



TSM232

Iridium Satellite terminal with a
backup battery

Quick Manual
v1.1

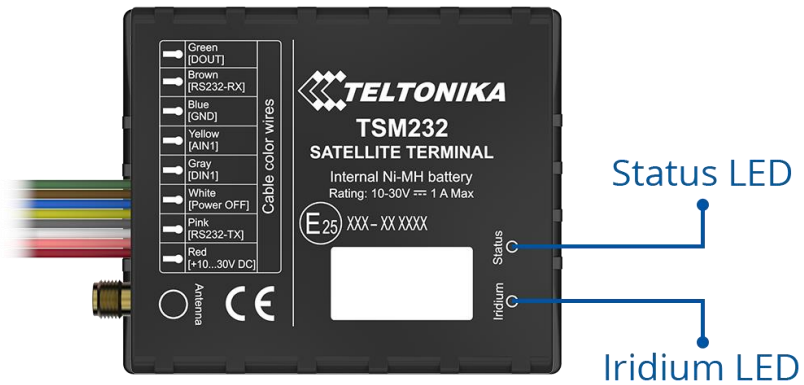
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Know your device

Top view



Top view
(without cover)

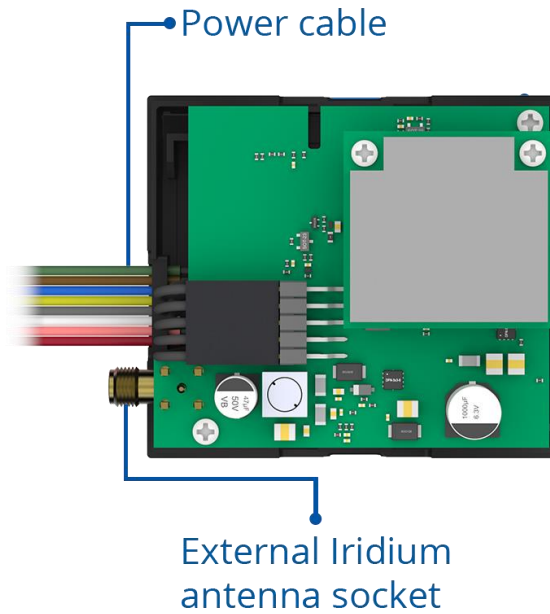


Figure 1 TSM232 device view

Pinout

Table 1 TSM232 6 socket pinout

PIN NUMBER	PIN NAME	DESCRIPTION
1	DOUT1	Digital output, channel 1. Open collector output. Max. 0,5 A DC
2	RS232-RX	Input for data reception through RS-232
3	GND	(-) Ground pin. (10...30) V DC*
4	AIN1	Analog input, channel 1. Input range: 0-30V/0-10V DC
5	DIN1	Digital input, channel 1
6	RESERVED	
7	RS232 - TX	Output for data transmission through RS-232
8	VCC (6-30) V DC (+)	Power supply (+10-30 V DC).



