



Bullhorn Tools Mobile

User Guide

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Introduction

The Bullhorn Tools Mobile app can be used to configure Bluetooth-enabled Bullhorn Remote Monitoring Units. The mobile application can configure inputs, set alarms, create transmission schedules, create or apply settings templates, and upgrade firmware. The app can also be used to send a test message from the connected unit to your Bullhorn Web account.

Bullhorn Tools Mobile is available on the Apple App Store or Google Play Store. This guide covers instructions for using both versions of the Bullhorn Tools Mobile app. Some screens and user actions may be slightly different between the two versions, but any differences will be noted when appropriate.

NOTE: American Innovations supports Bullhorn Tools Mobile on mobile devices running either iOS 11 or Android 11.

Getting Started

Before beginning the configuration process using Bullhorn Tools Mobile, review the following information:

- Download the latest version of the Bullhorn Tools Mobile from the Apple App Store or Google Play Store.
- Before opening Bullhorn Tools Mobile, ensure that Bluetooth is enabled on your mobile device. This allows for quicker pairing with your unit.
- **If connecting to an RM4211**, be sure to review the firmware update instructions found in [Update Firmware](#). This unit type automatically updates the firmware, if necessary, before you can continue the configuration process.

The following configuration tasks are common to all unit types:

- [Activate and Connect Unit](#)— all units must be activated with a Bluetooth connection before any configuration or measurement tasks can be performed.
- [Send a Test Message](#)— you can send test messages to ensure proper communication with Bullhorn Web.
- [Templates](#)— you can create unit configuration settings to a template, which can then be used to configure other similar unit types with the same configuration settings. Templates can save time when having to configure multiple units with matching configuration settings.

- [View Battery Information](#)— you can view or select the date, if applicable, for a battery installation.
- [Update Firmware](#)— when available, firmware can be updated using the mobile app. However, the RM4211 firmware is automatically updated when first connecting to Bullhorn Tools Mobile. Be sure to follow the instructions for this unit type.
- [Review Unit Information or Email Support](#)— view your unit information or contact [AI Support](#).

Activate and Connect Unit

Complete the following steps to active the unit's Bluetooth connection and then connect the unit to Bullhorn Tools Mobile:

1. Swipe a magnet across the access point on the unit (marked with an arrow on the enclosure). A red light flashes to indicates that the unit is waiting to pair with a Bluetooth-enabled device.

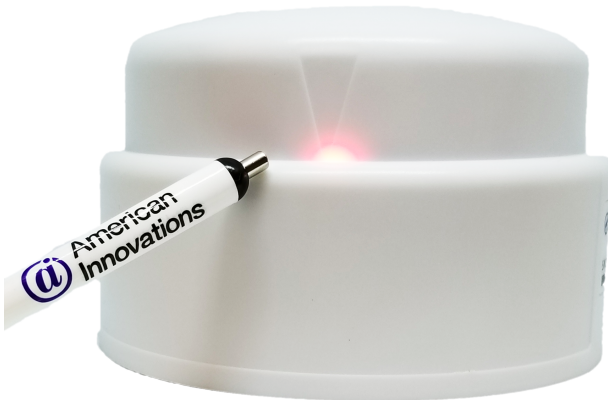


Figure 1-1. Unit Activated

2. On your mobile device, turn on Bluetooth and then open Bullhorn Tools Mobile. Any unit that is currently activated will display on the screen. Refresh the screen (swipe down) if your unit does not display.
3. Tap the name of the unit you want to configure and then **OK** in the confirmation dialog box.
4. **For RM1250, RM3250, and RM4210 units**— tap **Refresh** (or swipe down) to update current unit values. Tap **Auto Refresh** to enable the app to automatically refresh screens every five seconds.
5. **For RM4211 units only**— if the unit's firmware is not the most current, Bullhorn Tools Mobile will automatically begin a firmware update. The following message will display. Complete the following steps after you see this message.

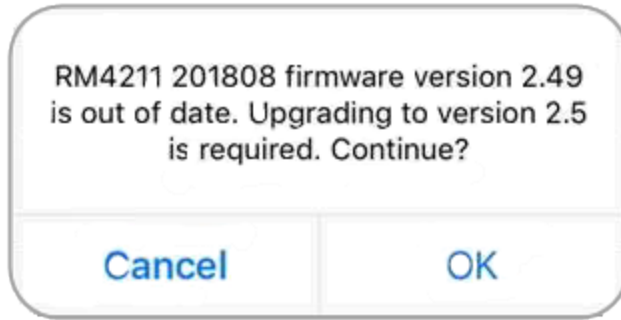


Figure 1-2. RM4211 Firmware Update Message

- a. Click **OK** to continue.
- b. After the firmware update has completed, a final message displays.

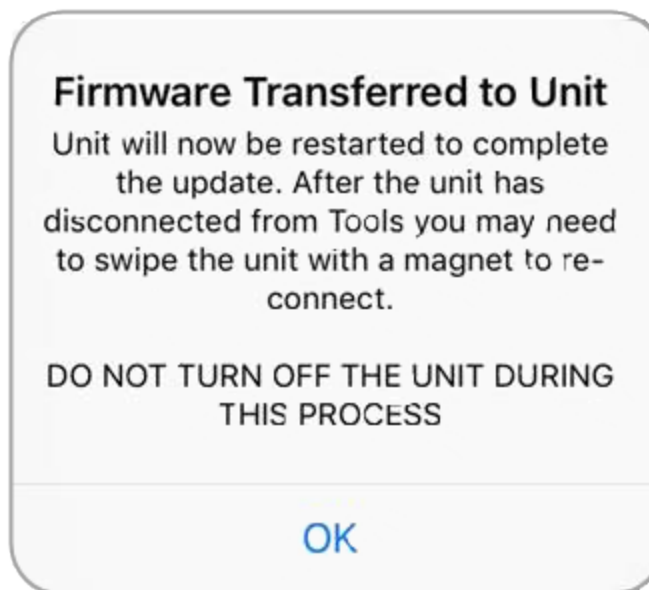


Figure 1-3. Firmware Transferred to Unit Message

- c. Click **OK**. If the unit does not automatically connect to your device, swipe the activation point on the unit with a magnet.
- d. On the *Search* screen, tap the name of the unit and then **OK** on the pop-up message window.
- e. Optionally, tap **Auto Refresh** toggle to enable the app to automatically refresh screens after completing an action.

Send a Test Message

Complete the following steps to send a test message to Bullhorn Web from the remote monitoring unit:

1. Tap .

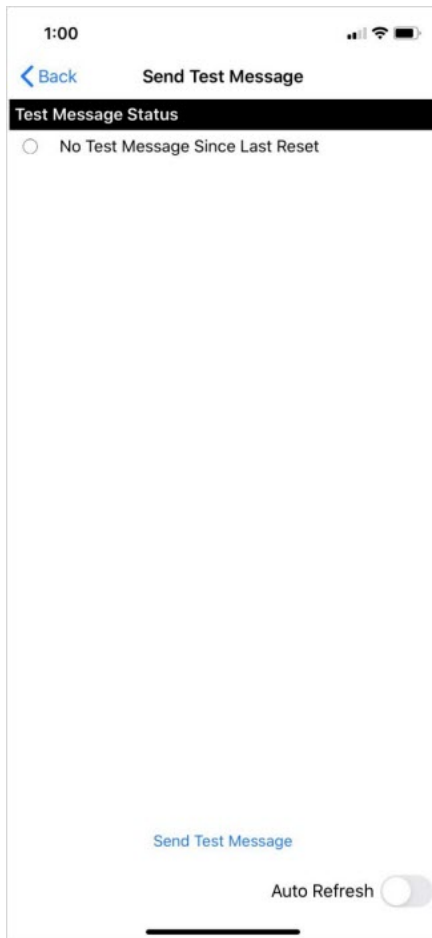




Figure 1-4. Send Test Message

2. Tap **Send Test Message** to send a test message to the Bullhorn Web account. Any queued commands for the unit will then be sent from Bullhorn Web and applied to the unit.
3. Tap  at the top of the screen to return to the previous screen.

Templates

Currently, templates cannot be edited. You can only add, delete, or rename templates.

Complete the following steps to open the *Templates* screen for any Bullhorn Tools Mobile supported unit type:

1. Tap  to open the *Settings* screen.

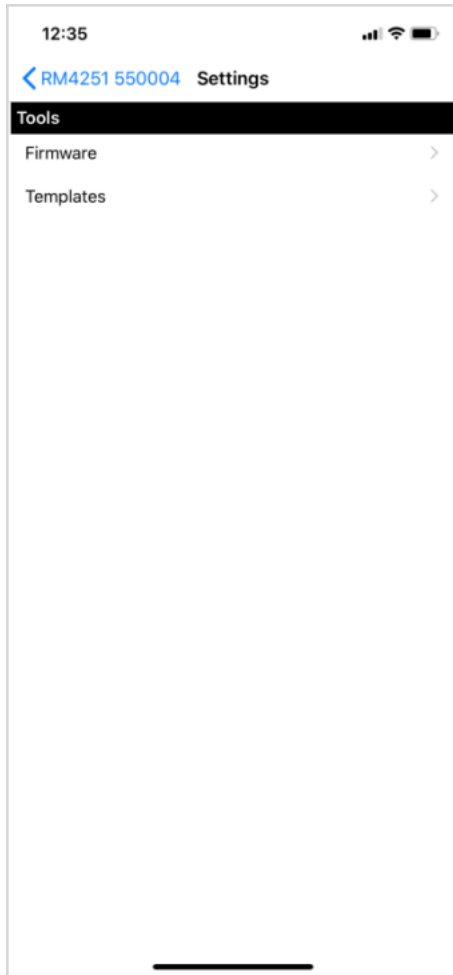


Figure 1-5. Settings

2. Tap **Templates** to open *Templates* screen.

From this screen, you can complete any of the following template-related tasks:

- [Create a Template](#)— create a new template based on the unit's current settings.
- [Apply a Template](#)— apply a saved template.
- [Rename or Delete a Template](#)— delete or rename a saved template.

Create a Template

Complete the following steps to create a new template for any unit type:

1. From the **Settings** screen tap **Templates**.

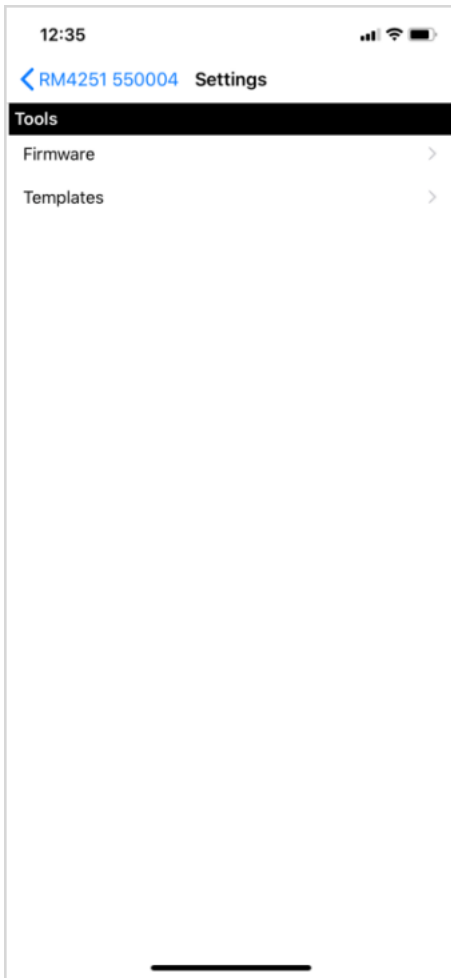


Figure 1-6. Settings

2. Tap **Create Template**.



Figure 1-7. Create Template

3. Enter a name for the template in the **Name** field. The settings shown are the unit's current settings and what will be included in the new template.



Figure 1-8. New Template

4. Tap **Create Template**.

Apply a Template

Complete the following steps to apply a saved template to any unit type:

1. On the **Templates** screen (**Settings > Templates**) tap the name of the template to open a preview screen that displays the template's settings.



