TELTONIKA | Telematics

FMB110

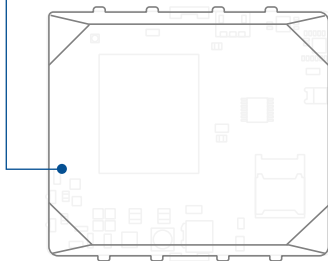Advanced tracker

Quick Manual v1.7

CONTENT

KNOW YOUR DEVICE

TOP VIEW

2x6
SOCKET

BOTTOM VIEW (WITHOUT COVER)

MICRO-USB

STATUS
LED

NAVIGATE
LED

DUAL-SIM
SLOT
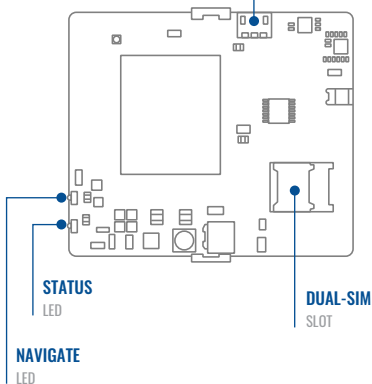
TOP VIEW (WITHOUT COVER)

BATTERY
SOCKET
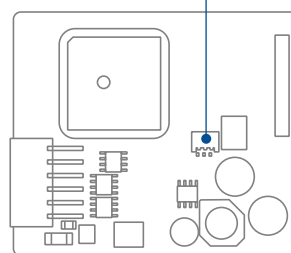
PINOUT

PIN NUMBER	PIN NAME	DESCRIPTION
1	VCC (10-30) V DC (+)	Power supply (+10-30 V DC).
2	AIN 1	Analog input, channel 1. Input range: 0-30 V DC.
3	AIN 2 / DIN 3	Analog input, channel 2. Input range: 0-30 V DC / Digital input, channel 3.
4	DIN 2	Digital input, channel 2.
5	DIN 1	Digital input, channel 1.
6	INPUT 6	TX EXT (LVCAN – TX).
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 POWER	+3,8 V output for 1–Wire devices.
11	1WIRE DATA	Data for 1–Wire devices.
12	INPUT 5	RX EXT (LVCAN - RX).

INPUT 6	6		12	INPUT 5	
DIN1	5		11	1WIRE DATA	
DIN2	4		10	1WIRE POWER	
DIN3/AIN2	3		9	DOUT2	
AIN1	2		8	DOUT1	
+10...30 V DC	1		7	GND	

FMB110 2x6 socket pinout

WIRING SCHEME

INPUT 6	6	12	INPUT 5
DIN1	5	11	1WIRE DATA
DIN2	4	10	1WIRE POWER
DIN3/AIN2	3	9	DOUT2
AIN1	2	8	DOUT1
+10...30 V DC	1	7	GND

ALL-CAN300 LV-CAN200 CAN-CONTROL

IGNITION DETECTION
ALARM BUTTON
RELAY
87
87a
86 85
30
FUEL GAUGE
STARTER
ANALOG LLS SENSOR
DOOR SENSOR
POWER SUPPLY 10 - 30V DC
CENTRAL LOCK
MULTIPLE TEMPERATURE SENSORS
IBUTTON
BUZZER
LED LIGHTS
AIN2
DIN3
DIN2
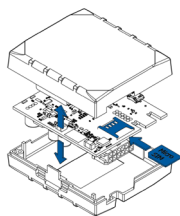DIN2-N
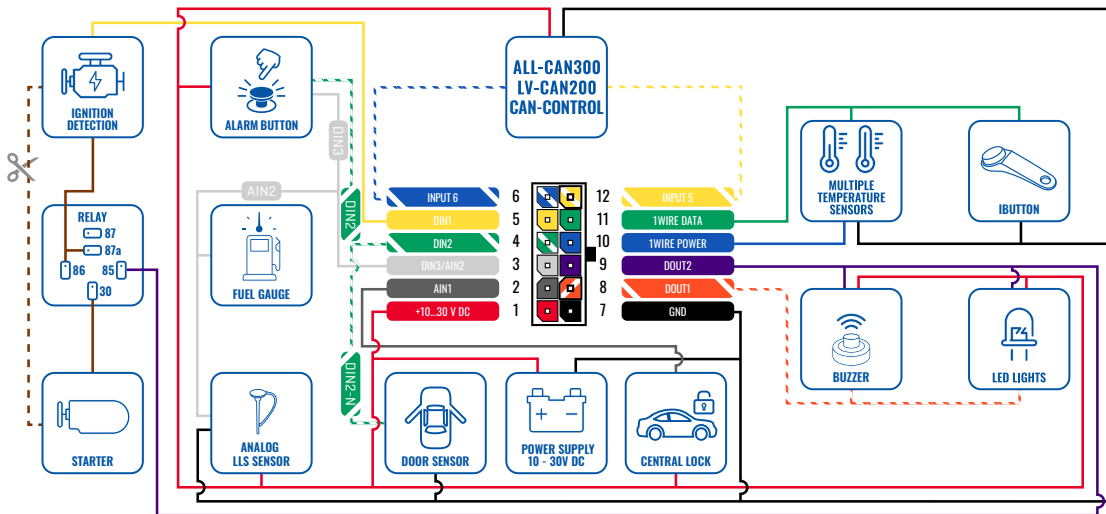
SET UP YOUR DEVICE
HOW TO INSERT MICRO-SIM CARD
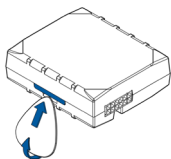
① COVER REMOVAL

