iNode Care Sensor PHT

Instruction manual

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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 PHT is a wireless BT4.0 precise pressure, temperature and humidity sensor with a built-in memory of events. It is intended mainly to home automation and weather stations.

The value of measured pressure, temperature & humidity 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 temperature and/or humidity level was above or below threshold level. The sensor can be used with **iNode Care Relay**. Device configuration software allows you to specify the conditions which are met will, send an alarm, and hence enable/disable external device.

2.   iNode Care Sensor PHT

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 PHT** it is the first picture in the first row in the window below.

To configure **iNode Care Sensor PHT** device you should double click on its icon. Application connects with this device and reads its settings:
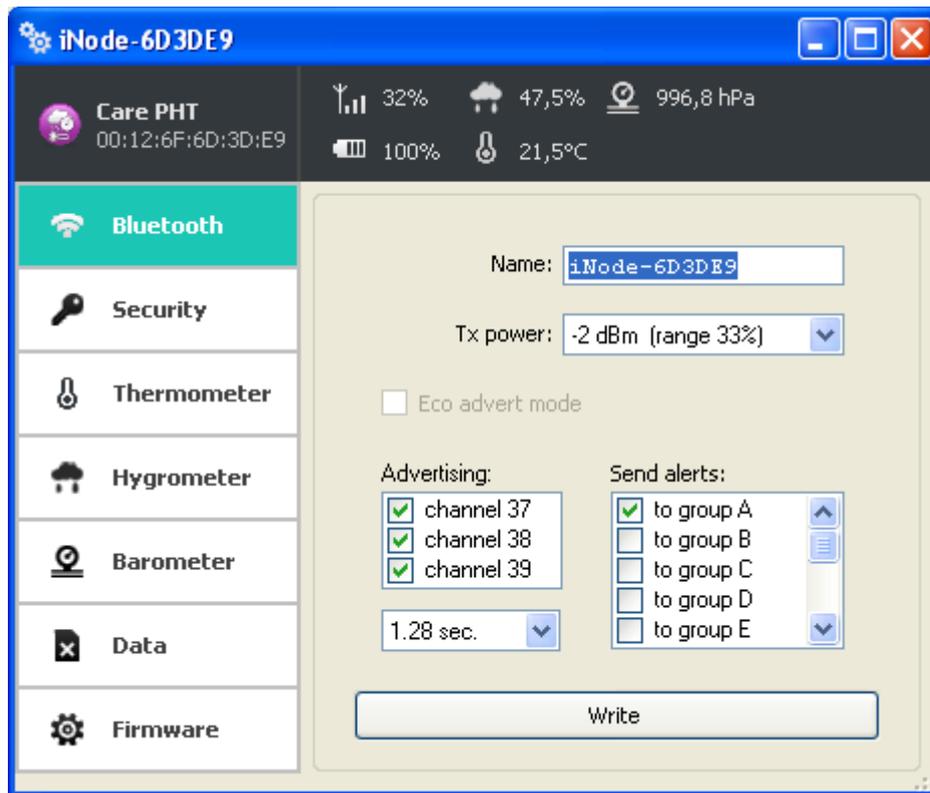
At the top of the window there is displayed following information:
– the name of the **iNode** family – in this case **iNode Care Sensor PHT;**
– the unique device identifier;
