

**Limited liability company
«Santel-Navigatsiya»**

**Accident Emergency Call Device
(AECD)**

7.18

**Instruction manual special on vehicle
parameters configuration using a CAN-
adapter or USB connector
(ERA_COMM program)**

MPCB.464514.007-18 ИС3

Contents

1	Preparing the Device for Installation	5
1.1	Hardware Requirements	5
1.2	PC Requirements	5
2	Installation and Removal	5
3	Adjustment, Integrating and Testing.....	6
3.1	Installing and Setting up the Program.....	6
3.1.1	Installing the Program	6
3.1.2	Installing Drivers	6
3.1.3	Setting up the Program	7
3.1.4	Adding Vehicle Profile Files	9
3.1.5	Configuring the Program Closing	10
3.2	Device Preparation.....	11
3.2.1	Using a CAN-adaptor	11
3.2.2	Using a USB-Hirose cable	11
3.2.3	Battery charge.....	11
4	Configuring the Device.....	11
4.1	Sequence of Actions	11
4.2	Sound Testing	14
4.2.1	Autostart Sound Test	14
4.2.2	Operator Launching of the Sound Test	14
4.3	Configuration and Sound Test Results	15
5	Complex Testing.....	17
5.1	Checking the Device functionality on the assembled chassis.....	17
5.2	Optional Testing	17
5.2.1	Checking the Parameter Values saved in the Device Memory	17
5.2.2	Testing the Device.....	19
6	Possible inconsistencies	20
	APPENDIX 1 - Report File Parameter Description	23
	APPENDIX 2 – Setting up the Device using the automaker conveyor software (EndOfLine)	25
	APPENDIX 3 – Device operating modes and Indication.....	28
	APPENDIX 4 – Description of tests in the «Test» mode.....	31

CHANGE REGISTRATION SHEET

Date	Document version	Notice of change in PLM	Full name
18.11.2021	18/11/2022		Ivan Ignatov
16.03.2022	16/03/2022		Ivan Ignatov
18.07.2022	18/07/2022	MPCB.1.006-2022	Ivan Ignatov
05.12.2022	05/12/2022	MPCB.1.004-2022	Ivan Ignatov
17.11.2023	17/11/2023	MPCB.1.011-2023	Ivan Ignatov
03.06.2024	03/06/2024	MPCB.1.003-2024	Ivan Ignatov
04.07.2024	04/07/2024	MPCB.1.006-2024	Ivan Ignatov

Introduction

This manual is intended for personnel configuring the Accident Emergency Call Device (AECD) 7.18, hereinafter referred to as Device, using the «ERA_COMM» program, hereinafter referred to as Program, connecting to the Device via a CAN adapter or USB-Hirose cable.

The instruction shows how to configure the Device using the «ERA_COMM» software version 3606 or higher.

For «ERA_COMM» software versions other than the one specified above, the interface and software functions may slightly differ.

For additional information address to the User Manual «AECD 7.18» MPCB.464514.007-18 PЭ;

1 Preparing the Device for Installation

After installing the Device on the vehicle, it is set up using the ERA_COMM RU.43489690.00501-04 program produced by Santel-Navigatsiya LLC.

The distribution kit of the ERA_COMM configuration program can be obtained from the technical support service by contacting support@santel-navi.ru.

1.1 Hardware Requirements

To configure the Device, you need the following equipment:

- personal computer (PC);
- PCAN / Cummins Inline 6 CAN-adaptor;
- or
- USB-Hirose cable.

1.2 PC Requirements

The personal computer must meet the following requirements:

- processor class not less than Intel® Pentium® 4 or AMD ATHLON64;
- processor frequency not less than 1.5 GHz;
- RAM, at least 512 MB;
- hard disk, at least 50 GB;
- USB port;
- Windows Vista/7/8/8.1/10¹ operating system.

2 Installation and Removal

The Device is installed by the automobile plant on the assembly line.

The location of Device is determined by the car manufacturer's specialists and agreed with Santel-Navigatsiya LLC.

When testing the Device as part of a vehicle in an accredited laboratory, the place of the Device installation is recorded in the test report.

When installing the Device on a vehicle, pay attention to the following parameters:

- 3x20 screw tightening when attaching the remote speaker – from 4.4 to 4.9 kgf*cm;
- M6 bolt tightening when fixing the electronic unit – from 30.6 to 40.8 kgf*cm;
- pressing force on the BIP during installation – from 0.9 to 1.1 kgf.

When connecting the "Mute" signal, pay attention to:

- maximum current switched by the "Mute-" contact is 100 mA at nominal voltage of 12/24 V;
- maximum current switched by the "Mute+" contact is 5 mA at a nominal voltage of 12/24 V.

¹ – To configure the vehicle via a USB-Hirose cable, Windows 7/10 is required.

When the Device or the vehicle on which the Device is installed is not in use, the battery of the Device must be charged every 6 months.

If the Device is NOT installed in a vehicle, the Device battery is charged by connecting the Device to an external 12 or 24 V power source with an output current of at least 500 mA per unit of Device.

If the Device is installed in a vehicle, to charge the battery of the Device, you must turn on the vehicle ignition for 4 hours.

The temperature of the battery and the environment during charging must be at least +5 °C.

3 Adjustment, Integrating and Testing

3.1 Installing and Setting up the Program

3.1.1 Installing the Program

To install the Program, you need to:

- run the `setup_era_comm_(XX).exe` file (where XX is the software version which may vary);
- specify the folder with the location of executable program files, by default the program is installed in the folder `C:\Program Files\ERA_COMM`;
- leave the remaining parameters unchanged.

3.1.2 Installing Drivers

To use the USB-Hirose cable with the Program, you need to install the drivers on your PC.

To install the drivers:

- run `SIM7X00DriverInstall_V2.0_mtu_cn.exe`, which is located by default in the `C:\Program Files (x86)\ERA_COMM\drivers\uveos_7.18` folder;
- install drivers `SIM7X00DriverInstall_V2.0_mtu_cn`;
- restart the computer;
- supply power to the Device (from the on-board electric system if the Device has been installed, or from a 12/24 V external power source);
- wait until the Device turns on (the BIP button indicator will blink red twice);
- connect the Device to the PC via a USB-Hirose cable.

If the drivers are installed correctly, the names of the SimTech ports will be displayed in the Windows Device Manager, under COM and LPT ports (Figure 1).

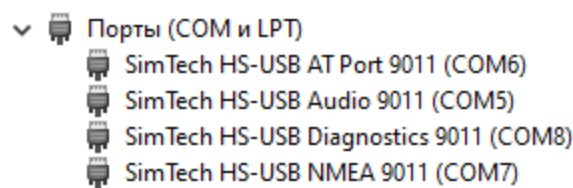


Figure 1

The drivers for the CAN adaptors are downloaded from the adaptor manufacturers websites.

