



FollowMe 1090 ADS-B Tracker

AVIONIX

FollowMe 1090 represents a fully featured and cost-effective tracking solution for service and emergency vehicles at airports. The tracker transmits continuously the GNSS position using ADS-B out technology. The tracker increases safety and prevents incursion between aircraft and vehicles. It provides increased situational awareness to air traffic control and is compatible with existing surveillance systems.



FollowMe 1090 offers:

- High reliability, no moving parts
- Multi constellation GNSS module for high precise and stable localization
- Interoperability with ADS-B or multilateration systems from any vendor
- Encoding according DO-260, Annex 10
- 1 to 20W peak power output on 1090MHz
- Improved situational awareness
- Low power consumption
- Geo-fencing, stops transmission automatically outside defined areas
- Compliant to ETSI EN 303 213-5-2
- Option for integrated ADS-B receiver outputting traffic in GDL90 format on Wi-Fi or Bluetooth





Technical Parameters

Parameter	Value
Input Voltage	5-15VDC via USB-C up to 32V with adapter
Power Consumption	<2W
Message Type	DO-260B, ADS-B, DF18
Message Rate	Annex 10, Vol. 4
Transmit Frequency	1090 ± 1 MHz
Transmit Power	1-20 W peak power configurable
GPS Receiver	GPS, GLONASS, BeiDou
GPS Sensitivity	167dBm @Tracking, 149dBm @Acquisition
Callsign	configurable
Vehicle Category	configurable
24-bit ICAO Address	configurable
Geo-Fencing	configurable
Update rates	configurable
Configuration Interface	USB / Bluetooth
Dimensions (L x W x H)	200mm x 100mm x 140mm
Mounting	Magnetic or permanent
Environmental	-20 - 60°C



For information or demonstration
please contact:

AVIONIX ENGINEERING sp. z o. o.
ul. Jana Sobieskiego 1/5
31-136 Kraków, Poland

info@avionix.eu

- **Software Development**
 - Flexible software solutions for airports and ATC
 - Surveillance Data Processing
 - ASTERIX Data Fusion, ED-129B Test Suite
- **Hardware Development**
 - RF Hardware Design
 - Mode-S/ADS-B/MLAT Receivers and Transmitters
- **ATC Spectrum Monitoring**
 - Airport Vehicle Transponder
- **Consulting, Project Management and Networking**
 - A-CDM, A-SMGCS, Airport Planning, AOCC
 - Support for Project, Offer and Tender Management

Components

The vehicle tracker consists of the tracking device inside a antenna shell enclosure, which is fixed with rubber coated magnets to the car roof. A 3-5m long cable is attached



On the back side there is the 4 pin M8 connector and a dual colour red/green LED. The device is powered through the cable from 5-15V power input. A USB-A and a cigarette lighter adapter (9-32V) are provided to easily connect to various power sources.



