



# USER GUIDE

Navigation User Terminal

# iON Connect





## Table of Contents

<b>1. INTRODUCTION .....</b>	<b>4</b>
1.1. Warnings and Recommendations .....	4
1.2. Technical Specifications .....	5
1.3. Package Contents .....	6
1.4. Device Overview .....	7
1.4.1. <i>Device Overview and Purpose</i> .....	7
1.4.2. <i>Navigation Terminal Functions</i> .....	7
1.4.3. <i>The Tracking System Operation Diagram</i> .....	8
1.4.4. <i>Navigation Terminal Connectors</i> .....	9
1.4.5. <i>Navigation Terminal System</i> .....	10
1.4.6. <i>Terminal operating modes</i> .....	10
1.5. Dimensional drawing .....	16
<b>2. DEVICE PREPARATION PROCEDURES .....</b>	<b>17</b>
2.1. SIM card holder .....	18
2.2. Indication .....	20
2.3. Terminal Vehicle Installation .....	22
<b>3. CONFIGURING the DEVICE USING the CONFIGURATOR UTILITY .....</b>	<b>22</b>
3.1. Drivers Installation .....	22
3.1.1. <i>Installing Drivers on Windows XP</i> .....	22
3.1.2. <i>Installing Drivers on Windows 7</i> .....	26
3.1.3. <i>Installing Drivers on Windows 8</i> .....	30
3.2. Configurator overview .....	37
3.3. Terminal Configuration .....	39
3.3.1. <i>"Server" Tab</i> .....	40



3.3.2. "SIM Configuration" Tab.....	41
3.3.3. "Track Points" Tab.....	42
3.3.4. "Powersaving" Tab .....	43
3.3.5. "Driving Style" Tab.....	44
3.3.6. "Notifications" Tab .....	45
3.3.7. "Data Grouping" Tab.....	47
3.4. Service Configuration of the Terminal .....	48
3.4.1. Firmware Update.....	48
3.4.2. Password Change.....	49
3.4.3. Service Commands.....	49
3.4.4. Working with the Configuration File .....	49
<b>TERMS AND ABBREVIATIONS.....</b>	<b>50</b>



## 1. Introduction

This document contains information on preparation procedures of the iON Connect navigation user terminal for operation.

Version	Date	Prepared by	Revisions
1.0	10.05.2016	Golovin V.	Main document
1.1	15.07.2016	Golovin V.	Added: Section 3.3.5 "Aggregation" Tab Changes: Section 3.3.1 — adjustments of data (configuration app.)
1.2	23.09.2016	Golovin V.	Changes: updated chapters with functions of the new configurator (3, 3.1-3.4, 3.3.1-3.3.7), added 3.4.1-3.4.4 chapters
1.2.1	27.10.2016	Golovin V.	Changes: current consumption parameters of "Mode 2" (1.4.6)
1.3	15.11.2016	Golovin V.	Changes: updated chapters with functions of the configurator (3.2, 3.3.1-3.3.7, 3.4)
1.3.1	22.11.2016	Golovin V.	Changes: updated chapters with functions of the configurator (3.2, 3.3.1, 3.3.3, 3.3.5, 3.4.1)
1.3.2	07.12.2016	Golovin V.	Changes: corrections in chapter 3.4
1.3.3	09.06.2017	Golovin V.	Changes: figure in chapter 1.4.3

### 1.1. Warnings and Recommendations

Before starting to use the device, please read the safety rules described in this section.

**CAUTION!** The device uses the cellular technology and can cause radio interference to medical and other equipment. Thus, if you are in the area where use of cellular devices is not allowed, disable the controller.

**CAUTION!** The controller can cause interference to cardiac pacemaker or hearing aids. Switch off the device in medical centres.

**CAUTION!** Switch off the device if you are in the area of blasting operations. The controller can cause interference when the operations are underway. Thus, follow the instructions and directions in such areas.



## 1.2. Technical Specifications\*

General Features	
Navigation receiver	GPS/GLONASS
Frequency bands	GSM/GPRS 900/1800 MHz
Antennas	built-in GPS/GLONASS antenna
	External GPS/GLONASS antenna
	built-in GSM antenna
Flash-memory	200,000 points
SIM card	Micro SIM (or SIM chip**)
Built-in accelerometer	Three-axis
Indicators	3 LEDs (GSM, GPS, operating mode)
Electrical Specifications	
Supply voltage	from 8 to 40 V
Current consumption in various modes (at 12V power voltage), not exceeding	<ul style="list-style-type: none"> <li>● 100 mA (operating mode, the battery is charged)</li> <li>● 140 mA (operating mode, the battery is discharged)</li> <li>● up to 10 mA (sleep mode)</li> </ul>
Built-in Li-Pol battery	Li-Pol, 150 mAh
Connectors and Interfaces	
OBD-II connector	Power supply from the onboard power system, connection detection.
MMCX connector	Connection of an external GPS/GLONASS antenna
SIM holder	SIM card may be inserted from outside.
Mini USB connector	Connection to a PC for configuration
Physical Specifications	
Dimensions	25 × 47 × 42 mm
Weight, maximum	60 g
Operating temperature	from -30°C to +80°C
Features	
Automatic detection and switching operation of external GPS/GLONASS antenna	
OBD-II disconnection detection	

\* technical specifications are subject to change by the manufacturer without prior notice

\*\* optional



### 1.3. Package Contents

The delivery package of the iON Conenct user navigation terminal contains the following components\*:

Indication	Name	Quantity
①	Navigation terminal	1 pcs
②	SIM card	1 pcs
③	Activation instructions	1 pcs

\* the package collection and content are subject to change by the manufacturer without prior notice



## 1.4. Device Overview

### 1.4.1. Device Overview and Purpose

iON Connect is a miniature monitoring device, designed for installation in vehicle's OBD-II connector. Since all modern vehicles are fitted with the connector, iON Connect can be quickly installed and configured (for connector location in a vehicle, please contact your vehicle's manufacturer). The device is designed to collect, store and transmit data to a server for further processing. The navigation terminal receives location and time data from the GPS/GLONASS satellites. The collected data is transmitted to the server over the GSM network using the GPRS packet-switched service. Server-stored data can be accessed through the dispatching software.

It is necessary to remember that iON Connect is one of the parts of the tracking system. The navigation terminal itself is responsible for data acquisition and transmission from the surveillance object to the server where the data is processed and provided to an end user.

Overall, the tracking system enables you to complete a wide range of tasks:

- safety issues — vehicle travel data, operating disturbances, etc.;
- efficiency improvement — control of a vehicle use only in authorized operations, efficiency analysis of the performed tasks;
- ensuring operation transparency — all data on vehicle travels, fuel consumption and other data is transmitted to the server and available online.
- statistical data collection — in the process of vehicle operation an end user is provided with various data which can simplify and even improve efficiency of performing tasks. Moreover, this data helps to make calculations of different economy-related measurements.

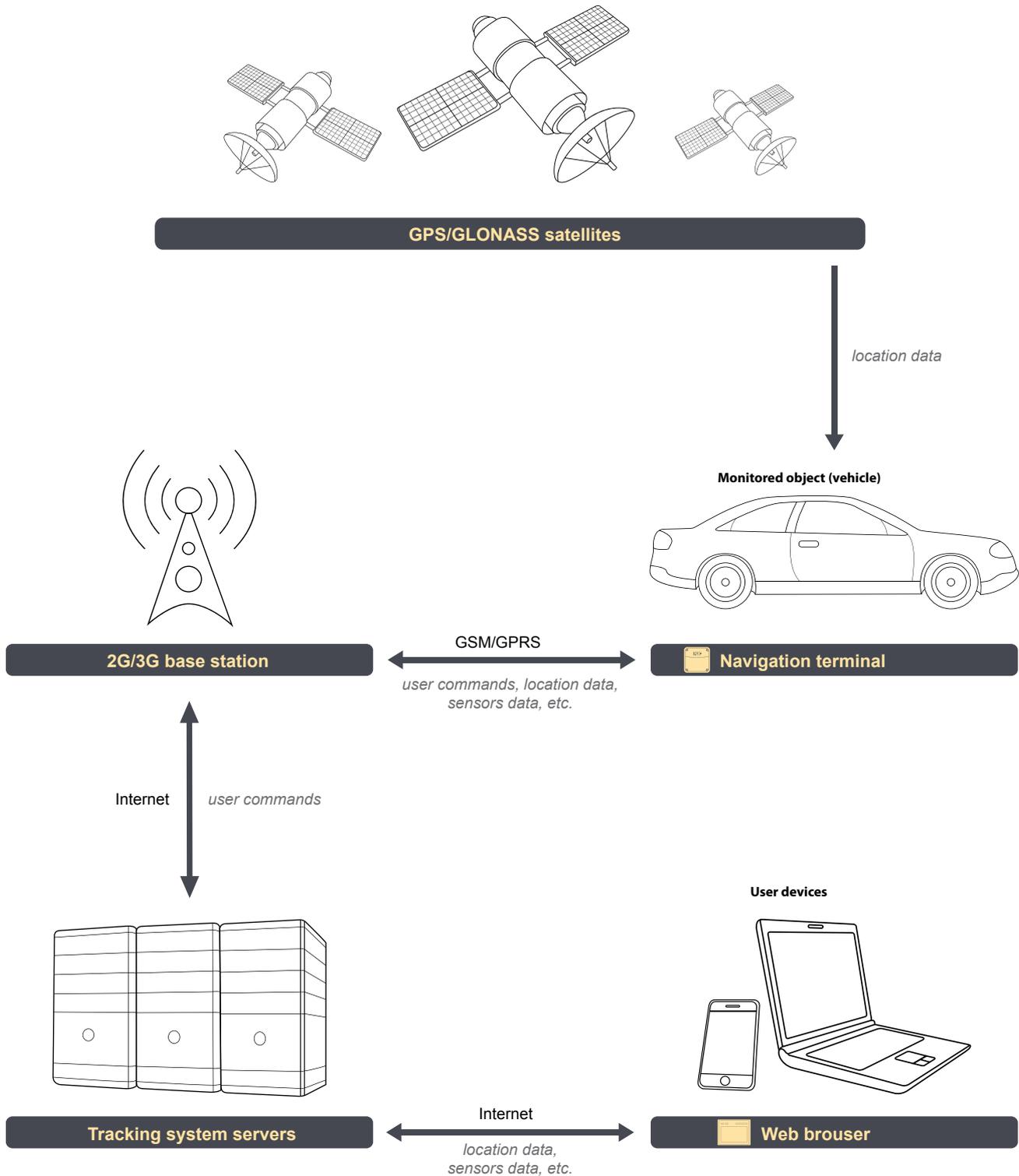
### 1.4.2. Navigation Terminal Features

The iON Connect navigation terminal as the part of the tracking system has the following features:

- fixes the vehicle location (space coordinates) using GPS/GLONASS module;
- determines overload, direction change, turns using the built-in accelerometer;
- driving style assessment and violation control.



### 1.4.3. The Tracking System Operation Diagram



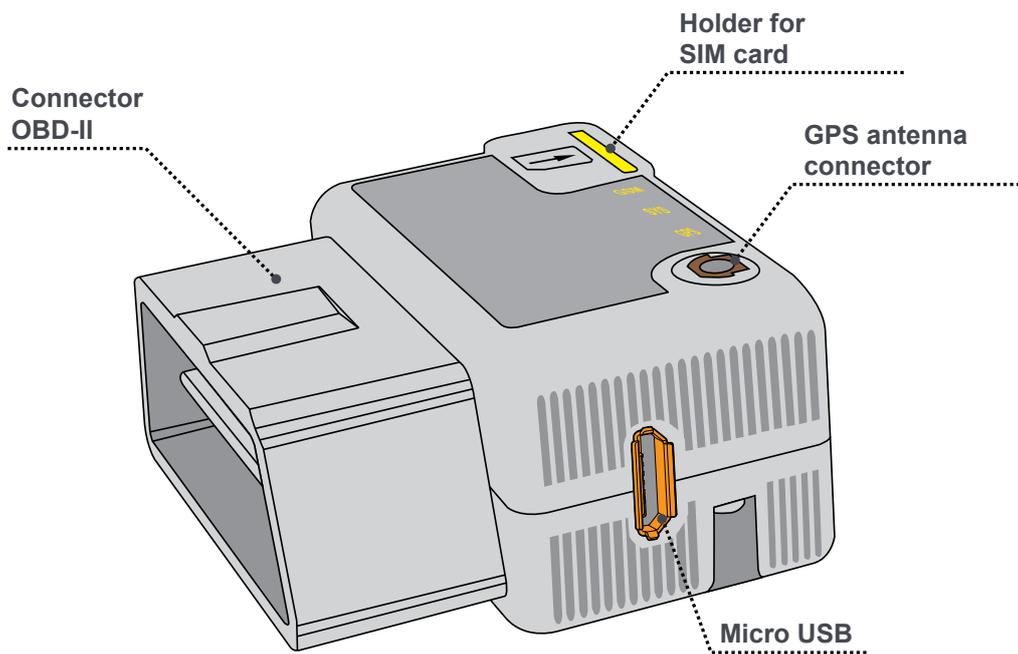
**Fig. 1.1.** The Tracking System Operation Diagram



#### 1.4.4. Navigation Terminal Connectors

iON Connect is a compact device in a plastic housing, that is power from a vehicle's OBD-II connector. It is fitted with internal battery, GPS/GLONASS and GSM antennas. It support connection of an external GPS/GLONASS antenna via MMCX connector. Indication lights and SIM tray are fitted on the side of the casing. Micro USB connector for PC connection is fitted on the side of the device.

