

# ***iNode Care Sensor #2***

***Instruction manual***

© 2014-2016 ELSAT®

## 1. About iNode

We would like to introduce a family of iNode devices working in the Bluetooth Low Energy ®. We will show you that it's not just tags to find lost keys, whether location tags, but still something more.

Our devices are capable of:

- these are mainly battery device.
- work without battery replacement for up to 12 months, depending on the type of application and usage.
- have memory for logging events, readings of measurements, etc.
- contain precise temperature, humidity sensors, accelerometer or magnetometer which allow home automation control, care of older persons or vehicle detection.
- as a remote control device, although a small power consumption, have a large range and features unavailable to other competitive facilities - password protection, AES encryption, control directly from the smartphone with BT 4.0.
- a unique encryption technology ensures the safety of the JPEG images recorded by our cameras.
- BT4.0 - LAN or BT4.0 - GSM gateways connect iNode sensors with the Internet.

iNode can also help to control the movement of people or goods, saving the time of appearance and disappearance (active RFID ® long range). New features related to the development of the product is also not a problem – this allows to remote firmware update with PC or smartphone with Bluetooth 4.0 ® and Low Energy Bluetooth enabled ® (Smart Bluetooth ®).

**iNode Care Sensor # 2** is a wireless BT4.0 motion and precise temperature sensor with a built-in memory of events. It is intended mainly for home automation and care for the elderly. The sensor allows for motion detection of objects to which it is attached. These can be for example. entrance doors, Windows, doors from refrigerators, container with medicines. You can also specify the position relative to the ground.



The measured temperature value and movement status is broadcasted with a period of 1.28 seconds and may be archived in internal memory along with the date and time of the event. This allows you to specify if and when she opened the drawer, fridge, bag, etc. The sensor can be used with **iNode Care Relay**. Device configuration software allows you to specify the conditions under which the meeting will send an alarm, and hence enable/disable external device.

Trademarks or registered trademarks:

**Bluetooth Low Energy ®, Bluetooth 4.0 ®, RFID®,CSR®,Windows®, Android, Google, Microsoft, ThingSpeak, Raspberry Pi, Domaticz, BlueZ, Linux** are used for informational purposes only.

All trademarks are property of their respective owners.

