



NEOMATICA

Tag ADM34

Operation manual

Edition 1.0

This operation manual refers to the Tag ADM34 (Tag hereinafter), the manual describes its functionality, the procedure of its configuration and operation.

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1 Application and functions

The tag is designed to identify objects and persons.

The tag contains a microcontroller with integrated Bluetooth Low Energy 4.1 (BLE) radio interface, two buttons, a LED and a sound transmitter. The tag is powered by a lithium battery CR2450. The tag transmits the identification number according to the chosen algorithm through radio channel using Bluetooth Low Energy 4.1 technology.

2 Technical characteristics

- Operating temperature: from 0°C up to + 40°C;
- Frequency range of radio interface: 2400..2483,5 MHz;
- Transmitter power: up to +8 dBm;
- Receiver sensitivity: -96 dBm;
- Data exchange technology: Bluetooth Low Energy (BLE);
- Coverage in the mode of BLE: up to 50 m in line-of-sight;
- Supported protocols: ADM, iBeacon, AltBeacon, Eddystone UID, Eddystone URL, Eddystone EID, SOS.
- Battery: CR2450 Panasonic;
- Operation time with one battery: up to 1 year;
- Housing protection level: IP53 ;
- Housing material: ABS plastic;
- Dimensions, mm, not more than: 40x40x10 (without fob);
- Weight: not more than 20 g.



Figure 1 – View of the tag.

3 Preparation for use and configuration

3.1 Preparation for use

The tag is supplied switched with factory settings. By default continuous transmission is set, the period of transmission is 1 second, the protocol is ADM.

3.2 Application «ADM BLE-Configurator»

Application «ADM BLE-Configurator» is available in Google Play.

To work with the application, you need the permission of the «Geolocation» or «Location». This is due to Google requirements for applications that provide data exchange with BLE devices, since BLE technology includes positioning by BLE beacons. You also need permission for the access of photos, media and files because this is used when updating the sensor software.

The Android application «ADM BLE-Configurator» performs the following functions:

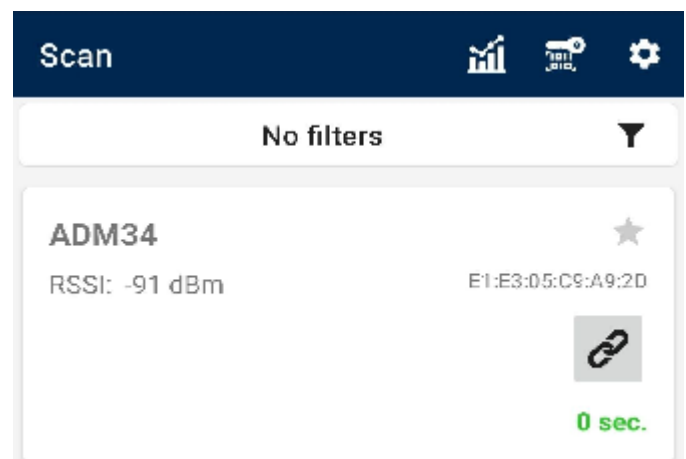
- Tag control;
- Tag configuration;
- Assessment of signal level when passing through obstacles;
- Assessment of the battery state;
- Definition of the tag address;
- Definition of the firmware version.

3.2.1 Search of the tag in application «ADM BLE-Configurator»

- Launch «ADM BLE-Configurator» application.
- Make sure that the application has been given all the necessary permissions.
- For correct operation, you need not only to permit the use of the «Geolocation» or «Location», but also to enable this function if it is disabled.
- The tag will be found as soon as the next message is sent.
- If the tag is not detected, press both buttons at the same time and hold them not less than 10-15 seconds before the beep, then try detecting again.

Following parametrs are available:

- Model;
- MAC-address;
- RSSI –level of received radio signal
- The time passed since the last data message was received




4 Configuration

The tag is supplied switched with factory settings. By default continuous transmission is set, the period of transmission is 1 second, the protocol is ADM.

If default settings comply with the set goals, it is not necessary to make configuration.

Configuration is done in the application "ADM BLE-Configurator" in OS Android.