3.1.3 Setting up the Program

To set up the Program:

- run ERA_COMM.exe;
- open Settings (Figure 2), in the main window (Figure 5);

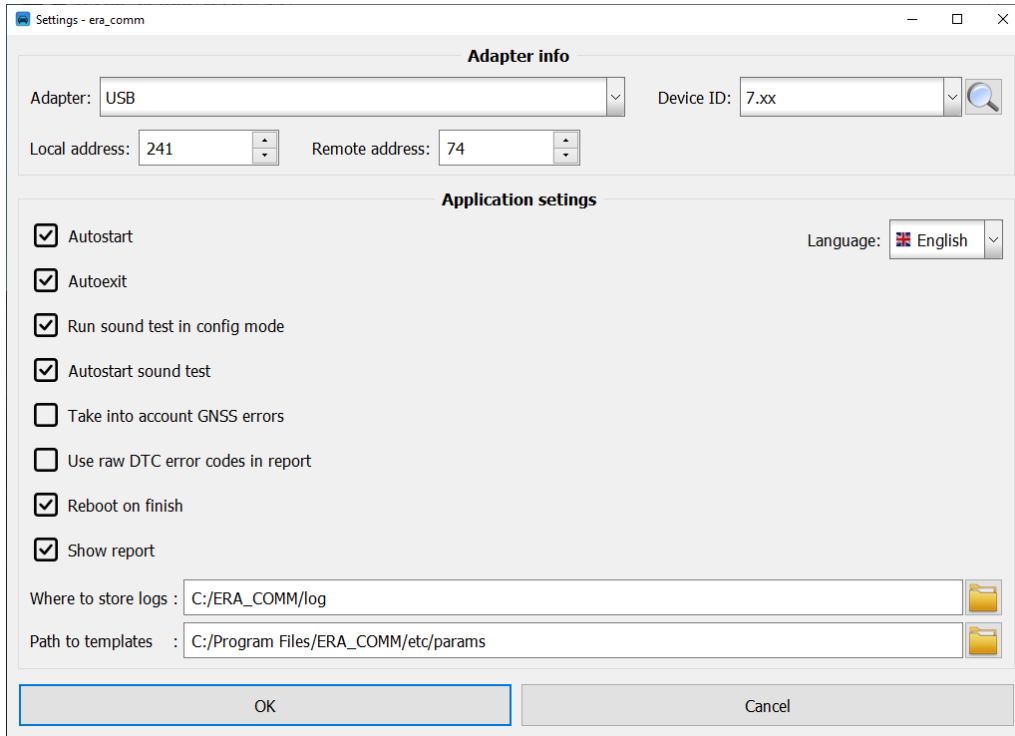



Figure 2 – Program settings window

- specify the parameter values on the settings page in accordance with Table 1;

Table 1 - Settings of the ERA_COMM program

Parameter Name	Parameter Description
Adapter	
Adapter	<p>For CAN-adapter: Cummins Inline 6 (for Inline 6); Peak system PCAN-USB (for PCAN).</p> <p>For USB-Hirose cable: USB</p>
Device ID	<p>For CAN-adapter:</p> <p>The identifier of the CAN-adapter. The  button allows you to automatically find the adapter ID if it is unknown.</p> <p>For USB-Hirose cable: Select the 7.XX identifier from the drop-down list.</p>
Local address	The address of the application on the bus (default is 241 (0xF1)).
Remote address	The address of the Device on the bus (default is 74 (0x4A)).

Continuing Table 1 - Settings of the ERA_COMM program

Application settings	
Autostart	<p>Configuration process launch mode.</p> <p>This parameter is set only during further configuration via the .bat file, for more details see <i>Appendix 2</i>.</p> <p>When further configuring the Device through the graphical interface of the Program, «Autostart» will be performed regardless of the checkbox.</p> <p>This parameter can be the following:</p> <p>The box is checked - configuration will start automatically immediately after starting the .bat file;</p> <p>The box is unchecked - to start testing, press the Start button.</p> <p>Recommended value: The box is checked.</p>
Autoexit	<p>Closing the program can be set as following:</p> <p>The box is checked - after the operation is completed, the program window will automatically close;</p> <p>The box is unchecked - after the tests are completed, the user must close the program window.</p> <p>Recommended value: The box is checked.</p>
Sound test during configuration	<p>You can set the following conditions for the sound test during configuration:</p> <p>The box is checked - the sound test starts in the process of configuration;</p> <p>The box is unchecked – there is no sound test during configuration.</p> <p>Recommended value: The box is checked.</p>
Autostart sound test	<p>The condition for performing a sound test can take the following values:</p> <p>The box is checked - the sound test starts automatically, no operator actions are required to start the test mode and confirm the test result;</p> <p>The box is unchecked - the operator's participation is required to start the sound test and confirm the test result. The operator presses the appropriate buttons («Start test», «Sound test passed», «Error») in the program window.</p> <p>Recommended value: The box is checked.</p>
Take into account GNSS errors	<p>Conditions for accounting for GPS /GLONASS path errors can take the following values:</p> <p>The box is checked - errors are taken into account, and when they occur, the program closes and an error message is displayed;</p> <p>The box is unchecked - errors are not taken into account.</p> <p>Recommended value The box is unchecked.</p>
Display DTC error codes instead of description	<p>Type of DTC errors output in the program execution report, can be set to the following values:</p> <p>The box is checked - DTC errors are displayed as an error code (example: 0x9A6000xx);</p> <p>The box is unchecked - DTC errors are displayed in text format (example: mic_connection_failure).</p> <p>Recommended value The box is unchecked.</p>
Reboot on finish	<p>The condition for rebooting the Device after successfully saving the parameters can take the following values:</p> <p>The box is checked – reboot the Device;</p> <p>The box is unchecked - do not reboot the Device.</p> <p>Recommended value: The box is checked.</p>

Continuing Table 1 - Settings of the ERA_COMM program

Application settings	
Show report	Displaying the report on program execution, can take the following values: The box is checked - display the report before the program termination; The box is unchecked - close the program without displaying the report. Recommended value: The box is checked .
Language	Program interface language can be set as: « Russian » or « English » Restart the program to implement changes.
Path to logs	Path to the debug log file, or path to the directory where session logs are saved.
Path to templates	Path to the folder containing folders with settings files and audio profiles. Parameter file is a file with the main settings of the Device. Audio profile is a file defining acoustic parameters of the Device.

— save the settings by pressing OK.

3.1.4 Adding Vehicle Profile Files

Vehicle profile files are optional and provided at the request of the car manufacturer.

Audio profiles will not upload to the Device if it is configured using a CAN-adapter. To upload the audio profiles, it is required to use a USB-Hirose cable for configuration.

3.1.4.1. To use vehicle profiles in the program, you need to:

- 1) create a "Vehicle params" folder on the drive "C:\";
- 2) unpack the resulting archive with vehicle profiles into the "Vehicle params" folder;
- 3) go to the program settings and in the "Path to templates" field (Figure 3) specify the path to the "C:\Vehicle params" folder.



Figure 3

If the vehicle files are correctly added to the program, vehicle profiles will become available for selecting in the main window of the program when you click the "Car Profile" field (Figure 4).

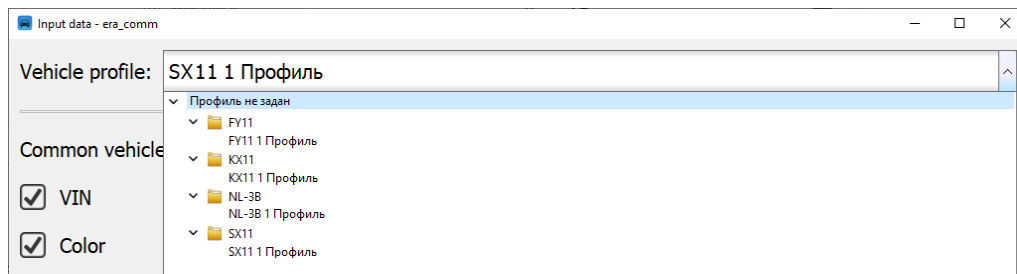


Figure 4

Carefully check all the data for compliance with the specific vehicle!

When selecting any vehicle profile in the program, the possibility to change the common vehicle parameters specified in the main program window (Figure 5) is not available.