Gently remove FMB110 **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 Micro-SIM card **cut-off corner** is pointing forward to slot.

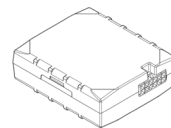[1] wiki.teltonika.lt/index.php?title=FMB110_Security_info

[2] wiki.teltonika.lt/view/Teltonika_Configurator
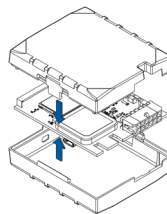
③ ATTACHING COVER BACK

After configuration, see **"PC Connection (Windows)"[1]**, attach device cover back.

[1] Page 6, "PC Connection (Windows)"

④ DEVICE IS READY

Device is ready to be mounted.

PC CONNECTION (WINDOWS)

1. Power-up FMB110 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**
     - FMB110 **Bluetooth** is enabled by default. Turn on Bluetooth on your PC, then select **Add Bluetooth or other device > Bluetooth.** Choose your device named – **"FMB110_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/FMB110_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/FMB110/TeltonikaCOMDriver.zip

CONFIGURATION

At first FMB110 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.

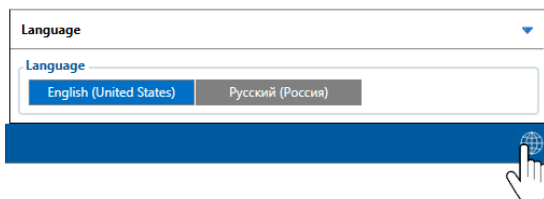[1] wiki.teltonika-gps.com/view/Teltonika_Configurator

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

MS .NET REQUIREMENTS

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

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.
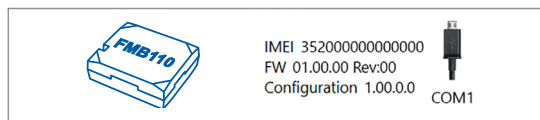
Configuration process begins by pressing on connected device.
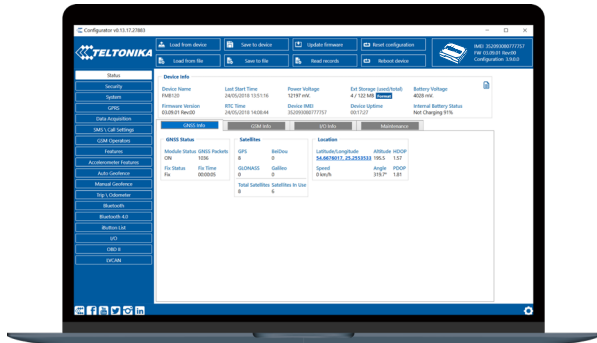
After connection to Configurator **Status window** will be displayed.

Various **Status window**[1] tabs display information about **GNSS**[2], **GSM**[3], **I/O**[4], **Maintenance**[5] and etc. FMB110 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 FMB110 configuration using Configurator can be found in our **Wiki**[8].

[1] wiki.teltonika-gps.com/view/FMB110_Status_info

[2] wiki.teltonika-gps.com/view/FMB110_Status_info#GNSS_Info

[3] wiki.teltonika-gps.com/view/FMB110_Status_info#GSM_Info

[4] wiki.teltonika-gps.com/view/FMB110_Status_info#I.2FO_Info

[5] wiki.teltonika-gps.com/view/FMB110_Status_info#Maintenance

[6] wiki.teltonika-gps.com/index.php?title=FMB110_GPRS_settings

[7] wiki.teltonika-gps.com/index.php?title=FMB110_Data_acquisition_settings

[8] wiki.teltonika-gps.com/index.php?title=FMB110_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:

```
«  setparam 2001:APN;2002:APN_username;2003:APN_password;2004:Domain;2005:Port;2006:0»
         ①         ②              ③              ④         ⑤       ⑥
```

