

# The Device



USB Type-C Charging Port

On/Off and Device  
Firmware Upgrade Button.

Indication Light



## Device Assembly

# Device Assembly

To install device push down the oronasal and locate the device towards the front of the mask.

Ensure device is in the correct orientation : Light pipe to the right and location slot towards the front of the mask.





# Device Assembly

Match the device to the alignment rib at the front of the mask.

Push the hooks into place over the bosses on either side of the mask.

Alignment Rib

Bosses



# Device Assembly

When fitted correctly the device should fit securely at the front of the mask not deforming the oronasal.





## Powering the Device On / Off

# Powering On The Device

A Single press on power button turns on the device.

The device indication light with flash orange and white while data is being transferred / synced.

Once data has synced the indication light will flash blue while the device calibration takes place.

The indication light will then turn solid to the user pre defined colour ( Default to White ) indicating the device is ready to use.



Lights flashing orange and white



Lights flashing blue

# Powering Off The Device

Hold the power button down until the indication light turns red.

Releasing the button will turn out the light and power off the device.





# Windows PC Install

**\*\*Windows 10\*\***

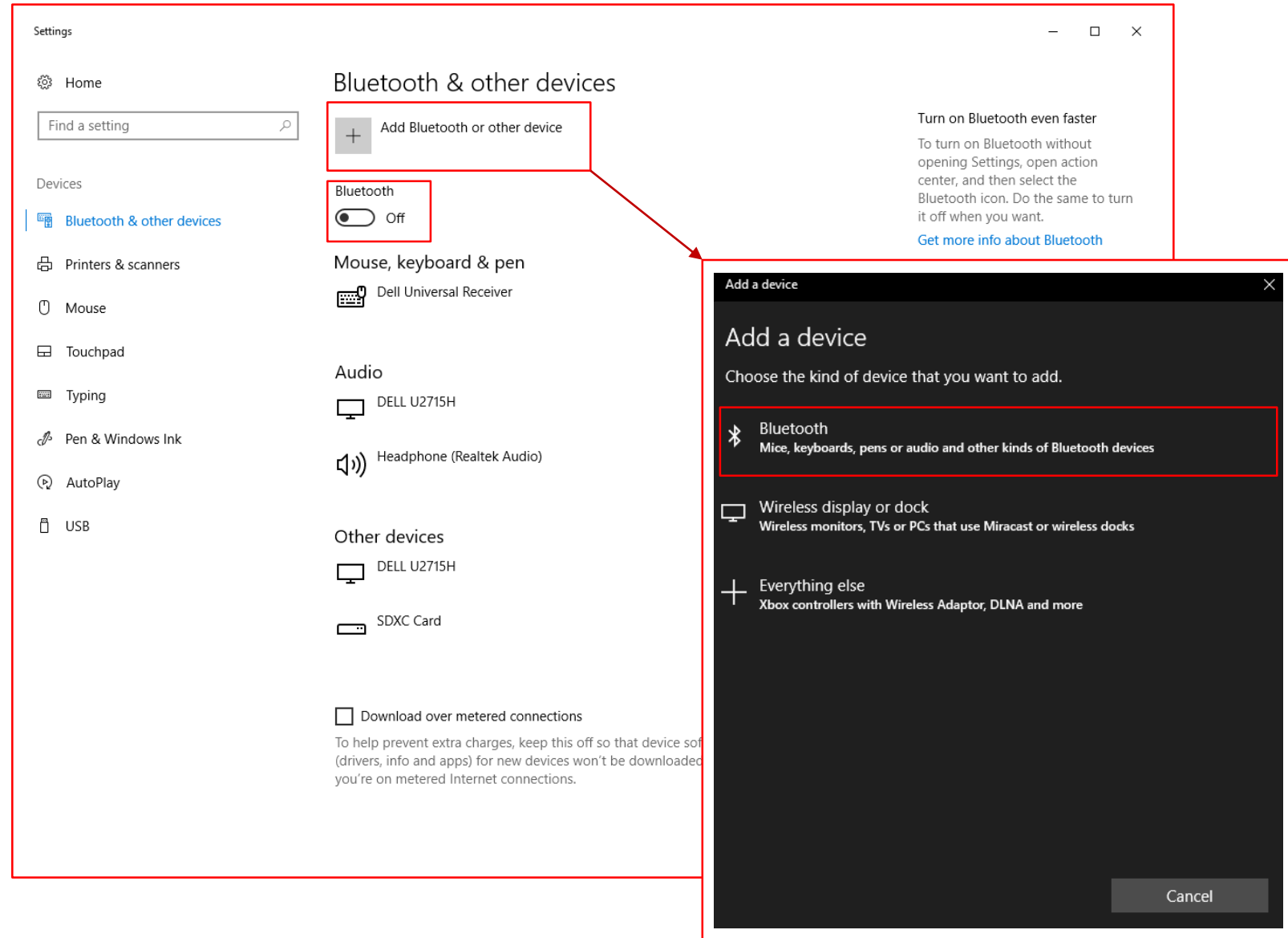
# Connect device to Computer

With the device powered on, navigate to 'Bluetooth & other devices' located within your computers Settings.

Turn on the Bluetooth adapter on your PC.

Select the 'Add Bluetooth or other devices' which will bring up the 'Add a device' window.

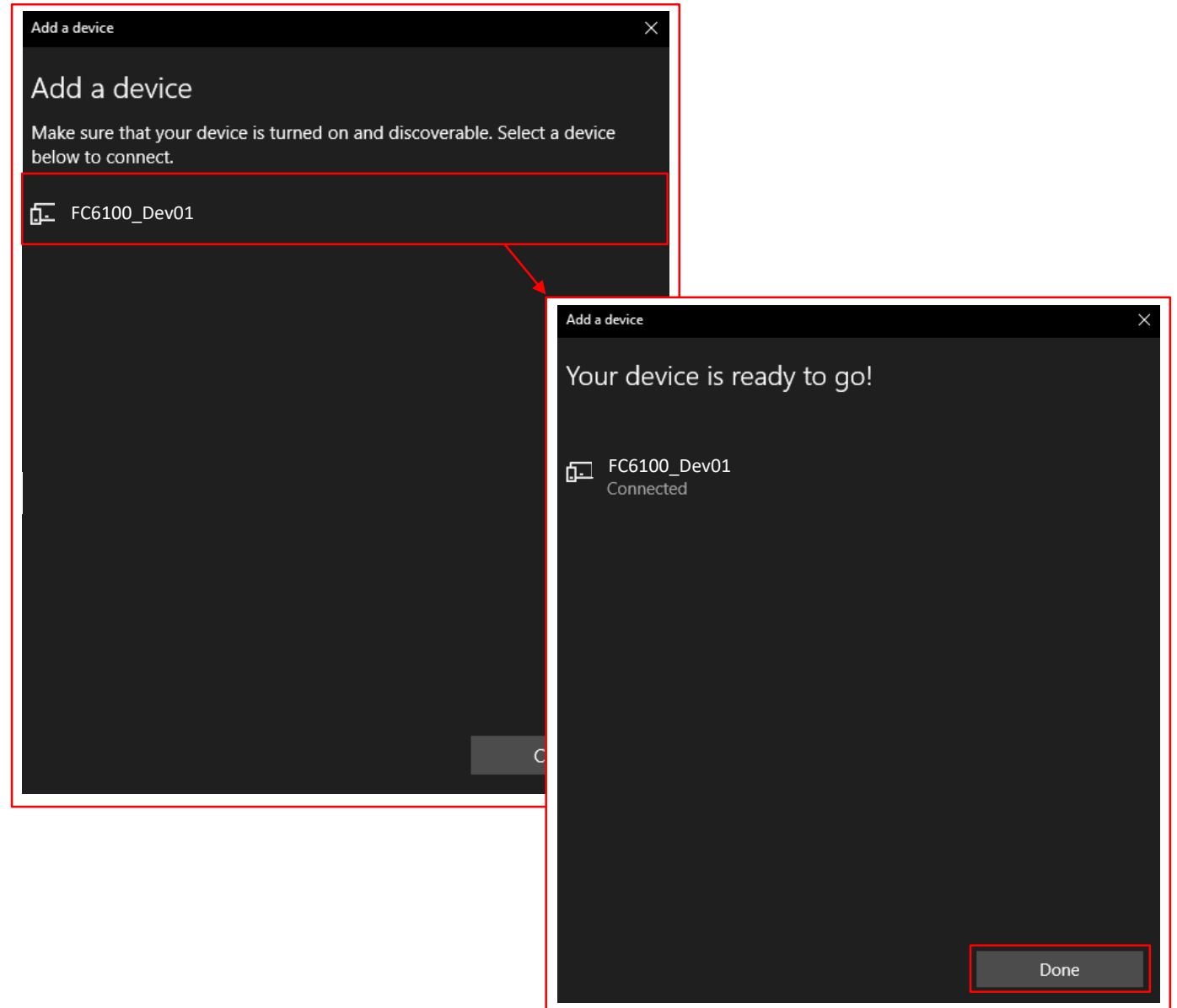
Select to add a 'Bluetooth' device.



# Connect Device to Computer

Select your device (Default FC 6100 Dev-XX) when displayed to connect.

An additional window will display when your device has successfully connected and 'ready to go', select 'Done' to end task.





# Copy Application

Copy the Application from the memory stick onto your PC into a known location.

**\*\* The application can be run off the memory stick\*\***

To run the program double click the program.



