Honeywell

RAEGuard App

Honeywell
RAEGuard

User Manual

Rev 1.3

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Introduction

This user manual mainly introduces to users how to install and use the RAEGuard App connected to the RAEGuard ESGD Detector (Energy Storage Gas Detector).

1 First Start

1.1 Requirements for mobile smart devices

Before installing the app, please make sure that the mobile smart device you are using meets the following requirements:

Android：8.1 or above; IOS：9.0 or above

Bluetooth: 5.0 or above（Bluetooth Low Energy）

1.2 APP download & installation

Before App installation, confirm whether the system of the mobile device you are using is Android or IOS.

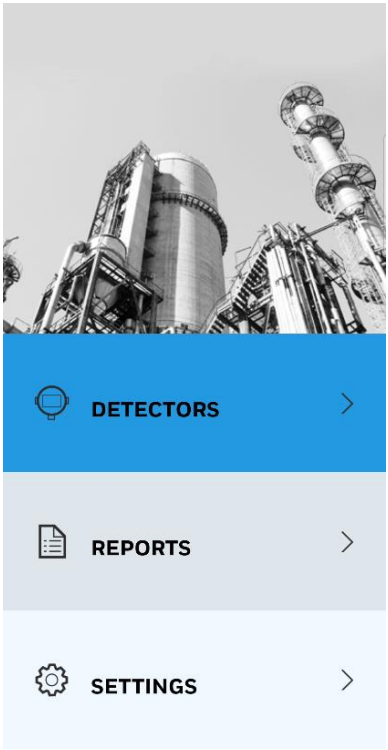
- Android system：

  Search "RAEGuard" in App Store or Google App Store on your smart mobile device to download. After downloading to your smart mobile device, install it.

- IOS system：

  Search "RAEGuard" in Apple Store on your smart mobile device to download. After downloading to your smart mobile device, install it.

1.3 APP Home Page



First, make sure the Bluetooth function of your mobile smart device is turned on. Then click on the App and open it to enter the **home page** of the App. There are 3 options available:

• DETECTORS

Click this item to scan the surrounding RAEGuard ESGD detectors and select the corresponding detector for Bluetooth connection.

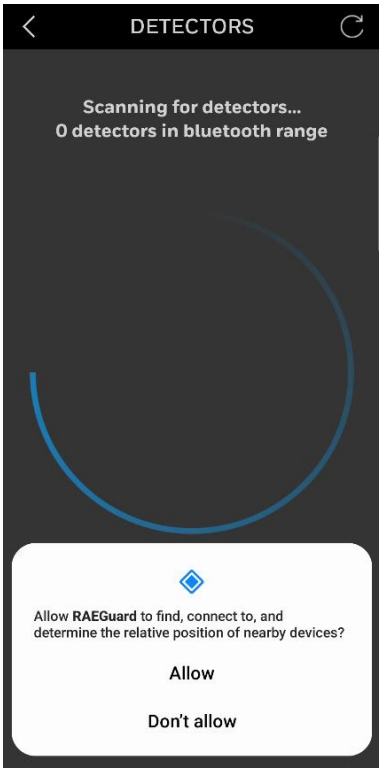
• REPORTS

Click this item to view the records of previous detector calibration operations through this application and select the corresponding records to generate a calibration report.

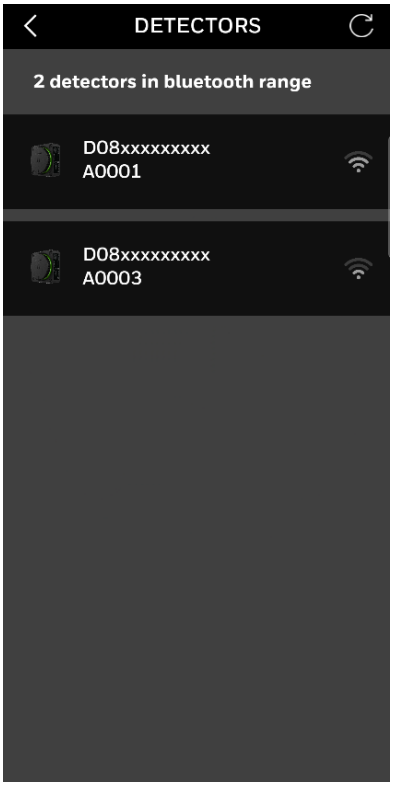
• SETTINGS
This item is showing App version number and language setting (Chinese or English).

2 Detectors Management

Click the "DETECTORS" on the home page to enter the device list.

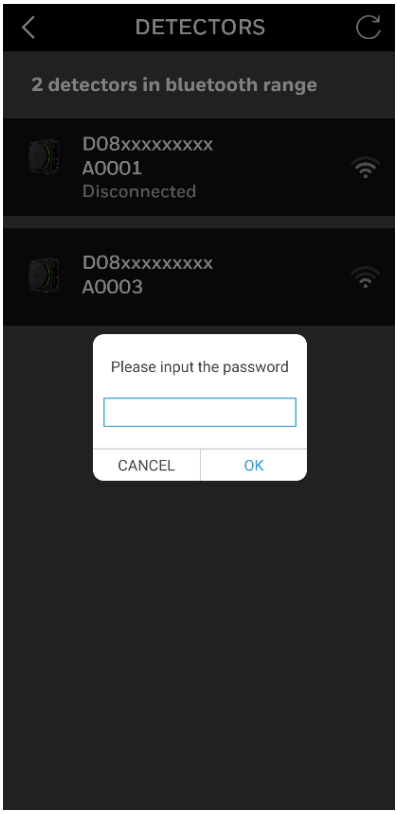


Since the master detector is connected to the APP via Bluetooth, the system's Bluetooth scanning permission will be used. This dialog box will pop up when you use the APP for the first time. Please click Agree, otherwise you will not be able to scan surrounding master detectors and establish the connection.

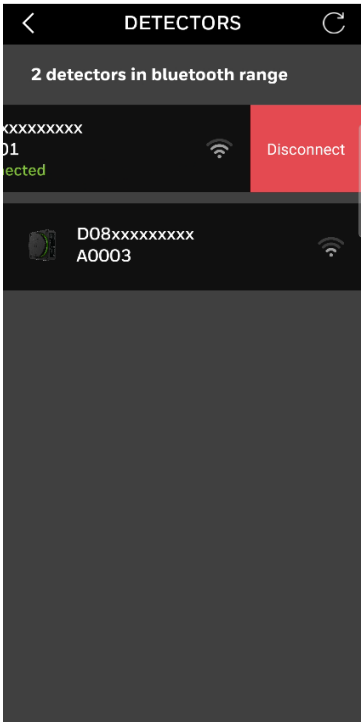


After the Bluetooth scan is completed, a list of scanned master detectors will be displayed. "D08xxxxxxxxx" in the picture above is the serial number of the master detector, and "A0001" is the location label of the master detector. Click the refresh button in the upper right corner to re-trigger Bluetooth scanning.

2.1 Connect detector to App



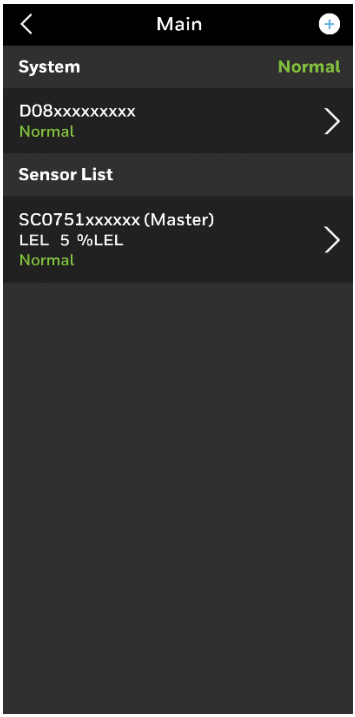
Click on a master detector in the list and enter the connection password (the default value is 1111) to establish a connection with the master detector.



If you need to disconnect from the master detector, you can long press the connected detector and slide it to the left, then click the "Disconnect" button to disconnect App from the detector.

Eliminating the process of this APP in the mobile smart device system can also disconnect App from the master detector.

2.2 Master Detector's Main Page

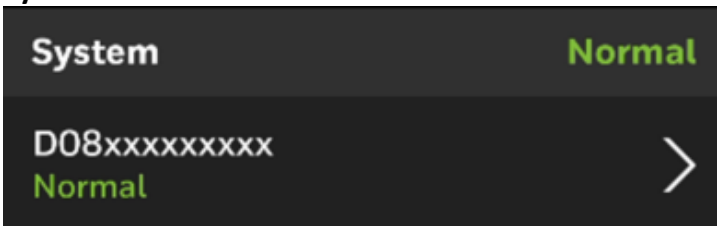


The main page consists of two parts:

- System
- Sensor list

Each time the detector successfully connects and enters the main page, it will automatically synchronize the time of the mobile smart device to the detector.

