FM2100

USER MANUAL
V1.0
DRAFT

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ATTENTION!

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

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

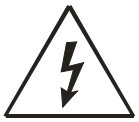
The device may be connected only by qualified individuals.

The device must be firmly fastened in the predefined location.

The programming must be performed using a second class PC (with autonomic power supply).

The device is susceptible to water and humidity.

Warning!! May explode, if a wrong accumulator is used.



Any installation and/or handling during a lightning storm is prohibited.

FM2100 has not USB interface; it has Mini USB connector type with physical RS232 interface.
Do not plug it to PC's USB port.
Please use cables provided with FM2100 device.
Teltonika is not responsible for any harm caused by using wrong cables for PC <-> FM2100 connection.

INSTRUCTIONS OF SAFETY

This chapter contains information on how to operate "FM2100" safely. BY following these requirements and recommendations you will avoid dangerous situations. You must read these instructions carefully and follow the strictly before operating the device!

The device uses a 10V...30V DC power supply. The nominal voltage is 24V DC. The allowed range of voltage is 10V...30V DC, power – not more than 12 W.

To avoid mechanical damage, it is advised to transport the FM2100 device in an impact-proof package. Before usage, the device should be placed so that its LED indicators are visible, which show what status of operation the device is in.

When connecting the connection (2x3) cables to the vehicle, the appropriate jumpers of the power supply of the vehicle should be disconnected.

Before dismounting the device from the vehicle, the (2x3) connection must be disconnected.

The device is designed to mount in a zone of limited access, which is inaccessible for the operator. All related devices must meet the requirements of standard EN 60950-1.

The device FM2100 is not designed as a navigational device for boats and aircraft.

FM2100 has not USB interface; it has Mini USB connector type with physical RS232 interface.
Do not plug it to PC's USB port. Please use cables provided with FM2100 device.
Teltonika is not responsible for any harm caused by using wrong cables for PC <-> FM2100 connection.

LEGAL NOTICE

SHORT DESCRIPTION

FM2100 is a terminal with GPS and GSM connectivity, which is able to determine the object's coordinates and transfer them via the GSM network. This device is perfectly suitable for applications where location acquirement of remote objects is needed. It is important to mention that FM2100 has additional inputs and outputs, which let you control and monitor other devices on remote objects.

1.1 About the document

This document contains information about the architecture, possibilities, mechanical characteristics of the FM2100 device.

1.2 Acronyms

PC – Personal Computer.

GPRS – General Packet Radio Service.

GPS – Global Positioning System.

GSM – Global System for Mobile Communications.

SMS – Short Message Service.

1.3 Mounting guidelines

The device is mounted in the predefined location in the object by attaching it using a two-sided tape and additionally securing using three plastic 300x4 mm straps. If there is no possibility of mounting the device in the predefined location as written above, alternative mounting methods may be applied, securing the stable position of the device.

2 PACKAGE CONTENTS

The FM2100 device is supplied to the customer in a cardboard box containing all the equipment that is necessary for operation. The package contains:

1. The FM2100 device.
2. Input and output power supply cable with a 2x3 connection.
3. GPS antenna (optional).
4. Port 1 and GPS cables
5. Additional accessories (if ordered)

Note: the manufacturer does not supply a SIM card in the package, which is necessary for connection to the GSM network! SIM card can be obtained from Your local GSM service provider!

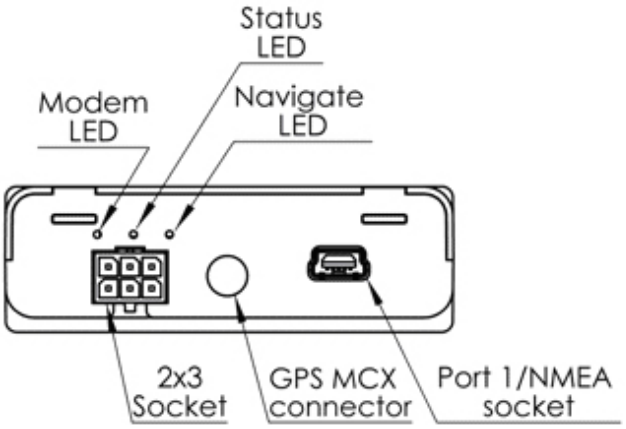
If any of the components is not in the package, please contact the manufacturer's representative or the vendor. (www.teltonika.lt)

