



SMOKE SENSOR

SMART-SS0102

User Manual



Document Information	
Title	Smoke sensor Smart-SS0102
Document type	Manual – Translation from Russian
Document number	V05-SS0102-01
Revision and date	04 – 03 June 2021

This document applies to the following products:

Product name	Type number
Vega Smart	Vega Smart-SS0102

Revision History

Revision	Date	Name	Comments
01	08.06.2020	KEV	Document creation date
02	12.12.2020	KEV	We add recommendation for using
03	16.04.2021	KEV	Functional is updated, operation modes are changed, indication is updated, communication protocol is changed
04	03.06.2021	KEV	Typos correction

CONTENTS

INTRODUCTION	4
1 DESCRIPTION AND OPERATION	5
Device description	5
OPERATION algorithm	5
Functional	6
Marking	6
2 SPECIFICATION	7
3 OPERATION	8
Indication	8
Button	10
Initial startup	11
Mounting recommendations	13
Connecting devices in the line of solidarity work	14
Connecting via USB	16
4 VEGA LORAWAN CONFIGURATOR	18
Interface of the application	18
Connection to the device	20
"Device info" tab	21
"LoRaWAN settings" tab	23
"Smart-SS0102" tab	27
5 COMMUNICATION PROTOCOL	29
SMART-SS0102 transmits the following types of packets	29
SMART-SS0102 receives the following types of packets	31
6 STORAGE AND TRANSPORTATION REQUIREMENTS	33
7 CONTENT OF THE PACKAGE	34
8 WARRANTY	35

INTRODUCTION

This manual is designated for Vega Smart-SS0102 Smoke sensor (hereinafter – device, sensor) manufactured by Vega-Absolute OOO and provides information on powering and activation procedure, control commands and functions of the device.

This manual is targeted at specialists familiar with installation work fundamentals for electronic and electrical equipment.



To provide the stable radio between the gateway and the end device it is recommend avoiding the device installation in the places which are barriers for the radio signal getting through like a reinforced floors and walls, a basement, an underground facilities and wells, a metal case etc. The necessary stage for the network deploying including a big quantity of end devices is a radio planning work with nature experiments

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.



This equipment cannot be used to create and operate fire-fighting systems

1 DESCRIPTION AND OPERATION

DEVICE DESCRIPTION

Vega Smart-SS0102 smoke sensor is designed to detect fire in a protected area, accompanied by the emission of smoke. The sensor periodically (every ten seconds) is analyzing the environment and switch on an emergency warning via a light and sound indication when a smoke is detected. In addition, the sensor sends an alarm signal to the LoRaWAN network.

Vega Smart-SS0102 can be used to protect rooms, buildings, and structures from fire and/or smoke.

The sensor is powered by two CR123A batteries each with 1400 mAh capacity.

The internal clock is set automatically when device connected to the "Vega LoRaWAN Configurator" via USB and may be corrected through LoRaWAN.

OPERATION ALGORITHM

The device has the next operation modes.

"Standby" mode is a main mode of the device operation. When the device switches to "Standby" mode it stands to guard after 60 seconds and starts poll the smoke sensor every 10 seconds. If the calibration value of triggering threshold is exceeded, the device makes two more measurements every 2 seconds to confirm the fact of triggering. If all three measurements show that triggering threshold has been exceeded, the detector switches to the "Fire" mode. If the measurements after 2 seconds are below triggering threshold, the device does not register an alarm and continues to work in "Standby" mode.

"Fire" mode is an alarm mode. The device sends the alarm packet to LoRaWAN network, switches on sound and light indication corresponding to alarm mode and stops smoke sensor measurements but still forms packets and transmits data according to the schedule. You can switch off the alarm only through device button pressing and the device will switch to the "Standby" mode.

"Test" mode is for checking device notification system without emission of smoke. The behavior of the detector in "Test" mode is fully consistent with behavior in the "Fire" mode. Transition to the "Test" mode is carried out by pressing button for 3 seconds. Transition back to "Standby" mode is carried out by short-term pressing of the button.

While operating in any mode the device forms data packet with configurable data collection period. Packet is formed at 00:00 if the collection period is 24 hours; at 00:00 and at 12:00 if the period is 12 hours etc. All packets are stored in the device memory until the next communication session. When beginning of communication session, the device starts sending packets from the earliest packet.

Transmission period can be equal to 5, 15, 30 minutes, 1, 6, 12 and 24 hours.

The time of data transmitting cannot be specified, it is defined in random way for every device in chosen period of transmission from the moment of connection to the network. For example, transmission period is 30 minutes, and device was started at 16:40 by the internal device clock. In random way the device calculate data transmitting time and set it at 16:41 in the half-hour period from 16:40 to 17:10. Thus, packets from this device will transmit at 16:41, at 17:11, at 17:41, at 18:11 and so on every 30 minutes by the internal device clock.

Time zone is specified for collection period setting which is equal to device time (UTC) plus time zone. Data transmission is always by UTC regardless of specified time zone.

FUNCTIONAL

Vega Smart-SS0102 smoke sensor is class A device (LoRaWAN classification) and has the following features:

- determination of smoke particles concentration in the room (smoke detector)
- sound (siren) and light (LED) indication of smoke emission
- detecting of the removing sensor from the mounting platform (removal sensor)
- ADR support (Adaptive Data Rate)
- sending of confirmed packets (configurable)
- extra communication in case of alarm event – smoke sensor, removal sensor
- temperature measurement
- battery charge measurement (%)
- notification in case of low battery charge (one of it or both)

MARKING

Device marked with sticker that contain the next information:

- Device model;
- DevEUI;
- Month and year of manufacture;
- QR-code containing DevEUI for automatized count.

Sticker located in three places – on device housing, in factory certificate and on the packing box.

Besides, there is an additional sticker located on the packing box and contains:

- Information about firmware version;
- QR-code containing DevEUI and keys for device registration in network via OTAA method.

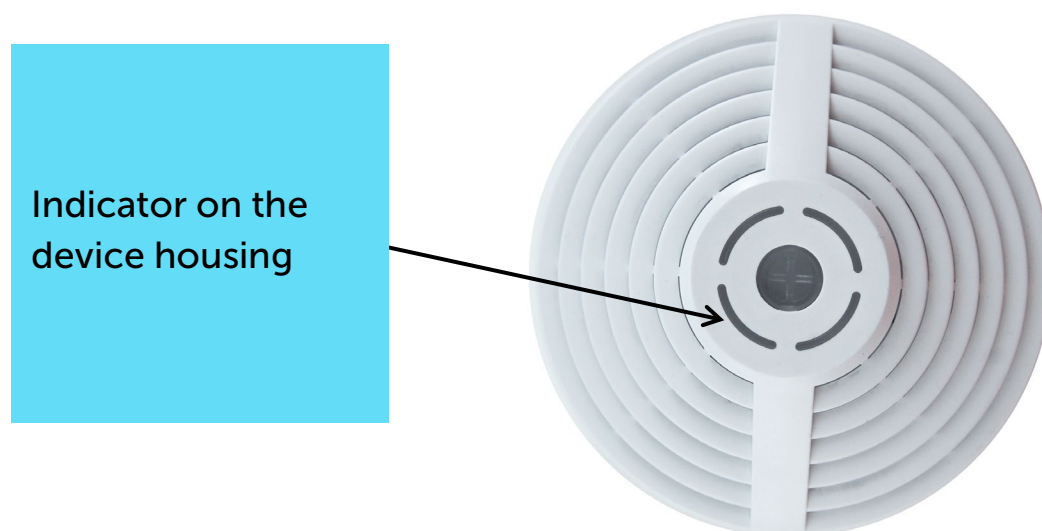
2 SPECIFICATION

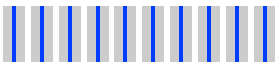



Main	
Sensitivity	0,05...0,2 dB/m
The volume of the sound signal while a distance from the detector is 1 m	no less 85 dB
Operating temperatures	-10...+55 °C
Relative air humidity at a temperature of +40 °C	no more 93 %
Maximum illumination level	12000 lx
USB-port	micro-USB, type B
Built-in temperature sensor	yes
Mean time between failures	no less 60000 h
LoRaWAN	
LoRaWAN class	A
Quantity of LoRa channels	16
Frequency plan	RU868, EU868
Activation type	ABP or OTAA
Communication period	5, 15, 30 minutes, 1, 6, 12 or 24 hours
Memory amount for storing packets	200 packets
Antenna	internal
Sensitivity	-138 dBm
Radio coverage in restrained urban conditions	max 5 km
Radio coverage within line of sight	max 15 km
Transmitter power by default	25 mW (configurable)
Maximum transmitter power	100 mW
Power	
Main battery	1400 mAh
Reserve battery	1400 mAh
Calculated number of packets sent by the device in "Standby" mode while default settings	15, 000
Housing	
Housing dimensions	ø117 x 44 mm
Ingress protection rating	IP20






3 OPERATION

INDICATION

A double color indicator is located on the front of the sensor housing which informs user about device state. The sensor also has a sound indication.



