TCA/TMA Level 2 Assurance

Device, Configuration & Software Integration Guidelines

FMC650 (SPEC 03.00.16.Rev.303_1059)

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Abstract

The document explains how providers can integrate Teltonika's TCA approved devices with their platform. Device data sending protocol is still the same with some slight changes made to comply with TMA Level 2 requirements.

The purpose of this document is to provide TCA and ASPs the necessary guidance on how to implement the TCA compliant solution with FMC650.

Device: FMC650
Firmware: 03.00.16.Rev.303_1059
Protocol: Teltonika Codec8 Extended

Firmware changelog

Previous firmware: 03.00.16.Rev.302_1059
New firmware: 03.00.16.Rev.303_1059
Changelog:

- Added fixes where device was generating data at 28th second instead of the configured 30th (Min Period).
- Added fixes to log timestamp received from GNSS rather than the MCU timestamp to eliminate time-drift over a certain duration.

Identification of lost GPS Fix

The base protocol remains the same as of Teltonika's proprietary CODEC 8 EXTENDED. Changes specific to TCA in SPEC ID 1059 are described below.

Via longitude & Latitude values
After the device's GNSS Fix is lost, the device sends the following values as latitude and longitude instead of the last known location or 0/0.

Latitude: 0xFFFFFFFF
Longitude: 0xFFFFFFFF

The values are not plottable on the map and integrators can identify and discard these values.

Via GNSS Status Flag (AVL ID 71)
GNSS Status Flag (AVL ID 71) can be used to identify a lost GNSS Fix. Refer to the table below for more details:

	Value	Status
GNSS Status (71)	0	GNSS OFF
	1	GNSS ON, no GPS antenna
	2	GNSS ON, without fix
	3	**GNSS ON, with fix**
	4	GNSS SLEEP
	5	GNSS Overcurrent/protect state

As mentioned in the table above, GNSS Fix is only valid when the value for AVL ID 71 is "3". If the GNSS status value (71) not 3, value of longitude and longitude can be discarded.

Device configuration guide

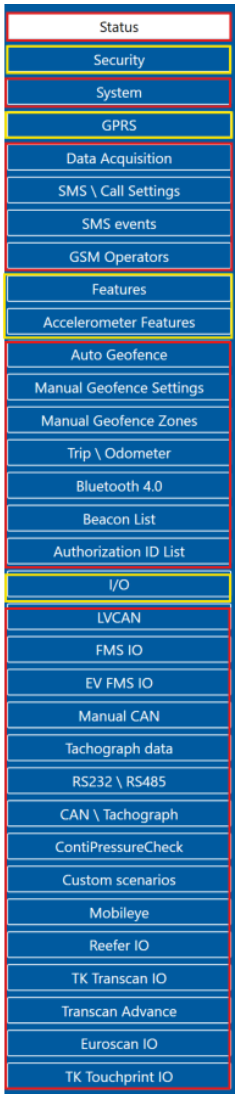
Device configuration can be changed according to the described guidelines. Note that any changes should comply with the TCA guidelines.

Key:

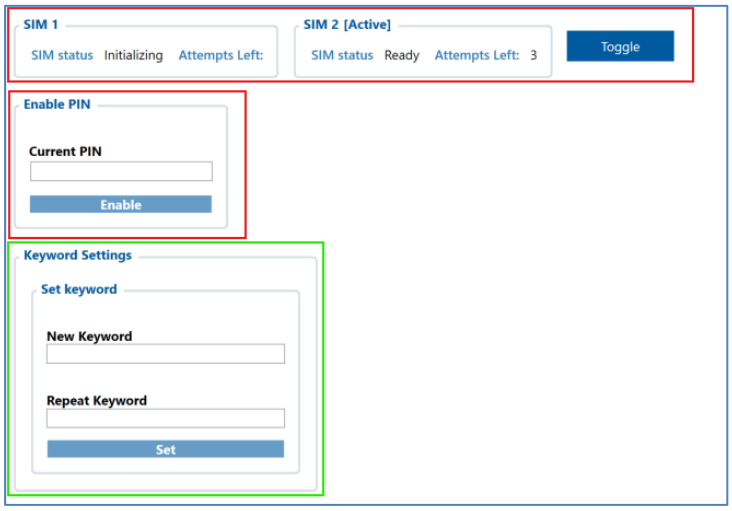
- Must not be changed
- Can be changed but change should comply with TCA guidelines or as instructed.
- Can be changed.
- *Any other changes to the config that are not covered below should be consulted with Teltonika & TCA.*

Note: Any changes made to the config must not impact the data acquisition settings and settings related to base parameters (time (data sending time), longitude, latitude & speed).