FC6100 App V1.0



## Connecting Device To The App

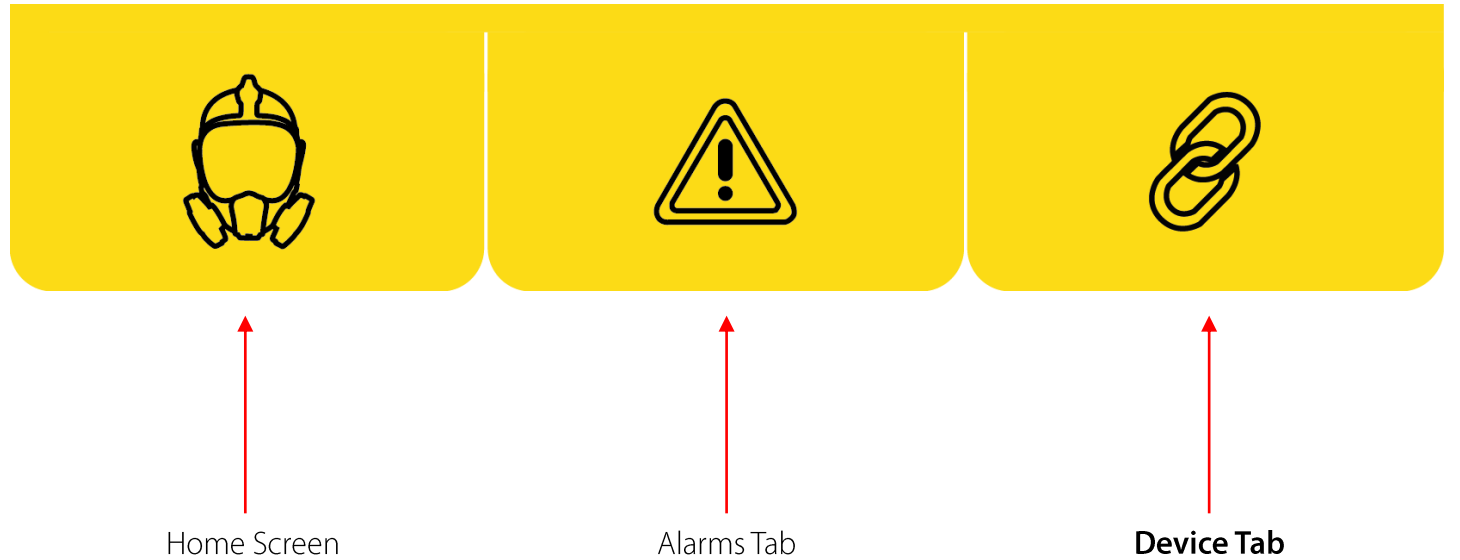
# Application Tabs

There are 3 main tabs at the top of the application screen.

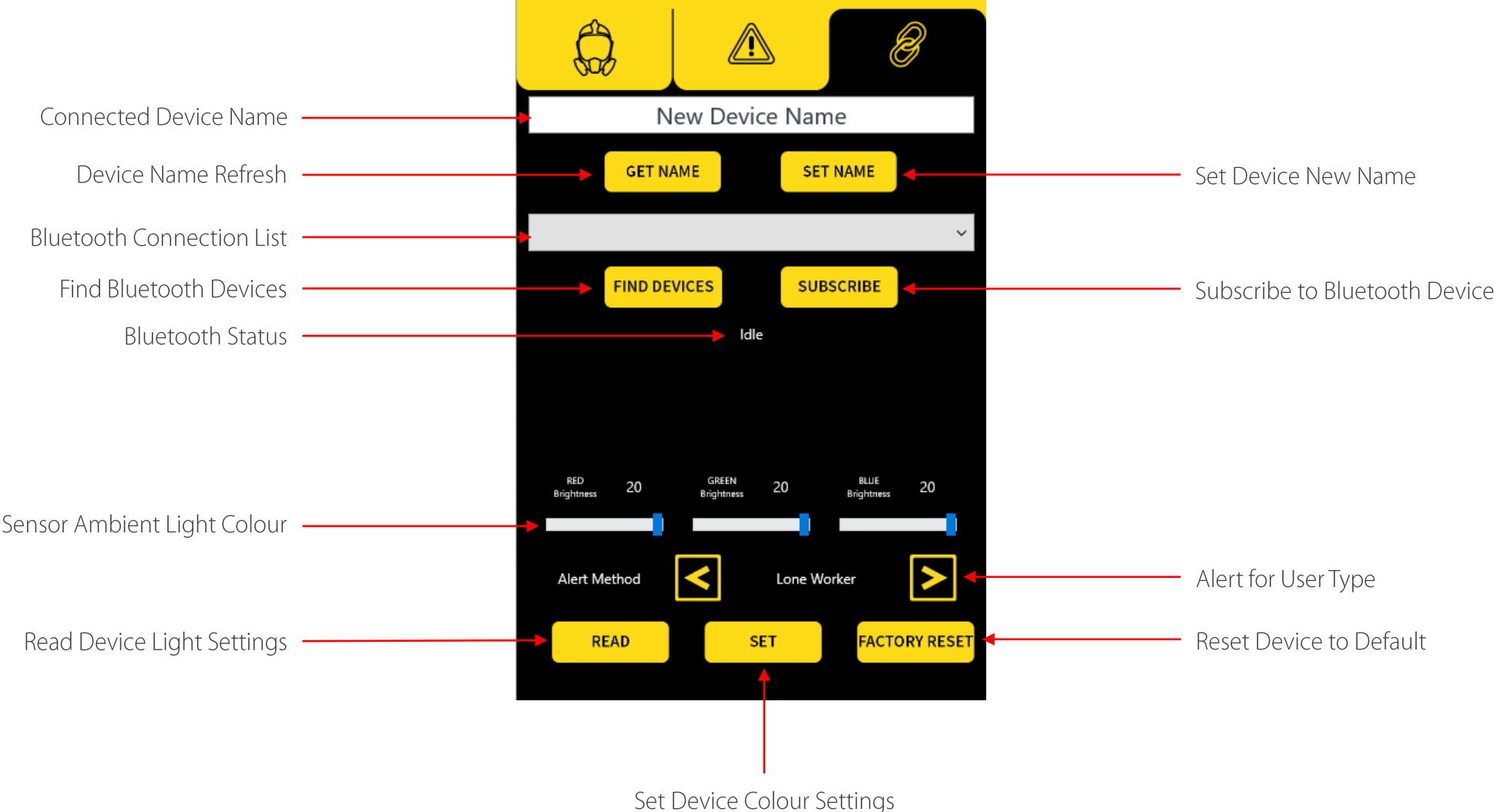
- Home Screen
- Alarms
- Device

The icons can be clicked to access additional functions.

Select the 'Device Tab'.



# Device Tab

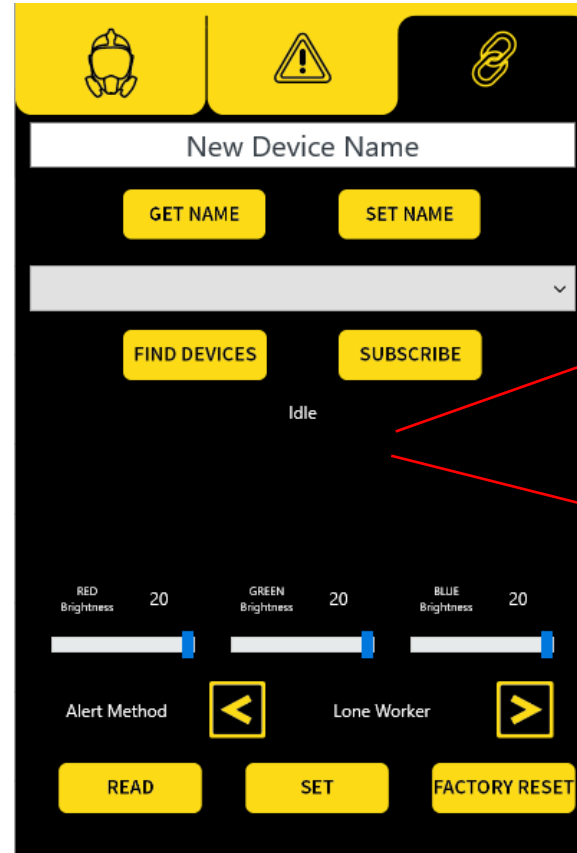


# Connecting To The Device

With the device on and paired to your windows PC, run the application.

Navigate to the Device tab and press 'Find Devices'

The App Status will change from 'idle' to 'Searching' and then 'Done' once the search has completed.



# Connecting To The Device

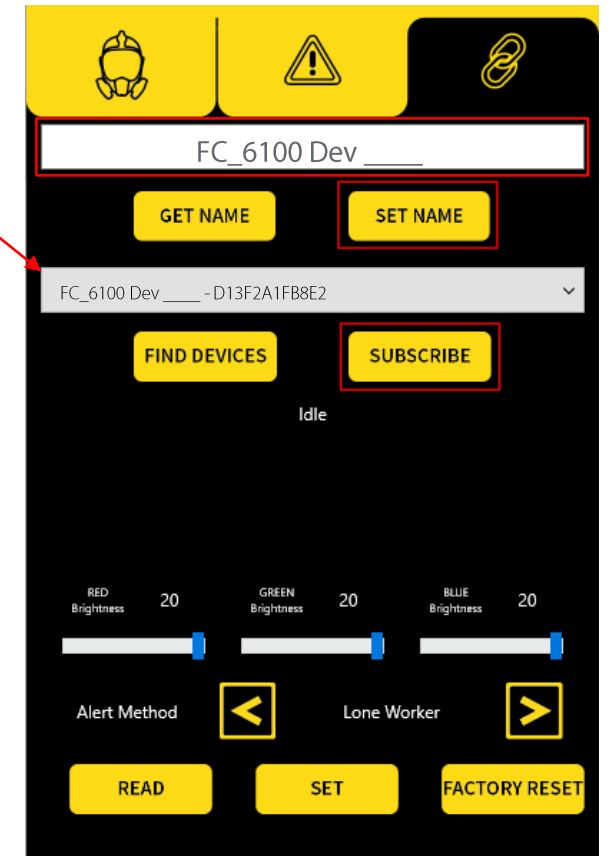
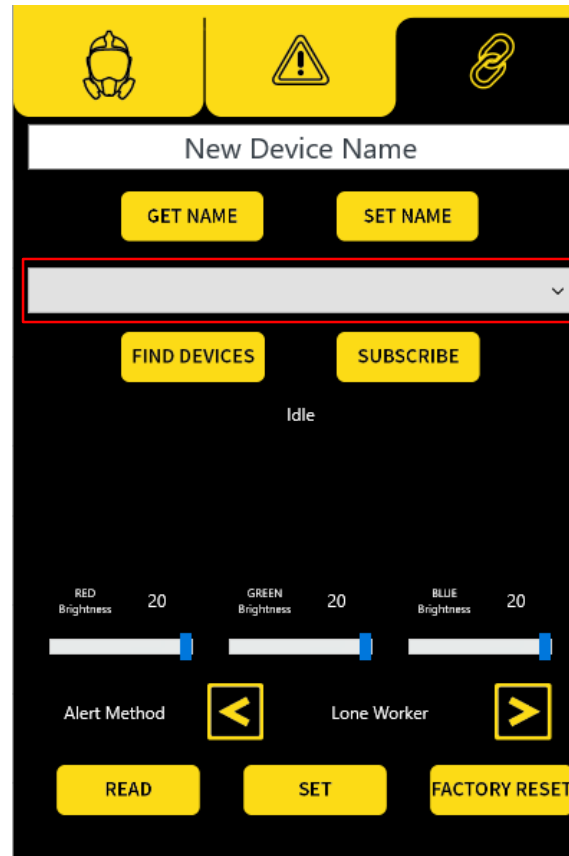
Select your device (Default FC 6100 Dev-XX) from the drop down box and wait 5 seconds.

