VEGA LORAWAN CONFIGURATOR

1.0.58 Version

User Manual

Contents

Introduction

This manual is designated for application “Vega LoRaWAN Configurator” developed by Vega-Absolute OOO for work with LoRaWAN® end devices which manufactured by Vega-Absolute OOO.

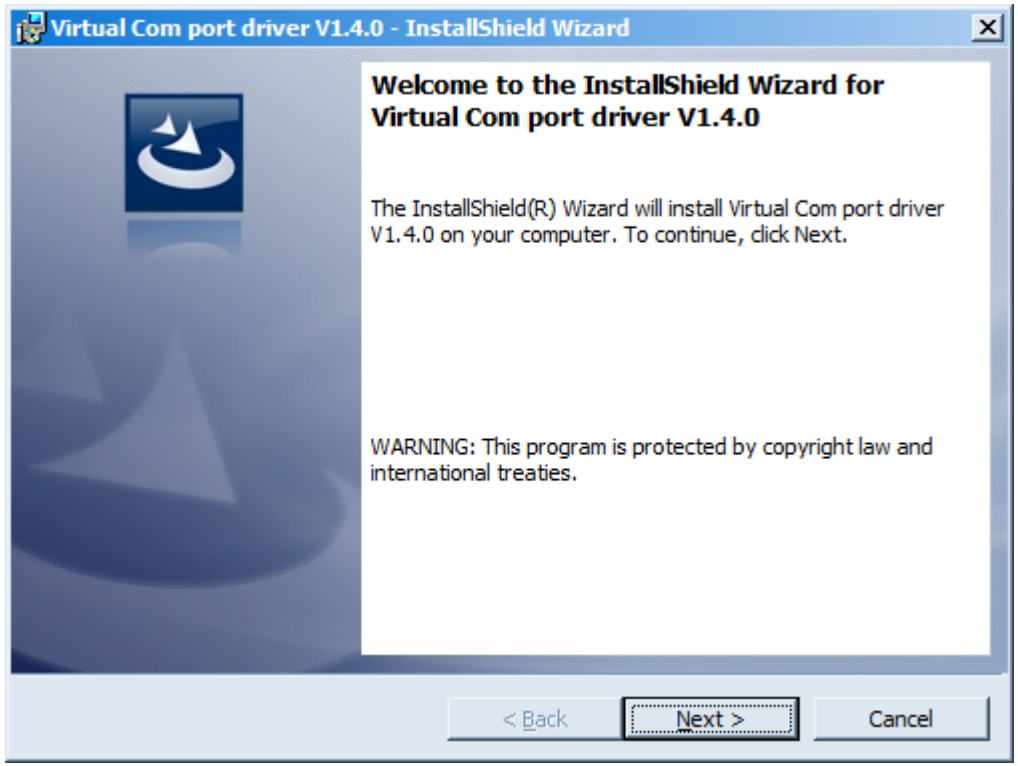
This manual is targeted at users the application and equipment.

Vega-Absolute OOO reserves the right to make changes to the manual related to the improvement of equipment and software, as well as to eliminate typos and inaccuracies, without prior notice.

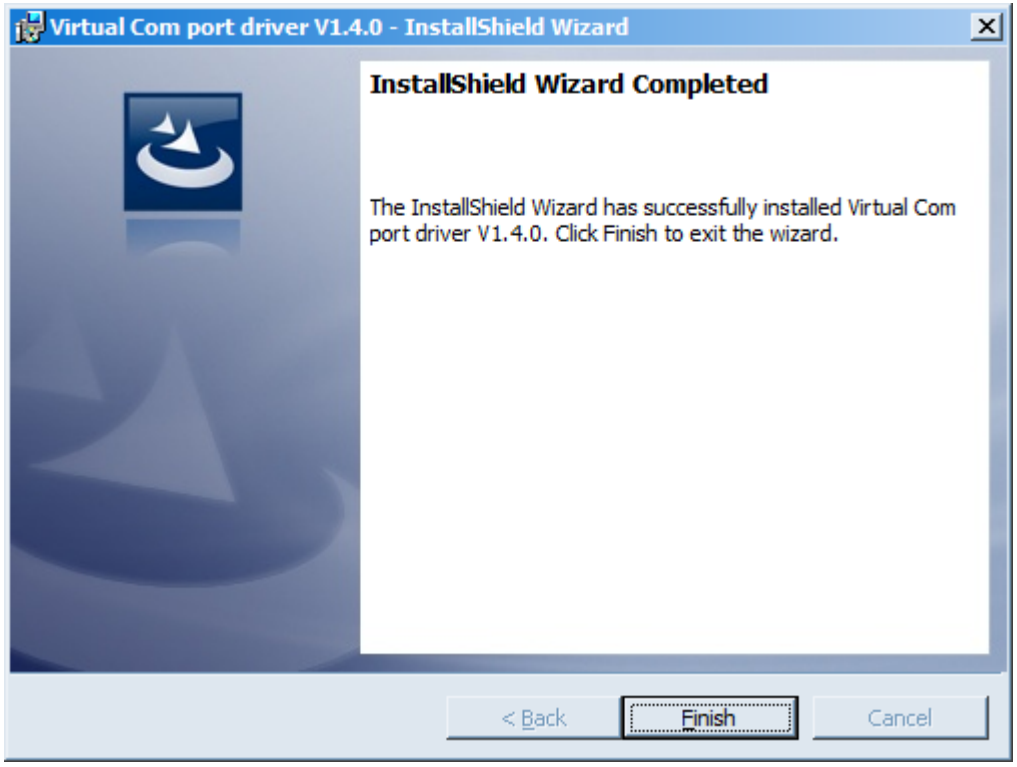
1. USB Connecting

The "Vega LoRaWAN Configurator" application (hereinafter referred to as the configurator) is intended for setting up the device via USB.