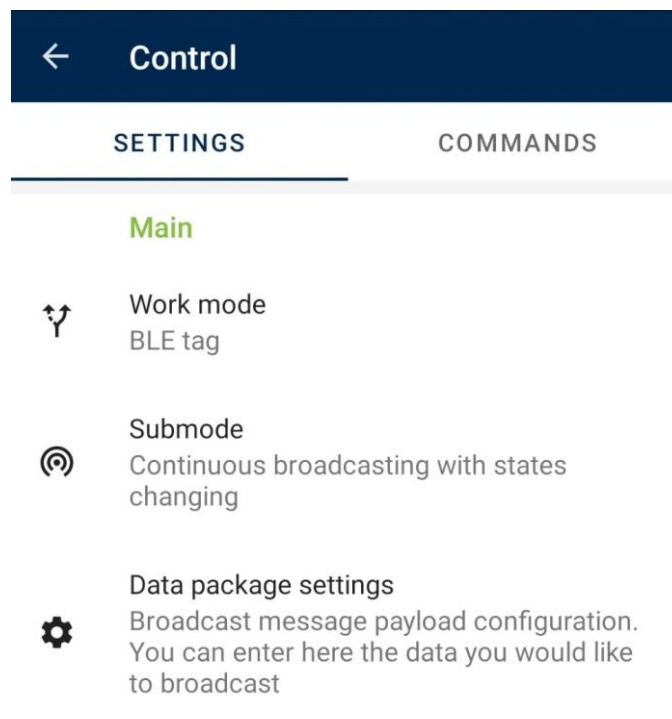
4.1 Configuration of the tag in "ADM BLE-Configurator"

To check or change the tag settings, wait until it is detected and click on the icon 

- to go to the menu "Control". If the tag is not detected, press both buttons at the same time and hold them not less than 10-15 seconds before the beep, then try detecting again.


4.2 Main parameters of the tag

The tag configuration contains three levels that depend on each other. We recommend setting three main parameters in the following order: mode of operation, submode, data package control.



4.2.1 Mode of operation

Configuration of the main broadcast mode. This parameter determines what role the tag plays.

 **Work mode**

Mode selection allows you to determine in which role the ADM34 will be used and what functionality will be available.

Immobilizer control

BLE tag

Combined

ADM333 Control

CANCEL

Following modes are:

- BLE Tag
- Immobilizer control – The tag makes works as remote control for the ADM33 immobilizer. It is possible to change the state of the immobilizer by buttons or by presence/absence of signal.
- Mixed – device works as a tag and as remote control for immobilizer at the same time. Broadcasting is carried out by pressing buttons or periodically. In this case, the submode does not need to be selected. The broadcast algorithm is configured in the menu “Data package control”.

4.2.2 Submode

Configuring the algorithm of message transmission on air. The availability of either submode depends on the mode of operation of the selected tag

Submode

The submode allows you to set how the ADM34 will transmit data: automatically, by pressing a button, or automatically, but with the ability to change the transmitted data on request.

- Continuous broadcast
- Continuous broadcasting with states changing
- Broadcast by button
- Pressing the buttons enables/disables continuous broadcasting

CANCEL

Following submodes are available:

- Continuous broadcast– broadcasting according to the established period.
- Continuous broadcasting with changing of the state - broadcasting according to the established period with change of the identifier and broadcasting protocol by pressing the button. A protocol and an identifier are set for each button.
- Broadcast by button – broadcasting starts after pressing the button and stops after the set time has passed. Each button is set to the broadcast duration, protocol, and identifier.
- Pressing the button turns broadcast on or off - broadcasting according to the established period with ability to stop or continue broadcasting by button.

4.2.3 Data package control

Set the broadcast protocol and identifier. The availability of a particular item depends on the selected submode.

Detailed description is given in paragraph 4.3.

4.2.4 Other configurations

- Password

Set password to protect configurations.

The password is required to run the session of the configurations. The existence of password doesn't affect tag.

- LED indication

Turn the light indication on or off.

- Sound indication

Turn the sound indication on or off.

- Battery power alert

Turn the battery power alert on or off.

- Potencia del transmisor

Setting transmitter power. The lower the power, the smaller the distance over which the signal will be transmitted. Signal transmission range also depends on the surrounding conditions.

- Reset configurations

Resets the tag to factory settings.

- Firmware actualization

This menu updates the tag software.

4.3 Configuration of broadcast in the mode «BLE tag».

Mode: BLE tag,

Submode: continuous broadcast.

The tag transmits identifier by chosen protocol with set period. Chose the protocol, identifier of the tag (UID) and set the period of broadcasting in menu “Data package control”.

Mode: BLE tag,

Submode: continuous broadcast with changing of state.

In this mode a selection of two broadcast protocols is available each with its own identifier. Switching between them is performed by pressing one of the buttons. The label transmits the identifier over the selected protocol with the set frequency, after a short press on the button the corresponding identifier and protocol button is switched to broadcast.