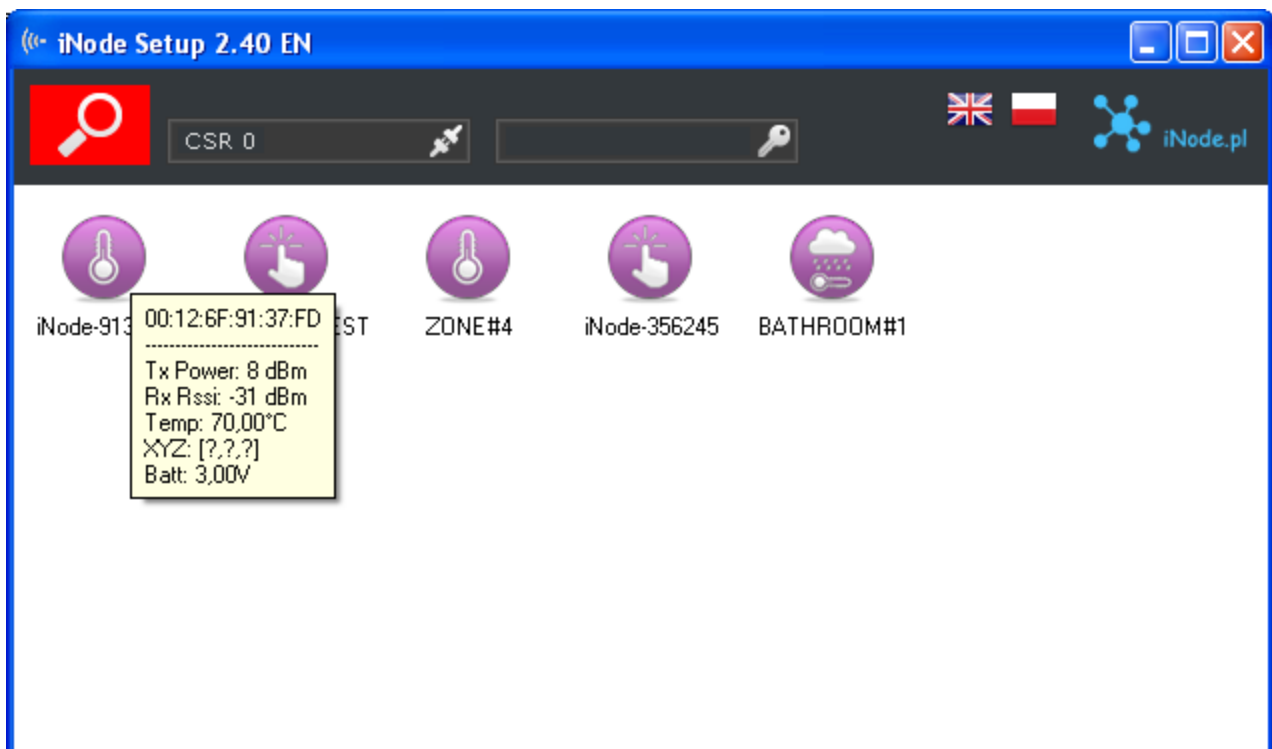
## 2. iNode Care Sensor #2

Install application **iNode Setup** and BT4.0 drivers on PC. Next run **iNode Setup** application (on Windows 7 to 10 with administrative rights), and press the red button with magnifying glass picture. If a BLE device you want connect to is password protected you should type the password in the text box with a key . If you press the button  you can change the type of adapter which will be used to communication – standard BT4.0 adapter (signed CSR ...), **iNode Serial Transceiver** (signed COM ...) or **iNode LAN** (signed the name of the device).

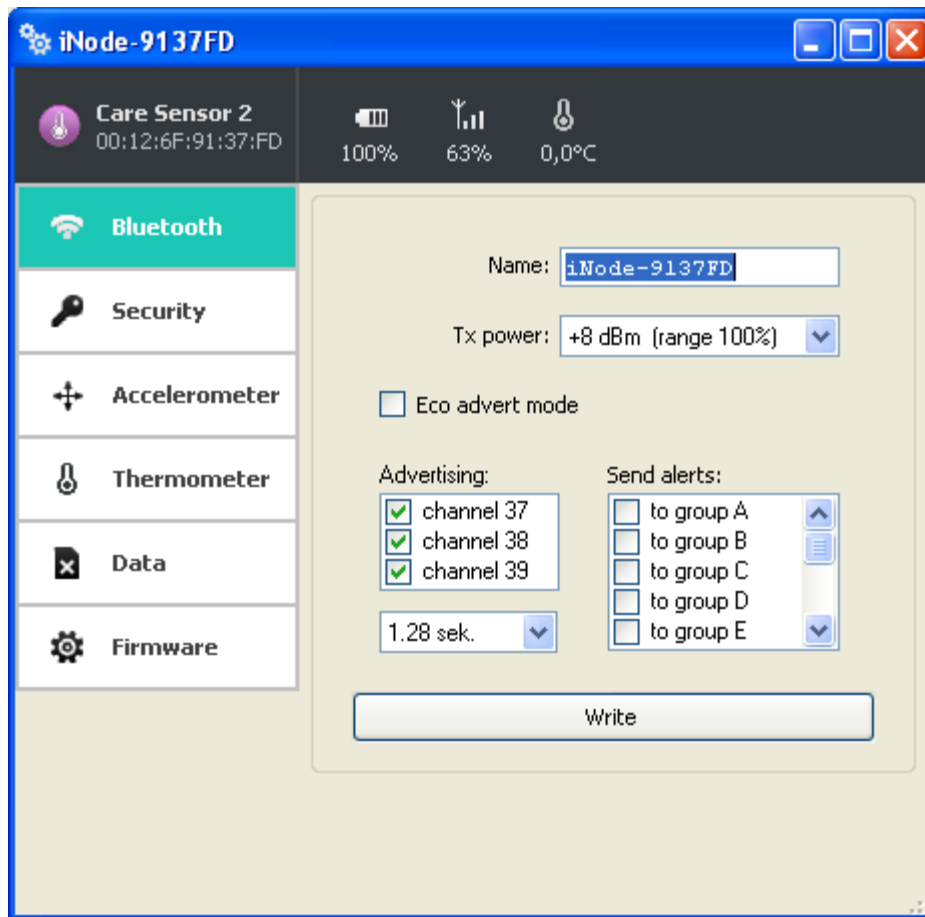
In case the application cannot start or system error you should try to install **Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package MFC Security Update** from that page:

<http://www.microsoft.com/en-us/download/confirmation.aspx?id=26347>.