Before connecting the device to the computer for the first time, you must install the driver for the COM port **stsw-stm32102**, which can be downloaded from iotvega.com site from any device page. After running the executable file **VCP_V1.4.0_Setup.exe**, the installer window will appear:



In this window, you need to click Next, then Install, and after that the installation will begin. When the installation will have been successfully completed, the following screen appears:



After pressing Finish the driver is ready for operation, - you may connect the device via USB.

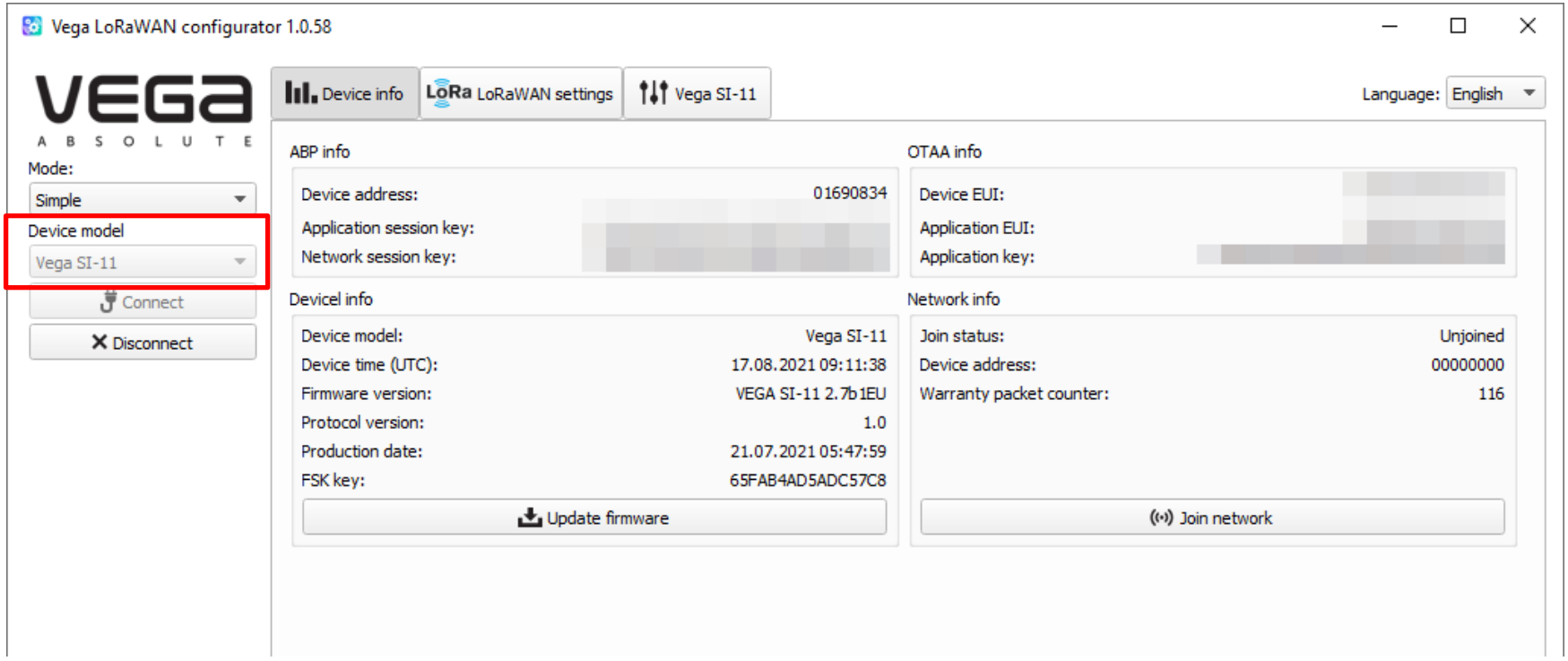
For the connection to the device, perform the following steps:

1. Connect the USB cable to the device.
2. Run "Vega LoRaWAN Configurator" application.

The "Vega LoRaWAN Configurator" application does not require the special installation. When the executabl
launched, the window for working with the application appears

3. Click the "Connect" button in the menu on the left.

The application automatically recognizes the type of device, and the device selection menu becomes inactive.



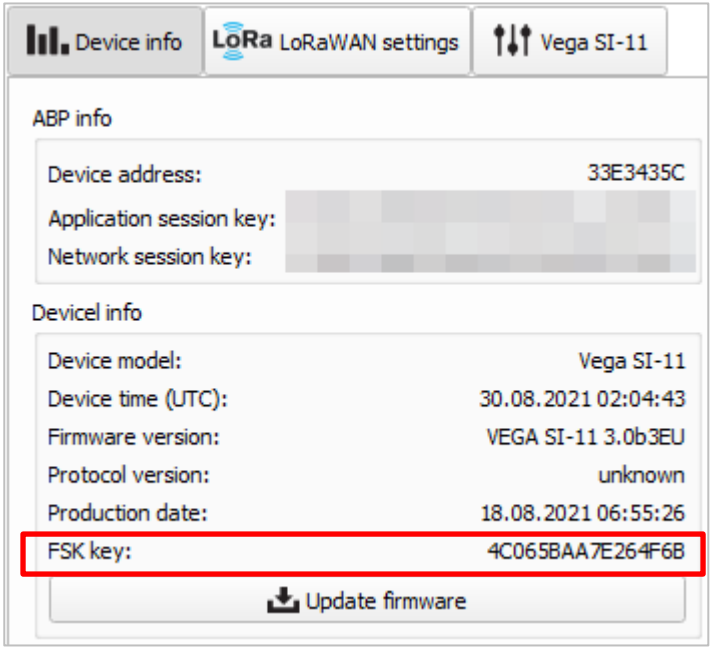
The configurator supports the ability to manually select the COM port of the device, which allows you to connect several end devices via USB at the same time and launch several program windows. Thus, in each window, you can configure and view different devices connected by the different COM ports. To select a COM port, you need to switch to the "Expert" mode.