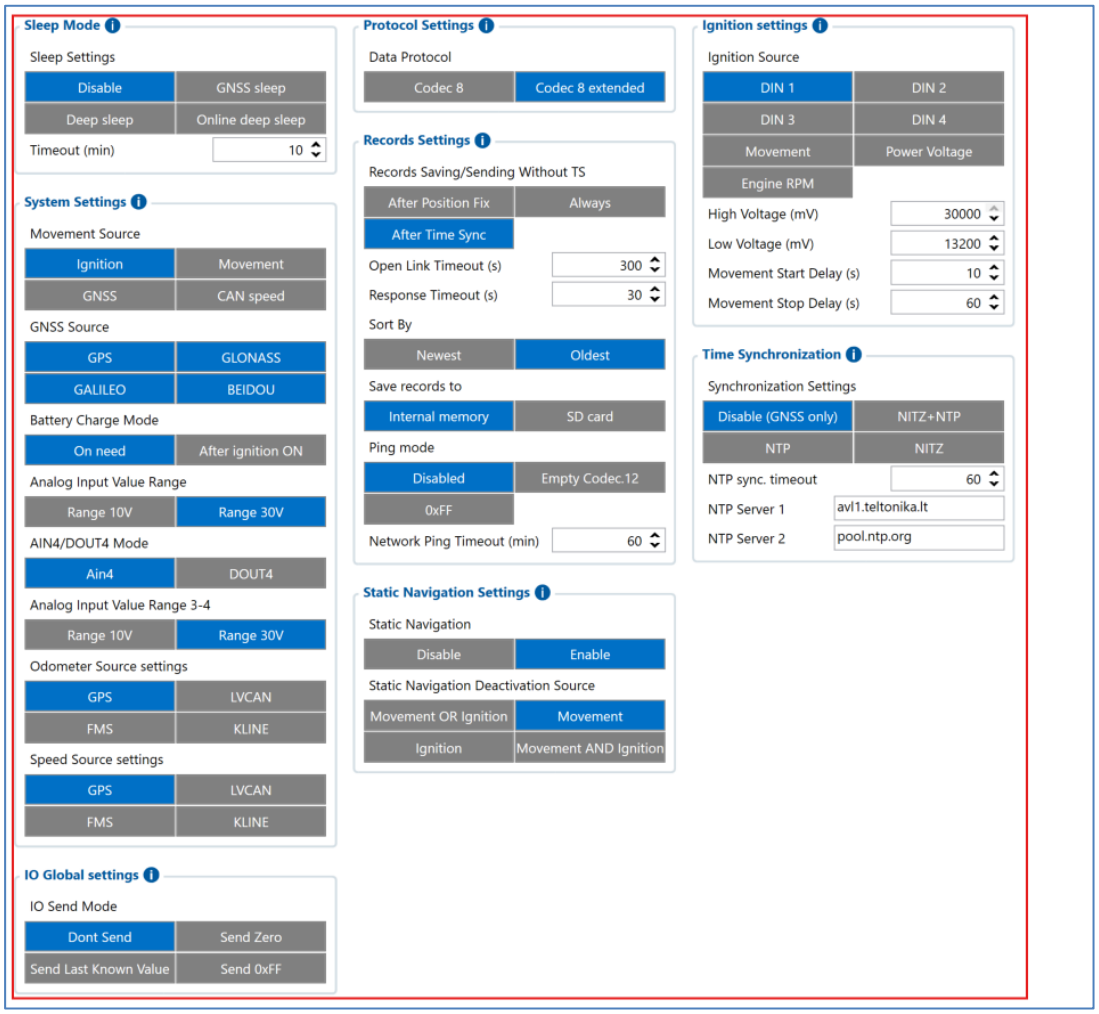
Config sections that can be reconfigured as needed by the ASPs:



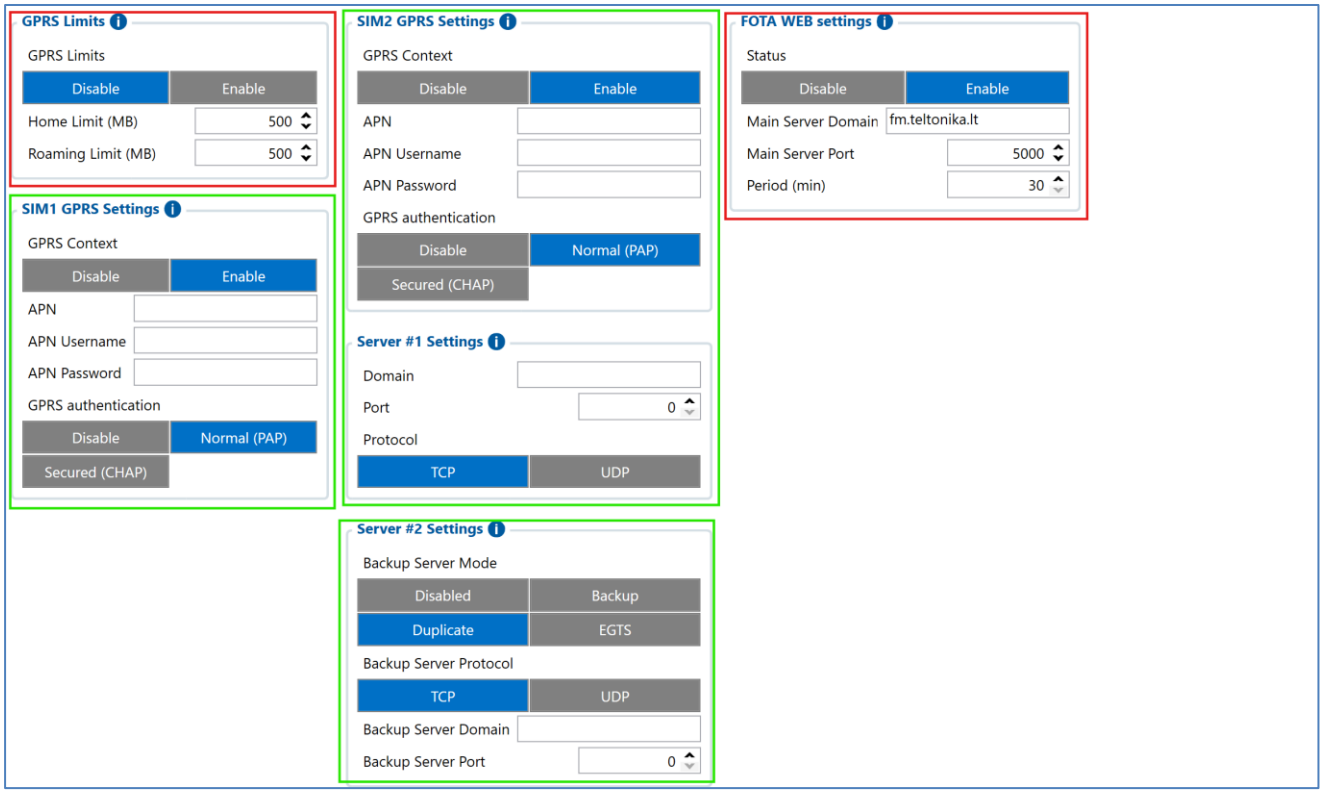
Security configuration:



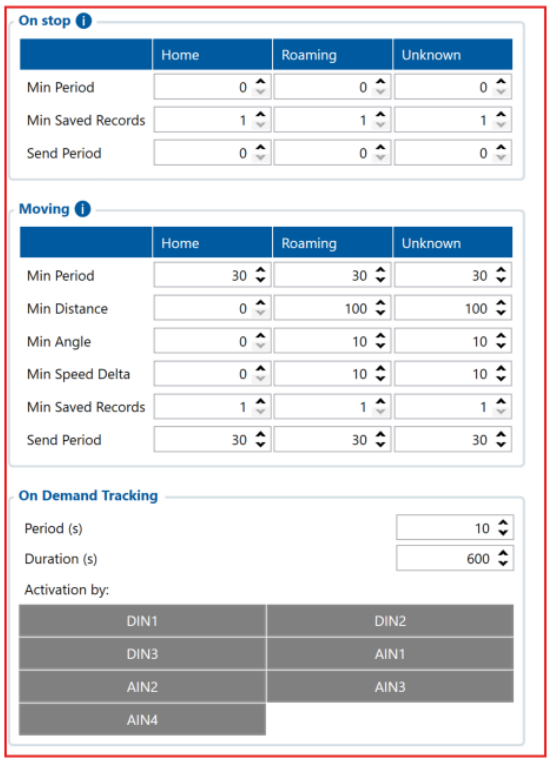
System configuration:



GPRS configuration:



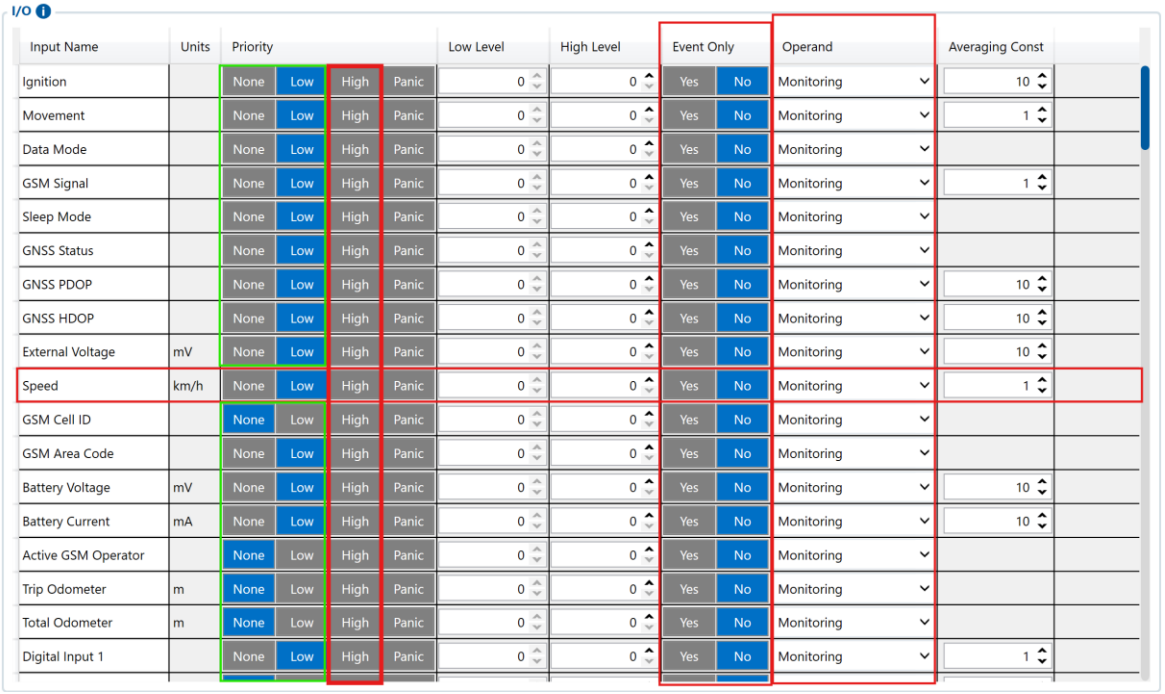
Data Acquisition configuration:



Features & Accelerometers Features configuration:

Scenarios can be activated but **must** be set to low priority only. Any eventual data should be disabled.
By default, all the scenarios are disabled.