Press 'Subscribe'

Once connected the device name will be displayed in the device name box, this could take up to 30 seconds.

The name can be changed by typing the new name into the box and clicking 'Set Name'.

\*\* Application will only let you rename to 8 Characters\*\*





## Home Screen Function

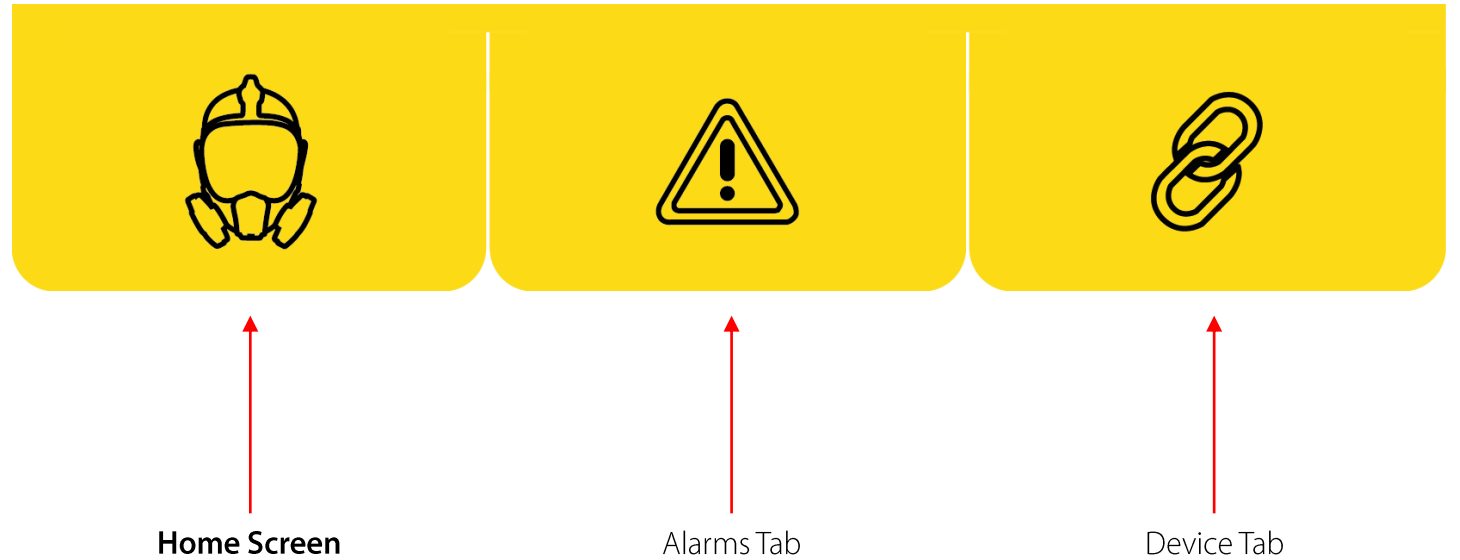
# Application Tabs

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- Home Screen
- Alarms
- Device

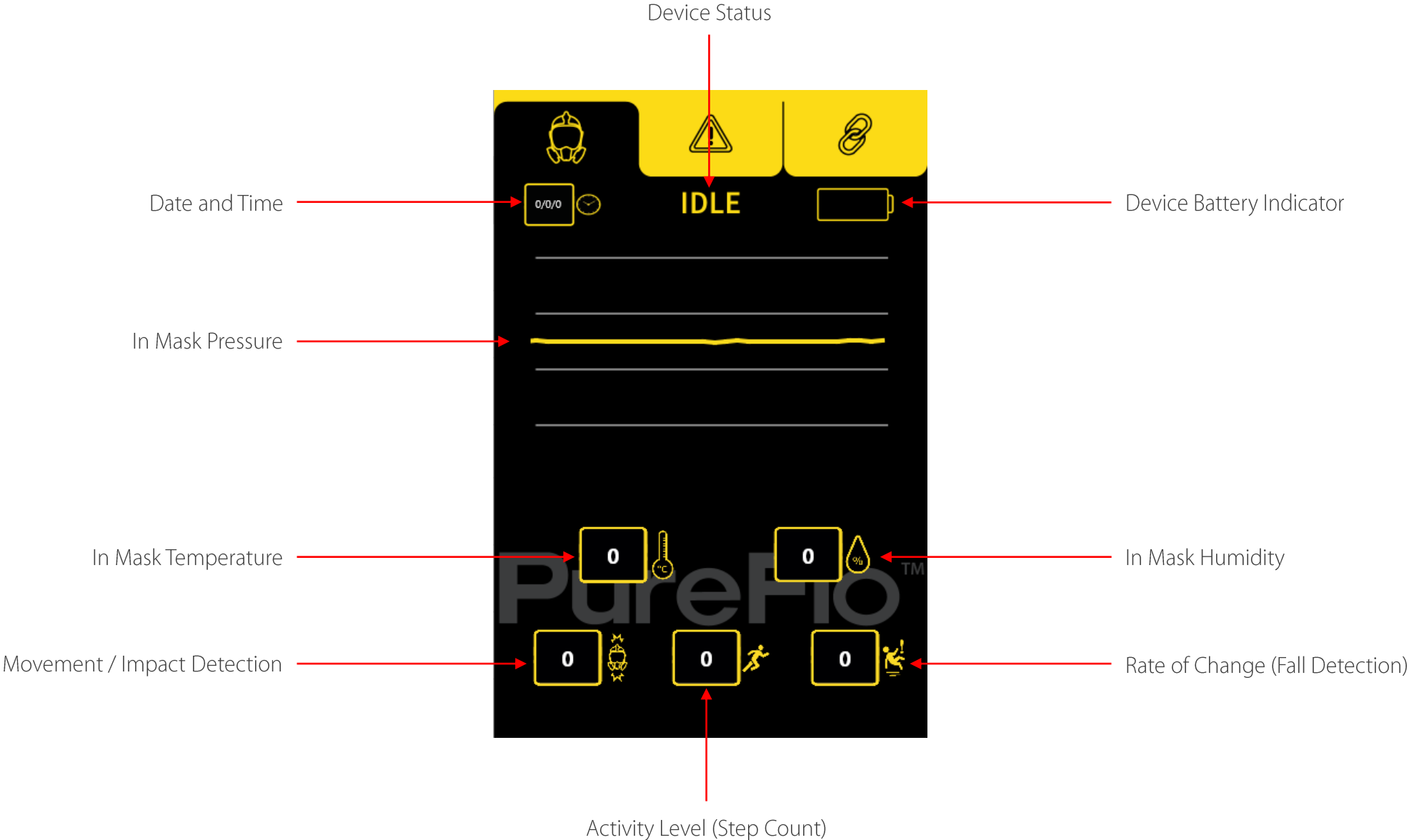
The icons can be clicked to access additional functions.

Select the 'Home Screen Tab'.