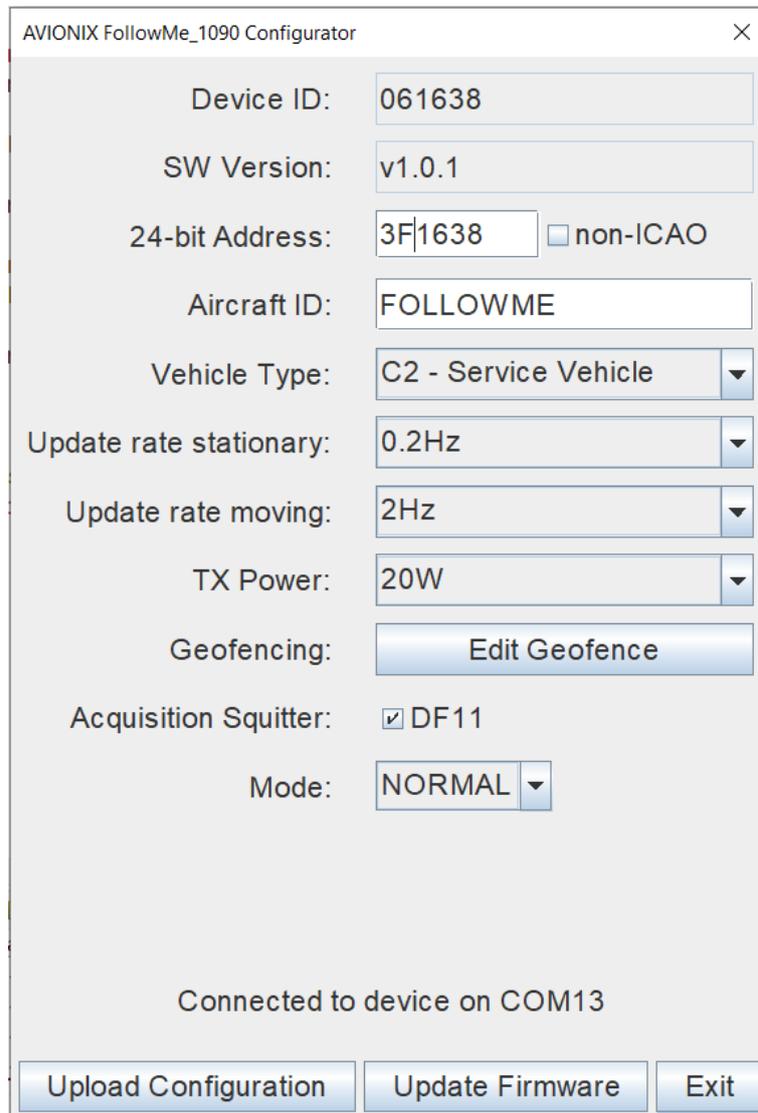
Operation

The device starts working as soon it is connected to a power source. It can take between 5 and 60 seconds until the GNSS fix is acquired. The dual colour LED on the back side informs about the operational state.

GREEN LED	Short pulse in 1s interval when GNSS fix is acquired. Fast flashing while a firmware upgrade is in progress.
RED LED	Short pulse for each ADS-B transmission. 1Hz blinking indicates missing GNSS fix or outside INCLUSION area. Static on when configured to TX-OFF mode.

Configuration Tool

The Configuration Tool allows the configuration of various parameters of the tracking device. For that it must be connected via the USB cable to a PC or laptop running a Windows® operating system. When the connection is established the current configuration parameters are loaded into the input fields. The parameters can be changed using mouse and keyboard. There is syntax checking on all input fields so that it is not possible to enter invalid data.



The screenshot shows the AVIONIX FollowMe_1090 Configurator window. It features several configuration fields and buttons. The fields are: Device ID (061638), SW Version (v1.0.1), 24-bit Address (3F1638) with a non-ICAO checkbox, Aircraft ID (FOLLOWME), Vehicle Type (C2 - Service Vehicle), Update rate stationary (0.2Hz), Update rate moving (2Hz), TX Power (20W), Geofencing (Edit Geofence button), Acquisition Squitter (checked DF11), and Mode (NORMAL). At the bottom, there are three buttons: Upload Configuration, Update Firmware, and Exit. A status message at the bottom indicates 'Connected to device on COM13'.

