

## General Guide for Installation

- Install the device as far as possible from metal parts and wiring harnesses.
- Recommendation: connect device supply directly to the OBD-II connector wires where pin 16 is +12B, pin 4 is GND (common).
- Analog output AN commutates at +12V. It is used to start some heaters using an analogous signal and to connect status LED located in the button from the package.
- Auxiliary output OUT commutates at GND. It is used to connect a coolant pump or the interior's heater via a power relay. It is switched on with the delay (TIME2 setting) and/or based on the coolant temperature (LTEMP1 setting) after the heater is switched on. It is switched off with the delay (parameter TIME3) after the heater is switched off.
- If there are other control units on the bus, it is recommended to connect the module's control wire (blue) via normally open signaling relay controlled by output OUT.

In this case you should activate setting SEPARLINE1 that activates this relay before the data exchange.

- In some vehicles heater's power supply might be switched off when the car is not moving. In this case you might need to "wake" it up by sending a pulse signal. You should switch output OUT to impulse mode and set pulse duration using setting PULSEOUT. The output is activated only when the heater starts.

-If you need to implement additional options of remote control of output OUT (for example, to block engine remotely) activate setting SEPAROUT1. It switches the output mode into manual control mode (SMS-commands: ACTIVATE / DEACTIVATE).

In this mode setting KEEPOUT1 activates option to save and to subsequently restore of output OUT state when the module's power supply is switched off and then switched on, respectively.

Please indicate the place of ALTOX module's location in the vehicle for possible maintenance:

Authorized Service:

Installation Date:



## Operational Manual

# ALTOX EBUS-5

## General Information

Dear buyers of ALTOX equipment!

We thank you for purchasing a new ALTOX EBUS-5 device. This device will provide you with great options to control your autonomous starting parking heater.

You need a SIM card for your ALTOX device. It is recommended to use special plans for M2M equipment.

## Use

Using ALTOX system you can control your starting parking heater remotely using a phone. You can use all mobile and landline phones with tone dialing option. Certain types of mobile phones (smart phones) can use apps and the option of using web interface to control the system in the real-time mode.

## Control and Programming

You can start using your ALTOX module right after you have saved authorized phone numbers in settings (3 cells: NUM1 / NUM2 / NUM3).

Saving of the first caller's phone number into cell NUM1 follows up automatically (cell NUM1 should be empty).

To save other phone numbers use a text message command NUMX:YYYYY, where X is a number from 1 to 3, and +YYYYY is a phone number.

To clear the cell send NUMX instruction without specifying a phone number.

There are the following control options:

- Outgoing voice call and DTMF commands;
- Outgoing text messages (SMS instructions);
- Mobile applications Thermo Call, HeaterRC or others;
- Direct control via a button in the car's interior;
- Via web interface of the mobile Internet app <http://altox.ru/app>

## Control via an outgoing call

Call the phone number of the SIM card installed in the GSM module. The phone number you are using to make a call should already be saved in the device (see text messages SMS-commands). If the call is made using a number that has not been saved in the ALTOX module, the connection with the device will end without receiving a response signal. The working status of the heater will not change.

When setting CALL1 is activated, ALTOX responds to the call and plays voice prompts (option).

If this setting is not active (CALL0), the call is dropped after a certain number of ringing tones. 1 ringing tone - the heater switches on, 2 ringing tones - the heater switches off.

## SMS Status Messages:

HEATER ON 30min

GSM (0-31): 28

Voltage: 12.8V

Temp heater: 50C

Temp sensor: 10C

Output: off

Note: if relevant data is not available, the fields will not be filled in

- heater status and time until switching off
- GSM receive signal level (not less than 10)
- car-system voltage
- heater's temperature sensor's value
- car interior's temperature sensor's value
- auxiliary output OUT status

## Text Messages with Error Codes:

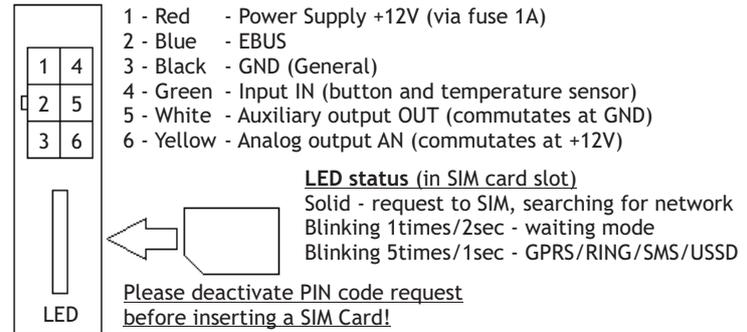
Current fault: none

Stored fault: none

- current codes of the heater's errors
- stored codes of the heater's errors

## Specifications

Parameter	Value
Power Supply Voltage	10V - 28V
Standby Current	less than 20mA
Max Current for Auxiliary Output Terminals	150mA
Operating Temperature	from -40 to +80°C



## Installing a Button to Switch on the Module

Make a Ø8mm hole in the plug or in another easily accessible for a driver place. The button is connected in accordance with the color of the main connector wires (key: Input IN - GND, LED: output AN - resistor - GND). Note: if a non-latching button (FIXKEY1 setting) is used to switch heater on heater will not be switched off automatically after time specified in TIME1.

