TELTONIKA FMB150 Advanced Tracker with CAN Data Reading Feature Owner's Manual

Contents

FMB150 Advanced Tracker with CAN Data Reading Feature

Product Specifications

- Product Name: FMB150
- Features: Advanced tracker with CAN data reading
- Power Supply: +10-30 V DC
- Input Range: 0-30 V DC
- Output: Digital output, open collector, max. 0.5 A DC

Product Usage Instructions

1. Know Your Device

The FMB150 device features various components:

- 2×6 Socket
- Navigate LED
- Status LED
- Micro USB Port
- Micro SIM Slot
- CAN Slot

- Battery Socket

2. Pinout Information

The pins on the FMB150 device serve different functions:

- PIN 1: VCC (+10-30 V DC)
- PIN 2: DIN3 / AIN2
- PIN 3: DIN2-N / AIN1

3. Wiring Scheme

Connect various components to the corresponding pins on the device for proper functionality:

- 1-Wire Power
- DIN3 / DIN2-N

4. Set Up Your Device

Follow these steps to set up your FMB150 device:

1. Cover Removal: Gently remove the cover using a plastic pry tool.
2. Micro-SIM Card Insert: Insert the Micro-SIM card with the cut-off corner pointing forward.
3. Battery Connection: Connect the battery to the device.
4. Attaching Cover Back: After configuration, reattach the device cover.

5. PC Connection (Windows)

To connect the device to your computer, follow these steps:

1. Download COM port drivers from the provided link.
2. Extract and run TeltonikaCOMDriver.exe.

6. Configuration (Windows)

Configure the FMB150 device using Teltonika Configurator software:

1. Download and install the latest Configurator version from the provided link.

Frequently Asked Questions (FAQ)

Q: How do I change the default factory settings on my FMB150 device?

A: The main configuration can be performed using the Teltonika Configurator software. Refer to the user manual for detailed instructions.

Q: What is the power supply range for the FMB150 device?

A: The FMB150 device operates on a power supply range of +10-30 V DC.

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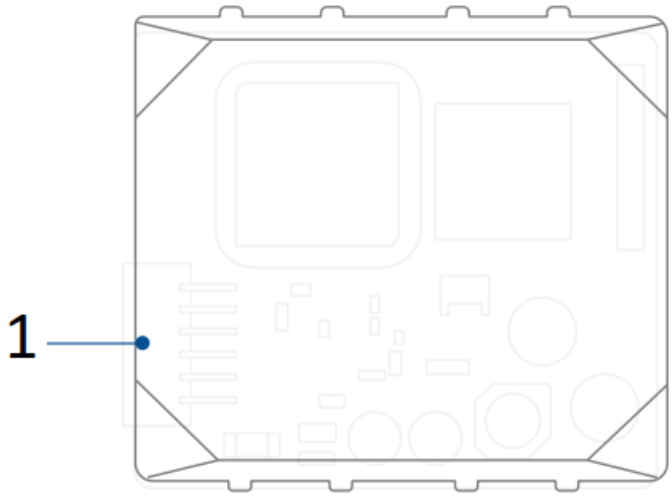
FMB150