Figure 1-9. Created Templates

2. Tap **Apply Template** to apply template settings to unit.

1:26

< Templates

Name New Template

Reporting and Power

Transmission Settings

Interval	Weekly
Start Time	3:20 AM
Day of Week	Sunday

Measurement Schedule

Interval	Weekly
Start Time	2:00 AM
Day of Week	Monday

Readings

Enabled/Disabled Readings

AC CH 1	Enabled
DC CH 1	Enabled
Instant Off CH 1	Enabled
AC CH 2	Disabled
DC CH 2	Disabled
AC CH 3	Disabled
DC CH 3	Disabled

Settings

AC CH 1

Input Type	Volts
Input Maximum	100.000
Input Minimum	-100.000
Scaled Label	V

Apply Template

Figure 1-10. Apply Template

3. Tap **OK** in the dialog box to apply this template.

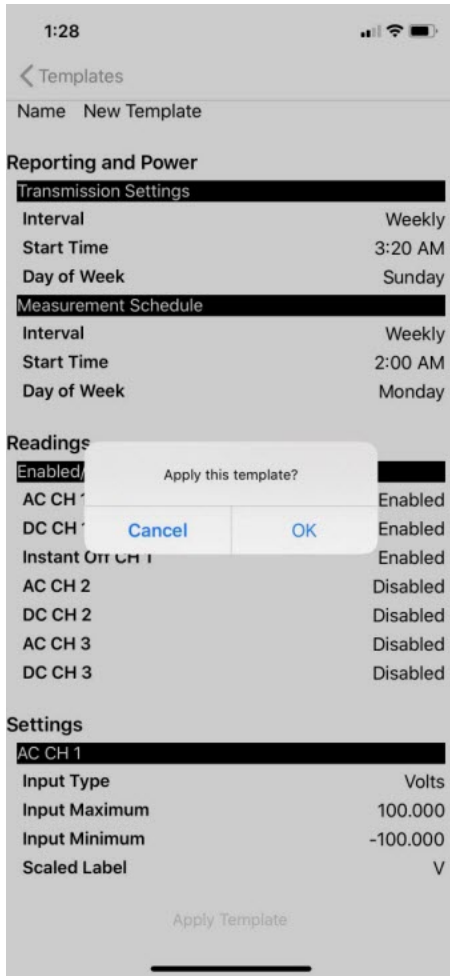


Figure 1-11. Permission to Apply Template

4. When the template has been applied, tap **OK** in the *Template Applied* dialog box.

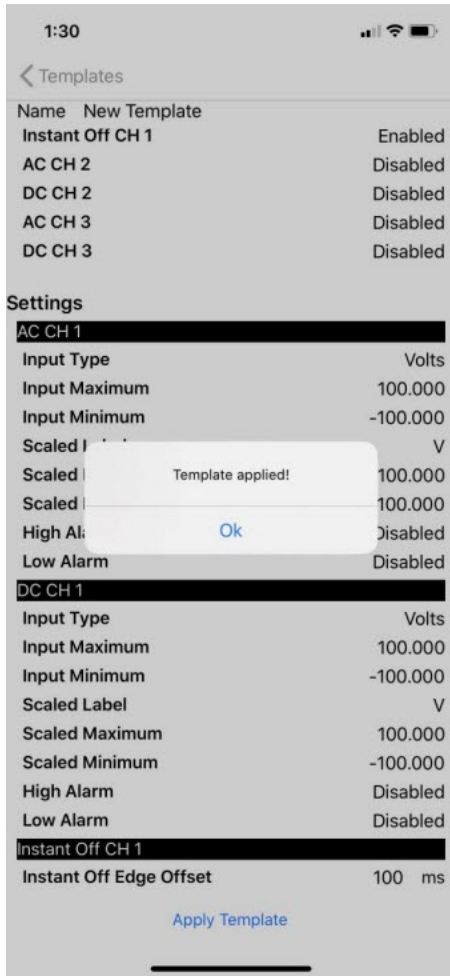


Figure 1-12. Template Applied Dialog Box

Rename or Delete a Template

Complete the following steps to rename or delete a saved template:

1. To rename a template:
 - a. For iOS devices, swipe left on the template name. Tap **Rename**, enter a new name for the template, and tap **OK**.
 - b. For Android devices, tap and hold the name of the template. Tap **Rename**, enter a new name for the template, and tap **OK**.
2. To delete a template:
 - a. For iOS devices, swipe left on the template name and then tap **Delete**.

- b. For Android devices, tap and hold the name of the template and then tap **Delete**.
3. Tap ← at the top of the screen to return to the previous screen.

View Battery Information

Current battery status and DC input voltage are displayed at the top of the main unit information screen.

Complete the following steps to set the date for when the battery was installed for any Bullhorn Tools Mobile supported unit type:

1. Tap ⌚.

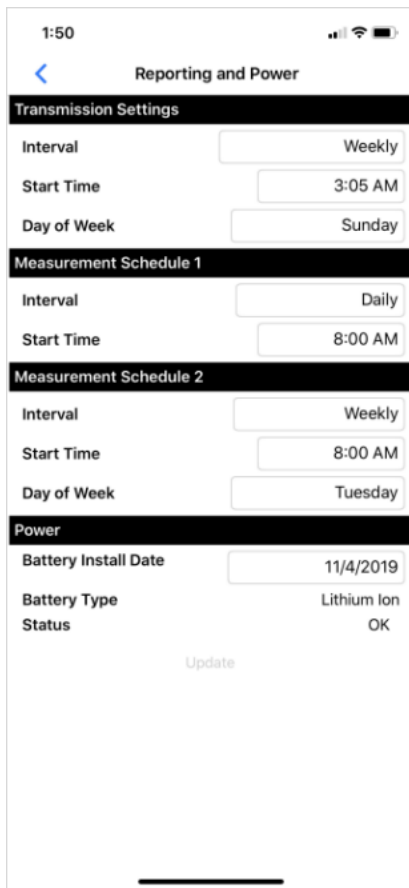


Figure 1-13. Reporting and Power Screen

2. Tap in the **Battery Install Date** field and select a date.
For Android users — tap the year to select a different year. Tap the arrows to the left or right of a month to select a different month.
3. Tap **Done** or **OK**.


4. Tap **Update**.
5. Tap ← at the top of the screen to return to the previous screen.

Update Firmware

WARNING: Before updating the firmware, ensure that you are updating to a newer version. If the firmware version to be applied is older than the unit's current version, this action will downgrade the unit's firmware and may cause application errors. AI generally recommends using the latest version of firmware on all remote monitoring units.

WARNING: On activation of an RM4211, the firmware is automatically updated. Refer to [Activate and Connect Unit](#) for more information about the firmware update process for this unit type.

Complete the following step to update the firmware on any Bullhorn Tools Mobile supported unit type:

1. Tap  to open the *Settings* screen.

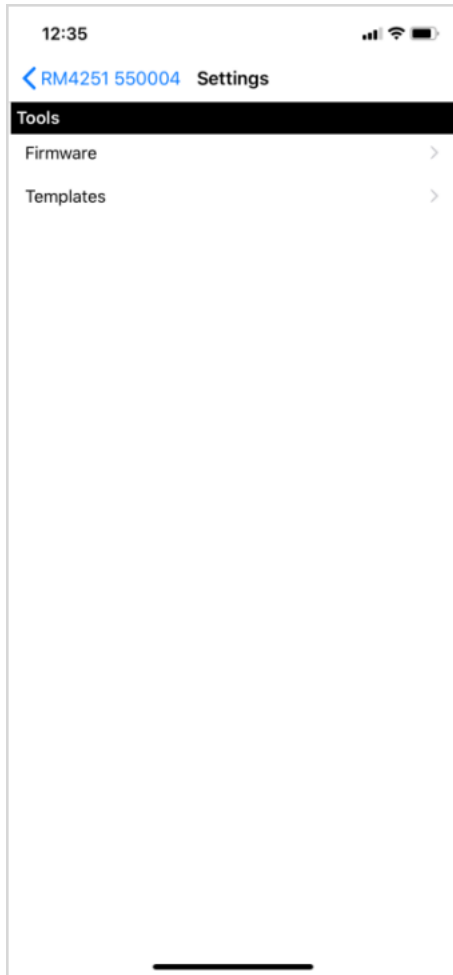


Figure 1-14. Settings Screen

NOTE: Some unit types will also include Reading settings on the *Settings* screen.

2. Tap **Firmware Update** to open the *Firmware Update* screen.
3. After the firmware has been uploaded, tap **OK** in the *Apply Firmware* dialog box.
The firmware update process may take several minutes.
4. When the firmware update is complete, a dialog box displays with instructions on completing the update. Tap **OK**.
5. The unit will disconnect and stop transmitting. When the app returns to the *Search* screen, re-activate the unit and connect to Bullhorn Tools Mobile to continue.

Review Unit Information or Email Support

Complete the following steps to view unit information or to contact the Support team for any Bullhorn Tools Mobile supported unit type:

1. Tap **i** to see unit information or to contact [AI Support](#).

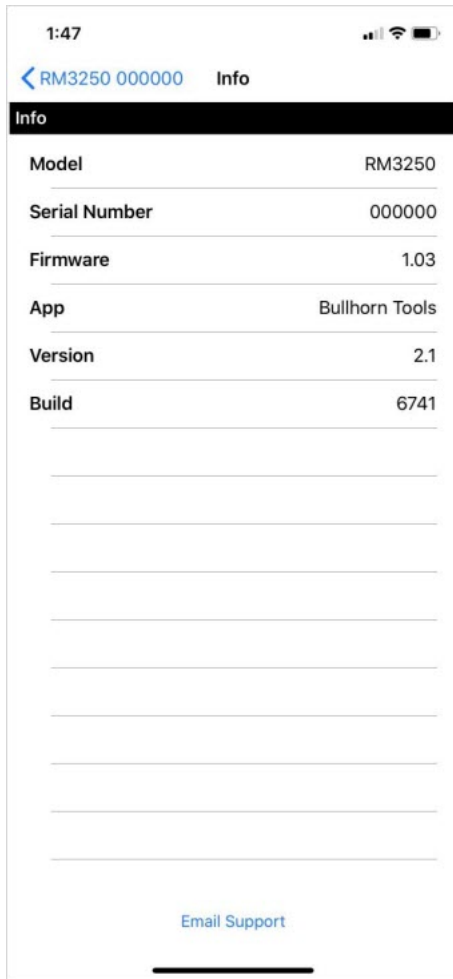


Figure 1-15. Info Screen

2. Tap **Email Support** to send an email to [AI Support](#). The email will include unit information and the current session's log file.

Technical Support

AI Support is available to provide assistance with Bullhorn Remote Monitoring Units, accept feedback about Bullhorn Remote Monitoring Units, or discuss your organization's training needs. Use the following information to contact AI Support:

Telephone:

1-800-229-3404

Email:

support@aiworldwide.com

Address:

American Innovations, Ltd.
Attn: AI Support
12211 Technology Blvd.
Austin, TX 78727

RM1250 Configuration

Bullhorn Tools Mobile can configure RM1250 units' inputs, alarms, and transmission schedules.

Since Bullhorn Tools Mobile uses a Bluetooth connection to pair with the unit, ensure that Bluetooth has been enabled on your mobile device before opening the app. For Android users, connect with the unit through the app, not from the Bluetooth connection screen that displays when you enable Bluetooth on your mobile device.

NOTE: American Innovations supports Bullhorn Tools Mobile on mobile devices running either iOS 11 or Android 11.

NOTE: Before beginning the configuration process, ensure that the Bullhorn Tools Mobile app is updated to the latest version. The app can be downloaded from either the Apple App store or Google Play Store.

Bullhorn Tools Mobile can be used to perform the following configuration tasks on RM1250 units:

- [Enable and Configure Channels and Alarms](#)— enable and configure one or two accumulator channels, one or two digital channels, and enable or disable alarms for the digital channels.
- [Set a Transmission Schedule](#)—set how often and when channel information will be sent to the Bullhorn Web account.
- [View Battery Information](#)— check battery status, DC input voltage, and add an installation date for the battery.
- [Update Firmware](#)— if available, apply an update to the firmware. Before updating the firmware, ensure that you are updating to a newer version. If the firmware version to be applied is older than the unit's current version, this action will downgrade the unit's firmware and may cause application errors. AI generally recommends using the latest version of firmware on RM1250 units.
- [Review Unit Information or Email Support](#)— view current unit information or send an email to customer support, which will include a log file of the current session.

The unit will disconnect automatically after 10 minutes. It is not necessary to swipe the activation point again unless you wish to de-activate the Bluetooth connection immediately.

Enable and Configure Channels and Alarms

Complete the following steps to enable and configure channel and alarms for an RM1250:

1. On the main screen tap the name of a channel.

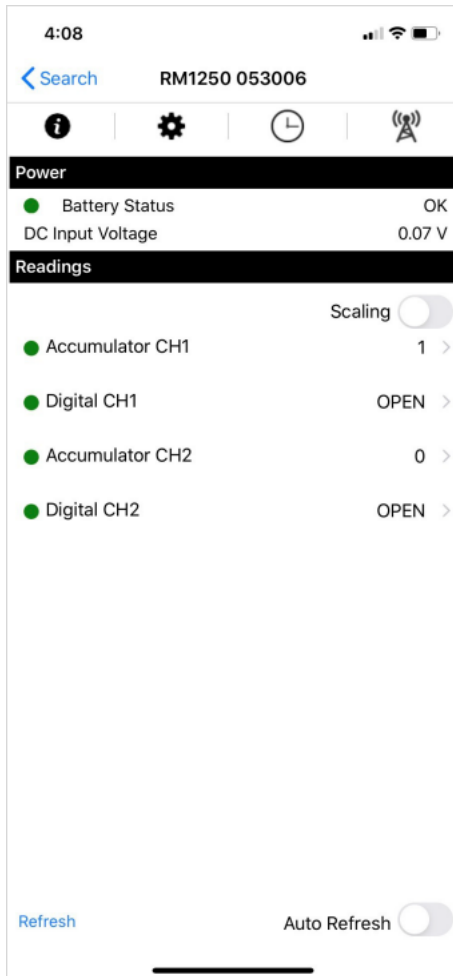


Figure 2-1. Main Screen

2. To enable the channel, tap the **Enable/Disable** toggle.

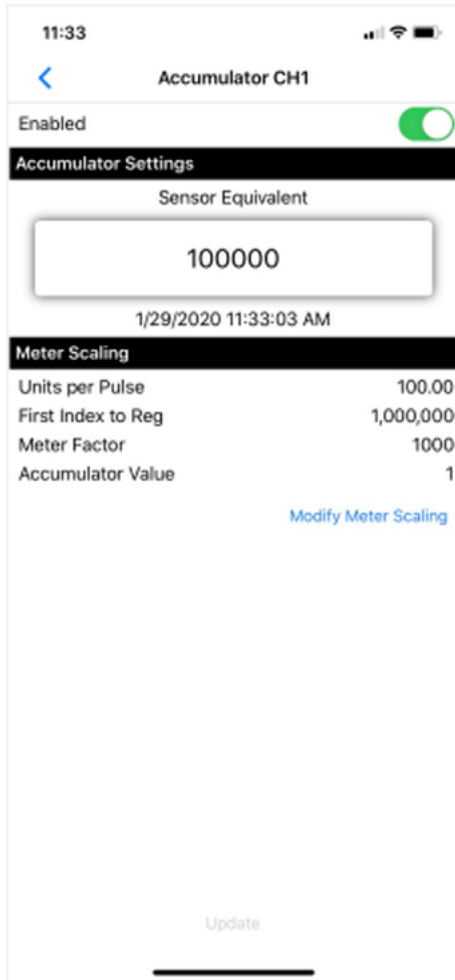


Figure 2-2. Enabling a Channel

3. For accumulator channel settings:



a. Tap **Modify Meter Scaling**.