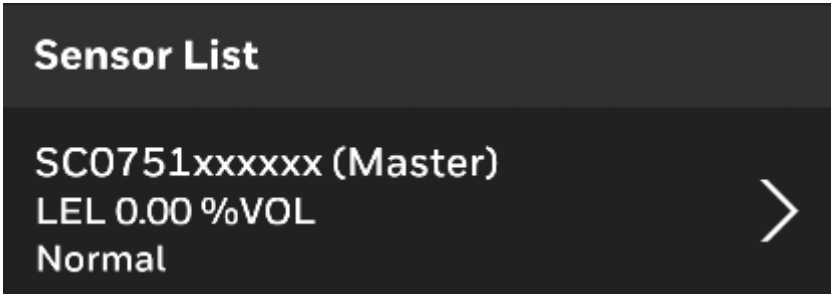
System



- “System Normal”: The state of the entire system
- “D08xxxxxxxxx”: master detector serial number
- “Normal”: master detector’s real-time status

Click this to enter the detector system management page。

Sensor

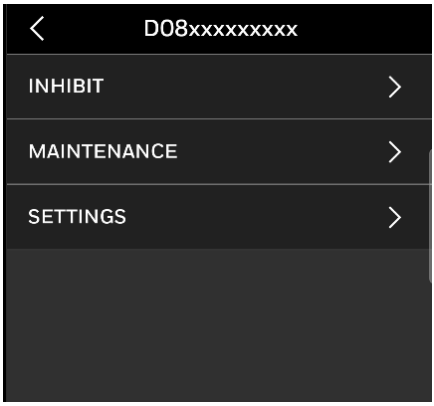


- “SC0751xxxxxx”: Sensor serial number
- “(Master) ”: represents the sensor of master detector
- “LEL”: gas type of sensor
- “0.00”: real-time reading of sensor
- “%VOL”: reading unit
- “Normal”: real-time status of sensor

Click this to enter the sensor management page.

2.3 Master Detector Management

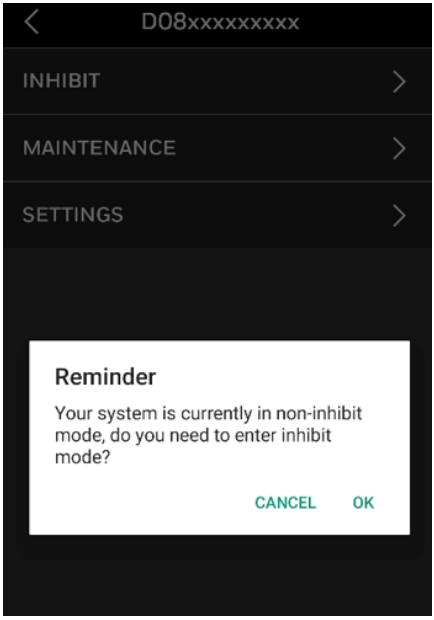
On the detector main page, click the real-time reading item of the system to enter the system management page.



Detector system management page including：

- Inhibit: Switch to inhibit mode
- Maintenance: System maintenance
- Settings: Parameter settings

2.3.1 Inhibit

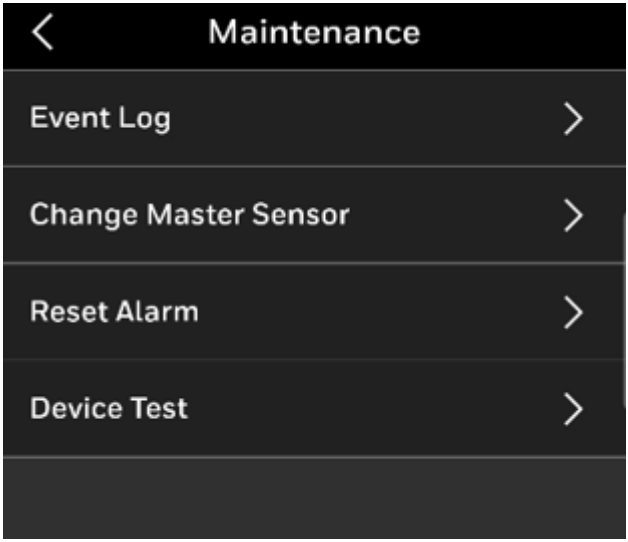


Click the "INHIBIT", and a dialog box will pop up to remind the user whether to enter or exit the inhibit mode. Click the confirmation button to complete the operation.

When the device enters the inhibit mode for a period (900 seconds by default, which can be configured in the parameter settings), it will automatically exit the inhibit mode.

When the device is in inhibit mode, the yellow light on the detector host will stay on until it exits inhibit mode.

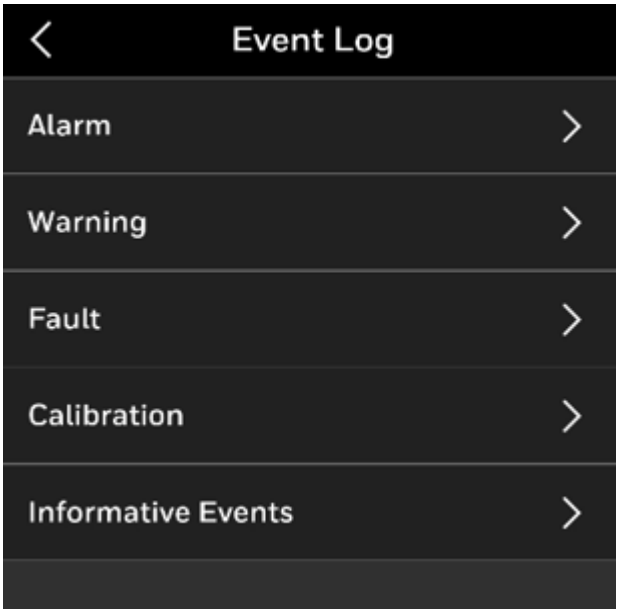
2.3.2 Maintenance



Maintenance including：

- Event log
- Guidance on replacing sensor module of master detector
- Reset alarm latch
- Equipment testing

2.3.2.1 Event Log

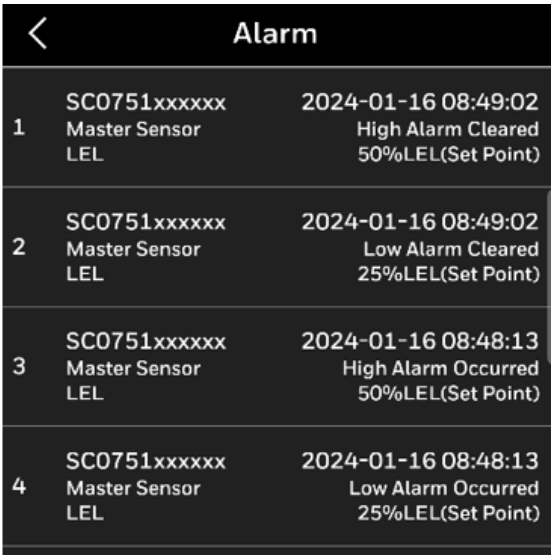


Event Log including：

- Alarm
- Warning
- Fault
- Calibration
- Informative Events

1) Alarm

The alarm log records the occurrence and removal of the detector's "High Alarm/Low Alarm/Over Alarm/STEL Alarm/TWA Alarm/Low Alarm Latch/High Alarm Latch", sorted in reverse chronological order.

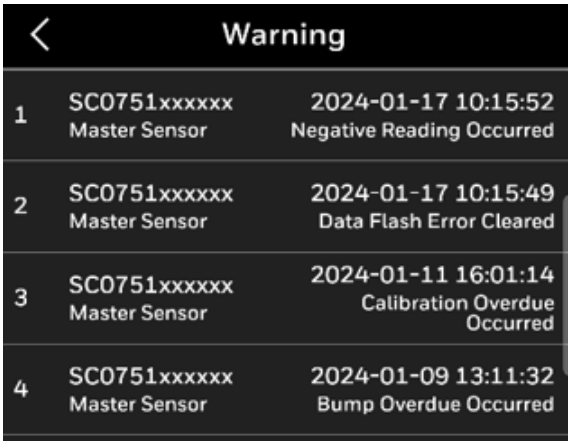


Description of page elements (from top to bottom, from left to right):

- Serial number
- Sensor serial number
- The location where the event occurred, such as master sensor, slave sensor, etc.
- Gas type, such as LEL or CO
- Time of incident
- Event type, such as low report generation, high report clearance, etc.
- Alarm setting thresholds.

2) Warning

The warning log records the occurrence and removal of various warning events of the detector, sorted in reverse chronological order.

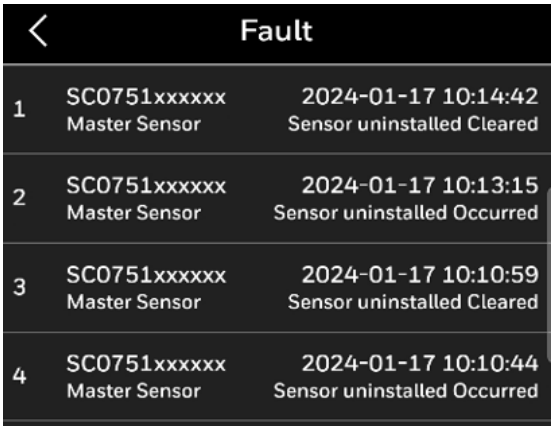


Description of page elements (from top to bottom, left to right):

- Serial number
- Sensor serial number
- The location where the event occurred, such as system, master sensor, slave sensor, etc.
- Time of incident
- Event types, such as generation of negative readings, calibration timeout, etc.

3) Fault

The fault log records the occurrence and removal of various fault events of the detector, sorted in reverse chronological order.

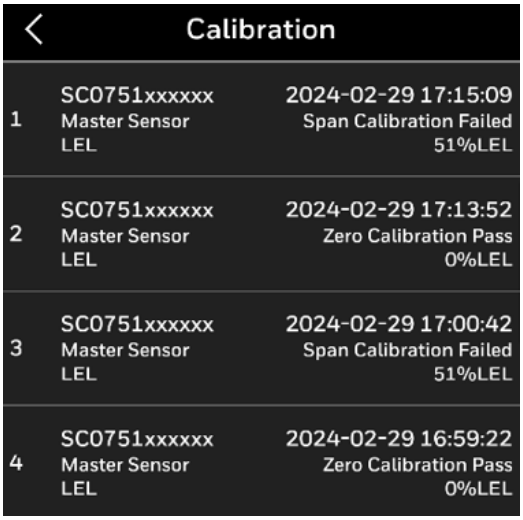


Description of page elements (from top to bottom, left to right):

- Serial number
- Sensor serial number
- The location where the event occurred, such as detector, master sensor, slave sensor, etc.
- Time of incident
- Event type, such as sensor unplugged, clock error, etc.