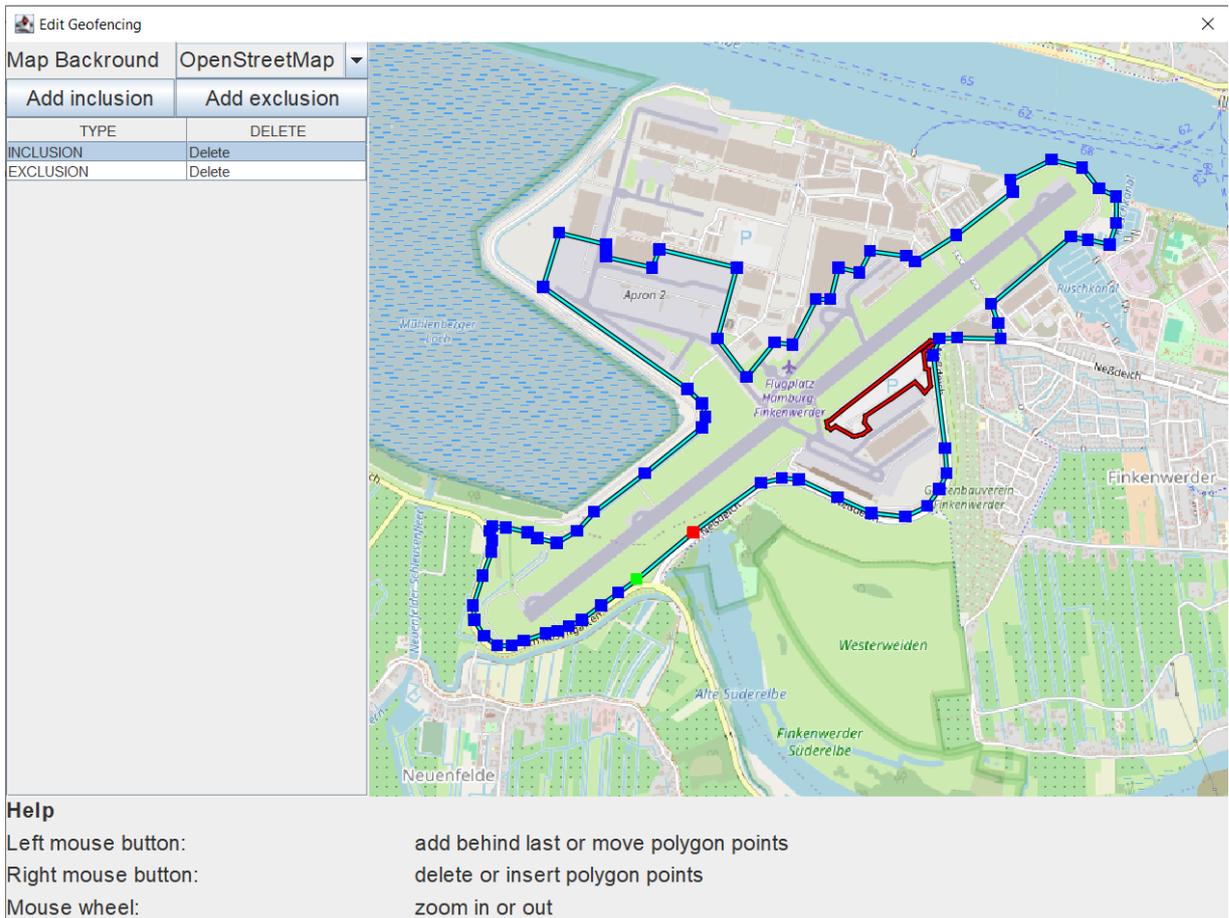
Device ID:	061638
SW Version:	v1.0.1
24-bit Address:	3F1638 <input type="checkbox"/> non-ICAO
Aircraft ID:	FOLLOWME
Vehicle Type:	C2 - Service Vehicle
Update rate stationary:	0.2Hz
Update rate moving:	2Hz
TX Power:	20W
Geofencing:	Edit Geofence
Acquisition Squitter:	<input checked="" type="checkbox"/> DF11
Mode:	NORMAL

Connected to device on COM13

Upload Configuration Update Firmware Exit

Pressing the “Upload Configuration” button uploads the current settings to the device.

The “Edit Geofence” button allows editing the geofencing information. A dialog is opened that allows to configure the geofencing information on a geographical map. To use this function, it is required that the computer is connected to the Internet to download the geographical map background.



The geofencing dialog allows the configuration of multiple INCLUSION and EXCLUSION polygons. When no INCLUSION polygon is defined, the whole world is included by default. During operation the tracking device will only transmit ADS-B messages when it is inside an INCLUSION area and not inside an EXCLUSION area. Multiple polygons of each type can be configured. INCLUSION polygons are shown with a green, EXCLUSION polygons with a red line. Polygon points may be moved, added or deleted to existing polygons.

The geofencing information is stored locally on the computer so that it is remembered when the next tracker is connected. This way the same configuration can be easily updated to a bigger number of devices.

