LUMIC LINKER APP MANUAL VERSION 1.6.5

December 2023

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Getting Started

App Description

This application enables wireless Bluetooth communication with the designated device. The Model 3000-Series of Ludlum's digital survey meters, already known for their versatility and user-friendly operation are ideal for this application, Ludlum Measurements has expanded the features and options for the Model 3000-Series instruments. These instruments may be upgraded with Bluetooth 4.0 LE® (Bluetooth Low Energy, sometimes referred to as Bluetooth Smart) for wireless connectivity. This feature permits wireless transmission of readings from a connected instrument, allowing operators to remotely monitor the live data on the screen of their mobile device. Additionally, this combination enables discrete operation of the radiation detection instrument.

When paired with Linker App the operator can seamlessly send data to the *Rad Responder Network, which provides a central location for up-to-date information from operators in the field. Reported data includes user, radiometric survey, survey notes, and GPS location, as well as details about the instrument and detector being used. This information can be shared with remote personnel instantly, greatly improving the speed and accuracy of acquiring and reviewing survey data.

Minimum Requirements

Supported Hardware

- IOS
 - o iPhone 6 and iPad Gen 3 and higher
- Android
 - o Bluetooth 4.0 and higher android devices

Supported Operating Systems

- IOS
 - o iOS 8.0 and higher
- Android
 - o Android 7 and higher

App Requirements

- 100 MB of free space on the device.
- Internet connection (Wi-Fi/Data) for app download, location service and Rad Responder features.
- Bluetooth 4.0 Bluetooth device (iOS/Android).
- Bluetooth enabled Lumic based instrument and 2241 with Bluetooth module.

Installation

Can be downloaded from the following app stores.

- Google Play (Android)
- App Store (iOS)

Using the App

Navigation





Tap the hamburger button on the top left to open the nav menu.

Home Button

Tap to navigate to the Home Page.

Device Button

Tap to navigate to the Device Page.

RadResponder Button

Tap to navigate to the Rad Responder Page.

Settings Button

Tap to navigate to the Settings Page.

Log Button

Tap to navigate to the Log Page.

Help Button

Tap to navigate to the Help Page.

Home Page



Instrument Information

At the top of the screen, the instrument's model and serial number are displayed.

Detector Information

The frame displays the detector model and serial number.

Device Status

Displays the signal strength of the instrument connection and indicates if the instrument is connected to the app or not.

Rad Responder Status

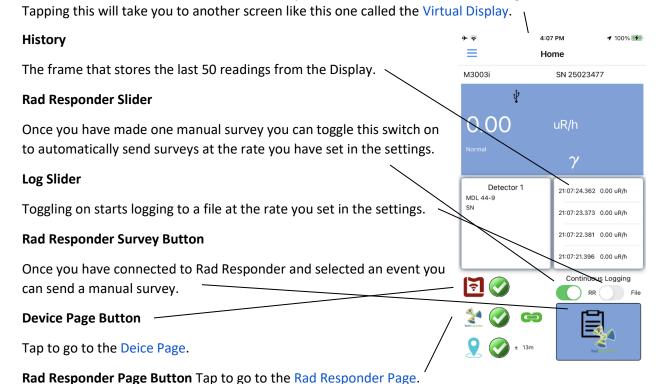
Indicates if you are connected to Rad Responder and if your credentials and permissions are valid.

Location Status

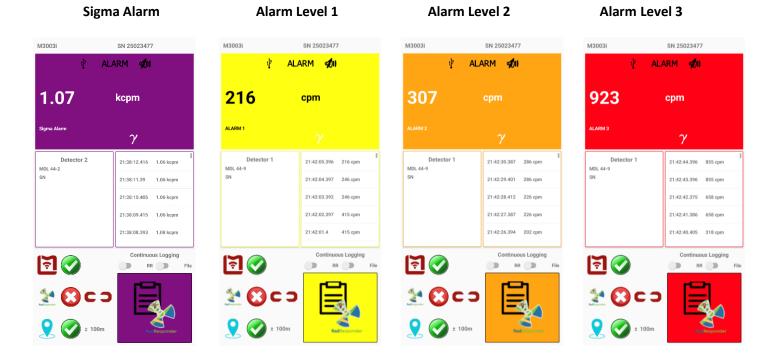
Indicates if you have location data and how accurate the current location data is in meters.

