How to start with FMB devices and Beacons?

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Eye Devices ready to use

The easiest way to get started with beacons is to use the Teltonika's Eye Devices. All you need to do is just unbox them.

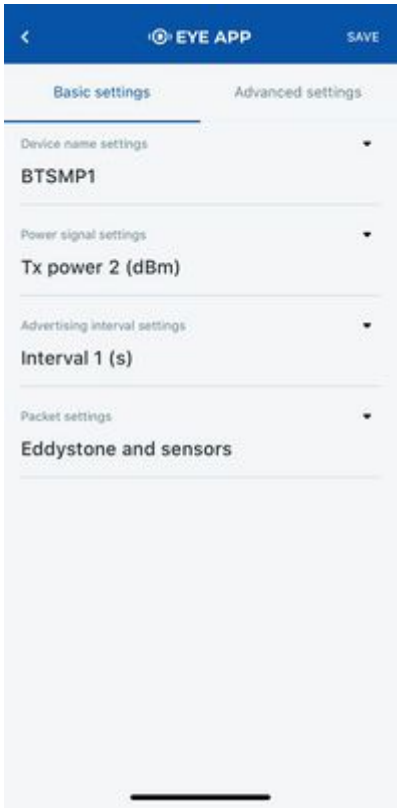
Eye Beacons are designed to make your wireless experience effortless, there is not need to make adjustments configuration, the devices are pre-configured and ON from factory, this ensures rapid deployment.

Devices work constantly and are ready to perform out of the box. Default basic Sensor settings are set to:

• Transmitting at 2 dBm power.

• Data advertising at 5 second intervals.

• Eddystone(for EYE Beacon) Eddystone and Sensors(for EYE Sensor) protocol



You can find detailed information about how to configure those parameters below:

Beacon Configuration and data sending

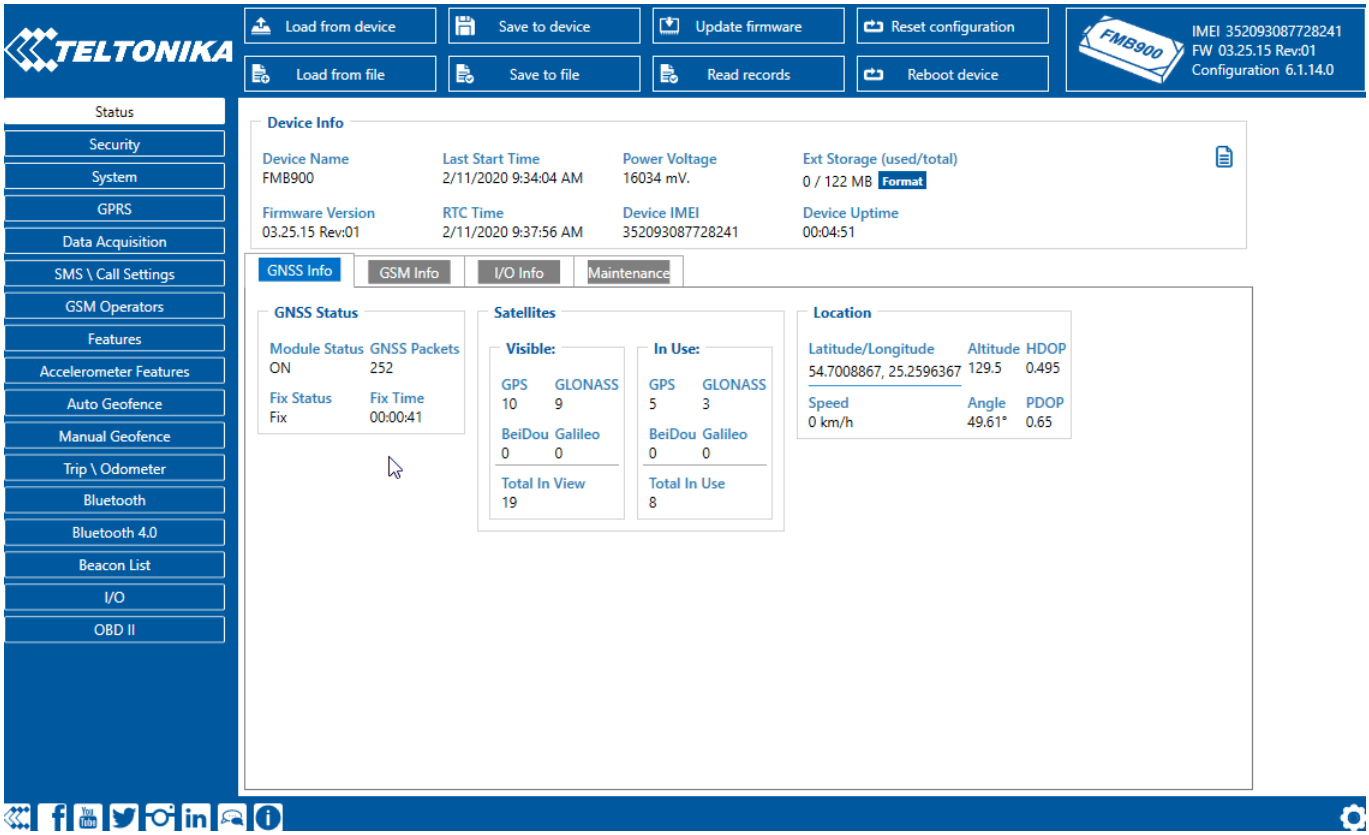
EYE APP Overview

Eye sensors are ready to use from factory, however, you can change your beacon parameters according to your needs. Eye App is Teltonika dedicated application for Eye sensor/beacon configuration.

1. Eye App first screen will show you available Eye Beacons/sensors reachable, press on you beacon to access next screen
2. Eye App second screen shows ID information and Firmware information, press on the icon to access beacon parameters
3. Eye App third screen allows you to change Beacon Name, TX power, Advertising interval, Packet settings.

Beacon configuration (Setting your tracking device for Beacon usage)

Below are short instructions which show how we recommend configuring the device to Enable the Beacon functionality for testing.