The “Update Firmware” function allows to replace the existing firmware with a new version.

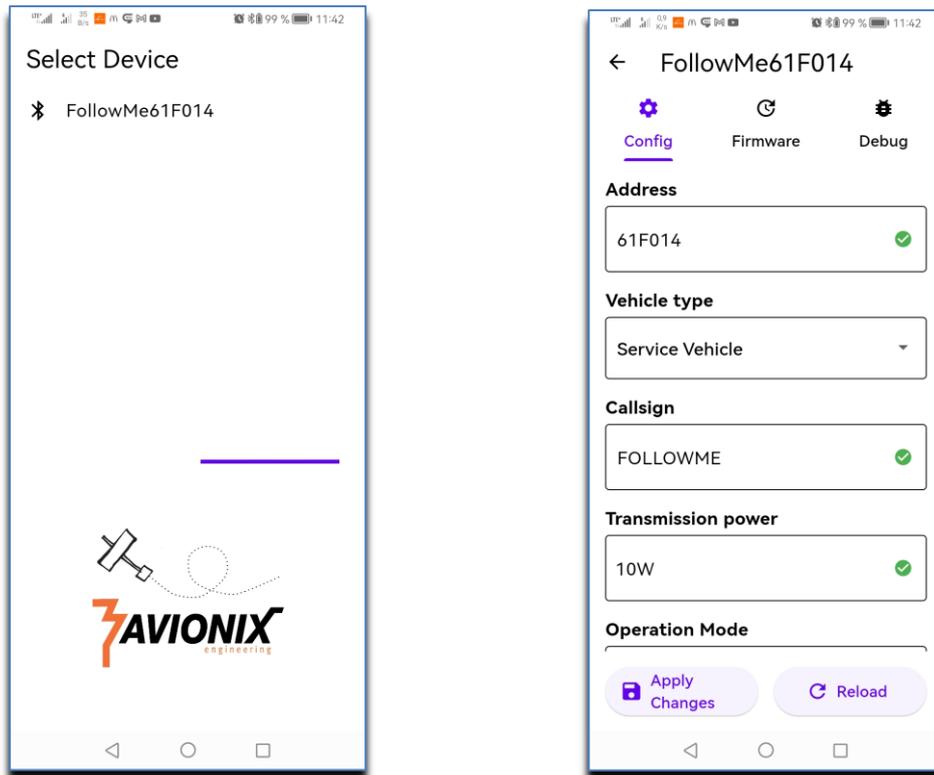
Bluetooth Configuration Tool

For Android phones there is a configuration tool that allows the configuration of the parameters over Bluetooth. It is available in the Google Play Store under this url:

https://play.google.com/store/apps/details?id=com.avionix.avx_config_app.

The vehicle tracker is allowing the connection over Bluetooth for configuration only in the **first minute** after it is powered on. Once connected there is no time limit to perform the configuration. The Bluetooth Configuration app provides all the features the desktop tool supports, just the configuration of the geofencing area is not possible with it.

When the application is started it shows all devices in range that are available for configuration. For identification the device ID is used that is shown on the sticker on the back of the device.



When the device is selected the configuration page is entered.

If the device is not shown it may be that it was started more than one minute ago, and it should be powered off and on. After changes were performed they are written to the device by pressing the **Apply Changes** button. The **Reload** button reloads the configuration on the device and overwrites local changes. By switching the **Firmware** button the firmware for the device may be updated. This should be done only in coordination with AVIONIX. When activated the app downloads the latest available firmware for the device from the AVIONIX server and sends it over Bluetooth to the connected device. This process takes about 3 minutes. When successful the firmware is activated.

Message Transmission Rates

The device transmits ADS-B DF18 squitters in the following update rates. The position update rate can be adapted by the Configuration Tool.

<i>Message Type</i>	<i>Rate</i>	<i>Comment</i>
Identification and Category	0.2Hz	
Surface Position	0.2Hz, 1Hz, 2Hz (configurable)	when moving
Surface Position	0.2Hz, 1Hz, 2Hz (configurable)	when stationary