

TELTONIKA FMB240 Waterproof GPRS GNSS Tracker with CAN Data Reading Feature Owner's Manual

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FMB240
WATERPROOF GPRS/GNSS TRACKER
WITH CAN DATA READING FEATURE
Quick Manual v1.5

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KNOW YOUR DEVICE

BOTTOM VIEW (WITHOUT COVER) TOP VIEW TOP VIEW (WITHOUT COVER) 2x6 SOCKET De 888888 = 0 0 GNSS BATTERY DUAL SIM NAVIGATE

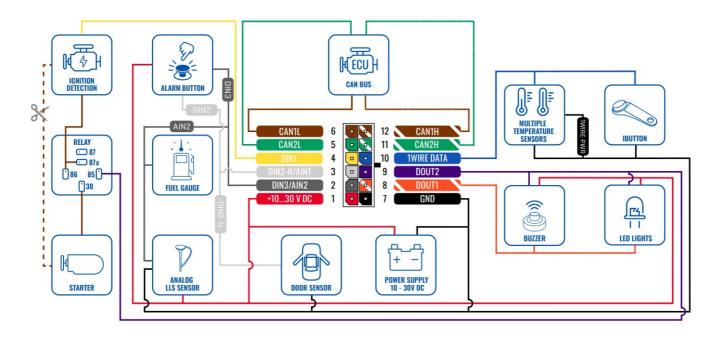
PINOUT



FMB240 2x6 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 r ange: 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 1–Wire devices.		
11	1WIRE	CAN HIGH, 2nd line		
12	DATA	CAN HIGH, 1st line		

WIRING SCHEME

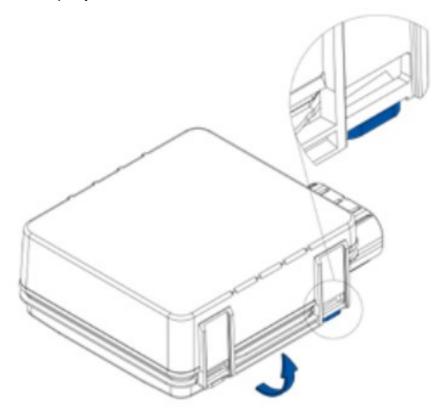


SET UP YOUR DEVICE

HOW TO INSERT MICRO-SIM CARD AND CONNECT THE BATTERY

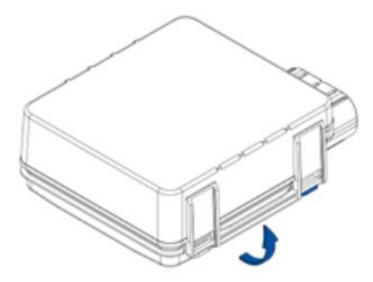
1. PARTLY CLOSED DEVICE

You will receive your device partly closed.



2. COVER REMOVAL

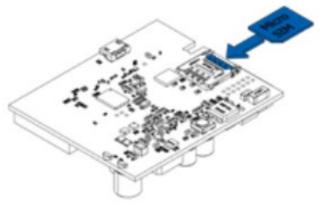
Gently remove top and bottom covers.



3. SIM CARD INSERT

Insert SIM card as shown with PIN request disabled or read our <u>Wiki1</u> how to enter it later in <u>Teltonika</u> <u>Configurator2</u>.

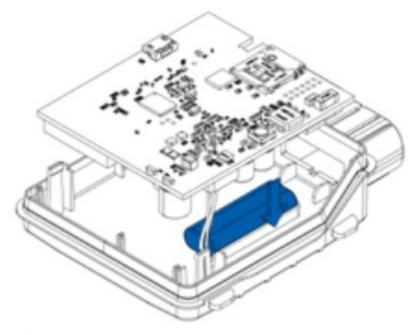
Make sure that Micro-SIM card cut-off corner is pointing outward from slot. SIM slot 1 is closer to PCB, SIM slot 2 is the top one.