LED indication		Sound	Meaning
	A short blue flash once per second	No sound	The process of joining the network is in progress
	A long blue flash with duration is 2 seconds	No sound	Device has successfully joined the network
	Three long blue flash with duration is 2 seconds each	No sound	Attempt to join failed
	Continuous red flashing	Tone-modulated sound signal lasting 10 minutes, followed by short beeps once per minute	“Test” mode “Fire” mode

	A short red flash once per second	A short beep once per minute	Battery malfunction (missing or discharged)
	Two short red flashes once per second	A double short beep once per minute	Sensor malfunction
	Three short red flashes once per second	A triple short beep once per minute	Dustiness of the sensor
	Four short red flashes	A short tone-modulated sound signal	Removal sensor triggered
	A short red flash once at every 10 seconds	No sound	The sensor is fine, in "Standby" mode
	No indication	A short tone-modulated sound signal	Transition to the "Standby" mode
	No indication	Tone-modulated sound signal lasting 10 minutes, followed by short beeps once per minute	Signal on the line of solidarity work
	No indication	A short beep	Button pressing

BUTTON

The button is located on the front side of the housing and allows you to manage the device.



The button on the
front side of
housing

The table of transitions between modes and the logic of the button operation depending on the operating mode of the device.

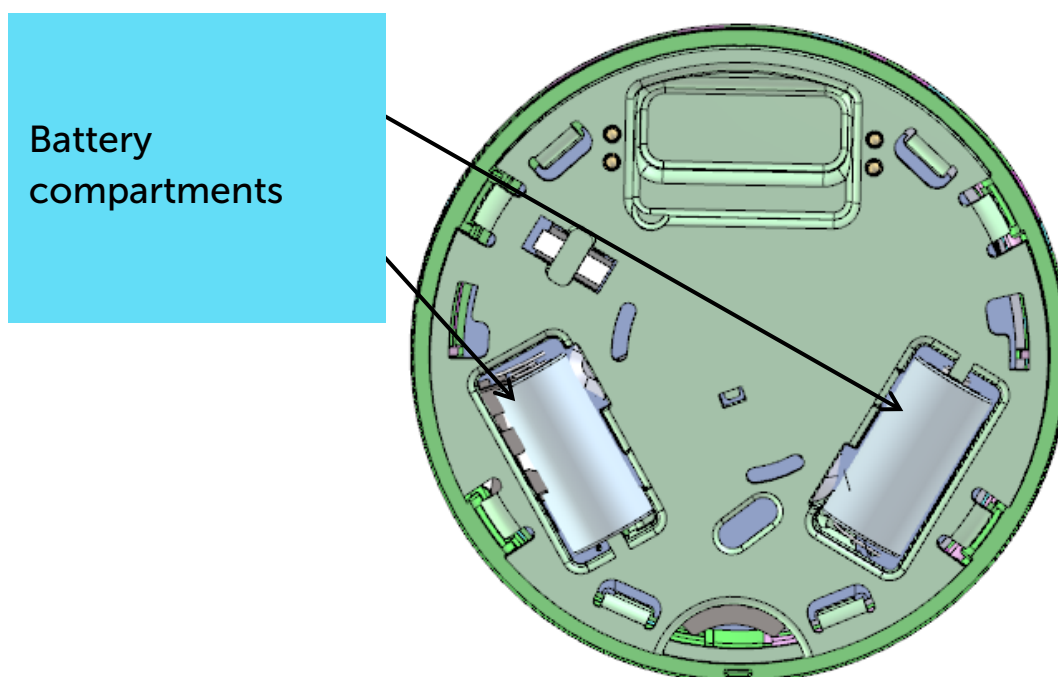
Operating mode	Single press on the button	Pressing for more than 3 seconds
Standby	The device generates a packet and initializes an out-of-order communication session	Transition to the "Test" mode
Fire	Transition to the "Standby" mode	
Test	Transition to the "Standby" mode	

INITIAL STARTUP

Smoke sensor is powered by two CR123A 3V 1400 mAh replaceable batteries. The one of them is main and the rest is reserve. While operating the device tests the batteries every half an hour. As a result of test the device determinates operability and availability of batteries. If both batteries are fine the device every time changes operation from the main battery (2 hours) and operation from the reserve battery (1 hour).

You need to insert the batteries observing the polarity before start. During this, the reserve battery is installed first, then the main one. When the main battery is connected, the device automatically switches to the "Standby" mode within a minute.

Two battery compartments are placed at the internal side of the housing.



After 60 seconds after inserting the batteries, the sensor starts working in the "Standby" mode and performs its functions to detect smoke, regardless of the presence of registration in the LoRaWAN network.

The sensor supports two activation methods in the LoRaWAN network - ABP and OTAA. Select one of the methods using "Vega LoRaWAN Configurator" application (See part 4).

1. ABP. After inserting the batteries, the device immediately registers in the network.

2. OTAA. After inserting the batteries, the device makes three attempts to connect to the network within the set frequency plan. After the activation request is confirmed by LoRaWAN network, the device indicates it (blue LED and beep). If all attempts fail, the sensor will keep trying to connect to the network every day. Meanwhile the sensor will function normally in the "Standby" mode.



Before connecting the device, make sure that its registration data is entered in the network - Device EUI, Application EUI and Application Key for OTAA, or Device address, Application session key and Network session key for ABP

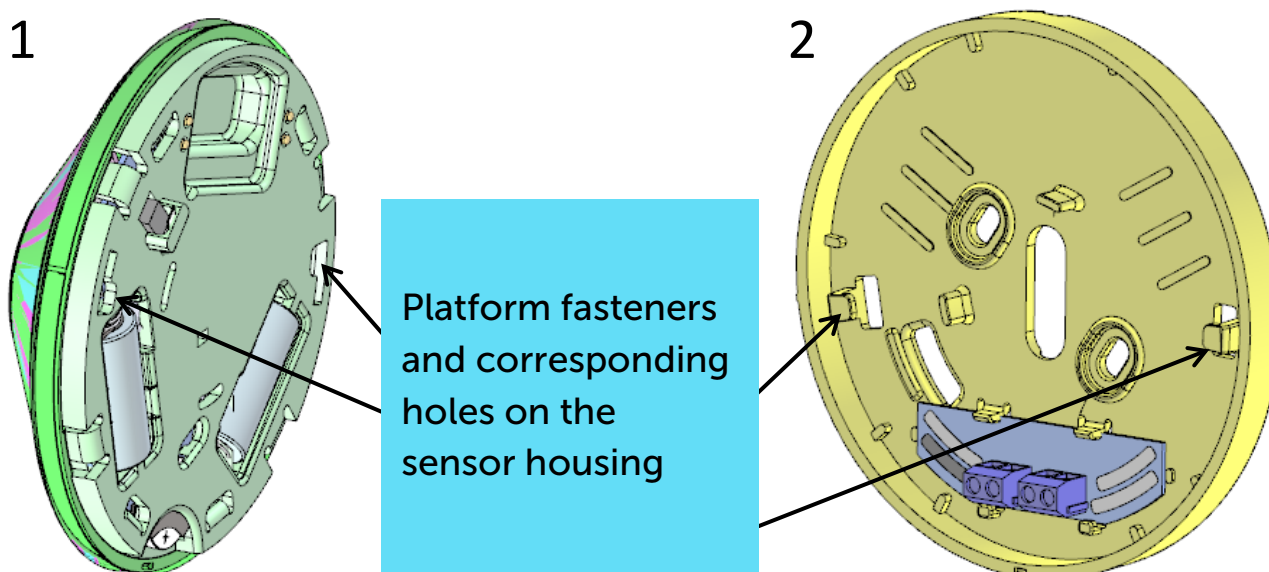
MOUNTING RECOMMENDATIONS

The sensor should not be installed in places where there are intense air currents (near fans, ventilation grids and air conditioners, heat sources), in rooms with a high level of dust, cigarette smoke, steam, in wet and kitchen areas, in places of insects.