Chose the protocol, identifier of the tag (UID) and set the period of broadcasting in menu “Data package control”.

Modo: BLE tag,

Submode: broadcast by button.

In this mode, a selection of two broadcast protocols is available, each with its own identifier. Broadcast starts after a short press on the button and stops by expiration of the established broadcast duration.

Chose the protocol, identifier of the tag (UID) and set the duration of broadcasting in menu “Data package control”.

Editing

Device data

Device address: C4:9C:3E:05:A7:74

Encryption key:

Continuous broadcast packet

Command: Relay state ON

General

Broadcast period: 10

Seconds: 1

2

SAVE

Editing

Device data

Device address: C4:9C:3E:05:A7:74

Encryption key:

Big button packet

The packet that will be transmitted after pressing the **big button**

Command: Relay state OFF

Broadcasting duration: 30

Seconds: From 2 to 600 sec.

Small button packet

The packet that will be transmitted after pressing the **small button**

Command: Relay state ON

Broadcasting duration: 30


Seconds: From 2 to 600 sec.

Mode: BLE tag,


Submode: pressing the buttons turns on/off the continuous broadcast.

The tag transmits the identifier over the selected protocol at a set frequency. Pressing a small button starts broadcasting, pressing a large button stops broadcasting.


Chose the protocol, identifier of the tag (UID) and set the period of broadcasting in menu “Data package control”.

✕ Editing 

Device data

Device address 

Device address in any format

Encryption key 

16 bytes, e.g. 32 HEX signs (0-9, A-F)

Big button packet

The packet that will be transmitted after pressing the **big button**

Command: **Relay state OFF** ▼

Broadcasting duration Seconds

From 2 to 600 sec.

Small button packet

The packet that will be transmitted after pressing the **small button**

Command: **Relay state ON** ▼

Broadcasting duration Seconds

From 2 to 600 sec.

4.4 Broadcast configuration in mode "Control of immobilizer".

To control the immobilizer ADM33 enter the immobilizer MAC-address and encryption key in menu "Data package control".

If you select the mode "Immobilizer Control", you will be prompted to set the password of access the tag configurations. We recommend setting a password, otherwise other people can access the address and encryption key of the immobilizer.

Mode: control of immobilizer.

Submode: continuous broadcasting.

The tag sends the command to switch the immobilizer to the specified state at the specified frequency.

For example, the immobilizer is set to switch relay to the off mode in the absence of commands, and the tag is set to send a command to turn it on. Immobilizer relay will turn on when a tag appears in the receiving area and turn off when the tag leaves the area.

In menu "Data Package Control" select the state to which to switch the immobilizer relay and set the broadcast frequency.

Modo: control of inmovilizer.

Submode: continuous broadcasting with changing of state.

The tag sends the command to switch the immobilizer at the set frequency.

The state to which the relay should switch is determined by the last pressed tag button.

In menu "Data Package Control" select the state to which to switch the immobilizer relay and set the broadcast frequency.

The screenshot shows the 'Editing' screen for the 'Control of immobilizer' mode. The 'Device data' section includes a 'Device address' dropdown menu set to 'C4:9C:3E:05:A7:74' and a QR code. Below it is an 'Encryption key' field with a masked password and a toggle for visibility. A note indicates '16 bytes, e.g. 32 HEX signs (0-9, A-F)'. The 'Continuous broadcast packet' section shows the 'Command' set to 'Relay state ON'. The 'General' section has a 'Broadcast period' of 1 second, with a range from 10 to 2 seconds. A green 'SAVE' button is at the bottom right.


The screenshot shows the 'Editing' screen for the 'Control of immobilizer' mode in 'continuous broadcasting with changing of state' submode. The 'Device data' section is identical to the previous screenshot. The 'Big button packet' section shows the 'Command' set to 'Relay state OFF' and a 'Broadcasting duration' of 30 seconds, with a range from 2 to 600 seconds. The 'Small button packet' section shows the 'Command' set to 'Relay state ON' and a 'Broadcasting duration' of 30 seconds, also with a range from 2 to 600 seconds.

Mode: control of immobilizer.


Submode: broadcasting by button.

Broadcasting begins after a short press on the button and stops after the set broadcast duration has expired. Each button is assigned a state to which the immobilizer relay should switch


In the "Data package control" menu for each tag button select the state to which to switch the immobilizer relay and set the broadcast duration.