Advanced tracker with CAN data reading feature

Quick Manual v2.3

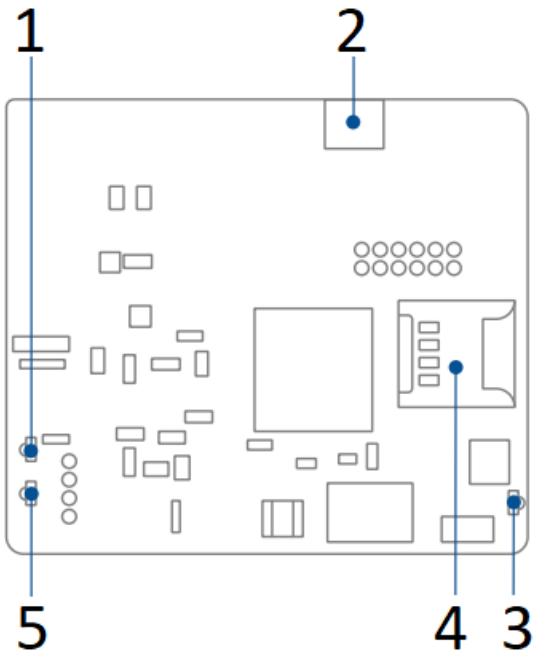
KNOW YOUR DEVICE

TOP VIEW



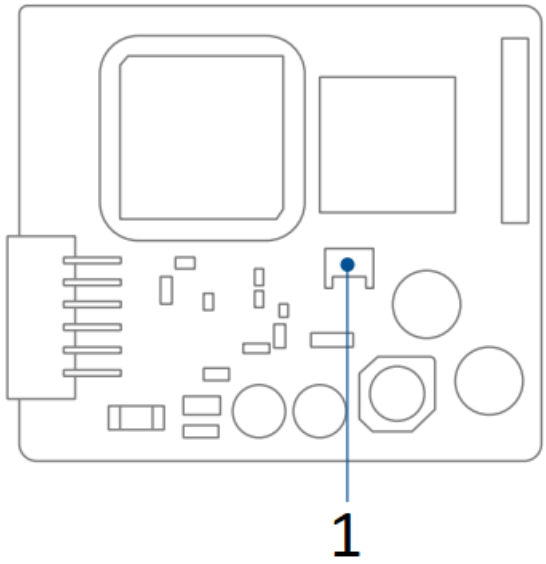
1. **2X6** SOCKET

BOTTOM VIEW (WITHOUT COVER)



1. **NAVIGATE** LED
2. **MICRO** USB
3. **CAN** LED
4. **MICRO SIM** SLOT
5. **STATUS** LED

TOP VIEW (WITHOUT COVER)



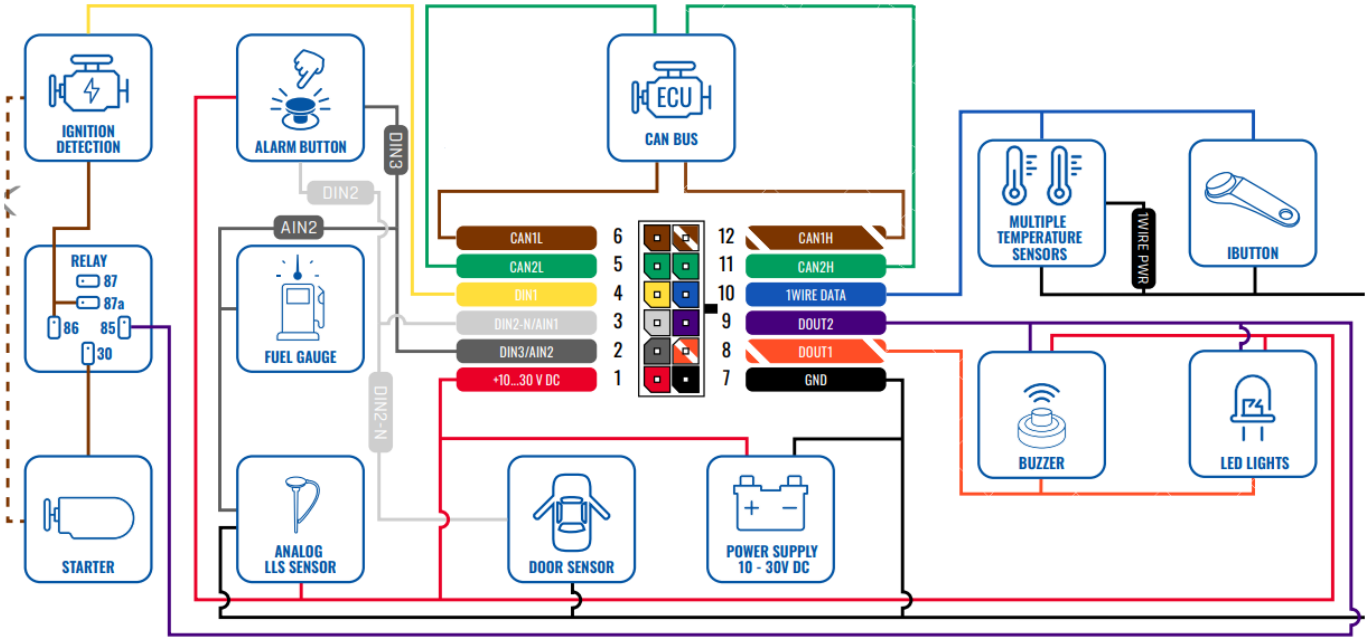
1. **BATTERY** SOCKET

PINOUT

PIN NUMBER	PIN NAME	DESCRIPTION
1	VCC (10-30) V DC (+)	Power supply (+10-30 V DC).
2	DIN 3 / AIN 2	Analog input, channel 2. Input range: 0-30 V DC / Digital input, channel 3.
3	DIN2-N / AIN1	Digital input, channel 2 / Analog input, channel 2. Input range: 0-30 V DC /GND Sense input
4	DIN1	Digital input, channel 1.
5	CAN2L	CAN LOW, 2nd line
6	CAN1L	CAN LOW, 1st line
7	GND (-)	Ground pin. (10-30) V DC (-)
8	DOUT 1	Digital output, channel 1. Open collector output. Max. 0,5 A DC.
9	DOUT 2	Digital output, channel 2. Open collector output. Max. 0,5 A DC.
10	1WIRE DATA	Data for 1Wire devices.
11	CAN2H	CAN HIGH, 2nd line
12	CAN1H	CAN HIGH, 1st line