Navigation terminal connectors are shown in the figure:

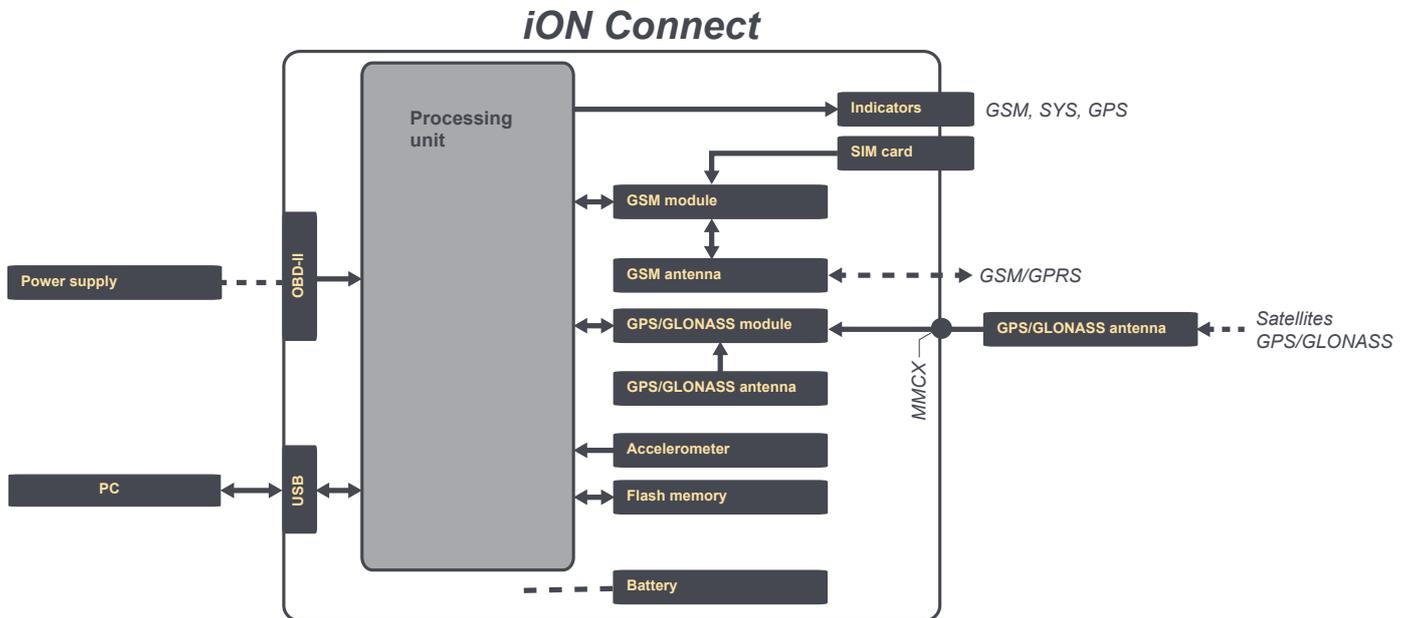


**Fig. 1.2.** iON Connect navigation terminal view



### 1.4.5. Navigation Terminal System

Navigation terminal structure diagram:



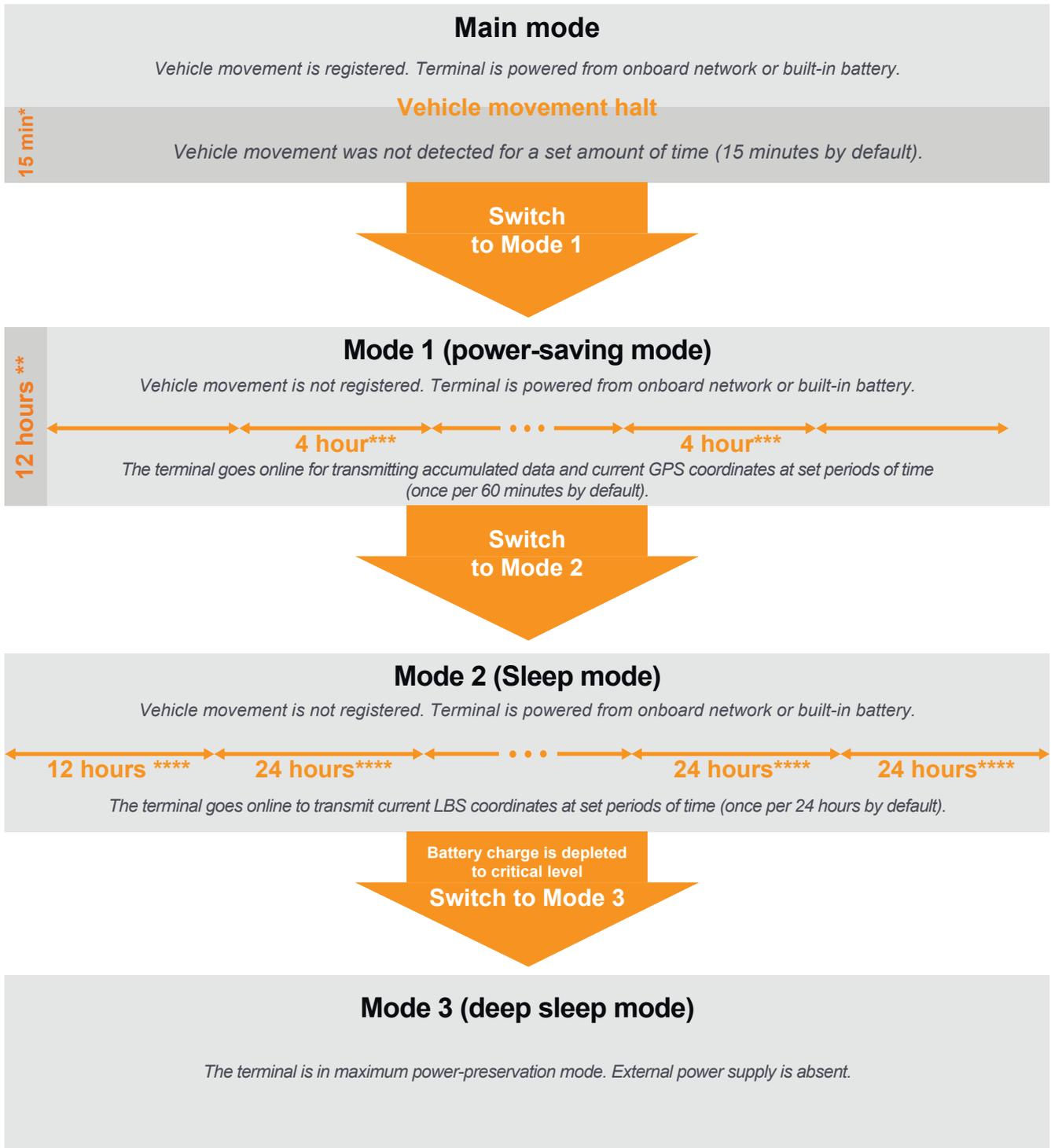
**Fig. 1.3.** iON Connect navigation terminal structure diagram

### 1.4.7. Terminal operating modes

The device has 5 operating modes, each designed for specific functionality and provided with possibility to reduce their power consumption to a certain limit. Power saving is achieved by disabling of some functional modules or their activation at long time periods

List of iON Connect available operating modes:

- «Main mode» — full-fledged operating mode with maximal power consumption;
- «Power-saving mode» — energy conservation mode, alternative name: «Mode 1»;
- «Sleep mode» — energy conservation mode, alternative name: «Mode 2»;
- «Deep Sleep mode» — energy conservation mode, alternative name: «Mode 3»;
- «Active mode» — full fledged operating mode with maximal power consumption.



Notes:

\* the time may be set using the configurator or PW#TW1 command

\*\* the time may be set using the configurator or PW#TW2 command

\*\*\* the time may be set using the configurator or PW#TS1 command

\*\*\*\* the time may be set using the configurator or PW#TS2 command

**Fig. 1.4.** iON Connect operation modes diagram



### Main mode

The terminal performs all of its function in real time; all of its electronic peripherals are enabled to provide complete functionality. In this mode, the device determines GPS and LBS coordinates and transmits them to a server of web monitoring via GPRS channel.

Main mode current consumption:

Built-in battery status	External power supply voltage	
	12 V	24 V
Charged	max 90 mA	max 50 mA
Discharged	max 150 mA	max 80 mA

“Main mode” is the only mode that is able to automatically switch to other operating modes for power preservation. iON Connect is configured to switch to other modes in the following order:

- ① “Main mode”;
- ② “Power-saving mode” (Mode 1);
- ③ “Sleep mode” (Mode 2);
- ④ “Deep sleep mode” (Mode 3).

- List of peripheral modules continuously operating in “Main mode”:
- movement sensor — accelerometer for detecting acceleration during movement;
- internal memory (black box) — for recording of accumulated data;
- GPS module — for determining precise GPS coordinates;
- GSM module — for transmitting of the accumulated data to a monitoring server and determination of LBS coordinates.

According to factory settings (by default), iON Conenct terminal operates in “Main mode” after detecting external power supply above 9 V and launching its operating system. The terminal also switches to “Main mode” after waking up from power-saving modes -

“Mode 1”, “Mode 2” and “Mode 3” (if the terminal was preconfigured to operate in the “Main mode”).

“Main mode” is set to be a default operating mode, but can be changed by PW#MODE command.

The terminal remains in “Main mode” until movement sensor detects movement, for example, when it is fitted in the vehicle. Once the movement stops, the countdown starts (configured by PW#TW1 and PW#TW2 commands or via the configurator). The terminal will switch to a respective power-saving mode after the countdown ends

(“Mode 1” or “Mode 2” depending on how much time have passed).

When operating in “Main mode”, iON Connect will switch from one power-saving mode to another in a determined order regardless of power source (external source or internal battery).

### Power-saving mode (Mode 1).

In “Power saving mode”, most of the terminal’s functions are performed in real time. However, only some of its electronic peripherals are enabled continuously - others are only activated periodically. For example, transmission of GPS and LBS coordinates via GPRS channel to a web-monitoring server is performed periodically, at time intervals set via configurator or PW#TS1 command. The interval is set to 15 minutes by default. While the connection is disabled, the terminal saves accumulated data into the internal memory (black box) for further transmission to a monitoring server.



“Mode 1” current consumption:

Built-in battery status	External power supply voltage	
	12 V	24 V
Charged	max 40 mA	max 20 mA
Discharged	max 150 mA	max 80 mA

List of periodically transmitted data in “Mode 1”:

- GPS coordinates;
- diagnostic data.

List of periodically received data in “Mode 1”:

- user commands.

List of peripheral modules continuously operating in “Mode 1”:

- movement sensor — accelerometer for detecting acceleration during movement;
- internal memory (black box) — recording of accumulated data;
- GPS module — determining precise GPS coordinates.

List of peripheral modules periodically operating in “Mode 1”:

- GSM module — determining LBS coordinates and transmitting them to a monitoring server.

In order to switch to “Power-saving mode”, it must be enabled by PW#EN1 command (enabled by default) and 2 conditions must be subsequently met:

- 1 The terminal is at rest and movement sensor does not detect movement;
- 2 movement timeout set by PW#TW1 command (60 minutes by default). Motion timeout set by control command PW#TW1 (60 minutes by default) has expired.

When setting timeout for switching to “Mode 1” via PW#TW1 command, make sure its value is less than that of PW#TW2 command (for “Mode 2”). Otherwise the value will not be accepted and user will receive an error message. Keep in mind, that timeout counter starts for both PW#TW1 and PW#TW2 commands simultaneously. In other words, these intervals are not summarized.

The terminal remains in “Power-saving mode” until one of the following events occurs:

- movement sensor sends alerts upon movement detection (in this case the terminal switches to “Main.

mode”);

- timeout for switching to next power-saving mode - “Sleep mode” (“Mode 2”) - expires (set with PW#TW2 command);
- built-in battery charge depletes to a critical level (with external power disabled). In this case the terminal switches to “Deep Sleep Mode” (“Mode 3”), i.e. the terminal automatically switched from “Mode 1” to “Mode 3”, bypassing “Mode 2”. Switching do “Mode 2” can be forbidden with PW#EN2 command (allowed by default).

To manually switch the terminal to “Mode 1”, send PW#MODE=2 command. Keep in mind, that if switched to “Mode 1” manually, the device will keep operating in this mode only. It will not switch to other modes ex-



cept for “Mode 3”. The terminal always switches to “Mode 3” when the built-in battery charge is depleted to a critical level.

If iON Connect switches to “Mode 1” automatically from the “Main mode”, it does so regardless of the power source - external power or internal battery - the terminal will switch operating modes in the described order to optimize power consumption.

### “Sleep mode” (Mode 2).

In “Sleep mode”, iON Connect terminal ceases to perform most of its functions and all of its electronic peripherals, except for movement sensor, are disabled for increased energy conservation. At set periods of time (set by the configurator or PW#TS2 control command), the terminal wakes up for transmitting LBS coordinates via GPRS channel to monitoring server. By default, the period is set to 1440 minutes (24 hours). When configuring this interval, keep in mind, that timeout counter starts for PW#TW1 and PW#TW2 simultaneously, in other words, these intervals are not added up.

“Mode 2” current consumption:

Built-in battery status	External power supply voltage	
	12 V	24 V
Charged	max 30 mA	max 20 mA
Discharged	max 150 mA	max 80 mA

List of periodically transmitted data in “Mode 2”:

- location LBS coordinates (no other data is transmitted).

List of “Mode 2” periodically received data:

- user commands.

List of peripheral modules continuously operating in “Mode 2”:

- movement sensor — accelerometer for detecting acceleration during movement and “wake-up”;

List of peripheral modules periodically operating in “Mode 2”:

- GSM module — for determining LBS coordinates to transmit them to a monitoring server.

The terminal switches to “Sleep mode” only if it is allowed by PW#EN2 command (allowed by default) and the following 2 conditions are met consecutively:

- 1 the terminal is at rest and movement sensor does not detect movement;
- 2 movement timeout set by PW#TW1 command (60 minutes by default). Movement timeout set by control command PW#TW2 (720 minutes i.e. 12 hours by default), has expired.

The terminal remains in “Sleep mode” until one of the following events occurs:

- movement sensor sends alerts upon movement detection (in this case the terminal switches to “Main mode”, if this mode has not already been set as operational);
- built-in battery charge is depleted to a critical level (with external power disabled); the terminal switches to “Deep Sleep Mode” (“Mode 3”).

To manually switch the terminal to “Mode 2”, send PW#MODE=3 command. Keep in mind, that if switched to “Mode 2” manually, the device will keep operating in this mode only. It will not switch to other modes ex-



cept for “Mode 3”. Since the terminal always switches to “Mode 3” when the built-in battery charge is depleted to a critical level.

### “Deep Sleep Mode” (Mode 3).

In “Deep Sleep Mode”, the terminal disables all of its peripheral modules for maximal energy conservation. In this mode, the device is powered from the internal battery.

To automatically switch to “Mode 3”, two conditions must be met:

- external power supply must be disconnected or its voltage must be below 9 V;
- internal power voltage of built-in battery must drop to a critical level (set by the manufacturer).

The terminal cannot be switched to “Mode 3” by PW#MODE command.

It will remain in this mode until external supply is detected. The terminal periodically checks its presence. After receiving power supply with voltage over 9 V, t

he terminal “wakes up” and switches to mode previously set to it by PW#MODE command; built-in battery will start charging up. No communication sessions are carried out in “Mode 3”.

### Active mode.

In “Active mode”, the terminal performs all of its function in real time; all of its electronic peripherals are enabled to provide complete functionality. In this mode, the device determines GPS and LBS coordinates and transmits them to a server of web monitoring via GPRS channel.

“Active mode” is similar to “Main mode”, but has some distinctive differences. In this mode, the terminal is fully functional for as long as internal or external power allows it. As opposed to “Main mode”, the terminal cannot automatically switch to other power-saving modes (except for “Mode 3”).

Enable “Active mode” when continuous operation of the terminal is required or there is no need to conserve energy. With the exception of features listed above, list of peripheral modules, functions and energy consumption of “Active mode” is identical to that of “Main mode”.

The only way to switch the terminal to “Active mode” is manually by PW#MODE=1 command.

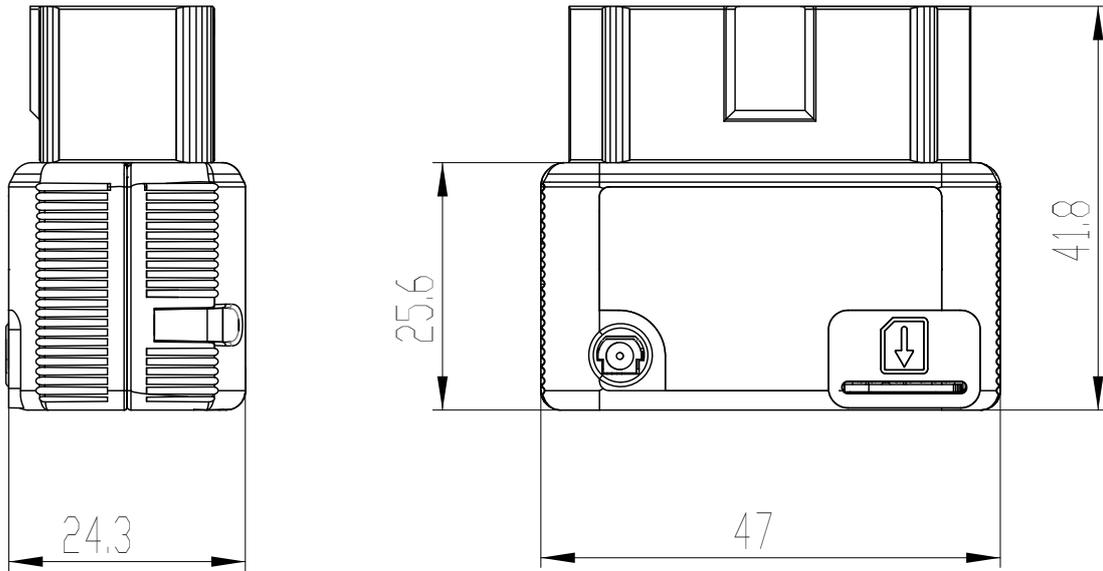
If iON Connect was switched to “Mode 3” from “Active mode”, then, after external power supply over 9 V has been connected, the device will switch to

“Active mode” and the built-in battery will start charging up.