To return to the possibility to change common vehicle parameters, select "No profile" in the "Vehicle profile" field (Figure 4).

3.1.4.2 If it is impossible to create a directory on the "C:" drive, please create it on another drive and place the parameter files in this directory. After that, you need to change the path in the "Path to templates" field in the program settings.

It is also required to make adjustments to the *.xml file placed in the vehicle profile folder.

To make adjustments to the *.xml file, follow the instructions:

- 1) go to the directory you created;
- 2) open the *.xml file using a text editor;
- 3) in the <files> section, specify the path to the profile files profile1.bin and profile2.bin (highlighted in yellow and green):

```
<files>
  <file source = "CAR_MANUFACTURER CAR_MODEL profile1.bin" dest = "/cache/redum_navi/fs_image_yaffs/audio_codec/" param="DEVICE"/>
  <file source = "CAR_MANUFACTURER CAR_MODEL profile1.bin" dest = "/store_a/" param="BACKUP_A"/>
  <file source = "CAR_MANUFACTURER CAR_MODEL profile1.bin" dest = "/store_b/" param="BACKUP_B"/>
  <file source = "CAR_MANUFACTURER CAR_MODEL profile2.bin" dest = "/cache/redum_navi/fs_image_yaffs/audio_codec/" param="DEVICE"/>
  <file source = "CAR_MANUFACTURER CAR_MODEL profile2.bin" dest = "/store_a/" param="BACKUP_A"/>
  <file source = "CAR_MANUFACTURER CAR_MODEL profile2.bin" dest = "/store_b/" param="BACKUP_B"/>
</files>
```

- 4) save the *.xml file.

3.1.5 Configuring the Program Closing

After completing the configuration, the program has several closing options depending on the selected parameters. The list of program parameters affecting its closure is given in Table 2.

Table 2– Program parameters affecting the its closure during configuration

	Parameter name				Result
	Autoexit	Sound test during configuration	Sound Test Autostart	Show report	
Checking the box	Checked	Checked	Checked	Checked	The program closes after clicking the «Close» button in the additional «Result» window that opens
	Checked	Checked	Unchecked	Checked	
	Checked	Unchecked	Unchecked	Checked	
	Checked	Checked	Checked	Unchecked	The program closes automatically
	Checked	Unchecked	Unchecked	Unchecked	
	Checked	Checked	Unchecked	Unchecked	The program closes automatically after confirming the test result
	Unchecked	Checked	Checked	Checked	The program is closed by pressing the Close button in the upper right corner of the Device configuration window
	Unchecked	Checked	Unchecked	Checked	
	Unchecked	Unchecked	Unchecked	Checked	
	Unchecked	Checked	Checked	Unchecked	The program is closed when the additional window «Result» is closed, and the Close button in the upper right corner of the product configuration window is pressed.
	Unchecked	Checked	Unchecked	Unchecked	
	Unchecked	Unchecked	Unchecked	Unchecked	

3.2 Device Preparation

3.2.1 Using a CAN-adapter

To work with the program via a CAN-adapter, it is necessary to agree on the Device additional setting with the manufacturer beforehand, including such parameters as: reading the vehicle data, device configuration via UDS, CAN bus speed, data exchange protocol.

3.2.2 Using a USB-Hirose cable

No additional configuration is required.

3.2.3 Battery charge

If the charge is lower than the set level when the Device is connected to an external power source (the backlight of the BIP buttons is white, the BIP indicator is red, or there is no BIP indication), you should leave the Device connected to an external power source for charging for at least 30 minutes, until the indication of the «ERA» mode appears (the backlight of the BIP buttons is white, the BIP indicator is green).

To fully charge the battery, the Device must remain connected to an external power source for 6 hours.

4 Configuring the Device

4.1 Sequence of Actions

IF THE VEHICLE HAS A DISCONNECT SWITCH, IT MUST BE SWITCHED ON (THE BATTERY IS NOT DISCONNECTED). DURING CONFIGURATION OF THE DEVICE, WELDING WORKS ON THE VEHICLE CHASSIS ARE PROHIBITED.

To configure the Device, you need to:

— supply power to the Device (from the on-board electric system if the Device has been installed, or from a 12/24 V external power source);

Attention: When the Device is first powered up², regardless of the ignition state, the Device turns on and enters a self-diagnosis state. The BIP indication at the first power-up has the following sequence:

- 1) lights up red from 3 to 10 seconds;
- 2) lights up green from 40 to 45 seconds;
- 3) blinks red 2 times.

If the ignition is turned off, the Device will turn off after a while.

If the ignition is turned on, the Device will remain in operating mode.

² – *When installing the Device at the car manufacturer's factory and/or disconnecting the external power supply (for example, in case of battery replacement).*

- wait until the Device turns on (the BIP indicator will blink red 2 times);
- connect the CAN adapter or USB-Hirose cable to the Device and the PC on which the Program is installed;
- run the Program on the PC.

After starting the Program, the main window will open (Figure 5).

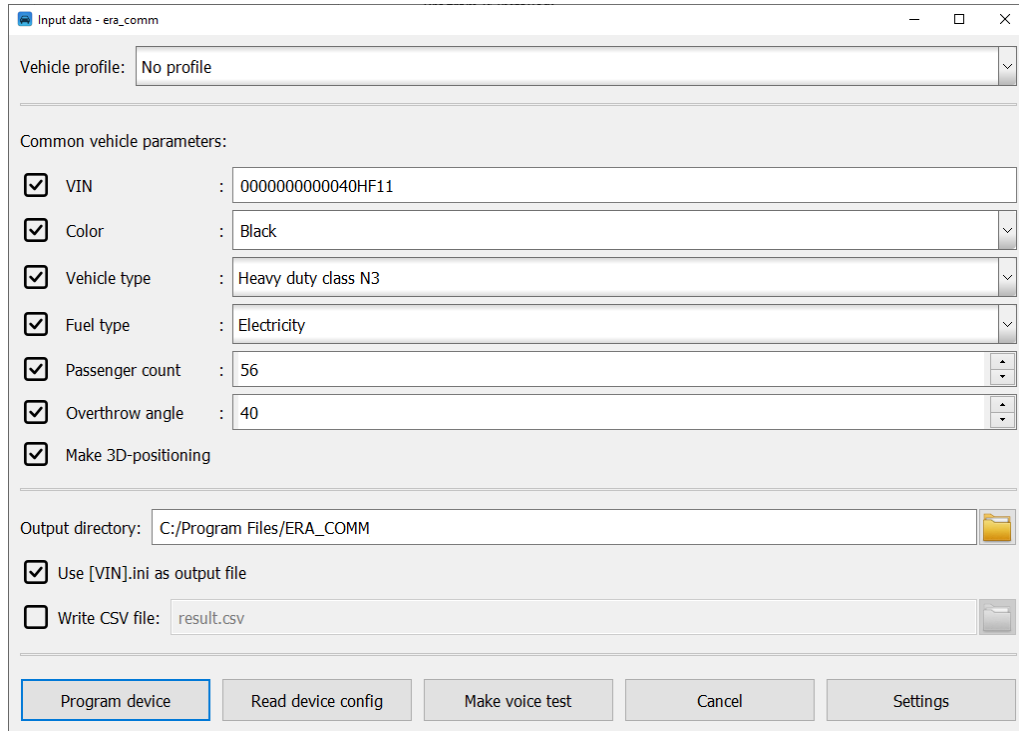


Figure 5 – Main window of the Program

The main window contains fields for entering customizable Device parameters, the description of which is given in Table 3.

