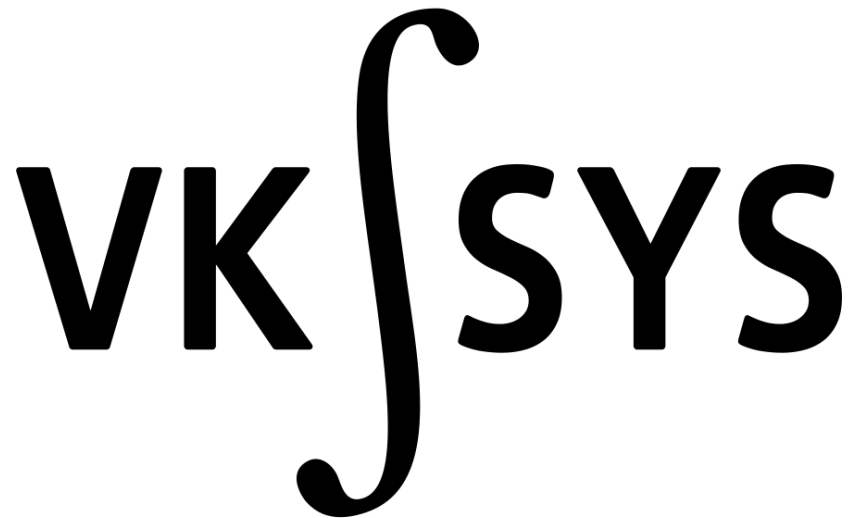


SmarTak inForce TAK Plugin

User Guide



VK Integrated Systems

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Document Release History

Release #	Date	Description of Changes
1.0	04/17/2023	Initial release
2.0	08/16/2023	GUI design and functionality
2.1	04/09/2024	GUI Updates and version compatibility changes
2.2	04/23/2024	New Functionality added. New GUI features

Purpose

SmarTak inForce is an ATAK plugin that allows users to connect to their SmarTak device(s). Discover local devices or view your paired devices with the press of a button. After successfully connecting to your device, you will be able to view the data on the map in real-time. For more information, visit us at the VK Integrated Systems Website <https://vkintsys.com/smartak>

Compatibility and Support

Releases for ATAK Version(s):

SmarTak inForce	ATAK	Android OS	Status
2.1.0.0+	5.1.0	7, 8, 9, 10, 11, 12, 13, 14	Supported
2.0.0.0+	5.0.0	5, 6, 7, 8, 9, 10, 11, 12, 13, 14	Supported
1.10.0.0+	4.10.0	5, 6, 7, 8, 9, 10, 11, 12, 13, 14	LTS
1.9.0.0+	4.9.0	5, 6, 7, 8, 9, 10, 11, 12, 13, 14	Deprecated
1.8.0.0+	4.8.1	5, 6, 7, 8, 9, 10, 11, 12, 13	Deprecated

1.7.0.0+	4.7.0	5, 6, 7, 8, 9, 10, 11, 12, 13	Deprecated
1.6.0.0+	4.6.1	5, 6, 7, 8, 9, 10, 11, 12	Deprecated
1.5.0.0+	4.5.1	5, 6, 7, 8, 9, 10, 11, 12	Deprecated

Latest Plugin Versions:

SmarTak inForce	ATAK
2.1.0.2	5.1.0
2.0.1.2	5.0.0
1.10.1.1	4.10.0
1.9.0.0+	4.9.0
1.8.0.0+	4.8.1
1.7.0.0+	4.7.0
1.6.0.0+	4.6.1
1.5.0.0+	4.5.1

Point of Contacts

support@vkintsys.com

Equipment / Software Required

Android Device with at least Android 5.0 (API level 21)