4) Calibration

The calibration log records zero calibration and span calibration, sorted in reverse chronological order.

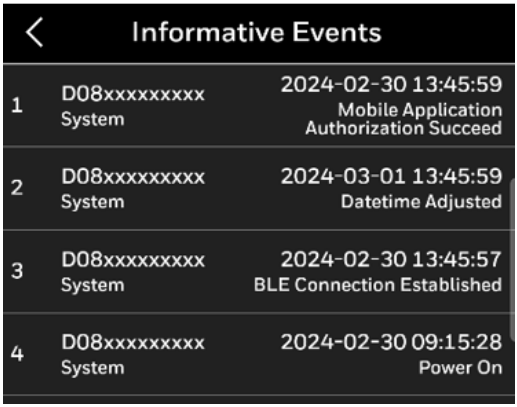


Description of page elements (from top to bottom, left to right):

- Serial number
- Sensor serial number
- The location where the event occurred, such as master sensor, slave sensor, etc.
- Gas type, such as LEL or CO
- Time of incident
- Event type, such as zero calibration passed, span calibration failed, etc.
- Gas concentration value for calibration setting

5) Informative Events

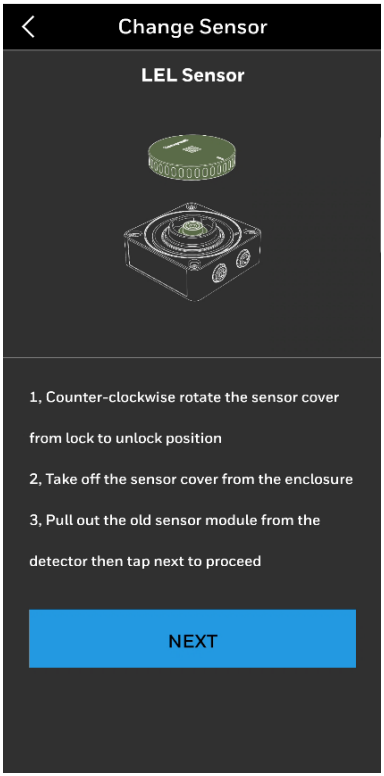
The informative events record various operating events of the detector, sorted in reverse chronological order.

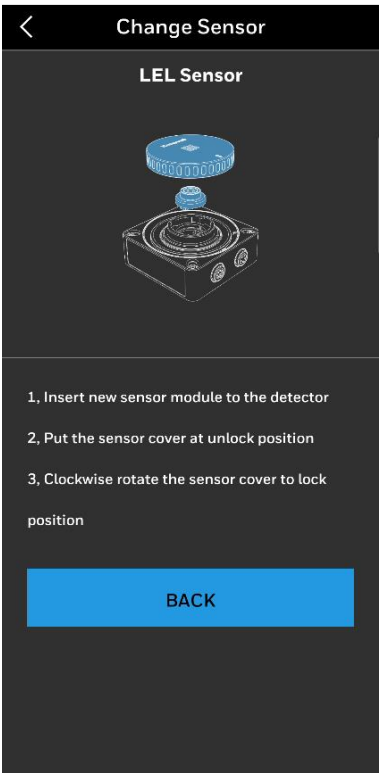


Description of page elements (from top to bottom, left to right):

- Serial number
- Sensor serial number
- The location where the event occurred, such as detector, master sensor, slave sensor, etc.
- Time of incident
- Event types, such as power on, time adjustment, mobile application connection, etc.

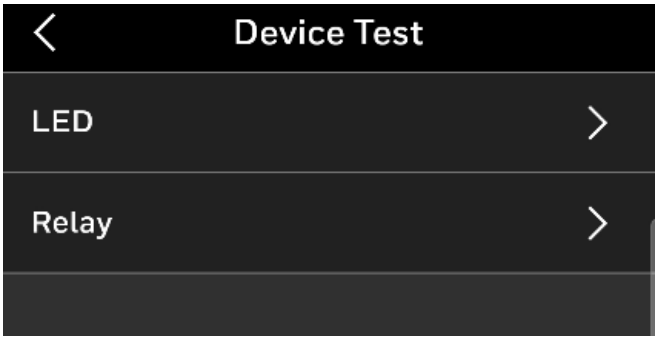
2.3.2.2 Replace Master Detector's Sensor Module





Please replace the sensor module of master detector according to the guidance above.

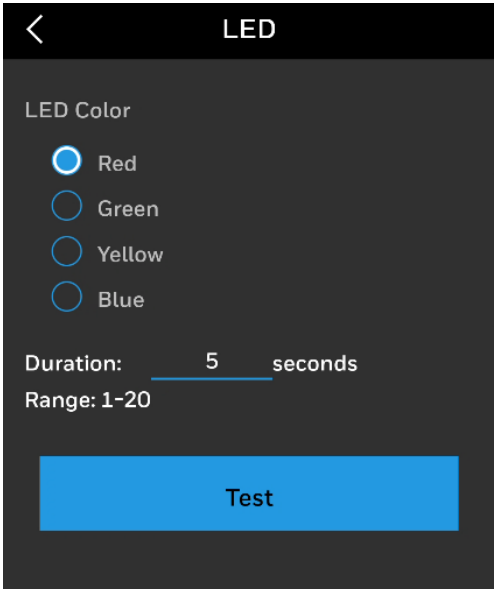
2.3.2.3 Device Test



Device test including：

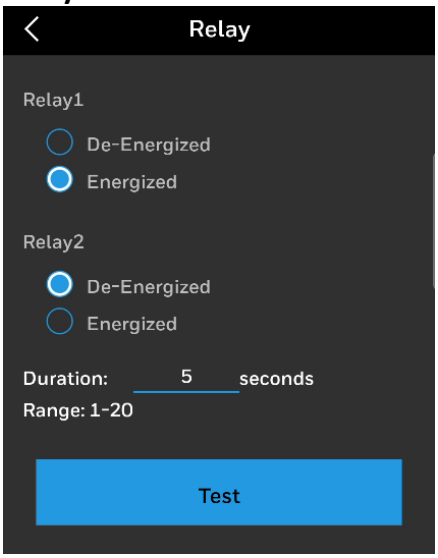
- LED
- Relay

LED



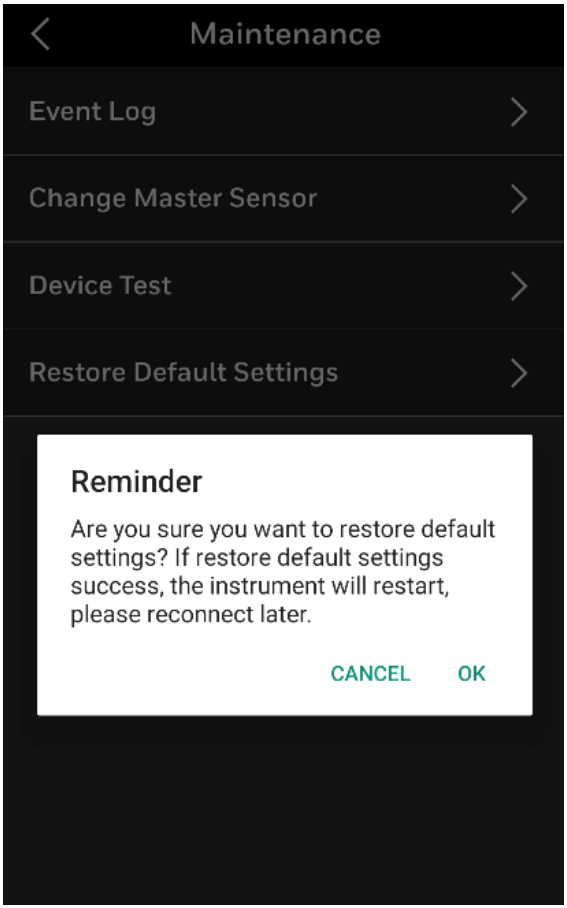
Select the corresponding color and duration, click the "Test" button, and the indicator light on the master detector will stay on for the specified time according to the set color.

Relay



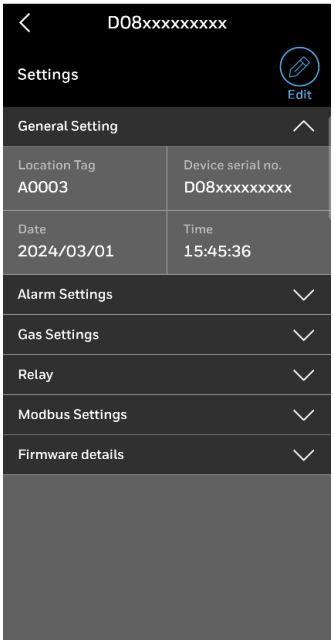
Select the corresponding relay action mode and holding duration and click the "Test" button. The corresponding relay on the master detector will execute the specified time according to the set action mode. At the same time, the detector's indicator light will always be on yellow. When the execution is completed, restore the action state of the relay and the color of the indicator light.

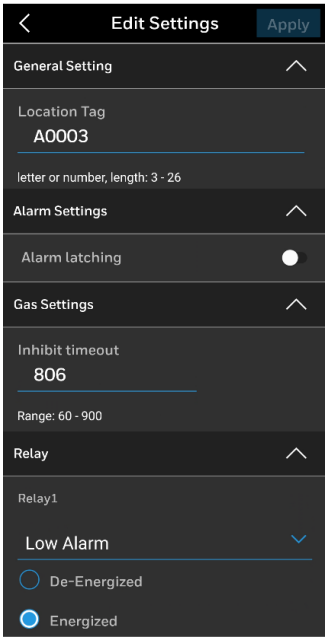
2.3.2.4 Restore Default Settings



Click the "Restore Default Settings" menu in the maintenance list, the settings in the system will be reset, and after a successful reset, the detector will restart. Please reconnect the detector later.