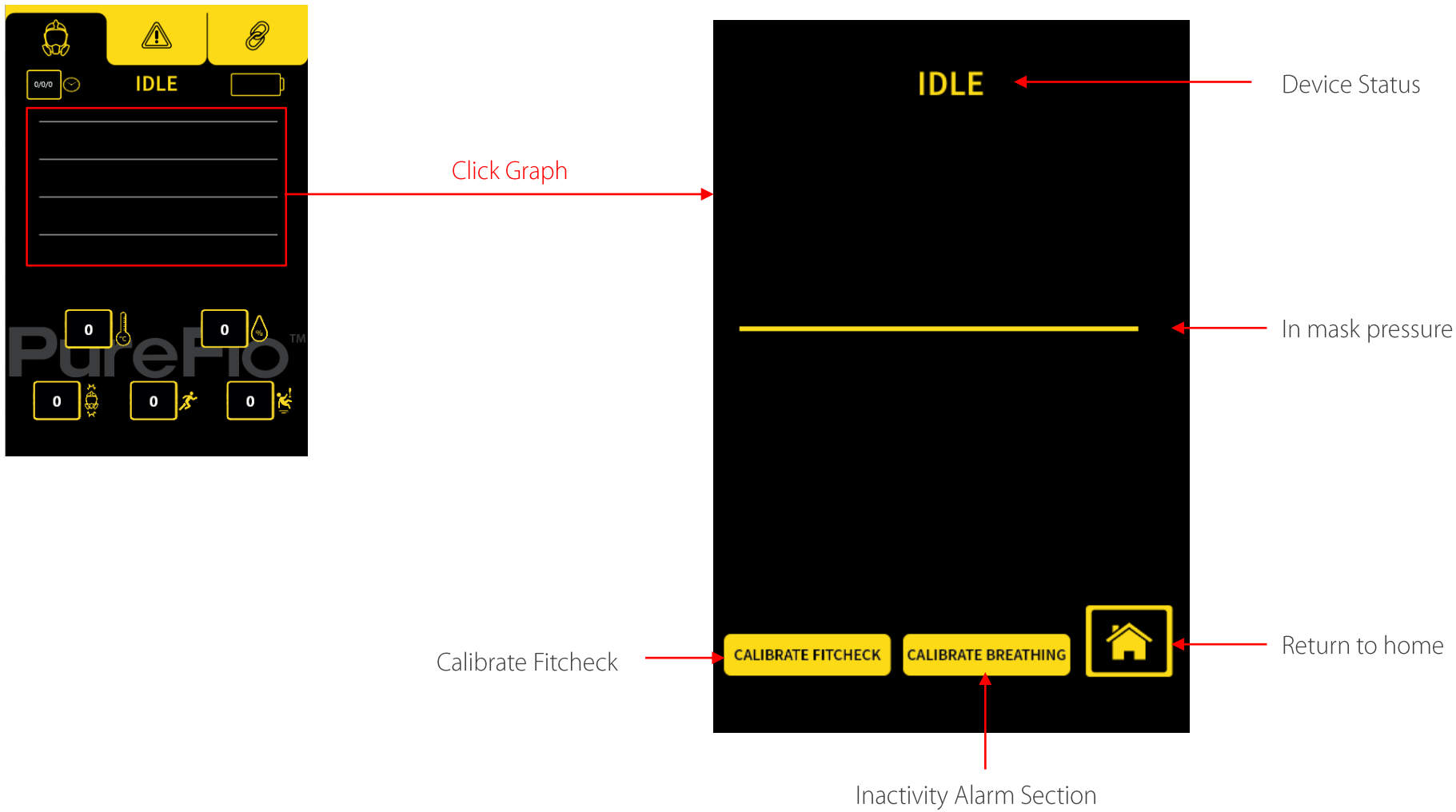




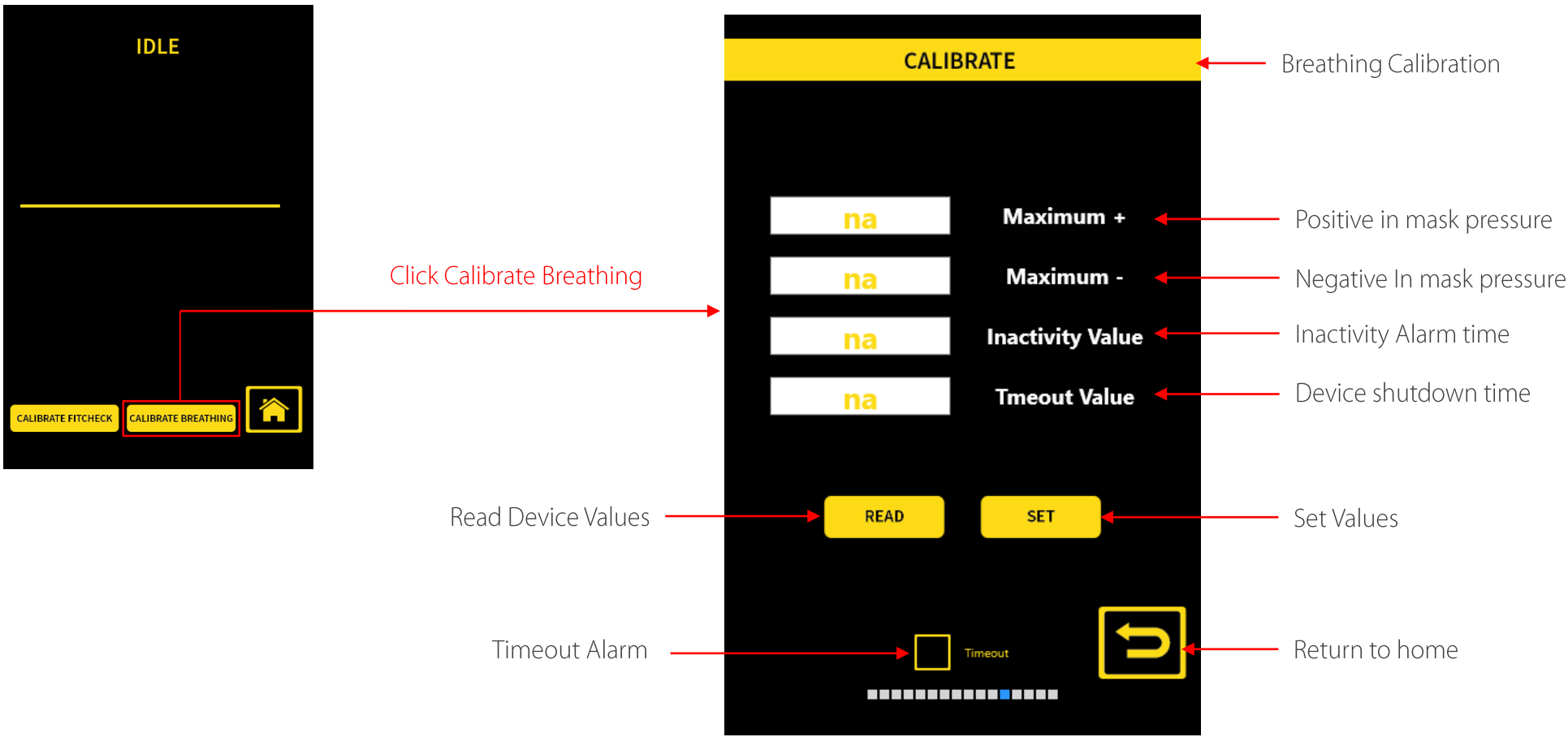
# Home Screen



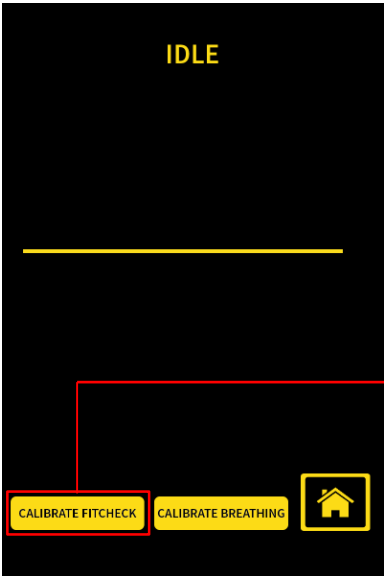
# Home Screen > Pressure Calibration



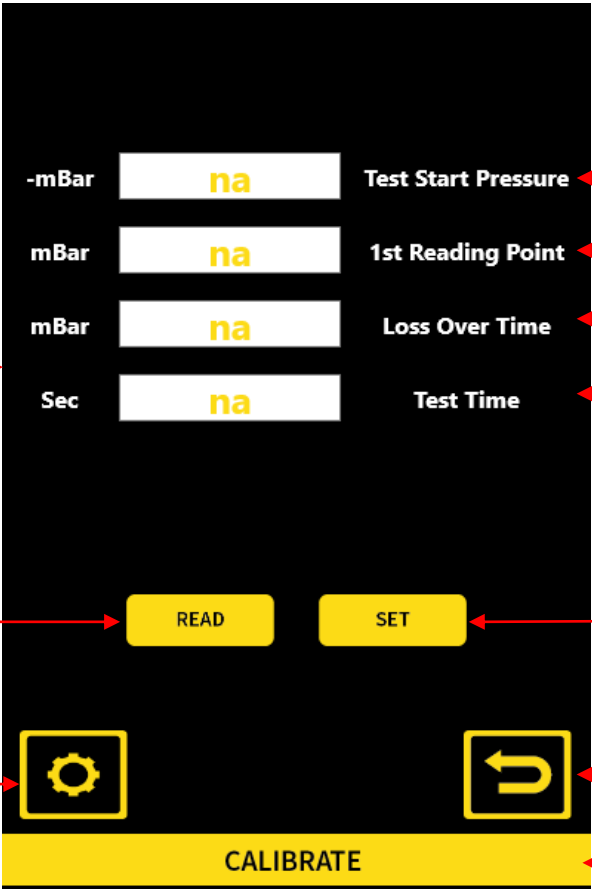
# Pressure Calibration > Calibrate Breathing