The screenshot shows a mobile application interface for 'Accumulator CH1'. At the top, there is a back arrow and the title 'Accumulator CH1'. Below this is a section titled 'Meter Scaling'. It contains four rows of settings, each with a label on the left and a text input field on the right:

- Units per Pulse: 100.00
- First Index to Reg: 1,000,000
- Meter Factor: 1000
- Accumulator Value: 1

Below the 'Accumulator Value' field, there is a blue link that says 'Reset Sensor Equivalent'. At the bottom of the screen, there is a button labeled 'Update'.

Figure 2-3. Modify Meter Scaling Screen

- b. Tap in the **Units per Pulse** field and tap the  key on the keyboard to remove the current value, and then enter a value using the keypad.
- c. Tap in the **First Index to Reg** field and select a value.
- d. Tap in the **Accumulator Value** field and tap the  key on the keyboard to remove the current value, and then enter a value using the keypad.

The **Meter Factor** is calculated based on **Units per Pulse** and **First Index to Reg** settings.

4. Tap **Update**.

5. Tap **Reset Sensor Equivalent** to update the index odometer reading, which is displayed in the Sensor Equivalent field on the main accumulator settings screen.

6. For digital channel settings:

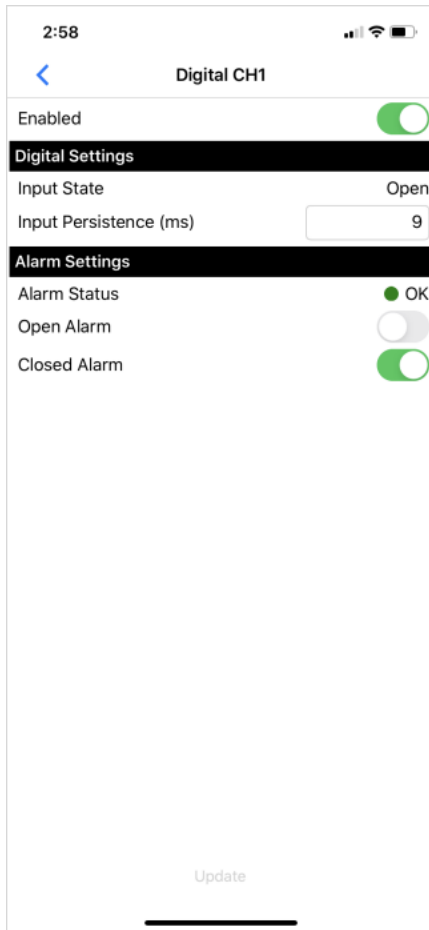



Figure 2-4. Digital Channel Settings

- a. Tap in the **Input Persistence (ms)** field, tap the  key on the keyboard to remove the current value, and then enter a value using the keypad.
- b. To enable or disable an alarm based on the input state status, tap the toggle next to the alarm.
- c. Tap **Update**.

7. Tap  at the top of the screen to return to the previous screen.

Set a Transmission Schedule

Complete the following steps to set up a transmission schedule for an RM1250:

1. Tap  to open the *Reporting & Power* screen.

The *Reporting & Power* screen also contains current battery information.

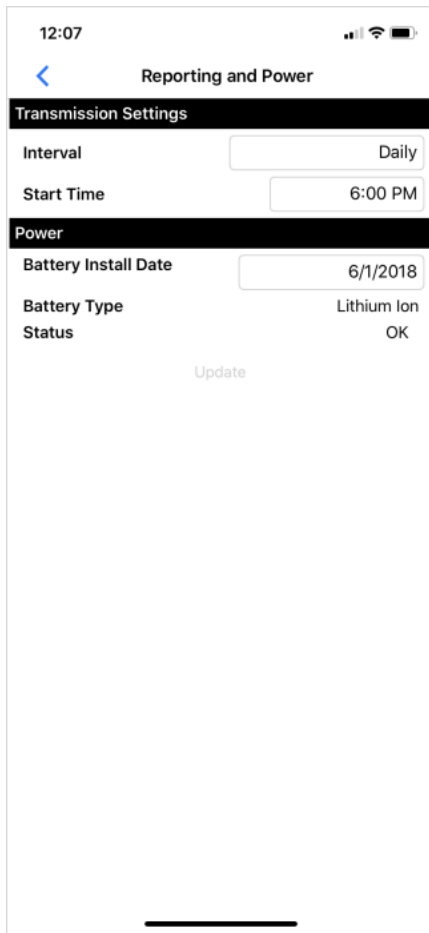



Figure 2-5. Reporting and Power Screen

2. Tap in the **Interval** field and select the interval for when the transmissions will be sent.
3. Tap in the **Start Time** field and select the time of day when the transmissions will be sent.
4. Tap **Update**.
5. Tap  at the top of the screen to return to the previous screen.

RM3250 Configuration

Bullhorn Tools Mobile can configure RM3250 units' registers and inputs, serial settings, and transmission schedules.

Since Bullhorn Tools Mobile uses a Bluetooth connection to pair with the unit, ensure that Bluetooth has been enabled on your mobile device before opening the app. For Android users, connect with the unit through the app, not from the Bluetooth connection screen that displays when you enable Bluetooth on your mobile device.

NOTE: American Innovations supports Bullhorn Tools Mobile on mobile devices running either iOS 11 or Android 11.

NOTE: Before beginning the configuration process, ensure that the Bullhorn Tools Mobile app is updated to the latest version. The app can be downloaded from either the Apple App store or Google Play Store.

Bullhorn Tools Mobile can be used to perform the following configuration tasks on RM3250 units:

- [Enable and Configure Registers and Digital Input](#)— enable and configure up to 10 registers and 1 digital input.
- [Set Serial Settings](#)— set communication parameters for the device that the RM3250 and communicating with.
- [Set Transmission Schedule](#)— set how often and when measurements will be sent to your Bullhorn Web account.
- [View Battery Information](#)— check battery status, DC input voltage, and add an installation date for the battery.
- [Update Firmware](#)— if available, apply an update to the firmware.
- Before updating the firmware, ensure that you are updating to a newer version. If the firmware version to be applied is older than the unit's current version, this action will downgrade the unit's firmware and may cause application errors. AI generally recommends using the latest version of firmware on RM3250 units.
- [Review Unit Information or Email Support](#)— view current unit information or send an email to customer support, which will include a log file of the current session.

The unit will disconnect automatically after 10 minutes. It is not necessary to swipe the activation point again unless you wish to de-activate the Bluetooth connection immediately.

Enable and Configure Registers and Digital Input

Registers (up to 10) and the digital input (listed under Readings on the main screen) on an RM3250 **must** be enabled through Bullhorn Tools Mobile as well as on the Bullhorn Web account. When the register is enabled through Bullhorn Tools Mobile, a reading is captured for that register. Then, when data is sent to the Bullhorn Web account, that value is decoded, paired with the same enabled register that was enabled through Bullhorn Tools Mobile, and then displayed on the unit's Unit Detail page (refer to [Bullhorn Web Unit Detail Page](#)).

Enabled registers on Bullhorn Web will only display correct data if the corresponding register was enabled through Bullhorn Tools Mobile.

Complete the following steps to enable and/or configure RM3250 unit registers or the digital input.

1. Tap the register or digital input name.

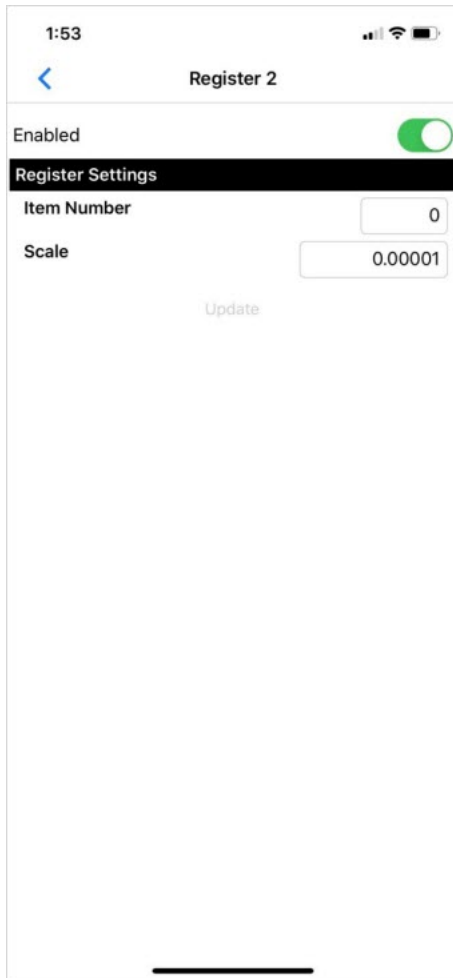




Figure 3-1. Register Enabled Screen

2. To enable a disabled register or input, tap the **Enabled** toggle. When enabled, settings for the register/input displays.

For all toggles within the Bullhorn Tools Mobile app, when the toggle is colored , the setting is enabled; when the toggle is gray , the setting is disabled.

3. For Registers:
 - a. Tap in the **Item Number** field and enter or edit the unit's identifying number.
 - b. If desired, select a scale value for the register. When scaling is applied to the register's value, it is multiplied or divided by factors of 10.

- i. Tap in the **Scale** field.
- ii. Select a scale value from the list. The scale value will update on the *Register* screen.
- iii. **OR** tap **Cancel** to return to the *Register* screen without changing the value.

4. For the digital input:

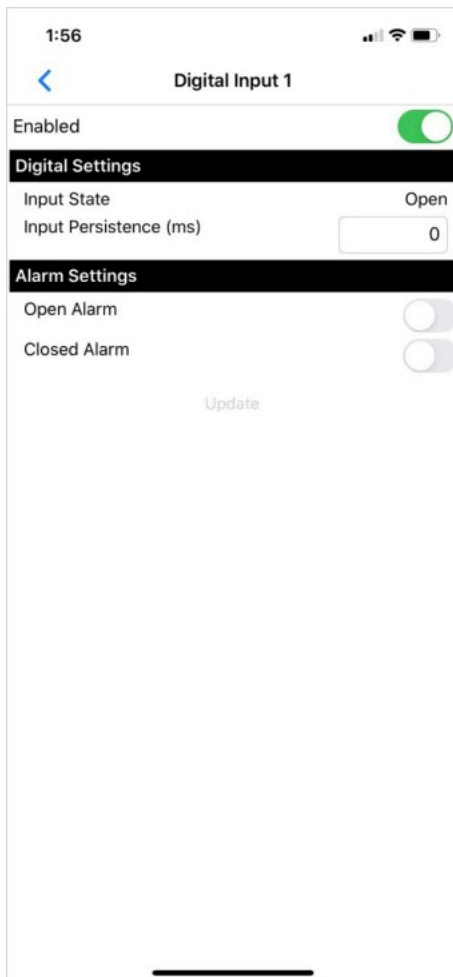


Figure 3-2. Digital Input Screen

- a. Tap in the **Input Persistence (ms)** field and enter a value (in milliseconds) to set how long the input must remain in a state other than the current state before an alarm is sent.
- b. Tap the toggle next to **Open Alarm** and/or **Closed Alarm** to enable or disable an alarm that will send an alarm packet to your Bullhorn Web account whenever there is a change to the **Input State**.