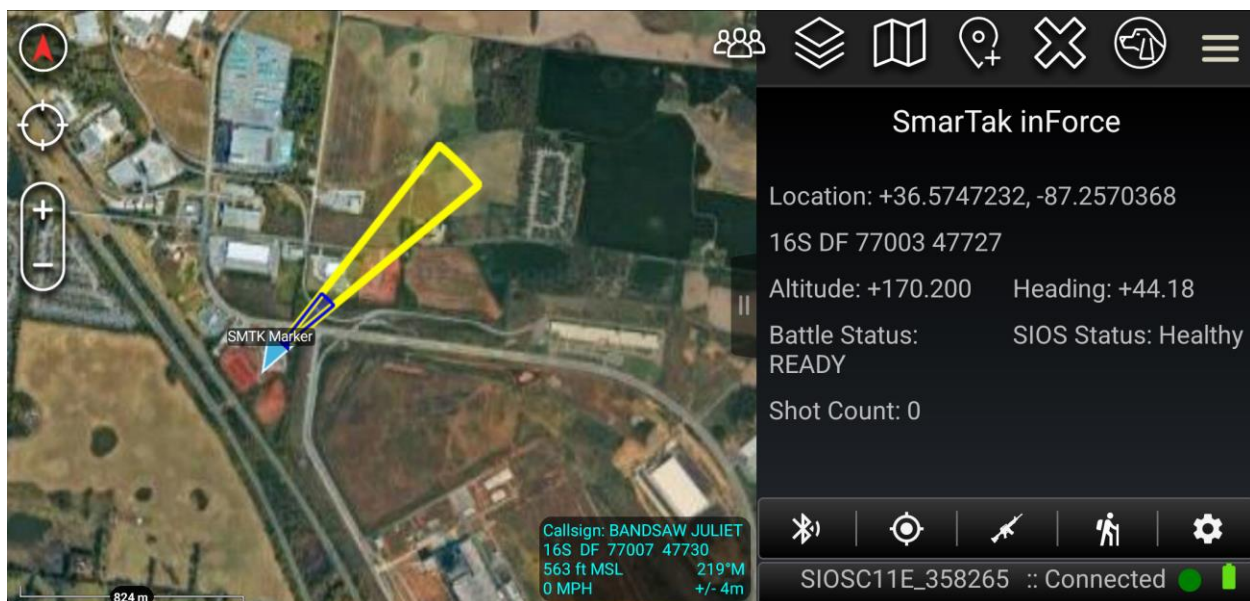
ATAK of a supported version

SmarTak inForce of a compatible version for your configuration

*** For connection and SIOS capabilities, a SIOS device is required ***

SmarTak inForce TAK Plugin

When you open the plugin, you will be greeted with the main plugin view. This includes (From top to bottom):



Plugin Title.

Latitude and Longitude GPS Location. Sometimes it will take a moment for GPS to receive a lock, especially if indoors. This location can be EUD or SIOS location, depending on device connection status and the user-selectable GPS preference on the settings page.

Military Grid Reference System (MGRS) SIOS/EUD GPS Location.

SIOS/EUD Device Altitude. Elevation in meters above sea level gathered from the device is default. Form and units can be changed on the settings page.

SIOS/EUD Device Heading. Heading gathered by the device in degrees in relation to true north.

SIOS Device Battle Status. Battle status generated by device based on current shot detection activity.

SIOS Device System Status. SIOS device health status based on the determination if readings are coming through correctly (Error detection mechanism).

Shot Count. The measured number of shot detection events (unless reset).

Toolbar with five tool buttons (Bluetooth Discovery and Paired Devices, Calibration, System Configuration, Tracking, and Plugin Settings).

Connected device details bar, to include these items:

- Connected Device Name. As with the other SIOS related data, a placeholder will show until a device is connected.

- Connection Status (Connected/Connecting/Disconnected).

- Connection Circle (Red for disconnected, green for connected).

- Battery Status image (Some versions of the hardware do not have this feature and will hide the image).

Test fire buttons (Not Shown)



Discovered Devices and Paired Devices:

Upon pressing the button, a toast will appear to tell you to turn on Bluetooth, if not on already. Powered-on devices within the scanning range will appear in the discovered list. Each device list item will have the device's name, the MAC Address, the device Bluetooth type, and an indicator to show the device's Bluetooth status.

The Bluetooth status circle indicator for devices is green for the currently connected device, blue for previously paired devices, red for the previously connected device (now disconnected), and grey for unknown devices.

The scanner does a different scan based on the hardware preference on the settings page. For SIOS-C11B devices, have the setting set to "11B". For SIOS-C11Bv2 and SIOS-C11E devices, have the setting set to "11E" (default).

When you click on a device to connect, the status will update. Once connected, the plugin will return you to the main view.

In the top-left of the view, there is a back button [<] to return to the main plugin view. This back button exists on all sub-views.



Calibration:



The SIOS device self-calibrates during usage, however, for specific use cases where the device may be mounted to an object and its frame of reference needing to be changed, this can be done with the calibration tool allowing quick changes if needed.

Drift correction. GPS error confidence. It allows the user to specify a user-inputted diameter, in meters, of relative GPS drift.

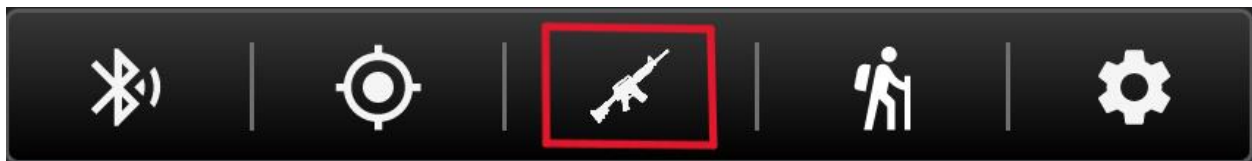
Adjusted Heading. Works like a compass. To move the heading left, place a - (minus or negative) symbol in front of the degrees you wish to adjust. To adjust the heading right, use positive integers with no - symbol.

Adjusted Pitch. Adjusted pitch will only be noticed when connected to a server and trajectory is needed and/or utilized.



Ensure to Apply Offsets before returning to the main view or the adjusted heading will not take effect. To reset adjustments, set adjusted heading and adjusted pitch to 0 and press "Apply Offsets"

System Configuration:



The system configuration view is where you can set your weapon configuration to tell the SIOS what weapon system it has been installed on.