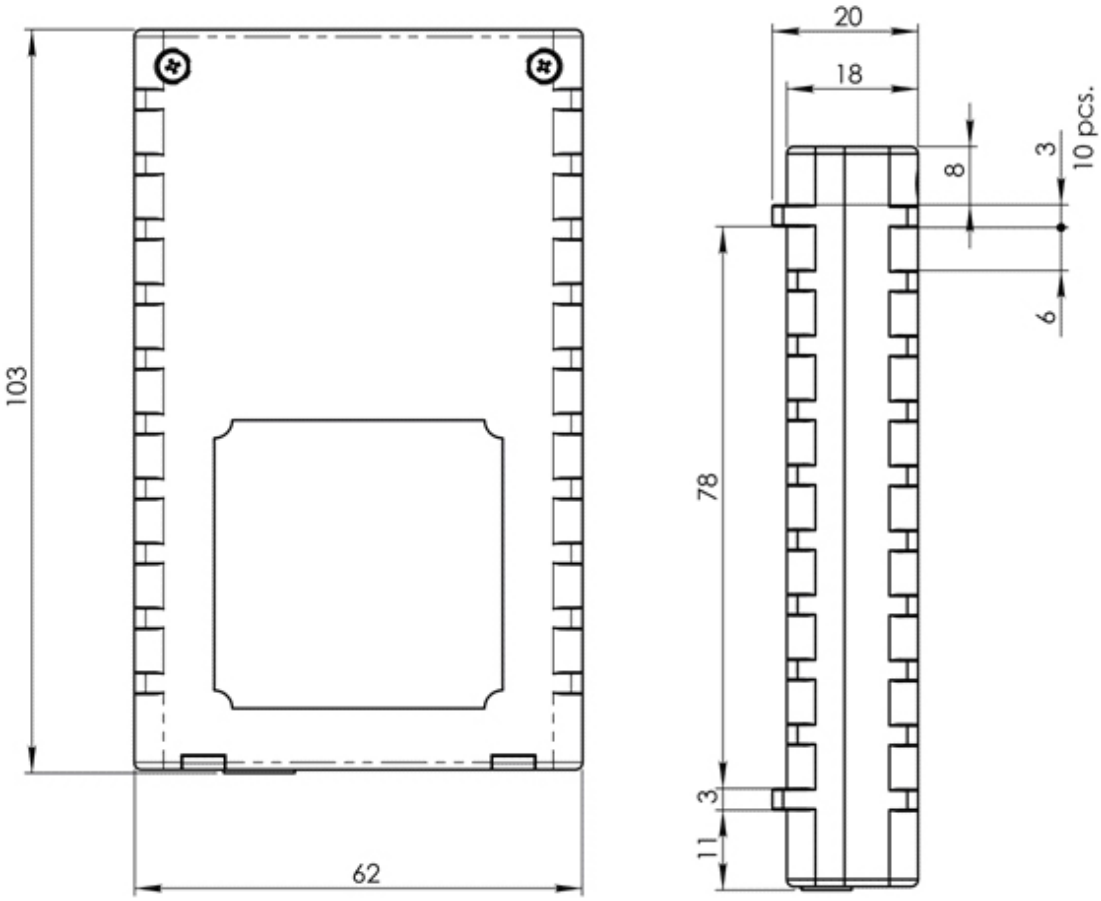
3 MAIN FEATURES

- ✓ Track your remote objects (trucks, cars) quickly and easily.
- ✓ The device supports the following GSM bearers:
  - o GPRS class 10 (up to 44,8 kbps).
  - o SMS (text/data).
- ✓ Quad-band:
  - o European (and Asian) - 900 MHz / 1800 MHz and American - 850 MHz / 1900 MHz.
- ✓ Case of the device is very robust and perfectly suitable for installation into harsh environment such as cars, trucks or other moving objects.
- ✓ FM2100 has 2 digital inputs, 2 digital outputs which could be used for performing of various tasks on remote objects,
- ✓ FM2100 has NMEA output via RS232 that could be used for navigation purposes.
- ✓ 3 LED indicators: “Modem”, “Status” and “Navigate”.
- ✓ An advanced solution for a very reasonable price.

4 MECHANICAL FEATURES

4.1 Device connectors and dimensions





All the dimensions in mm, tolerance ±0.5 mm

Figure 1. FM2100 mechanical drawing & spec ,

4.2 FM2100 technical specification

Table 1. FM2100 technical specification

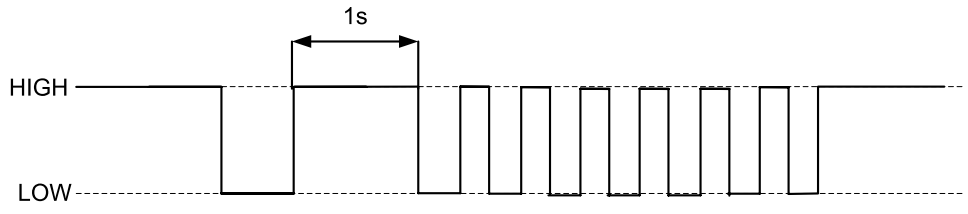
Part name	Physical specification
Navigation LED	LED
STATUS LED	LED
MODEM LED	LED
GPS	GPS antenna connector MCX
Socket 2×3	Tyco Micro MATE-N-LOK 3mm 794617-6
PORT 1/NMEA	Mini USB socket (RS232 physical layer)