2. FSK Connecting

FSK modulation allows remote connection and customize LoRaWAN device in a distance about 100 meters in the absence of line of sight.

To connect via FSK you will need:

- Special device – FSK dongle, which connects to PC via USB like any other LoRaWAN device,
- FSK key – is an individual LoRaWAN device key which you are connecting to.

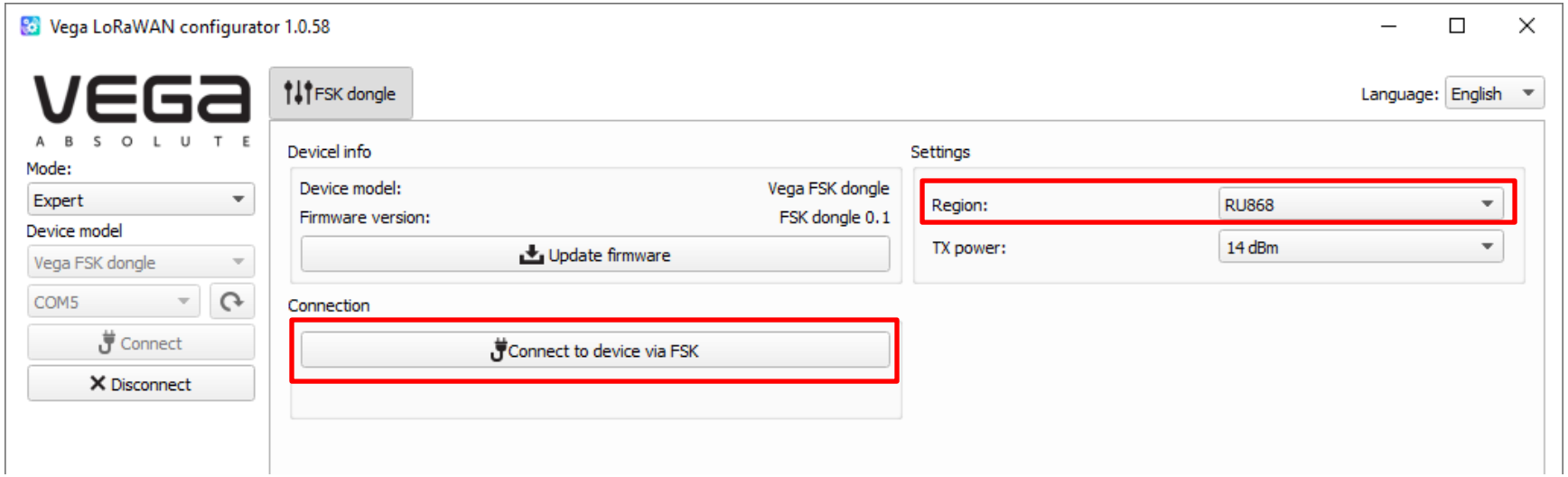


FKS key can be found in QR code on the device label also it can be checked during the connection in configurator's «Information» tab.

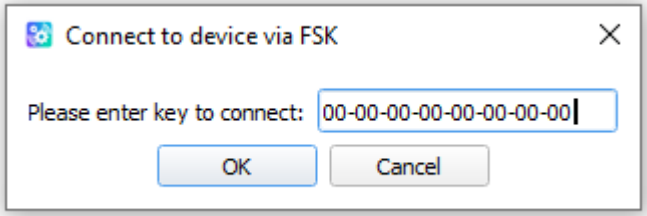
The connection procedure is as follows:

1. To connect FSK dongle to PC via USB
2. Run «Vega LoRaWAN Configurator» application
3. Click «Connect» bottom in left menu

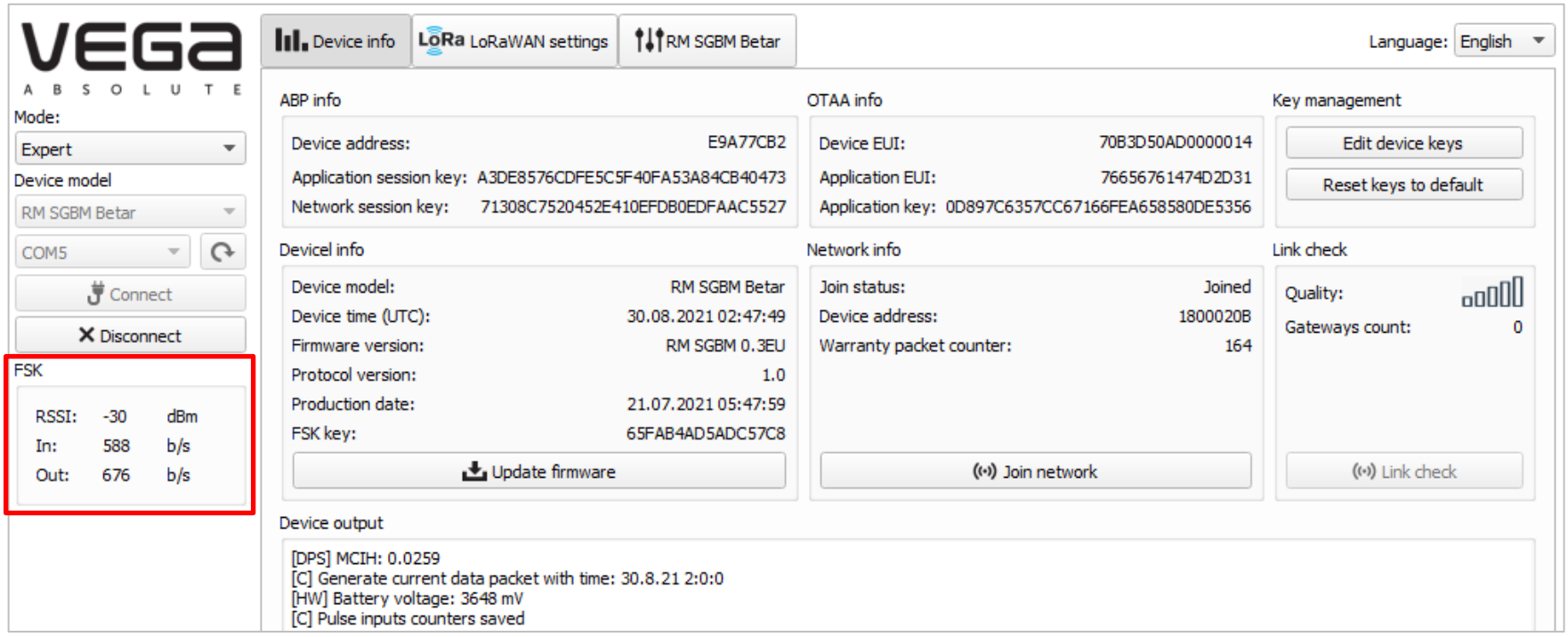
Application will automatically recognize device type and device model menu will be inactive.