Display

This area displays the values reading on the instrument. On the top are status symbols. In the center are the main digits and the units.

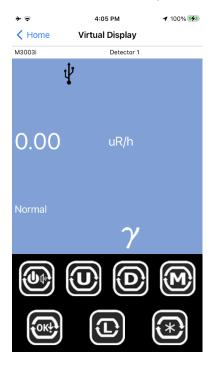


When the alarm levels are indicated the home screen will change color corresponding to the alarm.



Virtual Display Screen

The Virtual display is a blown-up home display with the same information but with added simulated buttons for each device you can use to press the buttons remotely.





Depending on the instrument model you can get different keyboard layouts that match each of the models.

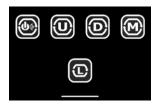
3002



3000, 3007, 3007B, 3004



3001, 3004, 3007i, 3007Bi, 3014

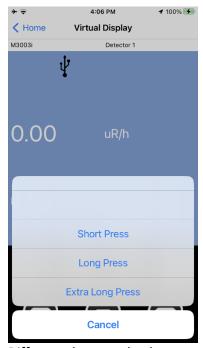


3003, 3003i



3078, 3078i

You can press and hold each button to get a sub menu to send different type press commands to the instrument.





Different alarms make the screen a separate color.

Sigma



Alarm level 1



Alarm level 2



Alarm level 3



Device Page





Scan Button

Tap to search for nearby 4.0 Bluetooth enabled Ludlum instruments. The new-found devices will appear in the list below the buttons.

Connect/Pair Button

Tap the connect button to attempt to connect to the selected available device (found by scanning) will begin pairing to an instrument shown in Pairing an Instrument to the App. This button will be disabled for a moment as it tries to connect or is already connected to an instrument.

Disconnect Button

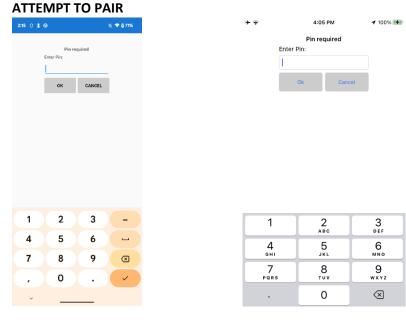
Tap the Disconnect button to release the current Lumic enabled instrument from the device. All communication will stop, and memory will be wiped of the last instrument connected.

Device List

The devices are listed under the buttons. Each device will have a name given to it by the chip, as well as a GUID underneath. The bar to the right represents the signal strength given in standard RSSI Values.

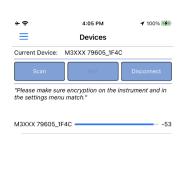
Pairing an Instrument to the App

After pressing the Pair/Connect button a pin screen will appear to enter the generated pin from the instrument. MAKE SURE THE INSTRUMENT AND DEVICE ENCRYPTION SETTINGS MATCH BEFORE YOU

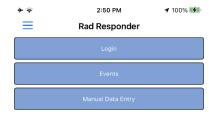


After Pairing is complete and paired successfully you will see an instrument Bluetooth name on the top of the screen and the pair/ connect button will be disabled.





Rad Responder Page





Login Button

This will log you into Rad Responder and request valid credentials and permissions. In the Logging into Rad Responder example, you can see a step-by-step process for logging into Rad Responder.

Events Button

This will allow you to select the current event to which you would like to post surveys too. In the Selecting an Event example, you can see a step-by-step process for selecting an event.