The coverage area of one sensor depends on the height of ceilings.

Height of the protected room, m	The average area controlled by a single sensor, m ²	Distance, m	
		Between sensors	From a wall to sensor
up to 3,5	up to 85	9,0	4,5
from 3,5 to 6,0	up to 70	8,5	4,0
from 6,0 to 10,0	up to 65	8,0	4,0
from 10,0 to 12,0	up to 55	7,5	3,5

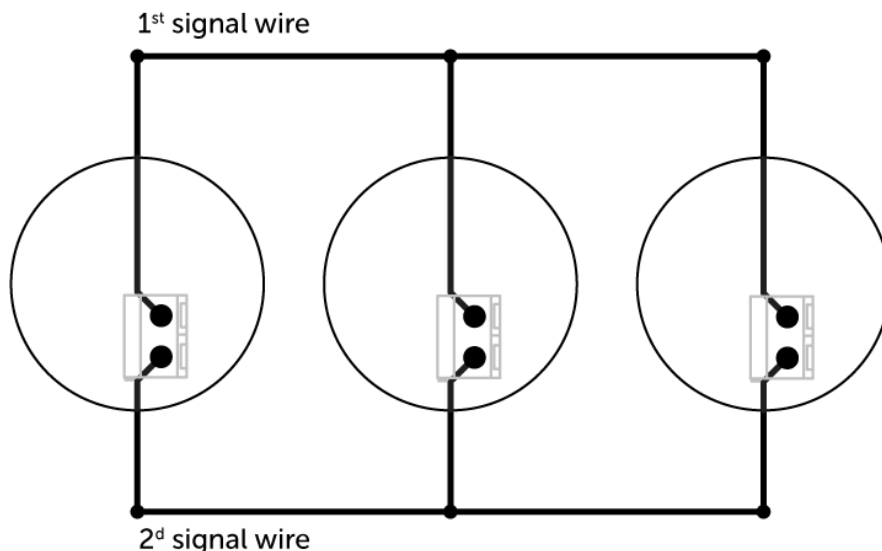
Smart-SS0102 structurally consists of two parts: device itself in the personal housing (1) and the mounting platform (2).



During installation, the platform is first installed, all the necessary wires are connected to it, if necessary. After that, it is necessary to align the mounting holes on the sensor housing and the fasteners on the platform and turn the sensor clockwise until it clicks firmly.

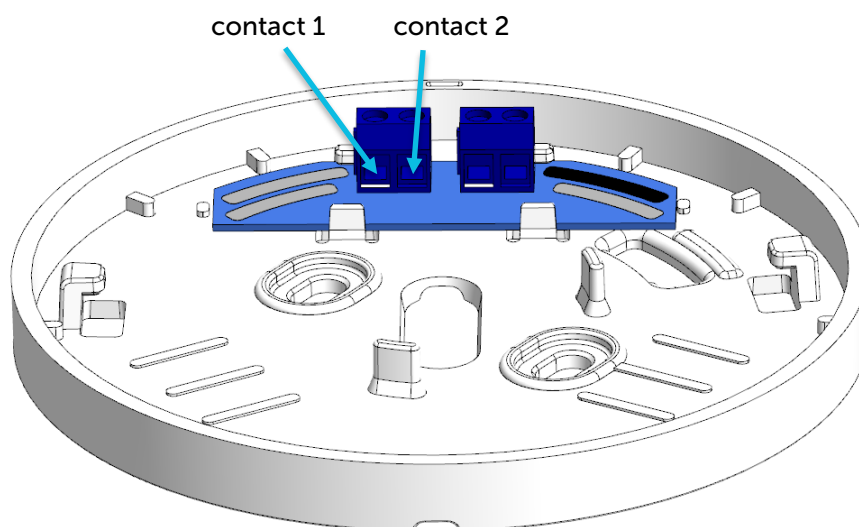
CONNECTING DEVICES IN THE LINE OF SOLIDARITY WORK

Vega Smart-SS0101 sensors can be connected to a solidarity line. To do this, they must be connected in series with a signal wire in one circuit.



It is recommended to connect no more than 10 sensors in one line with a wire length of no more than 50 meters.

The contacts for connection are located on the terminals of the mounting platform. The contacts are connected one to one, that is, contacts under number 1 must be connected to each other with a common wire, and contacts 2 must be connected to each other with another wire.

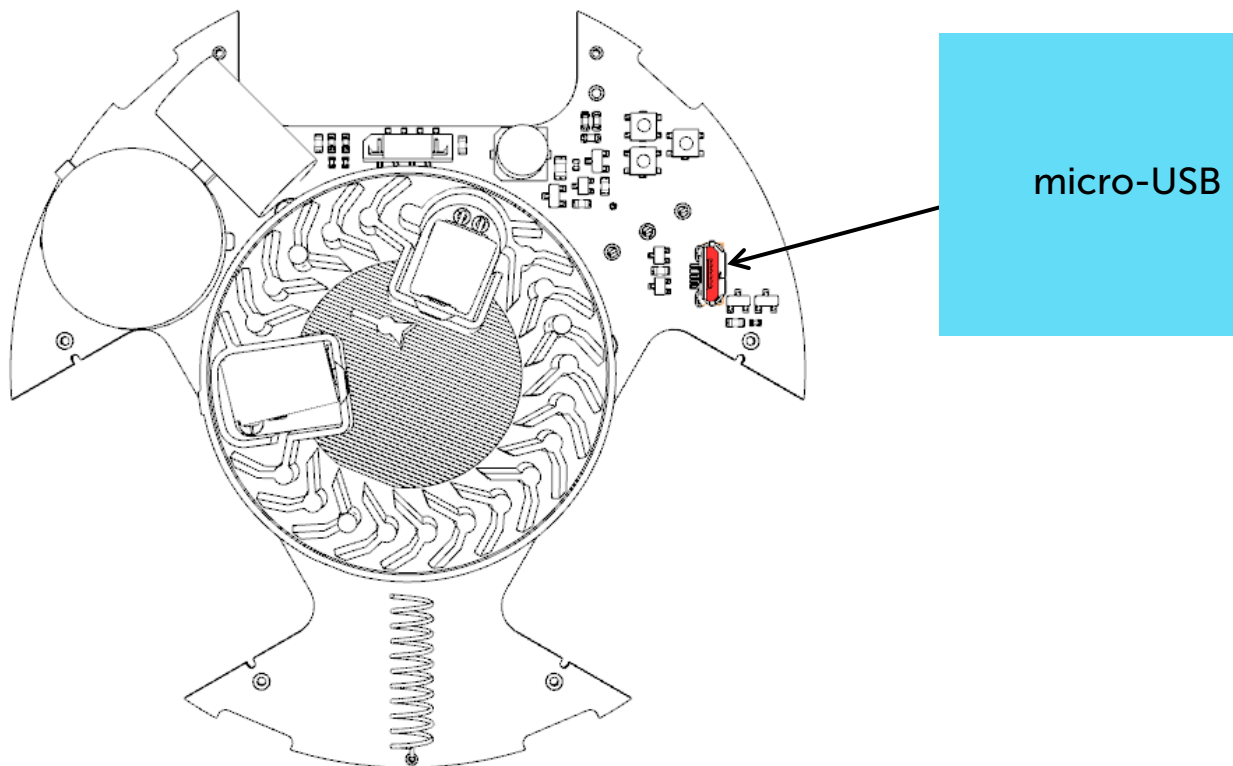


The modes of operation and the algorithm for collecting and transmitting data in the solidarity work line function as in individual work. Only additional indication of response to smoke is added.

