



# VEGA NB-IOT CONFIGURATOR

1.6.1 Version

## User Manual

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# Introduction

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This manual is designated for application “Vega NB-IoT Configurator” developed by Vega-Absolute OOO for work with NB-IoT 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.

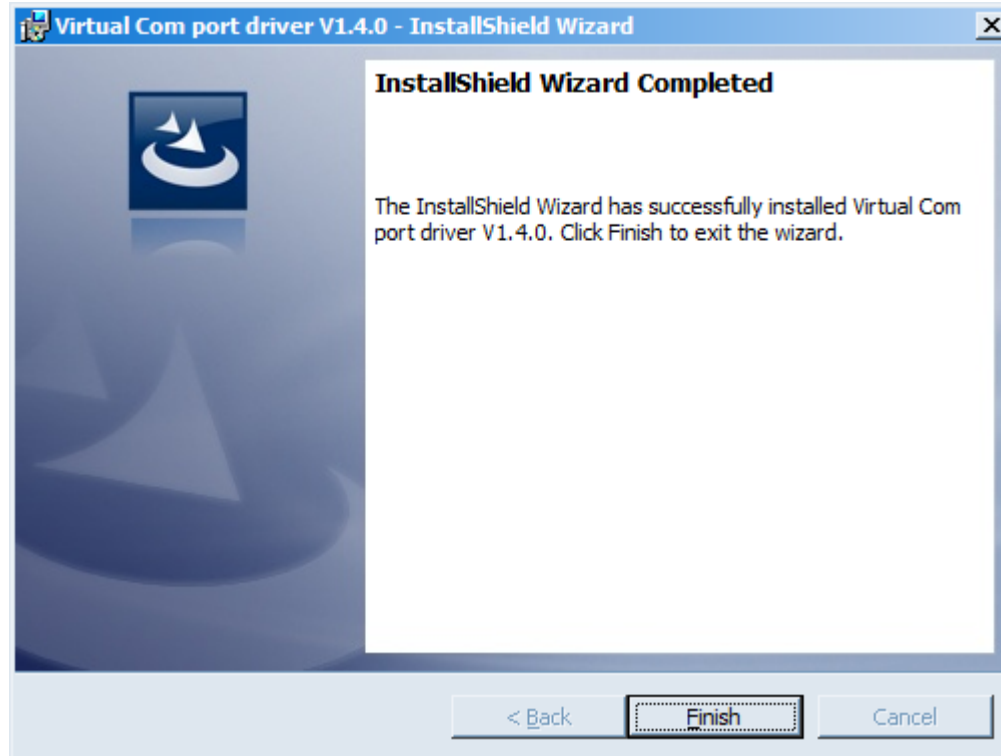
# 1. USB Connecting

The "Vega NB-IoT 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 stw-stm32102**, which can be downloaded from [iotvega.com](http://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:

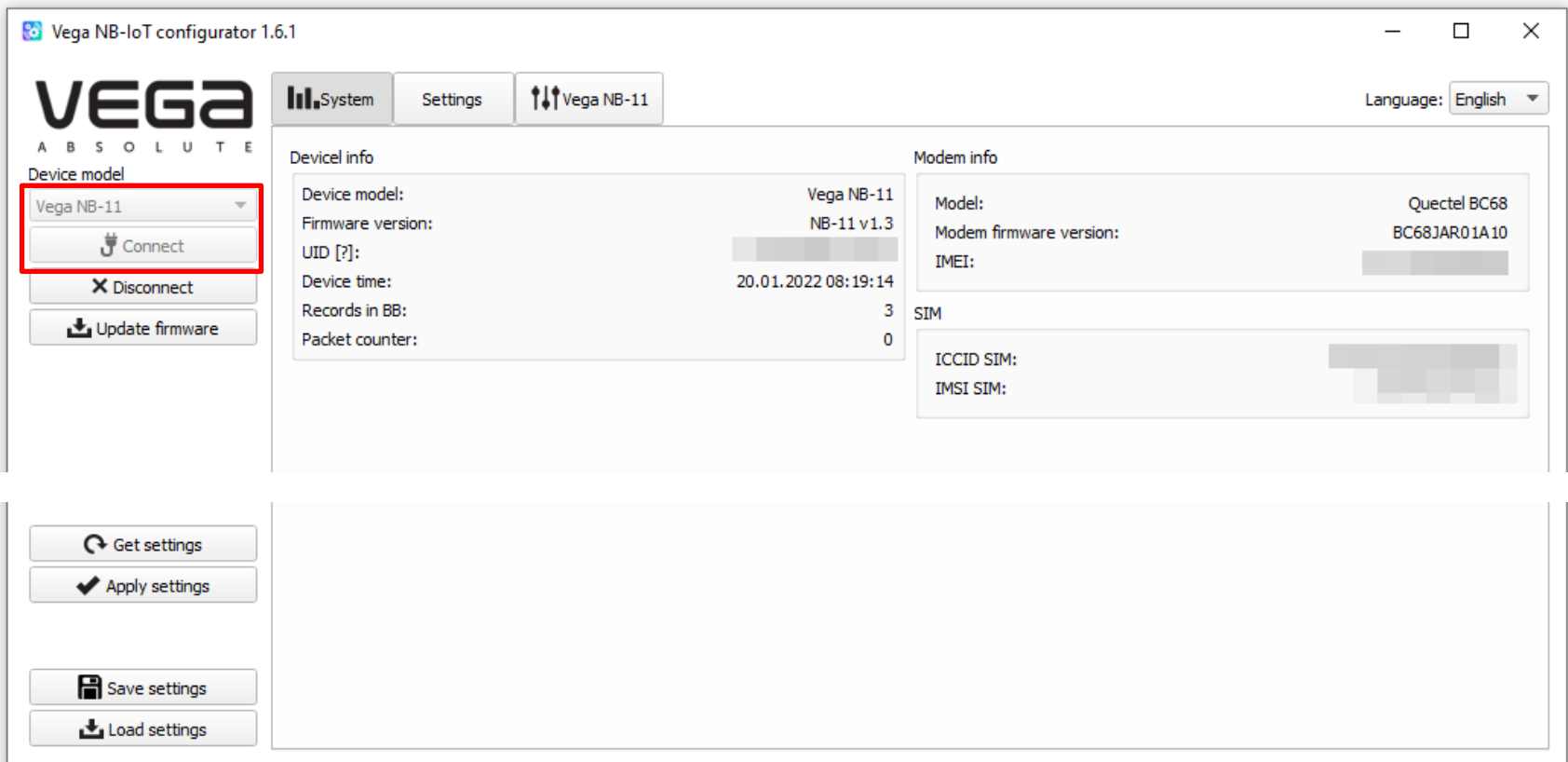
1. Connect the USB cable to the device.
2. Run "Vega NB-IoT Configurator" application.



The "Vega NB-IoT Configurator" application does not require the special installation. When the executable file is launched, the window for working with the application appears

