Quick start guide

for AUTOTERM modem QSTART

Scan the QR code to download the Autoterm Control application.

Manufacturer: AUTOTERM LLC

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1. Purpose

Modem QSTART is device with the ability to use Autoterm Control application on smartphone (available at Google Play and AppStore) to control any AUTOTERM AIR series or FLOW series heater (referred to for ease as "product"or "products" throughout).

The modem is used for manual and automatic control of the product and for sending data to a phone using SMS messages.

2. Specifications

No.	Name	Characteristics

1	Voltage (V):
	            upper limit -
	            lower limit -
		32
		10

2	Operating temperature range	from -40°C to +85°C
3	Dimensions (excluding antenna and cable)	(75 x 75 x 22) mm
4	Frequency:	GSM/GPRS/EDGE: 900/1800Mhz FDD-LTE (Cat.1): B1/B3/B7/B8/B5/B20/B28

3. Packing

- modem (1);
- modem connection harness (2);
- antenna (3);
- quick start guide.

4. Modem Description

Figure 1 shows an external view of the modem. The following are located on the modem:

- 6-pin cable connector (1);
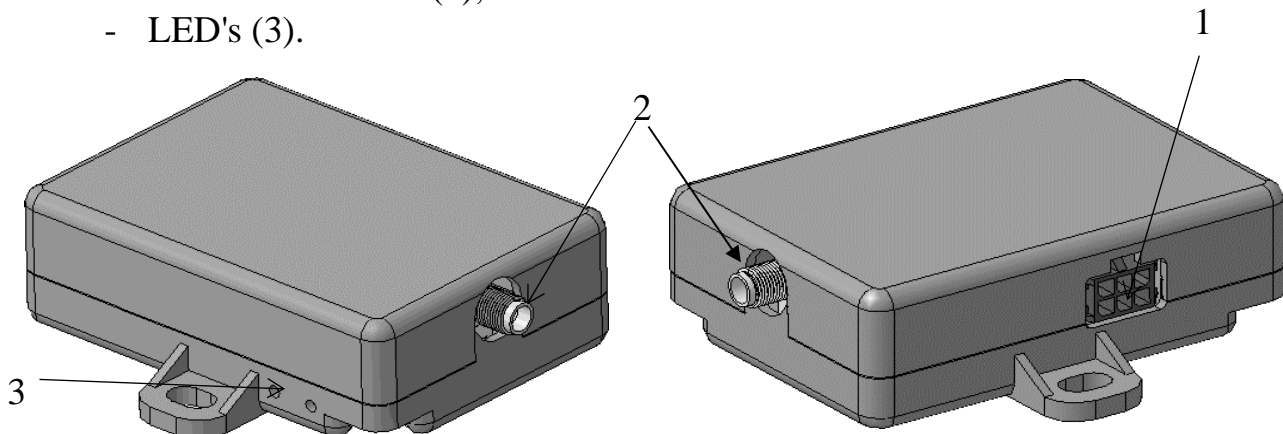- antenna connector (2);
- LED's (3).

Fig.1. Modem

4.1. SIM Card Setup

First of all, put the new SIM card in the phone, remove the PIN code and delete all preset contacts from it.

Attention! The SIM card has to be without voicemail. Ask your network provider to remove voicemail option from your SIM card.

To insert MICRO-SIM card, unscrew two screws from the bottom of the modem and take off top casing of the modem.

Insert the SIM card in the slot as shown in Fig.2. with contacts facing down, push carefully until a click. Then it is secured in its position.

To assemble the modem back, do the previous steps backward.