× Editing 

Device data

Device address 

Device address in any format

Encryption key 

16 bytes, e.g. 32 HEX signs (0-9, A-F)

Big button packet

The packet that will be transmitted after pressing the **big button**

Command: **Relay state OFF** ▼

Broadcasting duration Seconds

From 2 to 600 sec.

Small button packet

The packet that will be transmitted after pressing the **small button**

Command: **Relay state ON** ▼

Broadcasting duration Seconds

From 2 to 600 sec.

4.5 Broadcasting configuration in mode “Mixed”.

The "Mixed" mode is a combination of the "Control of immobilizer, broadcast by button" and "BLE tag, constant broadcasting" modes. A tag with a set frequency broadcasts the identifier over the selected protocol, and also sends control commands to immobilizer when buttons are pressed.

Submode configuration isn't available in this case. Configuration should be made in menu “Data package control”.

To get access to control the immobilizer ADM33 enter Immobilizer MAC-address and encryption key. We recommend setting a password, otherwise other people can access the address and encryption key of the immobilizer.

Chose protocol, identifier (UID) of the BLE-tag, broadcast period in the menu “Data package control”. For each label button, select a state to which to switch the immobilizer relay and set the broadcast duration.

Editing

Address and key of ADM33

Device address: C4:9C:3E:05:A7:74

Device address in any format

Encryption key:

16 bytes, e.g. 32 HEX signs (0-9, A-F)

Continuous broadcast packet **BLE tag**

Data packet that will be continuously broadcasted if no buttons are pressed

Protocol: **ADM**

UID: EADAA94A3DB0

HEX signs (digits from 0 to 9 and letters from A to F) are allowed

Broadcast period: 10

Frequency of sending data in seconds. This parameter determines the interval with which one data packet will be sent

Big button packet **Immobilizer control**

The packet that will be transmitted after pressing the **big button**

Command: **Relay state OFF**

Broadcasting duration: 30

The duration of the broadcast of the selected package after pressing the button. Measured in seconds. The number of packets to be sent depends on the set broadcast period

Small button packet **Immobilizer control**

The packet that will be transmitted after pressing the **small button**

Command: **Relay state ON**

Broadcasting duration: 30

The duration of the broadcast of the selected package after pressing the button. Measured in seconds. The number of packets to be sent depends on the set broadcast period

5 Tag firmware actualization

Wait until the sensor is detected

To switch to the «Control» menu click the icon



Click on «Firmware update»

If the tag firmware version is less than the version of the current firmware available on the update server, the message «Update available» will be displayed indicating the current version. To start the update process, click «update».

To check the relevance of the firmware version and download it from the update server, the application needs Internet access. At the same time, traffic may be consumed or a fee for communication services may be charged by your mobile network operator. The «ADM-BLE Configurator» application does not support a continuous connection via the Internet. Synchronization of firmware versions is performed no more than once a day. The sensor firmware has a size of not more than 100 kB.

6 Storage and Transportation

The tag should be stored in a warehouse at a temperature of 0C to +29C and relative humidity at most 85 %.

After transportation of the tag in sub-zero temperatures they should be stored at room temperature within 24 hours

7 Warranty

The manufacturer guarantees the proper function of the tag within 12 months from the day of its sale if consumer meets all the requirements and follows all the rules of transportation, storage, installation and handling.

The warranty does not cover:

- tags with mechanical damages and defects (cracks and chips, dents, signs of impacts, etc.) caused by consumer as a result of handling, storage and transportation rules violation. When there are signs of oxidation or other proofs of liquid penetration in the sensor housing;
- tags with signs of electrical and/or other damages caused as a result of unacceptable changes in external power network parameters or improper use of the terminal;

The device software is licensed, terms related to the manufacturer's limited liability in the framework of the License Agreement are provided at the web site

<https://neomatica.com/upload/docs/license.pdf>

8 Marking and Packing

Marking is placed on the housing of the tag. Both multipack and individual package is possible.

9 Disposal

Disposal of the tag and discharged battery is performed according to national and local norms and requirements.

10 Scope of supply

Device name	Quantity	Comments
Tag ADM34		

11 Acceptance certificate

Tag ADM34 in the amount of _____ pcs are considered to be ready for operation

Date of manufacture:

Manufacturer: «Neomatica»LLC

614087, Russia, Perm, 24A Malkova Str., office 6.

Telephone: +7 (342) 2-111-500 (ext. 42).

E-mail: sales@neomatica.com

Web site: <http://neomatica.com/en>