- 1 wiki.teltonika-gps.com/view/FMB240_Security_info
- 2 wiki.teltonika-gps.com/view/Teltonika_Configurator

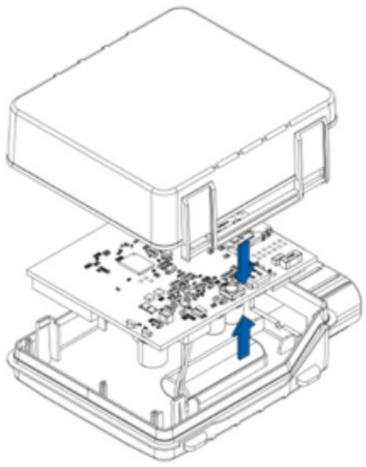
4. BATTERY CONNECTION

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



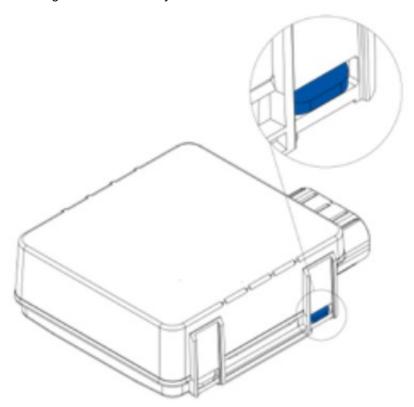
5. ATTACHING COVER BACK

After configuration, see "PC Connection (Windows)1", attach device top and bottom cover back and press them twice to the full closure. 1 Page 7, "PC Connection (Windows)



6. COMPLETELY CLOSED DEVICE

Make sure that product casing is closed correctly.



IMPORTANT!

This device has an IP67 casing with a two-phase closing, that ensures reliable protection and ease of use. Please make sure that product casing corner clips are fixed tightly and cable is connected to the device in order to maintain the degree of IP67 protection.

PC CONNECTION (WINDOWS)

- 1. Power-up FMB240 with DC voltage (10 30 V) power supply using supplied power cable. LED's should start blinking, see "LED indications1".
- 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
 - FMB240 Bluetooth is enabled by default. Turn on Bluetooth on your PC, then select Add Bluetooth or other device > Bluetooth. Choose your device named "FMB240_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/FMB240 LED status

2 Page 6, "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.lt/downloads/en/FMB240/TeltonikaCOMDriver.zip

CONFIGURATION

At first FMB240 device will have default factory settings set. These settings should be changed according to the users needs. Main configuration can be performed via <u>Teltonika Configurator</u>1 software. Get the latest Configurator version from <u>here2</u>.

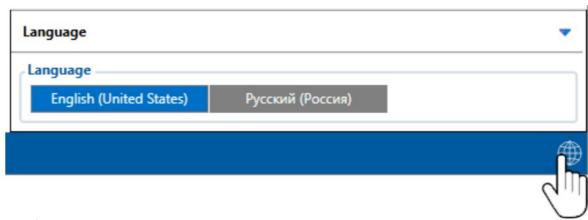
Configurator operates on Microsoft Windows OS and uses prerequisite MS .NET Framework. Make sure you have the correct version installed.

- 1 wiki.teltonika-gps.com/view/Teltonika Configurator
- 2 <u>wiki.teltonika-gps.com/view/Teltonika_Configurator_versions</u>

MS .NET REQUIREMENTS

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

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

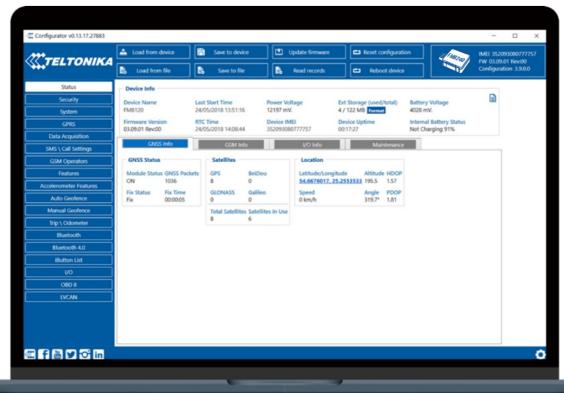


Downloaded Configurator will be in compressed archive.

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 <u>Status window1</u> tabs display information about <u>GNSS2, GSM3,I/O4, Maintenance5</u> and etc. FMB240 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.
B	Read records – reads records from the device.
(2)	Reboot device – restarts device.
	Reset configuration – sets device configuration to default.

Most important configurator section is GPRS – where all your server and <u>GPRS settings6</u> can be configured and <u>Data Acquisition7</u> – where data acquiring parameters can be configured. More details about FMB240 configuration using Configurator can be found in our <u>Wiki8</u>.