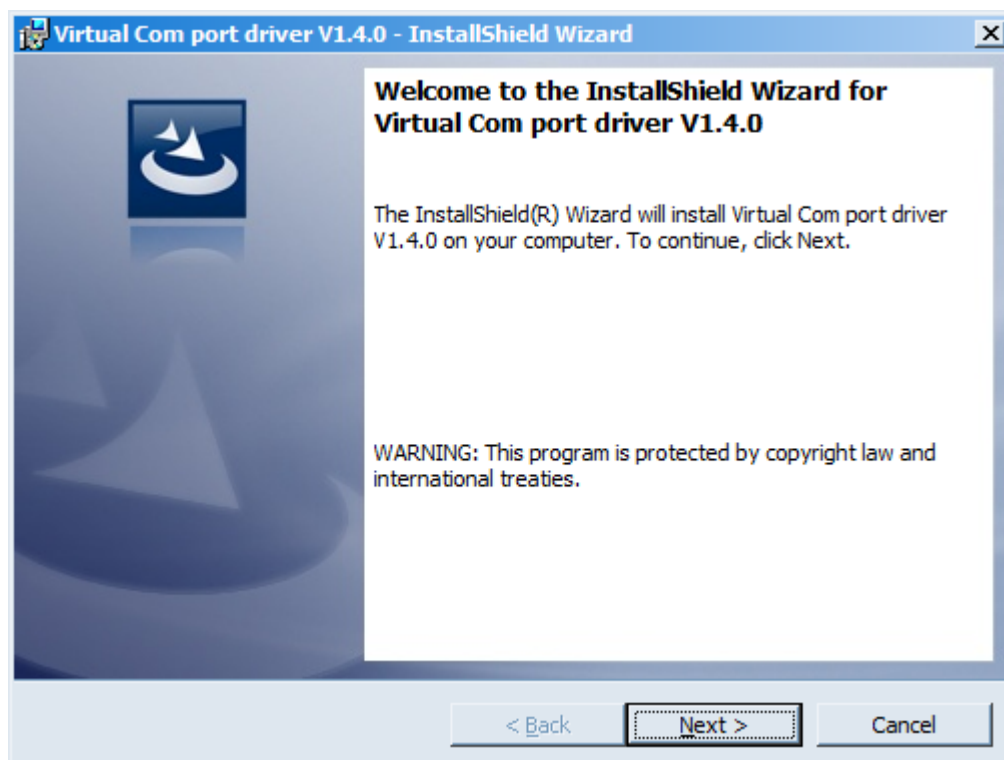
When smoke is detected, the first detector that detected it sets the alarm flag in the solidarity line and switches to the "Fire" mode. All other detectors in the line remain in the "Standby" mode and are armed, continuing to analyze the smoke in the room, but at the same time they sound like in the "Fire" mode, the light indication of the "Fire" mode is not initiated. The alarm in the line can be disabled only by pressing the button on the first detector or by disconnecting the signal wire.

CONNECTING VIA USB

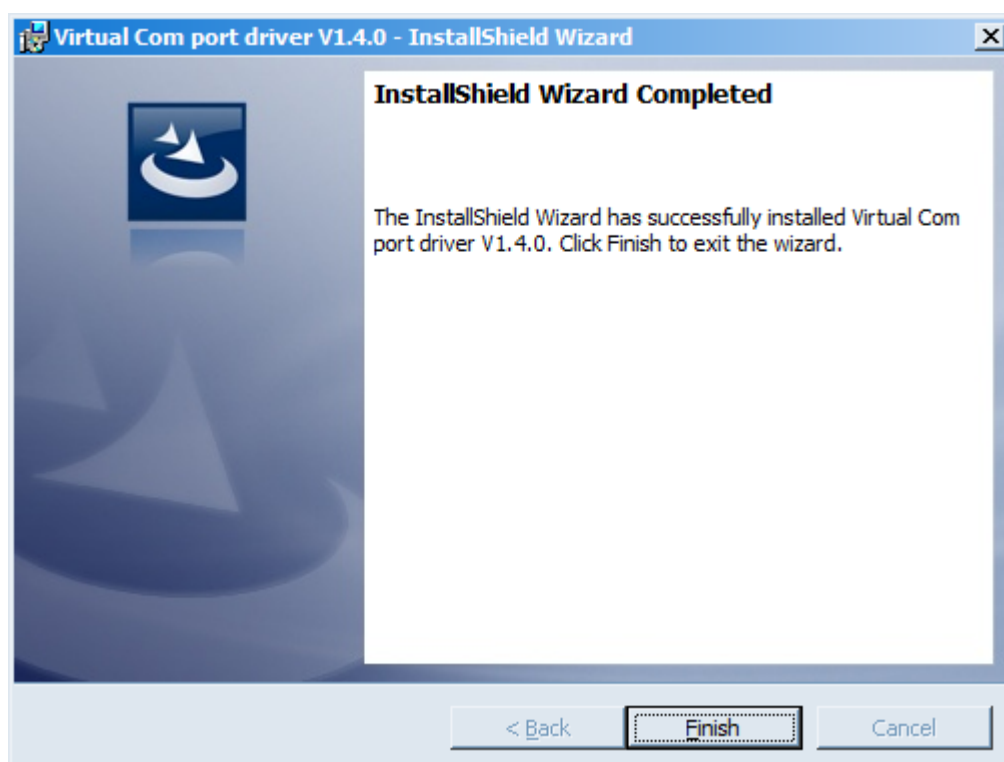
The device Smart-SS0102 can be configured with the "Vega LoRaWAN Configurator" application (See part 4).



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. 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 then the installation will begin. When the installation is completed successfully, the following screen appears:



After pressing **Finish** the driver is ready for operation, - it is possible to connect the device via USB.