# Pressure Calibration > Calibrate Fitcheck



Click Calibrate Fitcheck



Pressure required to start the test

Pressure drop until test starts

Pass criteria for pressure loss over the set time

Test Length

Read Device Values

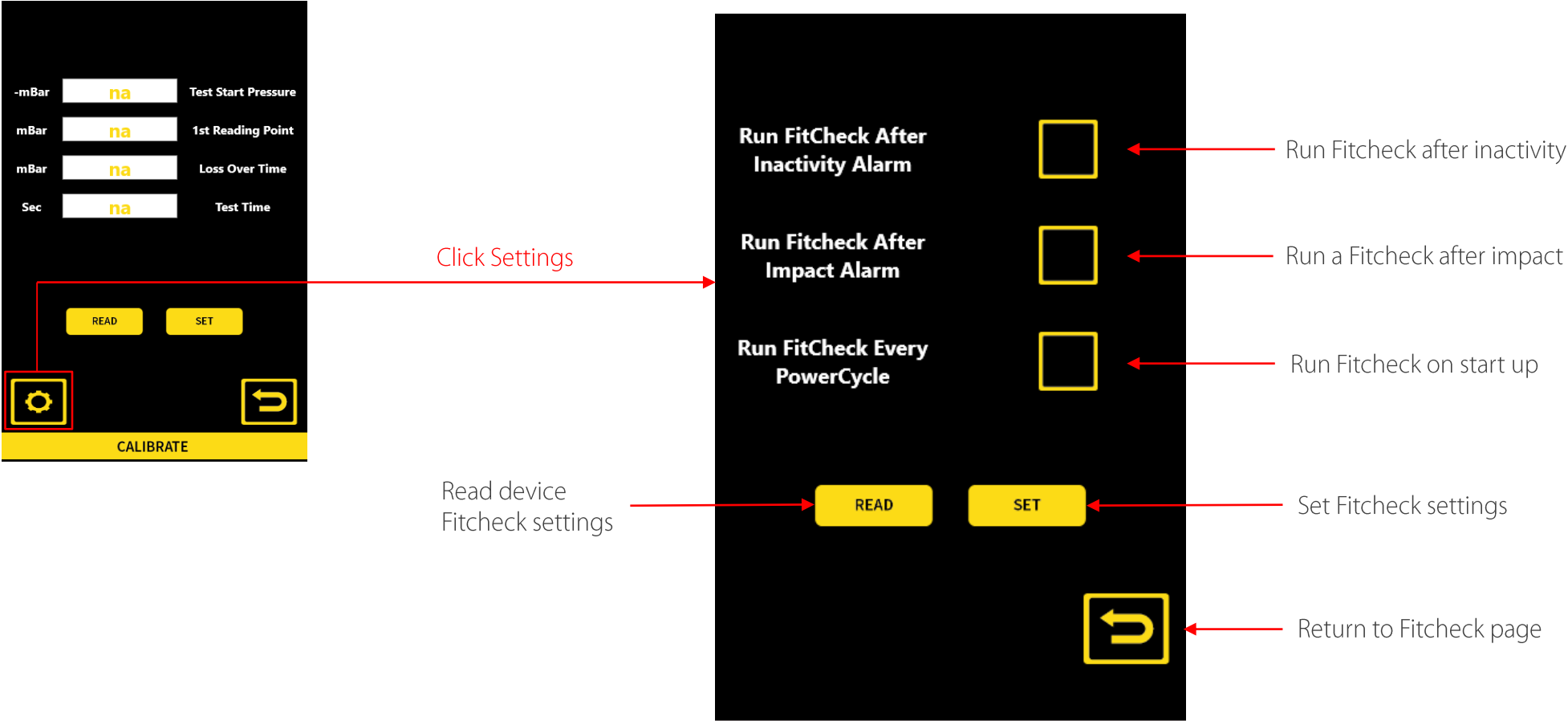
Set Values

Button to settings page

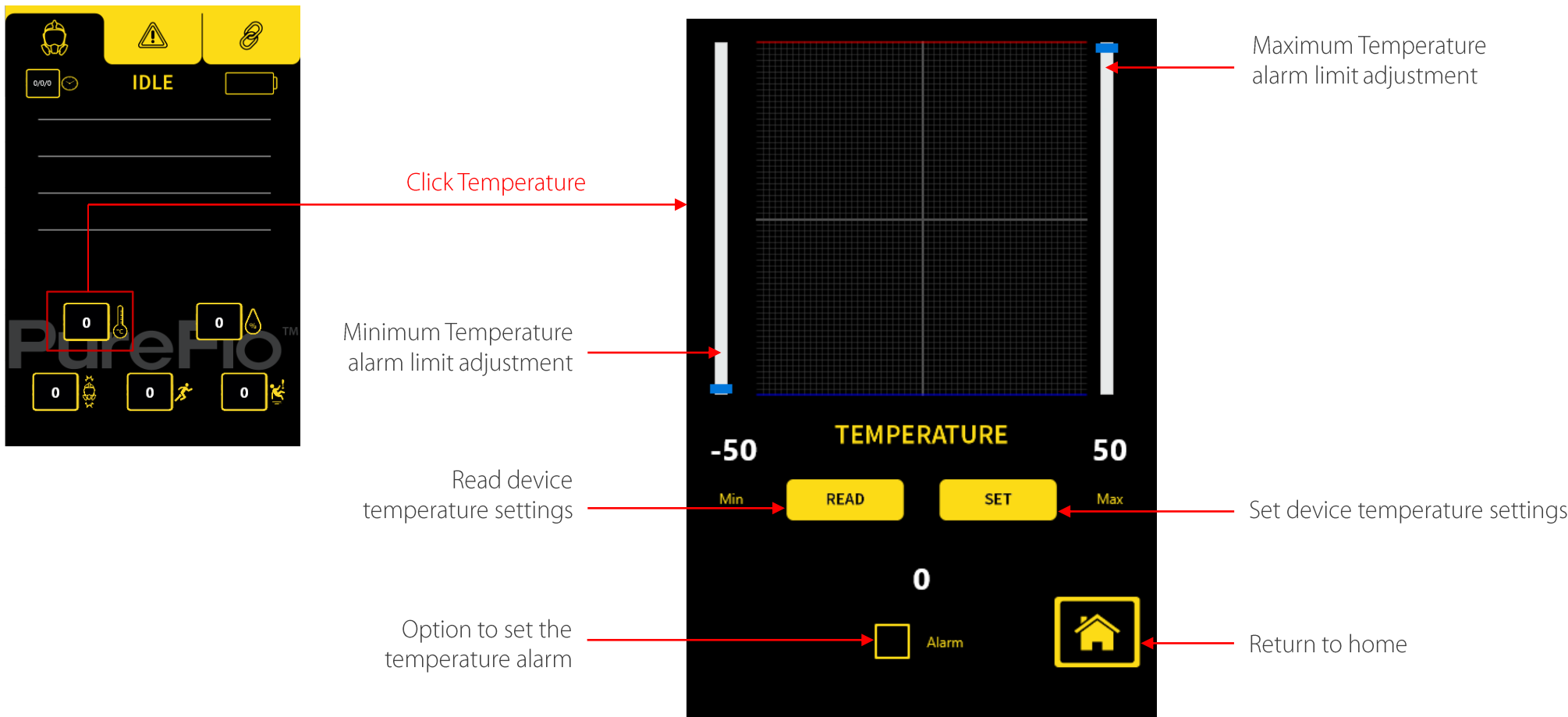
Return to home

Breathing Calibration

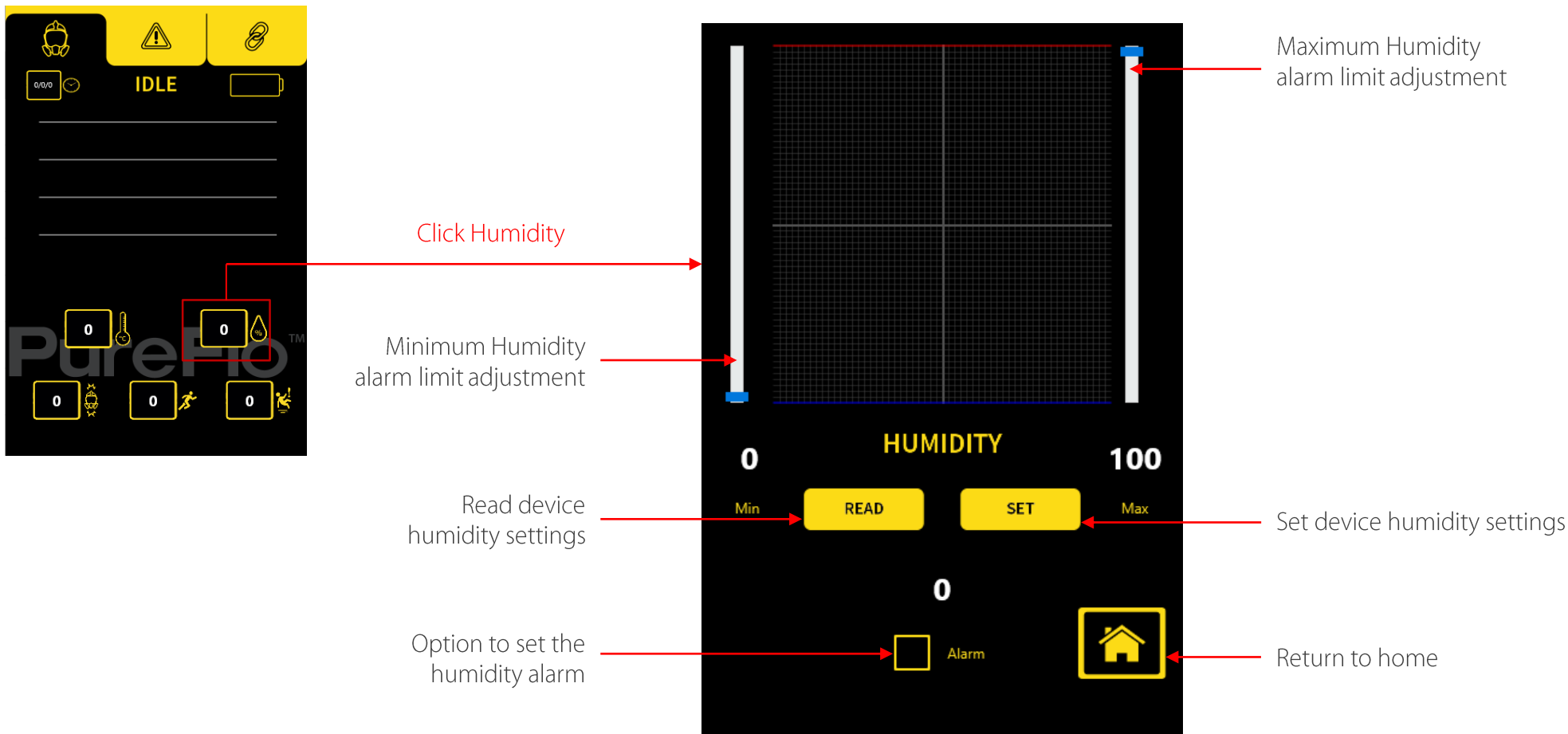
# Calibrate Fitcheck > Fitcheck Alarms



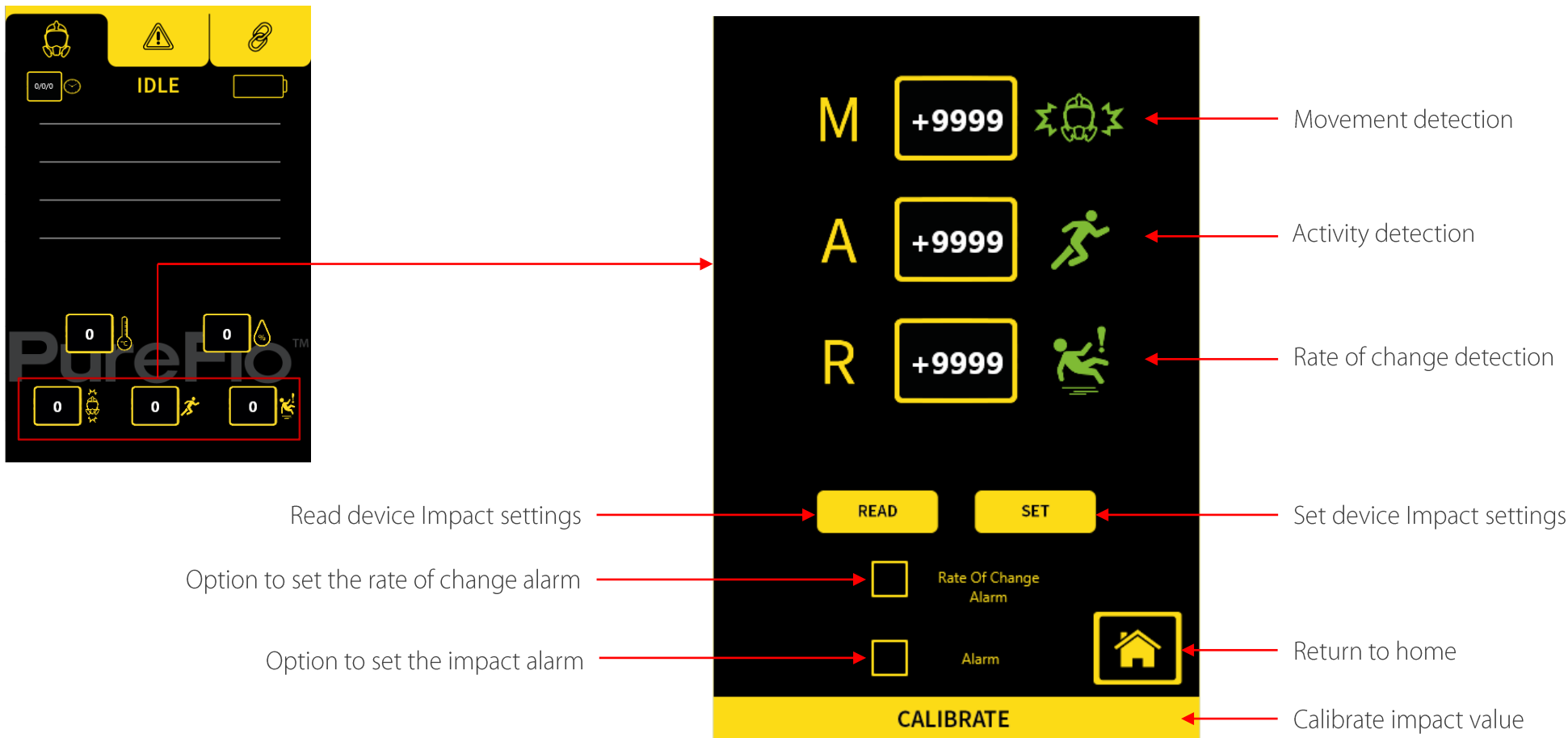
# Home Screen > In mask temperature



# Home Screen > In mask Humidity



# Home Screen > Impact







## Performing a Fitcheck

\*\* Calibration may be required through the App\*\*

# Performing a Fitcheck

To perform a Fitcheck / Fitcheck calibration, filters are required to seal the bayonet ports.



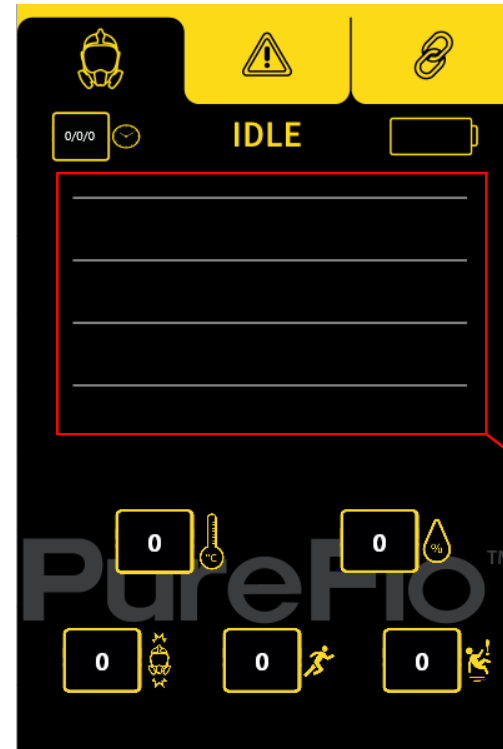
# Calibrate Fitcheck

Calibration may be required if the user cant inhale to the default negative pressure limits (40 mBar).

Make sure the device is on and the device indicator light displaying either Idle mode (Default Indicator White) or require Fitcheck (Indicator Purple).

Connect to the app and navigate to the 'Home Tab'.

Click on the 'Graph' and then on 'Calibrate Fitcheck'



# Calibrate Fitcheck

Click on 'Calibrate.'

The device indication light will then start to flash Blue.

The user should perform 3 comfortable negative pulls.