The device is powered via OBD-II connector, which means it receives power even when the ignition is off. It inadvisable to keep it in “Active mode” (in this mode, power-saving options are disabled), since it may lead to depleting of the vehicle’s battery.



### 1.5. Dimensional Drawing



**Fig. 1.5.** iON Connect navigation terminal dimensional drawing



## 2. Device Preparation Procedures

This section contains information on the iON Connect navigation user terminal preparation and installation on a vehicle.

Before the device installation on a vehicle, it needs to be configured using the configuration manager  **iON\_Config.exe**. The device can be configured during the mounting process, for example using a laptop connected to the device via USB connector. For more details about the configurator, see Section 3.

Preliminary device preparation is as follows:

- SIM card installation (Section 2.1);
- setting parameters in the configurator.

Device installation:

- find OBD-II connector;
- connect the device to OBD-II connector.

The navigation terminal has an extended indication system (Section 2.2) helping to check operation of various components.

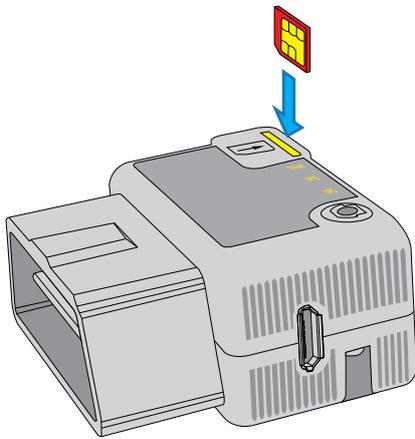


## 2.1. SIM Card Installation

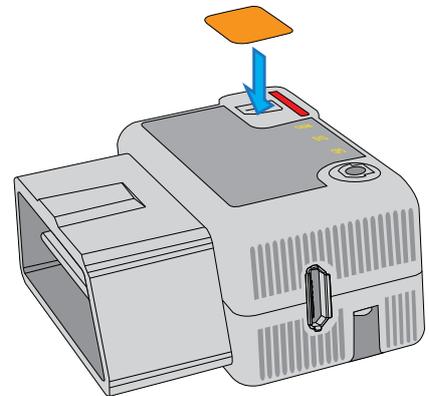
iON Connect uses Micro SIM cards. The package contains special stickers to cover SIM holder tray from dust and water.

To install the SIM card , follow the steps below:

- 1 Insert SIM card into the holder tray



- 2 Cover the tray with the special sticker



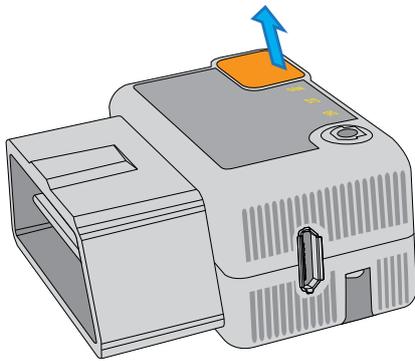
**Fig. 2.1.** SIM Card Installation



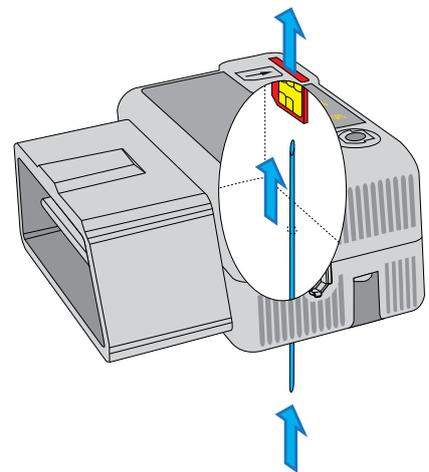
To eject SIM card, put a pin (or other thin object) into the special hole on the opposite side of the casing and push the SIM card out.

To eject the SIM card, follow the steps below:

- 1** Remove or peel back the sticker



- 2** Put a pin into the hole on the opposite side and push out the SIM card

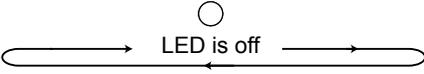
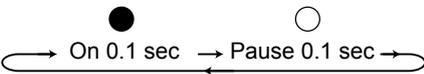
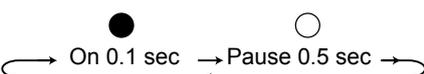
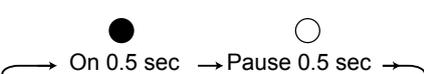
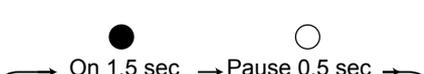


**Fig. 2.2.** SIM card ejection



## 2.2. Indicators

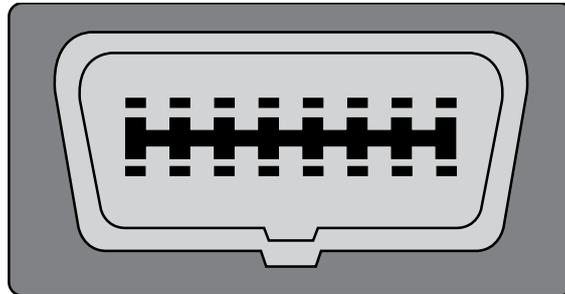
iON Connect indication is situated on the face side, between external antenna connector and SIM card tray. More detailed information on the indication system is shown in the chart:

Indicators	GSM	SYS	GNSS
	1	2	3
Color	red 	green 	blue 
	Connection module is off or indication is off or the device is in the hibernation mode	Device is off	No signal from positioning systems
		Loading (searching for network)	
		Searching for SIM card	
	No network registration	Registration in the GSM network	Positioning system signal received
		Registration in the GSM network complete, waiting for connection to the server	
		Registration in the GSM network is complete, device is connected to the server	
		Device is in "hibernation mode No.1" (LOW PWR 1)	
		Device is in "hibernation mode No.2" (LOW PWR 2)	
	Network registration complete		
	Transmitting data		



### 2.3. Terminal vehicle installation

iON Connect is powered from the vehicle's battery via OBD-II connector. Inserting the device into OBD-II is enough to fully connect it.



**Fig. 2.3.** Vehicle's OBD-II connector

In most cases, OBD-II is placed near the front panel of the vehicle. Sometimes it is fit into the glove compartment or placed on a special shelf and hidden behind a decorative panel. For exact location for each particular vehicle brand, check the respective documentation.

It is also possible to use OBD-II extender for convenience

iON Connect is fitted with GSM and GPS/GLONASS internal antennas. Metal elements over OBD-II may affect the reception of satellite signals. In this case, use external GPS/GLONASS antenna connected via MMCX connector for consistent reception of signal from navigational systems. The device automatically switched to operation with external GPS/GLONASS antenna when it is connected. For statistics on external antennas operation, check Conf\_iRZ program's

"Diagnostics" tab.

Please contact the manufacturer or a dealer for the list of recommended equipment.



### 3. Device Configuration Using Configurator

To configure iON Connect user terminal, plug it into your computer using a micro USB port and run the application  **iON\_Config.exe**

#### 3.1. Driver Installation

For operation of the  **iON\_Config.exe** application with the iON Connect user navigation terminal, download and install the iON Virtual COM Port driver.

##### 3.1.1. Installing Drivers for Windows XP

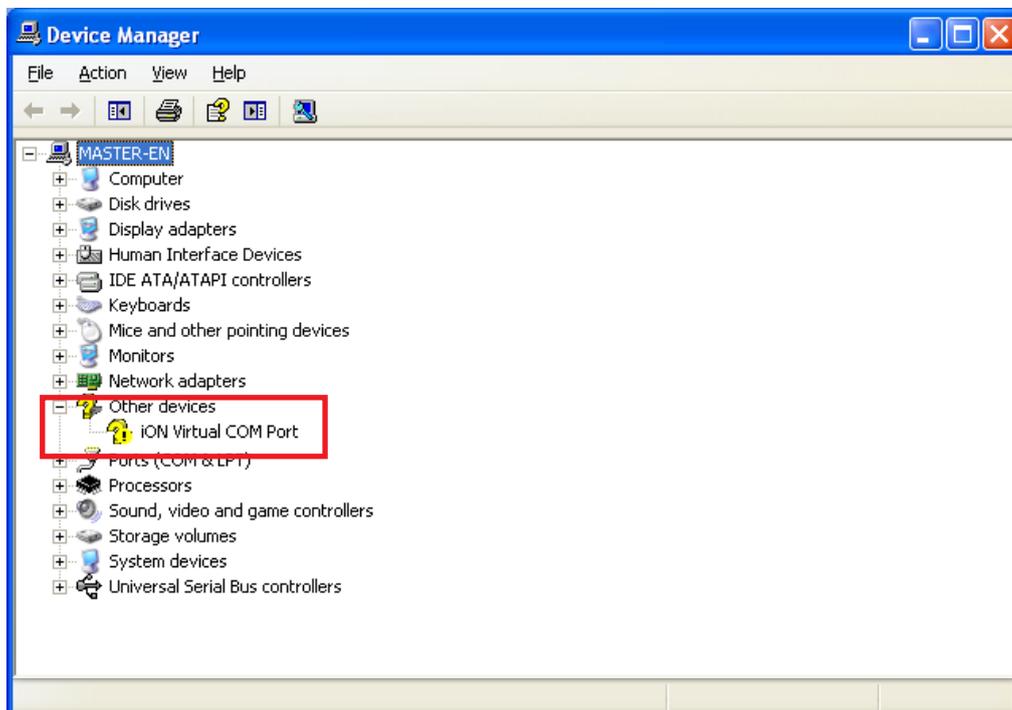
① Download and extract the iON\_Virtual\_COM\_Port\_driver.zip file containing the drivers for iON Connect to a folder in your computer. For example, to the **C:\drivers\** location

② Plug iON Connect into your computer using a USB port. Make sure the device is getting enough power - the device indicators should light up.

At that, the **Update Driver Software** icon will appear on the taskbar:

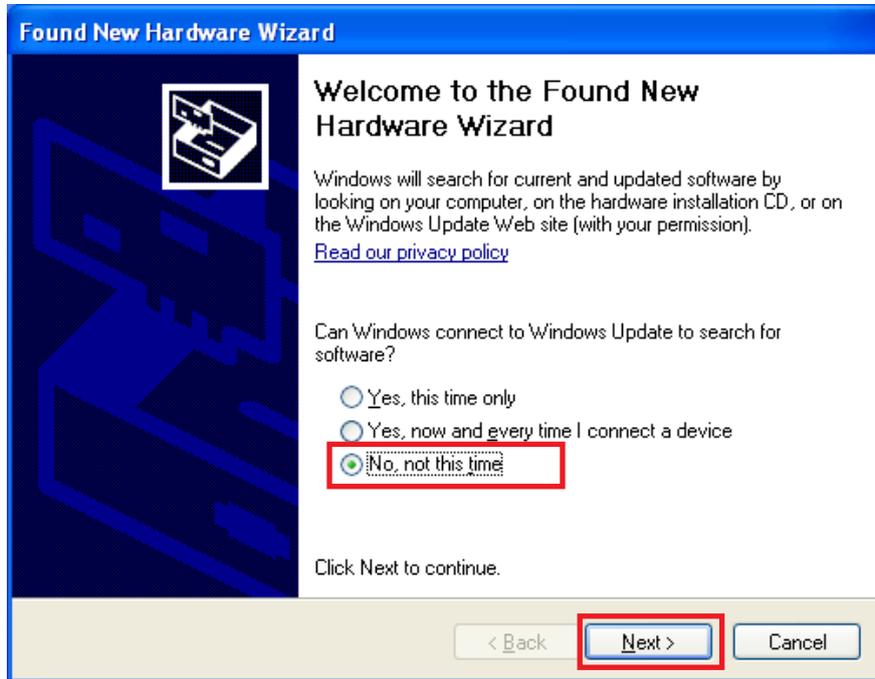


In addition, an unknown device will appear in Device Manager (My Computer ► Properties ► Hardware tab ► Device manager):

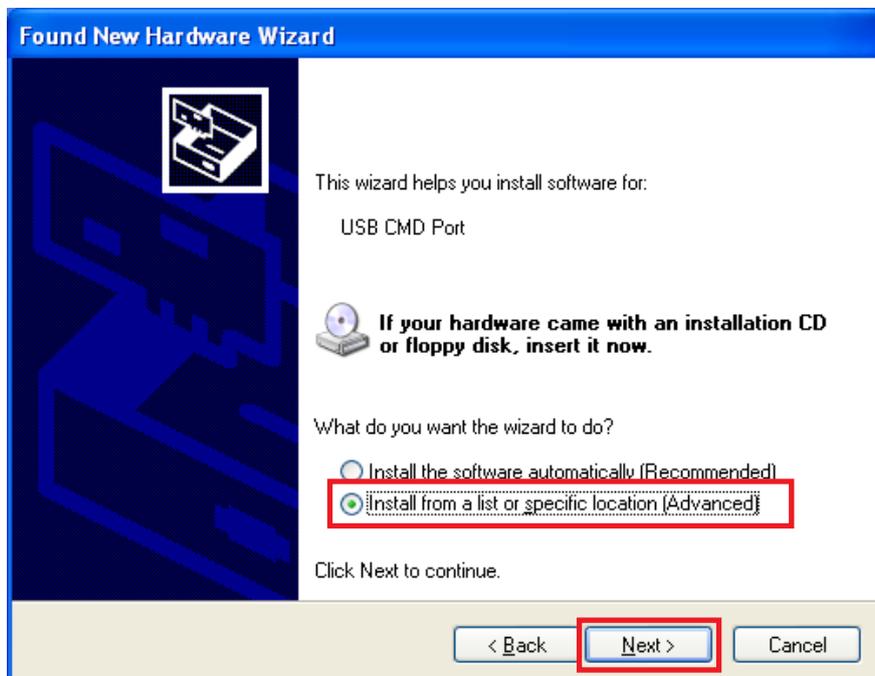




- ③ In the **Found New Hardware Wizard** dialog box select an option “**No, not this time**” and click **Next**:

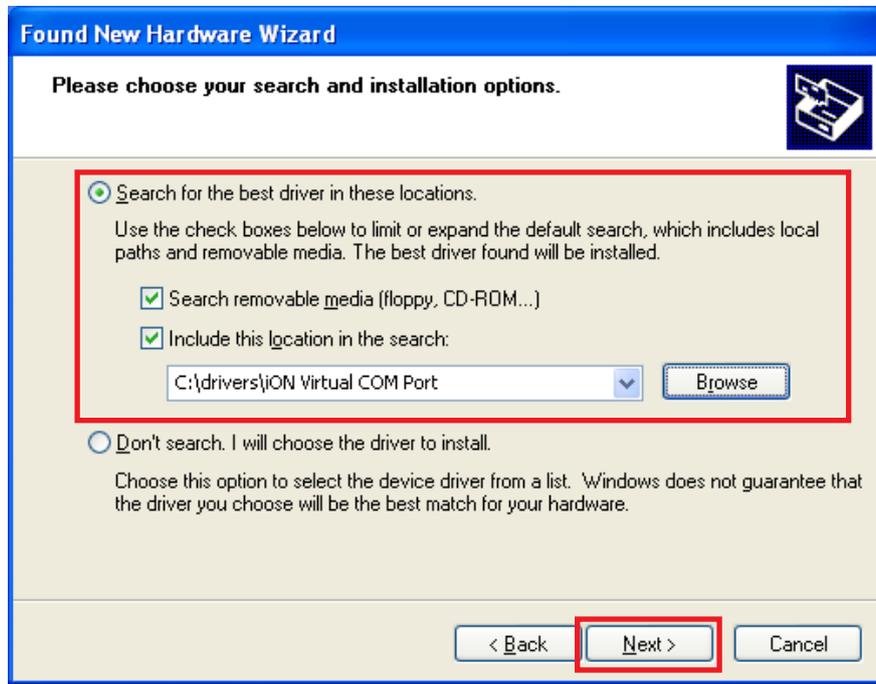


- ④ On the next screen select the “**Install from a list or specific location (Advanced)**” option and click **Next**:

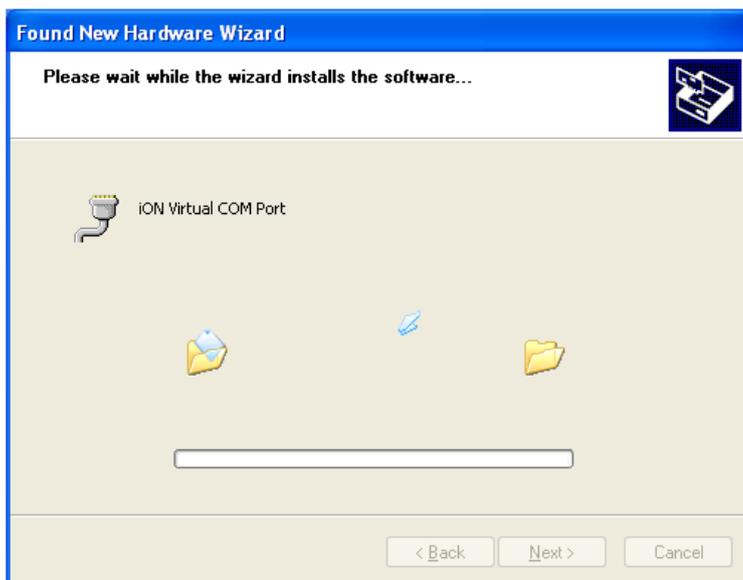




5 Select “**Search for the best driver in these locations**” and using the **Browse** button navigate to the folder that contains the driver files. For example, **C:\drivers\iON Virtual COM Port\**  
Then click the **Next** button:



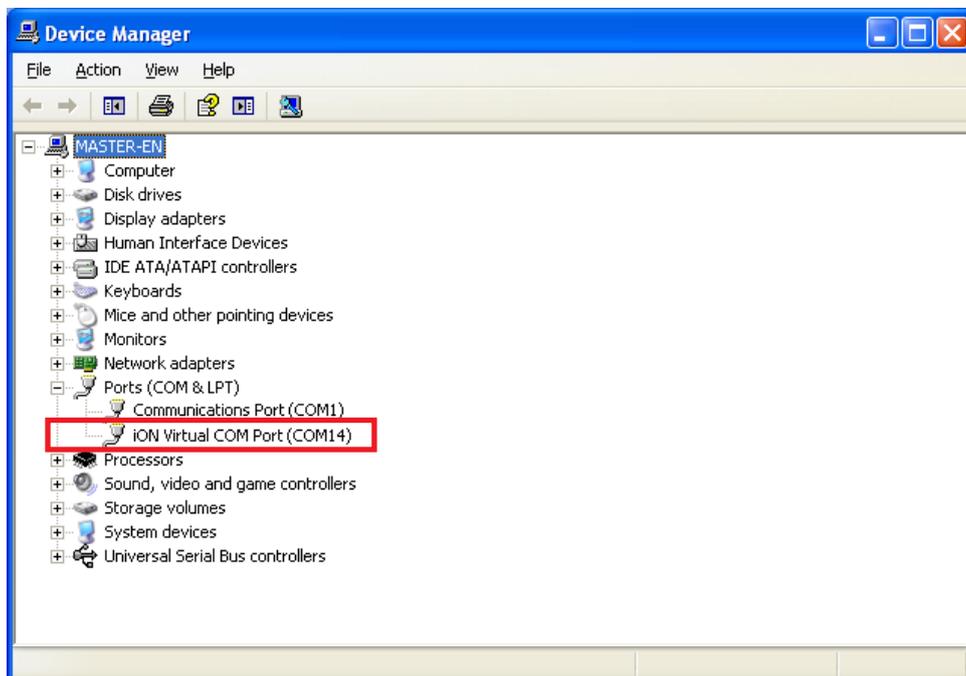
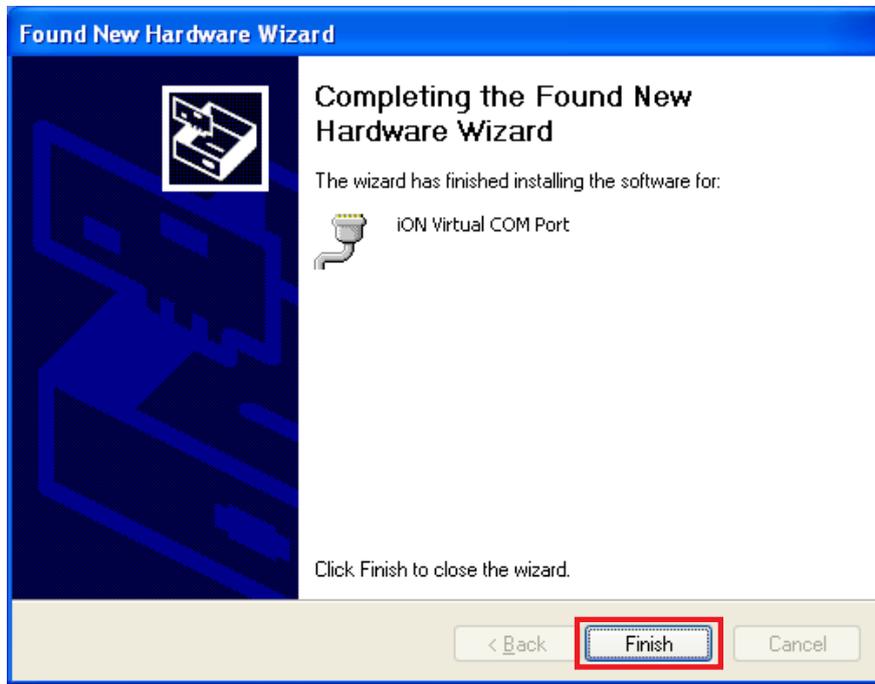
As a result, the driver installation process will launch. If the wizard prompts “The software you are installing... has not passed Windows Logo testing...”, select option **Continue Anyway**.





As a result, the driver for one device will be installed.

6 Click **Finish**:



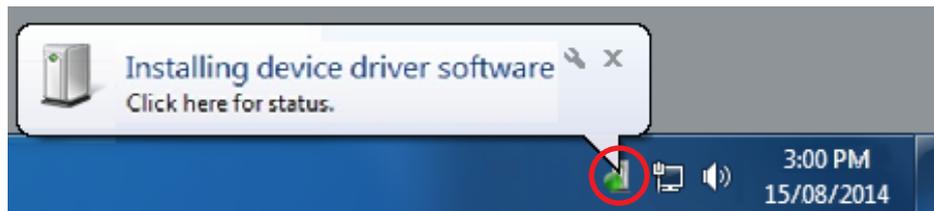


### 3.1.2. Installing Drivers on Windows 7

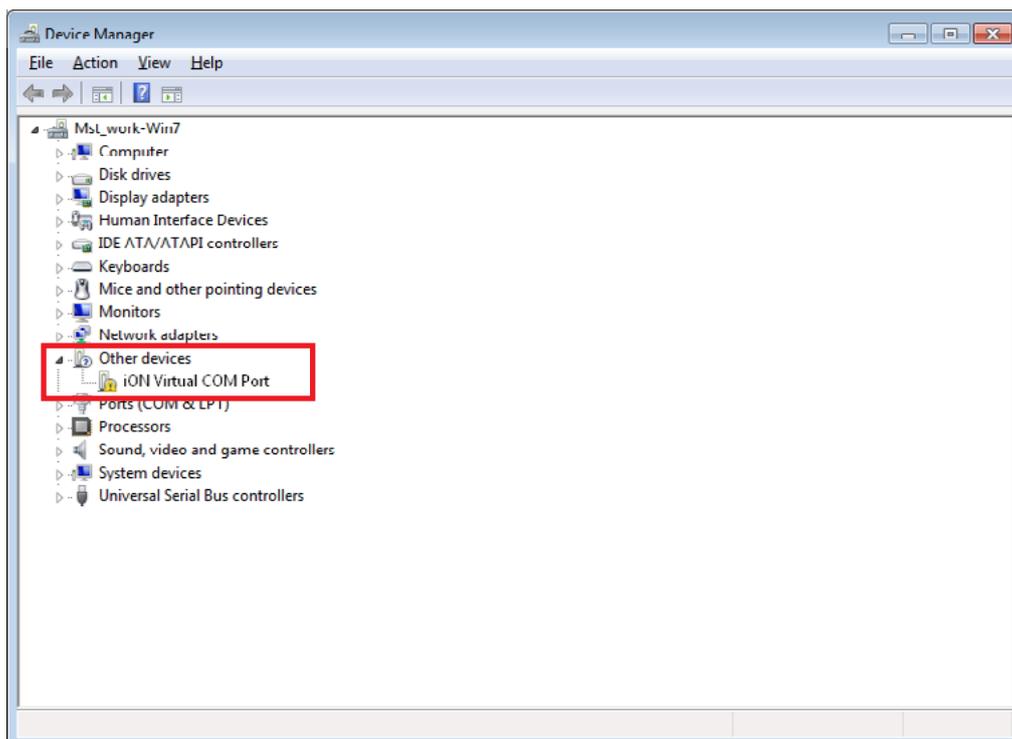
① Download and extract the **iON\_Virtual\_COM\_Port\_driver.zip** file containing the drivers for iON Connect to a folder in your computer. For example, to the **C:\drivers\** location

② Plug iON Connect into your computer using a USB port. Make sure the device is getting enough power - the device indicators should light up.

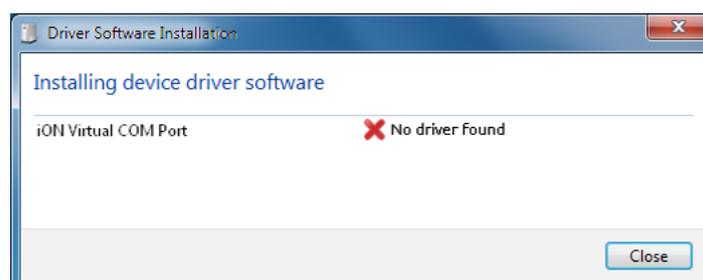
At that, the Update Driver Software icon will appear on the taskbar:



In addition, an unknown device is supposed to appear in the Device Manager (My Computer ► Properties ► Device Manager):

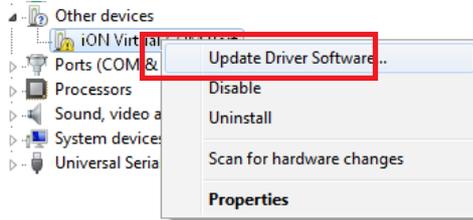


If automatic driver installation fails, the following prompt will appear:

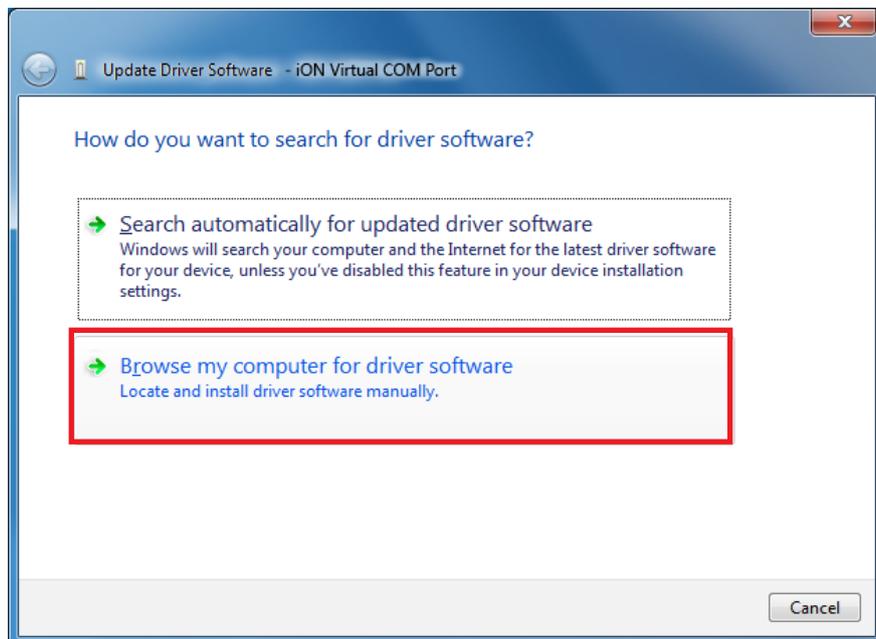




③ In this case open the Task Manager, highlight iON Virtual COM Port from the unknown devices and by the right-click on this device select “Update Driver Software...”.