Figure 2 shows an internal view of the modem. The following are located on the modem:

- 6-pin cable connector (1);
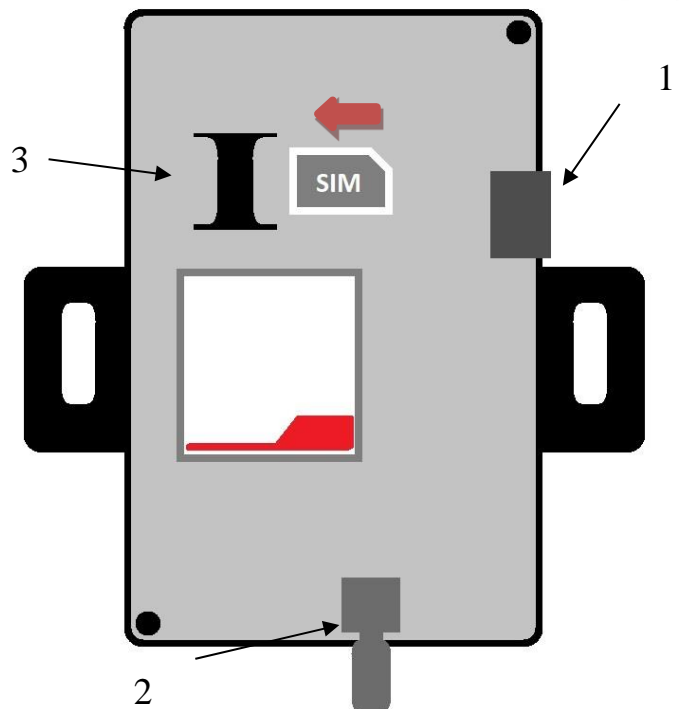- antenna connector (2);
- SIM card slot (3).

Fig. 2. To insert SIM card

4.2. Modem Connection

To set the modem up, connect the antenna, connect the harness to the modem and place the modem in a clean location. Mount the antenna in an unobstructed location (for example, on the windshield).

To connect the cable to the modem, push it in the connector until a click, so the cable connector is fixed in place.

To disconnect the cable, depress the connector latch.

To connect the modem to the product, disconnect the control panel from the product harness and connect the harness to the modem as shown in Fig.3.

After connecting the modem to the power harness (modem power supply), the LED closest to the antenna connector starts to glow. The second LED will start to blink (connection and data exchange). When the second LED (green) starts to blink slowly (once every 3 seconds) modem has established a network connection.
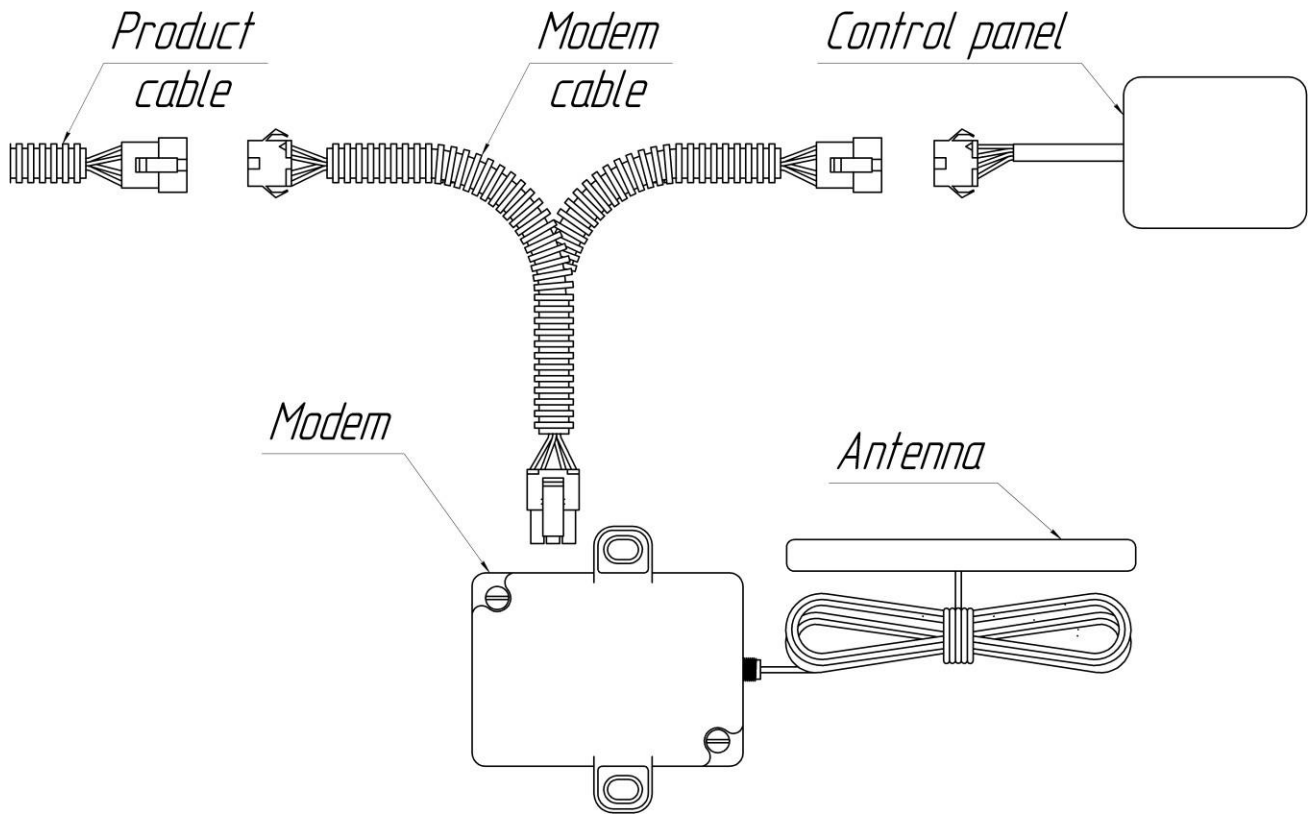
Fig. 3. Modem connection to AUTOTERM heaters