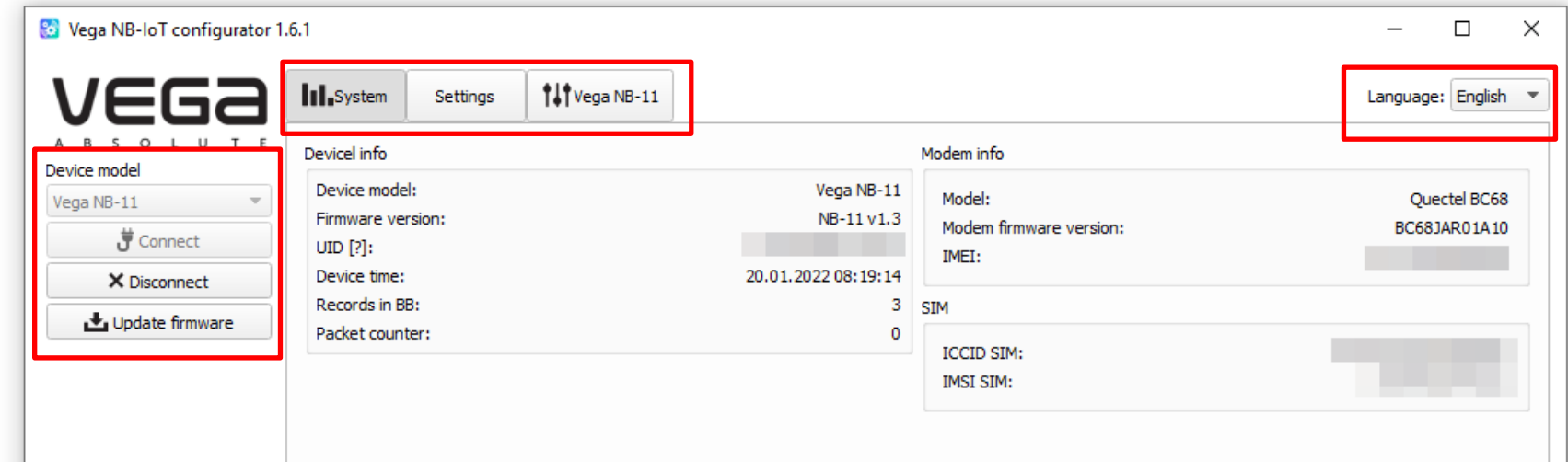
3. Click the "Connect" button in the menu on the left.

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



## 2. Application Interface

«Vega NB-IoT Configurator» application is designed to configure the device via USB.



The left side menu allows you to select a device model, connect to, or disconnect from a device and update firmware also.

**Button "Update Firmware"** - allows you to select the firmware file from the hard disk of the computer and load it into the device. Upon completion of the download, the device will disconnect from the configurator automatically. The current firmware version of the device can be downloaded from the website [iotvega.com](http://iotvega.com) on the page of the corresponding product

In the upper section there are three tabs: System, NB-IoT Settings and device state.

The language selection menu is in the upper right corner.



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.

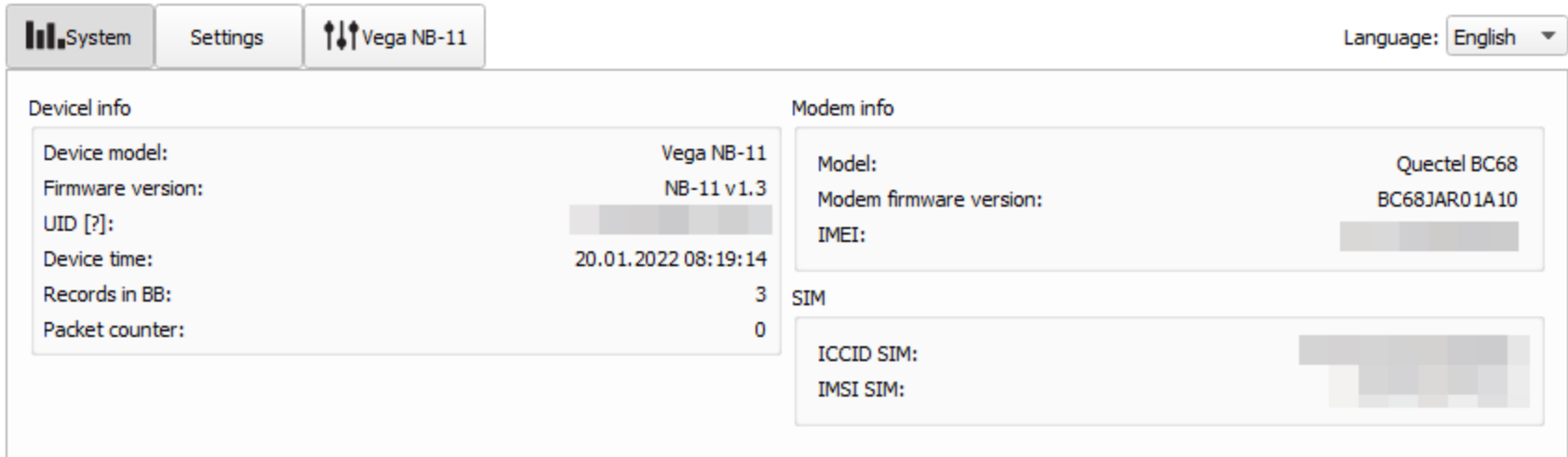
After making the necessary changes to the settings, you should click the "Apply settings" button and only then disconnect from the device with the "Disconnect" button.