Parameters with the checked box to the left of the parameter name are entered into the Device memory.

Table 3 – Description of the Device parameters in the graphical interface of the Program

Parameter name	Parameter description
Vehicle profile	The field for selecting a vehicle profile located in the «etc\params» folder, the value is selected from the drop-down list. To prevent the vehicle profile from being saved when configuring the Device, select the «Profile not set» value.
VIN	A 17-digit number of the vehicle to which the Device is installed. The number of characters in the VIN field other than the specified one will result in an error notification.
Color	Vehicle body color.
Vehicle type	The category of the vehicle on which the Device is installed, the value is selected from the drop-down list.
Fuel type	The type of fuel used in the vehicle on which the Device is installed, the value is selected from the list.

Continuing Table 3 - Description of the Device parameters in the graphical interface of the Program

Parameter name	Parameter description
Passenger count	The maximum number of passengers possible when transported in the vehicle.
Overthrow angle	Critical steering angle, can take values from 0 to 180.The value is determined by the car manufacturer, for each vehicle.
Make 3D positioning	<p>Sending a command to calibrate the zero position of the Device in space.</p> <p>During calibration, the Device must be installed on the vehicle in the operating position and secured with standard fasteners.</p> <p>The vehicle must be installed in a horizontal position relative to the ground, and for cargo vehicles, the cabin must be installed in the operating position (lowered).</p> <p>If the Device is calibrated outside the vehicle, the operational position of the Device must be simulated.</p> <p>The «Overthrow angle» parameter does not work without the checked box next to the «Make 3D-positioning» parameter, because «Make 3D-positioning» sets the starting angle for calculating the overthrow angle.</p> <p>For a CAN adapter: 3D positioning will be performed regardless of the checkbox, after confirming the recording of the VIN code.</p> <p>For a USB-microUSB / USB-Hirose cable: If you do NOT check the box, 3D positioning will NOT be performed.</p>
Output directory	The field for entering the file name and the directory where the test report file is located; when the checkbox next to the parameter «Use [VIN] .ini as the report file name» is checked, the file with the test results will be named according to the VIN number.
Write CSV file	The field for entering the file name and the directory for the file after setting the parameters of the Device. A CSV file will be generated for uploading to the JSC Glonass platform. The parameters of each manufactured device will be added to this file.

After entering the required values of the Device parameters, start the configuration process (Figure 6), by pressing the « Program device» button.

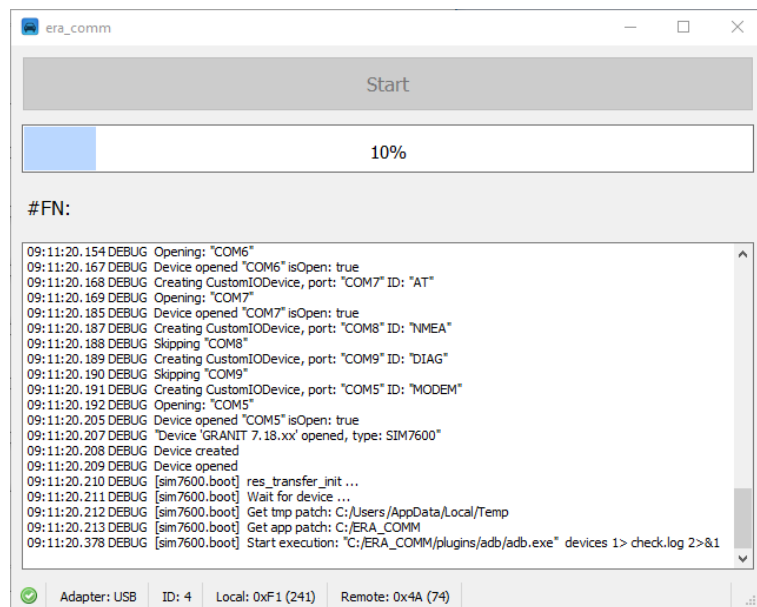


Figure 6 – Device configuration window

After configuring the Device and saving the main parameters, sound testing with voice prompts will begin.

Note: Configuring the Device is possible using the EndOfLine software of the automaker's conveyor, for more details see Appendix 2.

4.2 Sound Testing

Depending on the Program settings, sound testing starts automatically or under control of the operator.

4.2.1 Autostart Sound Test

If the «Autostart sound test» program parameter box is checked, sound testing will start automatically (no additional action is required from the user).

During sound testing, you need to follow the voice prompts and press the BIP button to confirm the selected action.

ATTENTION:

WHEN PLAYING THE VOICE PROMPT: «To enter the service mode, press the button ...», DO NOT PRESS THE SOS BUTTON.

IF YOU PRESS THE SOS BUTTON, YOU GO TO THE «SERVICE» MODE FOR SERVICE WORKS.

IN THE «SERVICE» MODE, AUTOMATIC OPERATION IS DISABLED IN THE EVENT OF ROLLOVER AND CRASH IMPACT OF THE VEHICLE, THE BIP STATUS INDICATOR LIGHTS UP GREEN, BLINKS RED 3 TIMES EVERY 2 SECONDS, AND THE REMOTE SPEAKER EMITS AUDIBLE SIGNAL SOUNDS EVERY 7 SECONDS.

TO EXIT THE «SERVICE» MODE, PRESS THE SOS BUTTON. AFTER EXITING THE «SERVICE» MODE, PLEASE CLOSE THE PROGRAM DEPENDING ON ITS PARAMETERS (see p.3.1.5), AND START THE PRODUCT CONFIGURATION AGAIN.

4.2.2 Operator Launching of the Sound Test

If the «Autostart sound test» program parameter box is not checked, an additional «Sound test» window will open before the sound tests (Figure 7), where you need to press the «Start test» button to start the sound testing of the Device.

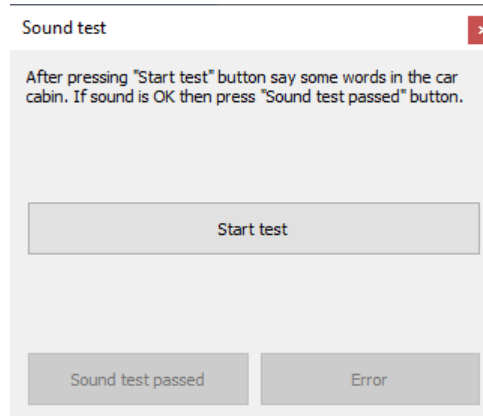


Figure 7 - Additional «Sound test» window

During the sound test, follow the voice prompts and press the BIP button to confirm the selected action.

After completing the sound test, in the additional window of the «Sound test» program (Figure 7), click the «Sound test passed» button if the test was performed without errors, or the «Error» button if errors were detected during testing.

ATTENTION:

WHEN PLAYING THE VOICE PROMPT: «To enter the service mode, press the button ...», DO NOT PRESS THE SOS BUTTON.

IF YOU PRESS THE SOS BUTTON, YOU GO TO THE «SERVICE» MODE FOR SERVICE WORKS.

IN THE «SERVICE» MODE, AUTOMATIC OPERATION IS DISABLED IN THE EVENT OF ROLLOVER AND CRASH IMPACT OF THE VEHICLE, THE BIP STATUS INDICATOR LIGHTS UP GREEN, BLINKS RED 3 TIMES EVERY 2 SECONDS, AND THE REMOTE SPEAKER EMITS AUDIBLE SIGNAL SOUNDS EVERY 7 SECONDS.