4.3. Preparation of SIM Card

To control the products by means of SMS-commands, phone numbers of SIM cards from which you plan to maintain control should be added to the contacts of the modem SIM card.

Insert the SIM card in the modem and turn on the power supply. When the connection is established (the LED indicating connection to the network is blinking slowly), you can add trusted numbers.

Attention! The first phone number to add is that of the Administrator. All further actions with trusted numbers are made only from this number.

Attention! Commands must be written in lowercase.

If you have problems setting up the modem, please contact our technical support team via e-mail: service@autoterm.com

Example of working with trusted numbers using SMS-commands:

Direction	SMS text	Description
To modem	`admin+71234567891`	Adding administrator number
Modem response	`Admin:+71234567891`	
To modem	`add+71234567892`	Adding trusted number
Modem response	`1. +71234567891` `2. +71234567892`	
To modem	`add+71234567893`	Adding trusted number

Modem response	`1. +71234567891`
	`2. +71234567892`
	`3. +71234567893`	

To modem	`list`	Viewing the list of trusted numbers

Modem response	`1. +71234567891`
	`2. +71234567892`
	`3. +71234567893`
	`4. +71234567894`	

To modem	`del2`	Removing trusted number No. 2

Modem response	`1. +71234567891`
	`3. +71234567893`
	`4. +71234567894`	

To modem	`signal`	Shows network strength and provider
Modem response	`GSM signal: 3` `Provider: Orange`	Scale form 1-5.

5. Controlling the Product

Product can be controlled in three ways:

1) by means of a telephone call;
2) by means of a mobile application;
3) by means of SMS messages (dialed manually).

## 6. Controlling the Product by Means of a Telephone Call

The product can be controlled only from a trusted phone number. When you call the modem number:

- If the product is stopped, the modem will respond with three beeps and will start the product.
- If the product is running, the modem will respond with two beeps and will stop the product.

7. Controlling the Product by Means of a Mobile Application

The product can be controlled by means of an application installed on a mobile phone with Android or iOS operating system. To do this, you need to download the app Autoterm Control SMS from Play Store or from AppStore and install it on your phone.

After installation, click the Autoterm Control SMS application to start it.
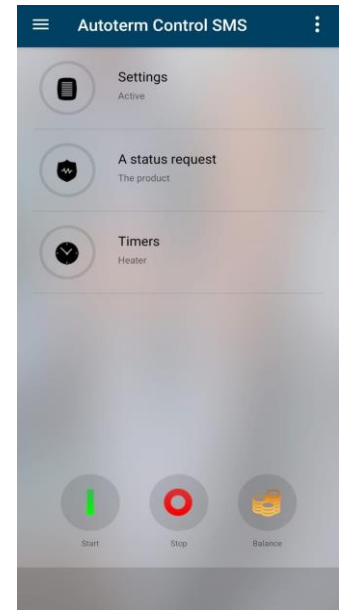
Autoterm Control settings:
- adding the product;
- ON/OFF SMS notifications;
- ON/OFF SMS malfunction notifications;
- confirm sending SMS;
- call notification[2];
- language selection;
- about the product[3].