5. Tap **Update**.

6. Tap ← at the top of the screen to return to the previous screen.

Set Serial Settings

Complete the following steps to set the serial settings for an RM3250:

1. Tap ⚙️ to open the *Settings* screen.

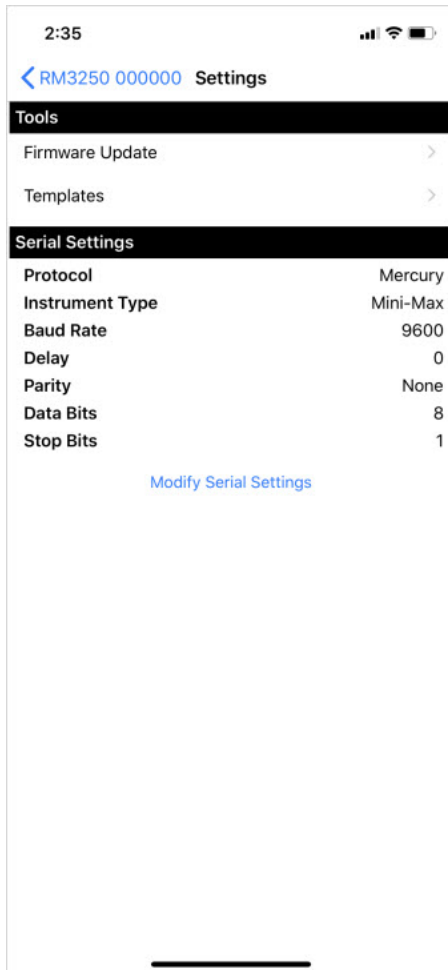


Figure 3-3. Settings Screen

2. Tap **Modify Serial Settings** to open the *Modify Serial Settings* screen.

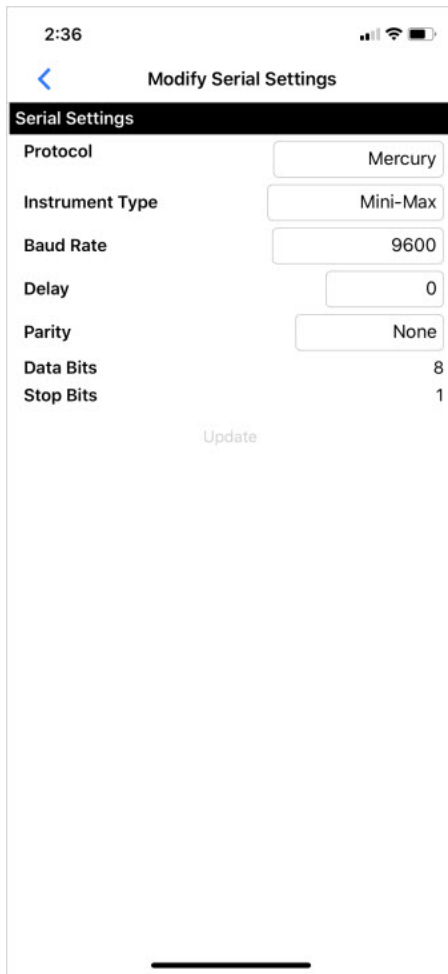


Figure 3-4. Modify Serial Settings Screen

3. Tap in the **Protocol** field and select a protocol: either Modbus RTU or Mercury.
4. Complete *one* of the following, depending on the protocol selected in the **Protocol** field:
 - a. For **Modbus RTU** protocol, tap the **Unit Address** field and enter select a unit address. The default is 1.
 - b. For **Mercury** protocol, tap the **Instrument Type** field and select a device: either Mini-AT or Mini-Max. Mini-Max is the default type.
5. Tap in the **Baud Rate** field and select a baud rate. The default baud rate for Modbus RTU is 115200; default baud rate for Mercury is 9600.
6. Tap in the **Delay** field and enter a value.
7. Tap in the **Parity** field and select a parity: None, Even, or Odd.
Data Bits and **Stops Bits** are not editable.

8. Tap **Update**.
9. Tap ← at the top of the screen to return to the previous screen.

Set Transmission Schedule

Complete the following steps to create a transmission schedule for an RM3250:

1. Tap ⌚ to open the *Reporting and Power* screen.

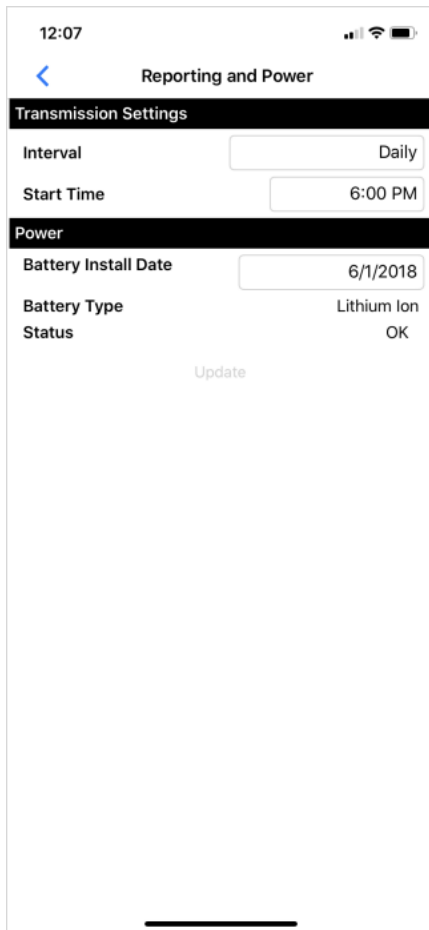




Figure 3-5. Reporting and Power Screen

2. Tap in the **Interval** field and select a transmission interval: Daily, 4 Hour, or 6 Hour.
3. If the data log becomes full, the unit may report to the website in-between the scheduled interval time.
4. Tap in the **Start Time** field and set a time of day.

5. For Android users, tap the hour and select a time by moving the rotator around the clock face, then tap the minute placeholder and select the minutes by moving the rotator around the clock face. You can also edit the time by tapping the  icon in the lower left corner, which opens hour and minute fields with data entry fields.
6. Tap **Update**.
7. Tap  at the top of the screen to return to the previous screen.

RM4210 or RM4250 Configuration 4

Bullhorn Tools Mobile can configure RM4210 or RM4250 units' transmission and measurement schedules, set coupon size, create alarms, and reset an over-current.

Since Bullhorn Tools Mobile uses a Bluetooth connection to pair with the unit, ensure that Bluetooth has been enabled on your mobile device before opening the app. For Android users, connect with the unit through the app, not from the Bluetooth connection screen that displays when you enable Bluetooth on your mobile device.

NOTE: American Innovations supports Bullhorn Tools Mobile on mobile devices running either iOS 11 or Android 11.

NOTE: Before beginning the configuration process, ensure that the Bullhorn Tools Mobile app is updated to the latest version. The app can be downloaded from either the Apple App store or Google Play Store.

Bullhorn Tools Mobile can be used to perform the following configuration tasks on RM4210 or RM4250 units.

- *Set Transmission and Measurement Schedules*— set when measurements will be taken and sent to the Bullhorn Web account and one or two schedules for when measurements will be taken.
- *Enable Measurement Schedules*— enable one or two measurement schedules for each enabled measurement.
- *Set Coupon Size, Alarms, Transducer, and Instant Off*— set coupon size and alarms for the Test Coupon AC Current Density or Triton AC Current Density readings, transducer settings for the AC Drain Current reading, and the instant edge offset for the test coupon.
- *Reset Over-Current*— after any over-current issues have been resolved, the test coupon relay can be reset with this command.
- *View Battery Information*— check battery status, DC input voltage, and add an installation date for the battery.
- *Update Firmware*— apply an update to the firmware, if available.

WARNING: Before updating the firmware, ensure that you are updating to a newer version. If the firmware version to be applied is older than the unit's current version, this action will downgrade the unit's firmware and may cause application errors. AI generally recommends using the latest version of firmware on RM4210, RM4250, RM4211, and RM4251 units.

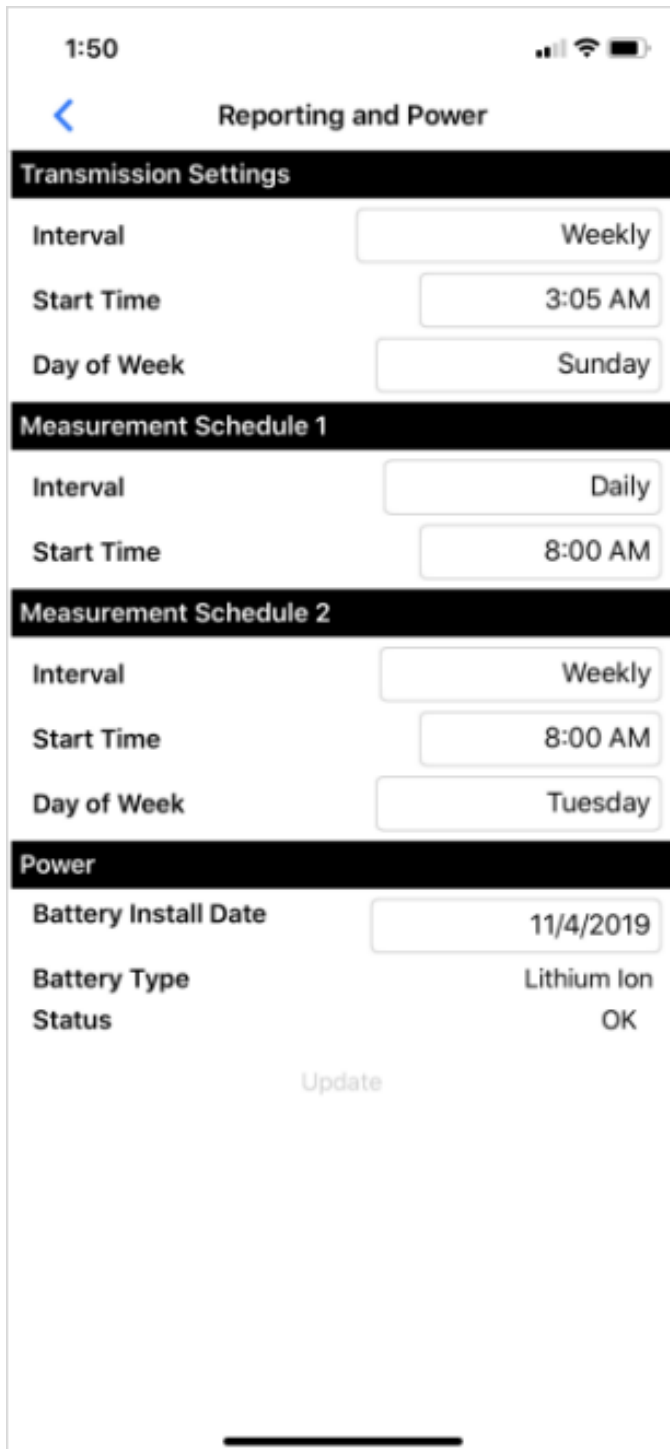
- [Review Unit Information or Email Support](#)— view current unit information or send an email to customer support, which will include a log file of the current session.

The unit will disconnect automatically after 10 minutes. It is not necessary to swipe the activation point again unless you wish to de-activate the Bluetooth connection immediately.

Set Transmission and Measurement Schedules

Complete the following steps to set both a transmission schedule and a measurement schedule for an RM4210 or RM4250:

1. Tap  to open the *Reporting and Power* screen.



1:50

Reporting and Power

Transmission Settings

Interval Weekly

Start Time 3:05 AM

Day of Week Sunday

Measurement Schedule 1

Interval Daily

Start Time 8:00 AM

Measurement Schedule 2

Interval Weekly

Start Time 8:00 AM

Day of Week Tuesday

Power

Battery Install Date 11/4/2019

Battery Type Lithium Ion

Status OK

Update


Figure 4-1. Reporting and Power Screen

-
2. For transmission settings (when measurements are sent to Bullhorn Web):
 - a. Tap in the **Interval** field and select an interval: Day of Month, Daily, or Weekly.
 - b. Tap in the **Start Time** field and select a time.
 - c. For **Day of the Month** interval, tap in the **Day of Month** field and select the number for the day of the month when the transmission will be sent. You can select up to four days.
 - d. For **Weekly** interval, tap in the **Day of Week** field and select the weekday when the transmission will be sent.
-

WARNING: The number of transmissions cannot be set to occur more often than when measurements are taken.

3. For each measurement schedule (when measurements are taken):
 - a. Tap in the **Interval** field and select an interval: Day of Month, Quarter-Hourly, Hourly, Daily, or Weekly.
 - b. Tap in the **Start Time** field and select a time.

NOTE: Quarter-Hourly, Hourly, and Daily intervals only require a Start Time.

 - c. For **Day of the Month** interval, tap in the **Day of Month** field and select the number for the day of the month when the transmission will be sent.
 - d. For **Weekly** interval, tap in the **Day of Week** field and select the weekday when the transmission will be sent.
4. Tap **Update** to apply changes.
5. Tap  at the top of the screen to return to the previous screen.

Enable Measurement Schedules

Complete the following steps to enable one or both measurement schedules for the RM4210 or RM4250:

1. Tap a Reading name shown on the main screen.

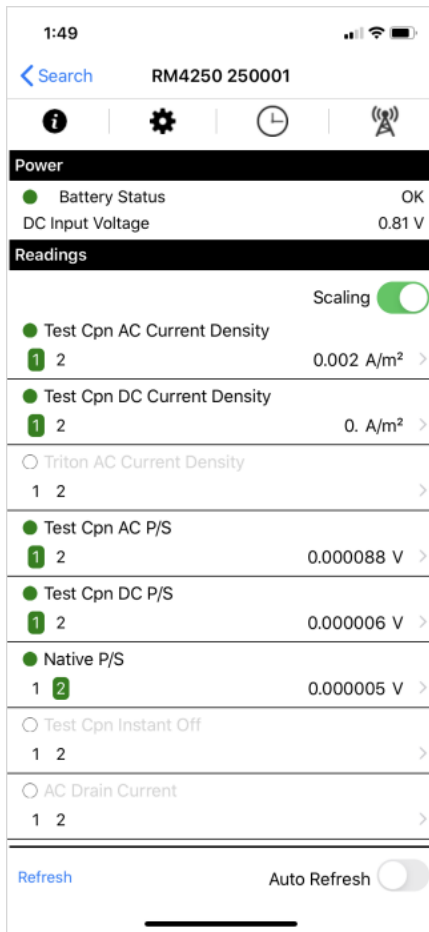


Figure 4-2. List of Readings

2. Tap one or both of the schedule toggles to enable (or disable).

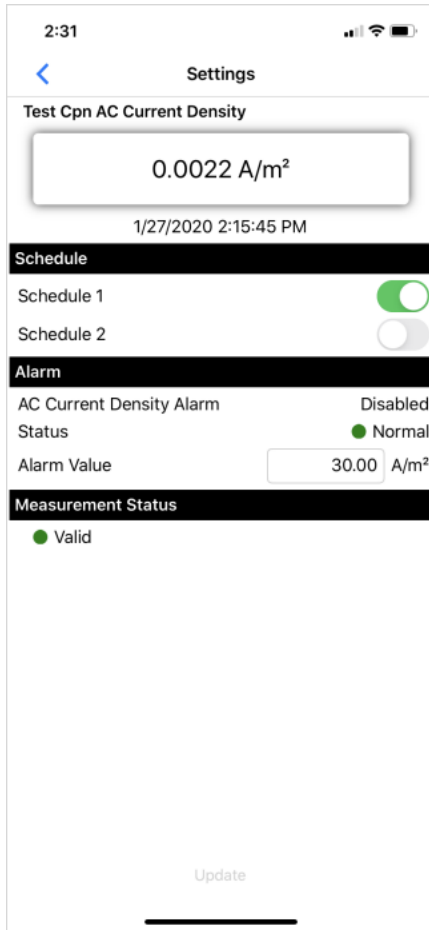


Figure 4-3. Set a Schedule

3. Tap **Update** to apply changes.
4. Tap ← at the top of the screen to return to the previous screen.


Set Coupon Size, Alarms, Transducer, and Instant Off

Coupon size and alarms can be set for the Test Coupon AC Current Density or Triton AC Current Density reading.

