VAKKA Instructions

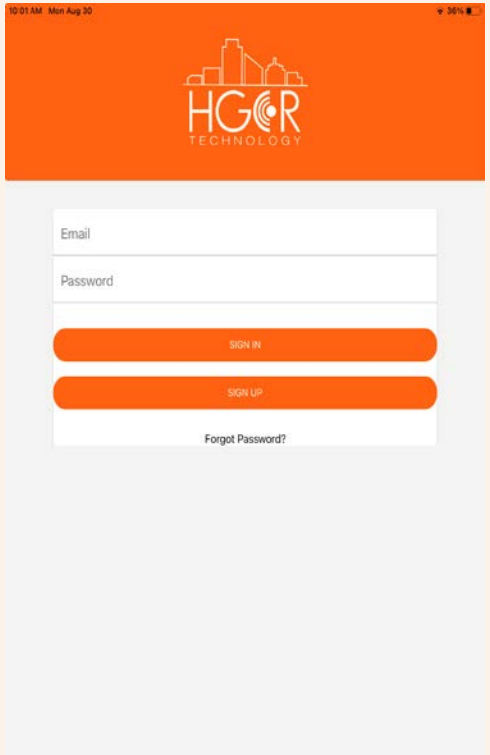
Wireless Temperature and Relative Humidity Sensors in Concrete

HGCR TECHNOLOGY

Project Setup

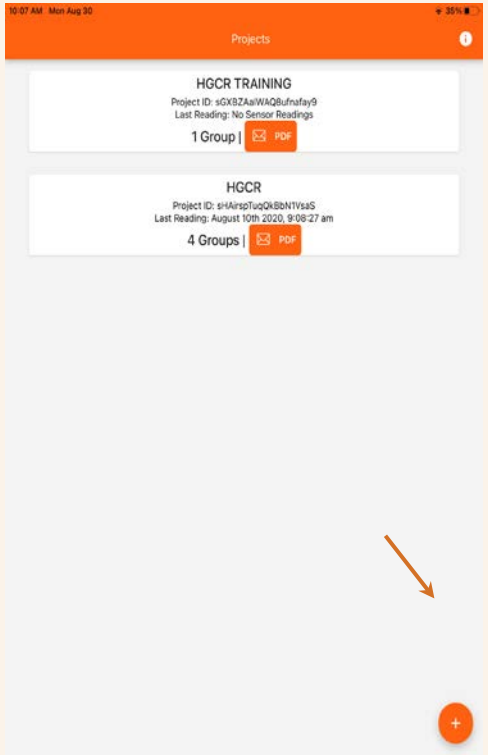
1

Login or Create an account with your email



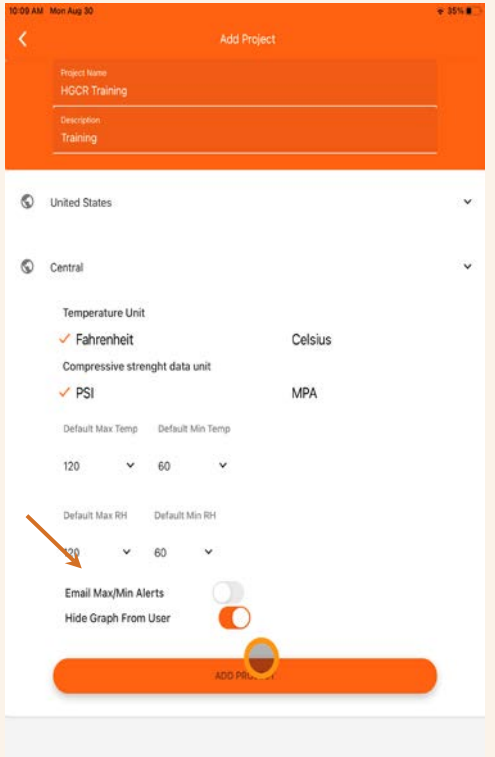
2

In the Projects menu select a project or click the "+" icon to create a new project.



3

Enter a project name, description, and settings. Click "Add Project" to continue and add contributors to your project.