**iNode Setup** will find all nearby iNode devices and sort them regarding receiving signal strength. Each type of iNode device has a different icon. For **iNode Care Sensor #2** it is the first picture in the first row in the window below.



To configure **iNode Care Sensor #2** device you should double click on its icon. Application connects with this device and reads its settings:



At the top of the window there is displayed following information:

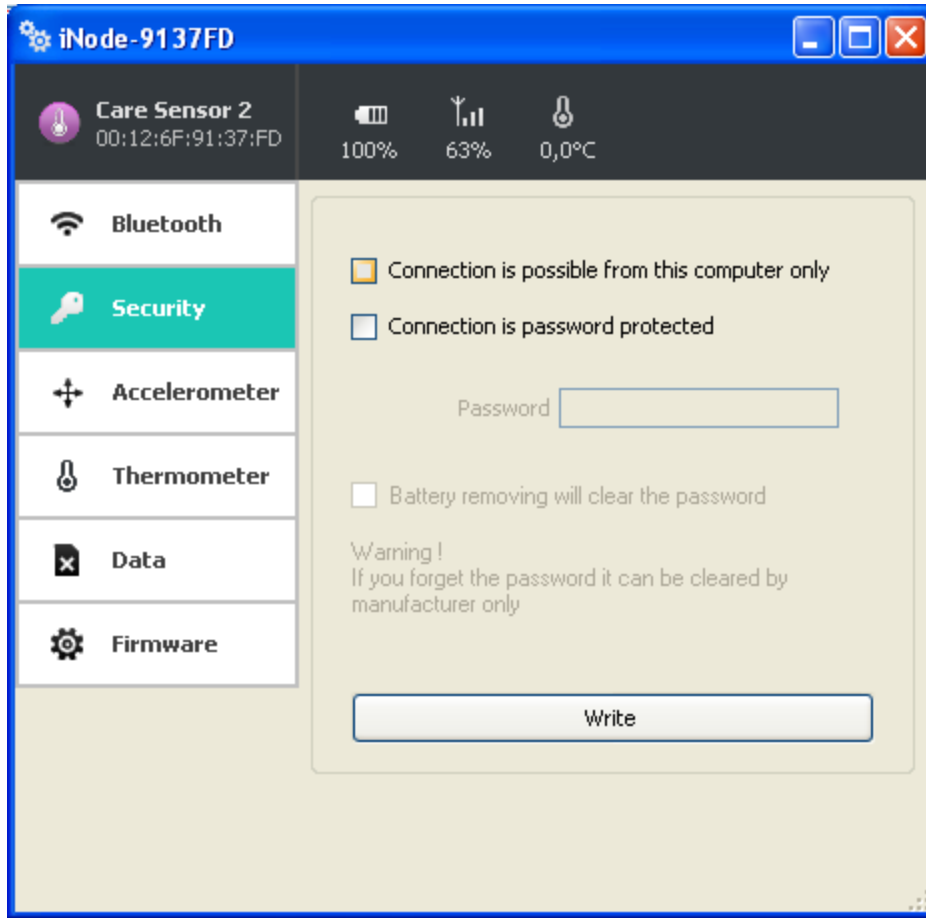
- the name of the **iNode** family – in this case **iNode Care Sensor #2**;
- the unique device identifier;
- battery level: 100% means 3V or greater, while 0% it is 1,8V;
- signal strength received by this device from the BT4.0 adapter or iNode LAN;
- temperature;

At the **Bluetooth** tab there are following items:

- **Name**: you can change default device name typing a new one in this text box. Its length is 16 characters maximum.
- **Tx power**: determine the power the device broadcasts and simultaneously the range the device can be scanned. If **iNode Care Relay** has set the scan range  $\sim 200m$ , and **iNode Care Sensor #2** has set the broadcast power  $-2dBm$  range 33% then effective distance from which the device can be scanned is equal  $200m * 0,33 = 66m$ .
- **Eco advert mode**: the battery saving mode. The device sends a broadcast frame in a 5-minute interval. To use this mode, you must properly configure the **iNode Care Relay** (switch-on time may not be less than 10 minutes). Besides, if you want the iNodeSetup.exe application can connect with your device you must first move it, and then turn on the scan.
- **Send alerts**: allows you to enter to which logical groups will be sent alerts.
- **Advertising**: you can chose the channels the **iNode Care Sensor #2** broadcasts advertising frames. This way the battery life can be extended but device can be more difficult to scan. Additionally the advertisement interval can be chosen. This time determine how fast you can connect with the device.

You can save modified settings by pressing the **Write** button.

The picture below shows the **Security** tab:

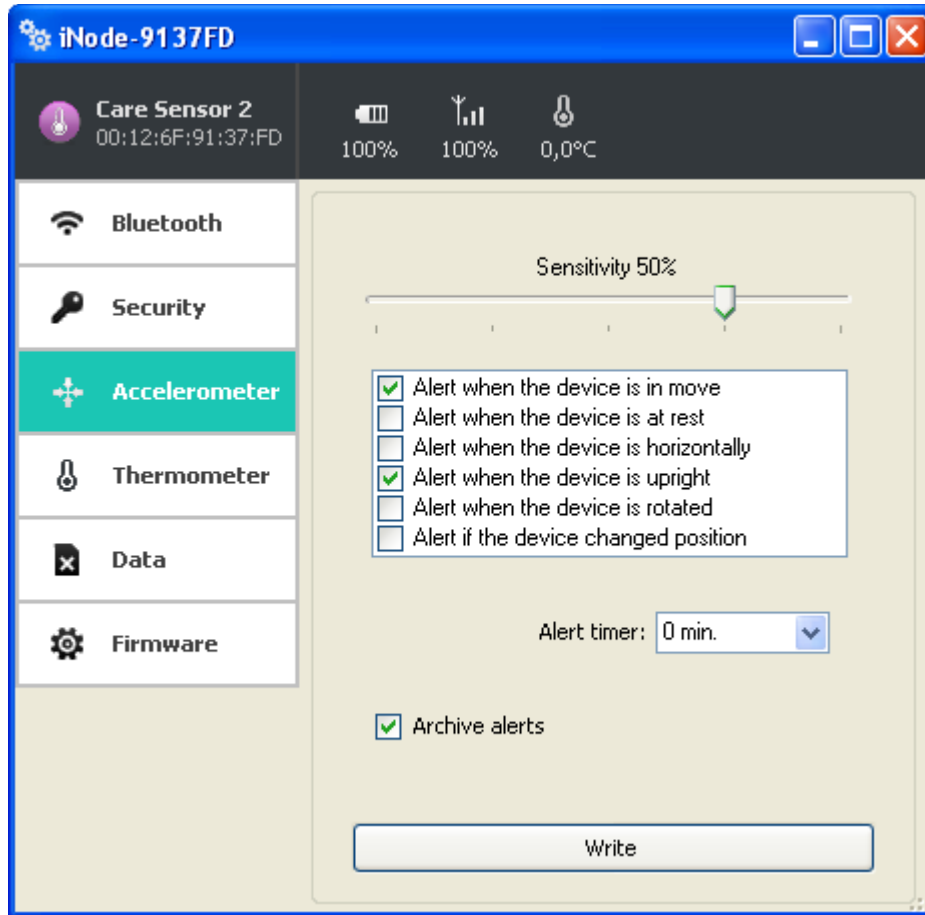


The following items can be set:

- **Connection is possible from this computer only**: this option enable you to protect the **iNode Care Sensor #2** access from others PCs or phones. You can reset this protection by battery removing for at least one minute. This type of protection cannot be set in case of **iNode Care Relay**.
- **Connection is password protected**: access to the **iNode Care Sensor #2** is password protected. Password length is 16 characters maximum.
- **Battery removing will clear the password**: if you unchecked this option than please remember that if you forget the password it can be cleared by manufacturer only.

You can save modified settings by pressing the **Write** button.