4. Click «Get settings» bottom and make sure frequency plan matches to frequency plan of LoRaWAN device you plan connect to via FSK.
5. Click «Connect to device via FSK».
6. Insert FSK key of the device in appears window and click «OK».



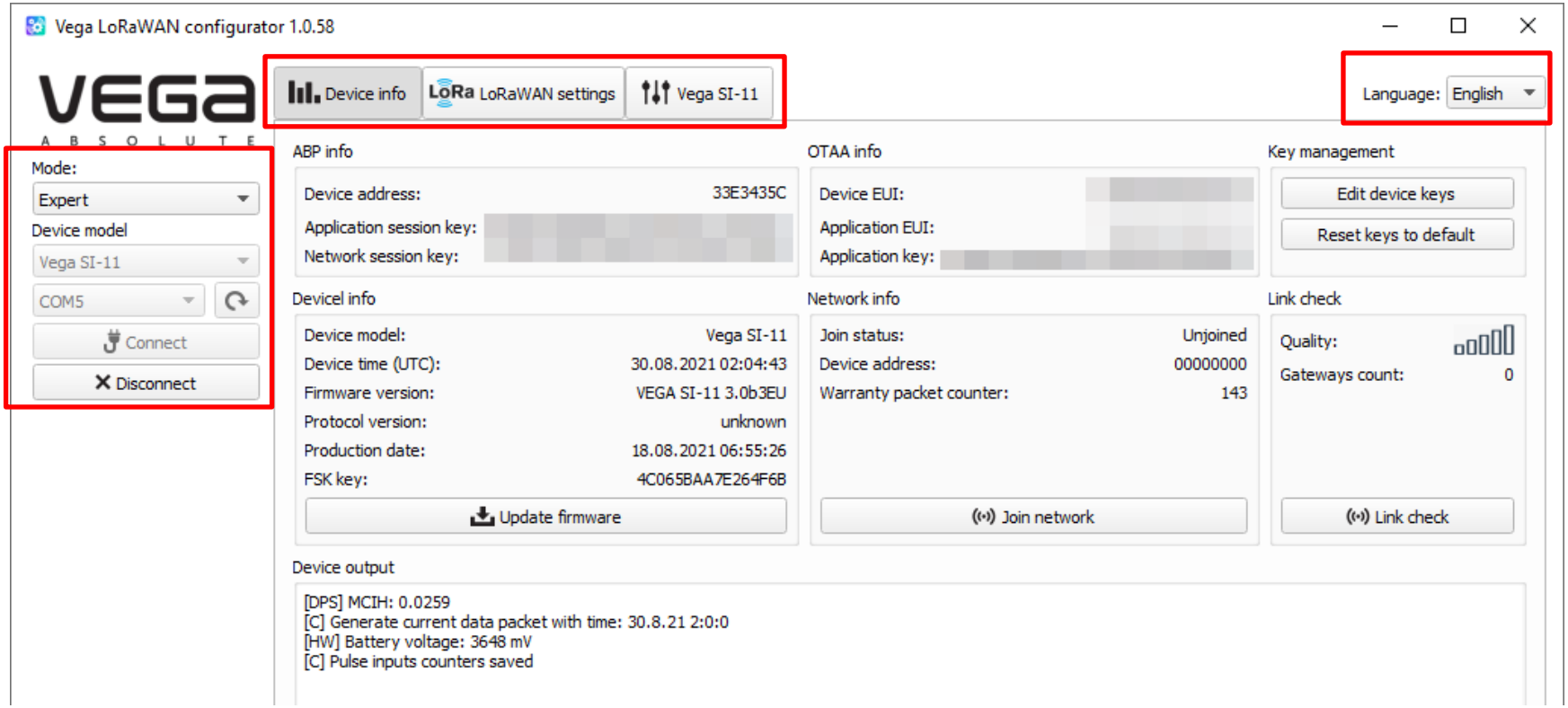
The connection to the device will occur as if it were connected via USB, but a window with FSK communication parameters will appear in the menu on the left. All settings are performed as with USB connection, using the buttons «Get settings» и «Save settings».



3. Application Interface

«Vega LoRaWAN Configurator» application is designed to configure the device via USB.

The configurator has two operation modes – «Simple» и «Expert». In «Simple» mode only basic settings are available, in «Expert» mode basic and advanced settings are available. As an example, the work of the application with the terminal device Vega SI-11 in the «Expert» mode is considered.



The left side menu allows you to switch between the “Simple” and “Expert” operating modes, select a device model, select a COM-port, connect to, or disconnect from a device.

In the upper section there are three tabs: Device info, LoRaWAN® settings and Device settings.

The language selection menu is in the upper right corner.