Figure 2 TSM232 socket pinout

Wiring scheme

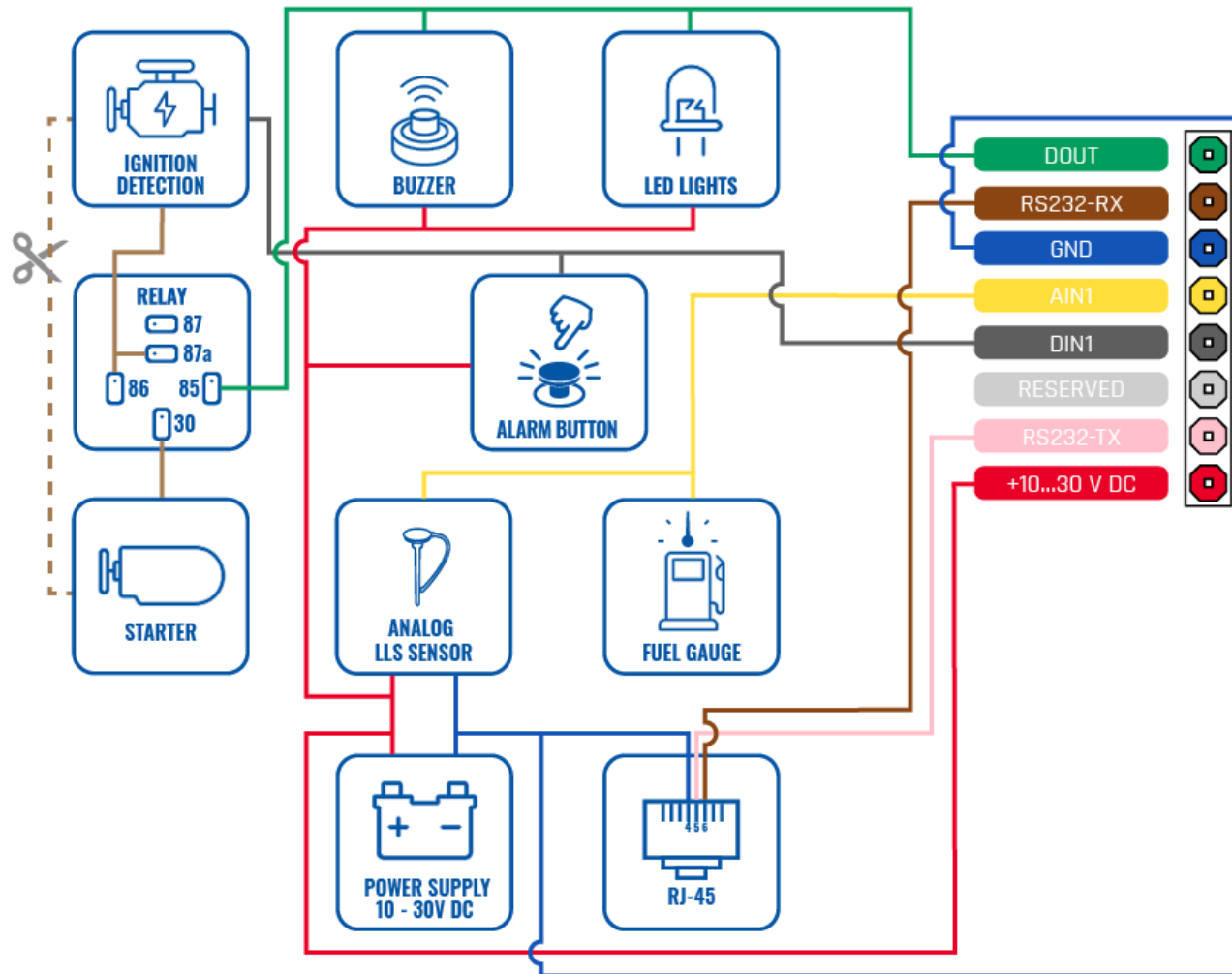
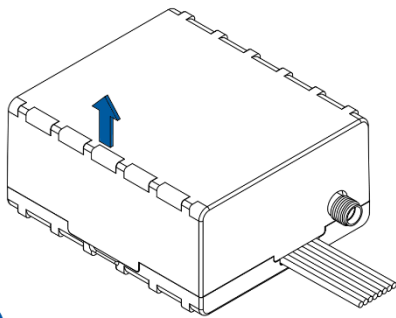


Figure 3 TSM232 Wiring scheme

Set up your device

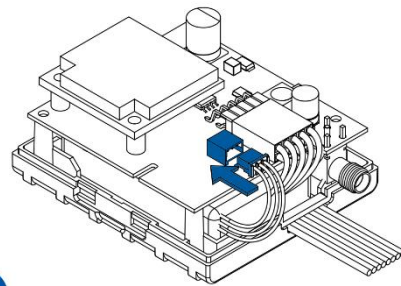
How to connect the battery

1. Gently remove TSM232 **cover** using **plastic pry tool** from both sides.
2. Connect **battery** as shown to device. Position the battery in place where it does not obstruct other components.
3. When battery connected, attach device **cover** back.
4. Connect External Iridium antenna



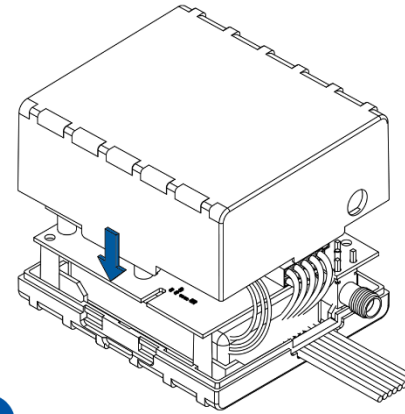
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Figure 6 Cover removal



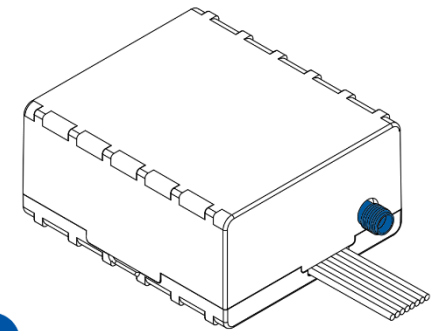
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Figure 7 Battery connection



3

Figure 5 Attaching cover back



4

Figure 4 Connecting Iridium antenna

Introduction

TSM232 works as external accessory and no need to configure it. Following information describes, how to configure main device, which TSM232 can be connected to.