Operation settings:

AIR series heaters:
- set operation time of the heater[4];
- Limit time of work;
- Set work mode: Power, Temperature by 3 sensors;
- Power level or Temperature;
- Set Ventilation function ON/OFF;

FLOW series heaters:
- set operation time of the heater[4];
- ON/OFF cabin heater;
- set cabin heater ON temperature;
- ON/OFF pump start-up at engine start;
- set temperature of pre-heater transition to standby mode;
- ON/OFF product control from the alarm system remote;
- ON/OFF auxiliary heater mode.

Requesting the current status of the product.

 Requesting the current status of the product.
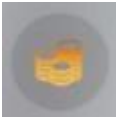
 Account balance request on the modem card number.

 Product start-up (if SMS notification is enabled, an SMS-message is returned confirming the start-up of the product).

 Product shutdown (if SMS notification is enabled, an SMS-message isreturned confirming the shutdown of the product).

Enter the number in the following format:

(country code) (city/wireless carrier code) (phone number)

Example number: +71231234567

When adding either an AIR series or FLOW series heater, select QSTART in the Modem section.

When that is completed press "Save"

2 – When a voice call to the modem number is made, an SMS status notification is returned.

3 – Information on the serial number of the heater, the software version of the electronic unit and modem software version are returned.

4 – Operation time can be set even when the product is running.

8. Controlling the Product by Means of SMS-Commands Sent from Mobile Phone

If your phone does not support installation of the Autoterm Control application, the product can be controlled by means of SMS-commands typed in manually. SMS-commands should be sent to the number of the SIM card installed in the modem.

A command consists of the start character (*), command number, command separator character and parameters (point), one or more parameters, separated by commas, and the character of the end of command (#).

Command number and parameters may consist only of numbers and English letters. Characters are case sensitive. That is the parameters P and p are different parameters. Using other characters is not allowed and commands with such characters are ignored.

Absence of one or more command parameters is allowed.

Example command for **Flow series heater**: `*1.P1E1T60#`
Example command for **Air series heater**: `*1.P1E1T60W4p9S23I1#`

8.1. Description of Commands

Start-up

SMS text for **Flow series heater**: `*1.PP1EP2TP3#`
SMS text for **Air series heater**: `*1.PP1EP2TP3WP4pP5SP6IP7#`

Description of parameters:

P – AIR or FLOW series heater sending confirmation of successful receipt of the command.
1 – send confirmation,
0 – do not send confirmation.
Default 1.

E – AIR or FLOW series heater sending error message in case of a failure in operation.
1 – send error message,
0 – do not send error message.
Default 1.

T – Operation time in minutes. For **Flow series heater**, the time can be set in a range of 20 to 120 minutes. For **Air series heater**, the time can range from 20 minutes to an indefinite period. For unlimited-time operation, set the value 65535.
The default period is 40 minutes.

W – **Air series heater** operation mode.
  1 – to temperature of electronic-heater unit board,
  2 – to panel temperature,
  3 – to temperature of exterior (cab) sensor,
  4 – to power set from control panel.
  The default option is 4.

p – Set **Air series heater** power, which ranges from 0 (minimum) to 9 (maximum).

S – Temperature setting (in degrees Celsius) to which the **Air series heater** will attempt to heat the environment according to the temperature set for **W**. The temperature can range from 1°C to 30ºC. The default value is 15.

I – Enable/disable **Air series heater** ventilation mode
  1 – Enable,
  2 – Disable.
  The default option is 2.

