Customer FAQs

Trimble SX12 with Wi-Fi HaLow Model

Reliable radios are the invisible backbone of robotic total stations today. Wi-Fi HaLow™ radio technology, allows the Trimble SX12 to quickly and easily work robotically, including at long range! Traditionally, radio communications are a tradeoff between long range and the amount of data you can send. For the Trimble SX12, Wi-Fi HaLow is an excellent balance: send all the data you need, at the range that you need, without having to switch between Standard Wi-Fi and Long Range Radio.

Keep reading below for answers to some frequently asked questions related to the Trimble SX12 with Wi-Fi HaLow, including:

Note- Due to country-specific radio regulations, the Trimble SX12 and EM130 with Wi-Fi HaLow are only available in the United States, Canada, Australia, and New Zealand.

Technology

- What is Wi-Fi HaLow?
    - Wi-Fi HaLow is an impressively robust communication method that allows for large amounts of data to be transferred at long range. For the SX12, that means you can easily work within your jobsite without having to think about the radio: stream video to quickly aim, capture images, transfer scans, etc.
    - Wi-Fi HaLow is an offshoot of traditional Wi-Fi standards. Wi-Fi HaLow operates in a sub-1GHz frequency, whereas traditional Wi-Fi operates in the 2.4 GHz frequency. Specifically, Wi-Fi HaLow operates in the 902-928MHz frequency range, though the specific frequency being used depends on the channel selected in Trimble Access, as well as the region the radio is configured to.
- What is the difference between 2.4 GHz Wi-Fi and Wi-Fi HaLow?
    - The difference between 2.4 GHz Wi-Fi and Wi-Fi HaLow is the operating frequency: 2.4 GHz for standard Wi-Fi, and sub-1GHz for Wi-Fi HaLow. The benefit of using a lower frequency is the signal is able to travel further while maintaining relatively high throughput capabilities.
    - This allows the Trimble SX12 and EM130 to communicate and transfer scans and stream video smoothly at much further range than what's possible with Standard Wi-Fi.
- What is the difference between Long Range Radio (LRR) and Wi-Fi HaLow?
    - Trimble Long Range Radio is a custom radio that operates in 2.4GHz ISM band while using Frequency Hopping Spread Spectrum (FHSS) technology for communication.
    - Wi-Fi HaLow radio utilizes a single frequency in the 902-928 MHz range. The specific frequency being used depends on the channel selected in Trimble Access, as well as the region that the radio is configured to.
    - Using LRR, the throughput is limited and as a result transferring scans or streaming video strains the capabilities of the LRR communication link. Conversely, Wi-Fi HaLow communications support approximately 8-14 times higher throughput than LRR! This means that although Wi-Fi HaLow doesn't have quite as long of a range as LRR, Wi-Fi HaLow allows for smooth and easy data transfer, even at long range.
- Does the Wi-Fi HaLow model of SX12 have any other ways to communicate with controllers?
    - Yes, the Trimble SX12 Wi-Fi HaLow model also includes Standard 2.4 GHz Wi-Fi. The Wi-Fi HaLow model is intended to be a single-link solution (no need to change radio methods), however we have included Standard Wi-Fi as a backup method just in case you experience local interference on those frequencies.
    - An SX12 and controller can also communicate via cabled connection using the Serial-to-USB cable that's included with every Trimble SX12.
- What range should I expect from Wi-Fi Halow on a Trimble SX12 & EM130?

❧ Trimble.

- Like any radio, we do not have an official specification. To better understand the factors that affect radio range and performance, please check out the [White Paper Introducing Trimble SX12 with Wi-Fi HaLow™ Radio Technology.](#)

Equipment

- What equipment do I need in order to use an SX12 with Wi-Fi HaLow?
  - TSC5, T7, TSC7 or T100 controller with Trimble Access version 2023.00 or newer
  - Trimble EM130 Radio module for the controller
  - And of course, an SX12 with Wi-Fi HaLow

Compatibility: Controllers & Antennas

- What controllers work with Wi-Fi HaLow?
  - TSC5, T7, TSC7 and T100 controllers are compatible with the EM130 for Wi-Fi HaLow
  - Controllers must also have Trimble Access version 2023.00 or newer.
- Can I use an EM130 with an EDB10?