- 1 wiki.teltonika-gps.com/view/FMB240 Status info
- 2 <u>wiki.teltonika-gps.com/view/FMB240_Status_info#GNSS_Info</u>
- 3 <u>wiki.teltonika-gps.com/view/FMB240_Status_info#GSM_Info</u>
- 4 wiki.teltonika-qps.com/view/FMB240 Status info#I.2FO Info
- 5 <u>wiki.teltonika-gps.com/view/FMB240 Status info#Maintenance</u>
- 6 wiki.teltonika-gps.com/index.php?title=FMB240 GPRS settings
- 7 <u>wiki.teltonika-gps.com/index.php?title=FMB240_Data_acquisition_settings</u>
- 8 <u>wiki.teltonika-gps.com/index.php?title=FMB240 Configuration</u>

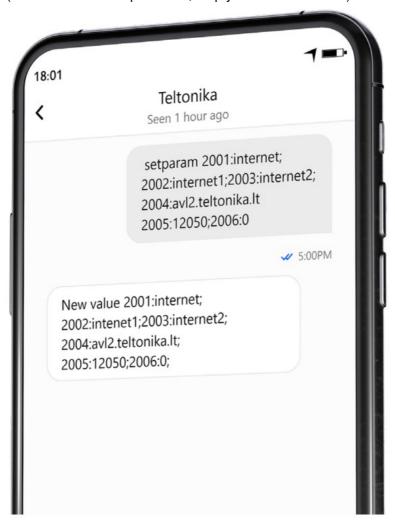
QUICK SMS CONFIGURATION

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)

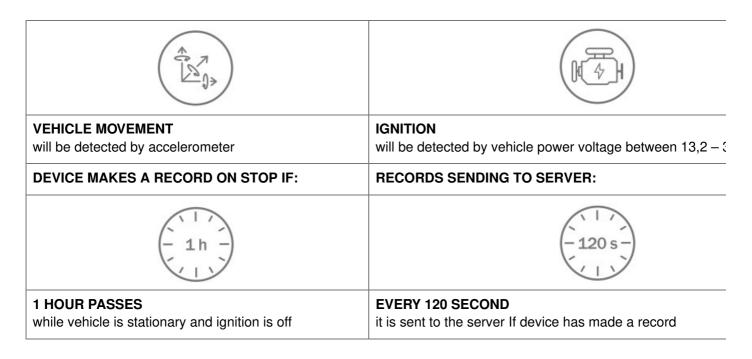


SERVER SETTINGS:

- 4. 2004 Domain
- 5. 2005 Port
- 6. 2006 Data sending protocol (0 TCP, 1 UDP)

DEFAULT CONFIGURATION SETTINGS

MOVEMENT AND IGNITION DETECTION:



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

-300 s -	
PASSES 300 seconds	VEHICLE DRIVES 100 meters
100	0-
VEHICLE TURNS 10 degrees	SPEED DIFFERENCE between last coordinate and current position is greater than 10 km/h

After successful SMS configuration, FMB240 device will synchronize time and update records to configured server. Time intervals and default I/O elements can be changed by using <u>Teltonika Configurator1</u> or <u>SMS</u> parameters2.

- 1 <u>wiki.teltonika-gps.com/view/Teltonika_Configurator</u>
- 2 wiki.teltonika-gps.com/view/Template:FMB_Device_Family_Parameter_list

MOUNTING RECOMMENDATIONS WITH A STANDARD CABLE

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.

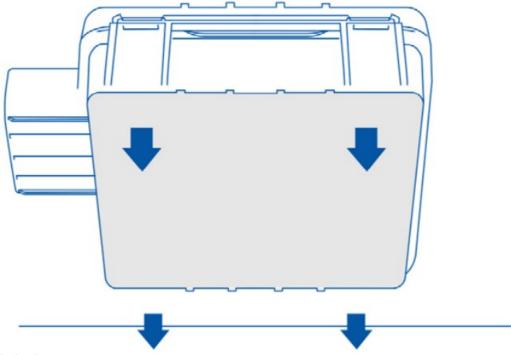
MOUNTING RECOMMENDATIONS WITH U-TYPE CABLE

DEVICE FASTENING

- Locate the battery in your vehicle. If present remove the battery cover to access the battery.
- You can use a double-sided tape to attach the device on the battery as well as a fastening straps to mount it
 anywhere next to the battery. Please make sure, that the GNSS antenna and LEDs indicators are facing up
 Figure 13.