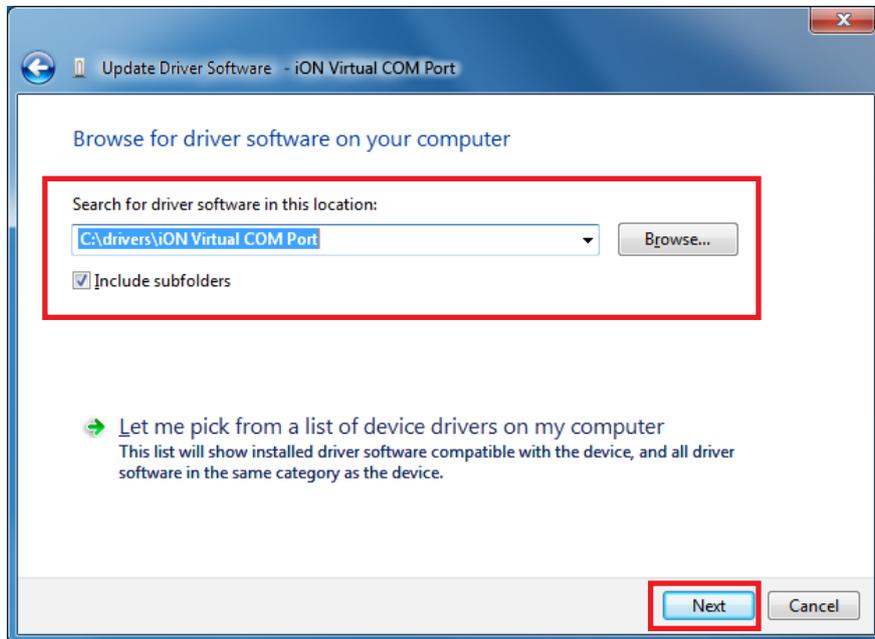


④ The Update Driver Software window will appear. Select the “Browse my computer for driver software” option:

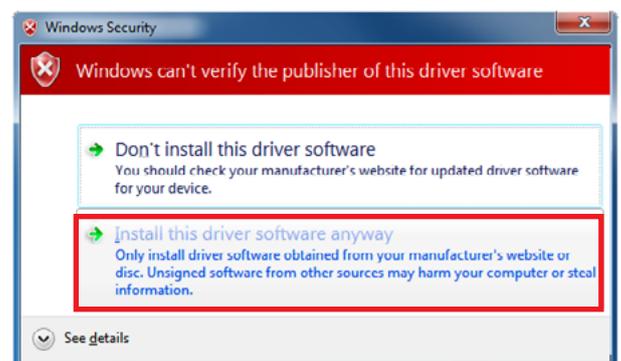
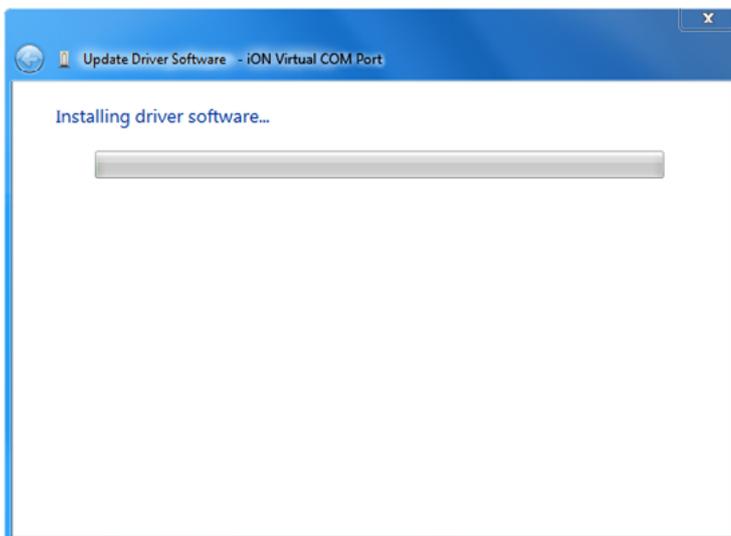




- 5 Using the Browse button navigate to the folder that contains the driver files. For example, `C:\drivers\iON Virtual COM Port\`  
Then click the **Next** button:

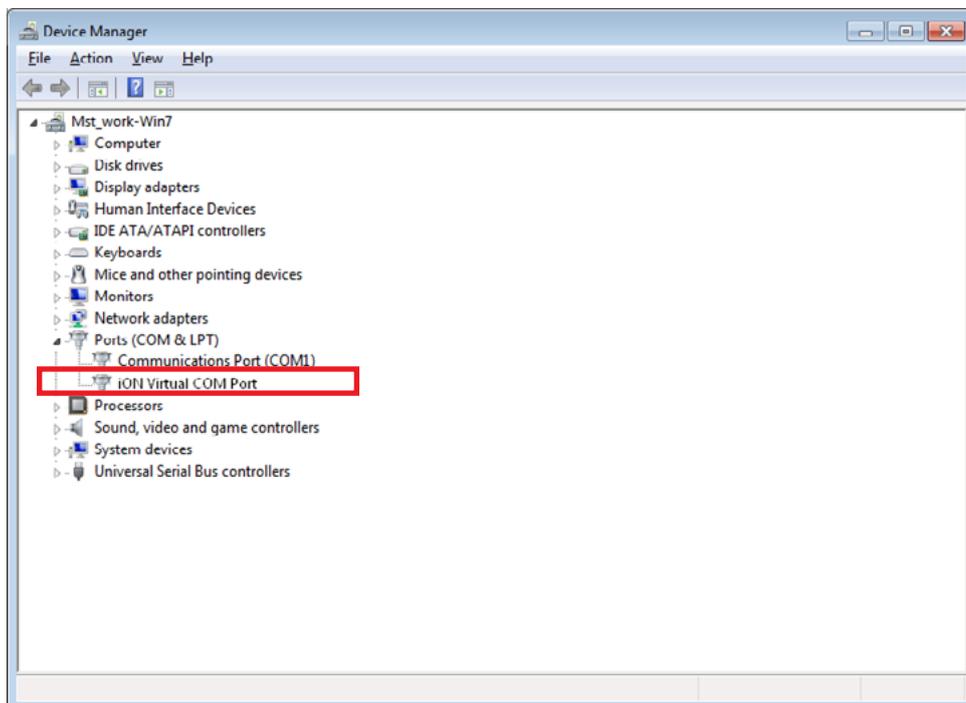
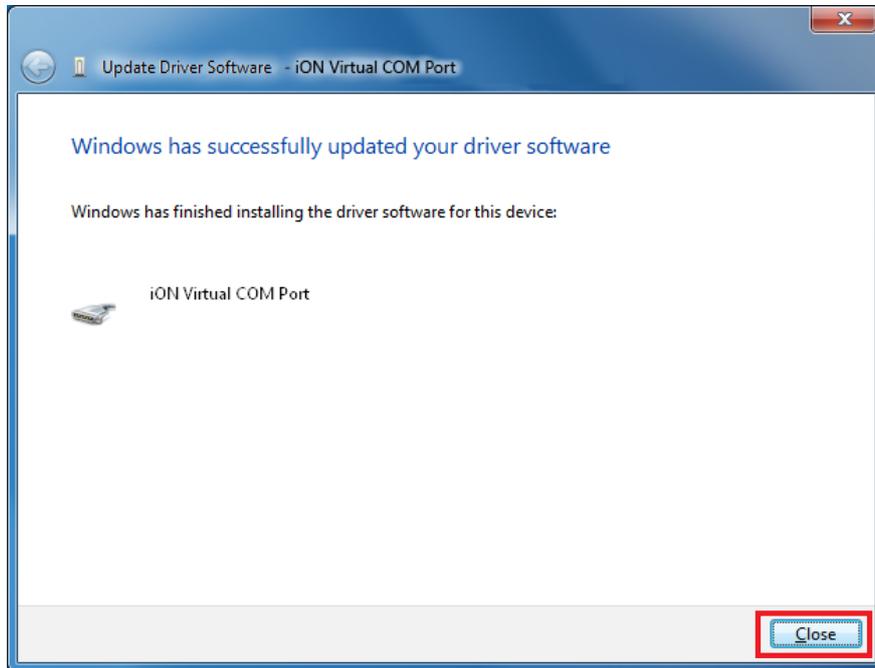


As a result, the driver installation process will launch. If you are prompted “Windows can’t verify the publisher of this driver software”, select “**Install this driver software anyway**” in the Windows Security dialog box.





As a result, the driver for one device will be installed:





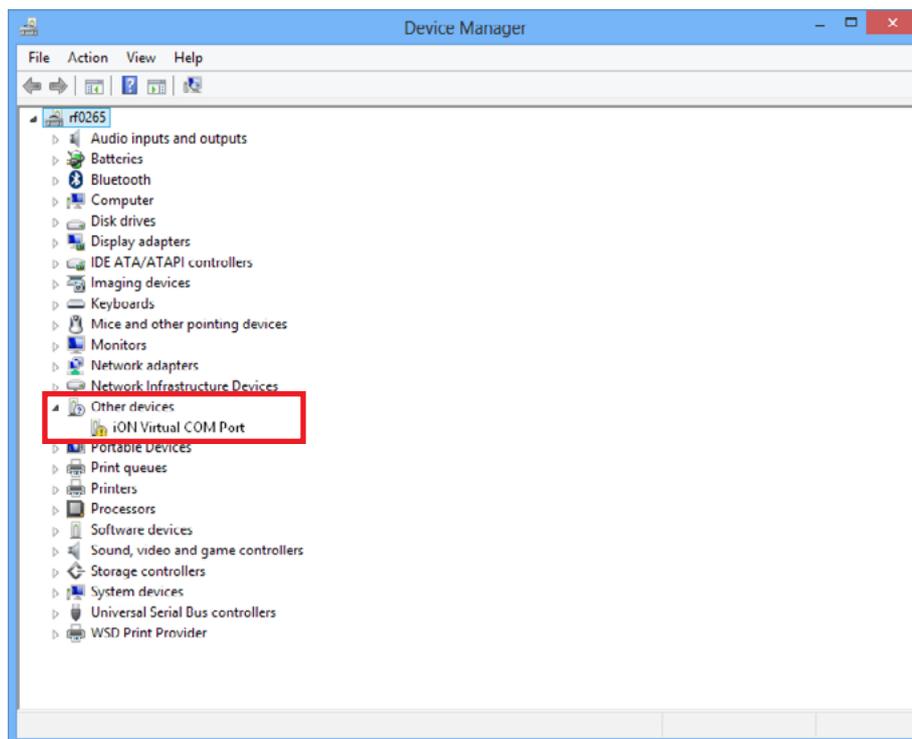
### 3.1.3. Installing Drivers on Windows 8

① Download and extract the iON\_Virtual\_COM\_Port\_driver.zip file containing the drivers for iON Connect to a folder in your computer. For example, to the **C:\drivers\** location

② Plug iON Connect into your computer using a USB port. Make sure the device is getting enough power — the device indicators should light up.

In this case the **“Update Driver Software”** icon will appear on the taskbar.

In addition, an unknown device will appear in the Device Manager (summon Windows charms bar ► Settings ► System information ► Device manager):

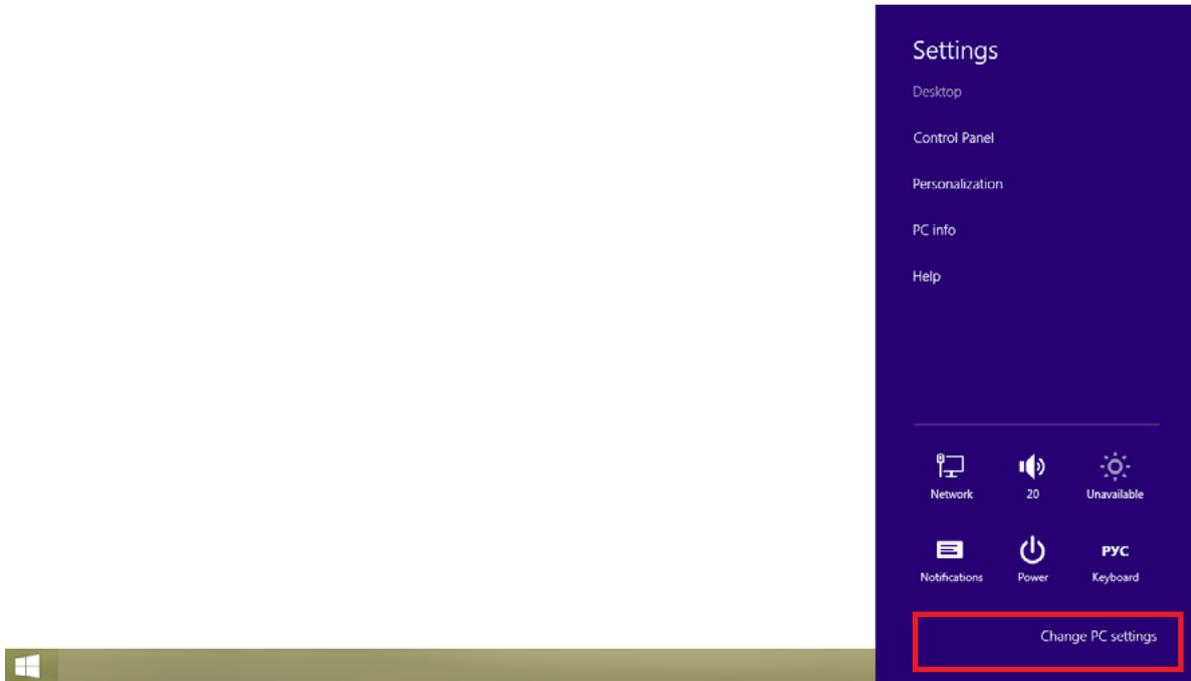




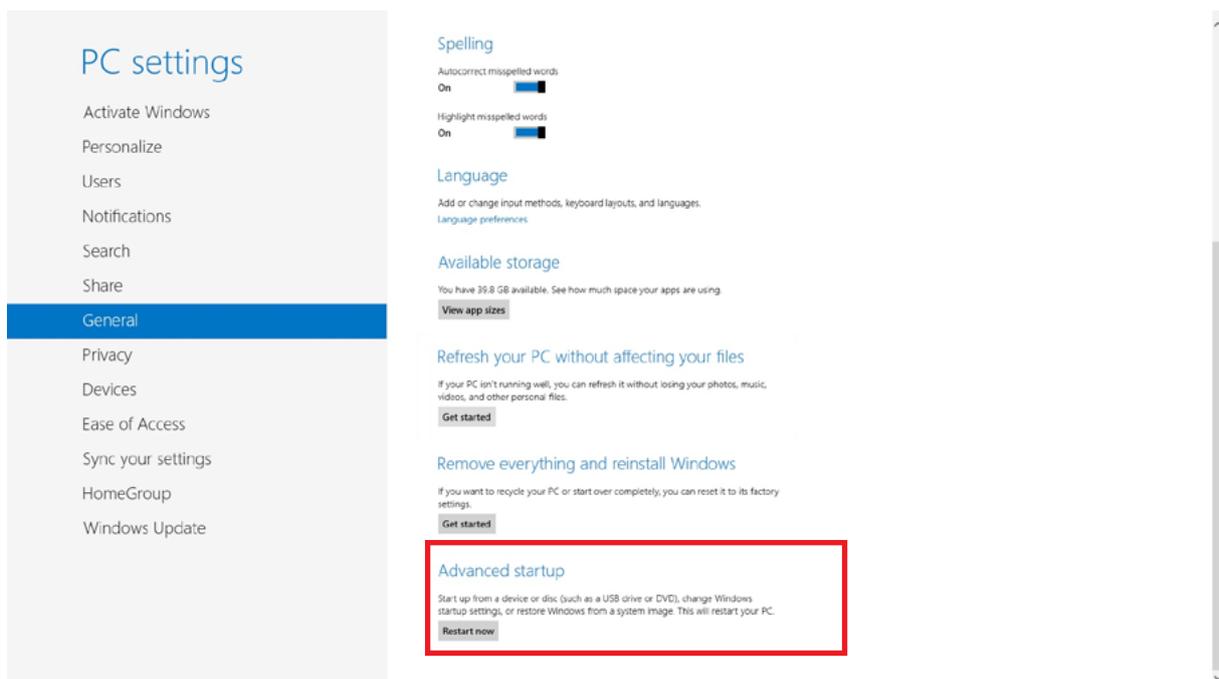
Since Windows 8 does not allow administrators to install drivers without digital signature by default, you will have to boot the system in a special mode.