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Project Setup

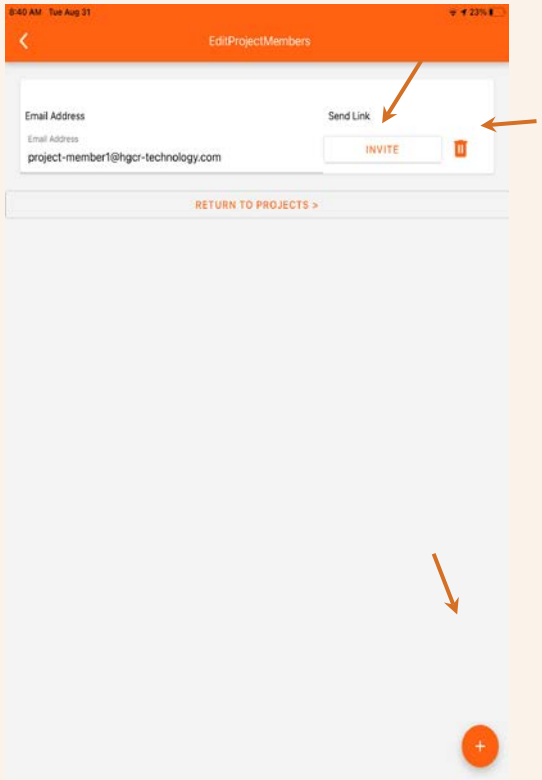
4

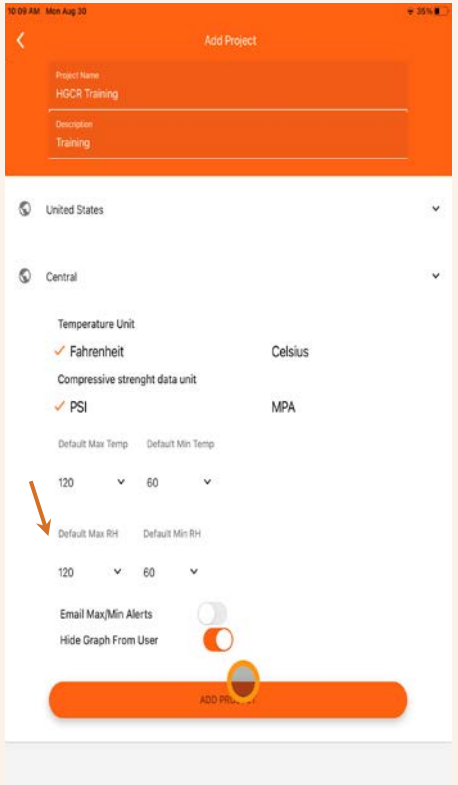
Click the “+” icon to add a member. Enter their email address then click “invite” to send an invitation link.

Click the trash can icon to remove a member.

When finished click the arrow at the top left of the screen to return to your project information.

Click “Save Changes” to save your project.





✓ *The Project Administration/Manager has the ability to make changes to the project. Project Members can only update or add information on a project.*

✓ *CAUTION: When deleting a project, all groups and sensors in the project will also be deleted.*

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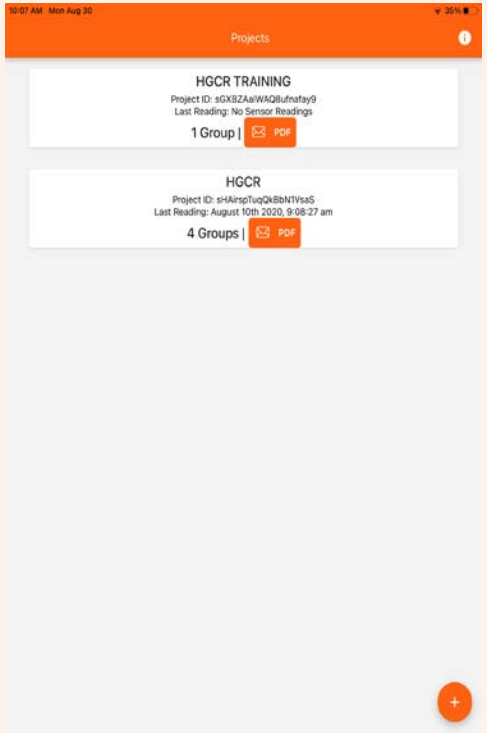
Concrete Mix Setup for Testing Laboratories