Example command for **Flow series heater** start-up:
*1.**P**1**E**1**T**60# – Start-up with receipt confirmation, failure notification, and 60 minute operation

  Example of SMS confirmation of receipt of the start-up command:
```
Start confirmation
Mode: Ignition
U= 12,5V
T= 23C
Work Time 01:15
```

  Example SMS message for a failure:
```
Information
Mode: Blowing
U= 12,5V
T= 23C
Work Time 00:49
Failure: 17
```

Example command for **Air series heater** start-up:
*1.**P**1**E**1**T**60**W**4**p**9**S**23**I**1# — Start-up with receipt confirmation, failure notification, and 60 minute operation

Example SMS message confirming receipt of the start-up command:

```
Start confirmation
Mode: Ignition
U= 12.5V
Tset= 23C
>Tplnr 25C
Text --C
Tpnl -C
Vent OFF
Work Time 01:15
```

Example SMS message for a failure:

```
Information
Mode: Blowing
U= 12.5V
Tset= 23C
>Tplnr 24C
Text --C
Tpnl -C
Vent ON
Work Time 00:49
Failure: 17
```

Operating parameters

Use this command to change the **Flow series heater** parameters during operation:
SMS text: $\text{*2.}\textbf{P}\text{P}_1\textbf{E}\text{P}_2\textbf{T}\text{P}_3\text{\#}$

Use this command to change the **Air series heater** parameters during operation:
SMS text: $\text{*2.}\textbf{P}\text{P}_1\textbf{E}\text{P}_2\textbf{T}\text{P}_3\textbf{W}\text{P}_4\textbf{p}\text{P}_5\textbf{S}\text{P}_6\textbf{I}\text{P}_7\text{\#}$

Description of parameters:

P –   AIR or FLOW series heater sending confirmation of successful receipt of the command.
   1 – send confirmation,
   0 – do not send confirmation.
   Default 1.

E –   AIR or FLOW series heater sending error message in case of a failure in operation.
   1 – send error message,
   0 – do not send error message.
   Default 1.

T – Operation time in minutes. For **Flow series heater**, the time can range from 20 to 120 minutes. For **Air series heater**, the time can range from 20 minutes to an indefinite period. For unlimited-time operation, set the value 65535.
The default time is 40 minutes.

W – **Air series heater** operation mode:
1 – to temperature of electronic-heater unit board,
2 – to panel temperature,
3 – to temperature of exterior (cab) sensor,
4 – to power set from control panel.
The default option is 4.

p – Set **Air series heater** power, which ranges from 0 (minimum) to 9 (maximum).
The default value is 5.

S – Temperature setting (in degrees Celsius) to which the **Air series heater** will attempt to heat the environment according to the temperature set for **W** - The temperature can range from 1 °C to 30 °C.
The default value is 15.

I – Enable/disable **Air series heater** ventilation mode
1 – Enable,
2 – Disable.
The default option is 2.

Example command for **Flow series heater**:
*2.**P**0**E**1**T**60# – Change of parameters without confirmation of receipt, with a notification of failure, operating time of 60 minutes

Example of return SMS:
```
Parameters.
Mode: Blowing
U= 12,5V
T= 23C
Work Time 00:49
```

Example command for **Air series heater**:
*2.**P**1**E**1**T**34**W**5**p**9**S**23**I**1# – parameter alternation with receipt acknowledgement, failure notification, and 34 minute operation

Example response text:
```
Parameters.
Mode: Ignition
U= 12.5V
>Power: 5
Tplnr 25C
Text --C
Tpnl -C
Work Time 00:03
```

Shutdown

SMS text: $*3.\mathbf{P}_1\#$

Description of parameters:

P – AIR or FLOW series heater sending confirmation of successful receipt of the command.
1 – send confirmation,
0 – do not send confirmation.
Default 1.

Example SMS confirmation for **Flow series heater**:
```
Stop confirmation.
Mode: Blowing
U= 12,5V
T= 23C
Work Time 00:49
Failure: 17
```

Example SMS confirmation for **Air series heater**:
```
Stop confirmation.
Mode: Blowing
U= 12.5V
>Power: 5
Tplnr 25C
Text --C
Tpnl -C
Work Time 00:3
Failure: 17
```

Information request

SMS text: $*4\#$
Upon receipt of this command, a response is sent in any case.