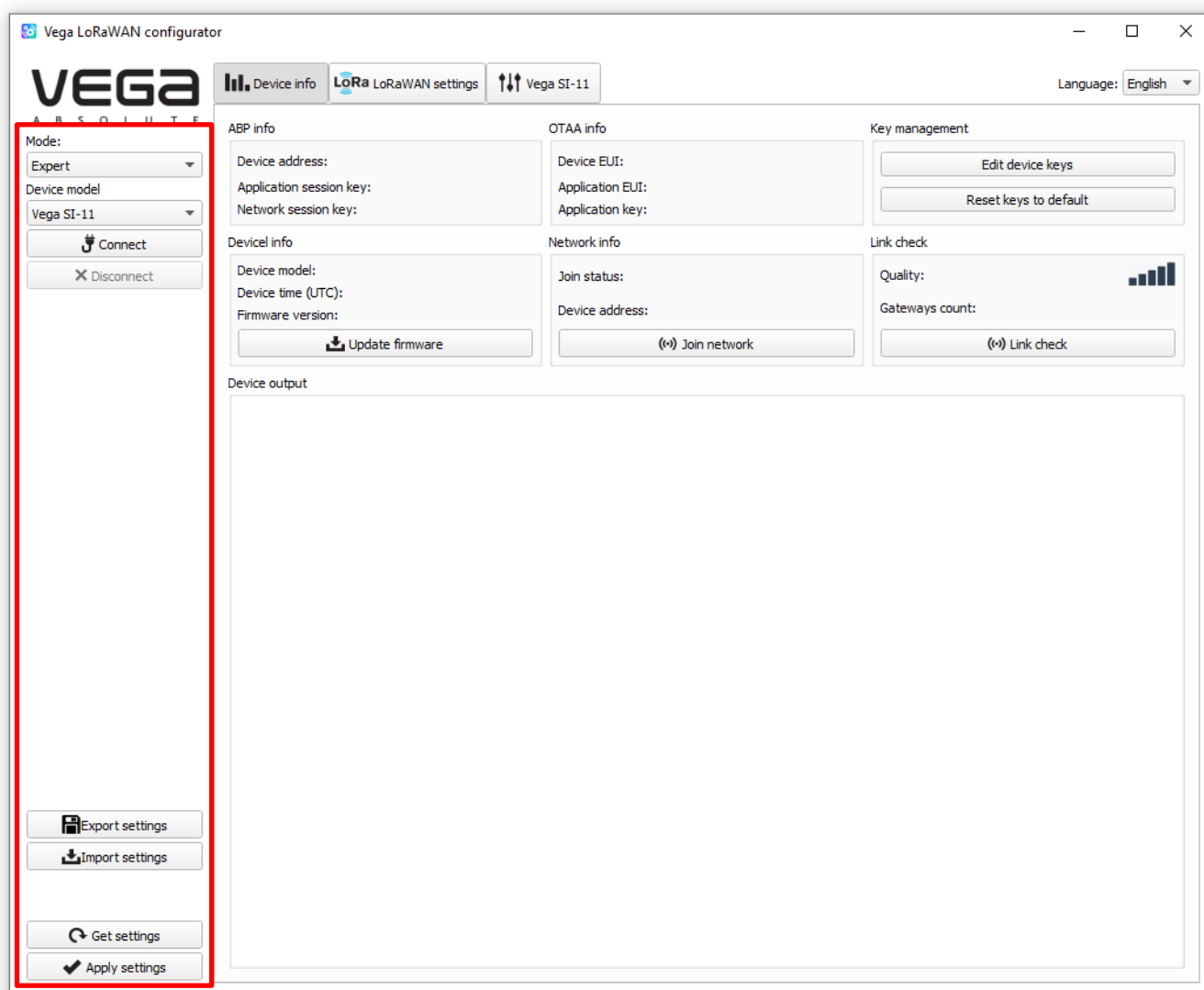
4 VEGA LORAWAN CONFIGURATOR

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

The configurator has two modes of operation - "Simple" and "Expert". In the "Simple" mode, only basic settings are available. In the "Expert" mode the basic settings, advanced settings, and the ability to check the coverage area of the signal from the gateways are available. Next, the work of the configurator is considered in the "Expert" mode.

INTERFACE OF THE APPLICATION

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



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

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.

The buttons "Get settings" and "Apply settings" are needed to display the current device settings in the program and to save the changed settings in the device memory, respectively.

The application window contains three tabs – Device info, LoRaWAN settings and device settings.

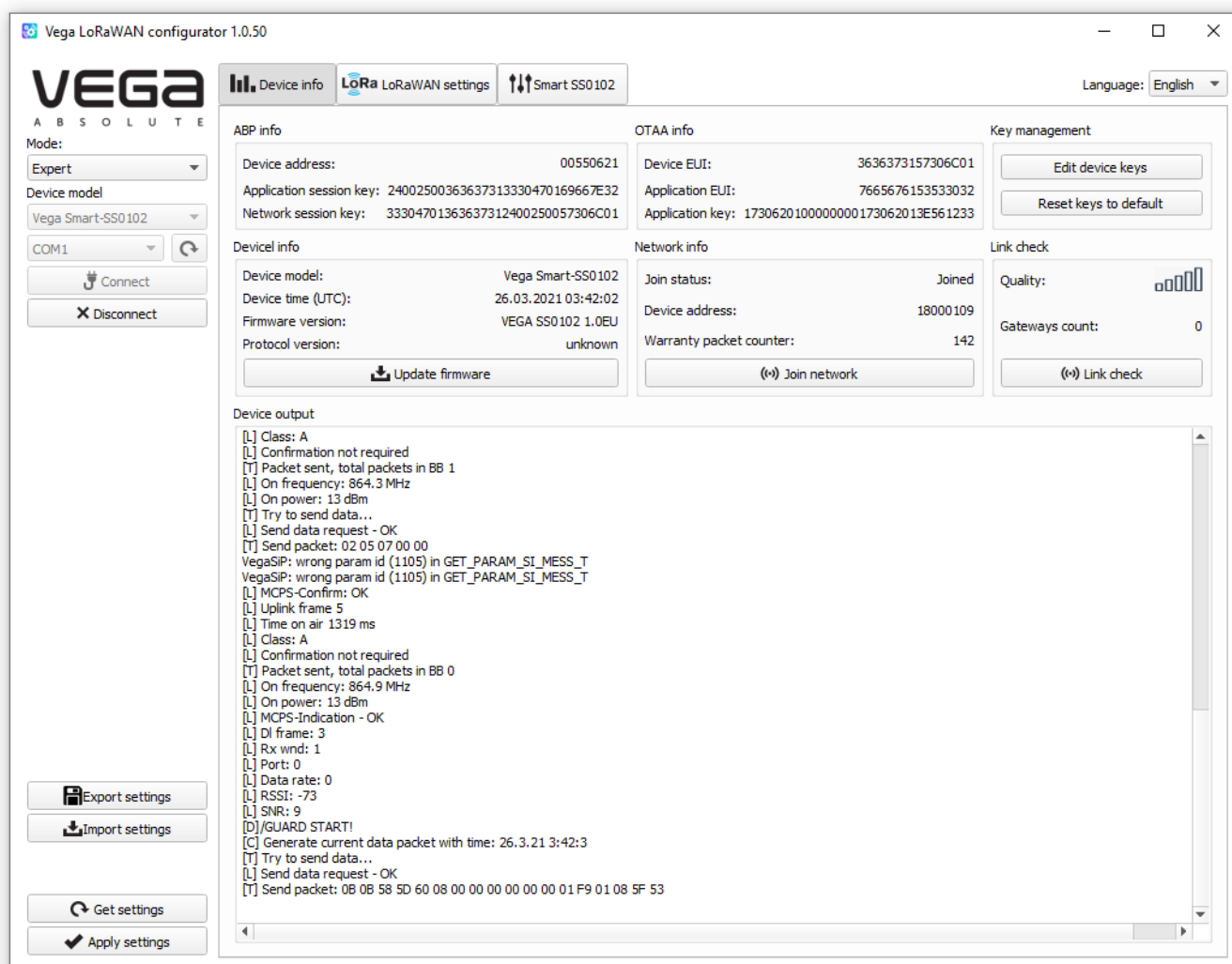
The language selection menu is in the upper right corner.

CONNECTION TO THE DEVICE

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

1. Connect the USB cable to the device.
2. Start the "Vega LoRaWAN Configurator" application.
3. Click the "Connect" button in the menu on the left.

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

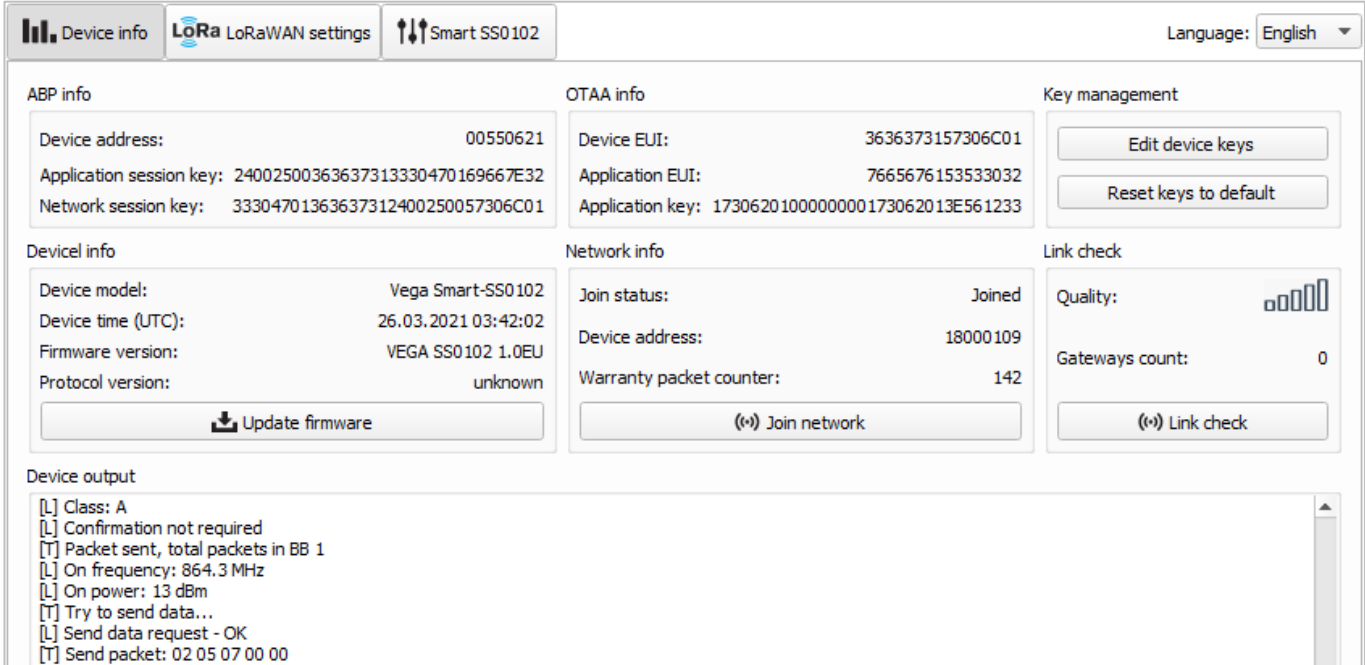


To read the settings from the device, you need to click the "Get settings" button, until this point the application will display the default settings or from the last connected device.