The picture below shows the **Accelerometer** tab:

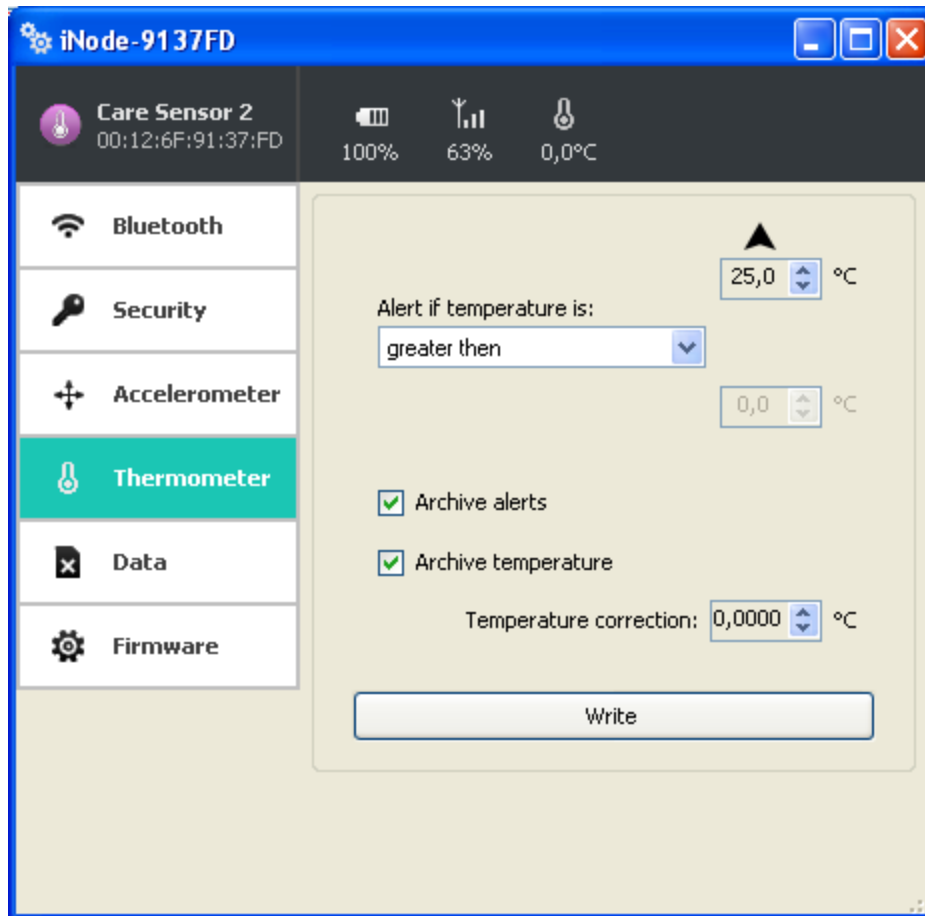


The following items can be set:

- *alert when the device is in move*: the device sends an alert in case of movement.
- *alert when the device is at rest*: this device sends an alert when motion ceases.
- *alert when the device is horizontally*: the device sends the alert in case of the horizontal position.
- *alert when the device is upright*: device sends the alert in case of the vertical position. The vertical position is one where the LEDs are located horizontally at the top or at the bottom.
- *alert when the device is rotated*: the device sends an alarm about rotating it 90 degrees.
- *alert if the device changed position*: device sends an alarm if the rest position after stop moving is different than the one before it starts.
- **Sensitivity**: is expressed as a percentage of the accelerometer sensitivity: 100% the highest, 6% the lowest.
- **Alert timer**: if one of the selected alerts lasts a selected time, the device sends the alarm event from timer.
- **Archive alerts**: the device saves the time of the beginning and end of any of the events selected above.

You can save modified settings by pressing the **Write** button.