– battery level: 100% means 3V or greater, while 0% it is 1,8V;
– humidity;
– pressure;
– signal strength received by this device 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 *~200m*, and **iNode Care Sensor PHT** 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 PHT** 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:
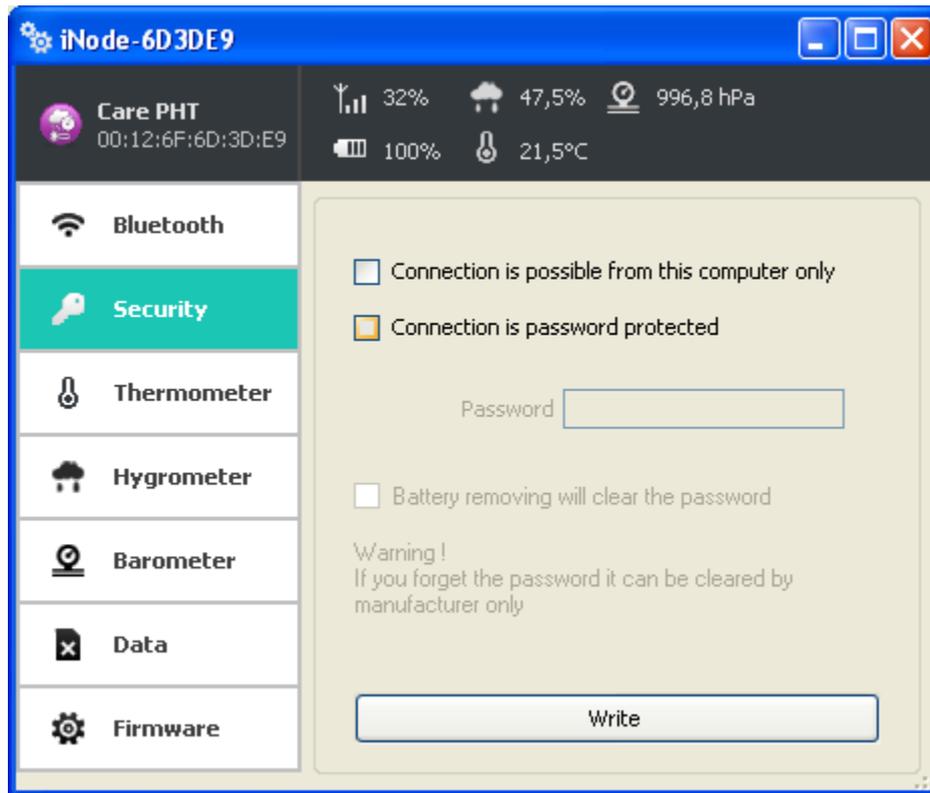
The following items can be set:
– **Connection is possible from this computer only**: this option enable you to protect the **iNode Care Sensor PHT** access from others PCs or phones. You can reset this protection by battery removing for at least one minute. This type of protection cannot be set in case of **iNode Care Relay**.
– **Connection is password protected**: access to the **iNode Care Sensor PHT** 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 **Thermometer** tab:
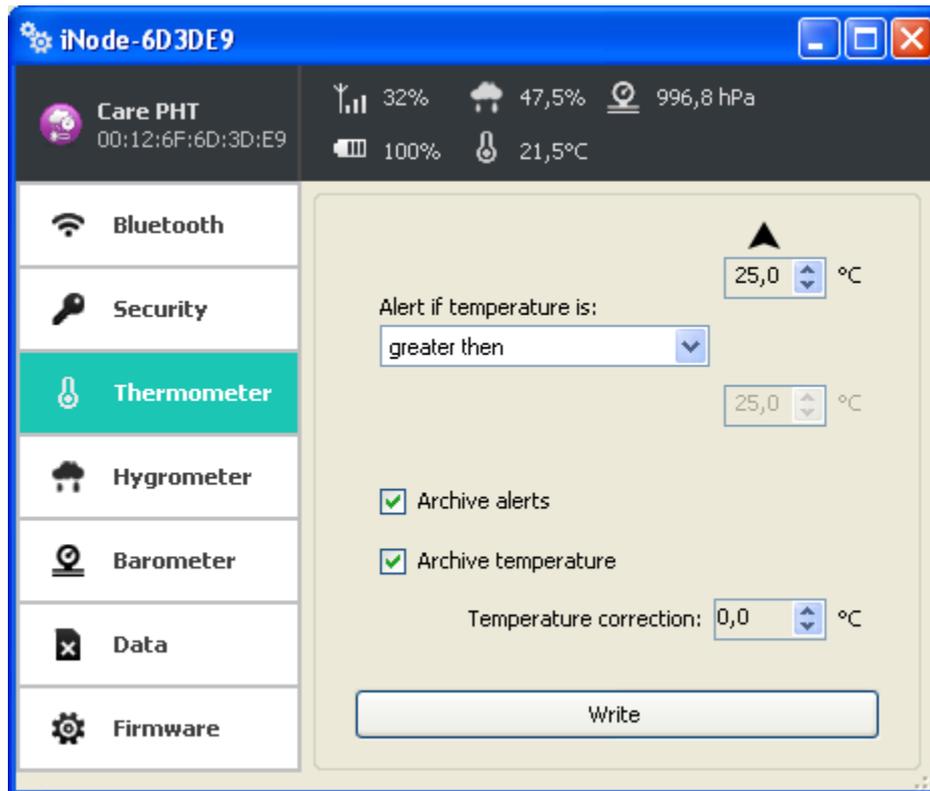
The following items can be set:
- **Alert if temperature is**:
  - *no alarm*: the device does not respond to temperature changes.
  - *greater than*: device sends an alert in case a set threshold temperature value is exceeded.
  - *less than*: device sends an alert in case a set threshold temperature 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 0.01 ° C.