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.

"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.



The screenshot shows the "DEVICE INFO" tab selected in the top navigation bar. The interface is divided into several sections:

- ABP info:** Displays Device address (00550621), Application session key (24002500363637313330470169667E32), and Network session key (33304701363637312400250057306C01).
- OTAA info:** Displays Device EUI (3636373157306C01), Application EUI (7665676153533032), and Application key (1730620100000000173062013E561233).
- Key management:** Includes buttons for "Edit device keys" and "Reset keys to default".
- Device info:** Displays Device model (Vega Smart-SS0102), Device time (UTC) (26.03.2021 03:42:02), Firmware version (VEGA SS0102 1.0EU), and Protocol version (unknown). It includes an "Update firmware" button.
- Network info:** Displays Join status (Joined), Device address (18000109), and Warranty packet counter (142). It includes a "Join network" button.
- Link check:** Displays Quality (represented by a signal strength icon) and Gateways count (0). It includes a "Link check" button.
- Device output:** A log area showing messages such as "[L] Class: A", "[L] Confirmation not required", "[T] Packet sent, total packets in BB 1", "[L] On frequency: 864.3 MHz", "[L] On power: 13 dBm", "[T] Try to send data...", "[L] Send data request - OK", and "[T] Send packet: 02 05 07 00 00".

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.

Key management (not displayed in the "Simple" mode) - allows you to change the factory keys to register the device on the network and reset the keys back to the factory settings.

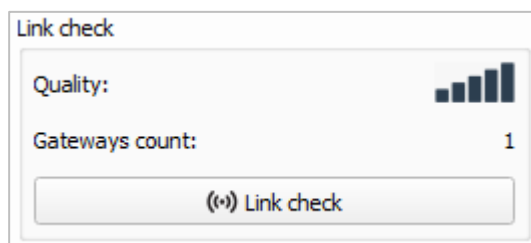
Device info - the configurator reads information about the device model, its firmware and automatically corrects the device's time when connected to it.

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.

Network info - shows whether the device connecting to the LoRaWAN network and its network address.

Join network button - 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.

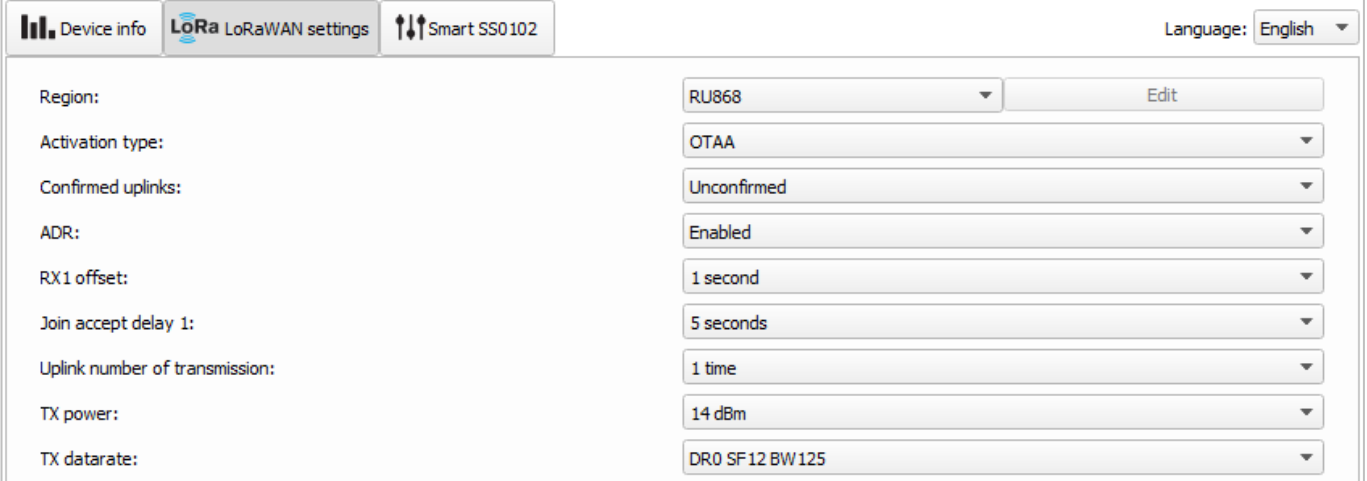
Link check (not displayed in the "Simple" mode) - when pressed, the device sends a special signal to the LoRaWAN network, in response to which the network informs it of the number of gateways that received this signal and the signal quality. This button only works when the device is connected to the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



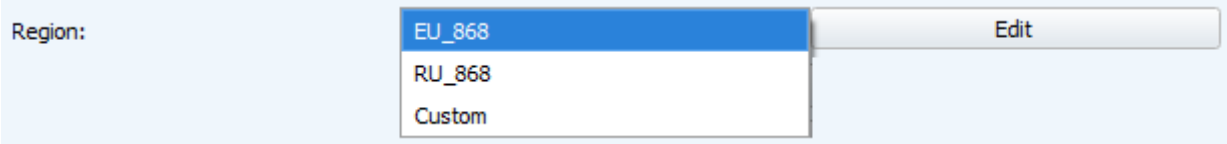
Device output (not displayed in the "Simple" mode) - monitoring the device status, all events in real time are displayed.

"LORAWAN SETTINGS" TAB

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



Region - allows you to select one of two installed frequency plans or specify a custom frequency plan. Custom frequency plan is EU-868 based.



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).

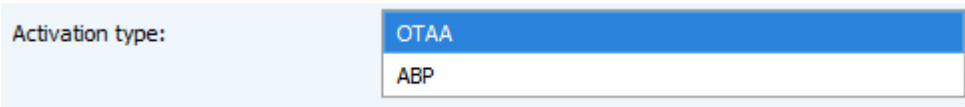
If you select "Custom" in the "Region" field, you must manually specify the frequencies that the device will use. To do this, click the "Edit" button, the channel frequency editing window will appear.

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 parameters the custom frequency plan will be considered empty.

Activation type – selecting ABP or OTAA device activation method.



Confirmed uplinks – when you choose "confirmed", the device will retry sending the packet until it receives the server confirmation, or until the "Uplink number of transmission" is over (see below).

Confirmed uplinks:	Confirmed
	Unconfirmed



If you choose to send packets without confirmation, the modem will not know whether the packet delivered or not

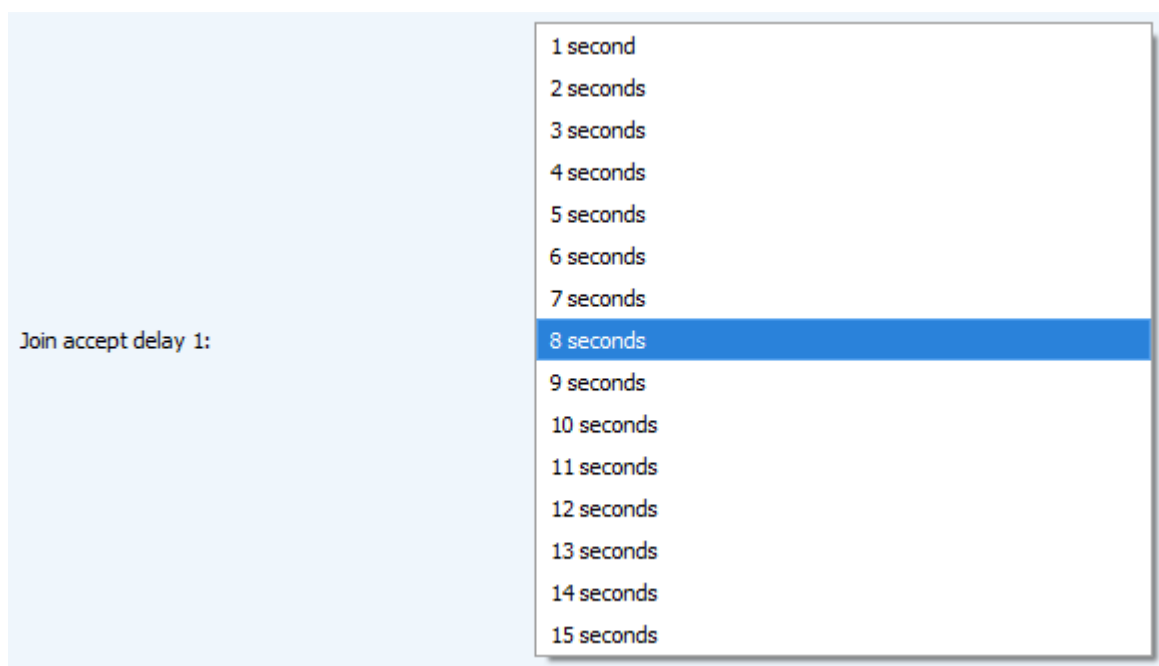
ADR – this option activates the Adaptive Data Rate algorithm for automatic control of the data transfer rate from the LoRaWAN™ network server side. The higher the quality of the signal received by the network, the higher the speed will be installed on the device. This option is recommended only on permanently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