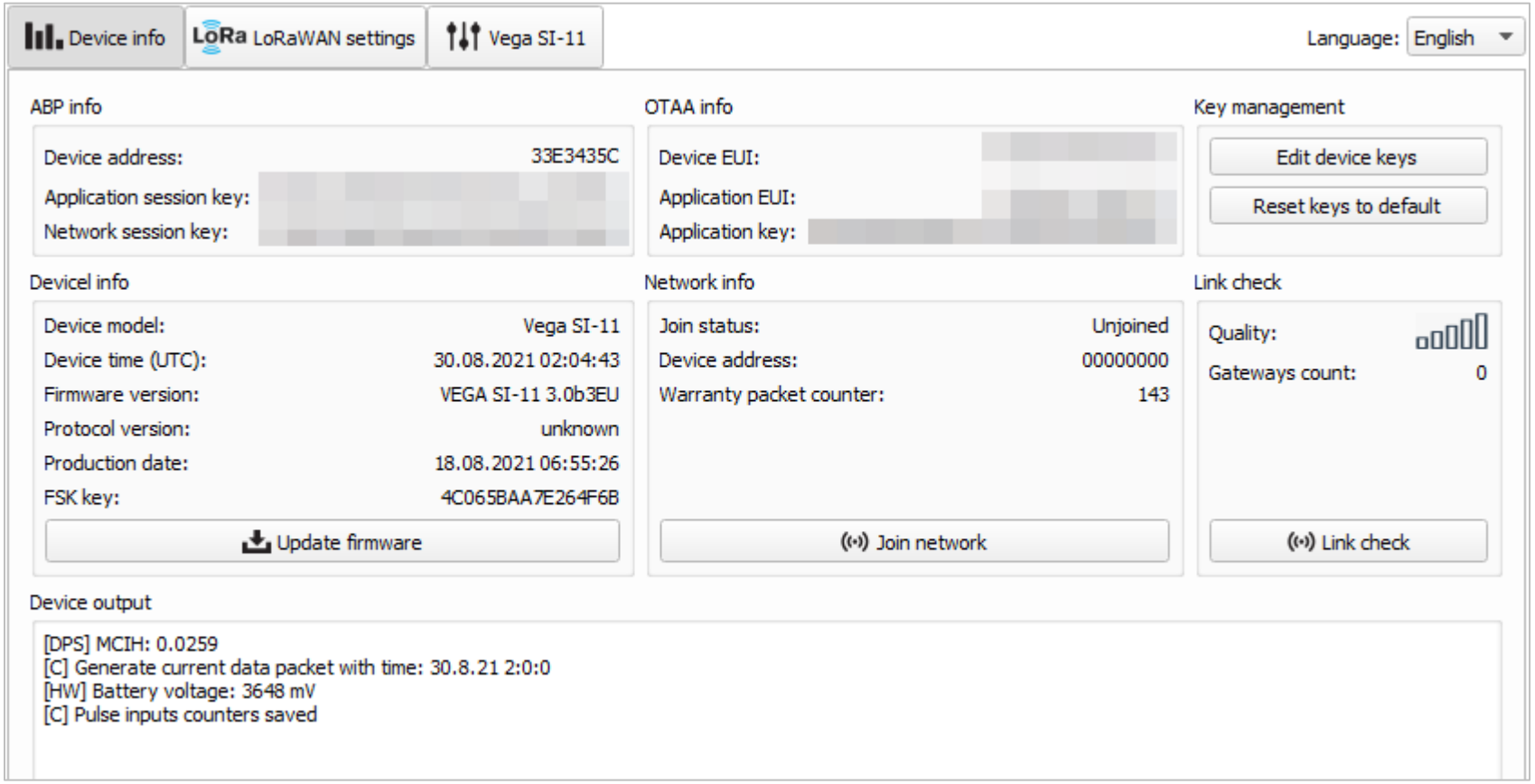
The buttons "Export settings" and "Import settings" allow you to save a set of settings to a file and then load them from a file.

To read the settings from the device, you need to click the "Get settings" button, until this the application will display the default settings or from the last connected device.

After making the necessary changes to the settings, you should click the "Apply settings" button and only then disconnect from the device with the "Disconnect" button.

4. «Device info» Tab

The "Device info" tab displays information about the device, its status, and the data needed to register the device in the LoRaWAN® network.



ABP info - displays the data necessary to register the device in the LoRaWAN® network with ABP method (Activation By Personalization).

OTAA info - the data required to register the device in the LoRaWAN® network with OTAA method (Over The Air Activation) is displayed.

Regional info (not displayed in the "Simple" mode) - shows the frequencies of the JOIN channels and the second receiving window. These frequencies can be changed in the "LoRaWAN Settings" tab when selecting a frequency plan.

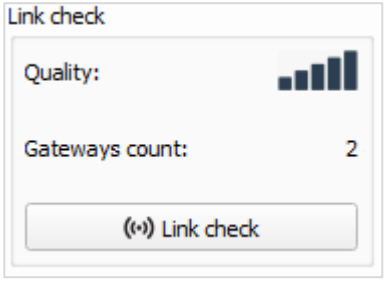
Device info - the configurator reads information about the device model, its firmware and automatically corrects the device's time when connected to it.

Update firmware - allows you to select the firmware file from your computer's hard drive and load it into the device. The device will automatically disconnect from the configurator when the download is complete. The current version of the device firmware can be downloaded from iotvega.com from the page of corresponding product.

Network info - shows whether the device is connected to the LoRaWAN® network and its network address.

Join network button (does not work when FSK connection is used)- launch the LoRaWAN® network connection procedure with the previously selected ABP or OTAA method. If the device is already connected to the network, reconnection procedure will occur.

Link check (not displayed in the "Simple" mode, does not work when FSK connection is used) - when pressed, the device sends a special signal to the LoRaWAN® network, in response to which the network informs it of the number of gateways that received this signal and the signal quality. This button only works when the device is connected to the network.