1

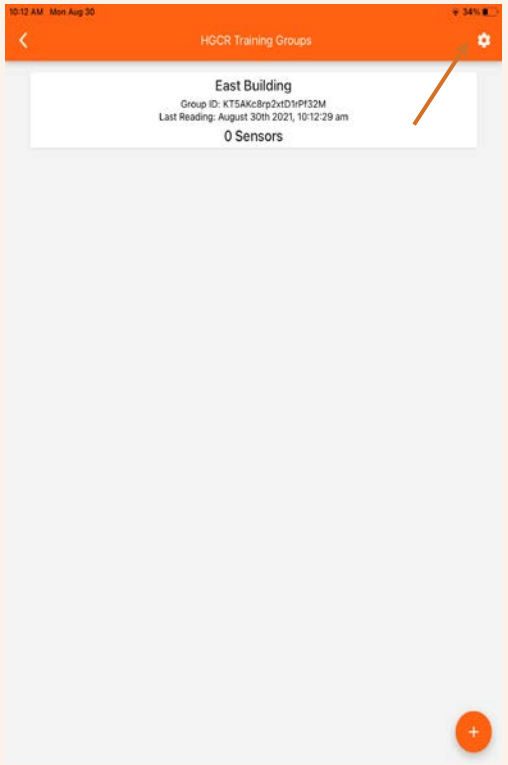
Login or Create an account with your email (see Project Setup)

Select your project from the main menu.



2

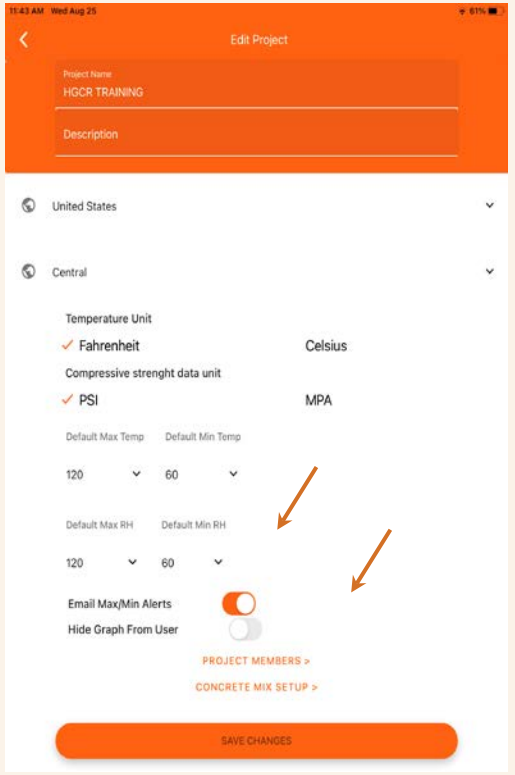
Select the gear icon in the top right corner of the screen to access your project settings.



3

Toggle “Hide Graph From User” button to chart Temperature and Humidity Data.

Select “Concrete Mix Setup” to navigate to your concrete mixes menu



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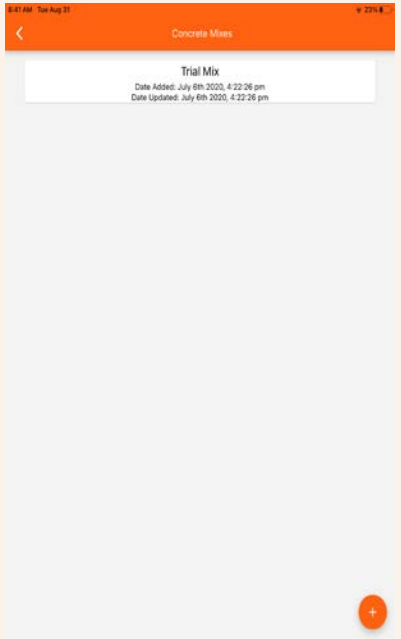
Concrete Mix Setup for Testing Laboratories