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

The picture below shows the **Hygrometer** tab:
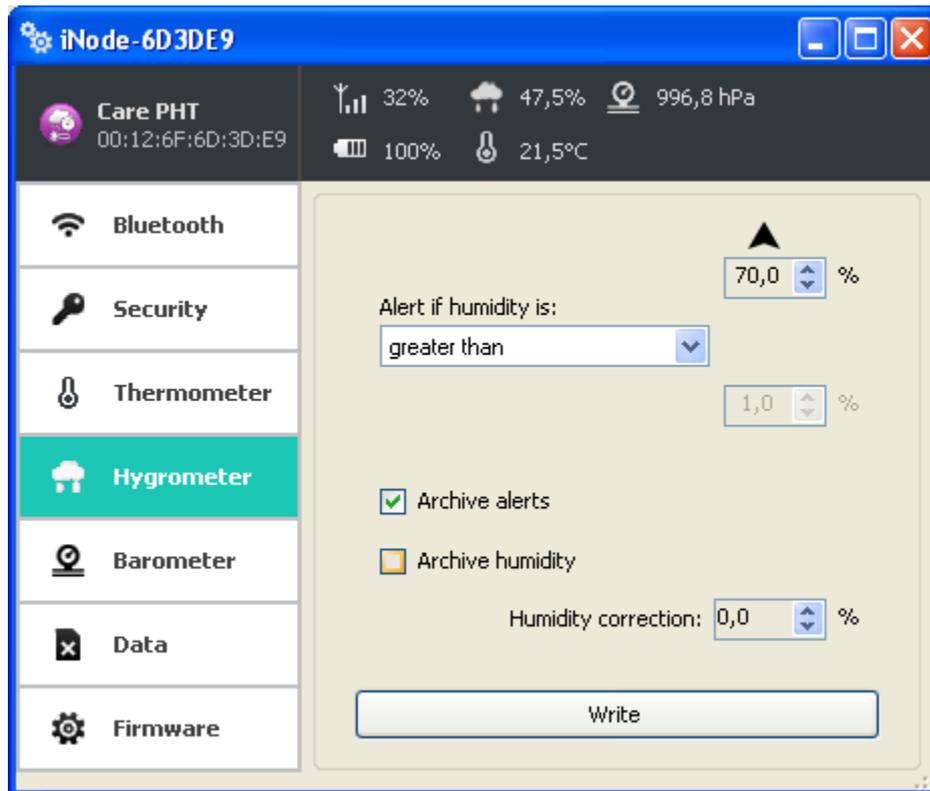
The following items can be set:

– **Alert if humidity is**:
  – *no alarm*: the device does not respond to humidity changes.
  – *greater than*: device sends an alert in case a set threshold humidity value is exceeded.
  – *less than*: device sends an alert in case a set threshold humidity value is exceeded.
  – *out of range*: sends an alert in case a crossing one of the set humidity threshold.
  – *in range*: device sends an alert, in case that the humidity is between set humidity values.
  You can change the humidity threshold value or values in the range from 1 % to 99 %.
– **Archive alerts**: the device saves the time of the beginning and end of any of the events selected above.
– **Archive humidity**: the device keeps the record measured humidity every 1 minute.
– **Humidity correction**: the user can adjust the measured humidity in the range from-20 % to 20 % with a resolution of 0.5 %.

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

The picture below shows the **Barometer** tab:
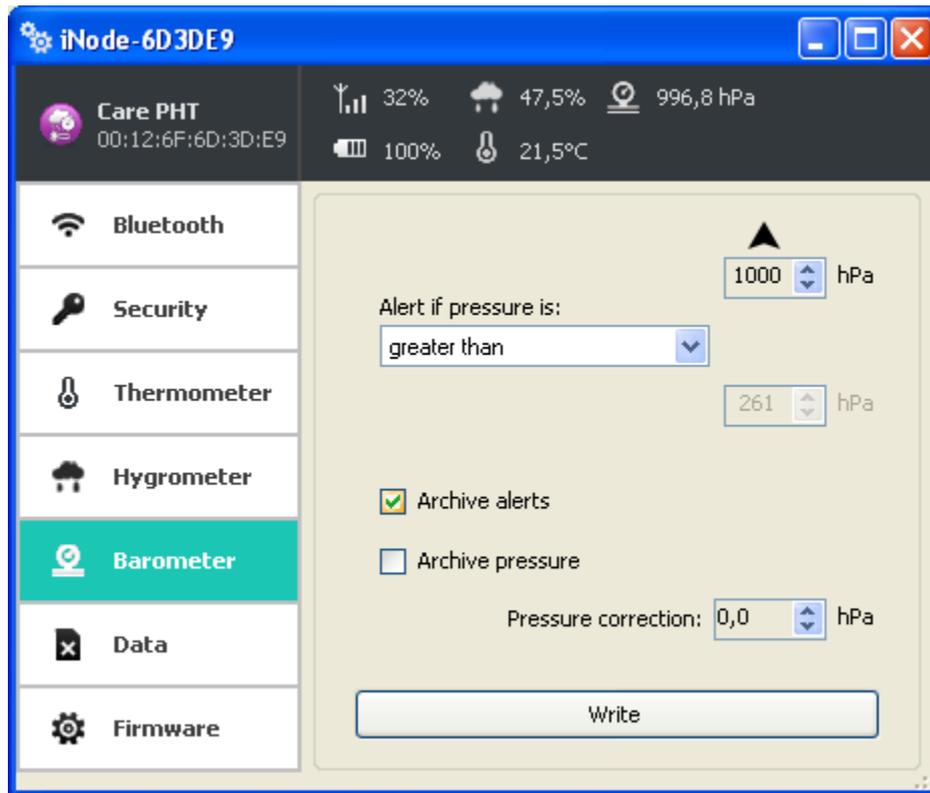
The following items can be set:
- **Alert if pressure is**:
  - *no alarm*: the device does not respond to pressure changes.
  - *greater than*: device sends an alert in case a set threshold pressure value is exceeded.
  - *less than*: device sends an alert in case a set threshold pressure value is exceeded.
  - *out of range*: sends an alert in case a crossing one of the set pressure threshold.
  - *in range*: device sends an alert, in case that the pressure is between set pressure values.

  You can change the pressure threshold value or values in the range from 261 hPa to 1269 hPa.
- **Archive alerts**: the device saves the time of the beginning and end of any of the events selected above.
- **Archive pressure**: the device keeps the record measured pressure every 1 minute.
- **Pressure correction**: the user can adjust the measured pressure in the range from -100 hPa to +100 hPa with a resolution of 0,1 hPa.