## Installing a Car Interior Temperature Sensor

Install the sensor as far as possible from heating sources. The sensor is connected in accordance with the colors of key connector's wires.

Internet Settings	Command
APN Access Point (ask your mobile provider)	APN1:internet
APN User Name (ask your mobile provider)	APN2:login
APN Password (ask your mobile provider)	APN3:password
Internet-application server's IP address	SERVER1:X.X.X.X
Internet-application server's port	SERVER2:XXX
Number of attempts to establish GPRS before reconnect	COUNT1:3
Number of attempts to establish TCP before reconnect	COUNT2:2
Ping frequency in home network, 1-99 sec	PING1:30
Ping frequency in roaming, 0-99 sec (0-OFF)	PING2:30

Note: after the setting of the APN point, ALTOX module will switch into GPRS mode. Internet traffic amounts to less than 3MB not taking rounding off into account. To automatically switch off the data transfer in roaming use setting «PING2:0».

#### Text SMS with General Settings:

A0 R1 B0 T30,0,0 - HEATER-A0, RSTOP1, BIND0, TIME1/2/3  
E10 L0,0,0 F0 - ERRCTRL:10, LTEMP1/2/3, FIXKEY0  
P0 S0,0 K0 - PULSEOUT:0, SEPAROUT0, SEPARLINE0, KEEPOUT0  
S1:w0,e1,v11.0,t99 - SMSF1, SMSW0, SMSE1, SMSV:11.0, SMST99  
C1 P\*\*\*\* - CALL1, PASS: (up to 4 characters)  
N1\*\*\*\* - phone number cell NUM1  
N2\*\*\*\* - phone number cell NUM2  
N3\*\*\*\* - phone number cell NUM3  
B\*\*100#:10,5:1 - BAL:\*100#, BTIMER1:10, BTIMER2:5, TRANSLIT1

#### Text SMS with ID and Internet Settings:

ID:12345678901234 - Unique Device Identifier  
S"XXX.X.X.X", "XXX" - SERVER1:XXX.X.X.X, SERVER2:XXX  
G"apn", "user", "pass" - APN1:apn, APN2:user, APN3:pass  
C3,2 P30,30 - COUNT1/2, PING1/2

#### Text SMS with GSM Stations Data:

The text message contains 7 cells with data: N, MCC, MNC, LAC and CID.  
N - number of cell from 0 to 6 (if a cell is empty, all fields have value 0);  
MCC - Mobile Country Code;  
MNC - Mobile Network Code;  
LAC - Local Area Code;  
CID - Cell ID.

LAC and CID fields values are displayed in hexadecimal notation.  
MCC, MNC, LAC and CID data allow to determine the location of the vehicle on the map (using Google, Yandex services, etc.).

Following voice prompts you should enter a DTMF-command by pressing a relevant tone button:

- Switching the autonomous heater ON/OFF - press 1.
- Request account balance - press 2.
- Request heater status - press 3.

After a minute the connection is dropped automatically.

The parking heater will be ON for the specified in settings time period (TIME1), and additionally LED on the button installed in the car will be activated.

### Control via Button

The standard ALTOX equipment also includes a button (it is installed if required in the car's interior). This button controls the heater and indicates its current working status.

### Control via Internet

This option allows controlling the heater in the real-time mode via Internet-app ALTOX HEATER (<http://altox.ru/app>) using your phone's or tablet's browser. Detailed recommendations on setting up the Internet-app and switching the module to the GPRS mode can be found in the document «Description of ALTOX HEATER Internet-application».

Attention! If you decide not to use the option of controlling the heater via Internet after switching the module into the GPRS mode, you should switch the GPRS mode off by sending a text message command «APN1:».

### Control via SMS

Send a SMS-command to the phone number associated with the SIM card installed in the module. Text message commands can be sent from any phone number. If the password is set (PASS setting), then before entering any command, you should include its value with no spaces (for example, «1111START», where 1111 is password, START is an command).

Heater Control	Command
Switch the heater ON (operation time from TIME1)	START
Switch the heater ON for a time period of XXmin (10-120)	START:XX
Switch OFF the heater	STOP
Request a text message (SMS) with the heater status	STATUS

When setting SEPAROUT1 is activated, the auxiliary output OUT is switched into a manual control mode (to implement additional options).