5

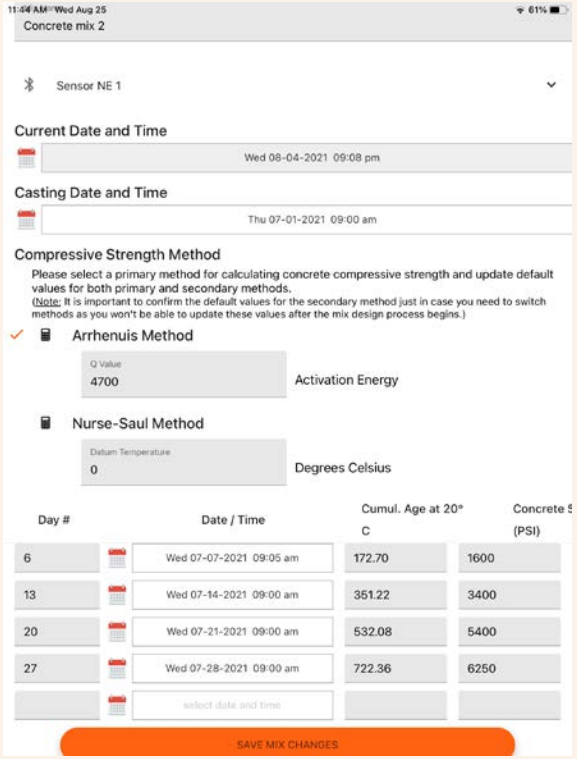
Select a concrete mix or click the "+" icon to enter a new concrete mix



6

Name your mix, select your sensor, input the date the lab cylinder was made, and add the age of the concrete and the compressive strength. Select the maturity function: Nurse Saul (Temperature-Time Factor) or Arrhenius (Equivalent Age). All sensors need to be updated to the current time before any field can be populated.

The default perimeters for the Datum Temperature and Q value are displayed. Change the perimeter associated to the maturity method. Start populating the time and compressive strength fields below.



✓ *All fields must be populated before the Maturity Index be applied to a concrete mix on site. Any change made to the mix design will require a recalculation of the Maturity Index.*

✓ *Once the Maturity Index is established, it can be selected as the mix design for the sensor on the project.*

The Strength Maturity Relationship will be automatically calculated and can then be used to estimate the strength of the concrete on site. When finished click "Add New Mix" to add your mix to the project.

NOTE: Once saved, no changes can be made to the mix design.

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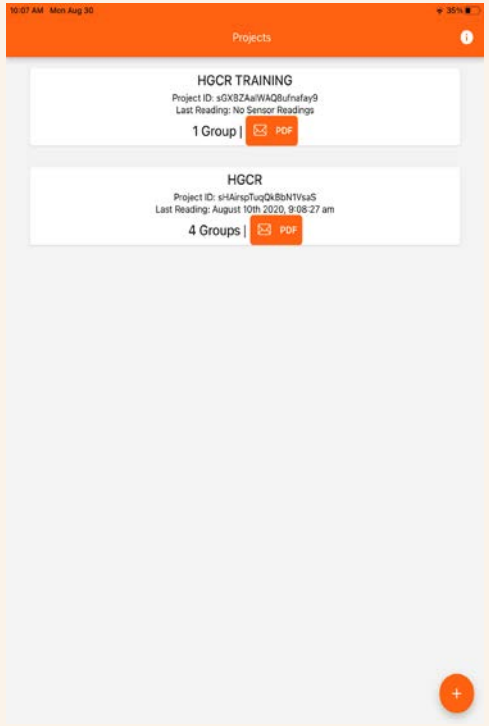
Adding Sensors to Project

1

Login or Create an account with your email (see Project Setup)

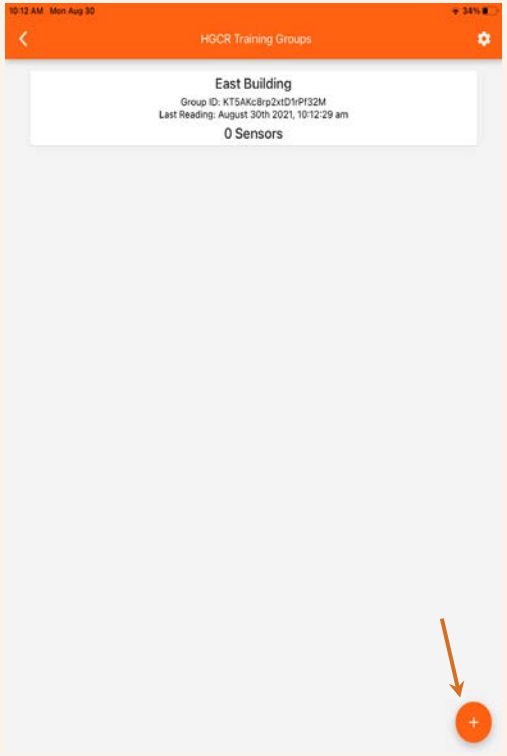
Select your project from the main menu.

