Jamming Detection

1 Introduction

1.1 About the Functionality

The jamming detection functionality is used to detect the jammed cellular communication, caused by special jammers. GSM jamming detection allows you to identify active jamming of the cellular network and allows to take an immediate action.

1.2 Legal Information

1.3 Compatibility

This functionality is compatible with the following devices with the newest firmware version:

- HCV5
- LCV5
- Pro5
- Trace5 (except Trace5 NA Verizon)
- Tco4 HCV
- Tco4 LCV
- Pro4
- Eco4
- Eco4 RS T
- Eco4 S
- Eco4 T

1.4 Contact Information

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1.5 Document Changelog

Version	Date	Modification
1.0	2017-05-17	Initial draft.
1.1	2017-08-07	Added special conditions section.
1.2	2018-01-12	GSM jamming detection principles described.
1.3	2018-11-05	Ignition lock schematic updated.
2.0	2020-07-16	Updated: List of compatible devices. Updated: Manual structure and design.
2.1	2020-10-23	Updated: List of compatible devices.
2.2	2020-12-18	Updated: Compatibility. Updated: Description.

1.6 Notations

The following notations are used in this document to highlight important information:

Bold text

Used to indicate user interface elements or for emphasis.

Italic text

Used to indicate items that belong to a list and can be selected, also for identification of examples.

Note

Used to highlight important information or special conditions.

1.7 References

Ignition blocking relay, LED and Buzzer connection instructions:

https://doc.ruptela.lt/pages/viewpage.action?pageId=884778

2 Description

The jamming detection functionality allows the tracking device to not only detect the interference or jamming of the cellular signal but also to configure the various digital outputs (DOUTs) in response to the detected signal jamming. The driver can immediately be notified that the cellular network is being jammed and vehicle ignition can be blocked until the network is no longer jammed.

The jamming detection works as follows:

a) The signal strength is measured on each channel and compared to a noise threshold.

b) If the signal strength is greater than or equal to the noise threshold, the channel is considered to be disturbed.

c) The number of disturbed channels is compared to a threshold. If there are more disturbed channels than the threshold, jamming is detected.

d) Once jamming is detected, the buzzer and/or ignition blocking are activated, depending on the configuration. For the connection of peripheral devices, refer to Ignition blocking relay instructions or the Digital output user manual (for LED and Buzzer)

Jamming cannot always be successfully detected and false alarms may occur, as in certain environmental conditions the module may detect high noise levels on some channels due to interference from external devices, radios, reflected signals, etc.

Jamming detection is active all the time in the device even without configuring it. The purpose of the configuration is to set up a method to inform the server (along with packed data) or the driver of the jamming is present.

To use the jamming detection functionality with LTE Cat M1 models, the modem firmware version must be BG96MAR02A07M1G_01.018.01.018 or newer. The modem firmware version can be checked using the *modrev* SMS command.