The picture below shows the **Thermometer** tab:

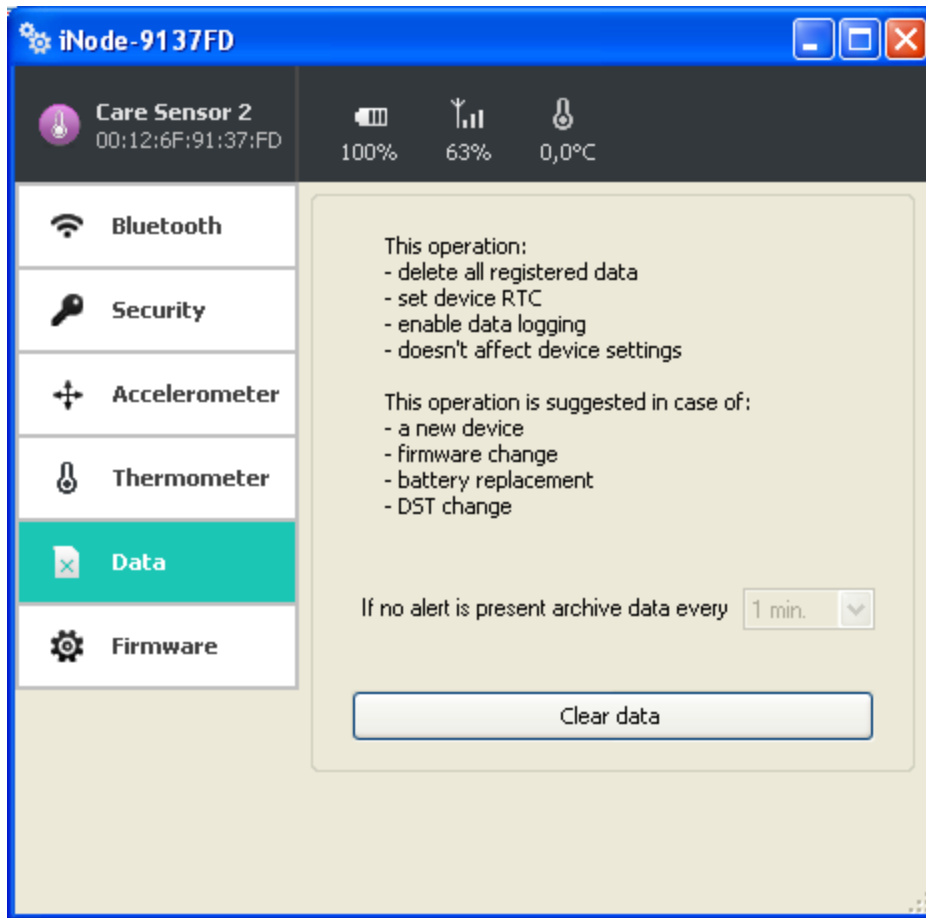


The following items can be set:

- **Alert if temperature is:**
  - *no alarm*: the device does not respond to temperature changes.
  - *greater than*: device sends an alert in case a set threshold temperature value is exceeded.
  - *less than*: device sends an alert in case a set threshold temperature value is exceeded.
  - *out of range*: sends an alert in case a crossing one of the set temperature threshold.
  - *in range*: device sends an alert, in case that the temperature is between set temperature values.
- You can change the temperature threshold value or values in the range from -30 °C to + 70 °C.
- **Archive alerts**: the device saves the time of the beginning and end of any of the events selected above.
- **Archive temperature**: the device keeps the record measured temperature every 1 minute.
- **Temperature correction**: the user can adjust the measured temperature in the range from -2 °C to 2 °C with a resolution of 0.0625 °C.

You can save modified settings by pressing the **Write** button.

The picture below shows the **Data** tab:

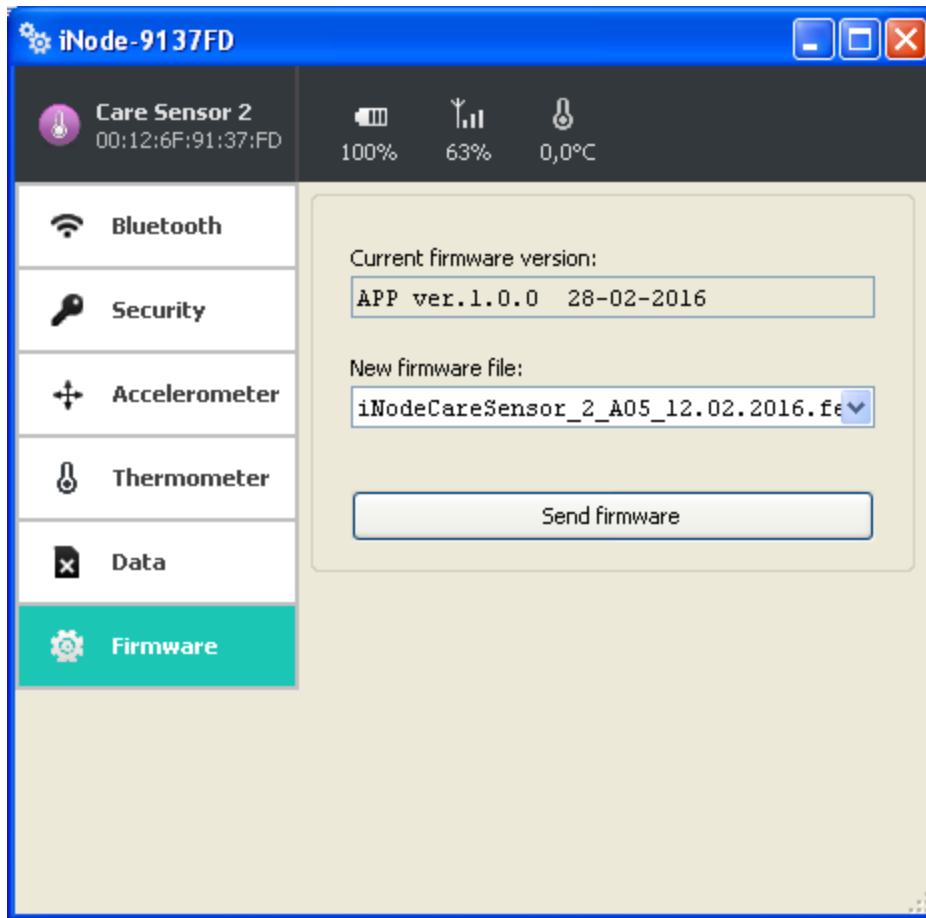


**Clear data** button erases the archived data memory and at the same time enabling archiving data.

Data in memory are saved in a cyclical buffer, e.g. after it is full, the oldest data will be erased. Memory has a capacity of 8192 records. One is the record time stamp and each entry three temperature measurement. So there are up to 24576 results of temperature measurement can be stored in memory.



The picture below shows the **Firmware** tab:



**Current firmware version** field shows the version and creation date of the firmware in the device.

To change the firmware in the device first select **New firmware file**.

Firmware is uploaded to the device after clicking **Send firmware** button. Application checks if this firmware is correct for this type of device to avoid situation that we want to upload the firmware which needs the button to be pressed for broadcasting in the device but this device doesn't have it.

The *fe* files with the firmware, manuals or other information you can find at our technical support: <http://support.inode.pl/>. User: *inode* no password.

### **3. Battery replacement**

The CR2032 battery from **iNode Care Sensor #2** should work up to 12 months. So really the speed of consumption depends on many factors such as operating temperature, frequency of collaboration with the PC or Smartphone (reading the recorded data), set the transmit power level, etc. Characteristics of the battery voltage as a function of time is over a long period of time, practically flat. Only at the end of the battery voltage begins to decrease sharply, and its internal resistance, which leads to rapid consumption.

In order to replace the battery:

1. Open the cover:  
The iNode cover can be opened without the use of tools. The most comfortable way to do it like the walnut shell opens. Simply insert into the gap between the two parts of the casing nails of thumbs and opens it. Inside there is a printed circuit board, with the metal battery holder.
2. Remove the circuit board from the enclosure:  
The battery is inserted into the holder on the side. It can not be removed if the plate is located in the housing.
3. Pull out the holder the old battery.
4. Insert the new battery:  
The battery like a coin has two sides. On one of them there is a large "+" sign and usually the name of the manufacturer. The other party usually has no markings. Insert the battery so that the side marked "+" touches with metal handle (it has also the "+" sign). If the operation was carried out correctly the LED should start flashing.
5. Insert the circuit board into the housing:  
The printed circuit board is not perfectly round has a slight chamfer on one side. Suits him a little bulge inside the case. By inserting the plate into the housing, pay attention to these two items were facing each other.
6. Close the cover:  
On one of the parts of the enclosure there is a pin. You need to set it up so that it was in the vicinity of the beheading described in the previous paragraph. Only with this setting the cover will close properly