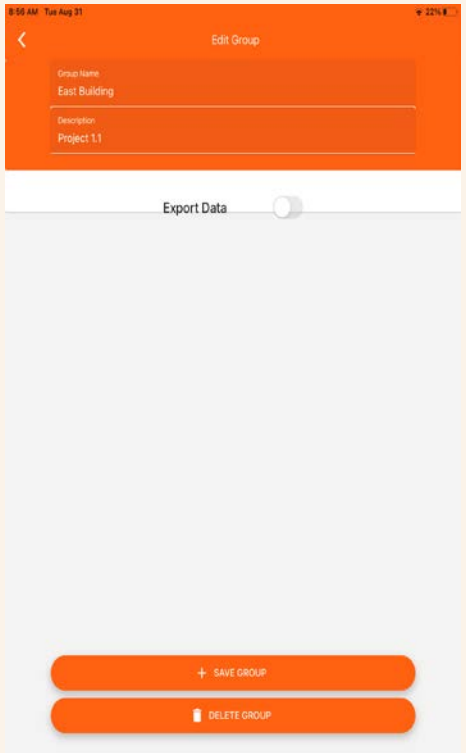


2

Select a group or click the "+" icon to create a new group.

Enter a name and description for your group and click "save group"





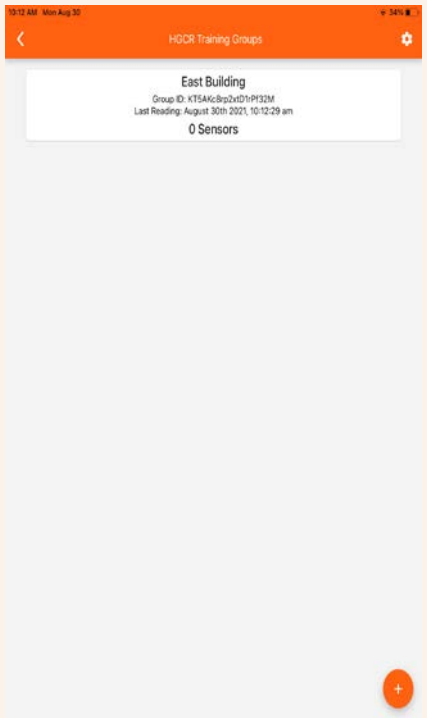
CAUTION: When deleting a group, all sensors in the project will be deleted.