For that, follow the steps below:

③ Open the charms bar in Windows 8 (or press the WIN+I keys), select **Settings** and tap or click **Change PC settings**:

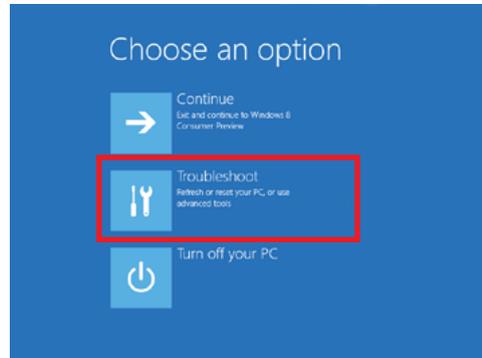


④ On the “PC settings” list select **General** (or **Update and Restore/Restore** in Windows 8.1), and in the right window in the “Advanced startup option” tap or click **Restart now**:

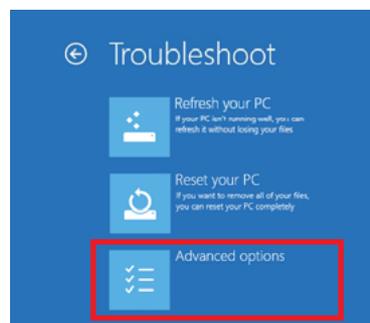




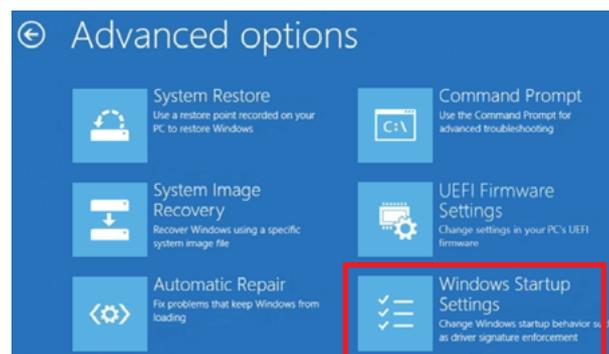
- 5 On the “Choose an option” screen select **Troubleshoot**:



- 6 On the “Troubleshoot” screen select **Advanced options**:

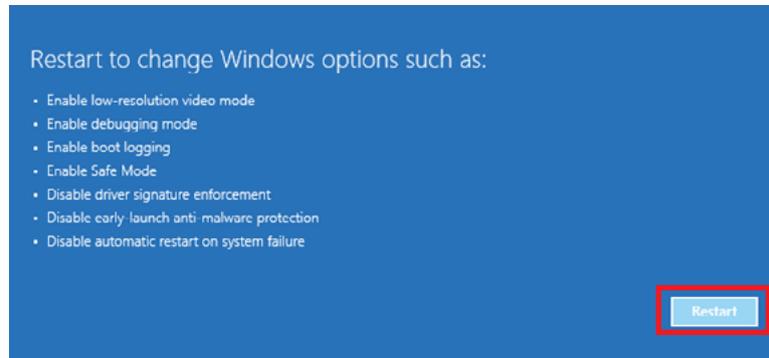


- 7 On “Advanced options” select **Windows Startup Settings**:



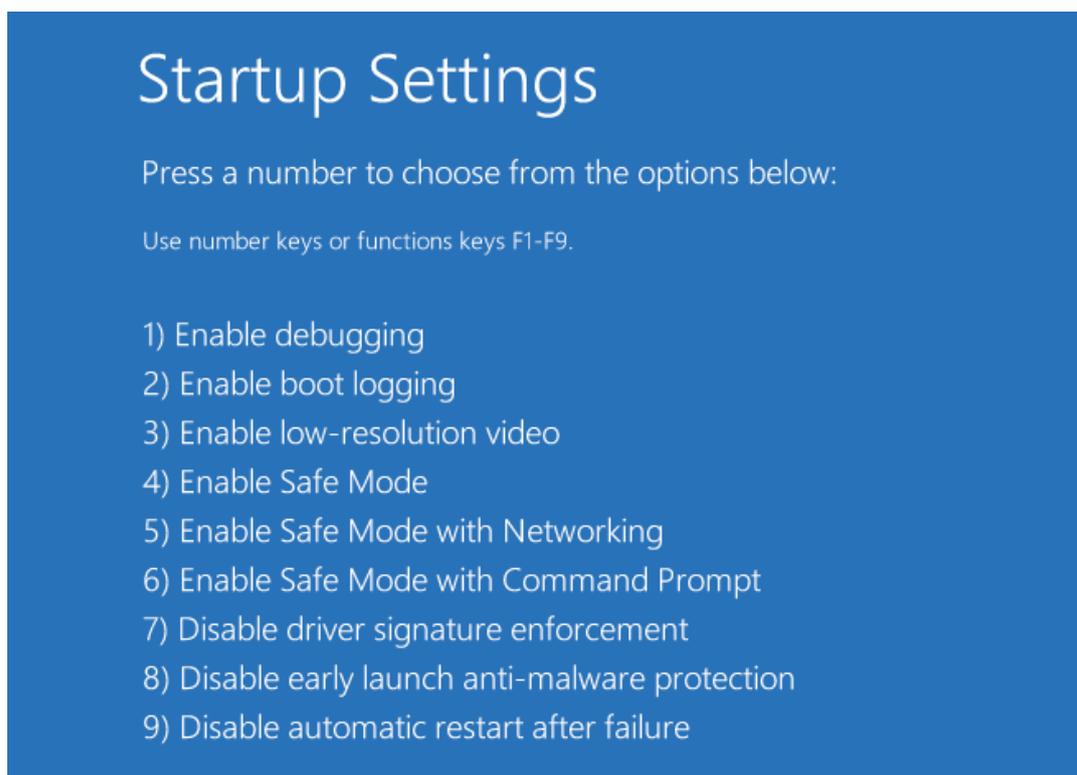


- 8 On “Window Startup Settings” tap or click **Restart**:



The PC will now reboot and you will be prompted with the startup settings before running.

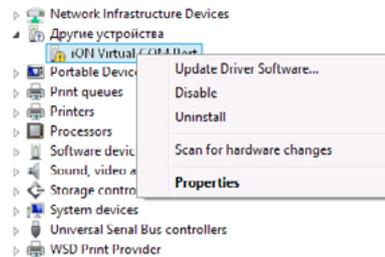
- 9 Press the number **7** (or **F7**) key to select the “**7) Disable driver signature enforcement**” option:



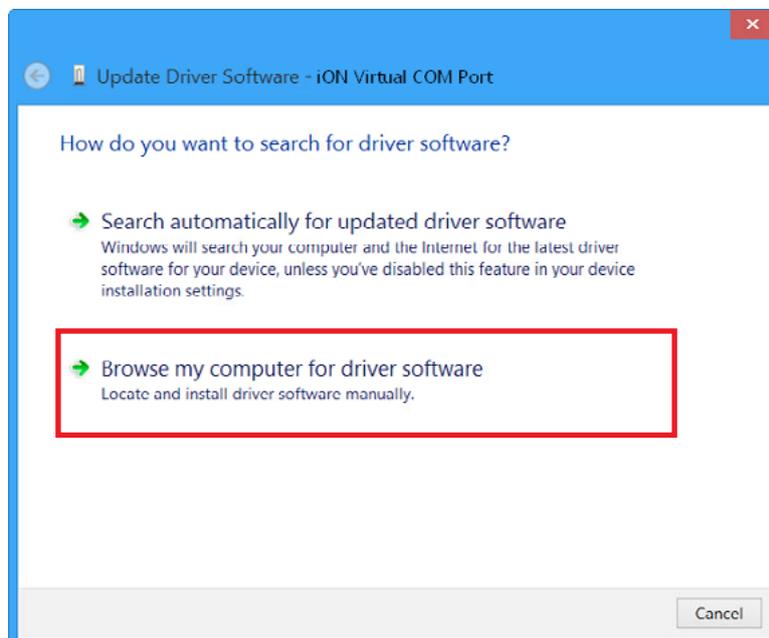
Then, Windows will reboot with the option to install unsigned drivers.



10 After Windows rebooting, open the Device Manager (open the Settings charm ► Control Panel ► System and Security ► System ► Device Manager) highlight iON Virtual COM Port from the unknown devices and by the right-click select **“Update Driver Software...”**.

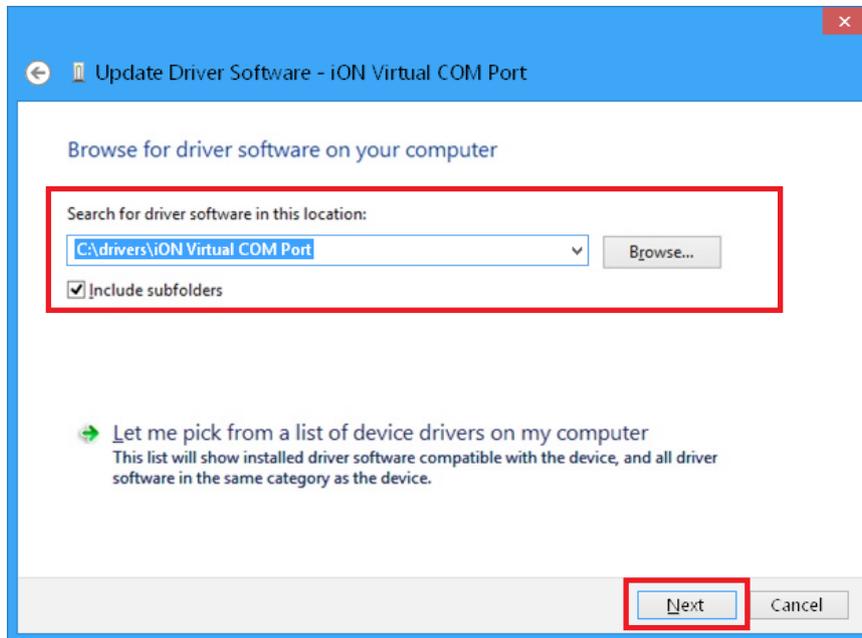


11 The Update Driver Software window will appear. Select the **“Browse my computer for driver software”** option:

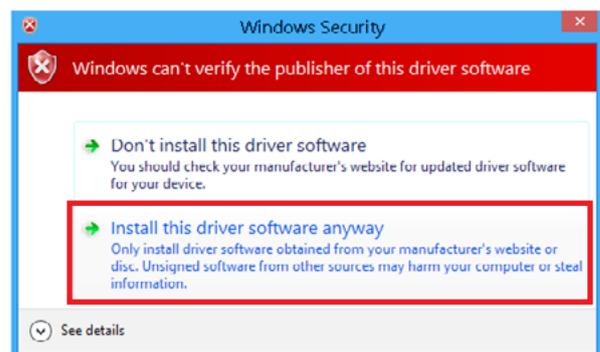
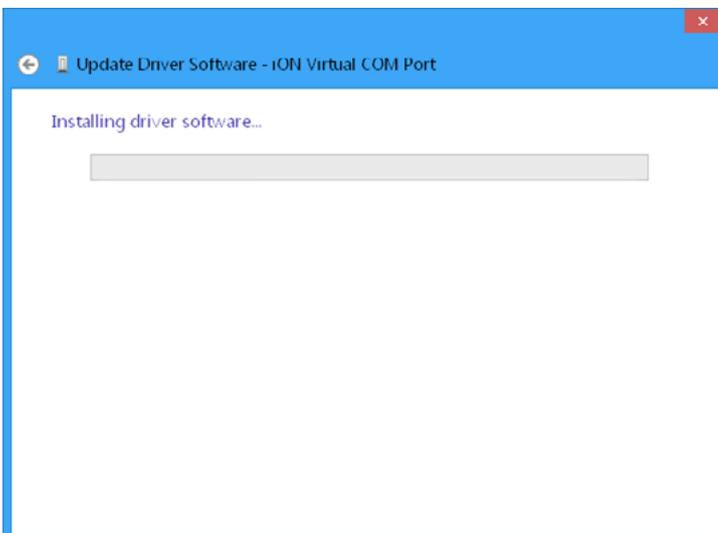




12 Using the **Browse** button navigate to the folder that contains the driver files. For example, `C:\drivers\iON Virtual COM Port\`  
Then click the **Next** button:

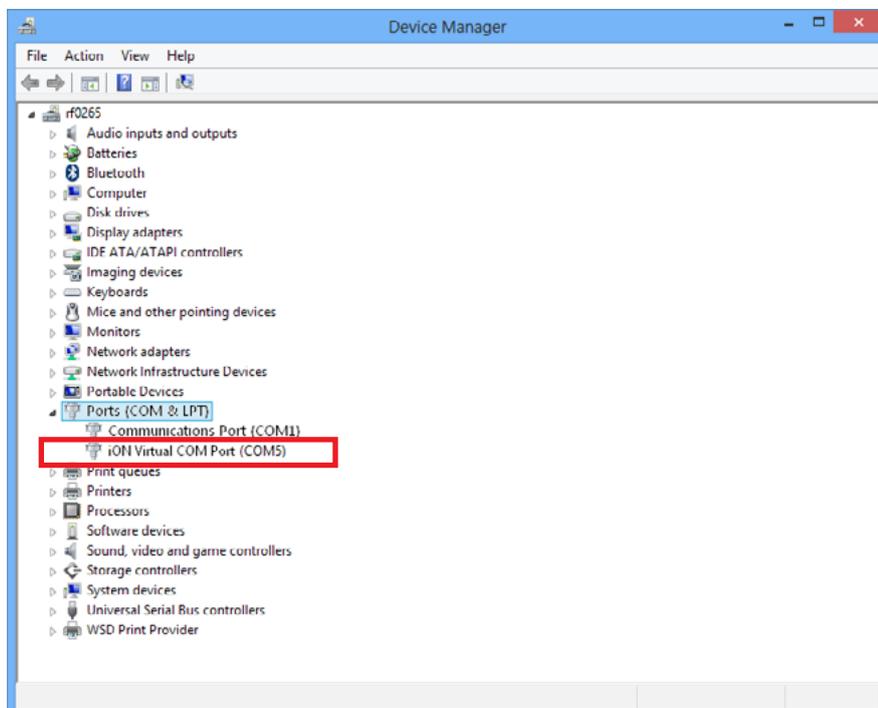
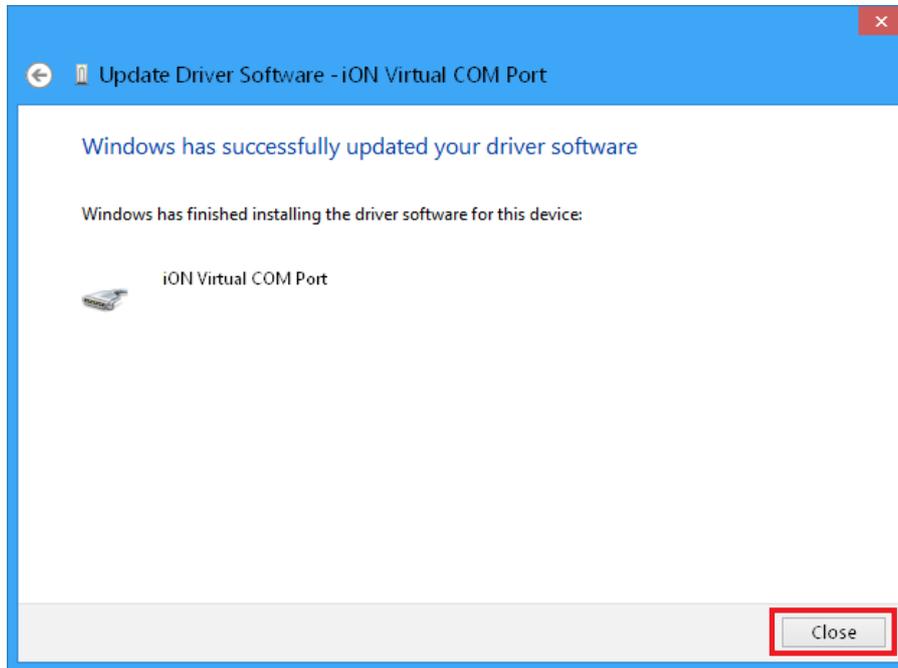


As a result, the driver installation process will launch. If you are prompted “Windows can’t verify the publisher of this driver software”, select “**Install this driver software anyway**” in the Windows Security dialog box.





As a result, the driver for the device will be installed. Click **Close**.