Configuration settings include:

Firearm

Caliber

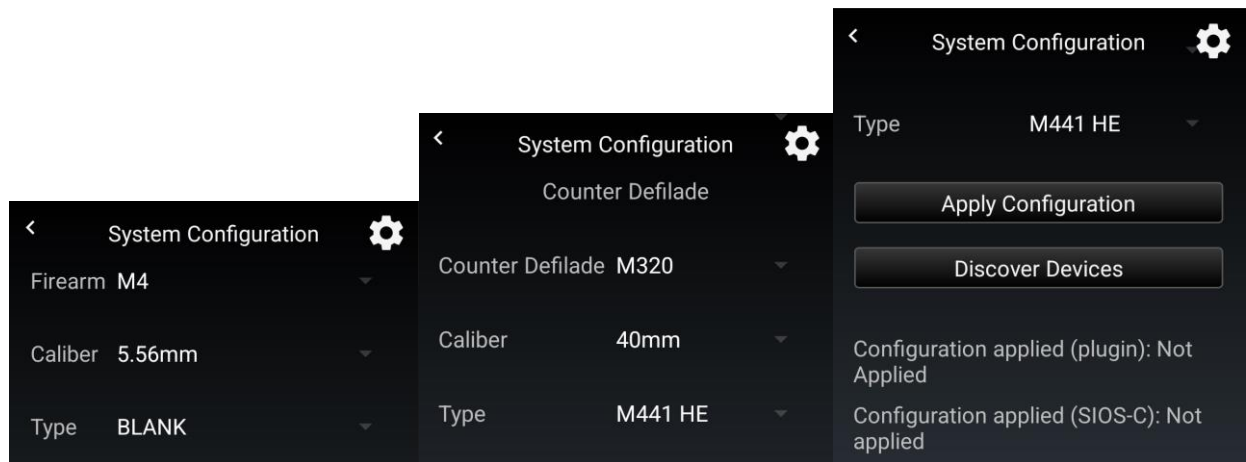
Ammunition Type

Counter defilade

Counter defilade caliber

Counter defilade ammo type

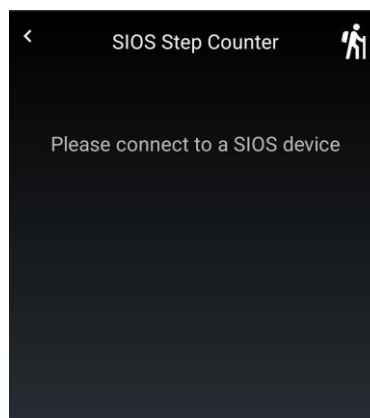
The configuration can be applied and sent to the SIOS through this view. Discover Devices can be accessed from this view as well.



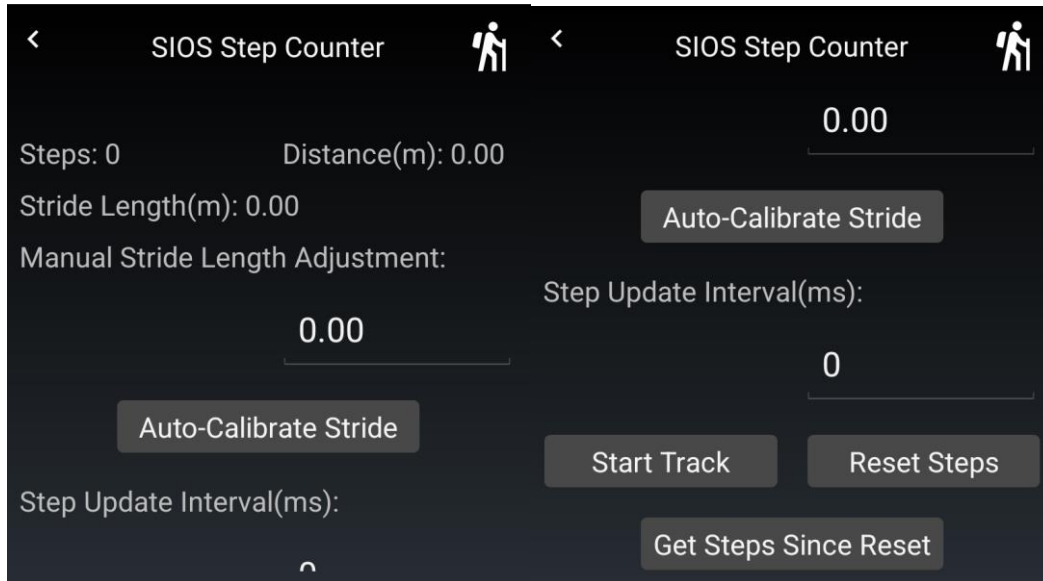
Tracking:



The tracking view allows you to start and stop tracks, request and track step count from the SIOS device, set a stride length, and see estimated distance travelled based on your stride length and step count. When no devices are connected, the page will appear like this:



When connected to a SIOS device, the tracking page functionality will become accessible.



Steps. This shows the total amount of steps that the SIOS has registered since last step count reset

Distance. This shows the calculated distance travelled based on stride length and step count. This value is in meters.

Stride Length. This shows the set stride length in meters for distance calculation, if set. The default is 0.0m.

Manual Stride Length Adjustment. This allows you to type in a stride length manually, for ease-of-use if stride length is already known.