TO EXIT THE «SERVICE» MODE, PRESS THE SOS BUTTON. AFTER EXITING THE «SERVICE» MODE, PLEASE CLOSE THE PROGRAM DEPENDING ON ITS PARAMETERS (see p.3.1.5), AND START THE PRODUCT CONFIGURATION AGAIN.

4.3 Configuration and Sound Test Results

After completing the configuration and sound testing, the process of saving data to the Device memory and generating a report file will be displayed in the central part of the Program window.

Depending on the selected parameters (section 3.1.5), the Program has several options for closing.

When the program parameter «Show report» is enabled, a window with the result of the Device configuration will open on the screen (Figure 8).

IF THE DEVICE IS CONFIGURED PRIOR TO ITS INSTALLATION ON THE VEHICLE, AFTER CONFIGURATION IS COMPLETED, YOU SHOULD WAIT FOR THE DEVICE TO TRANSITION TO THE «OFF» MODE WITHOUT CHANGING THE TILT ANGLE OF THE DEVICE TO AVOID THE EMERGENCY CALL.

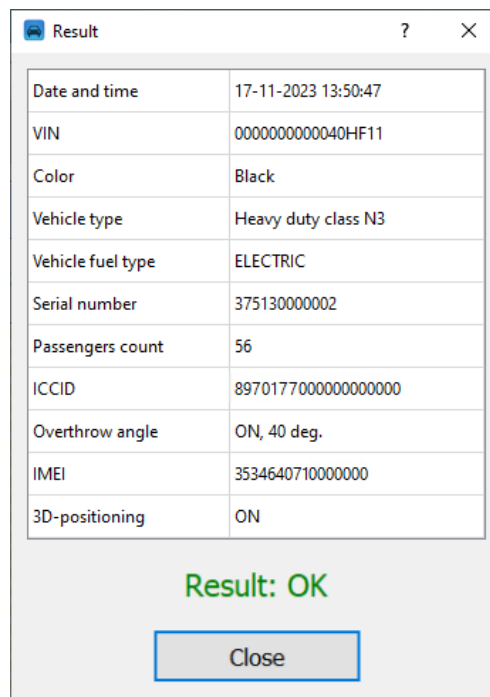


Figure 8 – Window with the results of the Device configuration and sound test

The report file will be located in the folder the path to which is specified during Device configuration, by default it is C:\Program Files\ERA_COMM.

The report file is processed by the EndOfLine conveyor software, but if you need to view it, the report file can be opened using Notepad (Figure 9).

```
[RESULTS]
RunType=TEST_AND_CFG
TestNum=0
ResultCode=0
ResultDescription=
VINSaved=000000000040HF11
Color=Black
VehicleType=N3
VehicleFuelType=ELECTRIC
AudioProfile=255
SerialNumber=375130000002
cmd_param=-2
PassengersCount=56
DateTime=17-11-2023 13:50:47
HardwareVersion=
SoftwareVersion=
DTCErrors=

[ICCID]
ICCID=89701770000000000000

[ROLLOVER]
Angle=40
AngleStr="ON, 40"

[TELEMATICS]
MQTTID=375130000002
Enterprise=SANTEL-NAVIGATSIYA
IMEI=3534640710000000
MTSICCID=

[OTHER]
Make3DPos=1
```

Figure 9 – Approximate contents of the report file

The description of parameters contained in the report file is given in *Appendix 1*.

5 Complex Testing

5.1 Checking the Device functionality on the assembled chassis

To check the functionality of the Device on the assembled chassis, testing is required.

The «Test» mode is intended for checking the functioning of the automobile telecommunication system by the ERA GLONASS system operator.

Entering the «Test» mode is carried out by sequentially pressing the «SOS» button 5 times within 5 seconds. After entering the «Service» mode selection state, wait 10 seconds without pressing any other buttons.

In the «Test» mode, the BIP status indicator is green and blinks red 3 times every 2 seconds.

To complete the test, please follow the voice prompts (more details in appendix 4).

Exit from the «Test» mode is carried out:

- after transferring the MSD (Minimum Set of Data) with the testing results to the system operator;
- when the external power is turned off.

5.2 Optional Testing

5.2.1 Checking the Parameter Values saved in the Device Memory

To read the parameters from the Device memory, do the following:

- supply power to the Device (from the on-board electric system if the Device has been installed, or from a 12/24 V external power source);
- wait until the Device turns on (the BIP indicator will blink red 2 times);
- connect the CAN adaptor or USB-Hirose cable to the Device and the PC on which the Program is installed;
- launch the ERA COMM program on the PC;
- click the «Read parameters» button in the program window (Figure 5);
- wait until the parameters reading is completed and the «Result» window is displayed (Figure 10);
- in the «Result» window, check the values of the saved parameters.

If the parameter values differ from those specified by the user during configuration, the Device should be reconfigured.

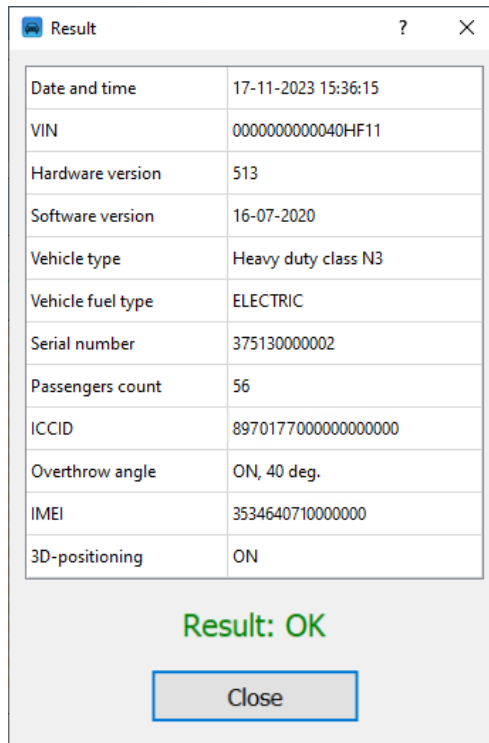


Figure 10 – «Result» window with the results of reading parameters from the Device memory

If there are errors, the «Result» window will display the «DTC Errors» line (Figure 11). To eliminate errors, act in accordance with Table 7 (p.6).

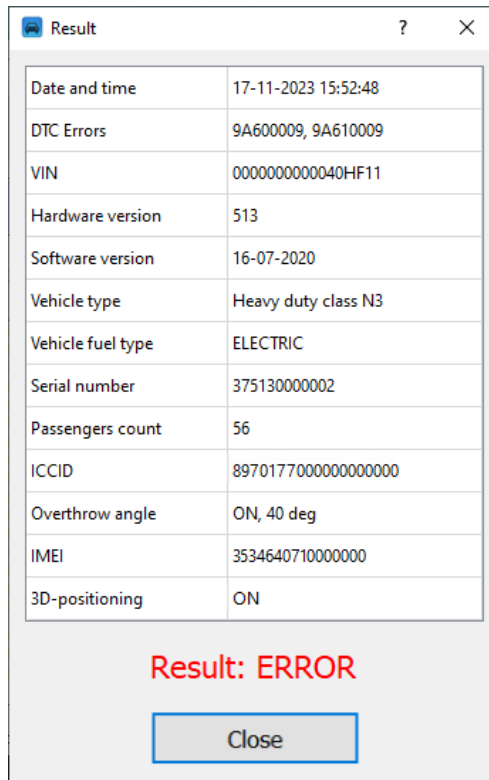


Figure 11 – «Result» window with DTC errors while reading the parameters from the Device memory

After the «Read parameters» operation has been completed, depending on the selected parameters, the Program has several options for closing. Exit from the Program is affected by the parameters "Auto exit" and "Show report" (see 3.1.5).