To perform a negative pull, place hands over both filter openings. Breathe in to a comfortable level, and hold breath for 1 second then release hands from filters.

Repeat a further 2 times.

-mBar	na	Test Start Pressure
mBar	na	1st Reading Point
mBar	na	Loss Over Time
Sec	na	Test Time
<div>READSET</div>		
<div></div>		
<div>CALIBRATE</div>		

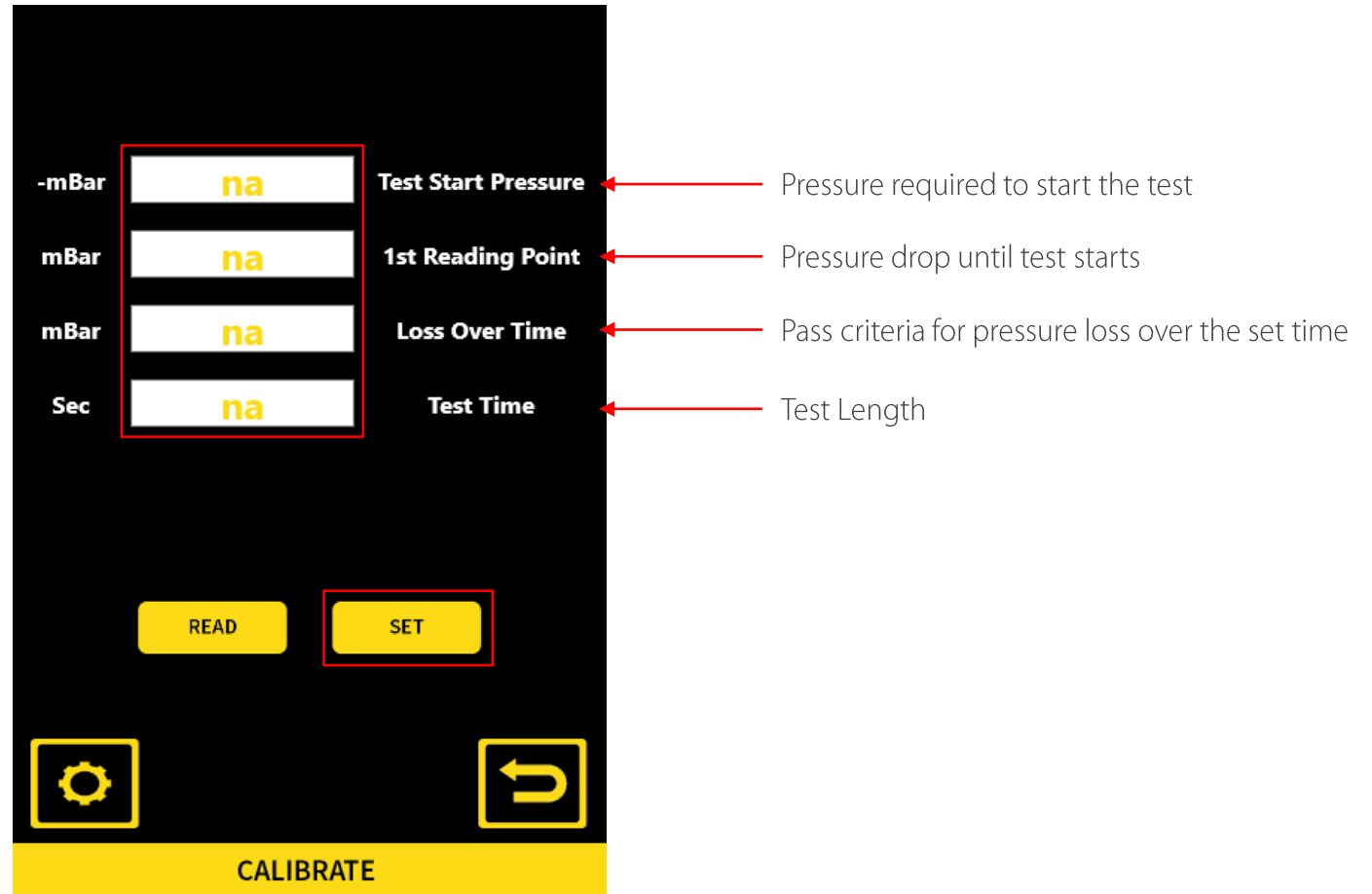


# Calibrate Fitcheck

Once the calibration is completed the indication light will return to idle or perform Fitcheck.

The data used to perform the test will then be calculated for that user. (These can be manually adjusted)

Press 'Set' to load the data onto the device.



# Performing a Fitcheck

Don the mask and place both hands over the filter openings.

Inhale until the device light indicator turns blue then hold your breath.

Do not inhale more air or let any air to escape as this will cause the test to fail.





# Performing a Fitcheck

The light indicator will display Green for a pass or Red for a fail.

At this point you can remove your hands from the filters and continue to breath normally.

In the event of a fail re adjust the mask to the face or calibrate the fitcheck and perform another test.



Passed Fitcheck



Failed Fitcheck



## Alarms & Alerts



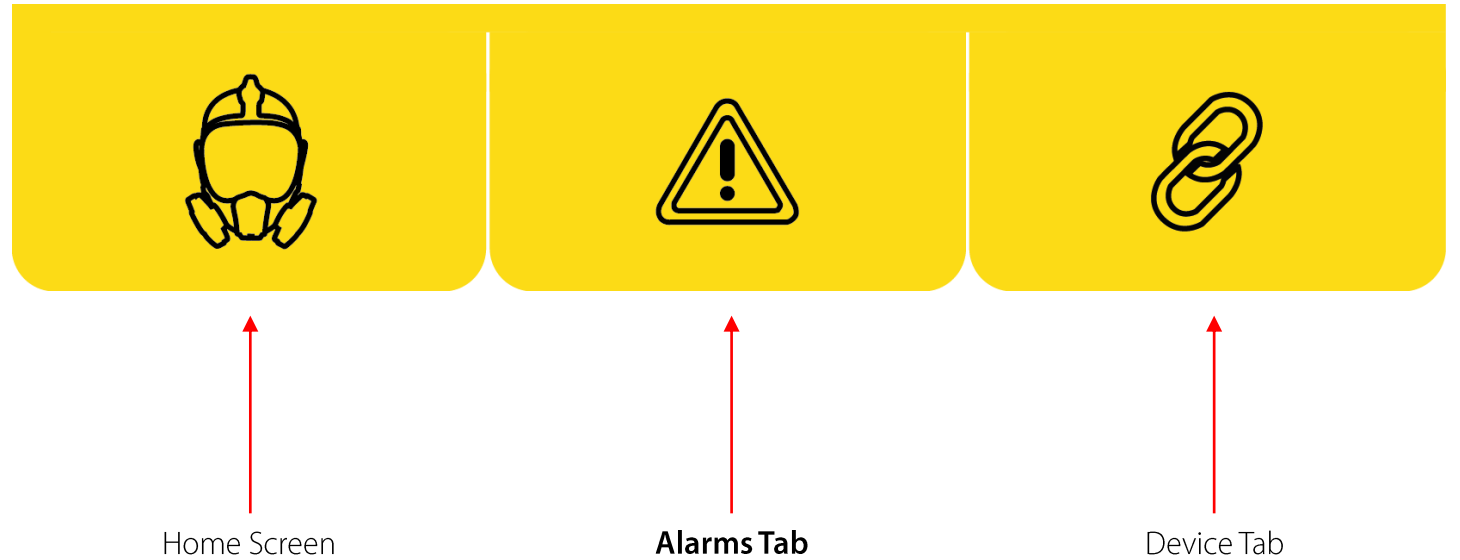
# Application Tabs

There are 3 main tabs at the top of the application screen.