IO configuration:



I/O

Input Name	Units	Priority				Low Level	High Level	Event Only		Operand	Averaging Const
Ignition		None	Low	High	Panic	0	0	Yes	No	Monitoring	10
Movement		None	Low	High	Panic	0	0	Yes	No	Monitoring	1
Data Mode		None	Low	High	Panic	0	0	Yes	No	Monitoring	
GSM Signal		None	Low	High	Panic	0	0	Yes	No	Monitoring	1
Sleep Mode		None	Low	High	Panic	0	0	Yes	No	Monitoring	
GNSS Status		None	Low	High	Panic	0	0	Yes	No	Monitoring	
GNSS PDOP		None	Low	High	Panic	0	0	Yes	No	Monitoring	10
GNSS HDOP		None	Low	High	Panic	0	0	Yes	No	Monitoring	10
External Voltage	mV	None	Low	High	Panic	0	0	Yes	No	Monitoring	10
Speed	km/h	None	Low	High	Panic	0	0	Yes	No	Monitoring	1
GSM Cell ID		None	Low	High	Panic	0	0	Yes	No	Monitoring	
GSM Area Code		None	Low	High	Panic	0	0	Yes	No	Monitoring	
Battery Voltage	mV	None	Low	High	Panic	0	0	Yes	No	Monitoring	10
Battery Current	mA	None	Low	High	Panic	0	0	Yes	No	Monitoring	10
Active GSM Operator		None	Low	High	Panic	0	0	Yes	No	Monitoring	
Trip Odometer	m	None	Low	High	Panic	0	0	Yes	No	Monitoring	
Total Odometer	m	None	Low	High	Panic	0	0	Yes	No	Monitoring	
Digital Input 1		None	Low	High	Panic	0	0	Yes	No	Monitoring	1

Configuration File:

Base configuration file that has been approved by TCA can be provided by Teltonika upon request.

Additional salient guidelines to maintain compliance:

1. The following 3 parameters should be discarded by ASP from data received from device or should only be used for internal purposes. TCA's solution should not have the visibility for it.
    a. Number of satellites
    b. HDOP
    c. PDOP
2. All peripherals (RS232/RS485, Video Solutions, Digital I/O, FMS, MobilEye, Tacho, Bluetooth etc.) are disabled* by default. To use any peripherals (including any that are not listed otherwise), approval from TCA and Teltonika is needed. **The only peripheral enabled by default is USB.* The interface can be used to load the initial configurations, e.g., APN, server domain & port etc., as per the instructions provided in Device Configuration Guide.
3. External power voltage and Ignition Status is sent with the AVL data and is contained in each packet.

4. SD card slot has not been used since internal memory is enough to hold records for up to 6 hours. In case external SD card is needed, approval is required from TCA and Teltonika.
5. Device is not password protected by default and can be accessed through USB. ASPs should add keyword protection for serial interface over USB. Refer to Security Configuration guide.
6. The device sends data every second after:
    a. The Ignition is turned OFF *OR*
    b. The Ignition is disconnected *OR*
    c. The External Power is OFF *OR*
    d. The External Power is disconnected.

    If any of the above conditions is met, ASP should filter out and discard any data that is received, for TCA.

Declarations:

1. The date and time data collected by the telematics device is within:
    a. 1 second from UTC when using GNSS signals &
    b. 10 seconds from UTC when not using GNSS signals for 24 hours.

Intellectual property rights:
The Customer acknowledges that UAB TELTONIKA TELEMATICS shall be the exclusive owner of all intellectual property rights used in connection with the products and/or Services the Customer purchases.

Changelog			
Initials	**Date**	**Version**	**Comment**
JA	2024.08.27	1.0	Initial TCA protocol change guide for integrators
JA	2024.10.25	2.0	(Major) Added firmware changelog and device configuration guideline sections.
JA	2024.10.25	2.1	Added additional salient guidelines and declarations section.
JA	2024.10.28	2.2	Updated point 2 & 6 in "Additional salient guidelines to maintain compliance" section.
JA	2024.10.28	2.3	Added "security configuration" part in "device configuration" section. Removed Bluetooth mentions form all the sections. Bluetooth disabled by default. Updated point 2 & 5 in "Additional salient guidelines to maintain compliance" section.