Auto-Calibrate Stride. This button opens up the stride calibration view, allowing you to find stride length by tracking step count over a 100m span.



Step Update Interval. This allows the user to set the update interval, in milliseconds, between step count updates received by the SIOS device.

Start/End Track. This begins or ends the tracking of steps from the SIOS device.

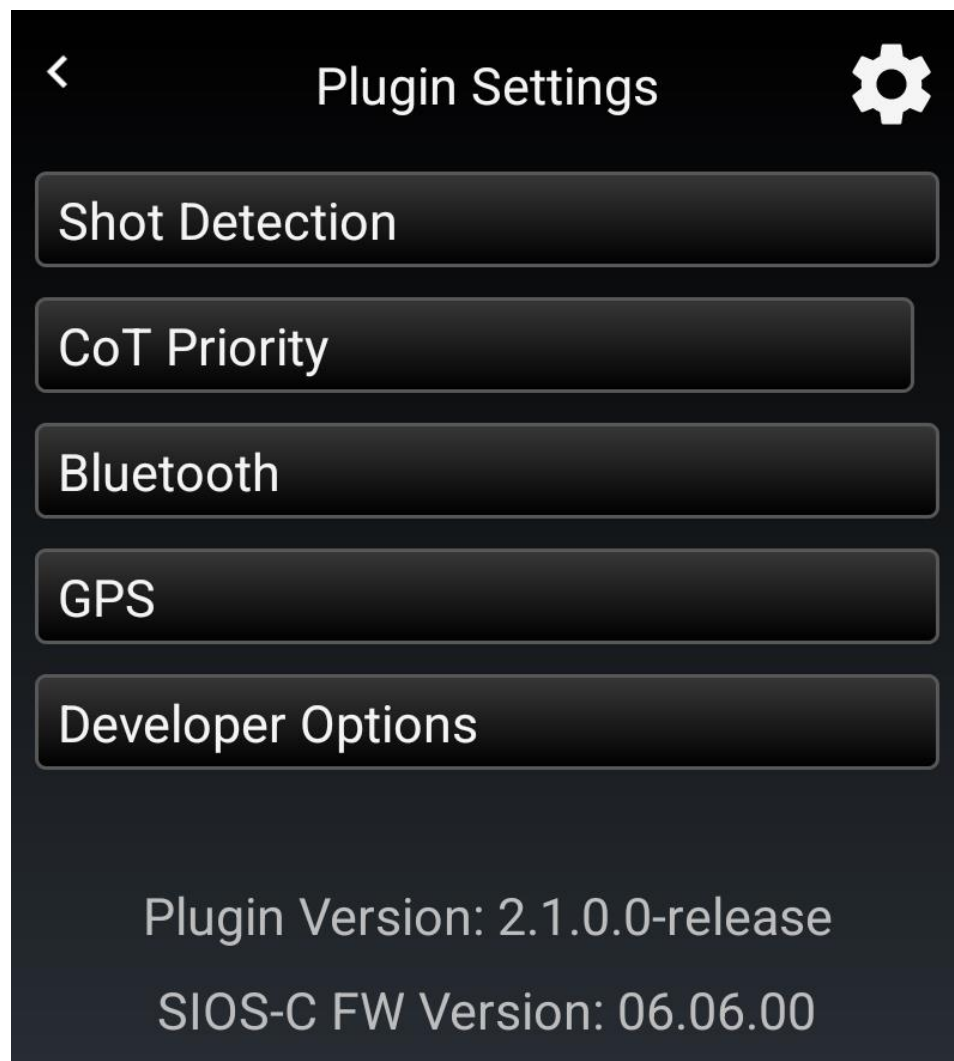
Reset Steps. This will clear the step count on the SIOS device back to zero.

Get Steps Since Reset. This will return the total number of steps on the SIOS device since the last step count reset was sent

Plugin Settings:



The plugin settings view allows you to make some changes with how the information coming from the SIOS device interacts with ATAK. The view has multiple sections, all of which can be collapsed or opened by pressing the section header.



The first section is the Shot Detection section.