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

The picture below shows the **Data** tab:
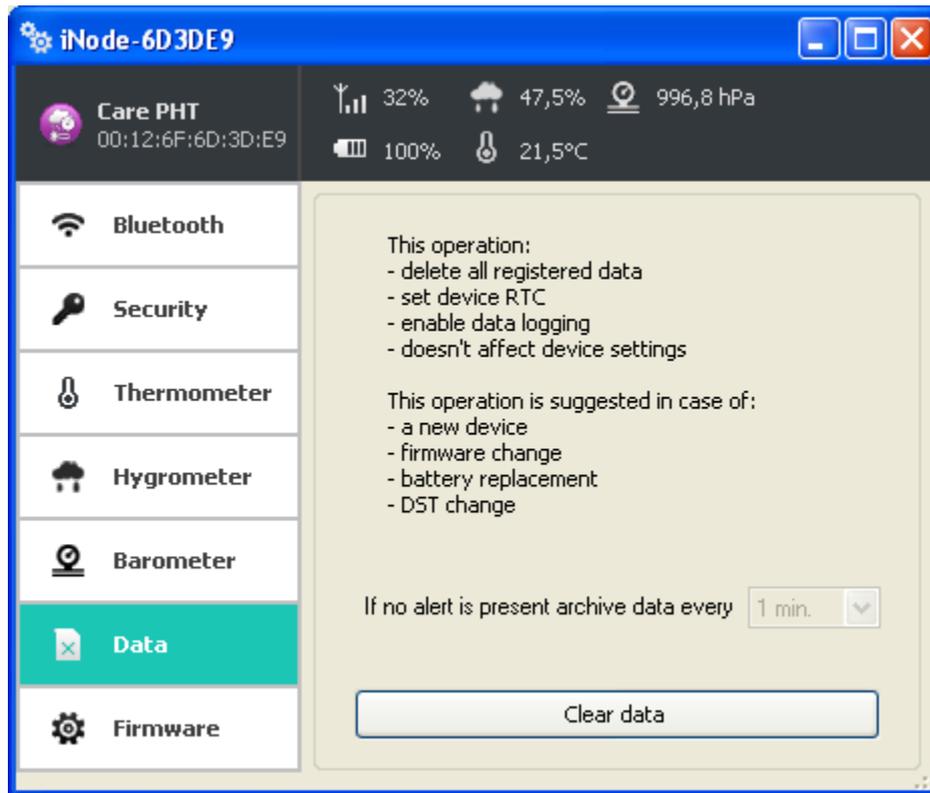
Clear data button erases the archived data memory and at the same time enabling archiving data.

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 pressure and/or temperature and/or humidity measurement can be stored in memory.