2.3.3 Settings





The system settings have two modes: view and edit.
By default, you enter the view mode, and you can only view the setting values of various system parameters.

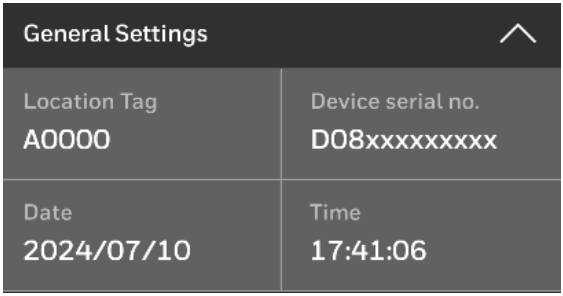
Click the "Edit" button in the upper right corner of the view mode to switch to edit mode.
In edit mode, users can modify parameter settings according to their own needs. After modifying the parameters, click the "Apply" button in the upper right corner to save the modified content and set it to the detector.

If the modified parameters exceed the specified range, the APP will pop up a dialog box to prompt an error message.

System settings including:
• General Settings
• Alarm Settings
• Inhibit Settings
• Relay Settings
• Modbus Settings
• Firmware Details

2.3.3.1 General Settings

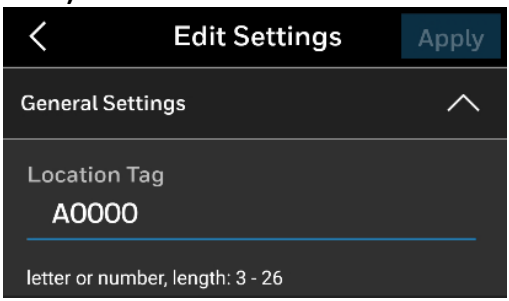
1) View Mode



Page elements including：

- Location Tag: Define the location information of master detector
- Device Serial No.: SN of master detector
- Date: Date of master detector
- Time: Time of master detector

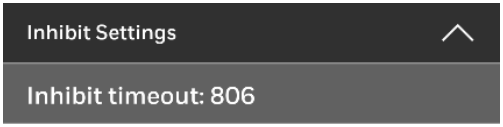
2) Edit Mode



Edit the detector's location information in the input box. You can enter 3-26 letters or numbers.
After the location tag is successfully modified, the APP will disconnect from the detector, and you need to reconnect to the detector on the Bluetooth scanning page.

2.3.3.2 Inhibit Settings

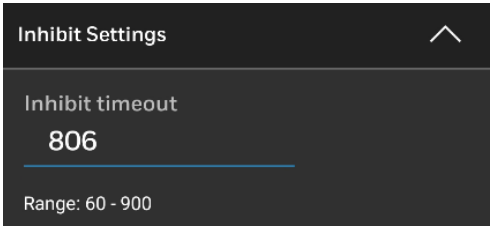
1) View Mode



Page element including：

- Inhibit timeout: the time (unit: second) After the system enters the inhibit mode and automatically exits the inhibit mode.

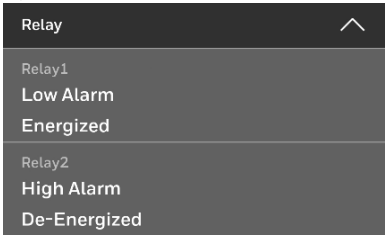
2) Edit Mode



Enter a number between 60 and 900 in the input box to set the inhibit timeout.

2.3.3.3 Relay Settings

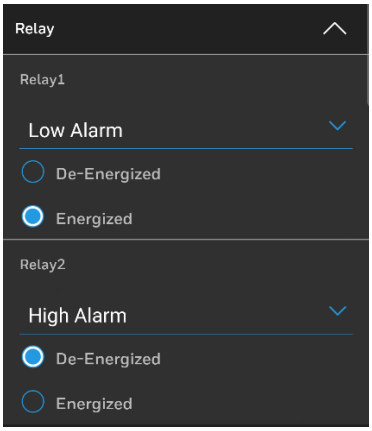
1) View Mode



Page elements including：

- Relay name, such as Relay1, Relay2
- The alarm type corresponding to the relay, such as Low Alarm, High Alarm, Fault
- Relay action modes, such as Energized, De-Energized

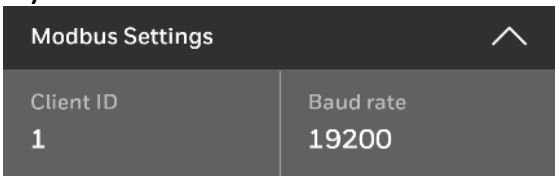
2) Edit Mode



Select the alarm type of the relay through the drop-down box and select the corresponding action mode to set the relay.

2.3.3.4 Modbus Settings

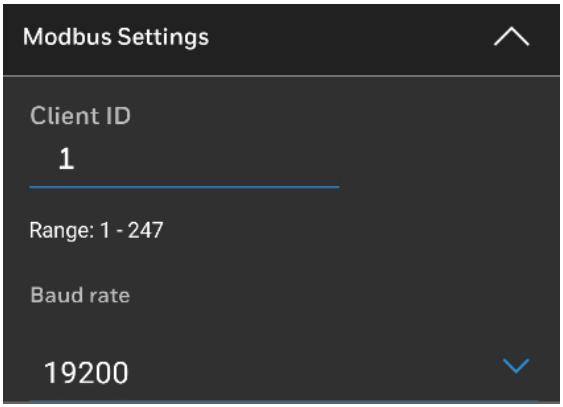
1) View Mode



Page elements including：

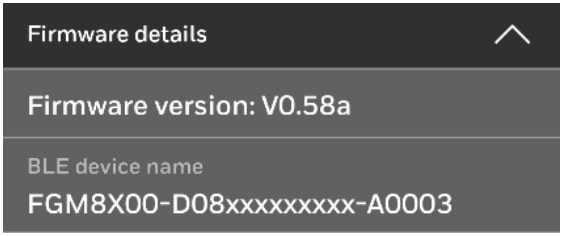
- Client ID: Modbus address of slave detectors (to connect to third-party controllers)
- Baud rate: Modbus communication speed

2) Edit Mode



In the input box below Client ID, enter the ID value that needs to be set. The supported range is 1-247.
Modification of the baud rate supports drop-down selection, the value range is: 9600, 19200, 38400

2.3.3.5 Firmware details



Page elements including:

- Firmware version: The firmware version of master detector
- Bluetooth device name: The name of the detector scanned by Bluetooth

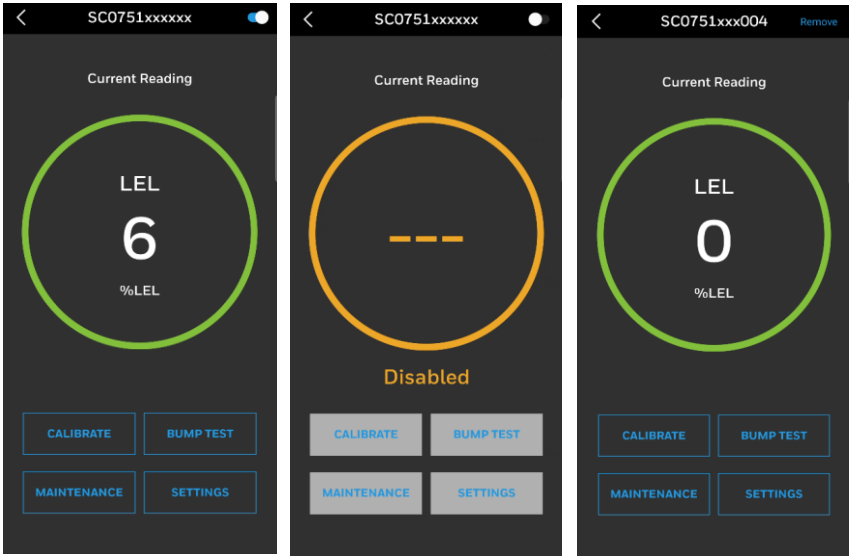
Firmware details can only be viewed and cannot be edited.

2.4 Sensor Management

Click the corresponding sensor on the main page to enter the sensor management page.

2.4.1 Real Time Reading

When the mobile smart device is connected to the RAEGuard ESGD detector via Bluetooth, the detector's real-time detection concentration value, unit, gas name, status etc. are displayed on the scren of mobile smart device.



Page element including (from top to bottom, from left to right):

- “SC0751xxxxxx”: Serial Number of sensor
- / : Enable or disable the switch of this sensor. Only the master sensor will display this switch. When the master sensor is disabled, the real-time reading will be displayed as "---" and all function buttons will be disabled.