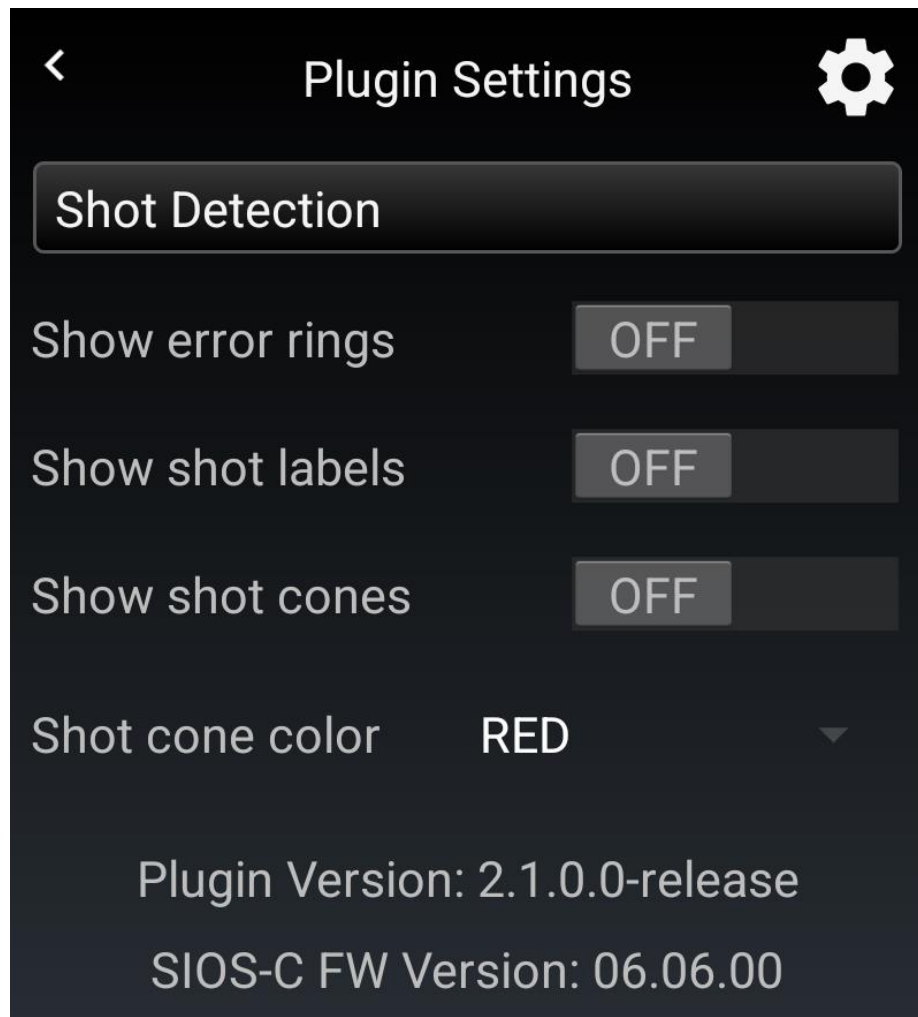
Starting from the top, we have:

Show error rings. This toggle allows a simulated GPS error area to be seen/hidden around shot events displayed on the map.

Show shot labels. (Default set to ON) This toggle allows labels of the shot events to be seen/hidden on the map.

Show shot cones. (Default set to ON) This toggle allows shot projection cones to be seen/hidden on the map.

Shot cone color. This drop down menu allows you to change your shot cone color.