The picture below shows the **Firmware** tab:
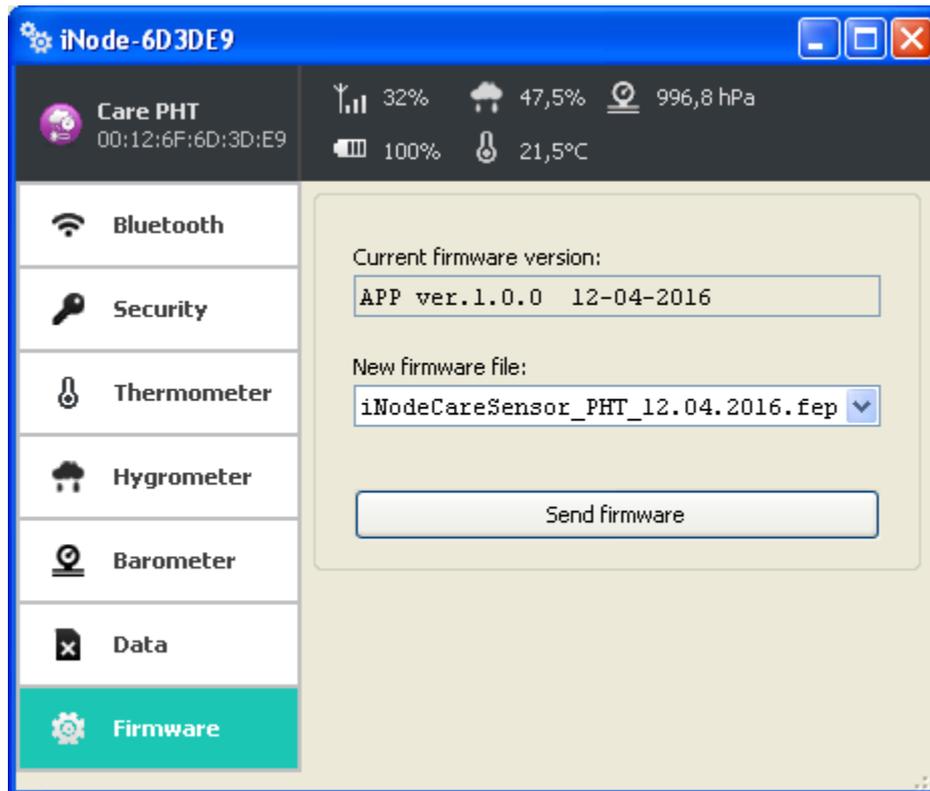
Current firmware version field shows the version and creation date of the firmware in the device.

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 *fep* 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 PHT** should work up to 6 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 pressure value resulting in sending an alert;
  - the threshold temperature value resulting in sending an alert;
  - the threshold humidity value resulting in sending an alert;
  - 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;
- operating temperature: from -30 to 65 °C;
- humidity: 10-90 % RHG;
- weight: 5 g;

Additional pressure sensor LPS331AP:
- Operating pressure range :
  260 to 1260 hPa
- Relative accuracy over pressure:
  ±0.1 hPa/±0.2 hPa (typ./max.) P = 800 to 1100 hPa, T= 25°C
- Absolute accuracy pressure:
  3.2 hPa/±2 hPa/+2.6 hPa (min./typ./max.) P = 800 to 1100 hPa, T= 0 to +80°C
- Measurement Resolution:
  ±0.0625 hPa

Additional temperature sensor Si7021:
- Accuracy:
  ±0.3°C/±0.4°C (typ./max.) -10°C to +85°C
- Measurement Resolution:
  ±0.01 °C

Additional humidity sensor Si 7021:
- Accuracy:
  ±2%RH/±3%RH (typ./max.) 0% to 80%
  ±2%RH/±4.5%RH (typ./max.) 80% to 100%
- Measurement Resolution:
  ±0.025%RH

Equipment:
- the battery CR2032;

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

Chipset:
- CSR 101x;

THE MANUFACTURER RESERVES THE RIGHT TO MAKE CHANGES AND/OR IMPROVEMENTS IN DESIGNS, FEATURES & DIMENSIONS WITHOUT NOTICE AND WITHOUT INCURRING OBLIGATION

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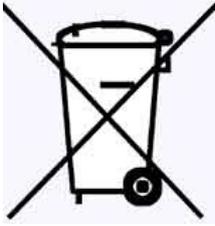
All the packaging materials are recyclable and are labeled as such. Dispose of the packaging in accordance with local regulations. Keep the materials out of children reach, as the materials can pose a hazard.

Proper disposal:
- According to WEEE Directive (2012/19/UE) the crossed-out wheelie 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 wheelie 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 2/4/2016

(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 PHT***
Model: **iNode:0x0809**

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: Signed on behalf of producer: Paweł Rzepecki
Piaseczno k/Warszawy   Function: Co-owner

Date of issue: Signature:
08.04.2016
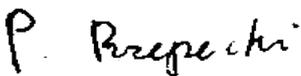
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