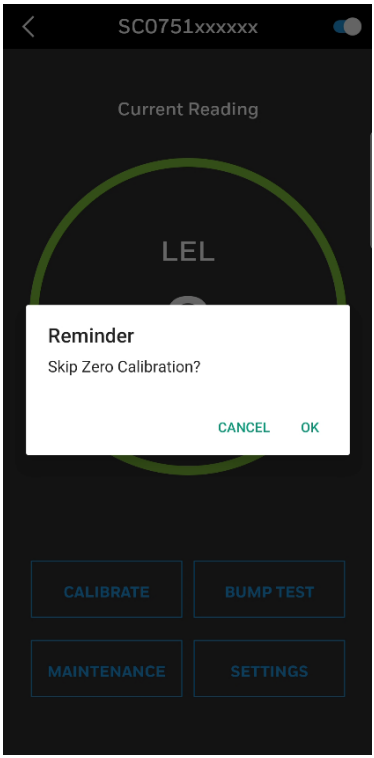
- Remove: The delete button of the slave detector. Only the slave detector's sensor will display this button. Click this button to delete the slave detector from the system.
- "LEL": Type of gas monitored by the sensor.
- "0"/"---": The real-time reading of the sensor will change in real time. Together with the unit, it indicates the current gas reading monitored by the sensor. "---" indicates that an exception occurred and the correct data could not be read.
- "%LEL": Unit of sensor reading.
- Color circle: Current status of the sensor.
  - Green: working normally
  - Yellow: Fault/warning/inhibit/sensor disabled/communication error
  - Red: Alarm

- "Disabled" line: If the sensor status is normal, this line is empty, otherwise the abnormal status of the sensor will be displayed in red.
- "Calibrate" button: Click to enter the calibration process.
- "Bump test" button: Click to enter the impact test process.
- "Maintenance" button: Click to enter the maintenance menu.
- "Settings" button: Click to enter the sensor parameter configuration page

2.4.2 Calibration

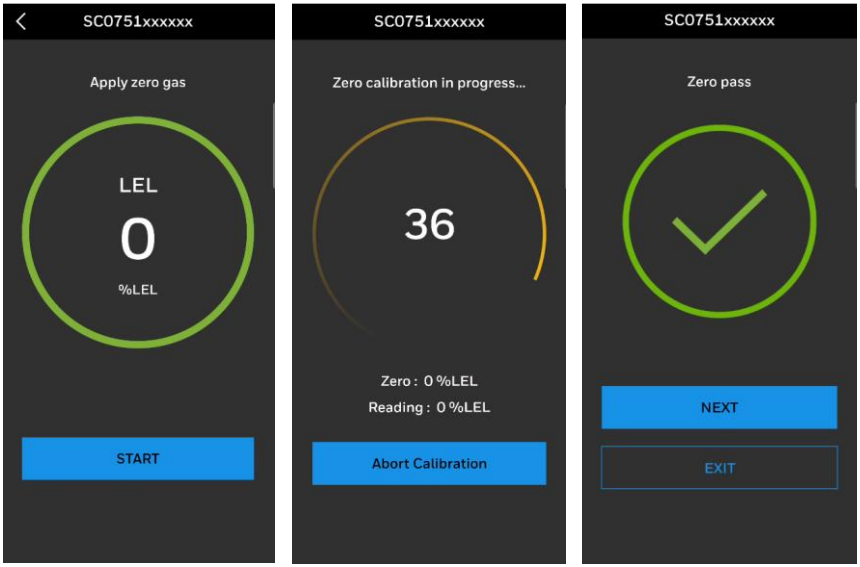
In order to avoid an alarm after calibration, it is recommended to enter the Inhibit mode in the master detector system management page before entering

the calibration, and then exit the Inhibit mode after the calibration is completed and the reading returns to zero.



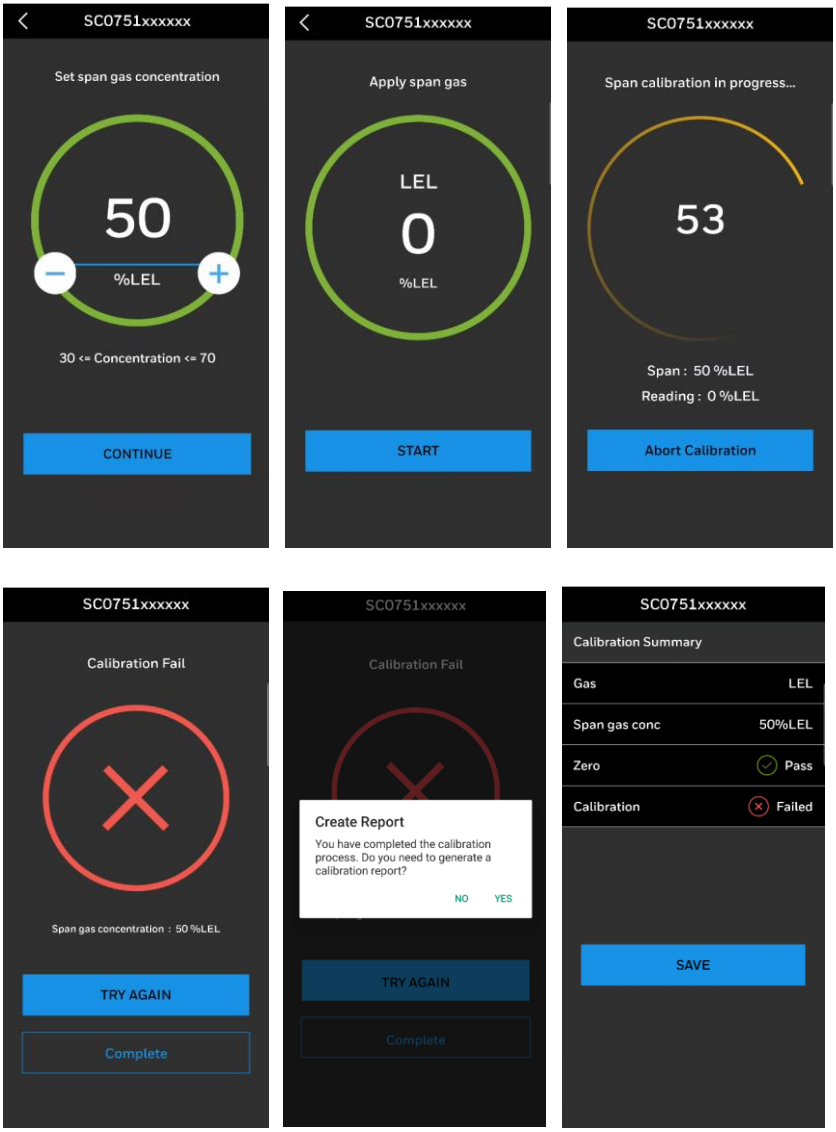
The process of calibrating the detector is as follows:

1. Click the "CALIBRATE" button and select whether to "Skip Zero Calibration". Click "OK" to skip zero calibration and go directly to span calibration. Click "Cancel" to go to zero calibration.
2. Zero calibration:



1) Click "Start" to perform zero calibration, and the detector enters "Inhibit" mode.
2) During the zero calibration process, there will be a countdown waiting for the zero calibration to be completed. During this period, you can also click the "Abort Calibration" button to return to the start page of the zero calibration.
3) After the zero calibration is completed, if the calibration is successful, you can click "Next" to continue span calibration, or you can click "Exit" to return to the real-time reading interface; if the calibration fails, you can click "Try Again" button to re-calibrate the zero point, or click "Skip" to continue span calibration.

3. Span calibration：



1) After zero calibration, connect the standard gas cylinder; click "+" or "-" on the screen to set the concentration value of the

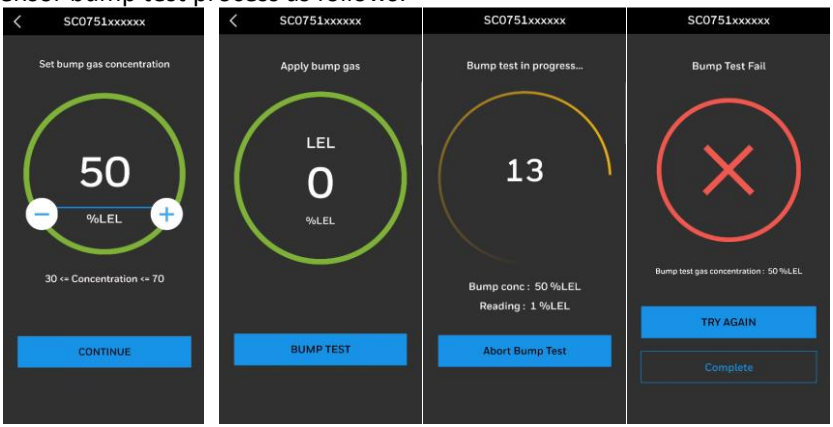
corresponding standard gas, and then click "Continue" to perform gas calibration.

2) Click "Start" on the current page to start span calibration, and the detector enters "Inhibit" mode.
3) During the span calibration process, there will be a countdown waiting for the span calibration to be completed. During this period, you can also click the "Exit Calibration" button to return to the start page of the span calibration.
4) After the span calibration is completed, if the calibration is successful, you can click "Complete" to proceed to the next step; if the calibration fails, you can click "Try Again" to re-calibrate the span point, or you can click "Complete" to proceed to the next step.
5) After clicking the "Complete" button, a dialog box will pop up asking whether you need to create a report. Select "YES" to enter the calibration results overview interface. Select "NO" to return to the real-time reading page.
6) View an overview of the calibration results and click "Save" to generate a calibration report and return to the real-time reading interface。

2.4.3 Bump test

In order to avoid an alarm after bump test, it is recommended to enter the Inhibit mode in the master detector system management page before entering bump test, and then exit the Inhibit mode after bump test is completed and the reading returns to zero.