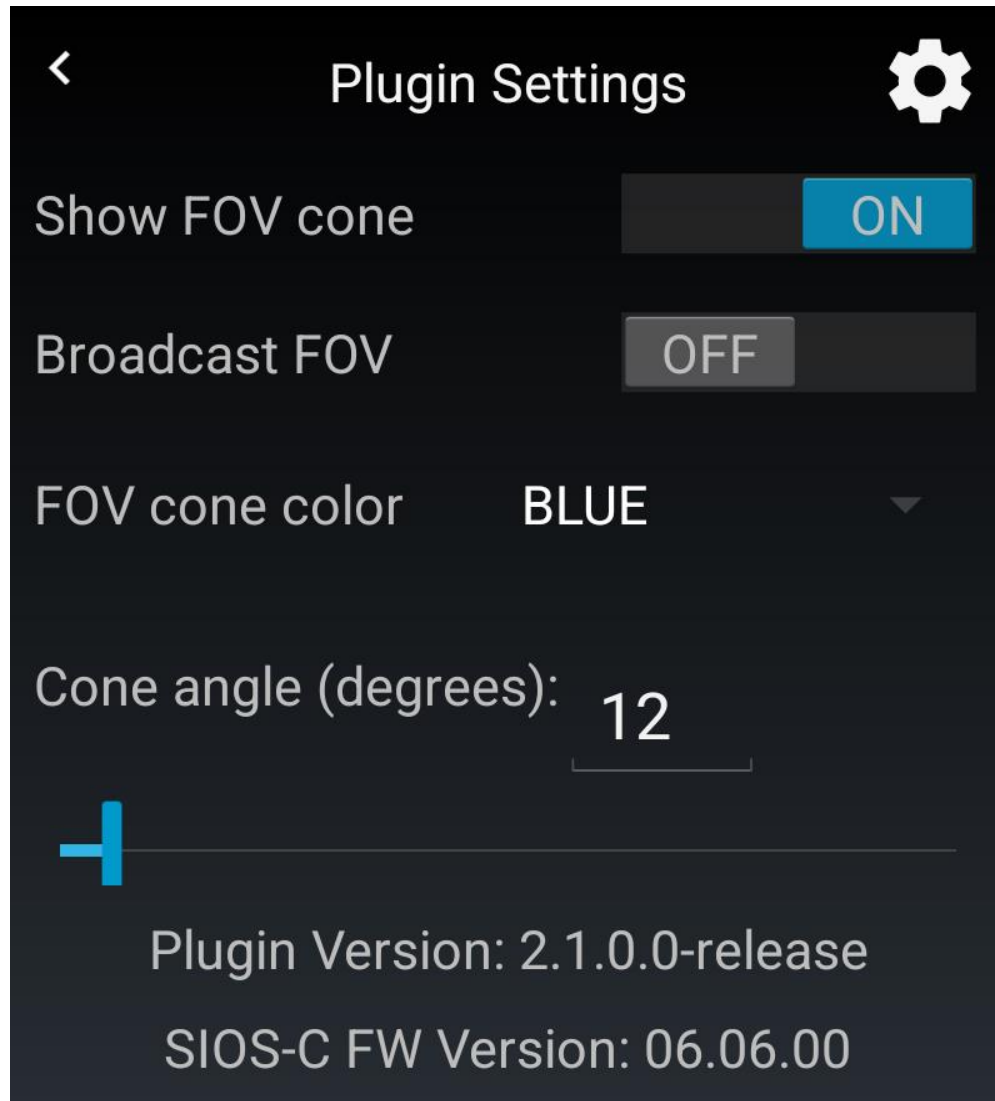


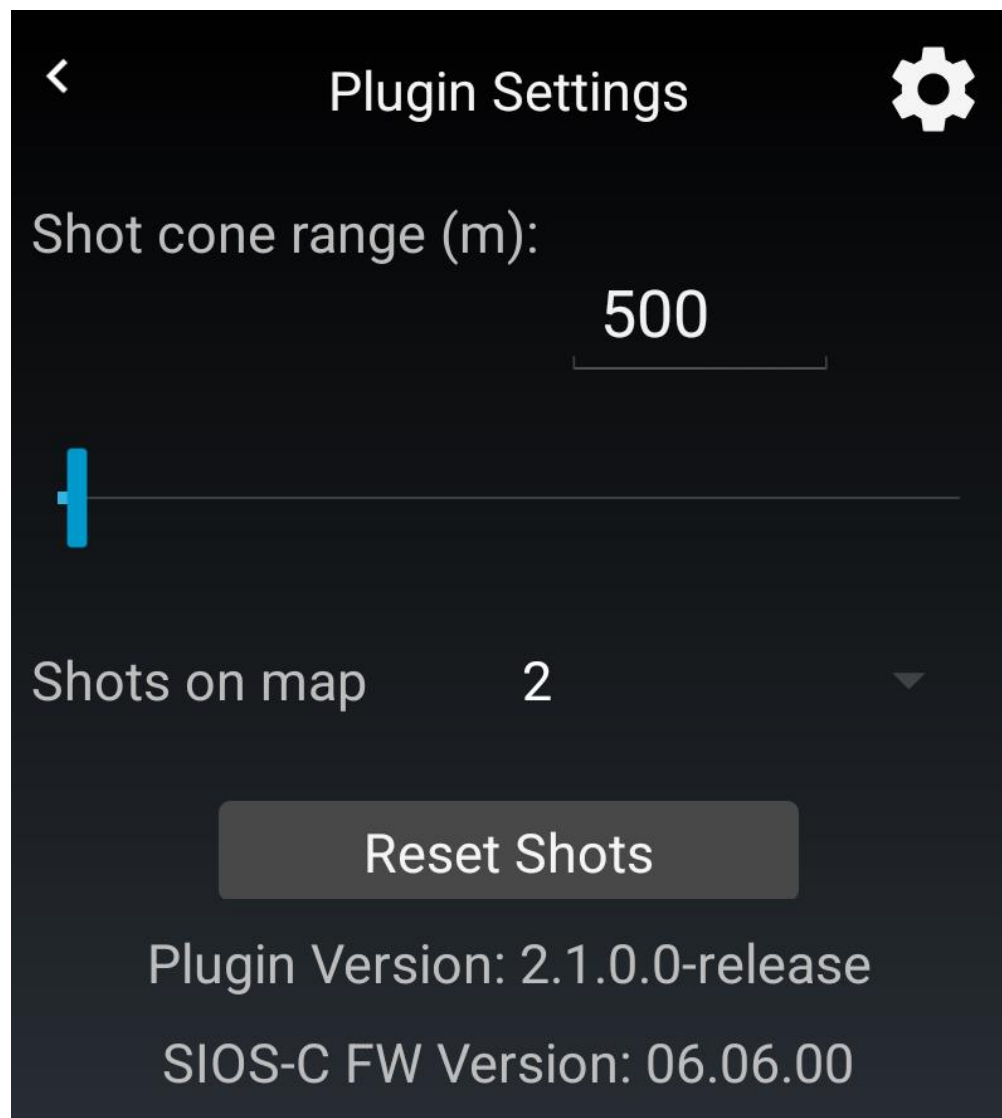
Show FOV Cone. (Default set to ON) The Field of View (FOV) cone shows the user's weapon orientation (Heading).

Broadcast FOV. When connected to a TAK server, this toggle allows the user to broadcast, or not broadcast, their FOV cone to all devices connected to the same TAK server.

FOV cone color. This drop down menu allows you to change your FOV cone color.

Cone angle (degrees). (Default to Firearm selection) Changes the width of the FOV and shot cone. Max is 180 degrees wide.