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)
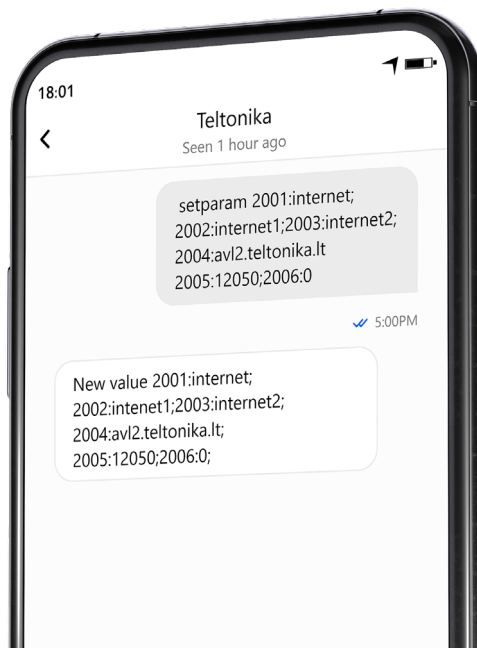
DEFAULT CONFIGURATION SETTINGS

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 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

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

After successful SMS configuration, FMB110 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

BASIC CHARACTERISTICS

MODULE

Name	Teltonika TM2500
Technology	GSM/GPRS/GNSS/BLUETOOTH

GNSS

GNSS	GPS, GLONASS, GALILEO, BEIDOU, SBAS, QZSS, DGPS, AGPS
Receiver	33 channel
Tracking sensitivity	-165 dBM
Accuracy	< 3 m
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 Station Class B
Data support	SMS (text/data)

POWER

Input voltage range	10 - 30 V DC with overvoltage protection
Internal fuse	3 A, 125 V
Power consumption	At 12V < 5 mA (**Ultra Deep Sleep[1]**)
	At 12V < 6 mA (**Deep Sleep[2]**)
	At 12V < 7 mA (**Online Deep Sleep[3]**)
	At 12V < 17 mA (**GPS Sleep[4]**)
	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[5]**, **Headset[6]**, **OBDII dongle[7]**, Inateck Barcode Scanner, Universal BLE sensors support

[1] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#Ultra_Deep_Sleep_mode

[2] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#Deep_Sleep_mode

[3] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#Online_Deep_Sleep_mode

[4] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#GPS_Sleep_mode

[5] teltonika.lt/product/bluetooth-sensor/

[6] wiki.teltonika.lt/view/How_to_connect_Blue-tooth_Hands_Free_adapter_to_FMB_device

[7] wiki.teltonika.lt/view/How_to_connect_OBD_II_Bluetooth_Dongle_to_FMB_device

INTERFACE

Digital Inputs	3
Digital Outputs	2
Analog Inputs	2
CAN Adapter inputs	1
1-Wire	1
GNSS antenna	Internal High Gain
GSM antenna	Internal High Gain
USB	2.0 Micro-USB
LED indication	2 status LED lights
SIM	Micro-SIM + eSIM
Memory	128MB internal flash memory

PHYSICAL SPECIFICATION

Dimensions	65 x 56,6 x 20,6 mm (L x W x H)
Weight	50 g

OPERATING ENVIRONMENT

Operating temperature	-25 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Operating humidity	5% to 95% non-condensing

Ingress Protection Rating	IP41		Sleep modes	**GPS Sleep**[21], **Online Deep Sleep**[22], **Deep Sleep**[23], **Ultra Deep Sleep**[24]

FEATURES

Sensors	Accelerometer
Scenarios	**Green Driving**[8], **Over Speeding detection**[9], **Jamming detection**[10], **GNSS Fuel Counter**[11], **DOUT Control Via Call**[12], **Excessive Idling detection**[13], **Immobilizer**[14], **iButton Read Notification**[15], **Towing detection**[16], **Crash detection**[17], **Auto Geofence**[18], **Manual Geofence**[19], **Trip**[20]

Configuration and firmware update	**FOTA Web**[25], **FOTA**[26], **Teltonika Configurator**[27] (USB, Bluetooth), **FMBT mobile application**[28] (Configuration)
SMS	Configuration, Events, DOUT control, Debug
GPRS commands	Configuration, DOUT control, Debug
Time Synchronization	GPS, NITZ, NTP
Fuel monitoring	LLS (Analog), **LV-CAN200**[29], **ALL-CAN300**[30], **OBDII dongle**[31], **CAN-CONTROL**[32]
Ignition detection	Digital Input 1, Accelerometer, External Power Voltage, Engine RPM (CAN Adapters, OBDII dongle)