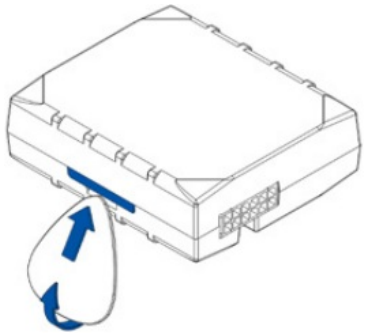
FMB150 2×6 socket pinout

WIRING SCHEME



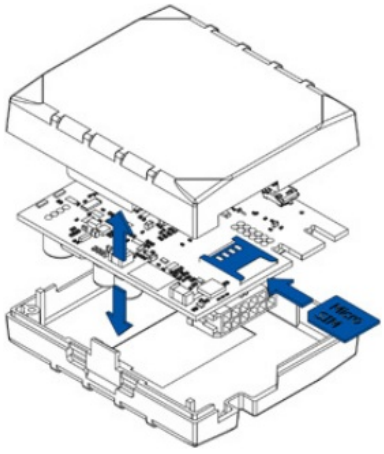
SET UP YOUR DEVICE

HOW TO INSERT MICRO-SIM CARD AND CONNECT THE BATTERY



(1) COVER REMOVAL

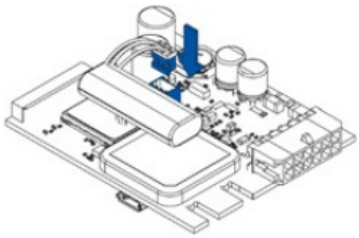
Gently remove FMB150 cover using plastic pry tool from both sides.



(2) MICRO-SIM CARD INSERT

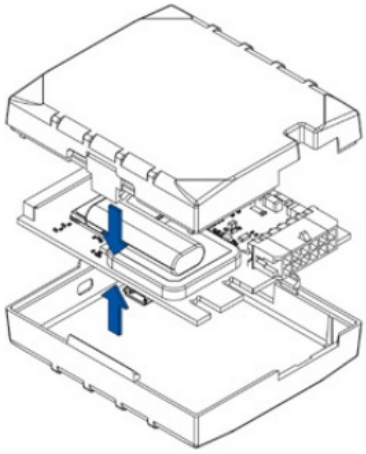
Insert Micro-SIM card as shown with PIN request disabled or read our **Wiki**[1] how to enter it later in **Teltonika Configurator**[2]. Make sure that MicroSIM card cut-off corner is pointing forward to slot.

[1] wiki.teltonika-gps.com/index.php?title=FMB150_Security_info
[2] wiki.teltonika-gps.com/view/Teltonika_Configurator



(3) BATTERY CONNECTION

Connect **battery** as shown to device. Position the battery in place where it does not obstruct other components.



(4) ATTACHING COVER BACK

After configuration, see “PC Connection (Windows)”, attach device cover back.

PC CONNECTION (WINDOWS)

1. Power-up FMB150 with **DC voltage (10 – 30 V)** power supply using **supplied power cable**. LED’s should start blinking, see “**LED indications**[1]“.

2. Connect device to computer using **Micro-USB cable** or Bluetooth® connection:

- Using Micro-USB cable
  - You will need to install USB drivers, see “**How to install USB drivers (Windows)**[2]“
- Using **Bluetooth®** wireless technology.
  - FMB150 **Bluetooth®** technology is enabled by default. Turn on Bluetooth® connection on your PC, then select **Add Bluetooth® or other device > Bluetooth®**. Choose your device named – “**FMB150_last_7_imei_digits**“, without **LE** in the end. Enter default password **5555**, press **Connect** and then select **Done**.

3. You are now ready to use the device on your computer.

[1] wiki.teltonika-gps.com/view/FMB150_LED_status
[2] Page 7, “How to install USB drivers”

HOW TO INSTALL USB DRIVERS (WINDOWS)

1. Please download COM port drivers from **here**[1].
2. Extract and run **TeltonikaCOMDriver.exe**.
3. Click **Next** in driver installation window.
4. In the following window click **Install** button.
5. Setup will continue installing the driver and eventually the confirmation window will appear. Click **Finish** to complete the setup.