PC Connection (Windows)

1. Power-up FMB640 device with **DC voltage (10 – 30 V)** power supply using **power wires**. LED's should start blinking.
2. Connect FM device to computer via USB connection:
 - Using **Micro-USB cable**
 - You will need to install USB drivers, see "[How to install USB drivers \(Windows\)](#)"
3. You are now ready to use the device on your computer.

How to install USB drivers (Windows)


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

Configuration (Windows)

At first FMB640 device will have default factory settings set. These settings should be changed according to the user's needs. Main configuration can be performed via Teltonika Configurator software. Get the latest Configurator version from here. Configurator operates on Microsoft Windows OS and uses prerequisite MS .NET Framework. Make sure you have the correct version installed

.Table 2 MS .NET requirements

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

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 (**Figure 8 Language selection**).

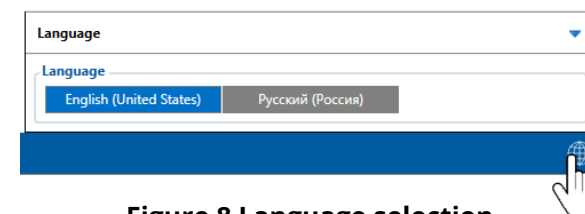


Figure 8 Language selection

Configuration process begins by pressing on connected device (Figure 9 Device connected via USB).

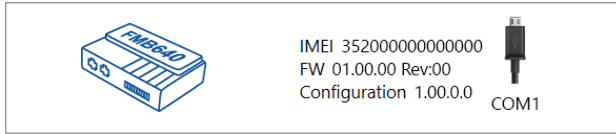


Figure 9 Device connected via USB

After connection to Configurator [Status window](#) will be displayed (Figure 10 Configurator Status window).

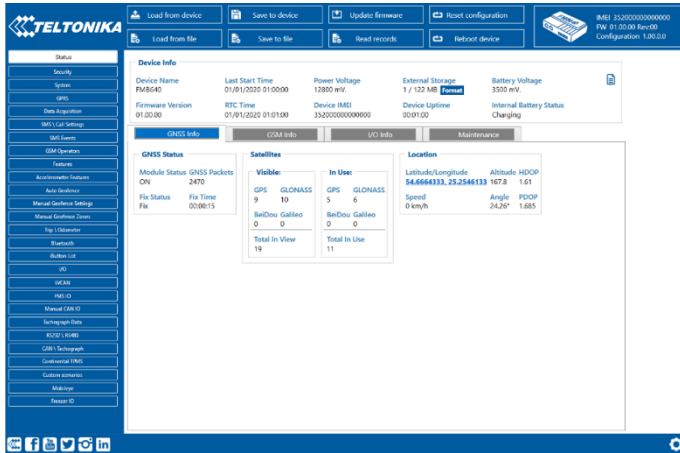


Figure 10 Configurator Status window

Iridium device can send short burst data (SBD) to server. This means that some data can be sent from FM device to server through satellites. In order to get those records, you have to connect the device to FM6 COM1 or COM2 port. Select COM1 or COM2 mode Satellite backup mode. Those settings can be found in RS232/RS485 TAB in the configurator. Baud rate for satellite devices is 19200 bps. (Figure 11 COM Settings)

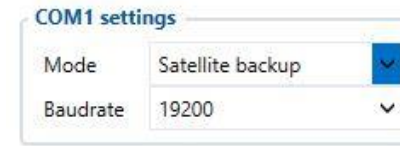


Figure 11 COM Settings

Furthermore, TSM232 functionality should be enabled. These settings can be found in the [Features](#) TAB in Short burst data settings. (Figure 12 SBD Settings)

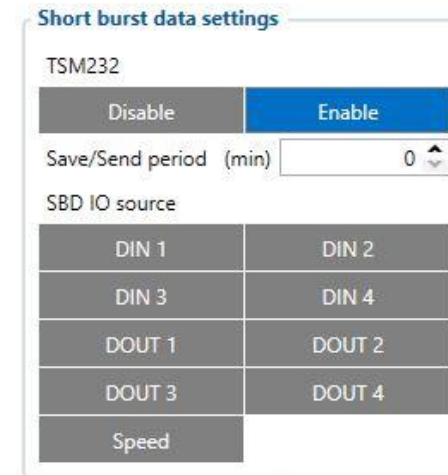


Figure 12 SBD Settings

More details about TSM232 configuration using Configurator can be found in our [Wiki](#).