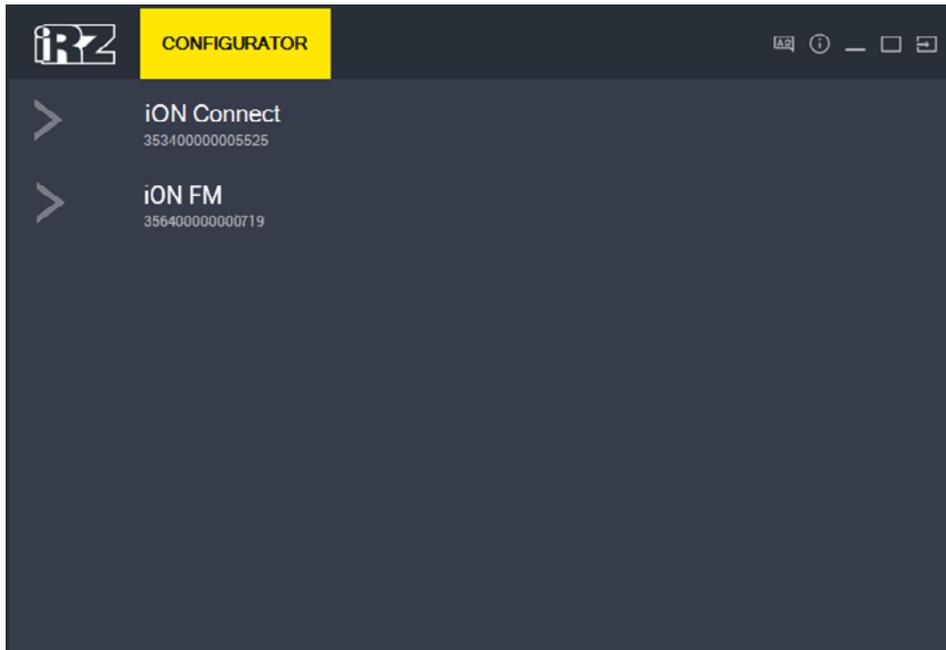


### 3.2. Configurator Overview

The configurator program is an application, in which all the managing elements are grouped by their tasks.

By default the device has a password, without which you can't save any changes in the configurator. For the terminal iON Connect the default password is **123456**.

When you initialize the configurator the list of the devices connected to the computer will open:



**Fig. 3.1.** List of Devices

To access the settings, click on the device from the list to which you want to connect.



After selecting the device, opens several tabs with information and configurations:

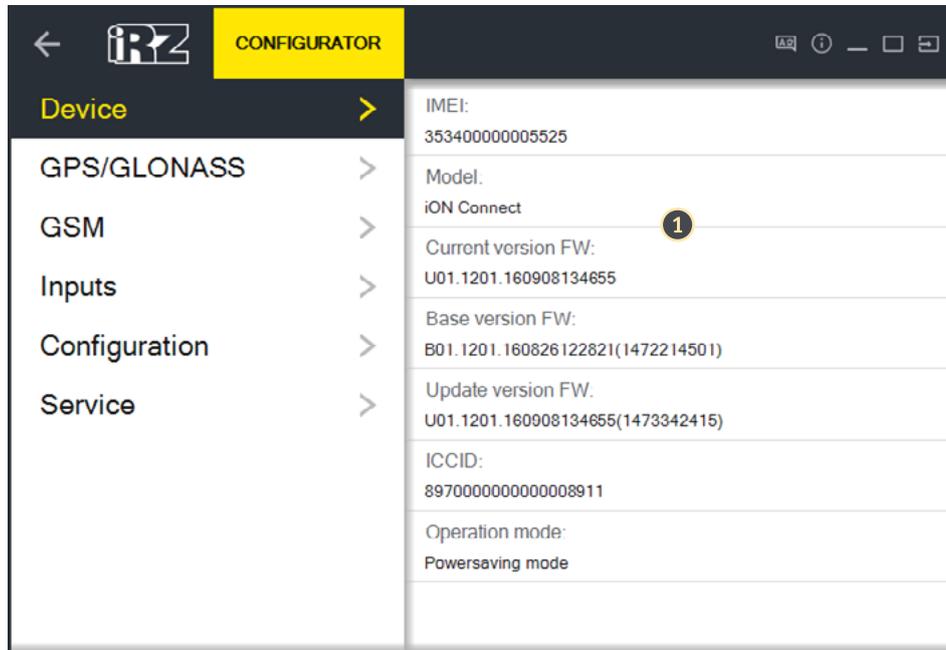


Fig. 3.2. "Devices" Tab

Mark	Element	Description
	<b>Device</b> tab	General information about device: IMEI, model, firmware version, etc.
	<b>GPS/GLONASS</b> tab	Information about GPS/GLONASS module and antennas.
	<b>GSM</b> tab	Information about SIM card and functioning of GSM connection
	<b>Inputs</b> tab	Information about state of device's inputs and diagnostic information: device temperature, external and internal voltage.
	<b>Configuration</b> tab	Configurations of the device
	<b>Service</b> tab	Firmware update, password change, execution of service commands for the device, loading and saving the configuration.
①	Working area	Working area of the selected tab.
	 Arrow to go back	Go back to the previous level.
	 Language selection	Change language.
	 About software	Information about the program
	 Language selection	Change the language.
	 Expand/Collapse	Change the parameters of the program's window
	 Exit	Exit from the program



### 3.3. Terminal Configuration

To access the configuration of the device, select the **Configuration** tab. In which the settings are grouped by topics:

Tab	Function
Server	Configuration of the connection with the servers of the monitoring system.
SIM configuration	Configuration of the SIM cards in the device.
Track points	Configuration of the tracking points saving.
Powersaving	Configuration of the power saving modes.
Driving style	Configuration of the driving style parameters.
Notifications	Configuration of notifications.
Data grouping	Configuration of data grouping.

The button  is used for the reading of the device configuration. The button **Save** is used to save the changes made in the configuration.

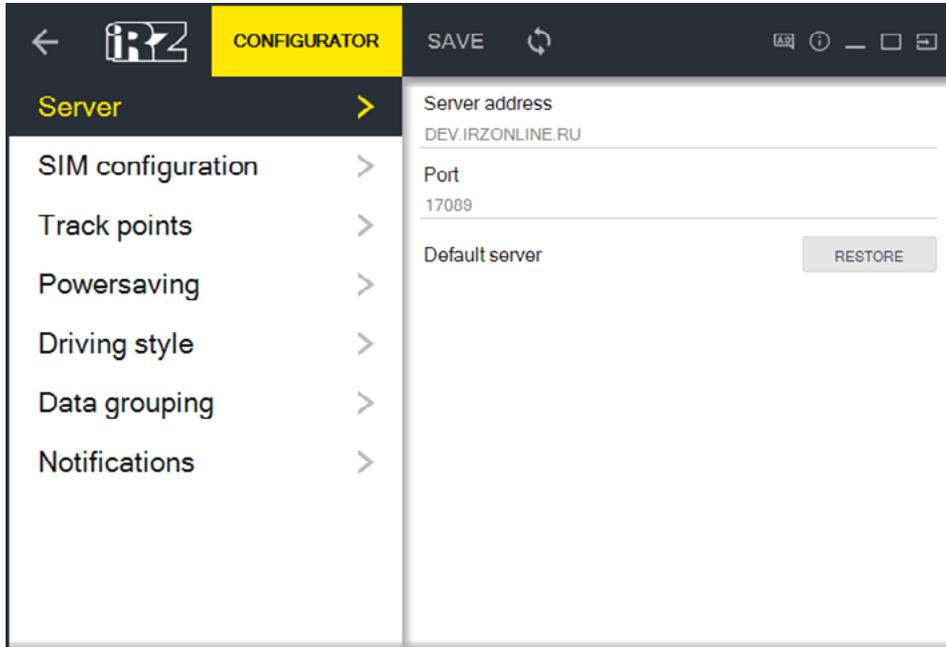
To change the parameters in the configuration of the device:

- ① Change the needed parameters (you can change parameters in several tabs at once);
- ② Click on the **Save** button;
- ③ Enter the password to access the configuration (if the password in the current session, it won't be necessary, the configuration will be saved after pressing the **Save** button).



### 3.3.1. "Server" Tab

The **Server** tab is used for the configuration of the connection with the servers of the monitoring system.



**Fig. 3.3.** "Server" tab

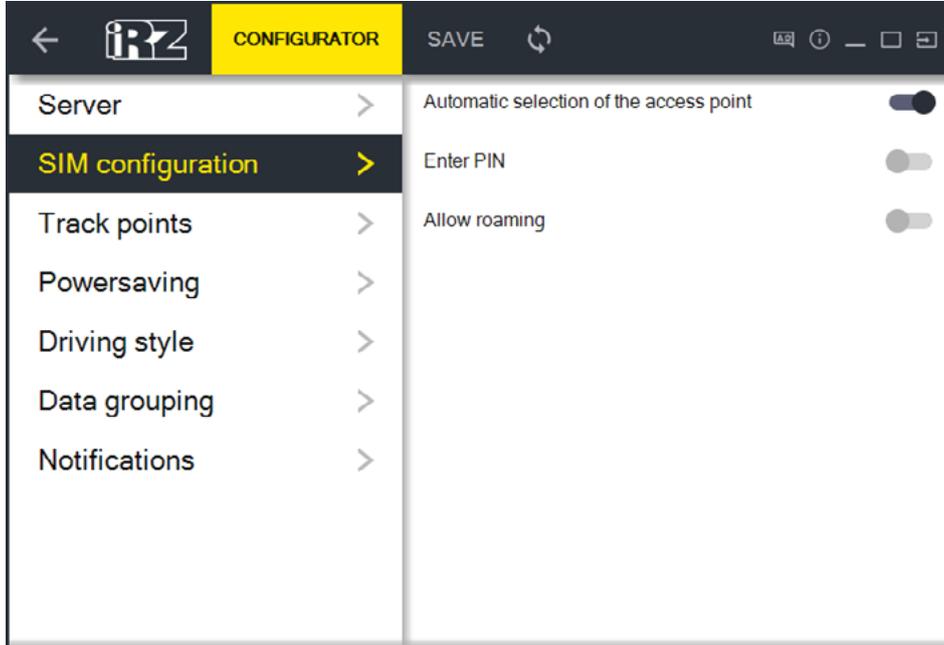
For the configuration of the connection you need to specify the IP address or the DNS name and its port.  
Example:

Parameter	Example
Server address	dev.irzonline.ru
Port	17089

The **Restore** button installs the default server parameters.

### 3.3.2. "SIM configuration" Tab

The **SIM Configuration** tab is used for the configuration of the SIM cards in the device.



**Fig. 3.4.** "SIM configuration" tab

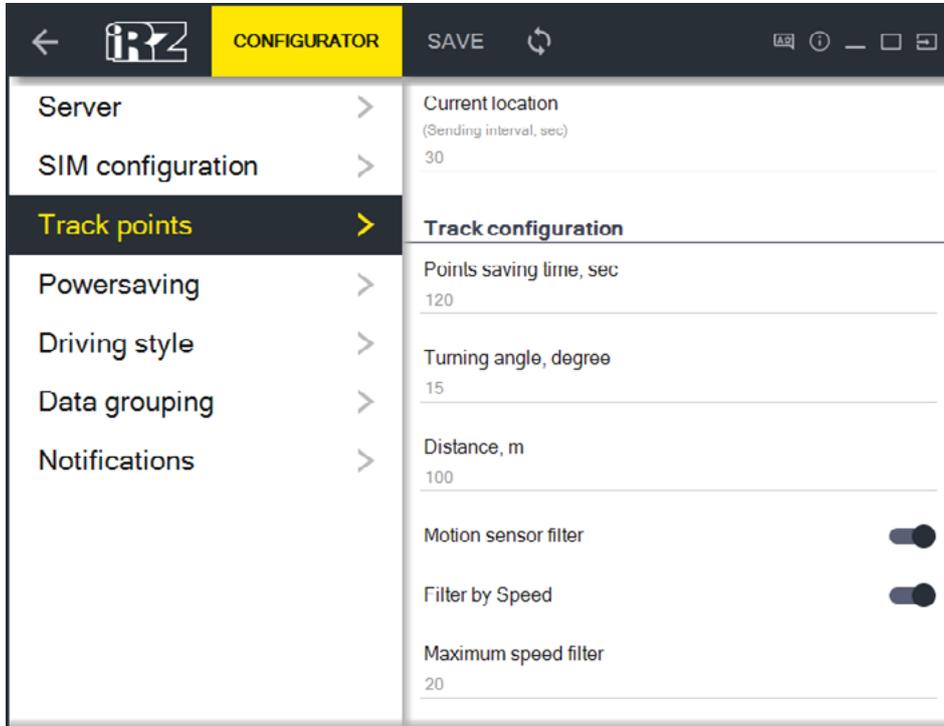
The following configurations are available:

Parameter	Description
Automatic selection of the access point	Enable/disable the automatic selection of the access point. If the parameter is disabled, then the APN, login and password need to be entered manually.
Enter PIN	Enable/disable the entry of the PIN code for the SIM card. If in the SIM card the PIN code is set, then it is needed to be enabled, and below will appear a window for its entry.
Allow roaming	Enable/disable the permission of the SIM card to work in roaming.



### 3.3.3. “Track points” Tab

The **Track Points** tab is used for the configuration of the navigation tracking points.



**Fig. 3.5.** “Track points” tab

The following configurations are available:

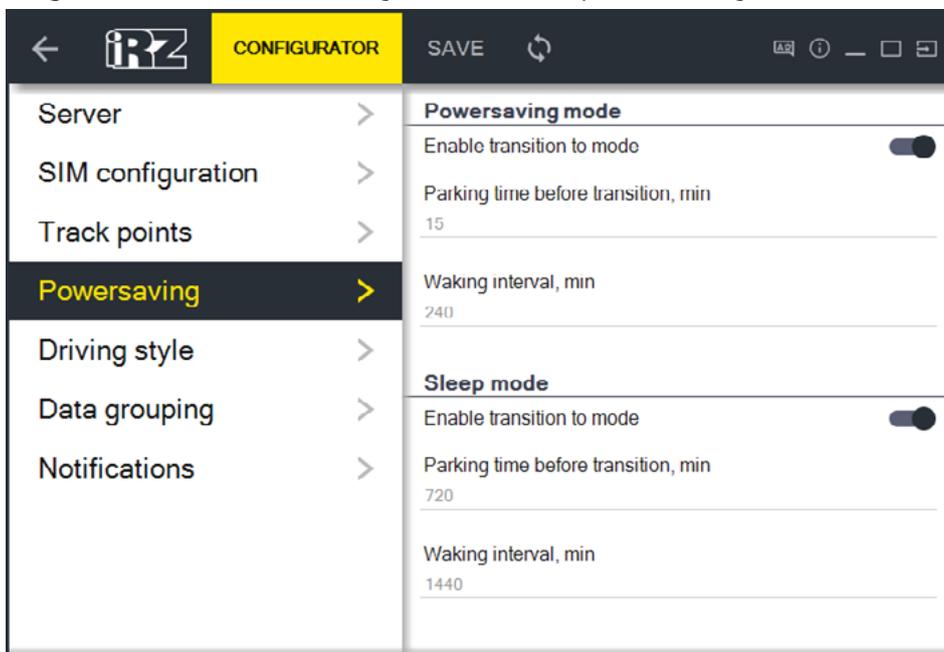
Parameter	Description
Current location	Period in seconds, which specifies the interval of time after which the terminal will send the data for the display of the location in real time. For example, 30 — every 30 seconds the coordinates of the current location will be sent to the server.
Track configuration:	
Points saving time	Period in seconds, which specifies the interval of time after which the device will save the coordinates of the current position. This information will be used for the construction of the track. For example, 120 — every 2 minutes the device will save the coordinate of the current position in its database.
Turning angle degree	Turning angle in degrees, above which a coordinate of the current position will be saved by the device. For example, 15 — when the direction is shifted by 15 degrees or more, the coordinate of the current position will be saved in the device’s database.
Distance	Distance in meters, above which a coordinate of the current position will be saved by the device. For example, 100 — every 100 meters the coordinate of the current position will be saved in the device’s database.
Motion sensor filter	Enable/disable of the data filter. When the filter is enabled, if the accelerometer has captures a parking event, then the data during the parking event will not be saved.