[1] teltonika-gps.com/downloads/en/FMB150/TeltonikaCOMDriver.zip

CONFIGURATION (WINDOWS)

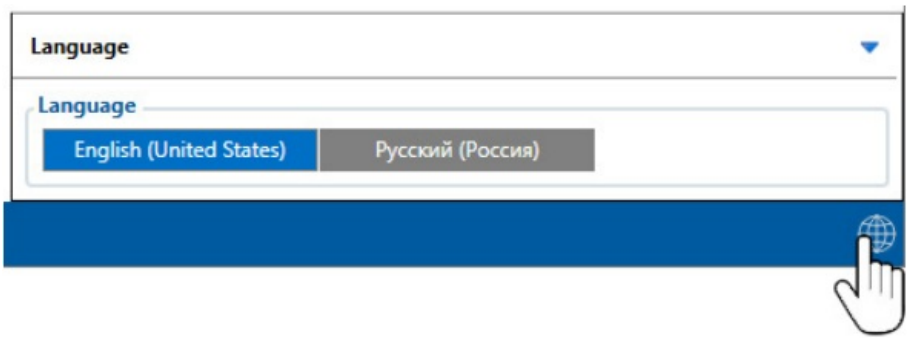
At first FMB150 device will have default factory settings set. These settings should be changed according to the users needs. Main configuration can be performed via **Teltonika Configurator**[1] software. Get the latest **Configurator** version from **here**[2]. Configurator operates on **Microsoft Windows OS** and uses prerequisite **MS .NET Framework**. Make sure you have the correct version installed.

[1] wiki.teltonika-gps.com/view/Teltonika_Configurator
[2] wiki.teltonika-gps.com/view/Teltonika_Configurator_versions

MS .NET REQUIREMENTS

Operating system	MS .NET Framework version	Version	Links
Windows Vista	MS .NET Framework 4.6.2	32 and 64 bit	www.microsoft.com[1]
Windows 7			
Windows 8.1			
Windows 10			

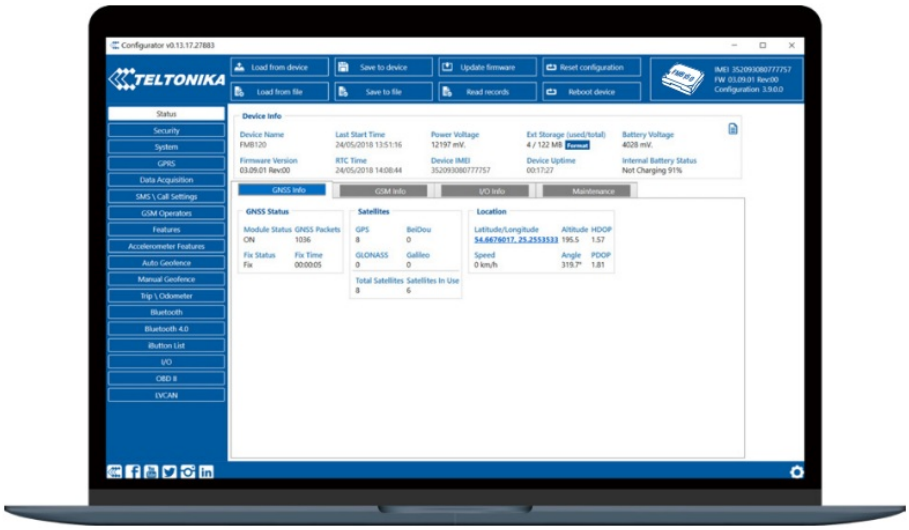
[1] dotnet.microsoft.com/en-us/download/dotnet-framework/net462



Downloaded Configurator will be in compressed archive.

Extract it and launch Configurator.exe. After launch software language can be changed by clicking in the right bottom corner.

Configuration process begins by pressing on connected device.



After connection to Configurator **Status window** will be displayed.

Various **Status window**[1] tabs display information about **GNSS**[2], **GSM**[3], **I/O**[4], **Maintenance**[5] and etc. FMB150 has one user editable profile, which can be loaded and saved to the device. After any modification of configuration the changes need to be saved to device using **Save to device** button. Main buttons offer following functionality:

Load from device – loads configuration from device.

Save to device – saves configuration to device.

Load from file – loads configuration from file.

Save to file – saves configuration to file.

Update firmware – updates firmware on device.

Read records – reads records from the device.

Reboot device – restarts device.

Reset configuration – sets device configuration to default.