The AC Drain Current reading includes two transducer settings.

Some of these settings can also be modified by tapping the name of the reading to open the reading's *Settings* screen.

Complete the following steps to set the coupon size, set the alarm value, set either the input max volts or transducer amps value, and set the instant off edge offset value for an RM4210 or RM4250:

1. Tap  to open the *Settings* screen.

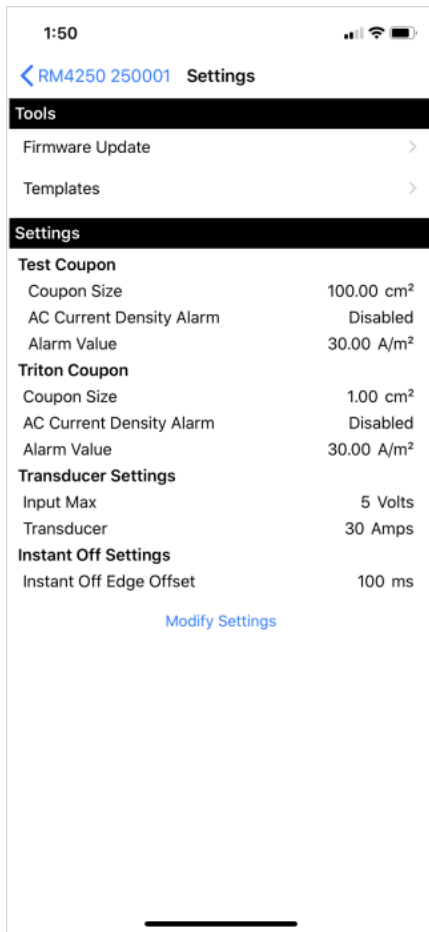



Figure 4-4. Settings Screen

2. Tap **Modify Settings** at the bottom of the screen.
3. For either the Test Coupon or Triton Coupon, tap in the **Coupon Size** value field and edit the value. Tap the  key on the keyboard to delete the current value and then enter a new value.

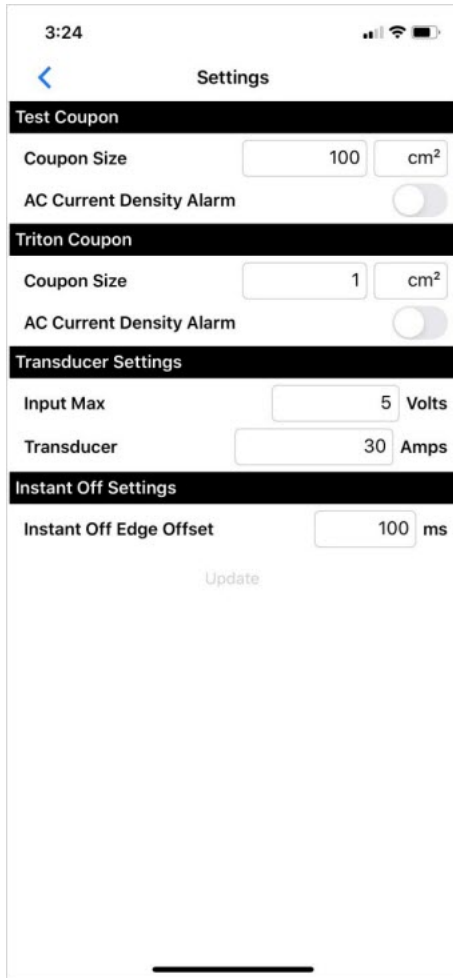







Figure 4-5. Test Coupon Settings

4. Tap in the **Coupon Size** unit of measurement field and select either **in²** or **cm²** to set the unit of measure.
5. Tap the alarm toggle to enable/disable the alarm for the coupon.
For all toggles within the Bullhorn Tools Mobile app, when the toggle is colored , the setting is enabled; when the toggle is gray , the setting is disabled.
6. If the alarm is enabled, tap in the **Alarm Value** field and edit the value. Tap the  key on the keyboard to delete the current value and then enter a new value.
7. Tap in the **Input Max (Volts)** or **Transducer (Amps)** field and edit the value. Tap the  key on the keyboard to delete the current value and then enter a new value.
8. Tap in the **Instant Off Edge Offset** field and edit the value. Tap the  key on the keyboard to delete the current value and then enter a new value.

9. Tap **Update**.

10. Tap  at the top of the screen to return to the previous screen.

Reset Over-Current

If a relay is in an alarm state and needs to be reset, tap **Reset Over-Current** on the main unit configuration screen to reset it.

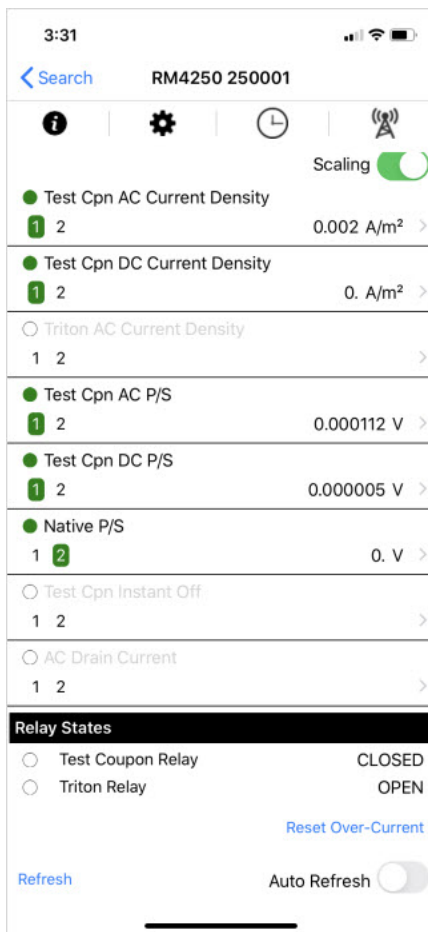


Figure 4-6. Reset Over-Current

RM4211 or RM4251 Configuration 5

Bullhorn Tools Mobile can configure RM4211 or RM4251 units' input and alarm settings, set up a transmission schedule, create a measurement schedule, create alarms, and reset an over-current.

Since Bullhorn Tools Mobile uses a Bluetooth connection to pair with the unit, ensure that Bluetooth has been enabled on your mobile device before opening the app. For Android users, connect with the unit through the app, not from the Bluetooth connection screen that displays when you enable Bluetooth on your mobile device.

NOTE: American Innovations supports Bullhorn Tools Mobile on mobile devices running either iOS 11 or Android 11.

NOTE: Before beginning the configuration process, ensure that the Bullhorn Tools Mobile app is updated to the latest version. The app can be downloaded from either the Apple App store or Google Play Store.

Bullhorn Tools Mobile can be used to perform the following configuration tasks on RM4211 or RM4251 units.

- *Scaling* — scaling can be applied to all the Readings' values except **Instant Off CH1**. When enabled, scaling applied to the measured value based off of the **Scaled Maximum** and **Scaled Minimum** values entered.
- *Set Up Inputs and Alarms* — enable and set up input and alarm values for each enabled Reading.
- *Switch Over-Current* — reset the state of the relay after an alarm was sent.
- *Set a Transmission and Measurement Schedule* — set when measurements are taken and when the values are transmitted to Bullhorn Web.
- *View Battery Information* — check battery status, DC input voltage, and add an installation date for the battery.
- *View Current Firmware* — view current unit firmware version and the current version of Bullhorn Tools Mobiles.
- *Review Unit Information or Email Support* — view current unit information or send an email to customer support, which will include a log file of the current session.

The unit will disconnect automatically after 10 minutes. It is not necessary to swipe the activation point again unless you wish to de-activate the Bluetooth connection immediately.

Scaling

Enable scaling by tapping the Scaling toggle so that it display as .

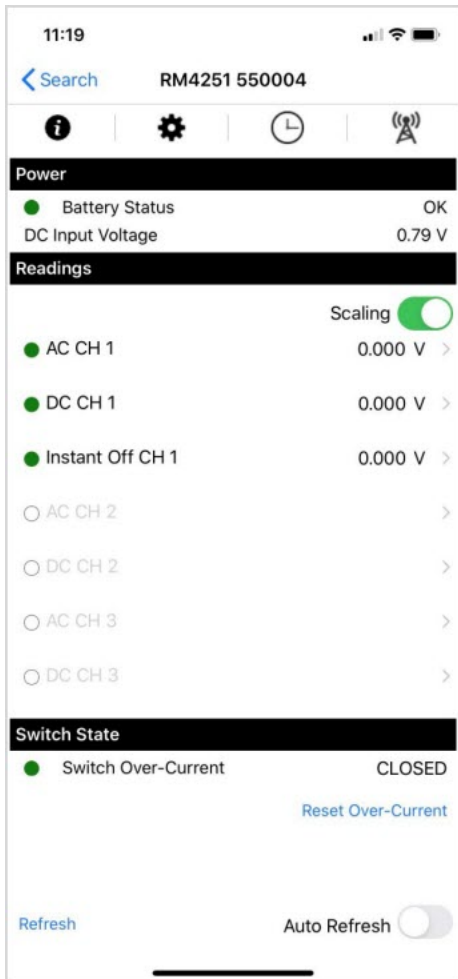




Figure 5-1. Scaling Toggle Switch

Once scaling is enabled, the measured value for each Reading will be displayed as the calculated scaled value.

Set Up Inputs and Alarms

Keep in mind the following notes while you are editing a Reading input and alarm settings on an RM4211 or RM4251:

-
- After tapping the Reading name, enable it by tapping the **Enabled** toggle .
 - For each setting field, tap the  key on the keyboard to delete the current value and then enter a new value.
 - When a value is changed for a Reading or alarm, the field name will display in italics as a way of noting that it has been edited.
 - Values entered in input settings and alarm settings have relationships between their values. Be aware of how each setting impacts other settings. If values entered in the setting and/or alarm fields are invalid, validation warnings will display at the top of the screen with an explanation of the problem. You will not be able to update the settings until the values entered are valid.
 - Instant Off has only one setting - Instant Off Edge Offset. It does not have any alarms.

Complete the following steps to edit input and alarms settings for Readings:

1. From the main screen, tap a Reading name.

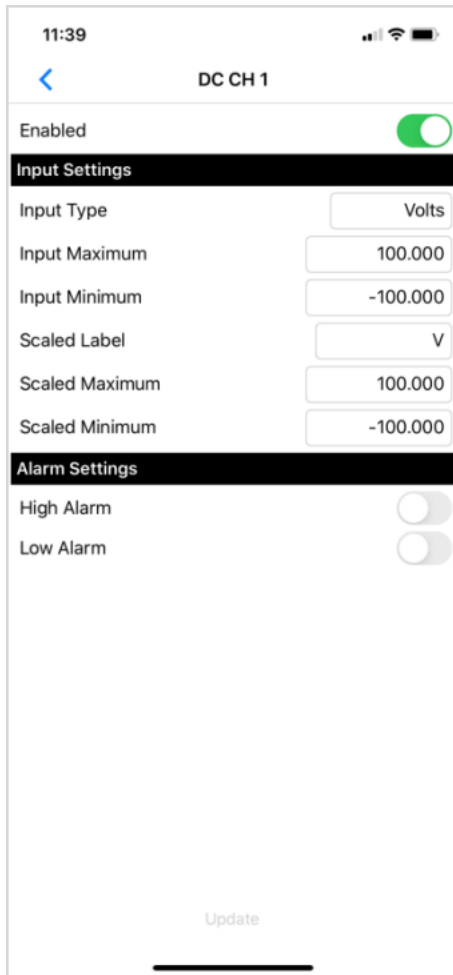


Figure 5-2. Reading Settings Screen

2. For each input setting, enter the appropriate value. Input fields vary by input type. For example, channels will not include the settings for Instant Off. The following are descriptions of all the fields:
 - a. **Input Type** — Defines the input as either millivolts or volts. Default is volts.
 - b. **Input Maximum Value** — Maximum value for the input. This value must be greater than Input Minimum Value. Default is 100 V.
 - c. **Input Minimum Value** — Minimum value for the input. This value must be less than Input Maximum Value. Default is -100 V.
 - d. **Scaled Label** — A user-defined identification of the scaled setting.