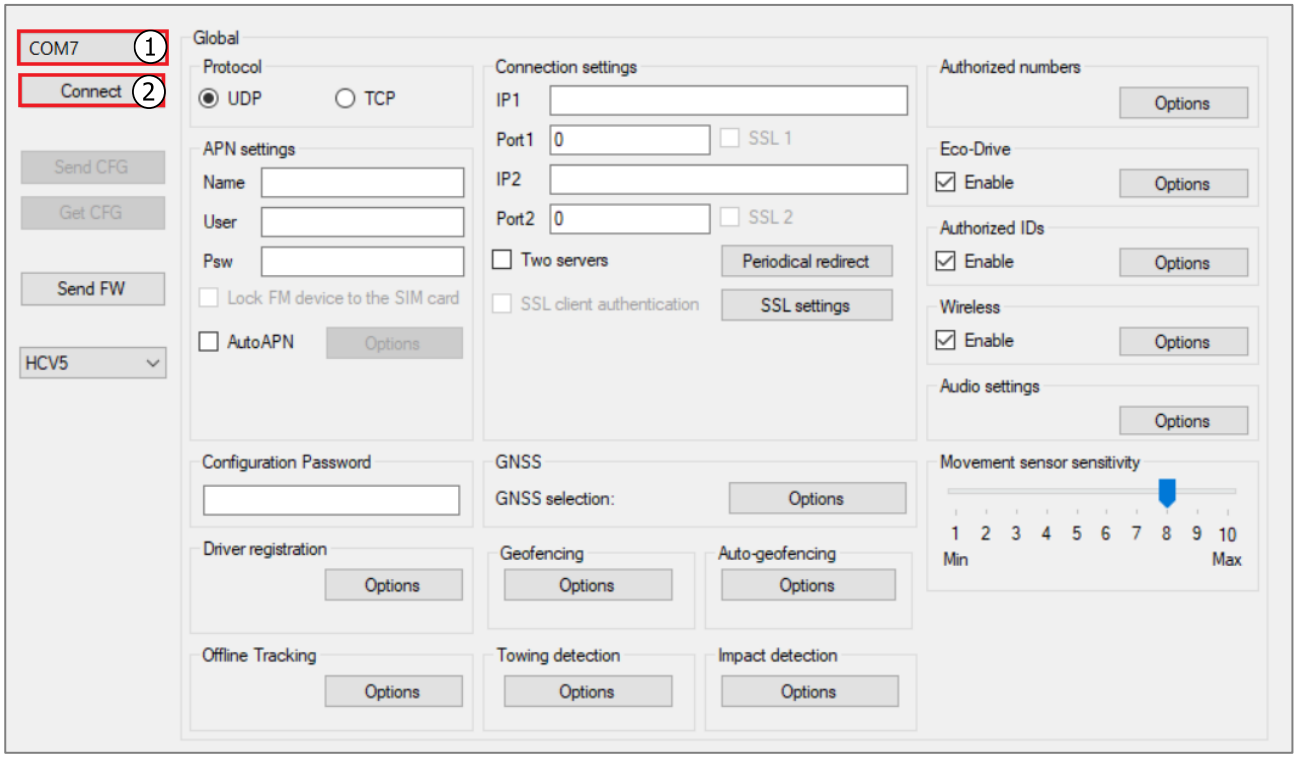
3 Configuration

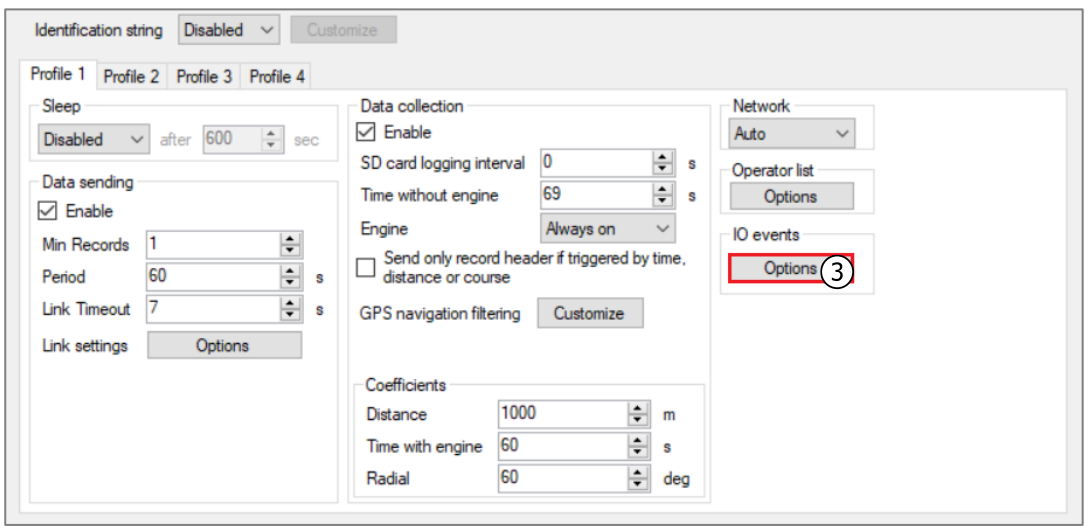
This functionality requires the use of the advanced configurator.