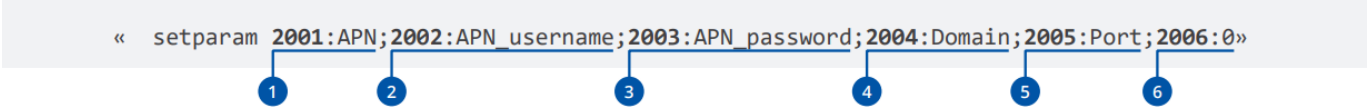
Most important configurator section is **GPRS** – where all your server and **GPRS settings**[6] can be configured and **Data Acquisition**[7] – where data acquiring parameters can be configured. More details about FMB150 configuration using Configurator can be found in our **Wiki**[8].

[1] wiki.teltonika-gps.com/view/FMB150_Status_info
[2] wiki.teltonika-gps.com/view/FMB150_Status_info#GNSS_Info
[3] wiki.teltonika-gps.com/view/FMB1501_Status_info#GSM_Info
[4] wiki.teltonika-gps.com/view/FMB150_Status_info#I.2FO_Info
[5] wiki.teltonika-gps.com/view/FMB150_Status_info#Maintenance
[6] wiki.teltonika-gps.com/index.php?title=FMB150_GPRS_settings
[7] wiki.teltonika-gps.com/index.php?title=FMB150_Data_acquisition_settings
[8] wiki.teltonika-gps.com/index.php?title=FMB150_Configuration

QUICK SMS CONFIGURATION

Default configuration has optimal parameters present to ensure best performance of track quality and data usage.

Quickly set up your device by sending this SMS command to it:



Note: Before SMS text, two space symbols should be inserted.

GPRS SETTINGS:

(1) 2001 – APN

(2) 2002 – APN username (if there are no APN username, empty field should be left)

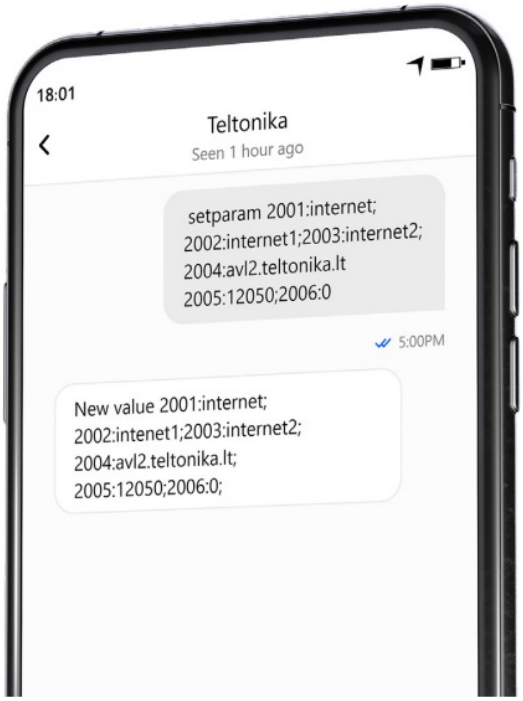
(3) 2003 – APN password (if there are no APN password, empty field should be left)

SERVER SETTINGS:

(4) 2004 – Domain

(5) 2005 – Port

(6) 2006 – Data sending protocol (0 – TCP, 1 – UDP)



DEFAULT CONFIGURATION SETTINGS

MOVEMENT AND IGNITION DETECTION:

VEHICLE MOVEMENT
will be detected by accelerometer

IGNITION
will be detected by vehicle power voltage between 13,2 – 30 V

DEVICE MAKES A RECORD ON STOP IF:

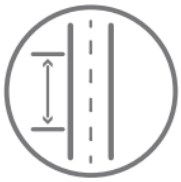
1 HOUR PASSES
while vehicle is stationary and ignition is off

RECORDS SENDING TO SERVER:

EVERY 120 SECOND
it is sent to the server If device has made a record

DEVICE MAKES A RECORD ON MOVING IF ONE OF THESE EVENTS HAPPEN:

PASSES
300 seconds



VEHICLE DRIVES
100 meters

VEHICLE TURNS
10 degrees

SPEED DIFFERENCE
between last coordinate and current position is greater than 10 km/h

After successful SMS configuration, FMB150 device will synchronize time and update records to configured server. Time intervals and default I/O elements can be changed by using **Teltonika Configurator**[1] or **SMS parameters**[2].