5.2.2 Testing the Device

To conduct sound testing and read the DTC errors, do the following:

- supply power to the Device (from the on-board electric system if the Device has been installed, or from a 12/24 V external power source);
- wait until the Device turns on (the BIP indicator will blink red 2 times);
- connect the CAN adapter or USB-Hirose cable to the Device and the PC on which the Program is installed;
- launch the ERA COMM program on the PC;
- click the «Run test» button in the program window (Figure 5);
- wait for the voice testing to start and follow the voice prompts by pressing the BIP buttons to confirm the selected action.

ATTENTION:

WHEN PLAYING THE VOICE PROMPT: «To enter the service mode, press the button ...», DO NOT PRESS THE SOS BUTTON.

IF YOU PRESS THE SOS BUTTON, YOU GO TO THE «SERVICE» MODE FOR SERVICE WORKS.

IN THE «SERVICE» MODE, AUTOMATIC OPERATION IS DISABLED IN THE EVENT OF ROLLOVER AND CRASH IMPACT OF THE VEHICLE, THE BIP STATUS INDICATOR LIGHTS UP GREEN, BLINKS RED 3 TIMES EVERY 2 SECONDS, AND THE REMOTE SPEAKER EMITS AUDIBLE SIGNAL SOUNDS EVERY 7 SECONDS.

TO EXIT THE «SERVICE» MODE, PRESS THE SOS BUTTON. AFTER EXITING THE «SERVICE» MODE, PLEASE CLOSE THE PROGRAM DEPENDING ON ITS PARAMETERS (see p.3.1.5), AND START THE PRODUCT CONFIGURATION AGAIN.

- wait until the DTC error reading is completed and the «Result» window is displayed;
- Check that there are no DTC errors.

If there are errors, the «Result» window will display the «DTC Errors» line (Figure 12). To eliminate errors, act in accordance with Table 7 (p.6).

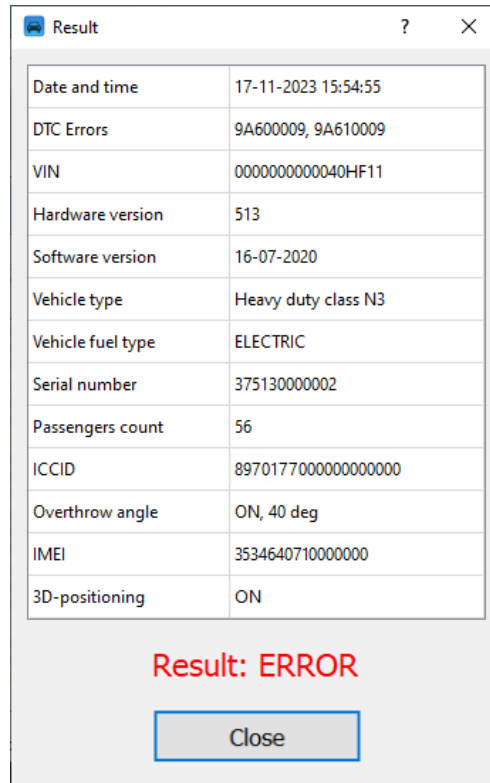


Figure 12 – «Result» window with the results of sound testing and read the DTC errors

After testing, depending on the selected parameters, the Program has several options for closing. Exit from the Program is affected by the parameters "Auto exit" and "Show report" (see 3.1.5).

6 Possible inconsistencies

Inconsistencies may occur during the configuration and verification of the Device. The list of possible inconsistencies and ways to solve them are given in Table 4.

Table 4

Inconsistency	Solution
No voice prompts	1) Test the Device by switching to the «Test» mode. 2) Make sure the Device is in the «ERA» mode and make an emergency call.
No voice prompt «Turn the ignition off and on»	1) Check the ignition signal. 2) Turn off the ignition, disconnect the Device from the PC, make sure the Device goes to the «OFF» mode, and perform the testing again.
Error when starting to configure the product	1. Check the connection of the product. 2. If the «Emergency Call» mode was initiated on the Device (more details in appendix 3), then configuration of the product is possible only 2 hours after the product exits this mode

If an error occurs in the Program during the Device configuration, the window with the configuration result displays the stage number (the «TestNum» line), error code (the «ResultCode» line), description of the error itself (the «ResultDiscription» line) and a «DTC Errors» line.

The description of the values displayed in the «TestNum» line is presented in Table 5.

The description of the values displayed in the «ResultCode» line is presented in Table 6.

Table 5 – Device configuration stages

Stage number	Stage description
0	All stages
1	Initialization
2	Parameter recording
3	Vocal tract and button test
4	Unit self-diagnosis check
5	Reading the unit ICCID
6	Vehicle type record
7	Vehicle fuel type record
8	VIN record
9	Reboot

Table 6 – Device configuration errors

Error code	Error description
0	Successful completion
1	Input data error
2	Unit connection error
3	Unit Communication error
4	Sound test error
5	Unit self-test error
6	Unit configuration error

The description of the values (errors) displayed in the «ResultDiscription» line is presented in Table 7.

Table 7

Error description	Error code in CAN-bus	Error cause	Error solution for AECD 7.18
mic_connection_failure	0x9A6000xx	Zero or low voltage at the BIP microphone	<ol style="list-style-type: none"> 1. Replace the BIP with a new one. 2. Wait 40 seconds. 3. If the error persists, check the «Mic +» voltage on the BIP connector, if the voltage is zero, see clause 4. 4. Replace the cord (connector) of the electronic unit, if the error persists, replace the electronic unit.
mic_failure	0x9A6100xx	BIP microphone does not work	<ol style="list-style-type: none"> 1. Wait a minute. 2. If the error persists, replace the BIP. 3. If the error persists, replace the cord (connector). 4. If the error persists, replace the electronic unit.
speakers_failure	0x9A6200xx	Zero or low voltage of the speaker in the electronic unit	<ol style="list-style-type: none"> 1. Replace the speaker with a new one. 2. Wait 40 seconds. 3. If the error persists, replace the cord (connector). 4. If the error persists, replace the electronic unit.
ignition_line_failure	0x9A6300xx	Electronic unit does not see the ignition signal	<ol style="list-style-type: none"> 1. Check the connection of the cord (connector) to the ignition signal. 2. If the error persists, replace the cord (connector). 3. If the error persists, replace the electronic unit.
sim_chip_failure	0x9A6400xx	Modem cannot find the SIM-chip	<ol style="list-style-type: none"> 1. Wait 2-3 minutes. 2. If the error persists, replace the electronic unit.
status_indicator_failure	0x9A6500xx	Incorrect LED operation on the BIP	<ol style="list-style-type: none"> 1. Replace the BIP. 2. Wait 40 seconds. 3. If the error persists, replace the cord (connector). 4. If the error persists, replace the electronic unit.