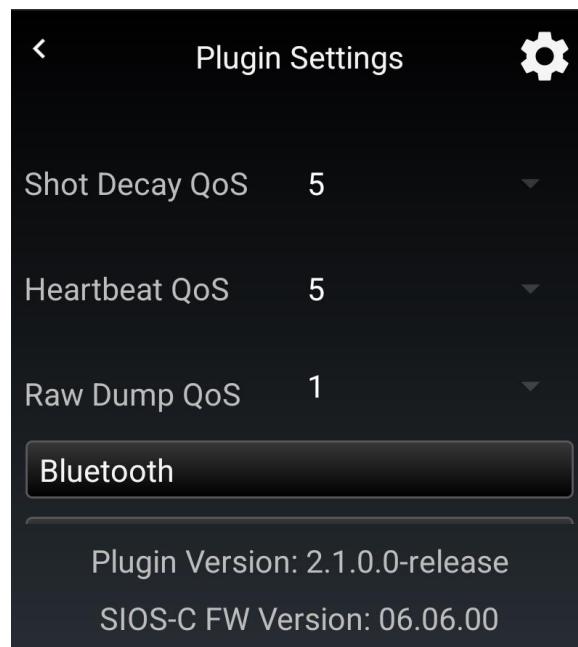
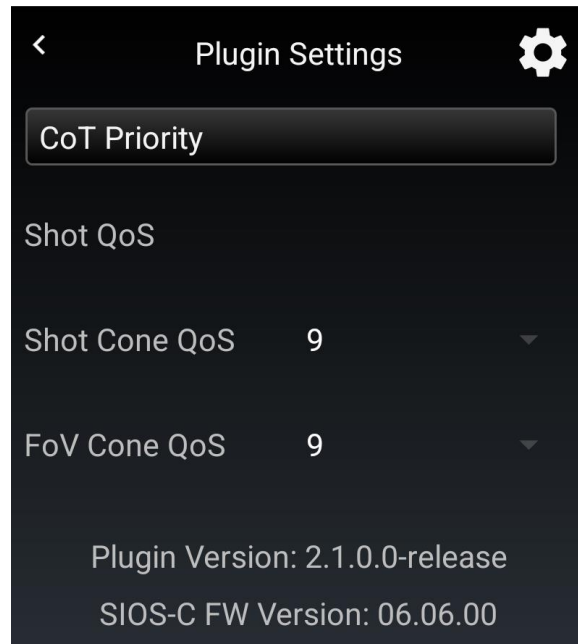
Shot cone range (m). (Default to Firearm selection) Changes the distance of the FOV and shot cone. Max is 20000 meters.

Shots on map. This dropdown allows the user to control how many shots will be populated on the map before shot decay occurs. Once the max number of allowable shots are populated, each new shot will replace the oldest shot on the map.

Reset shots. This resets the shot count and deletes the shot events on the map.

Next is the CoT Priority section

CoT Priority. The Quality of Service (QoS) digit field sets the priority for processing given a restricted bandwidth or bottleneck (9 being highest, 0 lowest)



Next is the Bluetooth section.

Prefer Classic Connections. Bluetooth (classic) transmits data as a stream but responds to input slower; Bluetooth Low Energy (BLE) transmits data in small packets but responds to input faster.

Signal Strength. The signal strength dropdown allows you to set the output power of the Bluetooth module on the SIOS, with dBm choices of +4 (default), +3, 0, -4, -8, -12, -16, -20, and -40.

Randomize MAC. This toggle will tell the SIOS device to begin or stop randomizing its MAC address. MAC address resets to factory after a power cycle.



SIOS Name Change. This allows the user to change the name of the SIOS device to any alphanumeric string up to 16 characters in length.

Confirm Name. This button will send the new name request to the SIOS, if valid. If not, it will pop up an error toast to the user. After a successful name change, the SIOS device will power cycle, and a reconnection by the user is needed.

Reset Name. This button sends a request to the SIOS device to reset the device name to the factory default. Just like the name change request, upon successfully completing the operation, the SIOS will power cycle and reconnection is needed.

GPS. This will allow you to choose which GPS readings to use when the SIOS marker is placed on the map.

Device Preference:

EUD. This sets the SIOS device location to that of the EUD.

SMTK (default). This uses the GPS of the SIOS device.

Optimal. Chooses the most accurate reading available between SIOS and EUD.

Format Preference:

MSL Sets the format to Mean Sea Level calculation for altitude

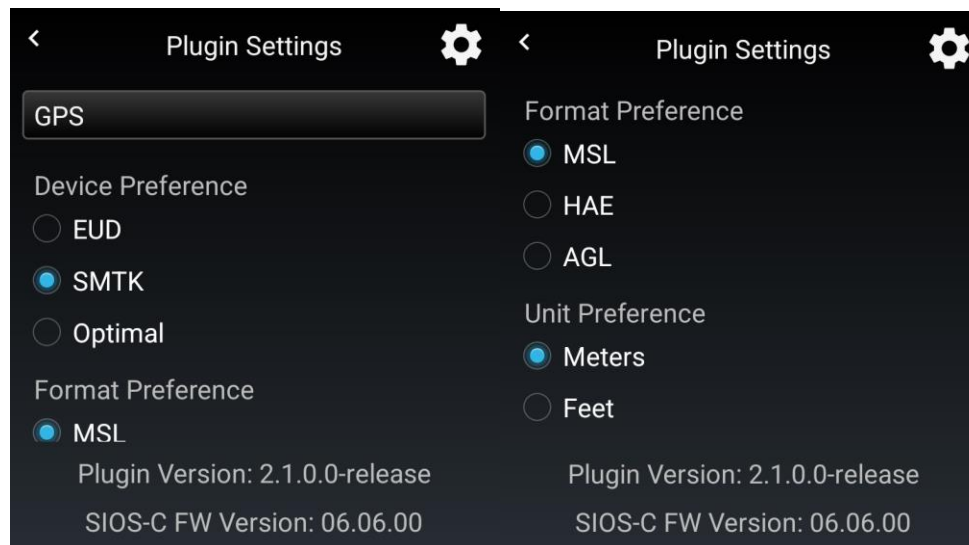
HAE Sets the altitude format to Height Above Ellipsoid

AGL Sets altitude format to Above Ground Level

Unit Preference:

Meters Sets altitude unit format to meters

Feet Sets altitude unit format to feet



Show Test Buttons. This displays the test buttons on the Plugin main page and allows shots to be fired, showing the shot cone and direction of fire, plus shot count increment, without firing actual rounds.

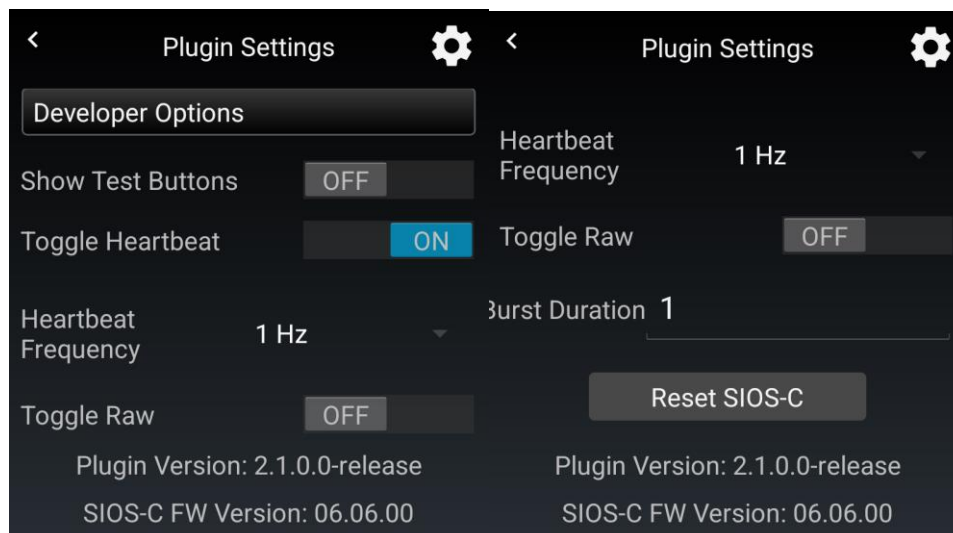
Toggle Heartbeat. This allows all heartbeat messages sent by the SIOS device to be transferred via CoT to any local networks/TAK servers the EUD is connected to.

Heartbeat Frequency. Heartbeat frequency in hertz determines how many times per second a heartbeat packet will be sent by the EUD, 10 times a second (10Hz), 8, 5, 3, 1, 0.5, or 0.25

Toggle Raw. Having toggle raw enabled will send the raw packet directly as it comes from the SIOS device with no alterations as a byte array-formatted CoT through the TAK Server or local area connection. It can be used to diagnose the packets coming from the SIOS.

Burst Duration. This sets the number of shots taken during a test fire button press.

Reset SIOS-C. This sends a message to the SIOS to reset, making it power cycle and reinitialize.



Frequently Asked Questions (FAQ)

Why will ATAK not install on my device?

If you have downloaded the Google Play Store version of ATAK, it is possible the application may be incompatible with the hardware on your device. This version of ATAK is a stripped down variant meant to comply with file size limitations of the Google Play Store. A likely fix would be to download the ATAK-Civ APK available at: tak.gov (free account creation required)

Why will SmarTak inForce not install on my device?

Confirm your versions of ATAK and SmarTak inForce are compatible. If your device claims SmarTak inForce is already installed, use your App explorer on your device to ensure SmarTak inForce is not currently on the device. Be sure to check all profiles on your device if you have more than one. If SmarTak inForce is shown in your App explorer, uninstall and attempt to install again.

Devices are not showing up to pair

Confirm that Bluetooth is enabled on your device. Make sure the SIOS device is powered on. If needed, check the app permissions for ATAK on your device. Ensure that location and bluetooth permissions are enabled for the app.

ATAK and SmarTak inForce version compatibility

Reference the compatibility matrix listed above

Alternative operating systems

ATAK and SmarTak inForce will run on variations of the Android Operating System (such as Graphene OS). ATAK and SmarTak inForce are not compatible with iOS (Apple) or any other non-Android OS. There is a form of TAK, iTAK, that will run on iOS devices, but functionality for the usage of plugins has not yet been added. For more information on iTAK, visit: tak.gov