- e. **Scaled Maximum Value** — Defines the maximum value that the input will be scaled. This value must be greater than the Scaled Minimum Value. You can enter up to seven digits.
- f. **Scaled Minimum Value** — Defines the minimum value that the input will be scaled. This value must be greater than the Scaled Maximum Value. You can enter up to seven digits.
- g. **Instant Off Edge Offset** — Defines the amount of wait time to take an instant off voltage measurement after cathodic protection has been interrupted through an internal relay. Measured in milliseconds (ms). This setting is only for Instant Off.

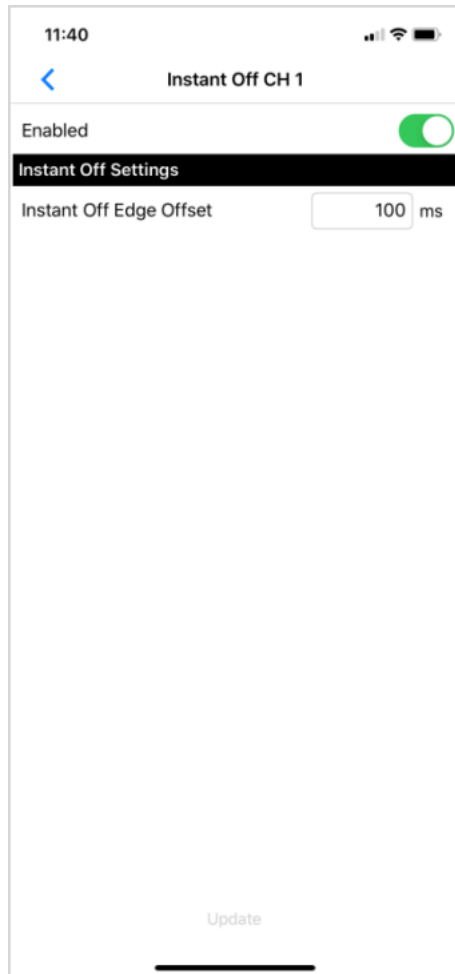


Figure 5-3. Instant Off Settings Screen

3. Enable one or both of the alarms - **High** and **Low**.

11:40 DC CH 1

Enabled

Input Settings

Input Type

Input Maximum

Input Minimum

Scaled Label

Scaled Maximum

Scaled Minimum

Alarm Settings

High Alarm

High Alarm Value

High Alarm Deadband


Low Alarm

Low Alarm Value

Low Alarm Deadband

[Update](#)

Figure 5-4. Alarm Settings for High and Low Alarms Screen

4. For each enabled alarm setting, enter the appropriate value. The following are descriptions of the fields:
 - a. **High Alarm Value** — The high value for the input for when the unit will go into an alarm state.
 - b. **High Alarm Deadband** — A range on either side of a alarm setting when no alarm will be triggered.
 - c. **Low Alarm Value** — The low value for the input for when the unit will go into an alarm state
 - d. **Low Alarm Deadband** — A range on either side of a alarm setting when no alarm will be triggered.
5. Tap **Update** when finished.
6. Tap  at the top of the screen to return to the previous screen.
7. Repeat for each Reading as needed.

Switch Over-Current

If a relay is in an alarm state and needs to be reset, tap **Reset Over-Current** on the main unit configuration screen to reset it.

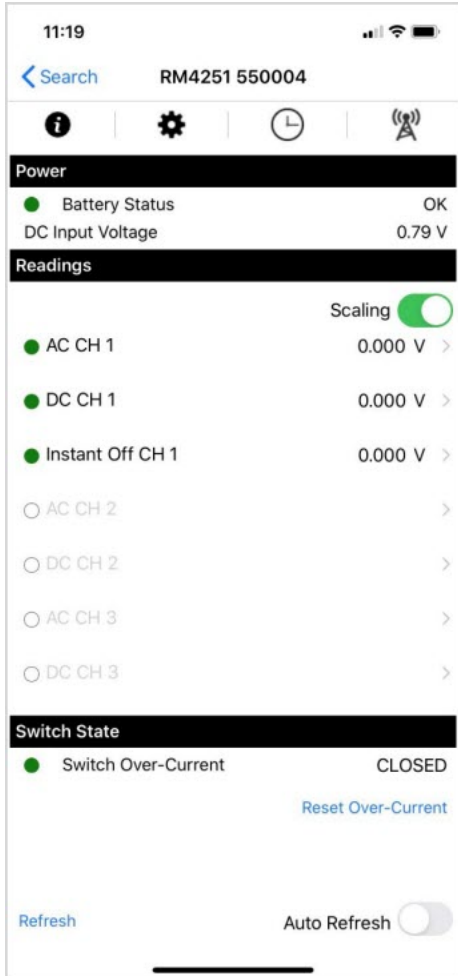
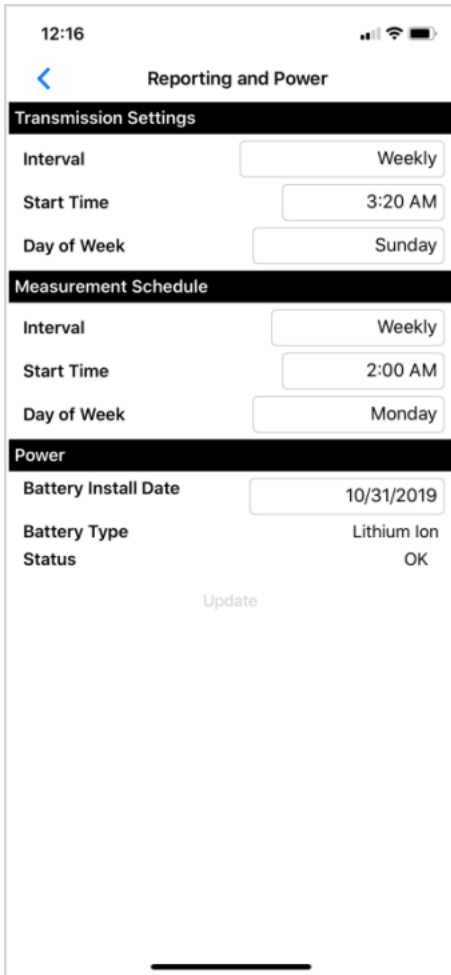


Figure 5-5. Reset Over-Current

Set a Transmission and Measurement Schedule

Complete the following steps to set both a transmission schedule and a measurement schedule for an RM4211 or RM4251:

1. Tap  to open the *Reporting and Power* screen.



The screenshot shows the 'Reporting and Power' screen on a mobile device. The status bar at the top displays the time 12:16, signal strength, Wi-Fi, and battery icons. The screen title is 'Reporting and Power' with a back arrow on the left. The content is organized into three sections: 'Transmission Settings', 'Measurement Schedule', and 'Power'. Each section has several fields with dropdown menus or text inputs.

Transmission Settings	
Interval	Weekly
Start Time	3:20 AM
Day of Week	Sunday

Measurement Schedule	
Interval	Weekly
Start Time	2:00 AM
Day of Week	Monday

Power	
Battery Install Date	10/31/2019
Battery Type	Lithium Ion
Status	OK

At the bottom of the Power section, there is an 'Update' button.

Figure 5-6. Reporting and Power Screen - Transmission Settings and Measurement Schedules

2. For transmission settings (when measurements are sent to Bullhorn Web):
 - a. Tap in the **Interval** field and select an interval: Day of Month, Daily, or Weekly.
 - b. Tap in the **Start Time** field and select a time.
 - c. For **Day of the Month** interval, tap in the **Day of Month** field and select the number for the day of the month when the transmission will be sent. You can select up to four days. Tap the field again to close the pop-up section.

12:25

Reporting and Power

Transmission Settings

Interval Day of Month

Start Time 3:20 AM

Day of Month 1

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Measurement Schedule

Interval Day of Month

Start Time 2:00 AM

Day of Month 1, 6

Power

Battery Install Date 10/31/2019

Battery Type Lithium Ion

Status OK

Update

Figure 5-7. Day of Month Transmission Schedule

- d. For **Weekly** interval, tap in the **Day of Week** field and select the day when the transmission will be sent.

WARNING: The schedule for how often measurements are taken cannot be more often than when transmission are made.

3. For measurement schedule settings (when measurements are taken):
 - a. Tap in the **Interval** field and select an interval: Day of Month, Quarter-Hourly, Hourly, Daily, or Weekly.
 - b. Tap in the **Start Time** field and select a time.

NOTE: Quarter-Hourly, Hourly, and Daily intervals only require a Start Time.

- a. For **Day of the Month** interval, tap in the **Day of Month** field and select the number for the day of the month when the transmission will be sent. You can select up to four days. Tap the field again to close the pop-up section.

The screenshot shows the 'Reporting and Power' configuration screen. It features three main sections: 'Transmission Settings', 'Measurement Schedule', and 'Power'. In the 'Transmission Settings' section, the 'Interval' is set to 'Day of Month', the 'Start Time' is '3:20 AM', and the 'Day of Month' is set to '1'. The 'Measurement Schedule' section has the 'Interval' set to 'Day of Month', the 'Start Time' at '2:00 AM', and the 'Day of Month' set to '1'. Below this is a calendar grid with days 1 through 28, where day 1 is highlighted in green. The 'Power' section shows the 'Battery Install Date' as '10/31/2019', the 'Battery Type' as 'Lithium Ion', and the 'Status' as 'OK'. An 'Update' button is located at the bottom of the 'Power' section.


Figure 5-8. Day of Month Measurement Schedule

- b. For **Weekly** interval, tap **Day of Week** and select the weekday when the transmission will be sent.
4. Tap **Update** to apply changes.
 5. Tap ← at the top of the screen to return to the previous screen.

View Current Firmware

On activation and connection to an RM4211 or an RM4251, Bullhorn Tools Mobile will automatically determine if the unit is running the most current firmware version. If it is discovered that the unit does not have the current firmware version installed, Bullhorn Tools Mobile will automatically upgrade the firmware. Allow the upgrade process to complete before continuing any configuration.

Complete the following steps to view the current version of firmware installed on the RM4211 or RM4251:

1. Tap  to open the *Settings* screen.

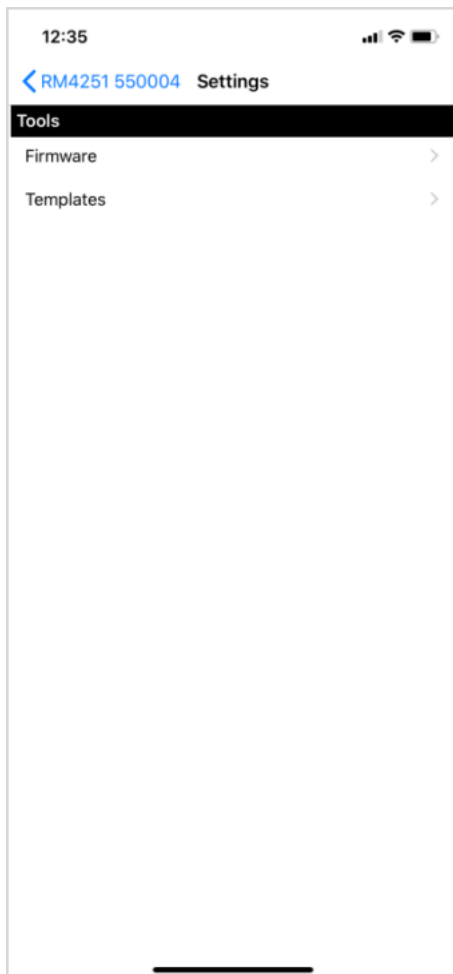


Figure 5-9. Settings for Firmware and Templates

2. Tap **Firmware** to open the *Firmware Versions* screen. The current version of the unit firmware and the current version of are listed.

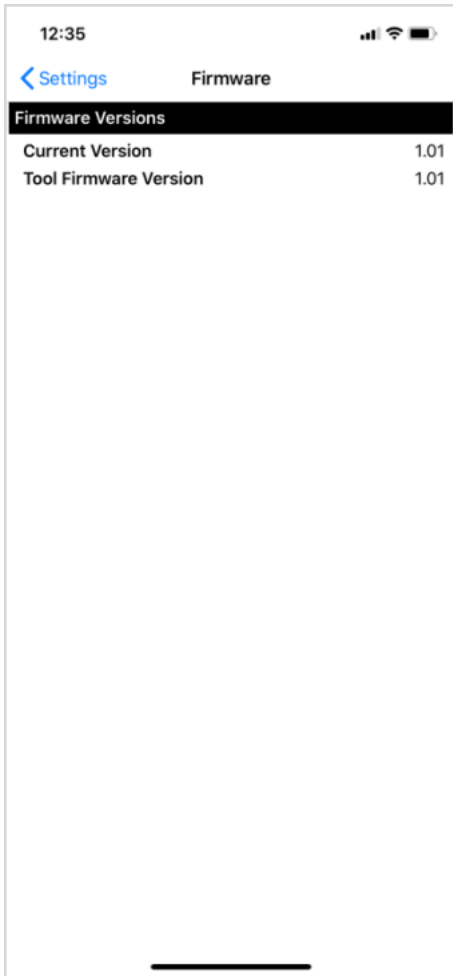


Figure 5-10. Firmware Versions

RM5 Configuration

Bullhorn Tools can configure RM5 units' inputs, alarms, and transmission schedules.