  - No, the EM130 and EDB10 are not compatible with each other
- Are the EM940 and EM130 modules interchangeable?
  - No the EM130 is used to connect to the SX12 instrument as a WiFi HaLow radio while the EM940 is a 900mhz/450Mhz radio used to connect to base GNSS receivers for real-time radio-delivered corrections.
- Can I use an antenna from the standard Wi-Fi and LRR model of SX10/SX12 on an SX12 with Wi-Fi HaLow?
  - No. Each antenna is optimized for different frequencies, and so antennas are not cross-compatible between Wi-Fi HaLow and LRR models of the SX12.
- Can I use an EM120 antenna (LRR) with the EM130 (Wi-Fi HaLow)?
  - No. Each antenna is optimized for different frequencies, and so antennas are not cross-compatible between an EM120 and EM130.
- How can I tell the difference between old antennas and new ones?
  - On the Empower antenna, look for green rings-- this indicates that it is an EM130 (Wi-Fi HaLow) antenna. If the antenna is all black or black with a white Trimble logo, then it is an EM120 (LRR) antenna. Below is an image of the EM130 antenna:

  - On the SX12, look for a yellow ring at the bottom of the antenna: this indicates it is a Wi-Fi HaLow antenna.

LRR and Standard Wi-Fi antenna
for Trimble SX10 and SX12
P/N: 59429025-GEO

Wi-Fi HaLow and Standard Wi-Fi
antenna for Trimble SX10 and SX12
PN: 59912025

- Are there replacement antennas available?
  - o Yes:
    - ▪ WiFi HaLow antenna for Trimble SX10 and SX12 *Part Number: 59912025*
    - ▪ WiFi HaLow antenna for EM130 (pack of 5) *Part Number: 32319-10-BLK-GEO*
- How do I ensure I have the latest driver for the EM130 on my controller?
  - o For Windows controllers (TSC7, T7, T100) proceed to the download portal [here](#) and find the module support package for EM130.
  - o For TSC5 (Android) sign into the device and launch the Play Store. Tap on user profile
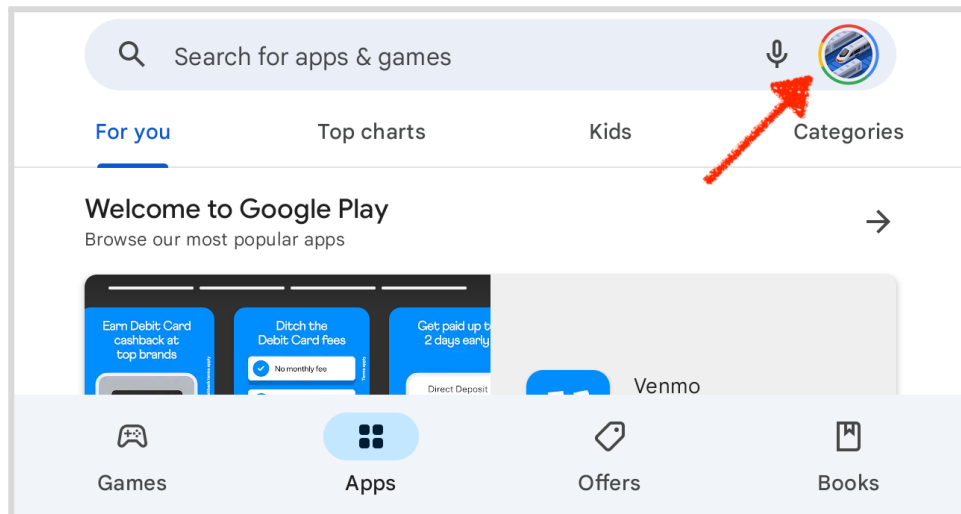
o   Tap on Manage apps & device
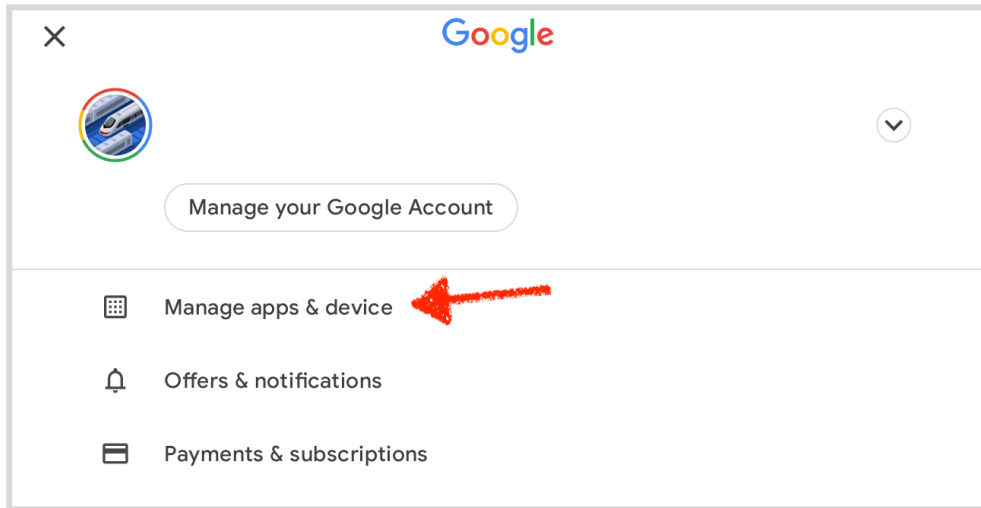
o   Tap on updating apps and ensure all apps are updated. Any EM130 module support updates will be located here.
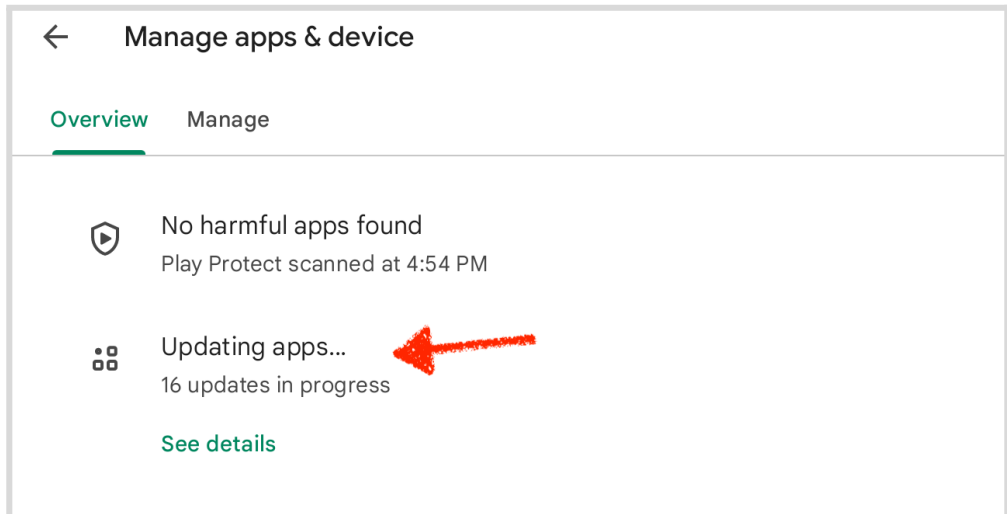