[1] **wiki.teltonika-gps.com/view/Teltonika_Configurator**
[2] **wiki.teltonika-gps.com/view/Template:FMB_Device_Family_Parameter_list**

MOUNTING RECOMMENDATIONS

CONNECTING WIRES

- Wires should be fastened to the other wires or non-moving parts. Try to avoid heat emitting and moving objects near the wires.
- The connections should not be seen very clearly. If factory isolation was removed while connecting wires, it should be applied again.
- If the wires are placed in the exterior or in places where they can be damaged or exposed to heat, humidity, dirt, etc., additional isolation should be applied.
- Wires cannot be connected to the board computers or control units.

CONNECTING POWER SOURCE

- Be sure that after the car computer falls asleep, power is still available on chosen wire. Depending on car, this may happen in 5 to 30 minutes period.
- When module is connected, measure voltage again to make sure it did not decrease.
- It is recommended to connect to the main power cable in the fuse box.
- Use 3A, 125V external fuse.

CONNECTING IGNITION WIRE

- Be sure to check if it is a real ignition wire i. e. power does not disappear after starting the engine.
- Check if this is not an ACC wire (when key is in the first position, most of the vehicle electronics are available).
- Check if power is still available when you turn off any of vehicles devices.
- Ignition is connected to the ignition relay output. As alternative, any other relay, which has power output when ignition is on, may be chosen.

CONNECTING GROUND WIRE

- Ground wire is connected to the vehicle frame or metal parts that are fixed to the frame.
- If the wire is fixed with the bolt, the loop must be connected to the end of the wire.
- For better contact scrub paint from the spot where loop is going to be connected.

LED INDICATIONS

NAVIGATION LED INDICATIONS

BEHAVIOUR	MEANING
Permanently switched on	GNSS signal is not received
Blinking every second	Normal mode, GNSS is working
Off	GNSS is turned off because: Device is not working or Device is in sleep mode
Blinking fast constantly	Device firmware is being flashed

STATUS LED INDICATIONS

BEHAVIOUR	MEANING
Blinking every second	Normal mode
Blinking every two seconds	Sleep mode
Blinking fast for a short time	Modem activity
Off	Device is not working or Device is in boot mode

CAN STATUS LED INDICATIONS

BEHAVIOUR	MEANING
Blinking fast constantly	Reading CAN data from vehicle
Permanently switched on	Wrong program number or wrong wire connection
Off	Wrong connection or CAN processor in sleep mode

BASIC CHARACTERISTICS

MODULE	
Name	Teltonika TM2500
Technology	GSM, GPRS, GNSS, BLUETOOTH® LE
GNSS	
GNSS	GPS, GLONASS, GALILEO, BEIDOU, QZSS, AGPS
Receiver	Tracking: 33
Tracking sensitivity	-165 dBM
Accuracy	< 3 m
Hot start	< 1 s
Warm start	< 25 s

Cold start	< 35 s
CELLULAR	
Technology	GSM
2G bands	Quad-band 850/900/1800/1900 MHz
Transmit power	GSM 900: 32.84 dBm ±5 dB GSM 1800: 29.75 dBm ±5 dB Bluetooth®: 4.23 dBm ±5 dB Bluetooth®: -5.26 dBm ±5 dB
Data support	SMS (text/data)
POWER	
Input voltage ra nge	10-30 V DC with overvoltage protection
Back-up battery	170 mAh Li-Ion battery 3.7 V (0.63 Wh)
Internal fuse	3 A, 125 V
Power Consumption	At 12V < 6 mA (**Ultra Deep Sleep**) At 12V < 8 mA (**Deep Sleep**) At 12V < 11 mA (**Online Deep Sleep**) At 12V < 20 mA (**GPS Sleep**)[1] At 12V < 35 mA (nominal with no load) At 12V < 250 mA Max. (with full Load/ Peak)
BLUETOOTH	
Specification	4.0 + LE
Supported perip herals	**Temperature and Humidity sensor**[2], **Headset**[3], Inateck Barcode Scanner, Universal BLUE TOOTH® LE sensors support
INTERFACE	
Digital Inputs	3
Negative Inputs	1 (Digital input 2)
Digital Outputs	2
Analog Inputs	2
CAN interfaces	2
1-Wire	1 (1-Wire data)
GNSS antenna	Internal High Gain
GSM antenna	Internal High Gain
USB	2.0 Micro-USB
LED indication	3 status LED lights
SIM	Micro-SIM or eSIM
Memory	128MB internal flash memory
PHYSICAL SPECIFICATION	

Dimensions	65 x 56.6 x 20.6 mm (L x W x H)
Weight	55 g

[1] wiki.teltonika-gps.com/view/FMB150_Sleep_modes#GPS_Sleep_mode
[2] teltonika.lt/product/bluetooth-sensor/
[3] wiki.teltonika.lt/view/How_to_connect_Blue-tooth_Hands_Free_adapter_to_FMB_device