Auxiliary Output Control	Command
Switch ON only the auxiliary output OUT	ACTIVATE
Switch OFF only the auxiliary output OUT	DEACTIVATE

To request the account balance of the SIM card (by number from the BAL setting) use SMS command «USSD». If you need to request data for another phone number, add it in the command: «USSD:\*XXX#».

Additional commands	Command
Send USSD-request *XXX# using the module's SIM card	USSD:*XXX#
Send text message XXX from SIM card's number to NNN	SMS:NNN:XXX
Request GSM stations data (MCC,MNC,LAC,CID)	GSMINFO

**Note:** MCC, MNC, LAC and CID data allow to determine the location of the vehicle on the map (using Google, Yandex services, etc.).

LAC and CID fields values are displayed in hexadecimal notation.

Heater's Diagnostics	Command
Read heater's errors	READ
Erase heater's errors	ERASE

**Note:** diagnostics is only possible for digital heaters.

## Settings

You can enter several settings simultaneously, dividing them by commas. If the password is set (PASS:XXXX), then before entering any instruction, you should include its value with no spaces (XXXXSETTINGS1).

General Settings Commands	Command
Request a text message (SMS) with general settings	SETTINGS1
Request a text message (SMS) with Internet settings	SETTINGS2
Restore to factory default settings	SETDEFAULT

1) On the first launch the module automatically detects the type of the digital heater. For the forced change of the connected heater's type use text message instruction HEATER-XX, where XX:

A0 - Automatic determination of the heater's type (digital/analog);  
 A1 - Analog heater; E7 - Ventilation (Aftermarket);  
 E1 - Aftermarket + Hydronic II; E2 - Hydronic II (Toyota, VW);  
 E3 - Hydronic II (Audi, Land Rover, VW).

2) To change the default operation time of the heater use text message command TIME1:XX, where XX is operation time from 10 to 120 minutes.

3) If output OUT controls ventilation of the car's interior set up the delay time for switching on output OUT using setting TIME2:XX and/or set up switching of output OUT based on the coolant temperature using setting LTEMP1:XX, where value XX can be from 0 to 99°C (0 - the setting is OFF).

4) Settings LTEMP2:XX and LTEMP3:XX allow switching the heater off based on the coolant temperature or car interior's temperature sensor's data (supplied with module) before the operation time TIME1:XX.

**Attention!** LTEMP1/2 are available not for all heater models.

Technical Settings	Command
Type of connected heater (see the description above)	HEATER-XX
Shut off heater when there are errors on digital bus	RSTOP1 /0
Binding to other control modules	BIND1 /0
Default operating time of heater, 10-120 min	TIME1:30
Delay before switching on of OUT, 1-20 min	TIME2:0
Delay before switching off of OUT, 1-9 min	TIME3:0
Permitted number of errors in the heater, 0-99	ERRCTRL:10
Switch off OUT by coolant temp, 0-OFF (0-99°C)	LTEMP1:0
Switch off heater by coolant temp, 0-OFF (0-99°C)	LTEMP2:0
Switch off heater by temp sensor data, 0-OFF (0-99°C)	LTEMP3:0
Type of button: latching / non-latching	FIXKEY1 /0
Pulse mode for OUT, 0-OFF (0-999 sec)	PULSEOUT:0
Switching on of OUT when the digital bus is activated	SEPARLINE1 /0
Manual control of OUT (on/off)	SEPAROUT1 /0
Restoring of the state for OUT after power supply	KEEPOUT1 /0

1) By default, the module uses the option of forwarding all incoming SMS that are not commands to the last phone number registered in the module or entered into cells NUM1/2/3.

To deactivate this option use commands SMSF0.

2) Automatic SMS notifications (1-ON, 0-OFF):

SMSW1 - transmitting SMS status when the heater's status changes;  
 SMSE1 - notifications about heater's operation errors;  
 SMSV:XX - alarm SMS about voltage dropping below value XX;  
 SMST:XX - information SMS about increasing of the car interior sensor's (supplied with module) temperature value above XX.

3) BTIMER1:N allows receiving SMS with account balance every N days.

User Settings	Command
Forwarding of incoming SMS (to switch off use SMSF0)	SMSF1 /0
SMS status when the heater's status changes	SMSW1 /0
SMS about control bus errors	SMSE1 /0
SMS about car system voltage drop	SMSV:11.0
SMS about car interior sensor's temperature	SMST:0
CALL1 - response incoming call, CALL0 - dropping call	CALL1 /0
Setting the password before entering SMS-commands	PASS:XXXX
Save the phone number into cell X, where X - 1, 2, 3	NUMX:+7YYYYY
Save USSD number fore account balance requests	BAL:*XXX#
Timer for sending SMS with balance, 0-99 days (0-OFF)	BTIMER1:10
Timer for sending balance into application, 1-9 hours	BTIMER2:5
Transliteration of cyrillic characters	TRANSLIT1 /0