- Home Screen
- Alarms
- Device

The icons can be clicked to access additional functions.

Select the 'Alarms Tab'



# Alarm Tab



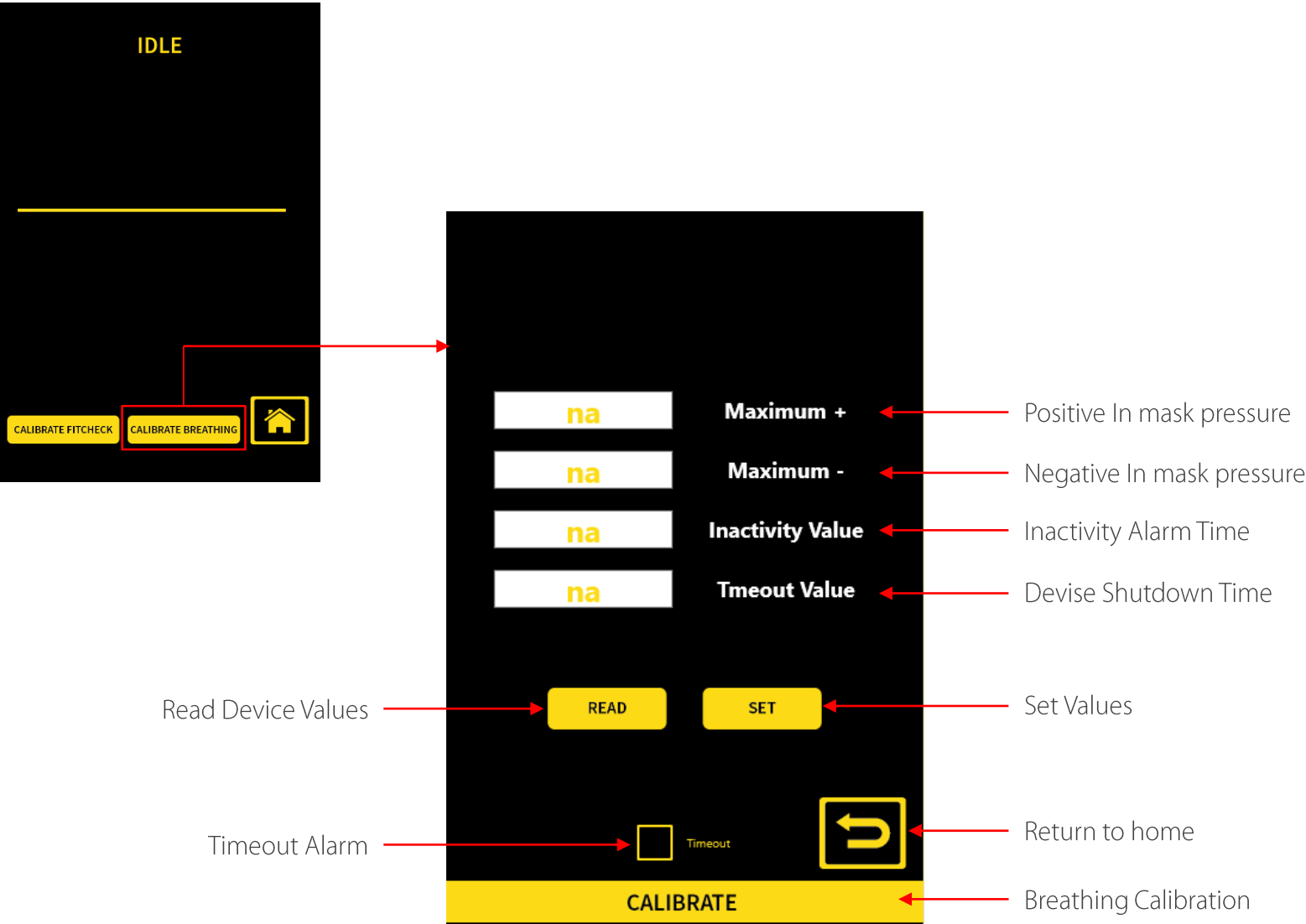
# Inactivity Alarm Calibration

The inactivity alarm monitors your normal breathing pressures and generates an alarm when the device senses lower pressures than normal.

**\*\*Calibration only needs to be done if you are a heavy breather to account for the additional pressure\*\***

To access the inactivity alarm navigate to the pressure calibration tab through the home screen.

Press the 'Calibrate breathing' button which takes you to the inactivity alarm settings tab.

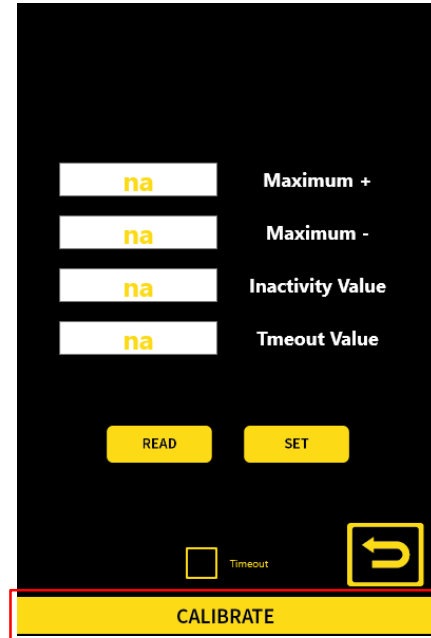


# Inactivity Alarm Calibration

Press 'Calibrate' which will cause the indication light to flash blue.


Breathe normally until the light turns to idle ( Default White) or Complete Fitcheck ( Default Purple )

This will then update the figures in the Maximum and Minimum boxes.



na	Maximum +
na	Maximum -
na	Inactivity Value
na	Timeout Value

READ SET

☐ Timeout 

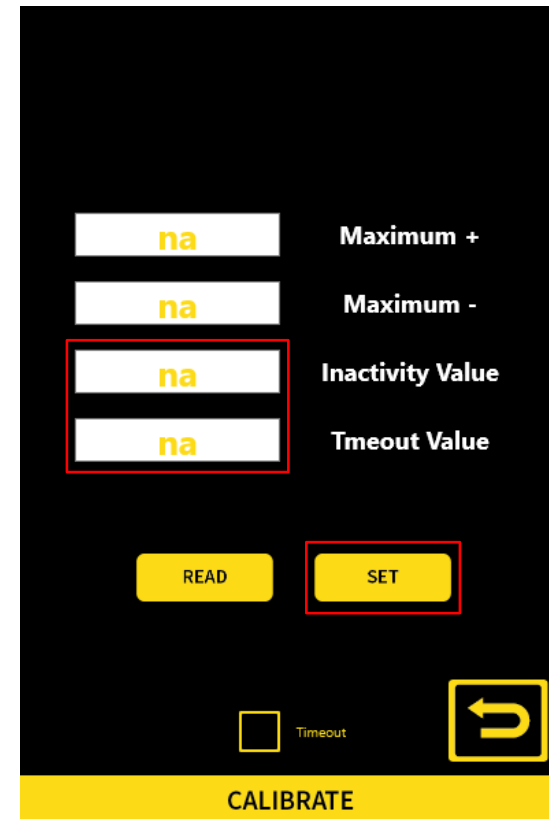
**CALIBRATE**



# Inactivity Alarm Calibration

Enter the inactivity time before an alert is send and the time post alert for the device to shut down.

Press 'Set' to add these changes to the device.



The image shows a mobile application interface for "Inactivity Alarm Calibration". The background is black with yellow text and buttons. At the top, there are four input fields, each containing the text "na" in yellow. To the right of these fields are labels: "Maximum +", "Maximum -", "Inactivity Value", and "Tmeout Value". The "Inactivity Value" and "Tmeout Value" fields are highlighted with a red rectangular border. Below the input fields are two yellow buttons: "READ" and "SET". The "SET" button is also highlighted with a red rectangular border. At the bottom left, there is a small yellow square icon followed by the text "Timeout". At the bottom right, there is a yellow square icon containing a white circular arrow. A yellow bar at the very bottom of the screen contains the word "CALIBRATE" in black capital letters.