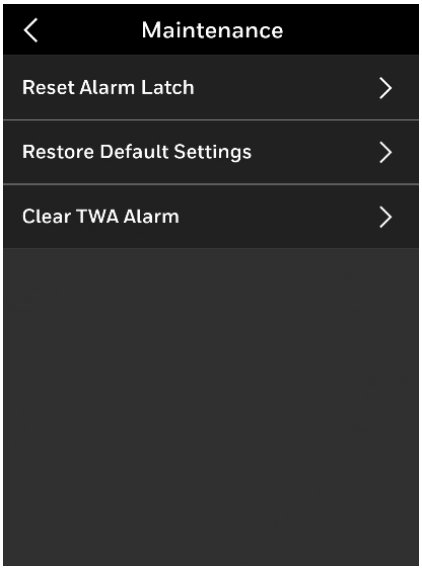
Sensor bump test process as follows:



1. Connect the gas cylinder, click "+" or "-" on the screen to set the concentration value of the corresponding gas, and then click the "Continue" button to perform the gas bump test.
2. Click the "Bump Test" button on the current page to start the bump test, and the detector enters the "Inhibit" mode.
3. During the bump test, there will be a countdown waiting for the test to be completed. During this period, you can also click the "Abort Bump Test" button to return to the start page of the bump test.
4. After the bump test is completed, if the test is successful, you can click "Complete" to enter the real-time reading page; if the bump

test fails, you can click "Try Again" to re-run the bump test, or you can click "Complete" to enter the real-time reading page.

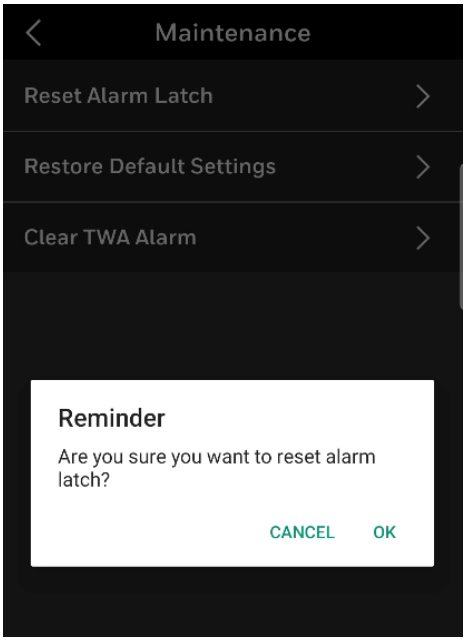
2.4.4 Maintenance



Sensor maintenance can include up to four parts:

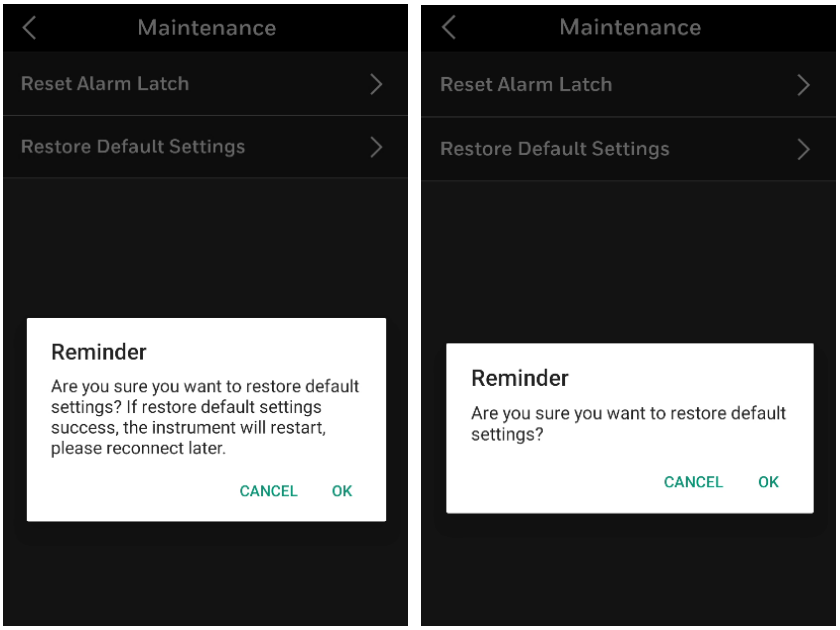
- Reset alarm latch
- Restore factory settings
- Clear TWA alarm (dynamic display, whether this button exists depends on the sensor type)
- Clear STEL alarm (dynamic display, whether this button exists depends on the sensor type)

2.4.4.1 Rest Alarm Latch



Click the "Reset Alarm" in the maintenance list, and the alarm latch status will be reset.

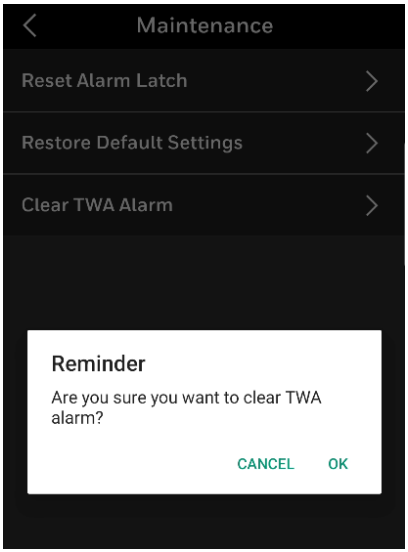
2.4.4.2 Restore Default Settings



Click the "Restore Default Settings" menu in the maintenance list:
If the current sensor is of master detector, a reminder box will pop up (left in the above picture) to ask the user to confirm whether to restore the default settings. Click the "OK" button, the settings of the master detector's sensor will be reset, and after the reset is successful, the detector will restart. Please reconnect the detector later.

If the current sensor is of slave detector, a reminder box will pop up (right in the above picture) to ask the user to confirm whether to restore the default settings. Click the "OK" button, the settings of the corresponding slave detector's sensor will be reset, and after the reset is successful, it will return to the "Current Reading" page.

2.4.4.3 Clear TWA Alarm



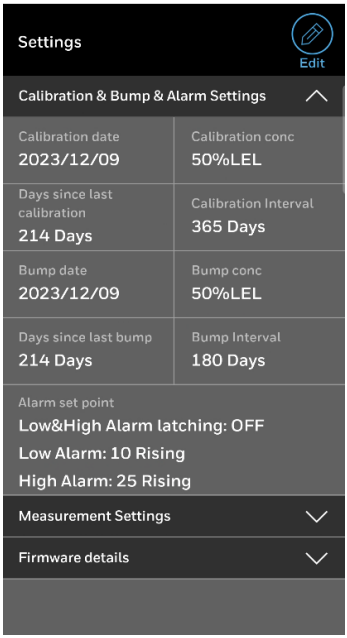
This menu is displayed dynamically, and the presence or absence of this menu depends on the sensor type.

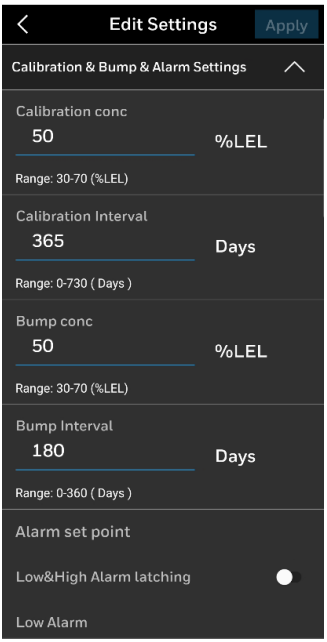
Click the "Clear TWA Alarm" menu, and then click the "OK" button in the reminder box, and the TWA alarm of the corresponding sensor will be cleared.

2.4.4.4 Clear STEL Alarm

Refer to 2.4.4.3

2.4.5 Settings





Sensor settings are available in viewing and editing modes.

- By default, you enter the view mode, and you can only view the setting values of various system parameters.
- Click the "Edit" button in the upper right corner of the view mode to switch to edit mode.
- In edit mode, users can modify parameter settings according to their own needs. After modifying the parameters, click "Apply" in the upper right corner to save the modified content. If the modified parameters exceed the specified range, the APP will pop up a dialog box to prompt an error message.

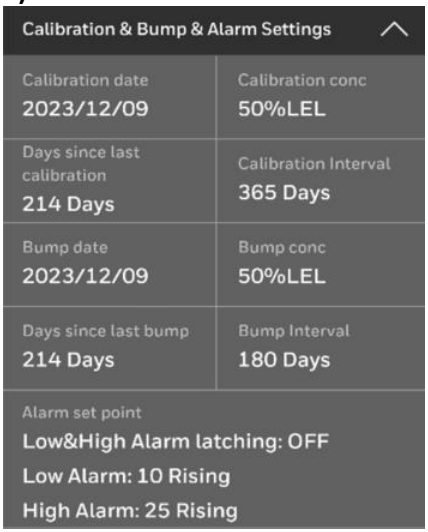
Sensor setup consists of three parts:

- Calibration & Bump & Alarm Settings
- Measurement Settings

- Firmware Details

2.4.5.1 Calibration & Bump & Alarm Settings

1) View Mode

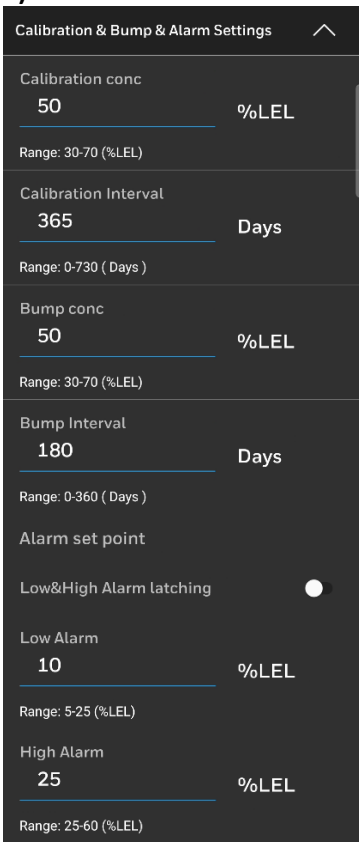


Page elements including:

- Calibration date: The date of the sensor's last successful span calibration. Editing is not supported.
- Calibration conc: The gas concentration set during sensor span calibration.
- Days since last calibration: The number of days since the sensor last successfully completed standard gas calibration. Editing is not supported.
- Calibration Interval: The interval time between the sensor's standard gas calibration. If the standard gas calibration is not successfully completed beyond this time, the sensor will issue a warning.
- Bump date: The date when the sensor last successfully completed the bump test. Editing is not supported.
- Bump conc: The gas concentration set during the sensor bump test.
- Days since last bump: The days since the last successful bump test of the sensor. Editing is not supported.