The buttons "Save settings" and "Load settings" allow you to save a set of settings to a file and then load them from the file.



## 3. «System» Tab

The "Device info" tab displays information about the device, modem, and SIM.



The screenshot shows the 'System' tab interface. At the top, there are three tabs: 'System' (selected), 'Settings', and 'Vega NB-11'. A language dropdown menu is set to 'English'. The main content area is divided into three sections: 'Device info', 'Modem info', and 'SIM'. The 'Device info' section displays: Device model: Vega NB-11, Firmware version: NB-11 v1.3, UID [?]: [redacted], Device time: 20.01.2022 08:19:14, Records in BB: 3, and Packet counter: 0. The 'Modem info' section displays: Model: Quectel BC68, Modem firmware version: BC68JAR01A10, and IMEI: [redacted]. The 'SIM' section displays: ICCID SIM: [redacted] and IMSI SIM: [redacted].

**Device info** - the configurator reads information about the device model, its firmware and automatically corrects the device's time when connected to it. In that block you can find out the number of records in the black box and the number of packets sent by the device.

**Modem info** – in that block information about LTE-modem is displayed.

**SIM** – identifiers of the SIM card (SIM chip).

## 4. «Settings» Tab

The " Settings" tab allows you to configure various parameters of the NB-IoT network and device operation.

System
Settings
Vega NB-11

Language: English

### Connection settings

Used frequency bands:  Band 1  Band 3  Band 5  
 Band 8  Band 20  Band 28

Network registration timeout, minutes: 5

Time zone [?]: UTC+00:00

APN: up to 39 characters

Username: up to 29 characters

Password: up to 29 characters

IP protocol: IPv4

### Server settings

Server address [?]: 89.189.183.233

Server port: 1884

Topic name: NB-11

Client name: NB-11

QoS [?]: 0  retain [?]

### Authentication

Username: up to 50 characters

Password: up to 50 characters 👁

### Guard settings

Guard input 1 send message on: short

Guard input 2 send message on: short

Hall sensor send message: On

### Additional

Send network statistics [?]

### Pulse filtering settings

	Input 1	Input 2	Input 3	Input 4
Minimum pulse duration, ms:	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>
Minimum pause duration, ms:	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>	<span style="border: 1px solid #ccc; padding: 2px 5px;">50</span>

**Connection settings** – a group of parameters set up the data collection and transmitting.

Used frequency bands for NB-IoT devices connection can be different for different cellular operators. You can ask the operator about used band or select all the bands.

Network registration timeout – it is a period after which the modem will switch to the “Sleep” mode when registration waiting. For battery economy it is better to set minimal period for which the device can registered in the network in the specific covering conditions.

Time zone set up for the data collection period which is equal to the device time (UTC) plus time zone. Transmission period is always use UTC time regardless of the time zone setting.

Cellular operator can give you APN or set it by default if the field is empty.

By default, packets sent with confirmation and this parameter cannot be changed. The number of retries is 5.

**Guard inputs settings** – allows to set up mode of security inputs triggering – when security circuit is short, open or in a both cases.

**Server settings** – settings of connection with MQTT broker.

In **additional** you can receive network statistics. By default, for traffic economy there are no information about connection quality, base station number and other in the packet.