na	Maximum +
na	Maximum -
na	Inactivity Value
na	Tmeout Value

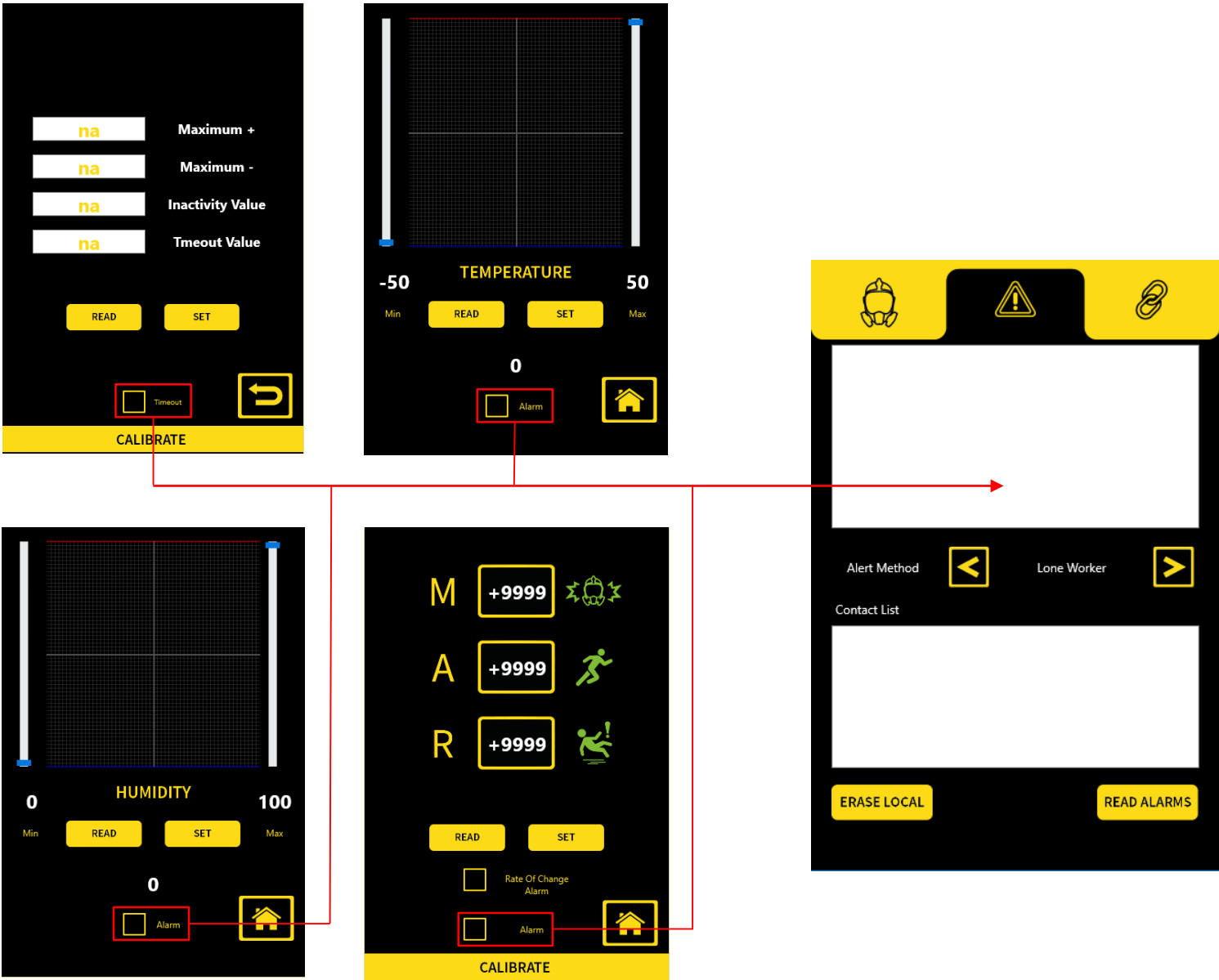
READ SET

☐ Timeout

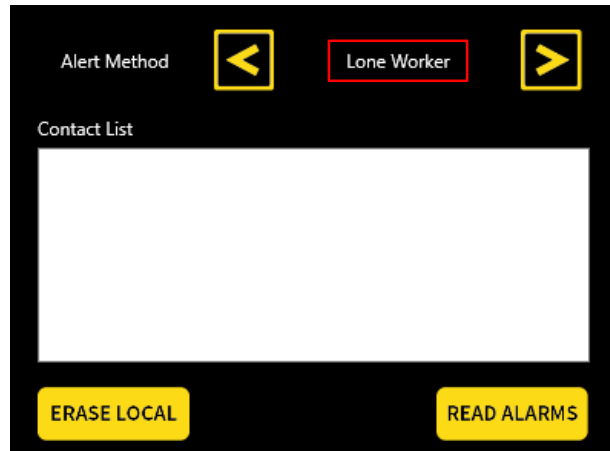
CALIBRATE

# Alarm Tab

All Alarms will be displayed on the Alarms Tab.  
These can be turned off on the various slides.

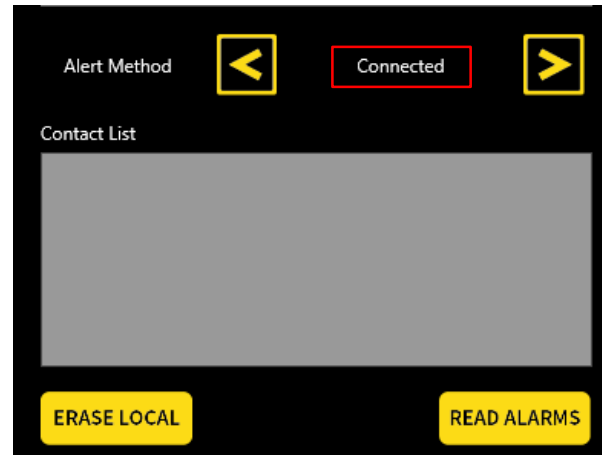


# Alert Method



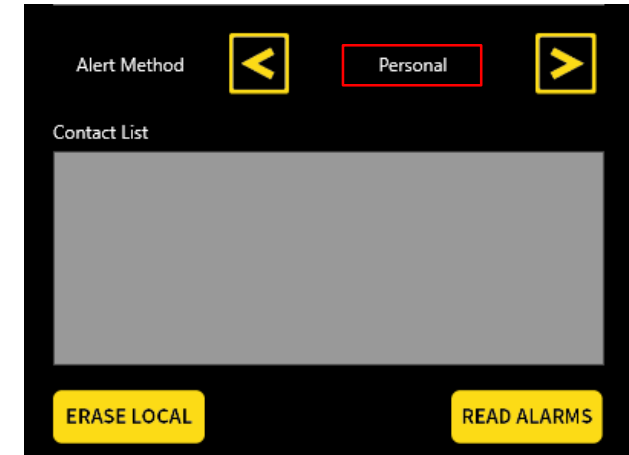
Lone Worker

Having the app in Lone worker mode allows the user to add phone numbers to the contact list that will receive a call or SMS when an alert has been triggered.



Connected

In connected mode the app has the ability to upload and record any alerts on the cloud.



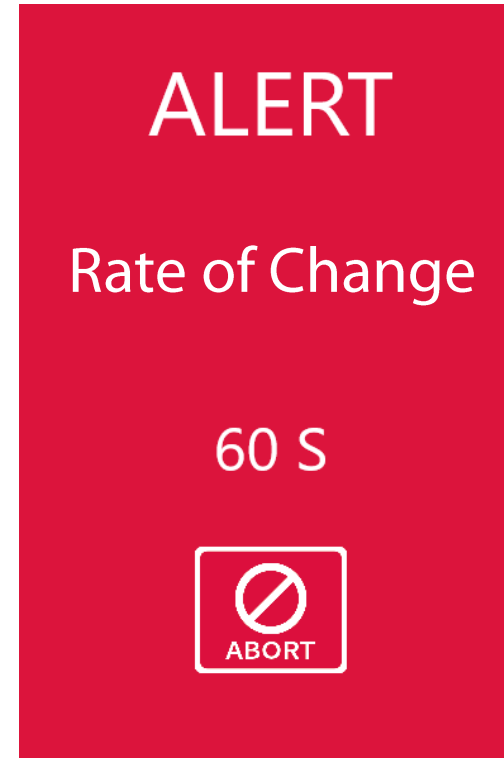
Personal

The app doesn't allow the user to create a contact list or connect to the cloud.

# Alert Abort Message

If the device detects a high rate of change or a large impact collision an alert message will appear.

This needs to be aborted in the set time or a message would be sent to an emergency contact.





# Fitcheck Alarm

If the device requires you to perform a Fitcheck the light indicator will illuminate purple.

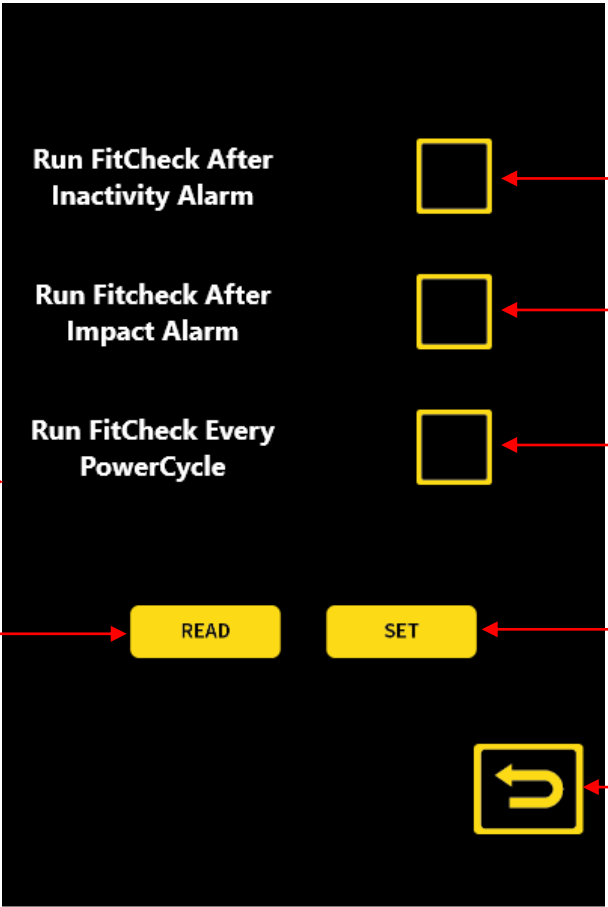


# Fitcheck Alarms

Fitcheck alarms can be changed in the Fitcheck settings tab.

To activate / remove fitcheck alarms press the boxes.

To set the new settings press the 'Set' Button



Read device  
Fitcheck settings

Run Fitcheck after inactivity

Run a Fitcheck after impact

Run Fitcheck on start up

Set Fitcheck settings

Return to Fitcheck page



## Charging Your Device

# Charging Your Device

To charge the device connect the USB into the device and into a PC or wall plug. The indication light will display the state of charge

If the lights flash **Red** – **Green** – **Blue** the device is charging normally.

If the light is solid **Green** the device is charged.

If the light is solid **Red** there is an error.

\*\* Rated Charging Output 5Vdc – 0.5A \*\*





## Technical Specification

# Technical Specifications

Manufacturer	Design Reality Ltd
Manufacturer Address	81 Bowen Court St. Asaph Business Park St. Asaph LL17 0JE United Kingdom
Internal FCC ID	2AT3JFC6100
Rated Charging Output	5Vdc – 0.5A
Temperature Rating	The device can be used within a mask at ambient temperatures between -10°C and 40° C. You can store the devise at an ambient temperature of -10° C to 50° C. Using or storing the devise outside of the recommended temperatures may damage the devise or reduce the battery life.
Humidity Rating	<75%



Thank you

*Diolch*