

How to connect OBD II Bluetooth Dongle to FMB device v1.0



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1 Bluetooth settings configuration

These are instructions how to easily prepare Bluetooth Dongle connection to FMB device. First we need to configure FMB device Bluetooth settings for proper connection to this unit. These are required steps:

1. Connect FMB device to PC using USB cable.
2. Launch **FMB Configurator** and connect to device as shown in **Figure 1** below.



Figure 1. FMB configurator connected devices window

3. After successful connection to device press **“Load from device”** button to load device current configuration visible at **Figure 2.1**

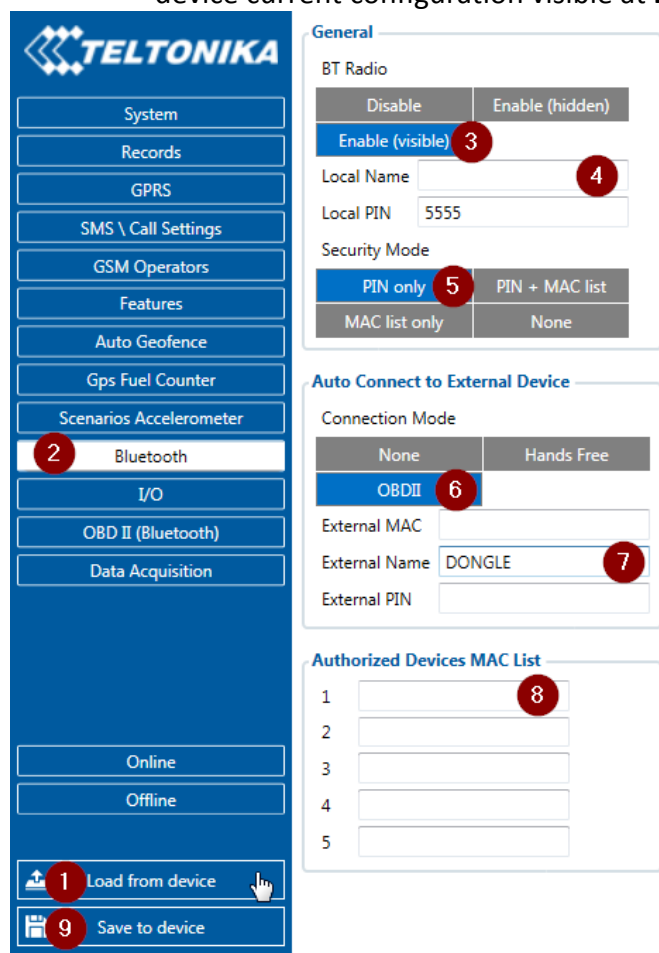


Figure 2.1 Load configuration from device; **2.2** Bluetooth settings; **2.3** Enable Bluetooth; **2.4** Bluetooth local name; **2.5** Bluetooth security mode **2.6** OBD II connection mode; **2.7** External OBD II Bluetooth device name; **2.8** Authorized Devices MAC List; **2.9** Save device configuration

4. When device configuration is loaded press „**Bluetooth**“ settings (Figure 2.2).
5. Turn on BT Radio by pressing „**Enable (visible)**“ (Figure 2.3). You could leave „**Local name**“ (Figure 2.4) box empty (then device name will automatically be „FMBxx_last 7 IMEI digits“) or type your own name.
6. Set Security Mode (Figure 2.5) to „**PIN only**“ or „**None**“ (you could select „**PIN + MAC list**“ or „**MAC list only**“ security mode but in this case you need to type external device MAC address in „**Authorized Devices MAC List**“ (Figure 2.8).
7. Set connection mode to „**OBDII**“ (Figure 2.6).
8. Set „**External Name**“ as your Bluetooth OBD II device name for proper device identification and connection to it. In this example OBD II device name is „DONGLE“ but at least 2 characters are needed to recognize it and connect to it. For better and faster adapter identification in network you could enter a full device name. You could check your OBD II adapter Bluetooth name by scanning nearby Bluetooth devices using mobile phone or computer with Bluetooth adapter.
9. Go to „**OBD II (Bluetooth)**“ in left menu and select priority and others parameters visible at Figure 3.

System

Records

GPS

SMS \ Call Settings

GSM Operators

Features

Auto Geofence

Gps Fuel Counter

Scenarios Accelerometer

Bluetooth

I/O

OBD II (Bluetooth)

Data Acquisition

Online

Offline

Load from device

Save to device

Update firmware

Load from file

Save to file

Reset device

OBD II (Bluetooth)

Input name	Units	Priority	Low level				High level		Event only		Operand	Send SMS to	SMS Text
Number Of DTC		None	Low	High	Panic	0	0	Yes	No	Monitoring			
Engine Load	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Coolant Temperature	°C	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Short Fuel Trim	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Fuel Pressure	kPa	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Intake MAP	kPa	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Engine RPM	rpm	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Vehicle speed	km/h	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Timing advance	°	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Intake air temperature	°C	None	Low	High	Panic	0	0	Yes	No	Monitoring			
MAF	g/sec	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Throttle position	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Run time since engine start	s	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Distance traveled MIL on	km	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Relative fuel rail pressure	kPa	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Direct fuel rail pressure	kPa	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Commanded EGR	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
EGR error	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Fuel level	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Distance traveled since codes clear	km	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Barometric pressure	kPa	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Control module voltage	V	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Absolute load value	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Ambient air temperature	°C	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Time run with MIL on	min	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Time since trouble codes cleared	min	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Absolute fuel rail pressure	kPa	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Hybrid battery pack remaining life	%	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Engine oil temperature	°C	None	Low	High	Panic	0	0	Yes	No	Monitoring			
Fuel injection timing	°	None	Low	High	Panic	0	0	Yes	No	Monitoring			

Figure 3. OBD II Bluetooth settings.

10. After all these steps press „**Save to device**“ to save configuration (Figure 2.9).
11. Now you can disconnect FMB device from a PC or stay connected if you want to make further changes to configuration.

2 Connecting to Bluetooth OBD II dongle

After this configuration you could connect your car OBD II dongle to FMB device. Turn on ignition then turn on its Bluetooth connection. For pairing follow your dongle instructions¹. OBD II device notification about paired Bluetooth connection depends on specific model. If you later restart FMB device it will automatically connect to this dongle.

3 Supported Bluetooth OBD II dongles

FMB module works with Bluetooth OBD II dongles which are made with **ELM327** or **STN1110** chips.

Comparison of these chips is presented in **Figure 4**.

	ELM327 v1.4	STN1110
Base microcontroller	PIC18F2580	PIC24HJ128GP502
Architecture	8-bit	16-bit
Processing speed	4 MIPS	40 MIPS
Flash (ROM)	32 KB	128 KB
RAM	1.5 KB	8 KB
Pin count	28	28
Available packages	PDIP, SOIC	PDIP, SOIC, QFN
Supply voltage range	4.5 to 5.5V	3.0 to 3.6V ¹
Supports all OBD-II protocols	yes	yes
ELM327 command set	yes	yes
Enhanced "ST" command set	no	yes
Firmware upgradeable	no	yes
Large OBD message memory buffer	no	yes
Low power mode	yes	yes
Supported UART baud rates	9600 bps to 500 kbps	38 bps to 10 Mbps
OBD message filtering	basic	advanced

Figure 4. ELM327 and STN1110 comparison.

¹ OBD II dongle Bluetooth connection pairing instructions depends on specific model.