Mounting recommendations

- Connecting wires
 - Wires should be connected while the module is not plugged in.
 - Wires should be fastened to stable wires or other non-moving parts. Any heat emitting and/or moving objects should be kept away from the wires.
 - There should be no exposed wires. If factory isolation was removed while connecting the wires, the isolation material should be applied.
 - 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 and the wires should not be loose.
 - Wires cannot be connected to the board computers or control units.
- Connecting power source
 - Be sure that after the car computer goes to sleep mode, power might be still available on the power wires. Depending on the car model, this may happen in 5 to 30 minutes period.
 - When the module is connected, measure the voltage again to make sure it did not decrease.
 - It is recommended to connect to the main power cable in the fuse box.
- 3 A, 125 V external fuse shall be used.
- 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.

Characteristics

Basic characteristics

Table 3 Basic characteristics

MODULE	
Name	Iridium 9603 SBD Transceiver
Technology	Iridium satellite transceiver
POWER	
Input voltage range	10-30 V DC with overvoltage protection
Back-up battery	Internal Ni-MH backup rechargeable battery 7.2 - 7.5 V 400mAh
Internal fuse	3 A, 125 V
Power consumption	At 12V < 7.13 mA (nominal with no load) At 12V < 1.0 A Max. (with full Load/Peak)
INTERFACE	
Digital Inputs	1
Digital Outputs	1
Analog Inputs	1
RS232	1
Integrated buzzer	1
Antenna	External Iridium antenna
LED indication	2 status LED lights
PHYSICAL SPECIFICATION	
Dimensions	64 x 56 x 30 mm (L x W x H)
Weight	210 g

OPERATING ENVIRONMENT

Operating temperature (without battery)	-25 °C to +55 °C
Storage temperature (without battery)	-40 °C to +70 °C
Operating humidity	5% to 95% non-condensing
Ingress Protection Rating	IP41
Battery charge temperature	Ambient Temperature 20±5°C
Battery discharge temperature	Ambient Temperature 20±5°C
Battery storage temperature	-20°C to +45°C

FEATURES

Functionalities	Data transferring via Iridium satellite network when GSM network is unavailable Smart RS232 communication algorithm One FMB640/FM63XY message size forwarded to TSM232 is only 14 bytes Message contains: Time/Coordinates/Speed/DIN1-4/DOUT1-2/Event ID Data sending can be initiated by periodic time interval or by panic priority event
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Electrical characteristics

Table 4 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)			0.5	A
Static Drain-Source resistance (Digital Output ON)			120	mΩ
DIGITAL INPUT				
Input resistance (DIN 1)	59.9			kΩ
Input voltage (Recommended Operating Conditions)	0		60	V
Input Voltage threshold (DIN 1)	7.5	7.7	8	V
ANALOG INPUT				
Input voltage (Recommended Operating Conditions), Range 1	0		+10	V
Input resistance, Range 1		120		kΩ

Safety information

This message contains information on how to operate TSM232 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 8 connectors wires to the vehicle, the appropriate jumpers of the vehicle power supply should be disconnected.
- Before unmounting the device from the vehicle, the 8 connectors 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 TSM232 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.



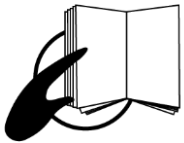
Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.



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

- [TSM232 REACH](#)
- [TSM232 CE/RED](#)



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](#).



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



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).

Warranty

TELTONIKA guarantees its products to be free of any manufacturing defects for a period of **24 months**. With additional agreement we can agree on a different warranty period, for more detailed information please contact our sales manager.

Contact us teltonika.lt/company/contacts

If a product should fail 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
- TELTONIKA can also repair products that are out of warranty at an agreed cost.

Warranty Disclaimer

TELTONIKA PRODUCTS ARE INTENDED TO BE USED BY PERSONS WITH TRAINING AND EXPERIENCE. ANY OTHER USE RENDERS THE LIMITED WARRANTIES EXPRESSED HEREIN AND ALL IMPLIED WARRANTIES NULL AND VOID AND SAME ARE HEREBY EXCLUDED. ALSO EXCLUDED FROM THIS LIMITED WARRANTY ARE ANY AND ALL INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING BUT NOT LIMITED TO, LOSS OF USE OR REVENUE, LOSS OF TIME, INCONVENIENCE OR ANY OTHER ECONOMIC LOSS.

More information can be found at teltonika.lt/warranty-repair