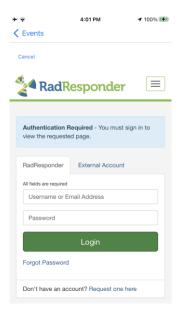
Manual Data Entry Button

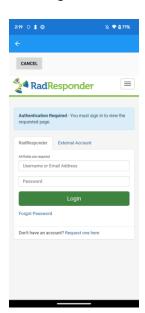
This allows a user to send a survey to Rad Responder by hand; any value and units should be allowed to be written. In the Enter a Manual Survey example, you can see a step-by-step process for entering and sending a manual survey. YOU NEED TO HAVE SENT A MANUAL SURVEY TO USE THE AUTO RAD RESPONDER SURVEYS TOGGLE IN THE HOME PAGE

Logging Into Rad Responder

MAKE SURE YOU ARE CONNECTED TO THE INTERNET ON YOUR DEVICE.

- 1. Hit the Menu button, and then press the Rad Responder button.
- 2. Once in the Rad Responder menu, log in. Press the Login button, which will open a web page in a few moments.
- 3. Using your Rad Responder information, sign in.





4. After you have successfully signed in, a message will appear asking if you want to grant Lumic Linker permission to send surveys and data on your behalf. If you agree, press the Grant button.





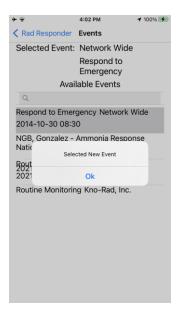
- 5. After the web page closes, the app should redirect you to the Events page. See Selecting an Event example for selecting an event to post surveys too. YOU MUST SELECT AN EVENT TO SEND SURVEYS TO RAD RESPONDER
- 6. Go back to the Home page, check the status of Rad Responder, and see if the Send Survey button is now usable.





Selecting an Event

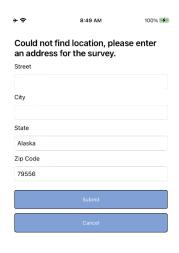
Search for your event to post surveys too and tap to select the event. Now you can send surveys but don't forget to send a manual survey before you use the Rad Responder toggle on the home page.





Entering a Manual Survey

If you are not receiving any location data from your device, you will be prompted to enter your address to get a quick Wi-Fi based location instead.





Enter all the data manually to send a survey to Rad Responder, then tap the send button.





If the internet was connected and the survey was successfully posted, you should get a pop to confirm and now you can use the Rad Responder toggle on the home page to send surveys at a set rate automatically.

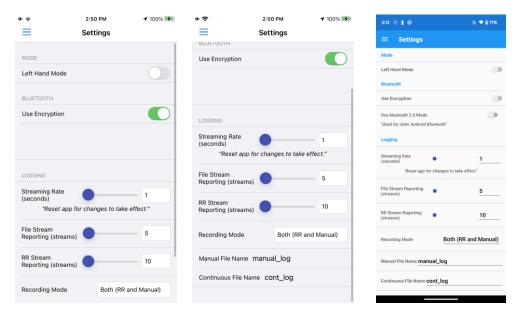






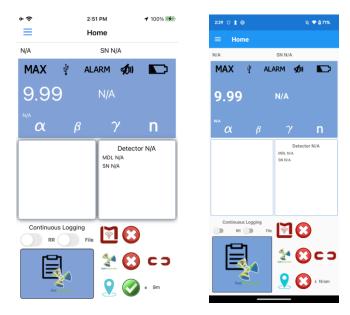


Settings Page



Left Hand Mode

switches the side the buttons are in the home screen.



Use Encryption

Sets if the phone uses encryption to the device. *Disabling or enabling this option may cause connection issues*.

Streaming Rate (seconds)

This defines the rate at which the instrument streams data to the Lumic Linker app. Range limits are 1 to 5 seconds.

Effective Rate (seconds): The effective rate at which events are reported or logged, mathematically defined as: **Streaming Rate * Stream Reporting = Effective Rate**. For instance, if the instrument streams data to Linker every second and stream reporting is 1 then: 1sec/stream * 1 stream = 1 second(s) 5sec/stream * 10 streams = 50 second(s), tell the next stream is logged or sent to Rad Responder.