- Bump Interval: sensor bump test interval time
- Alarm set point: Low & High Alarm latching state (ON / OFF), Alarm threshold values for low and high alarms and alarm triggering.

2) Edit Mode

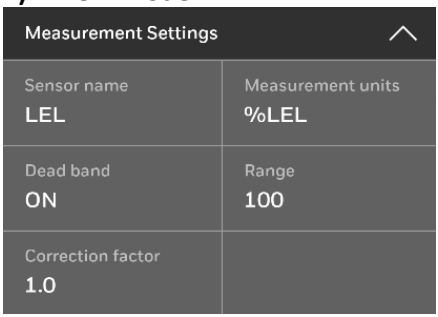


a) In the input box below "Calibration conc", enter a value in the specified range to complete the setting of Calibration conc.
b) In the input box below "Calibration Interval", enter a value within the specified range to complete the setting of Calibration Interval.

c) In the input box below "Bump conc", enter a value in the specified range to complete the setting of Bump conc.
d) In the input box below "Bump Interval", enter a value within the specified range to complete the setting of Bump Interval.
e) Click the switch behind “Low & High Alarm Latching” to set whether to enable the low and high alarm latching.
f) In the input box below "Low Alarm/High Alarm", enter a value within the specified range to complete the setting of the Low/High Alarm critical value, and select the appropriate trigger in the corresponding drop-down box. Direction can complete the setting of the alarm triggering direction.

2.4.5.2 Measurement Settings

1) View Mode

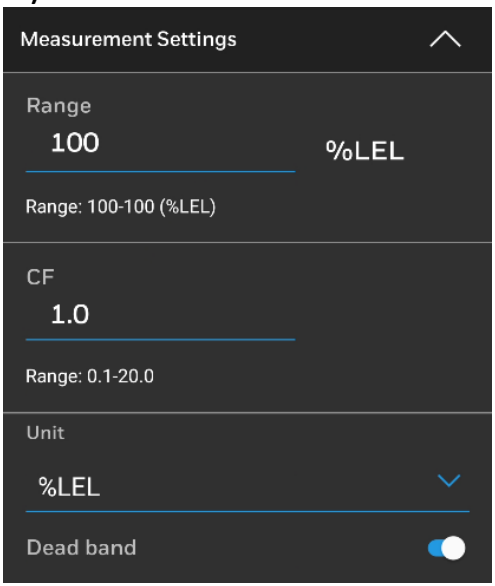


Page elements including:

- Sensor type: The gas type detected by the sensor. Editing is not supported.
- Correction factor: Cross-sensitivity coefficient, only valid for catalytic combustion combustible gas, does not support editing.
- Measurement units: The units in which the sensor detects gas concentration.
- Dead band: An algorithm supported by the detector. Customers are not recommended to make any changes.

- Correction factor: only valid for combustible gas detected by catalytic combustion sensor, not support editing.

2) Edit Mode



a. Enter a value within the recommended range to set the upper limit of the sensor.
b. Enter a value within the recommended range to set the sensor's correction factor.
c. Click the drop-down box to select the appropriate unit to set the sensor's measurement unit.
d. Click the Switch button on the right side of Dead band to set Dead band on or off.

2.4.5.3 Firmware Details

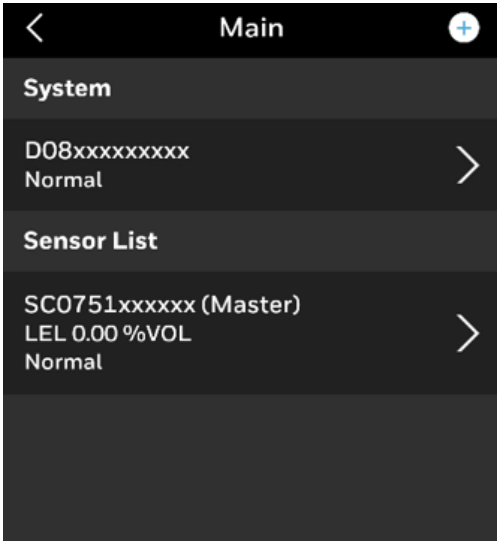
Page elements including:

- Firmware version: Corresponds to the firmware version information of master detector or slave detector.

Firmware details can only be viewed and cannot be edited.

2.5 Slave Detector Management

2.5.1 Add Slave Detector



Before adding a slave detector, make sure the wiring between the slave and the master is correct.

Click the button in the upper right corner of the main page, scan the QR code on the slave detector, and click the confirmation button on the pop-up confirmation box to add the slave detector.

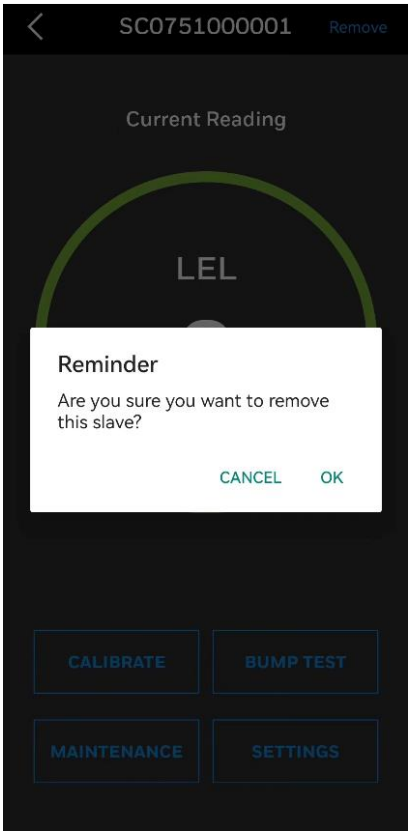
If the slave detector is added successfully, the main page will automatically refresh and the newly added slave detector will be displayed in the sensor list.

If adding a slave detector fails, an error message box will pop up. Please do the following checks:

- Whether the serial number of the slave detector's QR code is the real serial number of the slave detector.
- Whether the wiring between the slave detector and the master detector is correct.
- Whether the slave detector is powered correctly.
- Whether the maximum number of slave detectors is exceeded. The maximum number of connections supported by the master is 4.

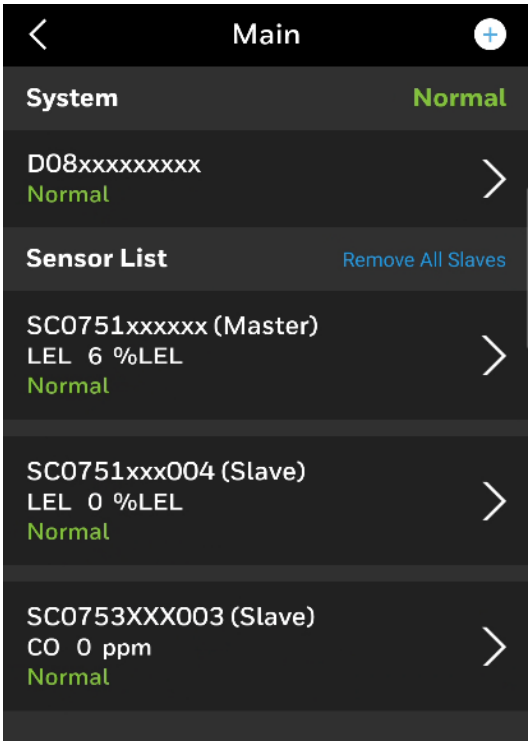
2.5.2 Delete Slave Detector

a) Delete one single slave detector



On the sensor real-time reading page, click the "Remove" button in the upper right corner, and click the confirmation button in the pop-up confirmation box. This slave detector will be deleted from the system and returned to the detector main page.

b) Delete all the slave detectors

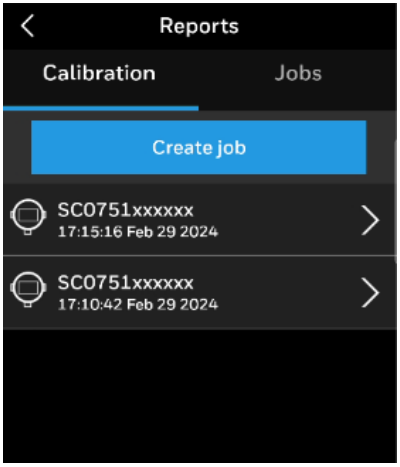


On the detector main page, if slave detectors have been added, there will be a button "Remove All Slaves". Click this button and click the confirmation button in the pop-up confirmation box to delete all slave detectors.

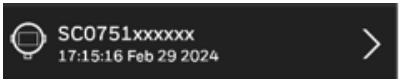
3 Reports

Click the "Reports" on the APP homepage to enter the report management page.