Compatibility: Trimble Access™ & SX12 Firmware

- Which version of Trimble Access is compatible with Wi-Fi HaLow?
  - 2023.00
- Which version of SX12 Firmware is compatible with Wi-Fi HaLow?
  - S2.8.4

Wi-Fi HaLow Settings in Trimble Access

- How do I know whether my SX12 is using Wi-Fi HaLow or standard Wi-Fi?
  - There are two ways to know what communication method you are using: the first is by looking at the status bar in Trimble Access, where you will either see "WiFi", meaning Standard Wi-Fi, or "WiFi HaLow".
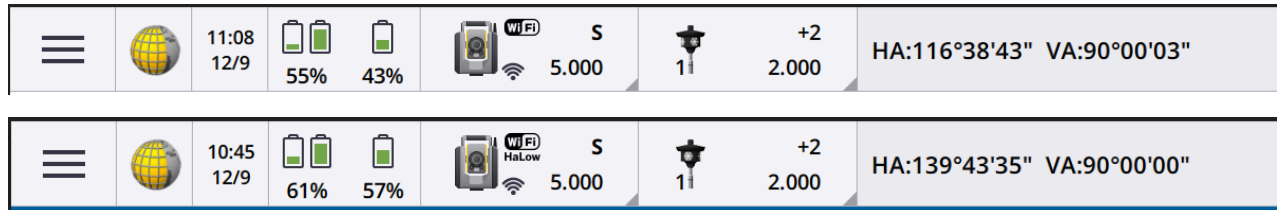

  - Alternatively, you can tell what radio is in use by looking at the SX12 power button. If it's green, Wi-Fi HaLow is in use If it's amber, the Standard Wi-Fi is in use.