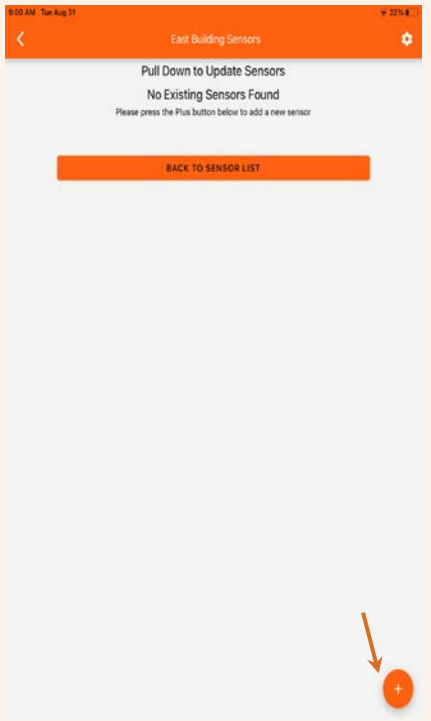
Adding Sensors to Project

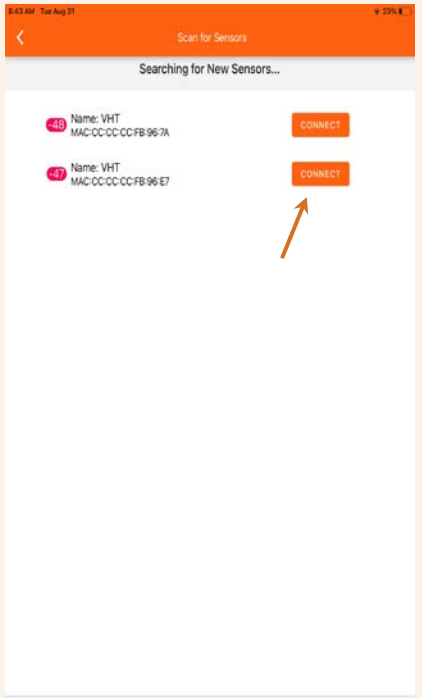
3

In the groups menu, select a group to see your sensor list.

Click the "+" icon to add a sensor to the group. When adding a new sensor, use the MAC address on the app to select the sensor you want to add and click "CONNECT"







✓ *List of sensors only include sensors that have not been previously connected to a project*

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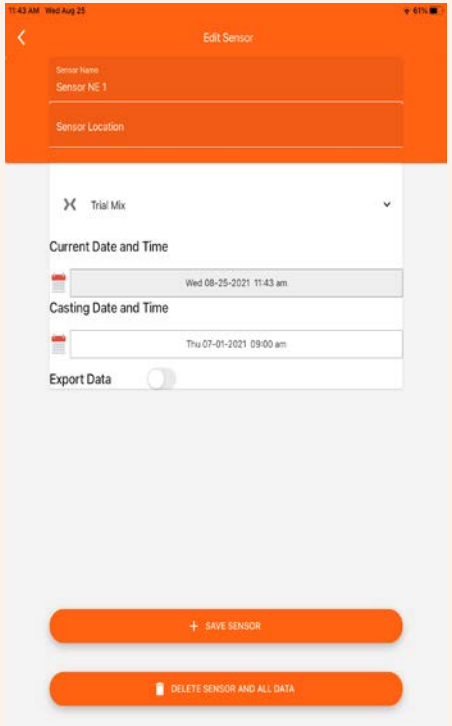
Adding Sensors to Project

5

Enter a sensor name, description, casting date and time then click “save sensor.”

Select a mix design associated to the location where the sensor will be installed. A “TRIAL MIX” has been provided.

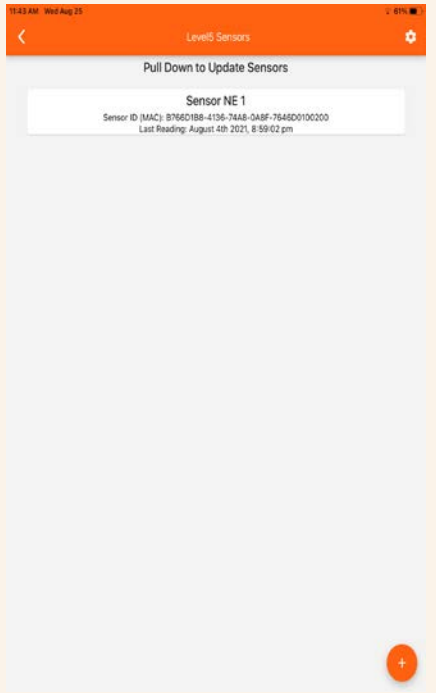


6

From your sensor list, select a sensor to access your data.

When within range of the sensor, click “Update Sensor” to synchronize your data.

Click “View Data” to export CSV data file.



- *CAUTION: When deleting a sensor, all data from the sensor in the project will be deleted on the app. The data on the sensor will not be deleted. You can reconnect to the sensor to retrieve the stored data. Wait five minutes before reconnecting to a deleted sensor, to ensure the delete process is complete.*
- *It is recommended that the interval between updates be no more than twice a day, allowing for changes in concrete properties to be identified.*

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Installing the Sensor

- For best transmission of the wireless signal, the main unit has to be installed at the top mat of reinforcing or no more than 50 mm (2 inch) from the surface. The 1 M or 3 M remote probes should be used to monitor the deeper environments.
- Avoid any physical obstructions between the sensor and mobile device while updating sensor.
- Best practice is to update sensors every 1 to 3 days.

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