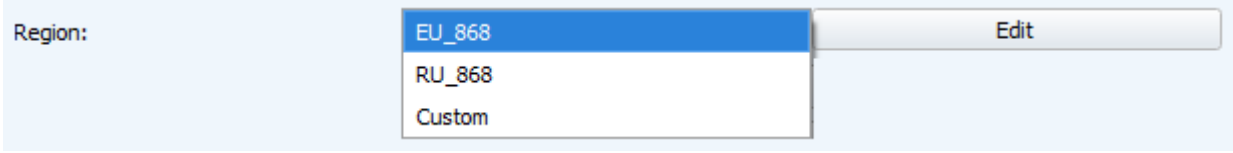


Device output (not displayed in the "Simple" mode) - monitoring the device status, all events in real time are displayed.

5. «LoRaWAN settings» Tab

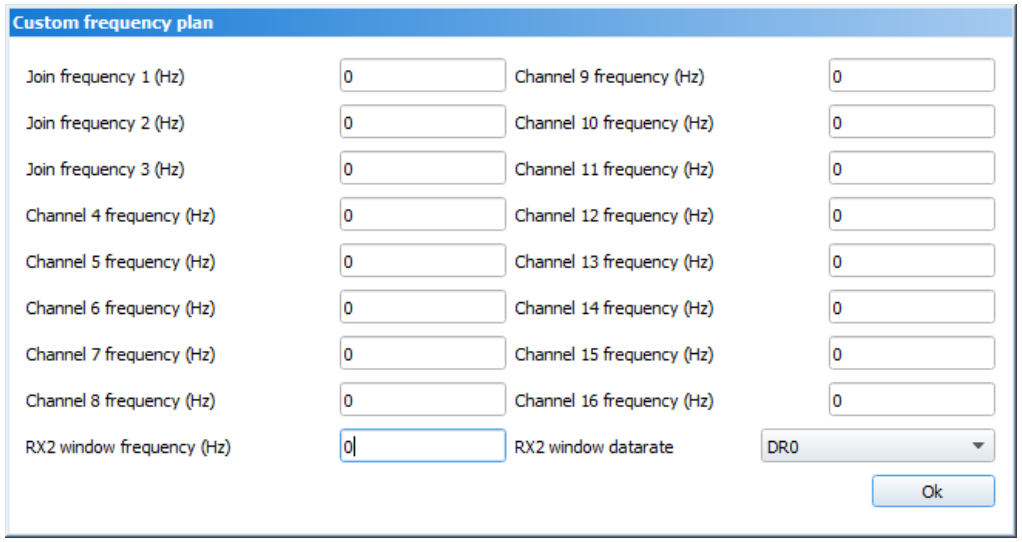
The "LoRaWAN Settings" tab allows you to configure various parameters of the LoRaWAN® network.

Region - allows you to select RU-868, EU-868 or specify a custom frequency plan.



In the device frequency plan, only those channels are active by default, on which sending requests for connection to the network (join channels). The remaining channels (that the device should use) can be transferring by the LoRaWAN® network server during the device activation procedure (only OTAA).

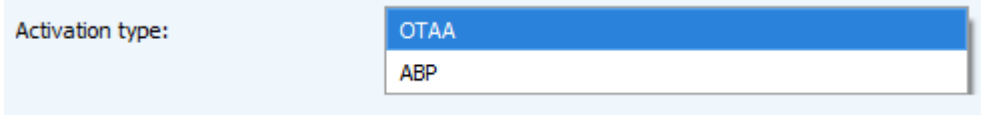
If you select "Custom" in the "Region" field, you must manually specify the frequencies that the device will use. To do this, click the "Edit" button, the channel frequency editing window will appear:



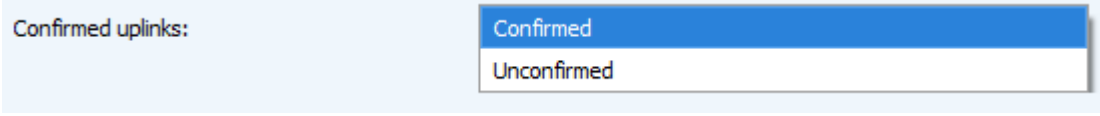
This frequency plan allows you to set up to 16 channels, as well as the frequency and speed of the second receiving window.

The first three channels and the second receiving window parameters are mandatory. Without these custom frequency plan will be considered empty

Activation type – selecting ABP or OTAA device activation method.



Confirmed uplinks – set up confirmation of the packet delivery.



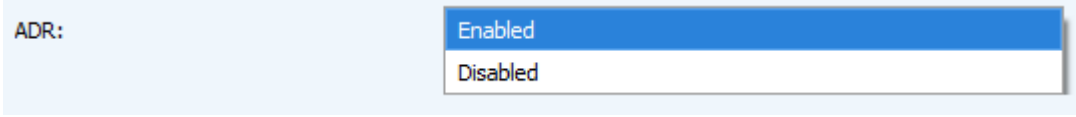
With the "Confirmed uplinks" option turned on, the device will retry sending the packet until it receives the server confirmation, or until the "Uplink number of transmission" is over (see below), then device completes the communication session until the next one according to the schedule. In this case, the device continues to collect data according to the data collection period and store it in memory.

Non-transmitted packets remain in the device memory until the next communication session.