OPERATING ENVIRONMENT	
Operating temperature (without battery)	-40 °C to +85 °C
Storage temperature (without battery)	-40 °C to +85 °C
Operating temperature (with battery)	-20 °C to +40 °C
Storage temperature (with battery)	-20 °C to +45 °C for 1 month -20 °C to +35 °C for 6 months
Operating humidity	5% to 95% non-condensing
Ingress Protection Rating	IP41
Battery charge temperature	0 °C to +45 °C
Battery storage temperature	-20 °C to +45 °C for 1 month -20 °C to +35 °C for 6 months
FEATURES	
CAN Data	Fuel Level (Dashboard), Total fuel consumption, Vehicle speed (wheel), Vehicle driven distance, Engine speed (RPM), Accelerator pedal position
Sensors	Accelerometer
Scenarios	**Green Driving, Over Speeding detection, Jamming detection, GNSS Fuel Counter, DOUT Control Via Call, Excessive Idling detection, Immobilizer, iButton Read Notification, Unplug detection, Towing detection, Crash detection, Auto Geofence, Manual Geofence, Trip[4]**
Sleep modes	**GPS Sleep, Online Deep Sleep, Deep Sleep, Ultra Deep Sleep [5]**

Configuration and firmware update	**FOTA Web[6], FOTA[7], Teltonika Configurator[8]** (USB, Bluetooth® wireless technology), **FMBT mobile application[9]** (Configuration)
SMS	Configuration, Events, DOUT control, Debug
GPRS commands	Configuration, DOUT control, Debug
Time Synchronization	GPS, NITZ, NTP
Ignition detection	Digital Input 1, Accelerometer, External Power Voltage, Engine

[4] **wiki.teltonika-gps.com/view/FMB150_Accelerometer_Features_settings**
[5] **wiki.teltonika-gps.com/view/FMB150_Sleep_modes**
[6] **wiki.teltonika.lt/view/FOTA_WEB**
[7] **wiki.teltonika.lt/view/FOTA**
[8] **wiki.teltonika.lt/view/Teltonika_Configurator**
[9] **teltonika.lt/product/fmbt-mobile-application/**

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC DESCRIPTION	**VALUE**			
	MIN.	**TYP.**	**MAX.**	**UNIT**
SUPPLY VOLTAGE				
Supply Voltage (Recommended Operating Conditions)	+10		+30	V
DIGITAL OUTPUT (OPEN DRAIN GRADE)				
Drain current (Digital Output OFF)			120	µA
Drain current (Digital Output ON, Recommended Operating Conditions)		0.1	0.5	A
Static Drain-Source resistance (Digital Output ON)		400	600	mΩ
DIGITAL INPUT				
Input resistance (DIN1)	47			kΩ
Input resistance (DIN2)	38.45			kΩ

Input resistance (DIN3)	150			kΩ
Input voltage (Recommended Operating Conditions)	0		Supply voltage	V
Input Voltage threshold (DIN1)		7.5		V
Input Voltage threshold (DIN2)		2.5		V
Input Voltage threshold (DIN3)		2.5		V
OUTPUT SUPPLY VOLTAGE 1-WIRE				
Supply voltage	+4.5		+4.7	V
Output inner resistance		7		Ω
Output current (Uout > 3.0 V)		30		mA
Short circuit current (Uout = 0)		75		mA
NEGATIVE INPUT				
Input resistance	38.45			kΩ
Input voltage (Recommended Operating Conditions)	0		Supply voltage	V
Input voltage threshold		0.5		V
Sink current			180	nA
CAN INTERFACE				
Internal terminal resistors CAN bus (no internal termination resistors)				Ω
Differential input resistance	19	30	52	kΩ
Recessive output voltage	2	2.5	3	V

Differential receiver threshold voltage	0.5	0.7	0.9	V
Common mode input voltage	-30		30	V

SAFETY INFORMATION

This message contains information on how to operate FMB150 safely. By following these requirements and recommendations, you will avoid dangerous situations. You must read these instructions carefully and follow them strictly before operating the device!

- The device uses SELV limited power source. The nominal voltage is +12 V DC. The allowed voltage range is +10…+30 V DC.
- To avoid mechanical damage, it is advised to transport the device in an impact-proof package. Before usage, the device should be placed so that its LED indicators are visible. They show the status of device operation.
- When connecting the 2×6 connector wires to the vehicle, the appropriate jumpers of the vehicle power supply should be disconnected.
- Before unmounting the device from the vehicle, the 2×6 connector must be disconnected. The device is designed to be mounted in a zone of limited access, which is inaccessible to the operator. All related devices must meet the requirements of EN 62368-1 standard. The device FMB150 is not designed as a navigational device for boats.