Since Bullhorn Tools Mobile uses a Bluetooth connection to pair with the unit, ensure that Bluetooth has been enabled on your mobile device before opening the app. For Android users, connect with the unit through the app, not from the Bluetooth connection screen that displays when you enable Bluetooth on your mobile device.

NOTE: Before beginning the configuration process, ensure that the Bullhorn Tools Mobile app is updated to the latest version. The app can be downloaded from either the Apple App store or Google Play Store.

Bullhorn Tools Mobile can be used to perform the following configuration tasks on RM5 units:

- *Enable and Configure Channels and Alarms*— enable and configure one or two accumulator channels, one or two digital channels, and enable or disable alarms for the digital channels.
- *Set a Transmission Schedule*—set how often and when channel information will be sent to the Bullhorn Web account.
- *Update Firmware*— if available, apply an update to the firmware. Before updating the firmware, ensure that you are updating to a newer version. If the firmware version to be applied is older than the unit's current version, this action will downgrade the unit's firmware and may cause application errors. AI generally recommends using the latest version of firmware on RM5 units.
- *Factory Reset*— Allows a unit to be reset to the factory default state. This procedure can be used to recover a unit that is in a bad configuration state that does not allow the user to configure settings.
- *Review Unit Information or Email Support For RM5 Units*— view current unit information or send an email to customer support, which will include a log file of the current session.

The unit will disconnect automatically after 10 minutes. It is not necessary to swipe the activation point again unless you wish to de-activate the Bluetooth connection immediately.

Enable and Configure Channels and Alarms

Complete the following steps to enable and configure channel and alarms for an RM5 unit.

1. On the info screen, tap the  icon to open the **Options** menu.
2. Tap the  icon to open the **Settings** menu.

3. Tap the name of the channel to open the **Channel Settings** screen.

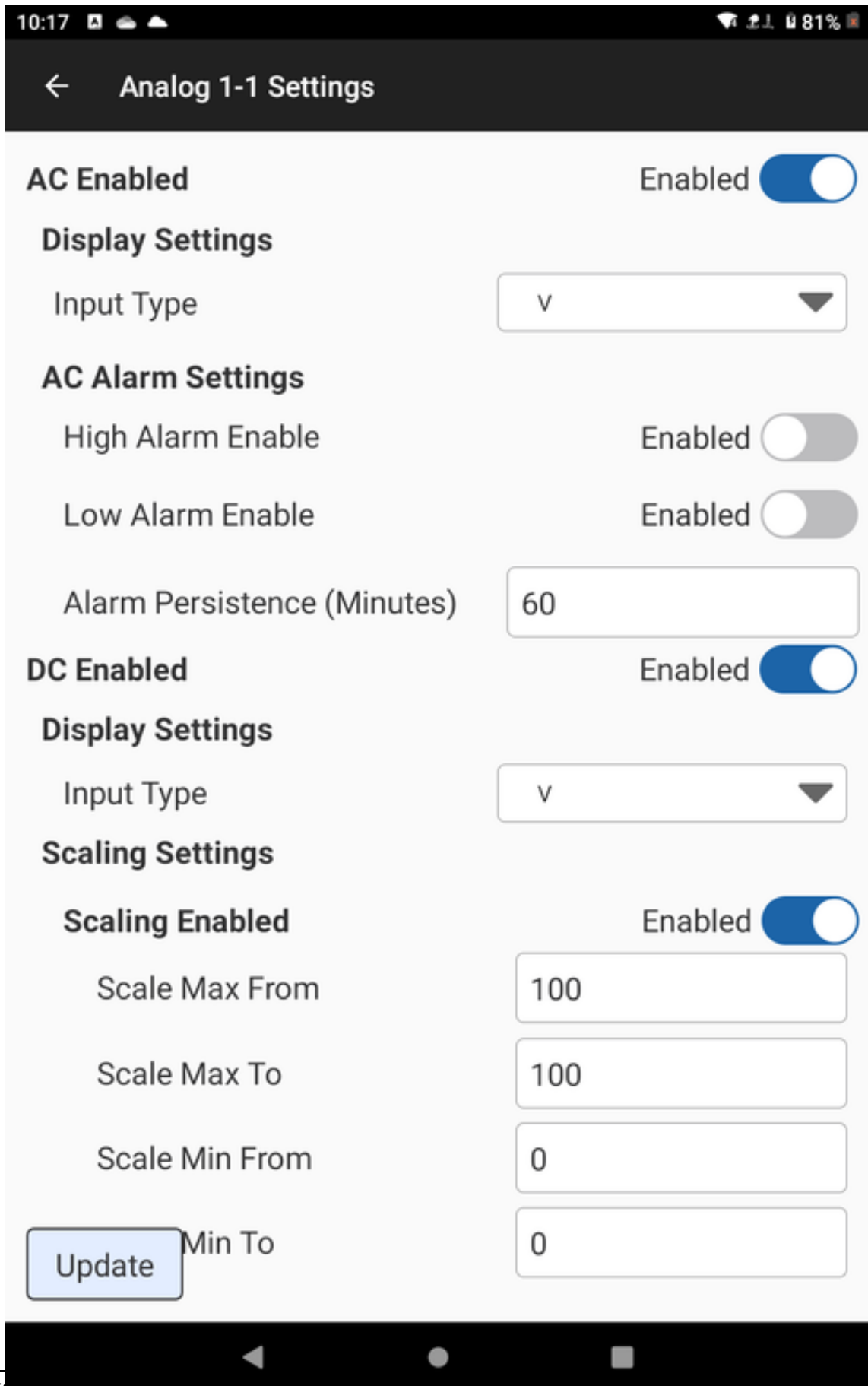


Figure 5-11. RM5 Analog Channel Settings

- **AC Enabled** — Enable alternating current measurements on the selected channel.
- **Display Settings** — Toggle input units between volts (V) and millivolts (mV).
- **AC Alarm Settings** — Set high and low voltage alarm thresholds that will trigger an alarm.
- **Alarm Persistence** — Amount of time in minutes that a reading must exceed a threshold before triggering an alarm. See [What is Persistence?](#) for details.
- **DC Enabled** — Enable direct current measurements on the selected channel.
- **Display Settings** — Toggle input units between volts (V) and millivolts (mV).
- **Scaling Settings** — Set minimum and maximum values for display range.
- **DC Alarm Settings** — Set high and low voltage alarm thresholds that will trigger an alarm.
- **Alarm Persistence** — Amount of time in minutes that a reading must exceed a threshold before triggering an alarm. See [What is Persistence?](#) for details.

5:12 79%

← Digital 1-2 Settings

Label

Channel Enabled Enabled

High Alarm Enabled Enabled

Low Alarm Enabled Enabled

Alarm Persistence

Accumulator Settings

Accumulator Enabled Enabled

Count

Alarm Enabled Enabled

Alarm Value

Reset Mode

Reset At

Reset To

Figure 5-12. RM5 Digital Channel Settings

- **Label** — Set the channel name.
- **Channel Enabled** — Turn the channel on or off.
- **High Alarm Enabled** — Transmit alarm if the input voltage is lower than the threshold value.
- **Low Alarm Enabled** — Transmit alarm if the input voltage is higher than the threshold value
- **Alarm Persistence** — Amount of time in minutes that a reading must exceed a threshold before triggering an alarm. See [What is Persistence?](#) for details.
- **Accumulator Enabled** — Toggle accumulator on or off.
- **Count** — Set the accumulator count value.
- **Alarm Enabled** — Toggle accumulator alarm on or off.
- **Alarm Value** — Accumulator count which triggers an alarm.
- **Reset Mode** — Select from **No Reset** or **Reset on Count**. **Reset on Count** options are:
 - **Reset At** — Set the value at which the accumulator resets.
 - **Reset To** — Set the value the accumulator resets to.

4. Tap **Update** to save the settings.

5:12 79%

← Digital 1-2 Settings

Label

Channel Enabled Enabled

High Alarm Enabled Enabled

Low Alarm Enabled Enabled

Alarm Persistence

Accumulator Settings

Accumulator Enabled Enabled

Count

Alarm Enabled Enabled

Alarm Value

Reset Mode

Reset At

Reset To

Update

Figure 5-13. Settings Update Button

5. Tap ← at the top left of the screen to go back.

Set a Transmission Schedule

Complete the following steps to set up a transmission schedule for an RM5:

1. Tap ≡ on the *Info* screen to open the *Options* menu
2. Tap ⌚ to open the *Reporting & Power* screen.


The screenshot shows the 'Report/Power' configuration screen. It includes the following fields and values:

- Reporting Mode:** Repeat
- Start Date:** 1/1/2022
- Start Time:** 9:00 AM
- Repeat Interval:** 7 Day

A note below the Repeat Interval field reads: "If you select a repeat interval incompatible with your bill plan, the repeat interval will be changed by Bullhorn Web when the device syncs." An "Update" button is positioned at the bottom of the form.

Figure 5-14. Reporting and Power Screen

3. Tap in the **Reporting Mode** field and select from **Off**, **Repeat**, or **Day of Month**.
 - a. In **Off** mode, the unit does not report.
 - b. In **Day of Month** mode, select the days of the month from the **Day of Month** field.
4. Tap in the **Start Time** field and select the time of day when the transmissions will be sent.
5. Tap in the **Repeat Interval** field and select the interval for when the transmissions will be sent.



-
6. Tap **Update**.
 7. Tap  at the top of the screen to return to the options screen.

Update Firmware

WARNING: Before updating the firmware, ensure that you are updating to a newer version. If the firmware version to be applied is older than the unit's current version, this action will downgrade the unit's firmware and may cause application errors. AI generally recommends using the latest version of firmware on all remote monitoring units.

NOTE: Firmware updates may take up to an hour. Please allow plenty of time for the update process to complete.

The Mesa tablet must be configured to update the firmware on an RM5. Create a `firmware` folder under `MS3A\Internal shared storage\Android\data\com.aiworldwide.BatToolsXF\files`, and place new firmware files there.

1. Tap  on the *Info* screen to open the *Options* menu
2. Tap  to open the *Settings* screen.

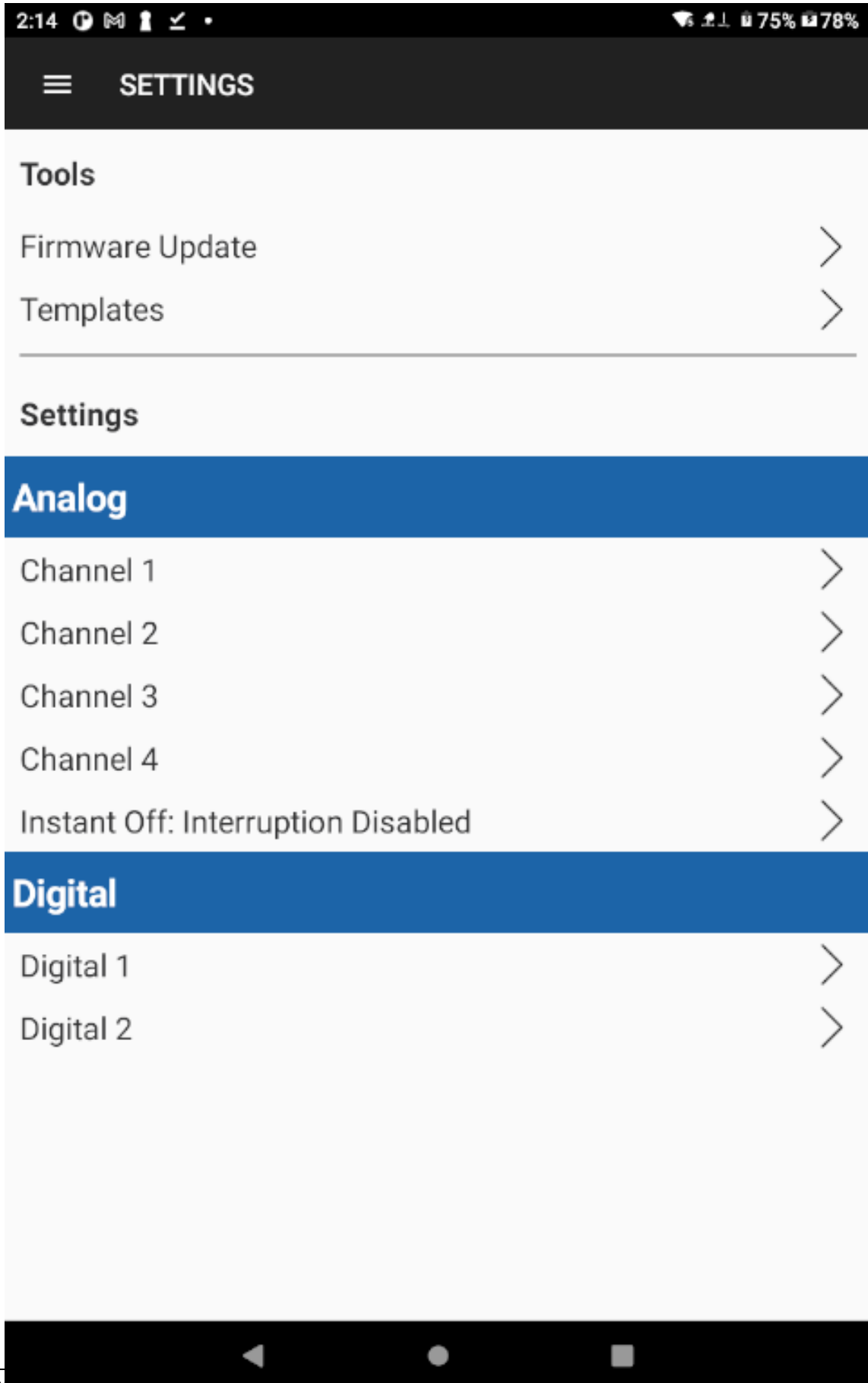




Figure 5-15. Settings Screen

NOTE: RM5 units will also include **Reading** settings on the *Settings* screen.