File Stream Reporting

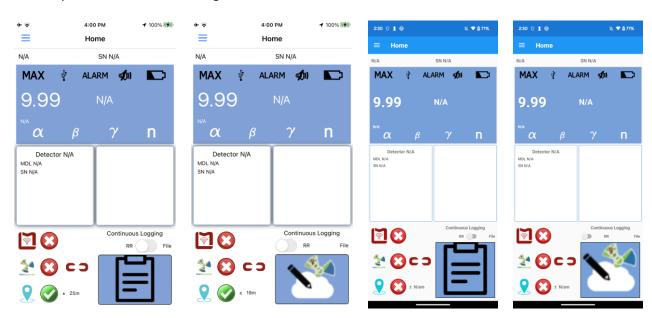
This defines how often the Lumic Linker streams are reporting to a file. Limits are 1-720 streams.

Rad Responder Stream Reporting

This defines how often the Lumic Linker streams are reporting to Rad Responder. Limits are 10 - 720 streams.

Recording Mode

Allows you to select what the button on the home page does. Right now, there are three options. One is Rad Responder, two is Manual Log, and three is both.



Manual File Name

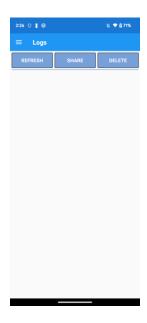
The file name used for manual file logs.

Continuous File Name

The file name for continuous file logs.

Log Page





Refresh Button

Refreshes the logs and displays any new logs that didn't exist before last refresh.

Share Button

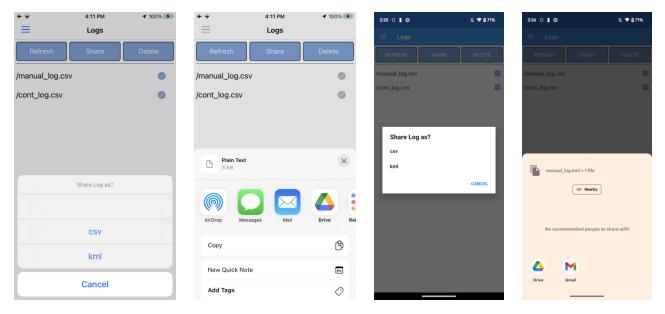
Open the share menu for iOS or Android to send the selected log files to the user desired location. Look at the Sharing Logs example for step by step.

Delete Button

Delete selected logs. In the Deleting Logs example you can see the step by step.

Sharing Logs

Select the logs you wish to share and select if you want the logs in .csv file or a .kml file format.



Then select the share location and you have successfully shared your selected file in chosen format to your desired location.

Log Examples:

.csv

```
DateAndTime(UTC), Latitude, Longitude, Altitude, MeterValue, MeterUnit, MeterStatus, ActiveDetector, RadiationType 2023-11-06 15:21:18.509,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:20.529,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:20.529,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:22.527,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:23.521,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:24.517,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:25.528,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:26.527,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:25.528,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:25.528,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:28.53,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma 2023-11-06 15:21:28.53,N/a,N/a,N/a,00.0,cpm,Normal,1,Gamma
```

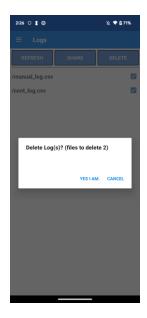
.kml

```
<
```

Deleting Logs

Select the files you wish to delete and confirm that you want them deleted.





Help Page

Help page contains information that the user could find helpful and the current version of the app.





Description

App description and link to the official manual.

Devices

Short guide to pairing instruments to the Linker app.

Rad Responder

Short guide to connect to Rad Responder and use Rad Responder in the app.

Release Notes

All the changes and fixes in this current release of the app.

Quick Start Guide for Connecting to an Instrument

Instrument Requirements

- Ludlum Instrument with a BLE module.
- Bluetooth enabled on instrument and device.
- Encryption matches on the device and instrument.

Generating a Pin

Press and hold the following buttons depending on the instrument for 2 seconds and for 3000, 3007, 3007B, 3004 and 3002 models the pin will disappear quickly, so write it down before it disappears. On the other models you need to press the correct buttons for 2 seconds again for the numbers to disappear, but don't forget to save the pin before you make it disappear.

3002







3000, 3001, 3003, 3003i, 3004, 3004i, 3007, 3007l, 3007B, 3007Bi, 3014







3078, 2078i







Paring to the App

After you have generated a pin on the instrument follow the instructions in Pairing an Instrument to the App_example.