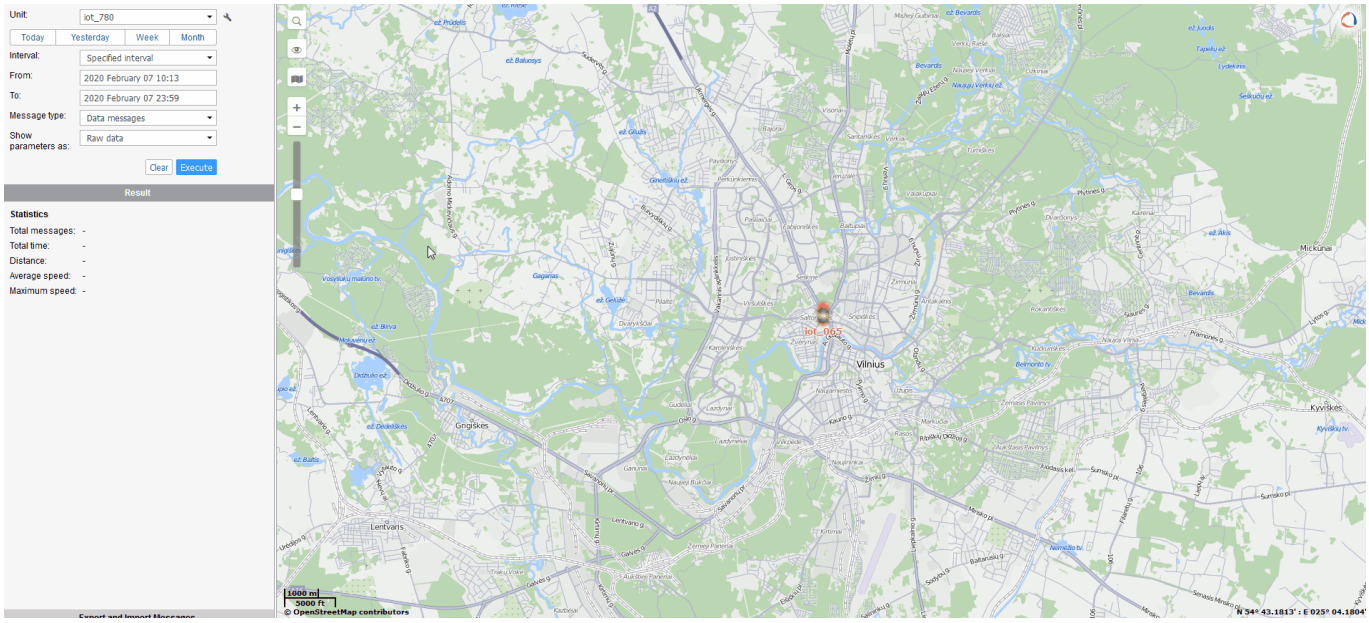


Steps to follow according to the visual representation

1. In System Settings Enable Codec8 Extended;
2. In Bluetooth® settings Enable Bluetooth®, set this setting as either "Enable (hidden)" or "Enable (visible)", otherwise Bluetooth® will be disabled;
3. In Bluetooth® 4.0 settings, set Non Stop Scan to "Disable", configure "Update Frequency" and "Scan duration" as 30 seconds. These settings will bring the best results for BLE scanning with our device;
4. In Beacon list settings, configure Beacon Detection as "All" and Beacon Record as "Eventual". This will detect all surrounding Beacons and create Beacon records every 30 seconds.

Beacon data parsing

Shown how Beacon data is represented on Wialon platform.



Parsing of Beacon records

Beacon records are sent as separate Records with Event I/O ID 385 and also include I/O element 385 (Codec8 Extended has to be used because the I/O element 385 uses Variable size IO element).

Received data in hexadecimal stream:
`00000000000000D68E01000001701F9B3FA9000F0E5732209AB450006800290400000181000100000000000000000001018100A911214B5C049F515341`

`FCA950D2C264414E1000050006BA21E2C56DB5DFFB48D2B060D0F5A71096E000000000A92131A74BB76A79423196C916CFB9FAED45002D00159F0700112`

`233445566778899ABCDE0810047AE0BE80015210F86676BEC91420A94409110029AFAC415B31A0AA101DE9C18E92CA5AA689697365434663222BA21EBBB`

`DE835D7F4965B5F06C2EDCB3A55300010080A501736B79686F73742E646B000010000128AD01000030CB`

Example Beacon Record

AVL Data Packet	
AVL Data Packet Part	**HEX Code Part**
Zero Bytes	00 00 00 00
Data Field Length	00 00 00 D6
Codec ID	8E (Codec8 Extended)
Number of Data 1 (Number of Total Records)	01

AVL Data	Timestamp	00 00 01 70 1F 9B 3F A9 (GMT: Friday, 07 February 2020 12:23:53.001)
	Priority	00
	Longitude	0F 0E 57 32
	Latitude	20 9A B4 50
	Altitude	00 68
	Angle	00 29
	Satellites	04
	Speed	00 00
	Event IO ID	01 81 (385)
	N of Total ID	00 01
	N1 of One Byte IO	00 00
	N2 of Two Bytes IO	00 00
	N4 of Four Bytes IO	00 00
	N8 of Eight Bytes IO	00 00
	NX of X Bytes IO	00 01
	N’th IO ID - AVL ID.	01 81 (385)
	Length of Variable Length IO	00 A9
	Value of Variable Length IO	11214B5C049F515341FCA950D2C264414E1000050006BA21E2C56DB5 DFFB48D2B060D0F5A71096E000000000A92131A74BB76A79423196C916CFB9FAED45002D00159F0700112233445566778899ABCDE081004 7AE0BE80015210F86676BEC91420A94409110029AFAC415B31A0AA101DE9C18E92CA5AA68969736543466322 2BA21EBBBDE835D7F4965B5 F06C2EDCB3A55300010080A501736B79686F73742E646B000010000128AD
	Number of Data 2 (Number of Total Records)	01
	CRC-16	00 00 30 CB