Technical details
Power supply 10...30 V DC 12W Max Energy consumption: GPRS: ⎓ 200 mA r.m.s Max., Nominal: ⎓ 65 mA r.m.s., Sleep: ⎓ 32 mA r.m.s. Operation temperature: -25°C ... +55°C Storage temperature: -40°C ... +70°C Storage relative humidity 5 ... 95% (non condensation)

4.2.1 Navigation LED

When GPS signal is not received, the Navigation LED is switched on permanently.

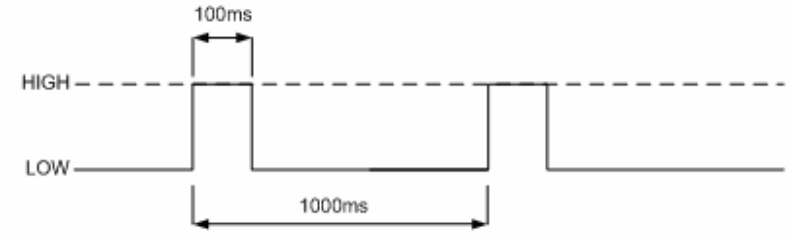
When GPS signal is received, the Navigation LED is blinking as follows:



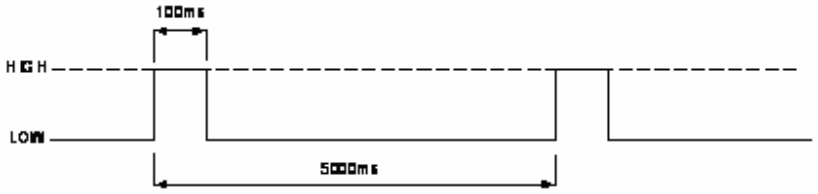
When Navigation LED is off, that means GPS antenna or connector is short circuited

4.2.2 Modem LED

When device is connected to the GPRS – Modem LED is blinking every second:



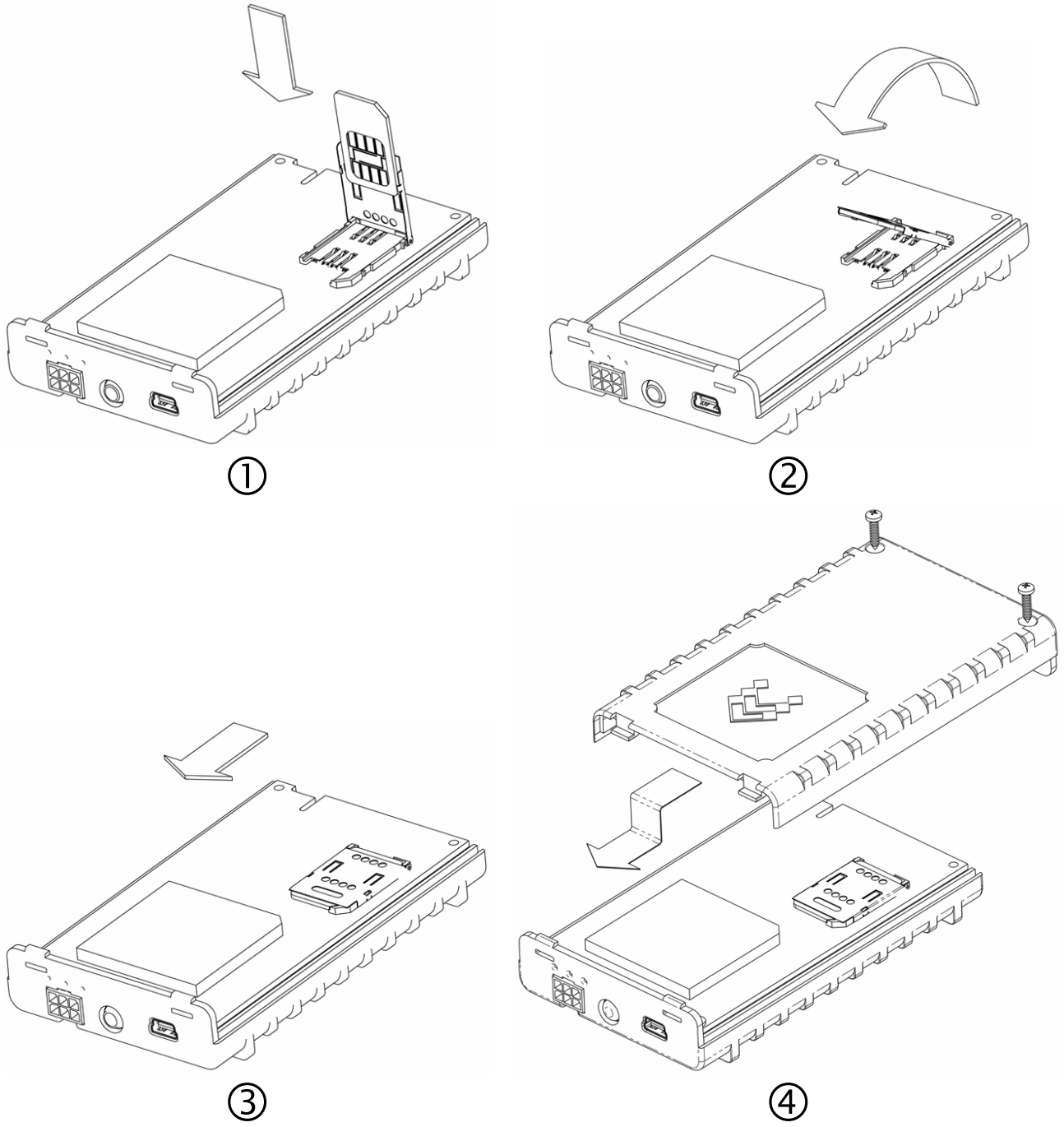
When device is not connected to GPRS – Modem LED is blinking every 5 seconds.