Example SMS response from **Flow series heater**:
```
Information
Mode: Ignition
U= 11,2V
T= 02C
Work Time 00:02
```

Example SMS response from **Air series heater**:
```
Information
Mode: Ignition
U= 12.5V
>Power: 9
Tplnr 25C
Text --C
Tpnl -C
Work Time 00:03
```

Setting start-up time

SMS text for **Flow series heater**: *5.$\mathbf{P}\Pi_1\mathbf{E}\Pi_2\mathbf{T}\Pi_3\mathbf{M}\Pi_4$#
SMS text for **Air series heater**: *5.$\mathbf{P}P_1\mathbf{E}P_2\mathbf{T}P_3\mathbf{M}P_4\mathbf{W}P_5\mathbf{p}P_6\mathbf{S}P_7\mathbf{I}P_8$#

Description of parameters:

P – Air or Flow series heater sending confirmation of successful receipt of the command.
　　　1 – send confirmation,
　　　0 – do not send confirmation.
　　　Default 1.

E – Air or Flow series heater sending error message in case of a failure in operation.
　　　1 – send error message,
　　　0 – do not send error message.
　　　Default 1.

T – Operation time in minutes. For **Flow series heater**, the time can range from 20 to 120 minutes. For **Air series heater**, the time can range from 20 minutes to an indefinite period. For unlimited-time operation, set the value 65535.
　　　The default time is 40 minutes.

M – Time in minutes after which the Air or Flow series heater will start up.
　　　The default time is 40 minutes.

W – **Air series heater** operation mode:
    1 – to temperature of electronic-heater unit board,
    2 – to panel temperature,
    3 – to temperature of exterior (cab) sensor,
    4 – to power set from control panel.
    The default option is 4.

p – Set **Air series heater** power, which ranges from 0 (minimum) to 9 (maximum).
    The default value is 5.

S – Temperature setting (in degrees Celsius) to which the **Air series heater** will attempt to heat the environment according to the temperature set for **W**. The temperature can range from 1°C to 30ºC.
    The default value is 15.

I – Enable/disable **Air series heater** ventilation mode
    1 – Enable,
    2 – Disable.
    The default option is 2.

Examples of start-up commands:	Text of SMS confirmation:
`*5.`**`P`**`1`**`E`**`1`**`T`**`60`**`M`**`78#`	`Deferred start confirmation.`

Cancelling deferred start-up

SMS text: `*5#`
Text of return SMS:
`Deferred start has been canceled.`

Information request on deferred start-up

SMS text: `*6#`
Example text of return SMS:
`Start in 1 days 15 hours 26 minutes.`

Setting up Flow series heater operating parameters

SMS text: `*7.`**`P`**P_1**`t`**P_2**`W`**P_3**`R`**P_4**`J`**P_5**`M`**P_6**`N`**P_7**`F`**P_8**`r`**P_9**`s`**P_{10}`#`

Description of parameters:

P – **Flow series heater** sending confirmation of successful receipt of the command.
    1 – send confirmation,
    0 – do not send confirmation.
    Default 1.

t – Transition temperature to standby mode when operating as a preheater [20..95]°C. Default 88°C.

W – Auxiliary heater mode.
- 0 – auxiliary heater mode turned off,
- 2 – automatic mode of auxiliary heater turned on,
- 3 – manual mode of auxiliary heater turned on.

R – Relay ON temperature [30..60]°C. Default 40°C.

J – Pump control signal with PWM / without PWM 1
- 1 – with PWM,
- 0 – without PWM.

M – Pump operating conditions.
- 0 – in normal mode,
- 1 – in normal mode + always turns on when the vehicle engine is running.

N – Transition temperature to standby mode when operating as auxiliary heater [80..95]°C.

F – Relay control of the cabin heater.
- 0 – operating in automatic mode,
- 1 – turned off.

r – Pump operation with auxiliary heater in standby mode.
- 0 – in normal mode,
- 1 – turned off.

s – Alarm channel control.
- 0 – in normal mode,
- 1 – turned off.