3. Tap **Firmware Update** to open the *Firmware Update* screen. The *Firmware Update* screen will show a list of available firmware files.
4. After the firmware has been uploaded, tap **OK** in the *Apply Firmware* dialog box.
The firmware update process may take several minutes.
5. When the firmware update is complete, a dialog box displays with instructions on completing the update. Tap **OK**.
6. The unit will disconnect and stop transmitting. When the app returns to the *Search* screen, re-activate the unit and connect to Bullhorn Tools Mobile to continue.

Factory Reset

Complete the following steps to reset an RM5 unit to factory defaults:

1. Tap  to open the options menu, then tap  to return to the unit info screen.
2. Tap **Factory Reset** to begin the reset process.

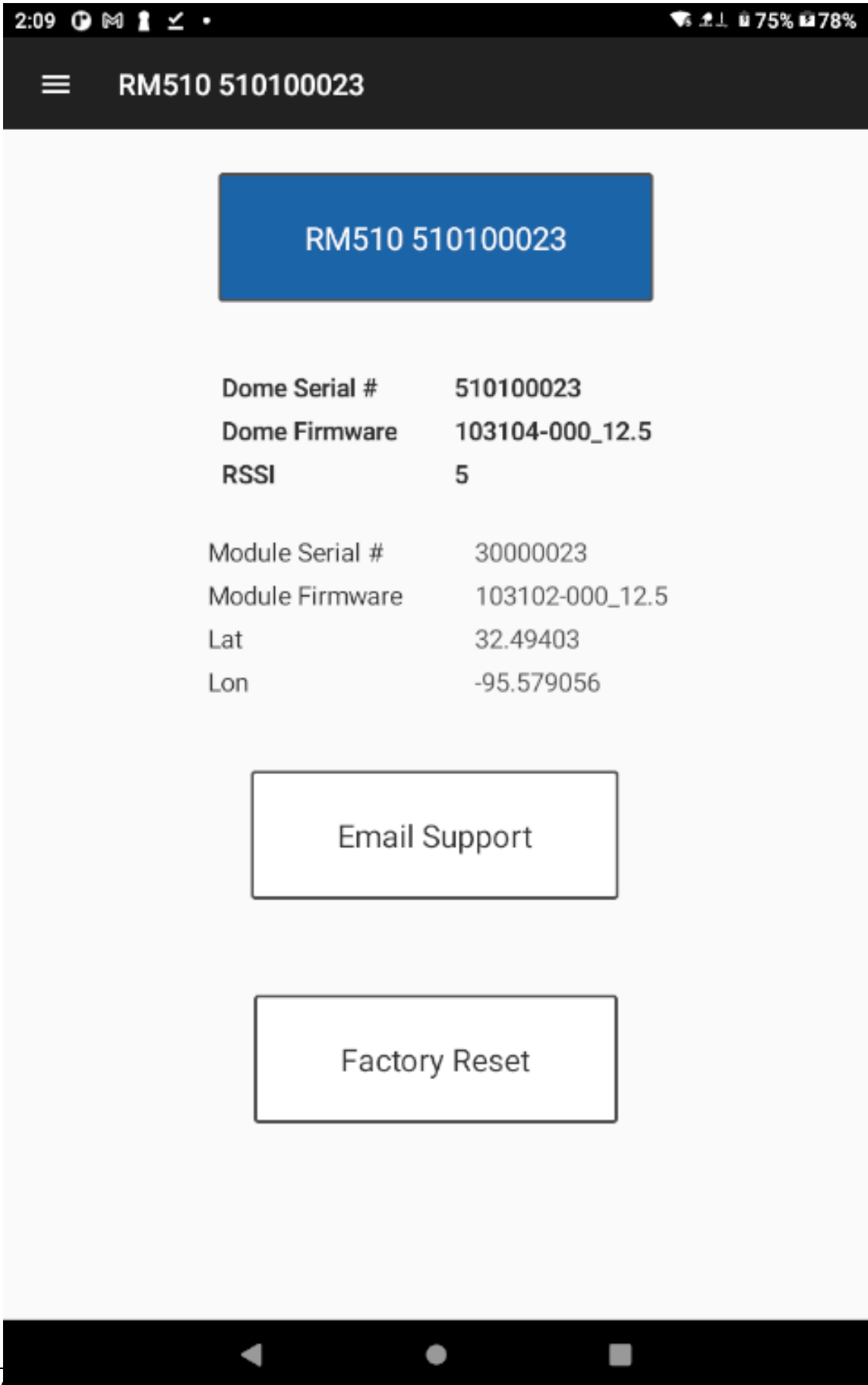


Figure 5-16. Factory Reset

3. The unit will display a confirmation screen. Tap **Start** to begin the reset process.

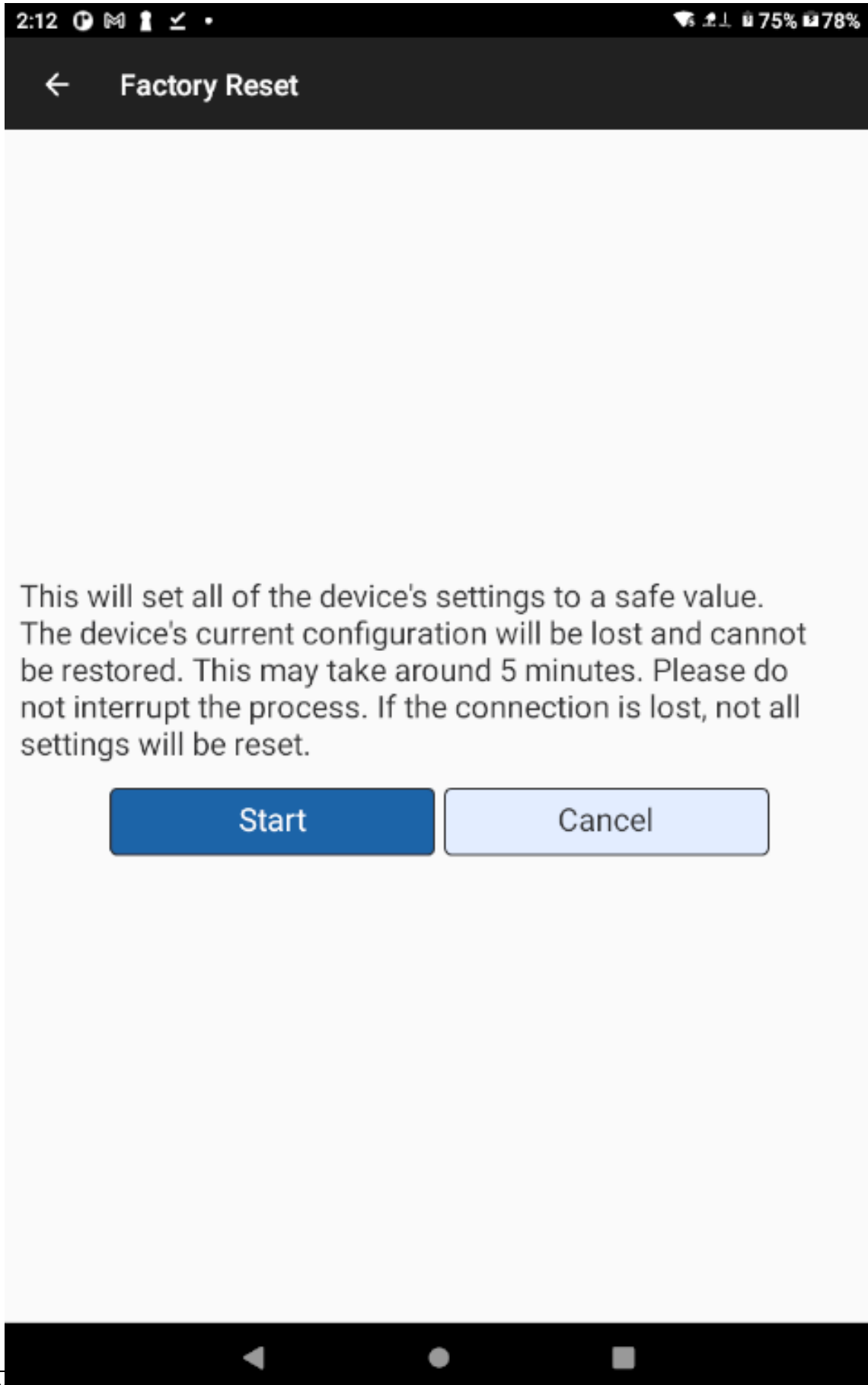




Figure 5-17. Reset Confirmation

The unit will now reset itself to factory defaults. This process could take several minutes. If the reset process is interrupted, the unit will likely be left in a bad state and will have to be reset again.

Review Unit Information or Email Support For RM5 Units

Complete the following steps to view unit information or to contact the Support team for any RM5 unit:

Tap  to open the options menu, then tap  to see unit information or to contact [AI Support](#).

1. The unit information screen is displayed by default when Bullhorn Tools Mobile is connected to an RM5 unit.

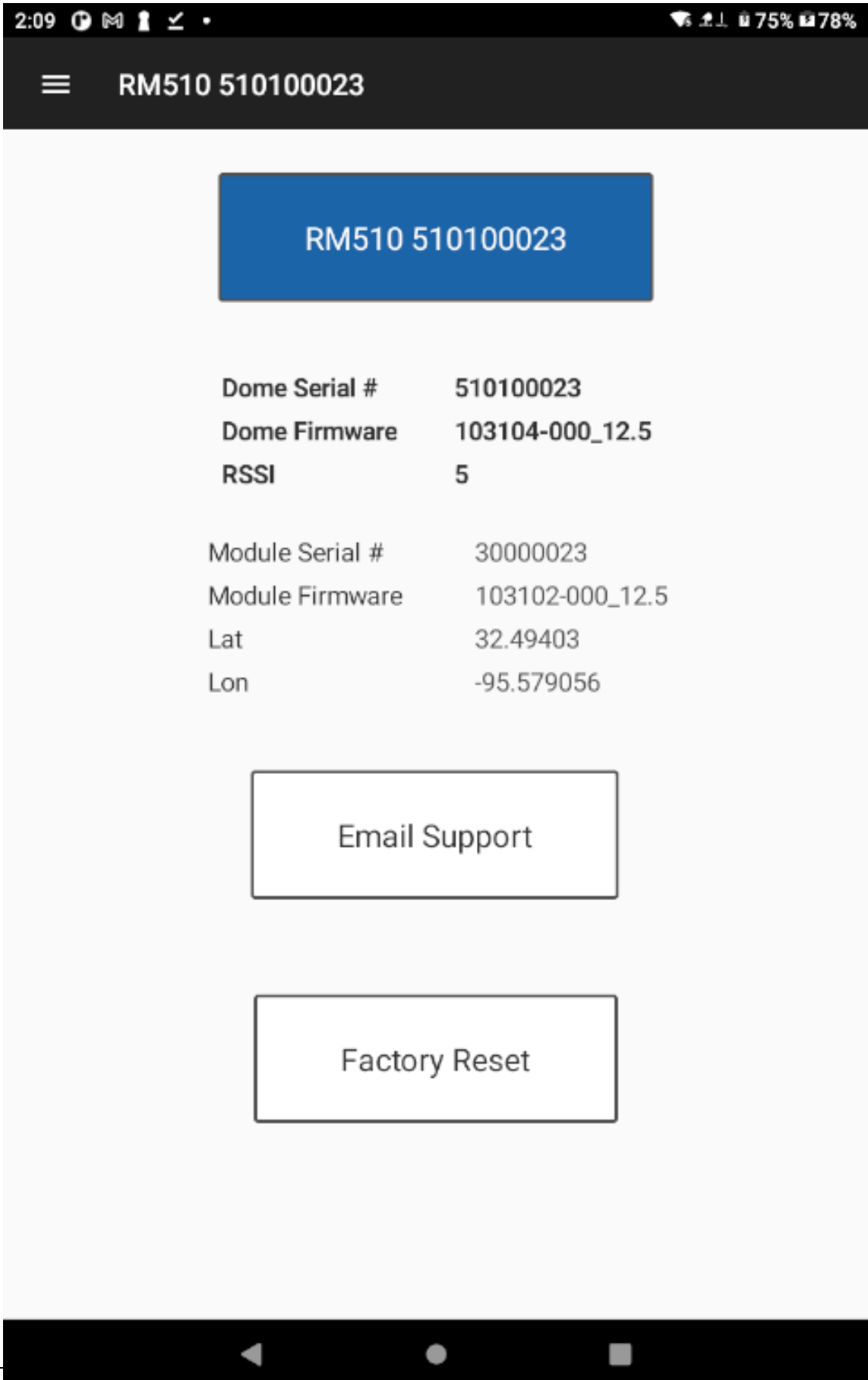




Figure 5-18. Info Screen

To return to the info screen from other screens, tap the  icon at the top left of the window, then tap the  icon.

2. Tap **Email Support** to send an email to [AI Support](#). The email will include unit information and the current session's log file.