**Pulse filtering settings** – in this part you can set minimum values of the pulse and pause duration apparently for each of four pulse inputs. Value can be set in milliseconds and can be equal from 2 to 65535 ms.

Minimum pulse duration - the value of the minimum pulse duration in ms, at which the pulse will be recorded by the modem, pulses with a duration less than the specified one will be regarded as bounce and will not be recorded by the modem.

Minimum pause duration - the value of the minimum pause duration in ms, after which the next pulse is let to be fixed.

Transmission schedule

Type:

Transmission hour:   Random communication time during the day

1  2  3  4  5  6  7  8  9  10  11

12  13  14  15  16  17  18  19  20  21  22

23  24  25  26  27  28  29  30  31  last day of month

Елена Козик (e.kozik@vegaabsolute.onmicrosoft.com): вход выполнен

If attempt is unsuccessful, repeat:  times with period of  minutes

Collection schedule

Type:

00:00  01:00  02:00  03:00  04:00  05:00  06:00  07:00  08:00  09:00  10:00  11:00

12:00  13:00  14:00  15:00  16:00  17:00  18:00  19:00  20:00  21:00  22:00  23:00

**Transmission schedule** – in this part the data transmission schedule is set. While weekly or monthly schedule is choosing you can use option “Random communication time during the day” or set the hour for transmitting data in the field “Transmission hour”.

**Collection schedule** – in this part the data collection schedule is set. Data collection is made in the time by the set schedule.

Both schedules are available in four types:

**Hourly** – you can set any point at time with step of 5 minutes. For example, if you choose 10 and 35 then the device will act twice an hour at 00:10 and 00:35, then at 01:10 and 01:35, and so on.

**Daily** – you can set any point at time with step of hour.

**Monthly** – you can set the dates of month for action and set the time accurate to the hour.

**Weekly** – you can set days of week and the time accurate to the hour.

Option of repeating failed sending is available for all the types of the schedule. You can set the number and period of repeats.

## 4. Tab with device state


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Tab with device state contains detail information about the network parameters, device input/output settings, connected device state, black box settings and device output.

Consider the fields common to all devices.

**Network** – displays the current parameters of the connection and allows to control it. Buttons in this block have logic like INIT button on the board.

Network

Connection state:	<span style="color: green;">●</span> Registered (LTE Cat.NB1)	Signal quality:	
Connection time:	00:00:31	MCC:	250
SQ:	12	MNC:	99
RSRQ, dB:	-10.8	TAC:	9C8D
RSRP, dB:	-94.2	CID:	085479F9
RSSI, dB:	-88.1	Band:	3
SNR:	153	Local IP:	10.105.10.70

Connection state could be one of the listed:

No network - the device cannot find base station.

Searching... - the device is searching for a signal.

Registered - the device has successfully registered on the network.

Sleep mode - the device is in power-saving mode, not online.

SQ parameter – Signal Quality – may be from 0 to 31 while connection is on, and 99 value means the connection absent. Table of values is shown below.

Value in program	Signal Quality, dBm
0	-113 and lower
1	-111
2...30	-109...-53
31	-51 and more
99	No connection
100	-116 and lower
101	-115
102...190	-114...-26
191	-25 and more
199	No connection

**Inputs/outputs** – displays current parameters of the device and allows to reset pulse counters on the inputs.

Inputs/outputs

Input 1 pulse count:	15	<input type="button" value="Reset"/>
Input 2 pulse count:	0	<input type="button" value="Reset"/>
Input 3 pulse count:	0	<input type="button" value="Reset"/>
Input 4 pulse count:	0	<input type="button" value="Reset"/>
Temperature:	27 °C	
Hall sensor:	0	
Battery level [?]:	99 %	
Battery:	3673 mV	

**Black box** – there are buttons for black box management and the number of records is displayed. The button “Compose” initiates data collection from all the inputs and this packet is placed in the black box until the next communication session. The button “Clear” deletes all records from the black box.

Black box

Records count: 3

Device output – displays device’s events in real time.



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