3.1 Starting the Configuration

To start the configuration, follow these steps:

1. Open the advanced configurator. Select the COM port to which your device is connected.
2. Click **Connect**.
3. Click the **Options** in the **IO events** section to open the **IO settings** window.



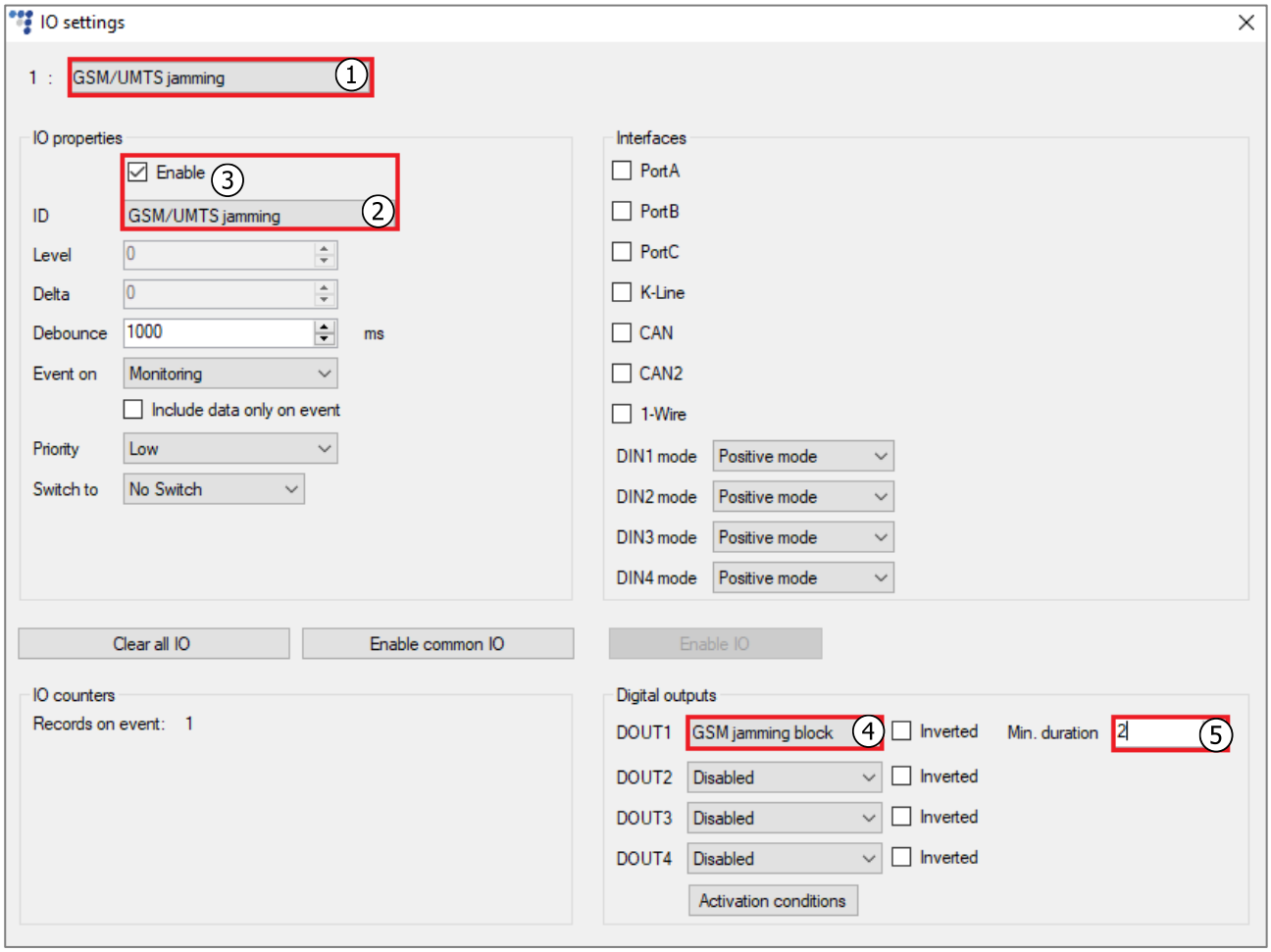


3.2 Configuring the Jamming Detection

Follow these step to configure the jamming detection:

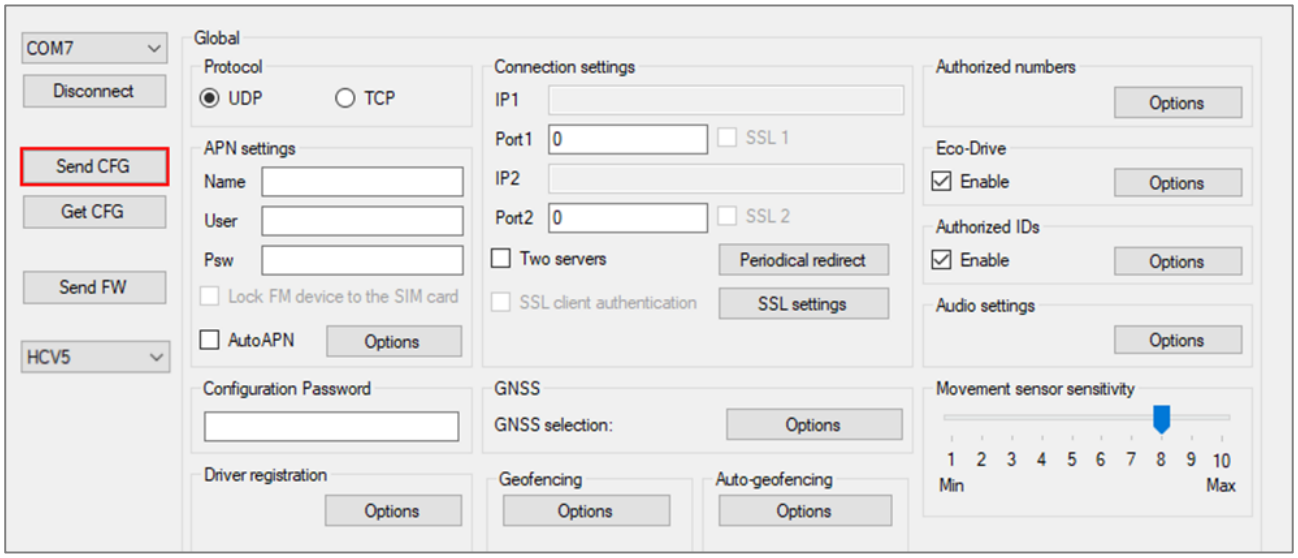
1. Select a parameter slot.
2. Select the *GSM/UMTS jamming* parameter.
3. Tick the **Enable** checkbox.
4. From the drop-down list of **DOUT1** or **DOUT2** select *GSM jamming block.*
5. Specify the time length (in seconds) of how long the jamming must be detected for before triggering the DOUT in the **Min. duration** field. Default value: *0*.

It is necessary to set the DOUT min time length to prevent various minor signal interference that can be misinterpreted by the device as GSM signal jamming.



3.3 Finishing the Configuration

To finish the configuration, close the **IO settings** window. Click **Send CFG** to send the configuration to the device.



4 Special Conditions

If a DOUT is configured to **GSM jamming blocking**, the DOUT state can be altered via SMS command *setio*, although the DOUT state change via SMS will be overwritten if jamming detection is triggered (jamming in progress).

For example: jamming is not in progress, DOUT state is 1. The user sets the DOUT state to 0 via *setio* SMS command. In this case the DOUT state will change back to 1 only if the tracking device will first detect jamming (change state to **jammed**) and then detect that jamming is no longer in progress (change state to **not jammed**).