Examples of return SMS messages.
Example 1:

Settings:		
Tw=46C		– transition temperature to standby mode (heater) 46ºC.
W=A		– automatic mode of auxiliary heater turned on.
Tr=49C		– cabin heater relay ON temperature 49ºC.
P=No PWM		– pump control signal without PWM.
PC=P		– pump operation only when the heater is running.
Sp=OFF		– pump OFF with auxiliary heater in standby mode.
Th=95C		– transition temperature to standby mode (auxiliary heater) 95ºC.
R=OFF		– relay control signal of the cabin heater OFF.
S=ON		– alarm channel ON.

Example 2:

Settings:		
Tw=88C		– transition temperature to standby mode (heater) 88ºC.
W=M		– manual mode of auxiliary heater turned on.
Tr=40C		– cabin heater relay ON temperature 40ºC.
P=PWM		– pump control signal with PWM.
PC=P+M		– pump operation when the heater and engine are running.
Sp=ON		– pump ON with auxiliary heater in standby mode.
Th=95C		– transition temperature to standby mode (auxiliary heater) 95ºC.
R=ON		– relay control signal of the cabin heater ON.
S=OFF		– alarm channel OFF.

Requesting operating parameters of the Air or Flow series heater

SMS text: *7#

Upon receipt of this command, a response is sent in any case.

Text of return SMS:

Settings:		
Tw=46C		– transition temperature to standby mode (heater) 46ºC.
W=OFF		– auxiliary heater mode turned off.
Tr=49C		– cabin heater relay ON temperature 49ºC.
P=No PWM		– pump control signal without PWM.
PC=P		– pump operation only when the heater is running.
Sp=ON		– pump ON with auxiliary heater in standby mode.
Th=80C		– transition temperature to standby mode (auxiliary heater) 80ºC.
R=OFF		– relay control signal of the cabin heater OFF.
S=ON		– alarm channel ON.

Resetting the parameters of the Air or Flow series heater (factory settings)

SMS text: *8#

Upon receipt of this command, a response is sent in any case.

Text of return SMS:

Settings:		
Tw=88C		– transition temperature to standby mode (heater) 88ºC.
W=OFF		– auxiliary heater mode turned off.
Tr=40C		– cabin heater relay ON temperature 40ºC.
P=No PWM		– pump control signal without PWM.
PC=P		– pump operation only when the heater is running.
Sp=ON		– pump ON with auxiliary heater in standby mode.
Th=95C		– transition temperature to standby mode (auxiliary heater) 95ºC.
R=ON		– relay control signal of the cabin heater ON.
S=ON		– alarm channel ON.

Requesting Air or Flow series heater serial number and software version

SMS text: `*9#`

In response to this command, an SMS message with the Air or Flow series heater serial number and the version of the software of the electronic unit and software version of the modem is sent.

Example of return SMS:
```
Serial:0660000000.
CU Ver:6.1.0.0.
Modem Ver:1.0.1.2.
```

Requesting the balance

SMS text: `*16#`

Return SMS is received depending on the modem response on balance.

9. Overall Testing of Modem after Installation

After the installation and connection of the modem to the product, the modem is tested in the following manner:

- Check that the red LED is lit (closest to the antenna connector);
- Request the status of the product.

If an SMS response is returned after the request, the modem is installed correctly.

If the LED is not lit, check the wires and connectors of the modem harness.

The second LED flashes - modem with a SIM card communicates with the operator.

10. Warranty

10.1.   The warranty period is 24 months from the date of sale of the product, on condition that the user complies with handling, transportation and storage requirements and as provided by the operation manual.

10.2.   In the absence of the stamp of the seller organization with the date of sale the warranty period is calculated from the date of manufacture of the modem.

10.3.   When a fault occurs during the warranty period due to the fault of the manufacturer, the modem is replaced by the manufacturer.

10.4.   The manufacturer shall not accept claims on incompleteness of delivery or mechanical damage after the sale of the product.

10.5.   This warranty does not cover defects resulting from:

- Force majeure (lightning, fire, flood, flooding, harmful voltage fluctuations, accident);
- Non-compliance with the rules of installation, operation, storage and transportation set forth in the operating instructions;
- Use of modem for other purposes.

10.6.   In case the operation manual for the modem is lost, the user is deprived of the right to warranty service.