Parameter	Description
Filter by speed	<p>Enable/disable the filter of data by speed — setting new value for parameter responsible for enabling/disabling track point filtration by speed, when the speed is less than the threshold.</p> <p>If the parameter is set to 0, the filter is disabled. If the parameter is set for an allowed interval (for example, 20 km/h), if the vehicle is moving with less than 20 km/h the device will filter said coordinates, considering that it is the margin of error of the GPS/GLONASS positioning systems, on traffic lights and traffic jams.</p>

### 3.3.4. “Powersaving” Tab

The **Powersaving** tab is used for the configuration of the power saving modes.



**Fig. 3.6.** “Powersaving” tab

The following configurations are available:

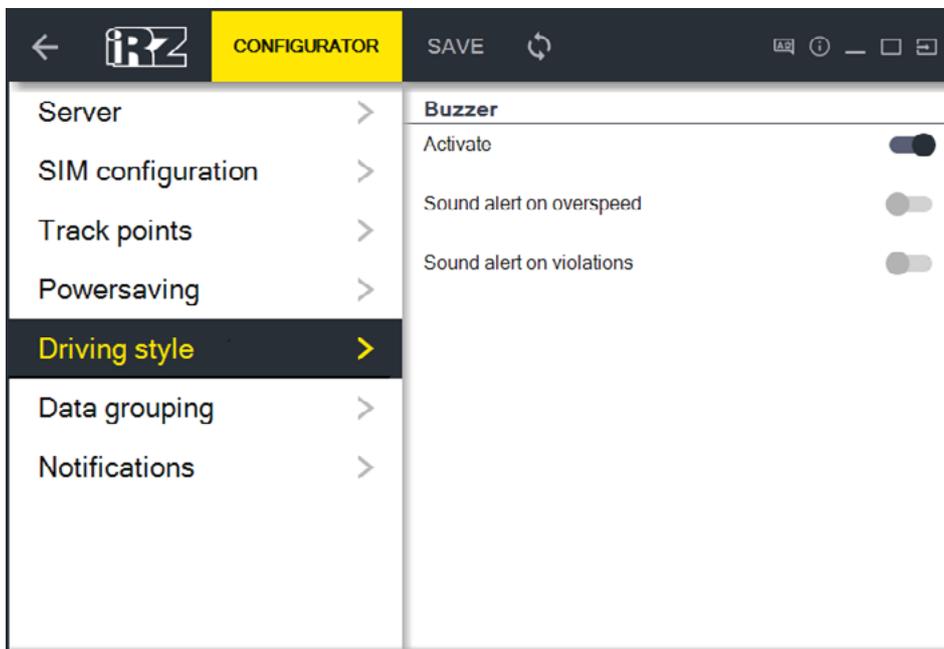
Parameter	Description
Powersaving mode:	
Enable transition to mode	Enable/disable the transition of the device to “Power saving mode”.
Parking time before transition	Time of parking event in minutes, after which the device will switch to power-saving mode.
Waking interval	Time of waking of the device form the powersaving mode in minutes, after which the device will go online to transfer the main data to the server.



Parameter	Description
Sleep mode:	
Enable transition to mode	Enable/disable the transition of the device to "Sleep mode".
Parking time before transition	Time of parking event in minutes, after which the device will switch to Sleep mode.
Waking interval	Time of waking of the device form the Sleep mode in minutes, after which the device will go online to transfer the main data to the server.

### 3.3.5. "Driving style" Tab

The **Driving Style** tab is used for the configuration of the driving style parameters.



**Fig. 3.7.** "Driving style" tab

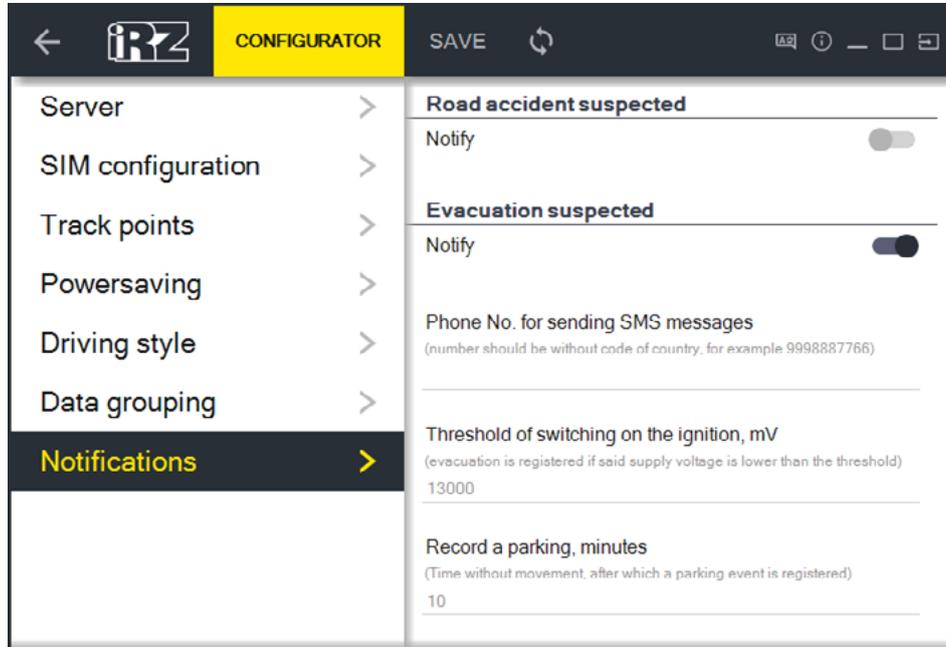
The following configurations are available:

Parameter	Description
Buzzer (Activate)	Enable/disable the sound alerts of the device when violations of the driving style parameters occur.
Sound alert on overspeed	Enable/disable the sound alerts when an overspeed occur, which is specified in the parameter "Allowed speed".
Allowed speed	Speed in km/h above which the device will make a sound alert.
Sound alert on violations	Enable/disable the sound alerts with different violation (except speed) of the driving style.



### 3.3.6. “Notifications” Tab

The **Notifications** tab is used for the configuration of notifications by SMS.



**Fig. 3.8.** “Notifications” tab

The following configurations are available:

Parameter	Description
Road accident suspected (Notify)	Enable/disable the notifications, if the device registers that a road accident happened. When said parameter is enabled, a mobile number needs to be entered in the format “999112233”, to which a SMS will be sent if an accident is registered by the device.
Evacuation suspected (Notify)	Enable/disable the notifications, if the device registers that an evacuation happened. When said parameter is enabled, a mobile number needs to be entered in the format “999112233”, to which a SMS will be sent if an evacuation is registered by the device. Also a threshold of ignition in mV and parking event in minutes need to be established, after which a parking event is registered.



### How determination of a road accident functions

When the device registers a road accident (hit or flip of the vehicle), from the device a SMS is sent to the specified number with the coordinates and a suspicion of an accident. If there is no GSM connection and there is no possibility of sending a SMS, the sending is postponed until the connection is restored. The intellectual analytical algorithm in the device is always checking the overload and vector of the movement direction, and if the overload goes above the permitted levels or the direction of the vector changes too fast in a small distance, according to the algorithm, the device will register an emergency situation and sends a notification. In case of a small accidents (grindings, light bumps, hooks), also in case of complex situations (light hit after a sharp brake), the device will not register a road accident. There is a possibility that a heavy traffic situation (getting into a deep hole, a sharp drift) might be registered by the device as a road accident and send a SMS.

### How determination of an evacuation functions

The device informs of the evacuation of the vehicle with ignition off, only if a parking event has been registered. Parking is the absence of movement of the vehicle after a time specified in the field "Register a parking" (Default – 10 minutes). Ignition off is registered when the power voltage of the vehicle is below than "Threshold of switching on the ignition" parameter.

When the vehicle is parked, the device monitors the values of the accelerometer, and if it registers movement, and the ignition is off, the device will send a SMS to the specified telephone number with a suspicion of an evacuation. If during said time the GSM connection is unavailable and there is no possibility of sending a SMS, the sending will be postponed until the connection is restored, but no more than 30 minutes.

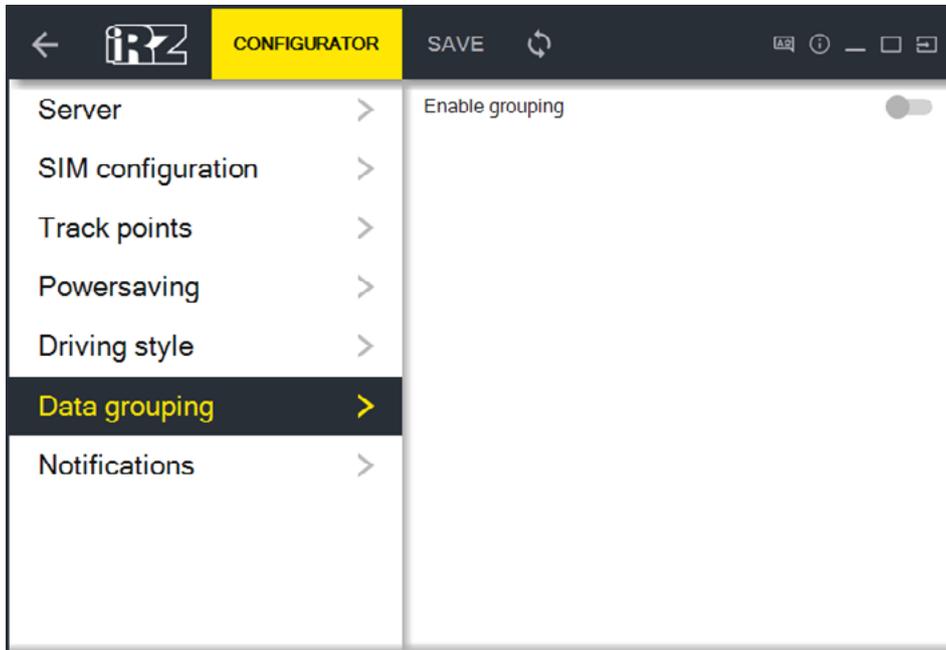
If notifications are enabled and configured, not depending on the situation — whether the vehicle is being evacuated or the movement is of a different character (for example, the opening of a door by the owner of the vehicle), if the movement of the vehicle is registered during the parking, the device will send a notification. That is why it is recommended to enable this option only when the vehicle is in risk of evacuation, to prevent unnecessary SMS notifications of evacuations.

**CAUTION!** In case of too many fake notifications, you need to tune the movement sensor. For this it is recommended to contact the technical support!



### 3.3.7. "Data Grouping" Tab

The **Data Grouping** tab is used for the configuration of data grouping, before their sending to the monitoring server. This function can be useful when working with monitoring systems that support grouping of data.



**Fig. 3.9.** "Data Grouping" tab

To enable the data grouping, move the switch **Enable Grouping** to the right.

**CAUTION!** The use of data grouping increases the internet traffic from the device!



### 3.4. Service configuration of the terminal

In the **Service** tab can be configured different service configuration of the terminal – installation and changing of the password, firmware update, sending of service commands and other.

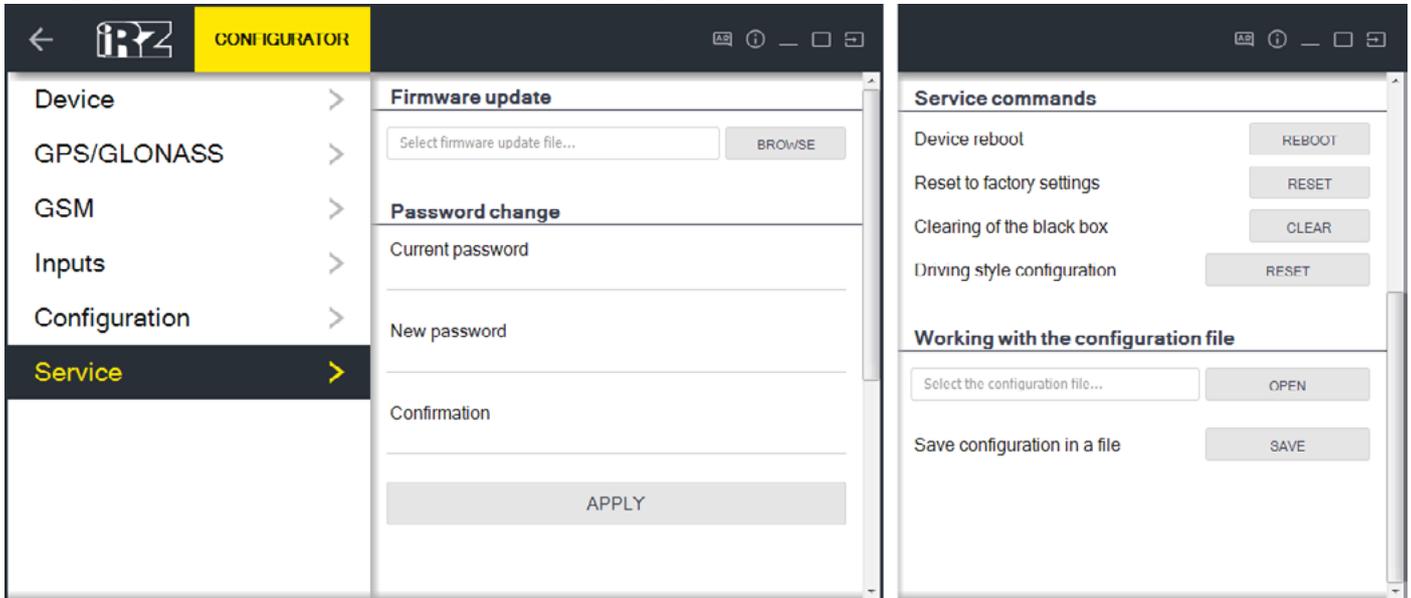


Fig. 3.10. "Service" tab

#### 3.4.1. Firmware Update

To update the firmware:

- 1 Click on the **Browse** button in the **Firmware Update** section;
- 2 Select the file with the update, which you want to install in the device;
- 3 Click on the **Update** button.

**WARNING!** While the firmware of the device is being updated, you must wait until the update finished before unplugging it, otherwise the device might get damaged!

The application checks for updates automatically for the firmware of the connected device. If an update for the device's firmware is available, in the **Device** tab in front of the **Current Version FW** tab will appear the icon  **New Version**, after pressing which you could update the device's firmware.



### 3.4.2. Password Change

To change the password, do the following steps:

- ① Enter the current password of the device in the designated field;
- ② In the next field enter the new password;
- ③ Enter again the new password in the **Confirmation** field;
- ④ Click on **Apply** button.

### 3.4.3. Service Commands

Also in the **Service** tab are available several important service commands:

Parameter	Description
Device reboot	Reboots the device
Reset to factory settings	Resets the settings of the device to defaults
Clearing of the black box	Delete the accumulated data from the black box (internal memory) of the device
Driving style configuration	Resets the settings of the driving style to defaults (leads to the device recalibration)

### 3.4.4. Working with the Configuration File

The settings made in the configurator program can be saved in a separate file, to quickly restore them from this file.

To save the settings:

- ① Click on the **Save** button in front of the **Save Configuration in a File** field;
- ② Name the file and select the saving path;
- ③ Click the **Save** button.

To load the settings:

- ① Click on the **Open** button;
- ② Select the file with the settings, which need to be installed in the device;
- ③ Click on the **Open** button.



## Terms and Abbreviations

Abbreviations	Meaning
Battery	Accumulator battery
GLONASS	Global Navigation Satellite System
LLS	Liquid Level Sensor
NUT	Navigation User Terminal
VEH	Vehicle
GPRS	General Packet Radio Service, a packet-based mobile data service for cellular communications
GPS	Global Navigation Satellite System
GSM	Global System for Mobile Communications
LBS	Location-based service
Li-Pol	Lithium-ion polymer battery
LLS	Liquid Level Sensor
USB	Universal Serial Bus