Parsing Beacon data from record

Beacon data
Unparsed Beacon data
11214B5C049F515341FCA950D2C264414E1000050006BA21E2C56DB5 DFFB48D2B060D0F5A71096E000000000A92131A74BB76A79423196C916CFB9FAED45002D00159F0700112233445566778899ABCDE081004 7AE0BE80015210F86676BEC91420A94409110029AFAC415B31A0AA101DE9C18E92CA5AA68969736543466322 2BA21EBBBDE835D7F4965B5 F06C2EDCB3A55300010080A501736B79686F73742E646B000010000128AD

Beacon Flags

The below table represents possible Beacon flags. Supported Beacon protocols are iBeacon and Eddystone.

Flags	
21	iBeacon with RSSI
23	iBeacon with RSSI, Battery Voltage
27	iBeacon with RSSi, Battery Voltage, Temperature
01	Eddystone with RSSI

03	Eddystone with RSSI, Battery Voltage
07	Eddystone with RSSi, Battery Voltage, Temperature

NOTE! Standard iBeacon protocol does not support Battery voltage or temperature sending.

Parsed Beacon data

Parsed Beacon data part	HEX Code Part
Data part (First half byte – current data part, Second half byte – total number of data parts)	11
BLE beacon flags #1 21 - iBeacon, RSSI is sent	21
BLE Beacon UUID #1	4B5C049F515341FCA950D2C264414E10
BLE Beacon Major #1	0005
BLE Beacon Minor #1	0006
BLE Beacon RSSI #1	BA - Signed 2's Complement -70 dBm
BLE beacon flags #2 21 - iBeacon, RSSI is sent	21
BLE Beacon UUID #2	E2C56DB5DFFB48D2B060D0F5A71096E0
BLE Beacon Major #2	0000
BLE Beacon Minor #2	0000
BLE Beacon RSSI #2	A9 - Signed 2's Complement -87 dBm
BLE beacon flags #3 21 - iBeacon, RSSI is sent	21
BLE Beacon UUID #3	31A74BB76A79423196C916CFB9FAED45
BLE Beacon Major #3	002D
BLE Beacon Minor #3	0015
BLE Beacon RSSI #3	9F - Signed 2's Complement -97 dBm
BLE beacon flags #4 07 - Eddystone, Battery Voltage, Temperature, RSSI is sent	07
BLE Beacon Namespace #4	00112233445566778899
BLE Beacon Instance ID #4	ABCDE0810047
BLE Beacon RSSI #4	AE - Signed 2's Complement -82 dBm
BLE Beacon Battery Voltage #4	0BE8 - 3048 mV
BLE Beacon Temperature #4	0015 - 21°C
BLE beacon flags #5 21 - iBeacon, RSSI is sent	21
BLE Beacon UUID #5	0F86676BEC91420A94409110029AFAC4
BLE Beacon Major #5	15B3
BLE Beacon Minor #5	1A0A
BLE Beacon RSSI #5	A1 - Signed 2's Complement -95 dBm
BLE beacon flags #6 01 - Eddystone, RSSI is sent	01
BLE Beacon Namespace #6	DE9C18E92CA5AA689697
BLE Beacon Instance ID #6	365434663222
BLE Beacon RSSI #6	BA - Signed 2's Complement -70 dBm
BLE beacon flags #7 21 - iBeacon, RSSI is sent	21