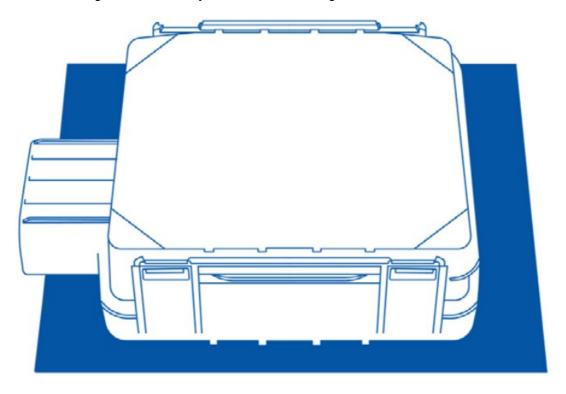
CONNECTING POWER WIRE

Device power wire is designed to be directly connected to the positive terminal fastener of the vehicle battery.



CONNECTING GROUND WIRE

Device ground wire is designed to be directly connected to the negative terminal fastener of the vehicle battery.



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

MODULE

Name	Teltonika TM2500		
Technology	2G(GSM/GPRS)/GNSS/BLUETOOTH		
GNSS			
GNSS	GPS, GLONASS, GALILEO, BEIDOU, QZSS, AGPS		
Receiver	Tracking: 33		
Tracking sensitivity	-165 dBM		
Position Accuracy	< 2.5 CEP		
Velocity Accuracy	< 0.1 m/s (within +/- 15% error)		
Hot start	<1 s		
Warm start	< 25 s		
Cold start	< 35 s		
CELLUAR			
Technology	GSM		
2G bands	Quad-band 850 / 900 / 1800 / 1900 MHz		
Data transfer	GPRS Multi-Slot Class 12 (up to 240 kbps), GPRS Mobile Statio n Class B		
Data support	SMS (text/data)		
POWER			
Input voltage range 10-30 V DC with overvoltage protection			
Internal Back-up battery	170 mAh Li-Ion battery 3.7 V (0.63 Wh)		
Internal fuse	3A, 125 V		
Power consumption	At 12V < 6 mA (<u>Ultra Deep Sleep1</u>) At 12V < 8 mA (<u>Deep Sleep1</u>) At 12V < 11 mA (<u>Online Deep Sleep1</u>) At 12V < 20 mA (<u>GPS Sleep1</u>) At 12V < 35 mA (Nominal with no load) At 12V < 1.5 A Max. (with full Load / Peak)		
BLUETOOTH			
Specification	4.0 + LE		
Supported peripherals	Temperature and Humidity sensor, <u>Headset2</u> , <u>OBDII dongle3</u> , I nateck Barcode Scanner		

INTERFACE

- 1 wiki.teltonika-gps.com/view/FMB240_Sleep_modes
 2 wiki.teltonika-gps.com/view/How_to_connect_Bluetooth_Hands_Free_adapter_to_FMB_device
 3 wiki.teltonika-gps.com/view/How_to_connect_OBD_II_Bluetooth_Dongle_to_FMB_device

Digital Inputs	3		
Negative Inputs	1 (Digital Input 2)		
Impulse Inputs	2 (Digital Input 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 + eSIM		
MEMORY	128MB INTERNAL FLASH MEMORY		
Dimensions	70,5 x 67,0 x 25,6 mm (L x W x H) 85,0 x 67,0 x 25,6 mm (L x W x H) (length with connector socket)		

OPERATING ENVIRONMENT

Operating temperature (without battery)	-40 °C to +85 °C
Storage temperature (without battery)	-40 °C to +85 °C
Storage temperature (with battery)	-20 °C to +40 °C
Operating humidity	-20 °C to +45 °C
Ingress Protection Rating	5% to 95% non-condensing
Battery charge temperature	IP67
Battery discharge temperature	0 °C to +45 °C
Battery storage temperature	-20 °C to +60 °C