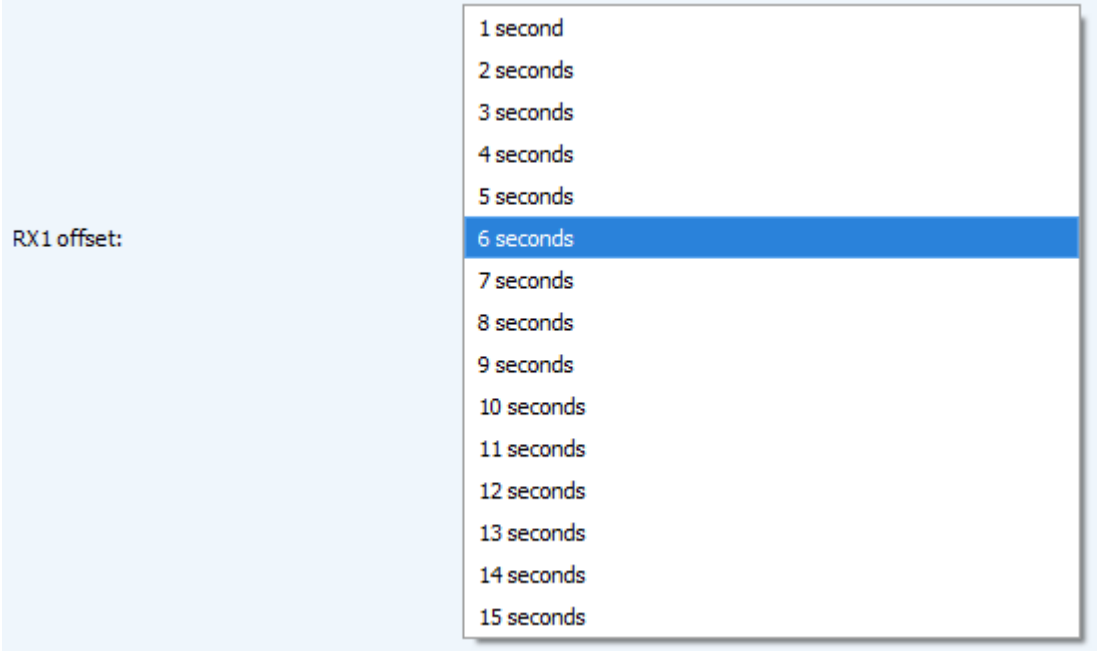
When the device black box overflows, the oldest packages will be overwritten with new ones

With the "Confirmed uplinks" option turned off, the device just sends all accumulated packets to the network in order from the earliest to the latest. There are no checks of package delivery in this mode. After communication session there are no non-transmitted messages in the device memory.

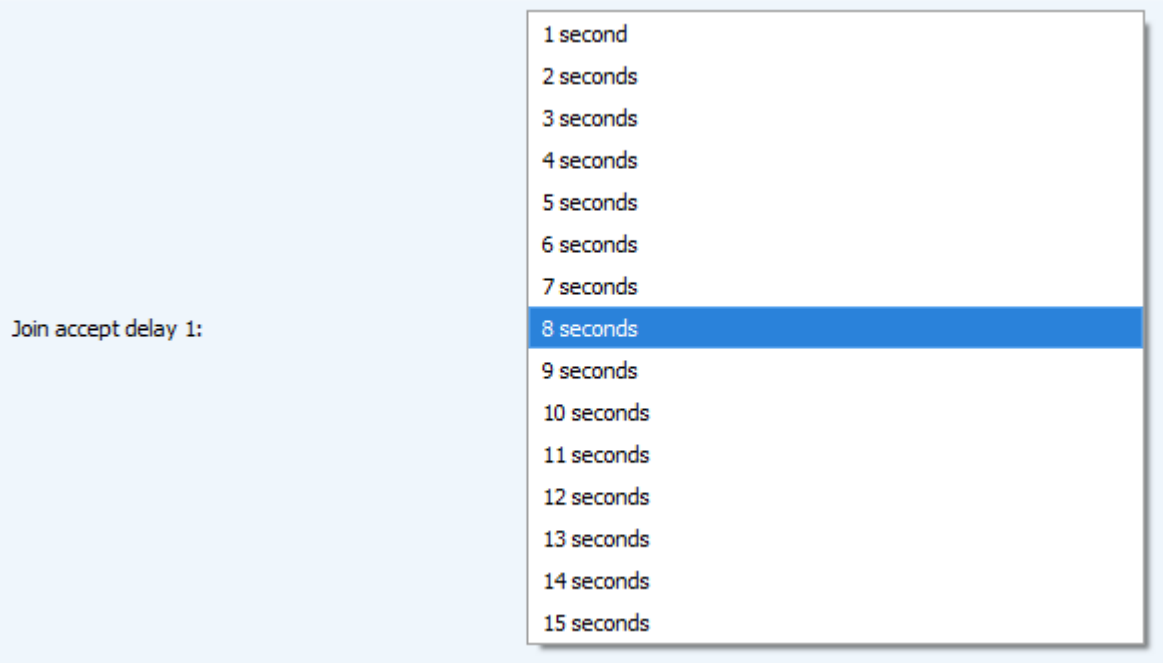
ADR – this option activates the Adaptive Data Rate algorithm for automatic control of the data transfer rate from the LoRaWAN® network server side. The higher the quality of the signal received by the network, the higher the speed will be installed on the device. This option is recommended only on permanently installed devices.