 Do not disassemble the device. If the device is damaged, the power supply cables are not isolated or the isolation is damaged, DO NOT touch the device before unplugging the power supply.

 All wireless data transferring devices produce interference that may affect other devices which are placed nearby.

 The device must be connected only by qualified personnel.

 The device must be firmly fastened in a predefined location.

 The programming must be performed using a PC with autonomic power supply.

 Installation and/or handling during a lightning storm is prohibited.

 The device is susceptible to water and humidity.

 CAUTION: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Battery should not be disposed of with general household waste. Bring damaged or worn-out batteries to your local recycling center or dispose them to battery recycle bin found in stores.

CERTIFICATION AND APPROVALS

 This sign on the package means that it is necessary to read the User's Manual before your start using the device. Full User's Manual version can be found in our **Wiki**[1].

[1] **wiki.teltonika-gps.com/index.php?title=FMB150**

 This sign on the package means that all used electronic and electric equipment should not be mixed with general household waste.

UK CA UK Conformity Assessed (UKCA) marking is a conformity mark that indicates conformity with the applicable requirements for above described products sold within Great Britain.

 The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by UAB Teltonika Telematics is under license. Other trademarks and trade names are those of their respective owners.

CHECK ALL CERTIFICATES

All newest certificates may be found in our **Wiki**[2].

[2] **wiki.teltonika-gps.com/view/FMB150_Certification_%26_Approvals**

The RoHS1 is a directive regulating the manufacture, import and distribution of Electronics and Electrical Equipment (EEE) within the EU, which bans from use 10 different hazardous materials (to date).


Hereby, Teltonika declare under our sole responsibility that the above described product is in conformity with the relevant Community harmonization: European Directive 2014/53/EU (RED).

E-Mark and e-Mark are the European conformity marks issued by the transport sector, indicating that the products comply with relevant laws and regulations or directives. Vehicles and related products need to go through the E-Mark certification process to be legally sold in Europe.

For more information, see the ANATEL website **www.anatel.gov.br**
This equipment is not entitled to protection against harmful interference and must not cause interference in duly authorized systems.

WARRANTY

We guarantee our products 24-month warranty[1] period.

All batteries carry a 6-month warranty period.

Post-warranty repair service for products is not provided.

If a product stops operating within this specific warranty time, the product can be:

- Repaired
- Replaced with a new product
- Replaced with an equivalent repaired product fulfilling the same functionality
- Replaced with a different product fulfilling the same functionality in case of EOL for the original product

[1] Additional agreement for an extended warranty period can be agreed upon separately.

WARRANTY DISCLAIMER

- Customers are only allowed to return products as a result of the product being defective, due to order assembly or manufacturing fault.

- Products are intended to be used by personnel with training and experience.
- Warranty does not cover defects or malfunctions caused by accidents, misuse, abuse, catastrophes, improper maintenance or inadequate installation not following operating instructions (including failure to heed warnings) or use with equipment with which it is not intended to be used.
- Warranty does not apply to any consequential damages.
- Warranty is not applicable for supplementary product equipment (i. e. PSU, power cables, antennas) unless the accessory is defective on arrival.
- **More information on what is RMA** [1]

[1] wiki.teltonika-gps.com/view/RMA_guidelines

Documents / Resources

	TELTONIKA FMB150 Advanced Tracker with CAN Data Reading Feature [pdf] Owner's Manual FMB150 Advanced Tracker with CAN Data Reading Feature, FMB150, Advanced Tracker with CAN Data Reading Feature, CAN Data Reading Feature, Data Reading Feature, Reading Feature

References

- Teltonika Configurator versions - Wiki Knowledge Base | Teltonika GPS
- FMB140 Security info - Wiki Knowledge Base | Teltonika GPS
- FMB150 Data acquisition settings - Wiki Knowledge Base | Teltonika GPS
- FMB150 Accelerometer Features settings - Wiki Knowledge Base | Teltonika GPS
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- FMB150 Features settings - Wiki Knowledge Base | Teltonika GPS
- FMB150 LED status - Wiki Knowledge Base | Teltonika GPS
- RMA guidelines - Wiki Knowledge Base | Teltonika GPS
- Teltonika Configurator - Wiki Knowledge Base | Teltonika GPS
- FOTA WEB - Wiki Knowledge Base | Teltonika GPS
- How to connect Bluetooth® Hands Free adapter to FMB device - Wiki Knowledge Base | Teltonika GPS
- User Manual