4.2.3 Status LED

When device has uploaded firmware – Status LED should blink. If LED does not blink – it means that device does not function.

4.3 SIM card insert scheme



①	Open the sim holder and insert the SIM card as shown.
②	Close the sim holder
③	Push SIM holder's top part in shown direction to clip SIM holder
④	Assemble device with enclosure's top part as shown and screw the bolts.

5 CONNECTION & PINOUT

5.1 Socket 2×3

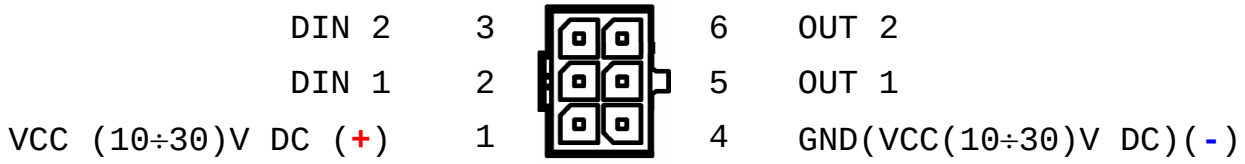
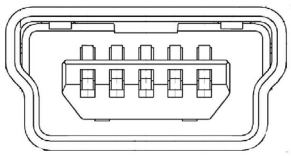


Figure 2. 2×3 socket pinout

Pin Nr.	Pin Name	Description
1	*2*	*3*
1	VCC (10÷30)V DC (+)	Power supply for module. Power supply range (10...30) V DC Energy consumption: GPRS: ⎓ 200 mA r.m.s Max., Nominal: ⎓ 65 mA r.m.s..
2	DIN 1	Digital input, channel 1*
3	DIN 2	Digital input, channel 2*
4	GND(VCC(10÷30)V DC)(-)	Ground pin. (10÷30)V DC (-)
5	OUT 1	Digital output. Channel 1. Open collector output. Max. ⎓ 150mA.
6	OUT 2	Digital output. Channel 2. Open collector output. Max. ⎓ 150mA.

* - digital input status 0 … ~2 V – FALSE; ~2 V … 30 V– TRUE

5.2 PORT 1/NMEA

Mini USB connector	PORT 1 (RS232)	
 1 2 3 4 5	Pin Nr.	Description
	1	GPS TX (NMEA)
	2	RX
	3	TX
	4	-
	5	GND

FM2100 has not USB interface; it has Mini USB connector type with physical RS232 interface.
Do not plug it to PC's USB port. Please use cables provided with FM2100 device.

This port can be used as system port (to flash firmware and configuration to device) with cable "Port1" and as GPS NMEA 0183 output with cable "GPS".

6 CHANGES LOG SHEET

Nr.	Date	New version number	Comments
	2008 April 10.	1.0	Preliminar draft release.