    - *Note- if the light is solid, that means the SX12 is connected to a controller. If the light is blinking, it is waiting for a connection.*

- How do I know what Wi-Fi HaLow Mode to use: High Bandwidth or Low Bandwidth?
  - By default, use High Bandwidth mode. If you are experiencing any performance issues, try Low Bandwidth mode.
  - Low Bandwidth channels have almost half the performance capacity of the High Bandwidth channels, however, they can provide better performance if there is interference in the High Bandwidth frequencies. In some situations, the Low Bandwidth channels can also provide a slightly longer range than the High Bandwidth as long as the radio link is not heavily loaded with video data traffic.
  - To change this setting, go to Instrument Settings in Trimble Access
    - *Tip- To quickly get to Instrument Settings, press and hold the SX12 icon in the status bar for 2 seconds, then let go.*

- How do I know what channel to choose?
  - Also within Instrument Settings, you will have a drop-down choice Wi-Fi HaLow Channel . Each channel is a slightly different frequency, in ascending order.
  - The first time you use Wi-Fi HaLow, or if you run into performance issues, try using the Auto-Select Channel button. Trimble Access will automatically scan the available channels and make a recommendation.
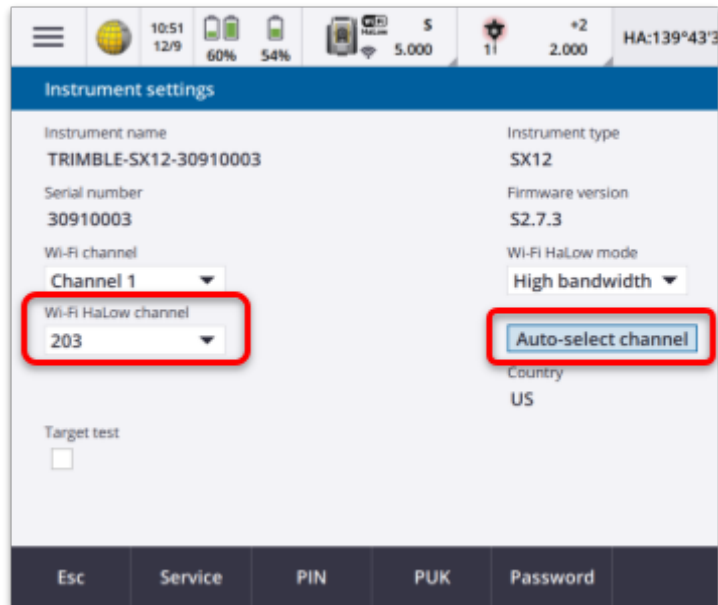
Availability

- What countries is the Trimble SX12 with Wi-Fi HaLow available in?
    - USA, Canada, Australia, and New Zealand
- Why is Wi-Fi HaLow only available in certain countries?
    - This regional availability is in compliance with governmental restrictions on communication frequencies
- In the future, will Wi-Fi HaLow be available in more places?
    - As countries worldwide change and update communication regulations, it's possible that Wi-Fi HaLow will be available in more regions, though we don't expect any expansion in the near future.
- Can I upgrade my Trimble SX10 or SX12 to use the Wi-Fi HaLow radio?
    - A Wi-Fi HaLow radio upgrade is available for the SX12 only. A SX10 cannot be upgraded to Wi-Fi HaLow. This upgrade can be performed by a certified SX12 Service Provider, or by Trimble Service Department at our regional fulfillment centers.

Links for More Information

- For more technical information, check out our White Papers:
  - [Introducing Trimble SX12 with Wi-Fi HaLow™ Radio Technology](#)
  - [Trimble SX12 Tracking And Target Separation](#)

- To learn more about the SX12 with Wi-Fi HaLow with Trimble Access, please check out:
  - [Trimble SX12 Scanning Total Station Field Guide](#)
  - [Trimble Access Help Portal](#)

- SX12 Accessories, please visit [geospatial.trimble.com/Optical-Accessories](#)

- For all other inquiries, please contact your local Trimble distribution partner