Continuing Table 7

Error description	Error code in CAN-bus	Error cause	Error solution for AECD 7.18
battery_failure	0x9A6600xx	Back-up battery of the electronic unit is discharged or does not charge	<ol style="list-style-type: none"> 1. Remove the electronic unit from the vehicle. 2. Put the electronic unit on charging from a power source (12/24 V). 3. Wait 10-15 minutes. 4. Connect the Device to the vehicle on-board power supply source. 5. If the error persists, replace the electronic unit.
battery_voltage_low	0x9A6700xx	Electronic unit backup battery voltage is below 3600 mV	<ol style="list-style-type: none"> 1. Remove the electronic unit from the vehicle. 2. Put the electronic unit on charging from a power source (12/24 V). 3. Wait 10-15 minutes. 4. Connect the Device to the vehicle on-board power supply source. 5. If the error persists, replace the electronic unit.
crash_sens_failure	0x9A6800xx	Accelerometer does not work	Replace the electronic unit.
gnss_receiver_failure	0x9A6A00xx	Navigation module is not working correctly at the moment	<ol style="list-style-type: none"> 1. Use a satellite signal booster. 2. Wait 2-3 minutes after receiving this error. 3. If the error persists, replace the electronic unit.
gnss_antenna_failure	0x9A6B00xx	Electronic unit cannot communicate with satellites or the signal is very weak	<ol style="list-style-type: none"> 1. Use a satellite signal booster. 2. Wait 2-3 minutes after receiving this error. 3. If the error persists, replace the electronic unit.
comm_module_interface_failure	0x9A6C00xx	Modem not found, or cellular networks are unavailable	<ol style="list-style-type: none"> 1. Wait 2-3 minutes after receiving this error. 2. Check if the cellular network signal is good (mobile phone) at the place of operation of the electronic unit. 3. Install a GSM signal amplifier. 4. If the error persists, replace the electronic unit.

APPENDIX 1 - Report File Parameter Description

The «result.ini» report file is located by default in the folder where the ERA_COMM program is installed, otherwise it is located in the folder specified by the user in the «Directory with report» program parameter. The report file can be opened in the Notepad application.

The typical content of the file is shown in Figure 1.1, the description of the parameters contained in the report file is given in Table 1.1.

```
[RESULTS]
RunType=TEST_AND_CFG
TestNum=2
ResultCode=6
ResultDescription=Failed to request seed
ICCID=
VINSaved=
GSMMode=WORK
VehicleType=
```

Figure 1.1 - Typical content of the result.ini file

Table 1.1 – Report file parameter description

Parameter Name	Value
RunType	Program call code
TestNum	Number of the stage at which the error occurred, can take values: 0 - All stages; 1 - Initialization; 2 - Sound parameters record; 3 - Test of the sound tract and buttons; 4 - Check of the unit self-diagnosis; 5 - ICCID reading; 6 - Vehicle type record; 7 - Vehicle fuel type record; 8 - VIN record.
ResultCode	A digital code for performing an operation, it can take values: 0 - Successful completion; 1 - Input data error; 2 - Error in connecting to the device; 3 - Error in communicating with the device; 4 - Sound test error; 5 - Self-test error; 6 - Device configuration error.
VIN	VIN of the vehicle that was recorded in the Device.
ResultDescription	Text description of the result.
Hardware version	Board version.
Software version	Internal software version of the Device.
VehicleType	Vehicle type stored in the Device memory.
Vehicle Fuel Type	Vehicle fuel type stored in the Device memory.
Serial number	Device serial number.
GSMMode	Always in WORK mode.
Passengers count	Maximum number of people to transport in the vehicle.

Continuing Table 1.1 – Report file parameter description

Parameter Name	Value
CMD Param	<p>The operation mode for the GAZ group only. For other car manufacturers, «-2» value is obligatory.</p> <p>Can take the following values: -2, -1, 0, 1, 2. -2: Do not use; -1: ERA only; 0: Zero; 1: Passive; 2: Active.</p> <p>If the parameter value is not specified or is specified with an error, it is considered equal to «-2».</p>
ICCID	Identification number of the ERA-GLONASS device read from it according to the diagnostic protocol (if it was read successfully).
Overthrow angle	<p>The overthrow angle set in the Device. It has the OFF/ON, deg value format where:</p> <ul style="list-style-type: none"> • ON/OFF - indicates if the overthrow sensor is turned on in the Device; • Deg value - Overthrow angle in degrees set in the Device. <p>The «Overthrow angle» parameter does not work if the «Make 3D-positioning» parameter is not enabled, because «Make 3D-positioning» sets the starting angle for calculating the overthrow angle.</p>
IMEI	The unique number of the GSM modem in the Device.
Telematic ICCID	The ERA-GLONASS device commercial profile identification number read from it according to the diagnostic protocol (if it was successfully read).

APPENDIX 2 – Setting up the Device using the automaker conveyor software (EndOfLine)

To configure the Device, do the following steps:

- connect the CAN-adapter or USB-Hirose cable to the personal computer;
- supply power to the Device;

— wait for the PC to complete the reading of data from the vehicle and form the «input.ini» file with software designed to automate the processes at the end of the line (EndOfLine) of the automaker conveyor. The «input.ini» file contains a list of customizable parameters described in Table 2.1.

Table 2.1 - The «input.ini» file parameters

Parameter name	Parameter description
[INPUT]	
RunType = TEST_AND_CFG	Call type of the device software. Currently, the device operates in one mode – work mode (SET_WORKMODE). The value of this parameter is used only for the output file and does not affect the device operation. The following values allowed: TEST_AND_CFG TEST_WO_CFG CLEAR_CFG SET_TESTMODE SET_WORKMODE
VIN = «01234567890123456»	17-digit line of the VIN-number to be saved to the memory of the Device. Takes the «-1» value if the VIN number is not specified and the Device will not be configured.
VehicleType = M1	Vehicle category, allowed values: M1 M2 M3 N1 N2 N3
VehicleFuelType = DIESEL	Type of fuel used in the vehicle, allowed values: GASOLINE DIESEL CGAZ LGAZ ELECTRIC HYDROGEN It is possible to specify several values, then the values are listed separated by commas, and the line with the values must be enclosed in quotation marks.
AudioProfile = 255	The parameter is not configurable. Default value: 255
OverthrowAngle = -1	Critical overthrow angle, can take values from 0 to 180. The value is determined by the automaker, for each vehicle. If the value of the parameter is equal to «-1», the parameter is not configured. If the parameter value is not specified, or is specified with an error, the value is considered to be «-1».

Parameter name	Parameter description
Make3DPositioning = 0	<p>Sending a command to calibrate the zero position of the Device in space. During calibration, the Device must be installed on the vehicle in the operating position and secured with standard fasteners. The vehicle must be installed in a horizontal position relative to the ground, and for cargo vehicles, the cabin must be installed in the operating position (lowered). If the Device is calibrated outside the vehicle, the operational position of the Device must be simulated.</p> <p>The «Overthrow angle» parameter does not work without the Make3DPositioning =1 parameter value, because «Make 3D positioning» sets the starting angle for calculating the overthrow angle.</p> <p>For a CAN adapter: When configuring the product via the vehicle CAN bus, this parameter will be =1 automatically, regardless of the selected value, after confirming the recording of the VIN code.</p> <p>For a USB-microUSB / USB-Hirose cable: This parameter can be set to 0 and 3D-positioning will NOT be done.</p> <p>Can take values: 1: Do 3D-positioning of the device; 0: Do not do 3D-positioning. If the value is not set or is set incorrectly, it is considered to be 0.</p>
PassengersCount = -1	<p>The number of passengers in the vehicle can take values from 0 to 999. If the parameter is set to «-1», the parameter is not configurable. If the parameter value is not specified or is specified with an error, it is considered to be «-1».</p>
cmd_param = -2	<p>The operation mode for the GAZ group only. Can take the following values: -2, -1, 0, 1, 2. For other car manufacturers, currently «-2» value is obligatory. Allowed values: -2: Do not use; -1: ERA only; 0: Zero; 1: Passive; 2: Active. If the parameter value is not specified or is specified with an error, it is considered to be «-2».</p>
[OUTPUT]	
OutFilePath = «result.ini»	<p>File name and path to the folder where the output data file is located (report file). The ini extension must be specified in the file name. Attention! If the path to the report file (result.ini / Vin.ini) is not changed in the input.ini file, then the files will be read from the following path: C:/Users/USERNAME/AppData/Local/Temp/result.ini C:/Users/USERNAME/AppData/Local/Temp/VIN.ini</p>

Note: in the «Parameter Names» column, the parameter values specified in the program default settings are highlighted in a different font.