FEATURES

CAN Data	Fuel Level (Dashboard), Total fuel consumption, Vehicle spee d (wheel), Vehicle driven distance, Engine speed (RPM), Acc elerator 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, Trip4		
Sleep modes	GPS Sleep5 , Online Deep Sleep5 , Deep Sleep5, Ultra De ep Sleep5		
Configuration and firmware update	FOTA Web6, FOTA, Teltonika Configurator7 (USB, Bluetooth), FMBT mobile application (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 <u>wiki.teltonika-gps.com/view/FMB240_Features_settings</u>
- 5 <u>wiki.teltonika-gps.com/view/FMB240_Sleep_modes</u>
- 6 wiki.teltonika-gps.com/view/FOTA_WEB
- 7 <u>wiki.teltonika-gps.com/view/Teltonika_Configurator</u>

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC DESCRIP	VALUE				
TION	MIN.	TYP.	MAX.	UNIT	
SUPPLY VOLTAGE			I		
Supply Voltage (Recommende d Operating Conditions)	10		30	V	
DIGITAL OUTPUT (OPEN DRAI	N GRADE)				
Drain current (Digital Output O FF)			120	μΑ	
Drain current (Digital Output O N, Recommended Operating Con ditions)		0.1	0.5	A	

	I	T.		1	
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		Suppl y voltag e	V	
Input Voltage threshold (DIN1)		7.5		V	
Input Voltage threshold (DIN2)		2.5		V	
Input Voltage threshold (DIN3)		2.5		V	
ANALOG INPUT	1	1			
Input voltage (Recommended Operating Conditions), Range 1	0		10	V	
Input resistance, Range 1		38.45		kΩ	
Measurement error on12V, Range 1		0.9		%	
Additional error on 12 V, Range 1		108		mV	
Measurement error on 30 V, R ange 1		0.33		%	
Additional error on 30 V, Range 1		88		mV	
Input Voltage (Recommended Operating Conditions), Range 2	0		30	V	
Input resistance, Range 2		150		kΩ	
Measurement error on 12 V, R ange 2		0.9		%	
Additional error on 12 V, Range 2		108		mV	
Measurement error on 30 V, R ange 2		0.33		%	
Additional error on 30 V, Range 2		88		mV	
OUTPUT SUPPLY VOLTAGE 1-WIRE					
Supply voltage	4.5		4.7	V	
	I.	I .		l.	

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		Suppl y voltag e	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 FMB240 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 FMB240 is not designed as a navigational device for boats.

\triangle	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.
\triangle	All wireless data transferring devices produce interference that may affect other devices which are placed nearby.
F	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.
A	Installation and/or handling during a lightning storm is prohibited.
	The device is susceptible to water and humidity.
\triangle	Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
X	Battery should not be disposed of with general household waste. Bring damaged or worn-out batte ries 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 Wiki1.

1 wiki.teltonika-gps.com/index.php?title=FMB240



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



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).



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



The standard aims to provide users more detailed information than vague marketing terms such as waterproof.



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 interfer ence in duly authorized systems.



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



E-Mark and e-Mark are the European conformity marks issued by the transport sector, indicating tha t 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.



REACH addresses the production and use of chemical substances, and their potential impacts on b oth human health and the environment. Its 849 pages took seven years to pass, and it has been de scribed as the most complex legislation in the

Union's history and the most important in 20 years. It is the strictest law to date regulating chemical substances and will affect industries throughout the world.

DECLARATION OF IMEI ASSIGNMENT

The IMEI number is used by a GSM network to identify valid devices and therefore can be used for stopping a stolen phone from accessing that network. For example, if a mobile phone is stolen, the owner can call their network provider and instruct them to blacklist the phone using its IMEI number. This renders the phone useless on that network and sometimes other networks too, whether or not the phone's subscriber identity module (SIM) is changed.

CHECK ALL CERTIFICATES

All newest certificates may be found in our Wiki2.

2 wiki.teltonika-gps.com/view/FMB240 Certification %26 Approvals

WARRANTY

We guarantee our products 24-month warranty1 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 product1

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 RMA1

wiki.teltonika-gps.com/view/RMA_guidelines
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Documents / Resources



<u>TELTONIKA FMB240 Waterproof GPRS GNSS Tracker with CAN Data Reading Feature</u> [p df] Owner's Manual

FMB240 Waterproof GPRS GNSS Tracker with CAN Data Reading Feature, FMB240, Waterpro of GPRS GNSS Tracker with CAN Data Reading Feature, Tracker with CAN Data Reading Feature, Data Reading Feature, Reading Feature

References

User Manual

Manuals+