ADR:	Enabled
	Disabled

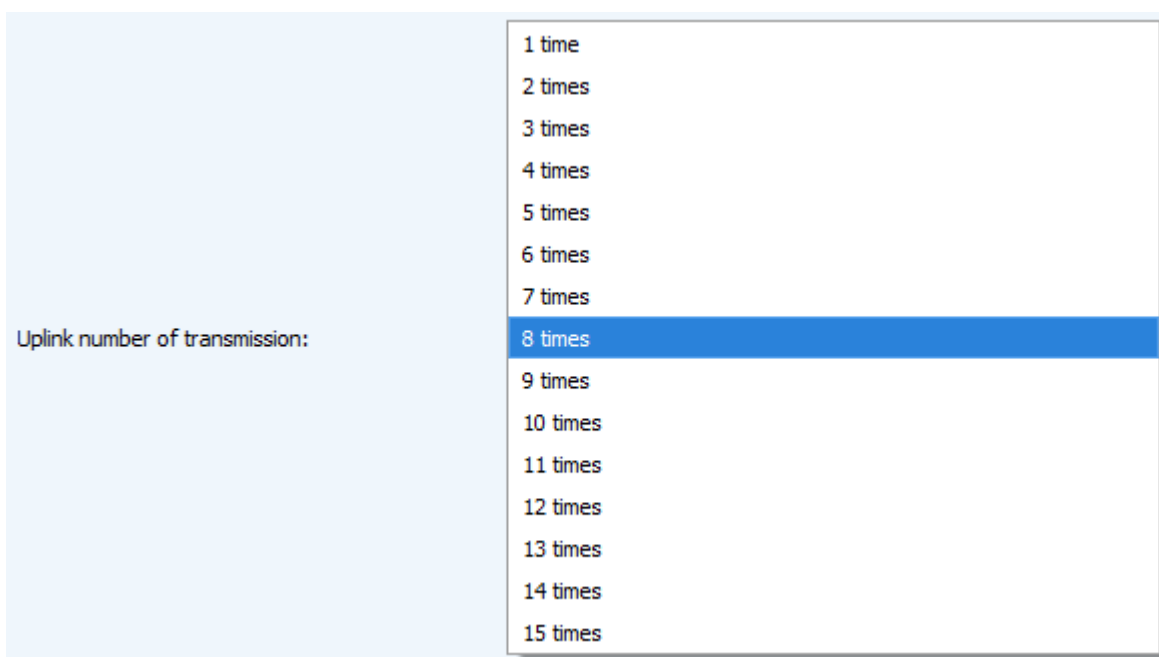
RX1 offset (not displayed in the "Simple" mode) – specifies the time between end of packet transmission and first receiving window opening. The second receiving window always opens after 1 second after the first.

RX1 offset:	1 second
	2 seconds
	3 seconds
	4 seconds
	5 seconds
	6 seconds
	7 seconds
	8 seconds
	9 seconds
	10 seconds
	11 seconds
	12 seconds
	13 seconds
	14 seconds
	15 seconds

Join accept delay 1 (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.

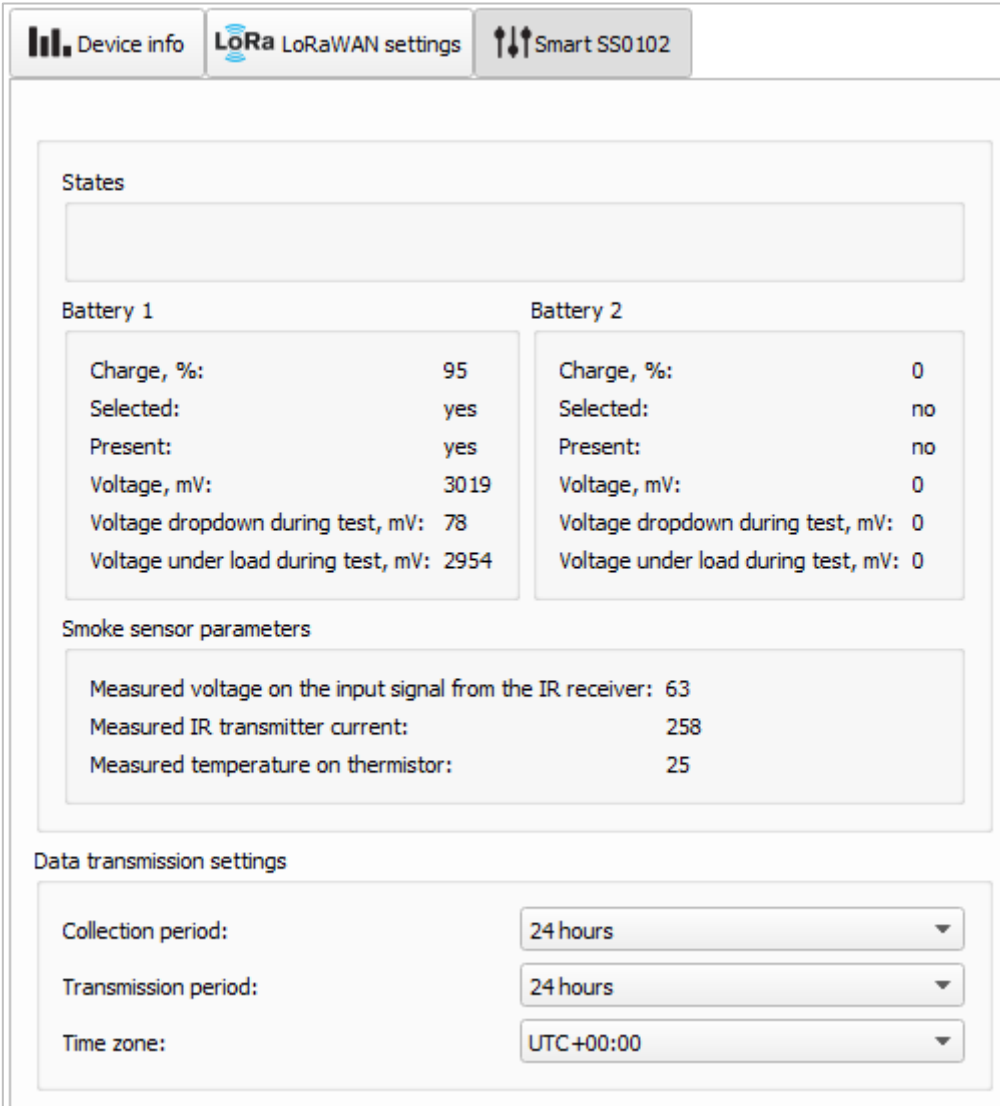
TX power:	<div>2 dBm 5 dBm 8 dBm 11 dBm 14 dBm 20 dBm</div>
-----------	---

TX datarate (not displayed in the "Simple" mode) – the device transmission datarate 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:	<div>DR0 SF12 BW125 DR1 SF11 BW125 DR2 SF10 BW125 DR3 SF9 BW125 DR4 SF8 BW125 DR5 SF7 BW125</div>
--------------	---

"SMART-SS0102" TAB

The "Smart-SS0102" tab contains the settings of the connected device.