## **4. Technical information**

### **Bluetooth Low Energy:**

- configurable from your PC:
  - the power with which the device operates in the range of -18 dBm + 8 dBm (maximum range up to 200 m in open space);
  - the name of the device;
  - the threshold temperature value resulting in sending an alert;
  - on/off the alert caused by the movement or change in position;
  - type of archived information;
  - group (logical network) to which alerts are sent;
  - the password of the user;
  - the password to access the device; independent of the user's password, the password for the authorization application on the smartphone or PC (protects against its copying and use by another client);

### **Power supply:**

- the battery CR2032;

### **Housing:**

- plastic;
- dimensions: Ø 32 mm x 9.5 mm;

### **Other:**

- remote firmware update;
- two LEDs;
- 10-bit or 14-bit motion sensor, 3-axis accelerometer;
- temperature sensor with a resolution of 1 °C;
- operating temperature: from -30 to 65 °C;
- humidity: 20-80 % RHG;
- weight: 5 g;

### **Additional temperature sensor MCP9844:**

- Accuracy:
  - $\pm 0.2^{\circ}\text{C}/\pm 1^{\circ}\text{C}$  (typ./max.)  $+75^{\circ}\text{C}$  to  $+95^{\circ}\text{C}$
  - $\pm 0.5^{\circ}\text{C}/\pm 2^{\circ}\text{C}$  (typ./max.)  $+40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
  - $\pm 1^{\circ}\text{C}/\pm 3^{\circ}\text{C}$  (typ./max.)  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Measurement Resolution:
  - $\pm 0.5^{\circ}\text{C}$ ,  $\pm 0.25^{\circ}\text{C}$ ,  $\pm 0.125^{\circ}\text{C}$ ,  $\pm 0.0625^{\circ}\text{C}$

### **Equipment:**

- the battery CR2032;

### **Software:**

- Windows XP/Vista/7.0/8.0/8.1/10.0;
- Linux;

### **Chipset:**

- CSR 101x;

## 5. Disposal



All the packaging materials are recyclable and are labeled as such. Dispose of the packaging in accordance with local regulations. Keep the materials out of children reach, as the materials can pose a hazard.

### **Proper disposal:**

- According to WEEE Directive (2012/19/UE) the crossed-out wheeled bin symbol (shown on the left) is used to label all electric and electronic devices requiring segregation.
- Do not dispose of the spent product with domestic waste: hand it over to an electric and electronic device collection and recycling point. The crossed-out wheeled bin symbol placed on the product, instruction manual or package communicates this requirement.
- Plastics contained in the device can be recycled in accordance with their specific marking. By recycling materials and spent equipment you will help to protect the environment.
- Information on electric and electronic devices collection locations is available from local government agencies or from the dealer.
- Spent or fully discharged single-use and rechargeable batteries must be discarded in dedicated labeled bins, handed over to hazardous waste collectors or returned to electric equipment dealers.

**DECLARATION OF CONFORMITY 1/7/2014**

(according to ISO/IEC Guide 22)

*Producer:* **ELSAT s.c.**

*Address:* **Warszawska 32E/1, 05-500 Piaseczno k/Warszawy POLAND**

Declares that the product:

*Product:* **iNode Care Sensor #2**

*Model:* **iNode:0x0804**

Conforms to the following Product Specifications and Regulations:

PN-EN 60950-1:2007/AC:2012

PN-ETSI EN 301 489-1 V1.9.2:2012

PN-ETSI EN 301 489-3 V1.6.1:2014-03

PN-ETSI EN 301 489-17 V2.2.1:2013-05

PN-ETSI EN 300 328 V1.8.1:2013-03

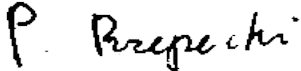
PN-EN 62479:2011/Ap1:2013-07

The product herewith complies with the requirements of the Low Voltage Directive 73/023/EEC, the EMC Directive 89/336/EEC, the RoHS Directive 2011/65/EU and carries the CE - marking accordingly.

Place of issue:  
Piaseczno k/Warszawy

Signed on behalf of producer: Paweł Rzepecki  
Function: Co-owner

Date of issue:  
04.07.2014

Signature: 

**ELSAT s.c.** ul. Warszawska 32E/1 05-500 Piaseczno k/Warszawy POLAND

phone: +48 22 716 43 06

<http://iNode.pl/>