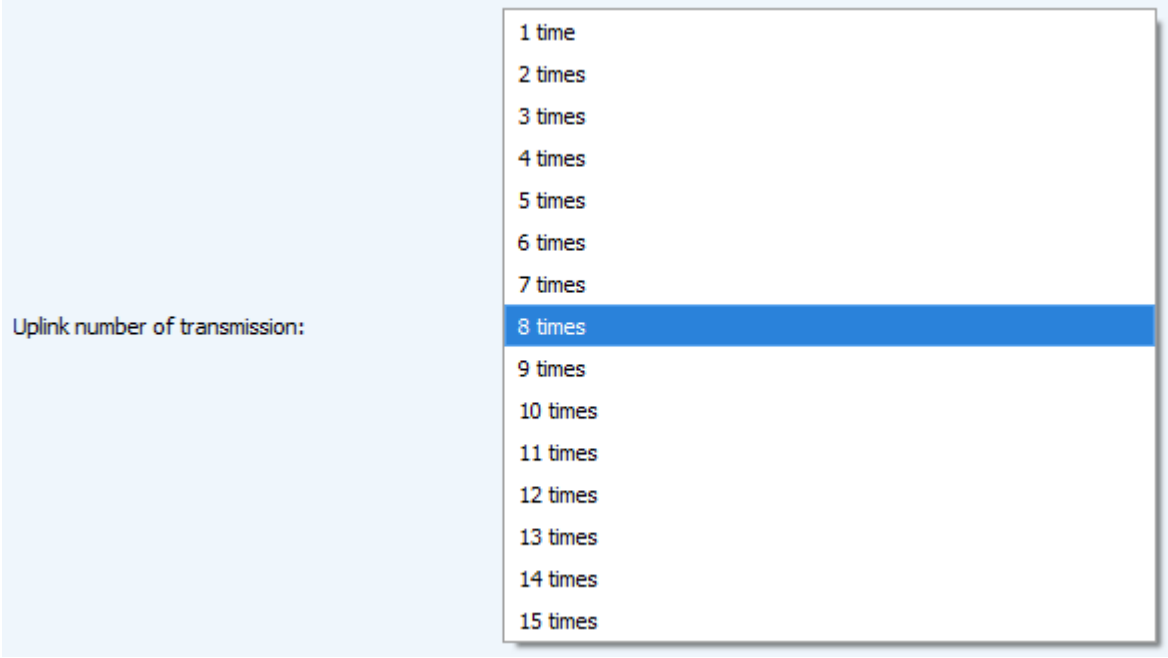
RX1 offset (not displayed in the "Simple" mode) – specifies the time between end of packet transmission and first receiving window opening. The second receiving window always opens after 1 second after the first.



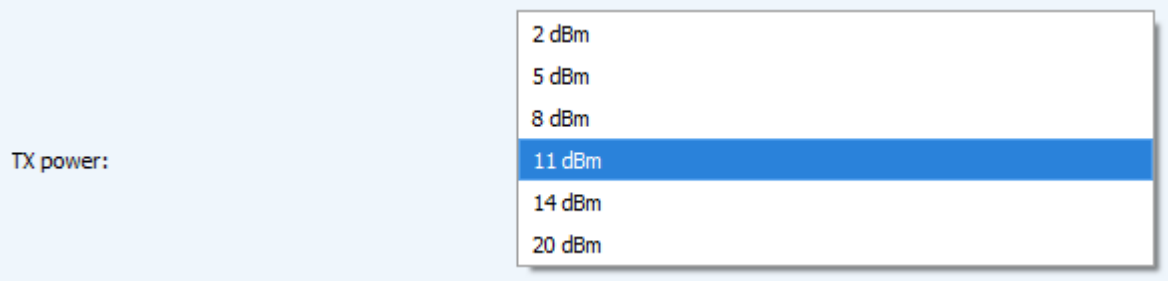
Join accept delay (not displayed in the "Simple" mode) – sets the time that the device will open the first receiving window to receive confirmation for the join request from the LoRaWAN® network while OTAA mode active. The second window always opens after 1 second after the first.



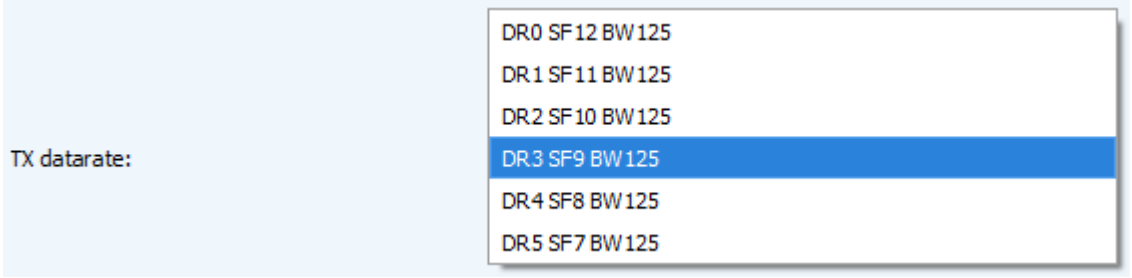
Uplink number of transmission (not displayed in the "Simple" mode) – if the "Confirmed uplinks" function is disabled, the device will simply send each packet as many times as specified in this option. If "Confirmed uplinks" is enabled, the device will send packets until it receives a confirmation or until it sends as many packets as specified in this option.



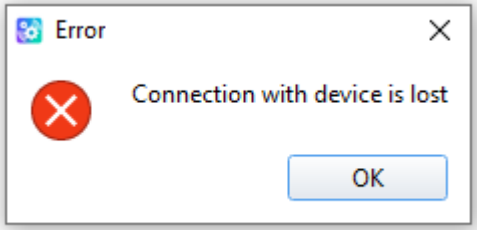
TX power (not displayed in the "Simple" mode) – the device RF transmitter power is adjusted to this value when sending packets to the LoRaWAN® network. This option can be changed by the network server.



TX datarate (not displayed in the "Simple" mode) – the device transmission data rate at which it will transfer packets to the LoRaWAN® network. This speed can be changed by the network server if the ADR algorithm is enabled.


TX datarate:
DR0 SF12 BW125
DR1 SF11 BW125
DR2 SF10 BW125
DR3 SF9 BW125
DR4 SF8 BW125
DR5 SF7 BW125

6. System messages and errors

ERROR	POSSIBLE REASON	USER ACTIONS
	Incorrect COM port selected when connecting in «Expert» mode	Try to choose another COM port or reconnect in «Simple» mode. In «Simple» mode configurator looks over all COM ports, till finds the one it can connect.

DOCUMENT INFORMATION	
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Revision and date	03 of 17.08.2021

Revision of manual	Firmware version	Date	Name	Comments
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02	1.0.55	24.06.2021	KEV	Updating because of new application version has been released
03	1.0.58	17.08.2021	KEV	Update due to the application new version release, description of the new functionality (FSK)

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