After successful generation of the «input.ini» file by the process automation software at the end of the line (EndOfLine) of the automaker’s conveyor, a *.bat file from the ERA_COMM folder should be launched: «era_comm.bat».

If necessary, the * .bat file can be created manually. Content of the *.bat file: «era_comm.exe input.ini».

The automaker's conveyor software should transfer the «input.ini» file containing the configuration parameters to the ERA_COMM program, after which the Device configuration process begins (see Figure 4).

After configuring the Device and saving the main parameters, sound testing will begin with voice prompts described in clause **4.2**.

APPENDIX 3 – Device operating modes and Indication

1. Device operating modes

The Device has the following operating modes:

- «Off» mode;
- «ERA» mode;
- «Emergency call» mode;
- «Service» mode;
- «Test» mode.

1.1 «Off» mode

The Device is in the «Off» mode when the vehicle ignition is off. The Device exits the «Off» mode when the ignition is turned on.

1.2 «ERA» mode

In the «ERA» mode, the Device detects and registers vehicle parameters, detects accident events in automatic mode and provides a response to the user's control actions. The Device is in «ERA» mode when the vehicle's ignition is turned on for the first time, as well as after the end of the «Test» mode or termination of the «Emergency call» mode.

If the Device is ready for use, the BIP status indicator will blink red twice.

1.3 «Emergency call» mode

The «Emergency call» mode is designed to transmit MSD (Minimum Set of Data) and establish a sound connection between vehicle users and the contact center operator. The «Emergency call» mode is performed automatically when the ignition is on and there is a signal from the road incident identification module³. Emergency call can be performed in manual mode by pressing and holding the SOS button for at least 3 seconds.

The road incident identification module determines the moment of the accident in case of:

- frontal collision;
- side collision;
- rear collision;
- rollover.

To exit the «Emergency call» mode initiated in manual mode, at the stage of establishing a connection (if the connection with the system operator has not yet been established), press the «SOS» button once, and the emergency call will be terminated.

³ – To determine the moment of the vehicle rollover in automatic mode, the “Rollover sensor” function must be enabled in the product settings.

When the «Emergency call» mode is initiated automatically, the Device will enter the «ERA» mode after the call is terminated by the emergency contact center operator.

In case of external power failure during the emergency call, the Device will run on a backup battery to maintain active voice communication for 10 minutes and function in standby mode for at least 1 hour.

1.4 «Service» mode

The «Service» mode is designed to disable all functions of the Device while the vehicle is in the service center and/or to do repair work.

The «Test» mode is entered by pressing the SOS button 5 times within 5 seconds. After the voice prompt informing on entering the «Service» mode, press the SOS button. If you do not press the SOS button within 10 seconds, the Device switches to the «Test» mode

In the «Service» mode, the BIP status indicator lights up green, blinks red 3 times every 2 seconds, and audible signal sounds are emitted from the remote speaker every 7 seconds.

Exit from the «Service» mode is performed:

- after pressing the SOS button;
- when the external power is turned off;

Notes:

1. When the Device is in the «Service» mode, the critical overthrow angle is not determined.
2. When carrying out repair works or maintenance on cargo vehicles with the need to tilt the vehicle cab, the Device must be switched to the «Service» mode.
3. After completion of repair work or technical maintenance of the vehicle, the Device must be put into normal operation.

1.5 «Test» mode

The «Test» mode is intended to check the functioning of the product, with the ability to transfer test results to the system operator.

The «Test» mode is entered by pressing the SOS button 5 times within 5 seconds. After the voice prompt about entering the «Service» mode, wait 10 seconds without pressing any buttons.

In the «Test» mode, the BIP status indicator lights up green and blinks red 3 times every 2 seconds.

To complete the test, follow the voice prompts (more details in appendix 4).

Exit from the «Test» mode is performed:

- after the transfer of MSD with the Device test results to the system operator;
- when the external power is turned off.

2. Indication of Device operating modes

The Device is turned on when external power is supplied.

When the Device is first powered up⁴, regardless of the ignition state, the Device turns on and enters a self-diagnosis state.

The BIP indication at the first power-up has the following sequence:

- 1) lights up red from 3 to 10 seconds;
- 2) lights up green from 40 to 45 seconds;
- 3) blinks red 2 times.

If the ignition is turned off, the Device will turn off after a while.

If the ignition is turned on, the Device will remain in operating mode.

On subsequent switching on, if the external power has not been turned off, the Device will switch to the ERA mode with indication in accordance with Table 3.1.

IMPORTANT: If you disconnect external power from the Device, the following powering up of the Device will lead to the BIP indication corresponding to the first power supply.

Table 3.1 – Device operating mode indication

Operating mode	Indication
AECD turning on after the ignition is turned on	Lights up red for 3 to 10 seconds.
«ERA» mode	Lights up green when internal diagnostics are successful. Lights up red if there is a malfunction.
AECD malfunction	Lights up red continuously. The malfunction code can be read via CAN bus or USB connection.
The cellular operator's network is temporarily unavailable	Five short red blinks (5 Hz) and an optional voice prompt «The cellular operator's network is temporarily unavailable».
Establishing connection in «Emergency call» mode	Slow blink red/green (1 Hz). Optional voice prompt informs about mode:
Sending MSD in «Emergency call» mode	— «Establishing a connection»; — «Transferring data to the system».
Voice connection in the «Emergency call» mode	Lights up green continuously. Optional voice prompt «Connection established».
«Test» mode	Lights up green, three short red blinks (5 Hz), 2-second pause, repeat.
«Service» mode	Lights up green, three short red blinks (5 Hz), 2-second pause, repeat. Every 7 seconds there is an audible signal

⁴ - When installing the Device at the car manufacturer's factory and/or disconnecting the external power supply (for example, in case of battery replacement)

APPENDIX 4 – Description of tests in the «Test» mode

The «Test» mode is intended to check the functioning of the product, with the ability to transfer test results to the system operator.

The «Test» mode is entered by pressing the SOS button 5 times within 5 seconds. After the voice prompt about entering the «Service» mode, wait 10 seconds without pressing any buttons.

To complete the test, follow the voice prompts

The list of tests performed in «Test» mode is shown in Table 4.1.

No.	Purpose of the test	Description of the test
1.	Checking the indication in «Test» mode	During the test, the BIP status indicator lights up green and flashes 3 times red every 2 seconds. If the Device indication is as indicated, press the «SOS» button.
2.	Checking the microphone and speaker	The test requires you to say a phrase, listen to it and, if the sound quality and volume are satisfactory, press the «SOS» button.
3.	Ignition off/on test	During the test, after completing the voice prompt , it is required to turn off and then turn on the ignition of the vehicle.
4.	Informing the user about test completion and the beginning of transferring the test results to the system operator	When the test is completed, the phrase «Test completed» will be heard. By default, the MSD with the test results will be transmitted to the system operator. Press the «SOS» button to cancel the transmission of the MSD. After the MSD with the results is transmitted to the system operator or the user cancels the transmission of the MSD, the Device will enter the «ERA» mode.