3.1 Calibration Reports



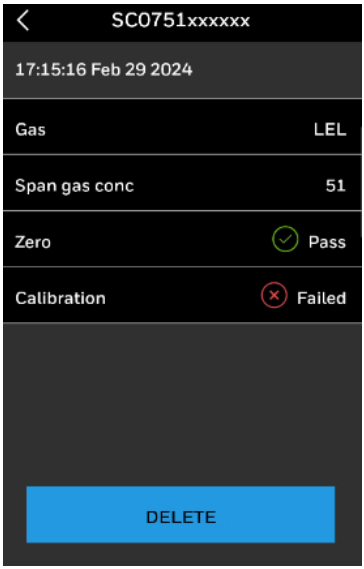
Select the "Calibration" to view a list of records of sensors calibrated through this mobile smart device。



Page elements including:

- “SC0751xxxxxx”: Serial number of the sensor
- “17:15:16 Feb 29 2024”: Calibration time

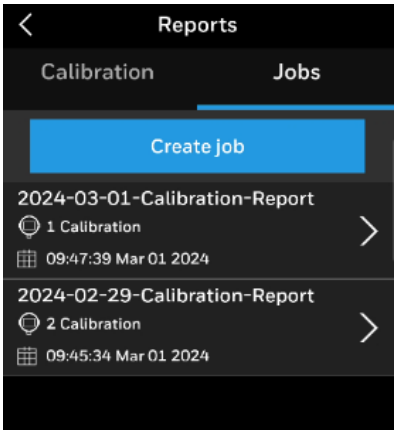
Click this record to view calibration details.



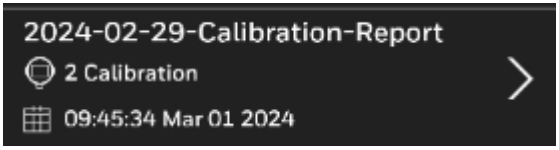
Page elements including:

- "SC0751xxxxxx": Sensor serial number
- "17:15:16 Feb 29 2024": Calibration time
- "Gas LEL": Type of gas detected by the sensor
- "Span gas conc 51": Setting value of span calibration gas concentration
- "Zero Pass": Zero calibration success
- "Calibration Failed": Standard gas calibration failed
- "Delete" button: Delete this calibration record on the APP

3.2 Jobs



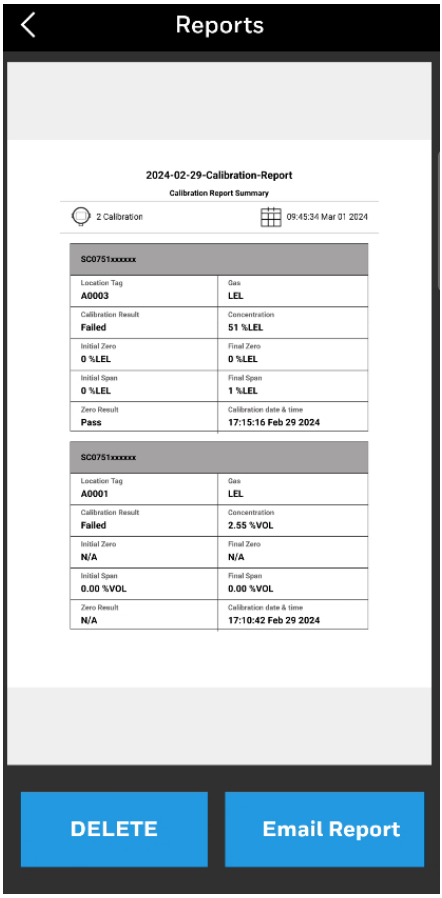
Select the “Jobs” to see a list of reports generated by this mobile smart device.



Page elements including:

- “2024-02-29-Calibration-Report”: Report name.
- “2 Calibration”: This report contains two calibration records.
- “09:34:34 Mar 01 2024”: The time/date when this report was created.

Click this record to view report details。



This page contains:

- Report overview
- Calibration details
- Delete report
- Send report

Calibration Details

SC0751xxxxxx	
Location Tag **A0003**	Gas **LEL**
Calibration Result **Failed**	Concentration **51 %LEL**
Initial Zero **0 %LEL**	Final Zero **0 %LEL**
Initial Span **0 %LEL**	Final Span **1 %LEL**
Zero Result **Pass**	Calibration date & time **17:15:16 Feb 29 2024**

Page elements including:

- “SC0751xxxxxx”: Serial number of the sensor
- “Location Tag A0003”: Location tag
- “Gas LEL”: Type of gas detected by the sensor
- “Calibration Result Failed”: The span calibration failed.
- “Concentration 51%LEL”: gas concentration value set by span calibration
- “Initial Zero 0 %LEL”: Reading before zero calibration
- “Final Zero 0 %LEL”: Reading after zero calibration
- “Initial Span 0 %LEL”: Reading before span calibration
- “Final Span 1 %LEL”: Reading after span calibration
- “Zero Result Pass”: The zero calibration passed.
- “Calibration date & time”: Calibration time/date

DELETE Report

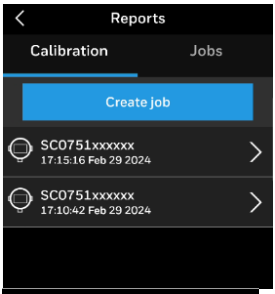
Delete this report。

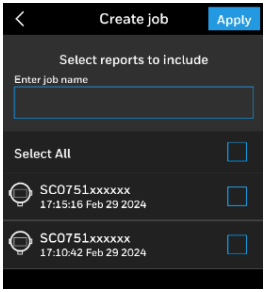
Email Report

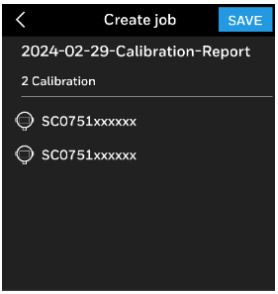
Select the appropriate email software on your mobile smart device and send this report to the designated email address。

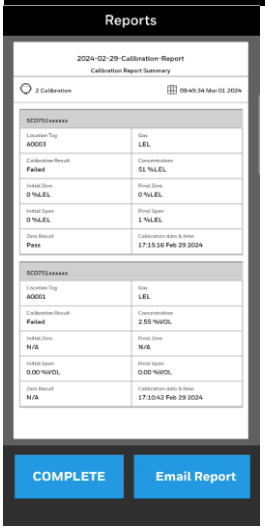
3.3 Create Jobs

Users can create and share work reports for completing corresponding detector calibration work.



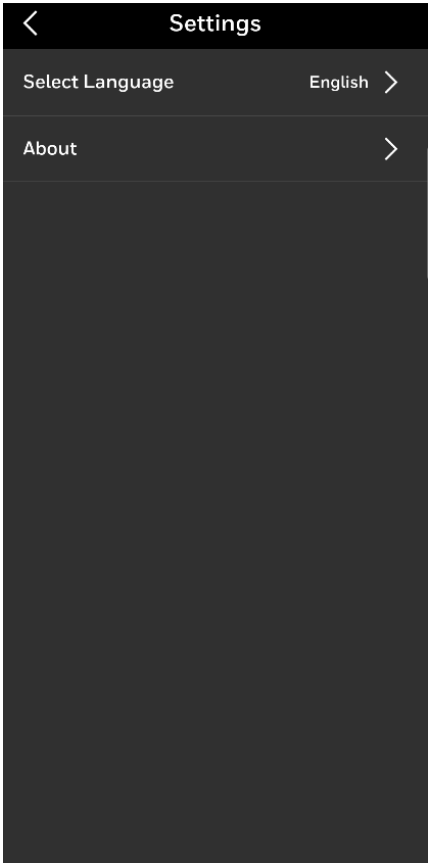






1. On the home page of the App, click "REPORTS" > "Create job".
2. Enter the name of this job, select the detector calibration records you want to include, and click the "Apply" button in the upper right corner of the screen.
3. Click "Save" in the upper right corner to complete the creation of the report.
4. Display an overview of the report, click "Complete" to return to the "Reports" homepage; click "Email Report" to send the report (PDF file) to the designated email address by selecting the email software installed on your mobile smart device.

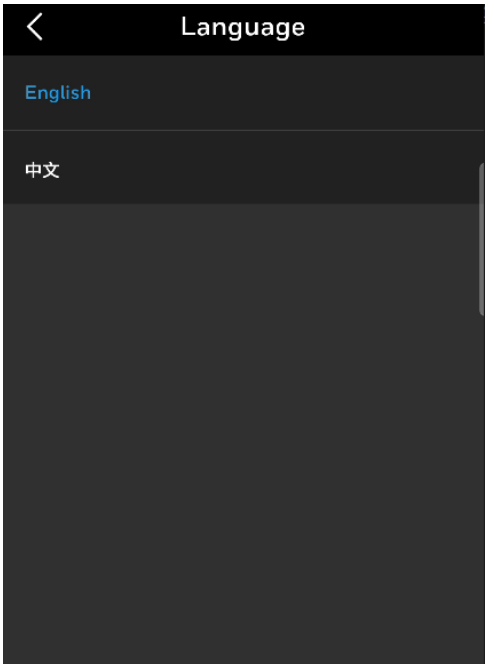
4 Settings



APP Setting including：

- Select Language
- About

4.1 Select Language



Click the "Select Language" menu to enter the language selection page, select the appropriate language, and the APP will switch to the set language for display. Currently supports Chinese and English。

4.2 About

Click the "About" to enter the APP details page. You can view the APP version number, compilation date and other information.

5 Cybersecurity Consideration

- Please refer to the user manual for instructions on how to operate the RAEGuard APP and RAEGuard ESGD detector.

- When users need to use mobile applications to operate the detector, please search for "RAEGuard" from the following application stores (use App Store/Google App Store for Android, use Apple Store for IOS), download and install it.

- When users use the RAEGuard mobile application to connect to the RAEGuard ESGD detector, ensure the security of the network environment using Bluetooth devices and ensure that the detector is disconnected from other Bluetooth devices.

- When using the RAEGuard APP to connect to the detector, please agree to the APP obtaining Bluetooth scanning and connection permissions.

Contact Information

For more contact information, please visit www.honeywell.com.cn.

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