[8] wiki.teltonika.lt/index.php?title=FMB110_Features_settings#Green_Driving

[9] wiki.teltonika.lt/index.php?title=FMB110_Features_settings#Over_Speeding

[10] wiki.teltonika.lt/index.php?title=FMB110_Features_settings#Jamming

[11] wiki.teltonika.lt/index.php?title=FMB110_Features_settings#GPS_Fuel_Counter

[12] wiki.teltonika.lt/index.php?title=FMB110_Features_settings#DOUT_Control_Via_Call

[13] wiki.teltonika.lt/index.php?title=FMB110_Accelerometer_Features_settings#Excessive_Idling

[14] wiki.teltonika.lt/index.php?title=FMB110_Features_settings#Immobilizer

[15] wiki.teltonika.lt/index.php?title=FMB110_Features_settings#iButton_Read_Notification

[16] wiki.teltonika.lt/index.php?title=FMB110_Accelerometer_Features_settings#Towing_Detection

[17] wiki.teltonika.lt/index.php?title=FMB110_Accelerometer_Features_settings#Crash_Detection

[18] wiki.teltonika.lt/index.php?title=FMB110_Auto_Geofence_settings

[19] wiki.teltonika.lt/index.php?title=FMB110_Manual_Geofence_settings

[20] wiki.teltonika.lt/index.php?title=FMB110_Trip/Odometer_settings

[21] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#GPS_Sleep_mode

[22] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#Online_Deep_Sleep_mode

[23] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#Deep_Sleep_mode

[24] wiki.teltonika.lt/index.php?title=FMB110_Sleep_modes#Ultra_Deep_Sleep_mode

[25] wiki.teltonika.lt/view/FOTA_WEB

[26] wiki.teltonika.lt/view/FOTA

[27] wiki.teltonika.lt/view/Teltonika_Configurator

[28] teltonika.lt/product/fmbt-mobile-application/

[29] teltonika.lt/product/lv-can200/

[30] teltonika.lt/product/all-can300/

[31] wiki.teltonika.lt/view/How_to_connect_OBD_II_Bluetooth_Dongle_to_FMB_device

[32] teltonika.lt/product/can-control/

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC DESCRIPTION	VALUE			
SUPPLY VOLTAGE	MIN.	TYP.	MAX.	UNIT
Supply Voltage (Recommended Operating Conditions)	+10		+30	V

DIGITAL OUTPUT (OPEN DRAIN GRADE)

	MIN.	TYP.	MAX.	UNIT
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

	MIN.	TYP.	MAX.	UNIT
Input resistance (DIN1)	47			kΩ
Input voltage (Recommended Operating Conditions)	0		Supply voltage	V
Input Voltage threshold (DIN1)		7.5		V

CHARACTERISTIC DESCRIPTION	VALUE			
SUPPLY VOLTAGE	MIN.	TYP.	MAX.	UNIT
Input Voltage threshold (DIN2)		2.5		V
Input Voltage threshold (DIN3)		2.5		V

ANALOG INPUT

	MIN.	TYP.	MAX.	UNIT
Input voltage (Recommended Operating Conditions), Range 1	0		+10	V
Input resistance, Range 1		38.45		kΩ
Measurement error on 12V, Range 1		0.9		%
Additional error on 12 V, Range 1		108		mV
Measurement error on 30 V, Range 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

CHARACTERISTIC DESCRIPTION	VALUE			
SUPPLY VOLTAGE	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Measurement error on 12 V, Range 2		0.9		%
Additional error on 12 V, Range 2		108		mV
Measurement error on 30 V, Range 2		0.33		%
Additional error on 30 V, Range 2		88		mV
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

SAFETY INFORMATION

This message contains information on how to operate FMB110 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 2x6 connector wires to the vehicle, the appropriate jumpers of the vehicle power supply should be disconnected.

- Before unmounting the device from the vehicle, the 2x6 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 FMB110 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.

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=FMB920

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).

The Declaration EAC and the Certificate EAC in conformity with the technical regulation TR CU of the EurAsEC Customs Union are EAC certification documents issued by independent organizations. Such organizations perform their function through laboratories accredited to the public agencies in charge of the supervision of metrology and standardization in the three countries of the EAC Custom Union, joining at the moment the certification system : Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan.

REACH addresses the production and use of chemical substances, and their potential impacts on both human health and the environment. Its 849 pages took seven years to pass, and it has been described 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.

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 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.

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).

DECLARATION OF IMEI ASSIGNMENT

The International Mobile Equipment Identity or IMEI /aɪˈmiː/ is a number, usually unique, to identify 3GPP and iDEN mobile phones, as well as some satellite phones. It is usually found printed inside the battery compartment of the phone, but can also be displayed on-screen on most phones by entering *#06# on the dialpad, or alongside other system information in the settings menu on smartphone operating systems.

CHECK ALL CERTIFICATES

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

² wiki.teltonika-gps.com/view/FMB920_Certification_%26_Approvals

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