Quick Start Guide for connecting to Rad Responder in App

Rad Responder Requirements

- Internet on the device.
- Valid Rad Responder credentials.
- Register instrument and detectors in Rad Responder.

Connecting Rad Responder

Follow instructions from the Connecting to Rad Responder example.

Using Linker to Send Surveys to Rad Responder

Use the Entering a Manual Survey example for manual surveys. Once you have made one manual survey you can also use the continuous survey toggle on the Home Page, to continuously send surveys to Rad Responder based on stream settings.

Version History

1.3.6 Jul 31, 2017

- Fixed some connection issues with rad responder.
- Separation of symbols fresh token is now the green check mark, And Active connection with new link icon.
- Fixed connection speeds with device.
- Fixed connection issues with device.

1.3.12 May 25, 2018

- This app has been updated by Apple to display the Apple Watch app icon.
- Added a second level of an alarm color change.

1.4.63 Oct 14, 2022

update for 3003 and the 3078 removed the audio background tag.

1.4.64 Nov 14, 2022

Bug Fixes

- Fixed a bug where the app would crash when the instrument pin was changed.
- All instruments that don't support the remote button feature currently will now correctly display message when attempting to open remote button menu.

UI Changes

• Removed the S at the end for speed settings.

1.5.1 Apr 15, 2023

Bug Fixes:

- Setting Increment to 0 or nothing would crash the app.
- Status icons and status text for M3XXX instruments show on the screen properly.
- Different alarms on M3XXX instruments change screen color to indicate alarms and their proper levels.

Yellow - Level 1

Orange - Level 2

Red-Level 3

Purple - All other alarms

• Updated description and versioning.

1.6.4 November 2023

New Features:

- Added virtual screen support for M3003 Gen 2 family of instruments.
- Can now log to a file every second.
- Device Page now filters only possible Ludlum instruments.
- Logging Changes:

Instead of the Linker logging being time based, logging is now event based.

Streaming Rate (seconds per stream):

This defines the rate at which the instrument streams data to the Lumic Linker app. Range limits are 1 to 5 seconds.

Stream Reporting (streams):

This defines how often the Lumic Linker streams are reported to Rad Responder or logged to a file. Range limits are 1 to 720 streams.

Effective Rate (seconds):

The effective rate at which events are reported or logged. Mathematically defined as:

Streaming Rate * Stream Reporting = Effective Rate.

For instance, if the instrument streams data to Linker every second and stream reporting is 1 then:

1 sec/stream * 1 stream = 1 second

Log files now have a header string.

Bug Fixes:

- Logs should show up correctly now.
- Log event timing should be more consistent.
- Fixed save, delete, and share multiple logs.
- In Device Page while connected to an instrument the pair button is now disabled.
- File name additional _clog is removed, and the file names should now be the correct names from settings.
- Hamburger menu buttons will no longer let you navigate to the current page.
- Navigation Issue on home buttons is fixed.
- App will not crash, when you have no internet and try to log into Rad Responder. (On IOS version Only)

UI Changes:

- Logs now have a selected radio button instead of toggles.
- Made changes to the device menu to make instruments easier to find.
- Updated virtual display screen to be simpler and straight forward to use.
- Fixed many spelling errors throughout the app.

- Replaced virtual display button images with high resolution images. Each button should be consistent for all appropriate instruments.
- Added a warning message regarding matching encryption in the instrument with the linker settings before you attempt to pair with the instrument.
- Settings reflect the new logging changes.
- Highlights are now normal from orange and red color was switched for the app's primary blue color. (Only on Android Version)
- Added numeric keyboard for settings options that apply.
- Logs in history now show in UTC time instead of local to match logs in file.
- Get Address Screen updates:
 - O Add top Margin to move below new screen notch. (Only on IOS Version)
 - Added Cancel Button.
 - O Slight menu appearance improvement.
 - Added State Label.

1.6.5 December 2023

New Features:

Bug Fixes:

• Fixed an issue were M3000 and M3002 instruments with M3XXX BLE modules would not display readings or information on the screen.