The screenshot displays the 'Smart SS0102' configuration page. At the top, there are three tabs: 'Device info', 'LoRa LoRaWAN settings', and 'Smart SS0102' (which is active). Below the tabs, the page is organized into several sections:

- States:** A large empty box intended for displaying the current state of the device.
- Battery 1 and Battery 2:** Two side-by-side panels showing battery status.

Battery 1		Battery 2	
Charge, %:	95	Charge, %:	0
Selected:	yes	Selected:	no
Present:	yes	Present:	no
Voltage, mV:	3019	Voltage, mV:	0
Voltage dropdown during test, mV:	78	Voltage dropdown during test, mV:	0
Voltage under load during test, mV:	2954	Voltage under load during test, mV:	0
- Smoke sensor parameters:** A box containing three measurements:
 - Measured voltage on the input signal from the IR receiver: 63
 - Measured IR transmitter current: 258
 - Measured temperature on thermistor: 25
- Data transmission settings:** A section with three dropdown menus:
 - Collection period: 24 hours
 - Transmission period: 24 hours
 - Time zone: UTC+00:00

States – displays the current state of the device:

- Test
- Standby mode
- Alarm Fire!
- Sensor removed
- Sensor malfunction
- Dustiness of the sensor chamber

Battery 1 and Battery 2 – displays batteries parameters and test results (which provided by the device every half an hour). Battery 1 is main, and Battery 2 is reserve.

Smoke sensor parameters – this part contains information about smoke sensor state.

If the camera is clean and serviceable, then the voltage should be in the range of 30-110 mV, the current is 174-328 mA, and the temperature on the thermistor should approximately correspond to the temperature in the room.

Data transmission settings – the transmission period which the packet with the current readings is transmit (See part 5, packet 1).

With the "Confirmed uplinks" option turned on, the device will send the next packet only after receiving a confirmation of the delivery of the previous one. If such confirmation has not received after the fulfilled in the settings uplink number of transmissions, 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.

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. There are no non-transmitted messages in the device memory.

5 COMMUNICATION PROTOCOL

This part describes the Smart-SS0102 data exchange protocol with LoRaWAN network.



In fields consisting of several bytes, the little endian byte order is used

SMART-SS0102 TRANSMITS THE FOLLOWING TYPES OF PACKETS

1. Packet with current state, sent by event on LoRaWAN port 2.

Size in bytes	Field description	Data type
1 byte	Packet type == event ID: 5 – Alarm because of fire detection 6 – Test 7 – Alarm because of line of solidarity work 8 – Removal from mounting platform 9 – Alarm reset 10 – Low battery charge 11 – Start of the device guard 12 – Stop of the device guard 13 – <i>Reserve</i> 14 – Sensor malfunction 15 – Dustiness of the sensor chamber 16 – By the schedule	uint8
4 bytes	This packet time (unixtime UTC)	uint32
1 byte	Current state (bit field): 0 бит – Dustiness 1 бит – Fire 2 бит – Test 3 бит – Standby 4 бит – Malfunction 5 бит – Alarm 6 бит – Removal from mounting platform 7 бит – Signal through the line of solidarity work	uint8
2 bytes	Receiver voltage in mV	uint16
2 bytes	Transmitter current in mA	uint16
2 bytes	Thermistor temperature in °C	uint16
1 byte	Flag – battery 1 is used	bool
1 byte	Flag – battery 2 is used	bool
1 byte	Flag – battery 1 is available	bool
1 byte	Flag – battery 2 is available	bool
1 byte	Battery charge in %, calculated from load	uint8

2. Packet with time correction request, sent every seven days on LoRaWAN port 4.

Size in bytes	Field description	Data type
1 byte	Packet type, this packet == 255	uint8
4 bytes	Time of the modem at a moment of the packet transmission (unixtime UTC)	uint32

After receiving this type of package, the application can send to modem the packet with time correction.

3. Settings packet – transmitting on LoRaWAN port 3 when settings request command is received, or device connected to the network.

Size in bytes	Field description	Data type
1 byte	Packet type, this packet == 0	uint8
2 bytes	ID of parameter	uint16
1 byte	Data length (len)	uint8
len bytes	Parameter value	-----
2 bytes	ID of parameter	uint16
1 byte	Data length (len)	uint8
len bytes	Parameter value	-----
...
2 bytes	ID of parameter	uint16
1 byte	Data length (len)	uint8
len bytes	Parameter value	-----

SMART-SS0102 RECEIVES THE FOLLOWING TYPES OF PACKETS

1. Real-time clock adjustment – sent by application on LoRaWAN port 4.

Size in bytes	Field description	Data type
1 byte	Packet type, this packet = 255	uint8
8 bytes	The value in seconds for which you need to adjust the time. Can be positive or negative	int64

2. Packet with request of settings – sent by application on LoRaWAN port 3

Size in bytes	Field description	Data type
1 byte	Packet type, this packet == 1	uint8

Answering that packet, the device will send the packet with settings.

3. Packet with settings is identical to such packet from device.

Size in bytes	Field description	Data type
1 byte	Packet type, this packet == 0	uint8
2 bytes	ID of parameter	uint16
1 byte	Data length (len)	uint8
len bytes	Parameter value	-----
2 bytes	ID of parameter	uint16
1 byte	Data length (len)	uint8
len bytes	Parameter value	-----
...
2 bytes	ID of parameter	uint16
1 byte	Data length (len)	uint8
len bytes	Parameter value	-----

The package with settings sent to the device may not contain all the settings supported by the device, but only the part that needs to be changed.

Table of ID of Smart-SS0102 parameters and these possible values

ID of parameter	Description	Data length	Possible values
4	Confirmed uplinks	1 byte	1 – confirmed 2 – unconfirmed
5	ADR (Adaptive Data Rate)	1 byte	1 – enabled 2 – disabled
8	Uplinks number of transmission	1 byte	from 1 to 15

16	Communication period	1 byte	1 – 1 hour 2 – 6 hours 3 – 12 hours 4 – 24 hours 5 – 5 minutes 6 – 15 minutes 7 – 30 minutes
49	Data collection period	1 byte	1 – 1 hour 2 – 6 hours 3 – 12 hours 4 – 24 hours 5 – 5 minutes 6 – 15 minutes 7 – 30 minutes
55	Time zone, in minutes	2 bytes	from -720 to 840

6 STORAGE AND TRANSPORTATION REQUIREMENTS

The Smart-SS0102 sensor shall be stored in the original packaging in heated room at temperatures $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$ and relative humidity less than 85%.

The sensor shall be transported in covered freight compartments of all types at any distance at temperatures -20°C to $+65^{\circ}\text{C}$.

7 CONTENT OF THE PACKAGE

The sensor is delivered complete with:

Smoke sensor Vega Smart-SS0102 – 1 pc.

CR123A battery – 2 pcs.

Factory certificate – 1 pc.

8 WARRANTY

The manufacturer guarantees that the product complies with the current technical documentation, subject to the storage, transportation and operation conditions specified in the "User Manual".

The warranty period is 36 months.

The warranty does not apply to batteries.

The warranty period of operation is calculated from the date of sale marked in the product factory certificate, and from the release date when such a mark is absent. During the warranty period, the manufacturer is obliged to provide repair services or replace a failed device or its components.

The manufacturer does not bear warranty obligations in the event of a product failure if:

- the product does not have a factory certificate;
- the factory certificate does not have an TCD stamp and / or there is no sticker with information about the device;
- the serial number (DevEUI, EMEI) printed on the product differs from the serial number (DevEUI, EMEI) specified in the factory certificate;
- the product has been subject to alterations in the design and / or software which are not provided for in the operational documentation;
- the product has mechanical, electrical and / or other damage and defects arising from violation of the conditions of transportation, storage and operation;
- the product has traces of repair outside the manufacturer's service center;
- the components of the product have internal damage caused by the ingress of foreign objects / liquids and / or natural disasters (flood, fire, etc.).

The average service life of the product is 10 years.

In the event of a warranty claim, contact the service center:

113/1, Kirova Str., Novosibirsk, 630008, Russia.

Tel.: +7 (383) 206-41-35.



vega-absolute.ru

User Manual © Vega-Absolute ООО 2020-2021