



**GPS/GLONASS Terminal “NAVISET GT-10 IRIDIUM”
(version 2)
(Registration Certificate)**



1. Application and OPERATION PRINCIPLE

SL-GCMS-1 device (hereinafter «NAVISET GT-10») is designed to monitor the location of a mobile object, the data of fuel consumption and other telemetry (a state of inputs, data of digital interfaces and etc.), to transmit to the collection server.

Terminal NAVISET GT-10 is a solution for the most demanding users, designed for application to control vehicles, fuel consumption, security and etc. The universal interface allows integrating the device to any third-party software.

The NAVISET GT-10 terminal records data of coordinates and telemetry in the memory and transmits them to a data collection and processing server at specified period of time using the GPRS network of any GSM provider via the Internet. Unsent data to the server are stored in a non-volatile memory of the device («a black box») so even at complete discharge of the reserve storage battery; they will be stored and be transferred at switching on.

2. The special feature:

With this device you can easily use the following options and get all the information in real time:

- Location of your vehicle
- Monitoring of fuel consumption
- Vehicle security + panic button
- Voice communication with a driver
- Voice menu for external device controls
- Standard alarm option
- Snapshots of RS232camcorder
- Temperature of 8 sensors
- Driver identification, if they are more than 1 person, I-Button will use.
- Possibility to move abroad without GPRS roaming
- Configuration and software update via USB or remotely via GPRS

3. Basic advantage:

The main advantage of NAVISET GT-10 IRIDIUM navigation terminal is multi-functionality and accessibility to everyone:

- Present of 2 SIM cards allows to be sure of a communication stability with a device and to avoid expensive GPRS roaming in case of a location out of a mobile operator coverage area
- Due to the voice menu, you can easily control the engine operation, communicate with a driver and others
- Device has a maximum of required functions, and at the same time it has the lowest price in the market
- Configuration and software update via USB interface or via the GPRS connection
- Immunity supply voltage and voltage overloading is achieved using high-voltage regulator for current up to 5A, in conjunction with the two-level protection at the input.
- Monoblock version enhances reliability
- Participation of efficient personnel in the manufacture is reflected in a quality of finished articles
- 3 operating modes to optimize data transmission expenses
- Long operation period because of application of the original hardware components
- Built-in antenna allows to avoid sabotage cases
- Remote configuration via the configuration program

Our company has many years of experience, is keeping up to date and constantly expands the product functionality. All changes and innovations are reflected on our site.

2.2. Specification

Feature	GLONASS	GPS
Supply voltage, V (constant current)	7.5 - 24	7.5 - 24
Current consumption at a power supply voltage of 12 V peaked, in a registration and call mode	1,65	1,35
average, in an operating mode of server connection	420	150
Backupbattery	Li-Po 1100mA	Li-Po 1100mA
Peak current of output circuit load, A	3x1	3x1
Maximum length of a loop 1-Wire, m	10	10
Reaction time of the button (sensor), msec	2	2
Quantityofinputs	7	7
Input for a frequency measurement of a meander	1	1
Input for a pulse counting	2	2
Analoginput0-5V	1	1
Analoginput0-36V	2	2
Discretecutoffinput	2	2
Buswire1-Wire	1	1
RS232 -RX	1	1
Quantity of outputs (open collector)	3	3
RS-232interface	+	+
Quantity of SIM card	2	2
Voice interface for PTT connection	+	+
Voice Bluetooth	optionally	optionally
Voice menu	+	+
Sensorof space positionchange(accelerometer)	+	+
The temperature measurement sensor inside the device	+	+
«Black box» for storage of event logs, snapshots and sound files	4 MB	4 MB
Interface for communication with the PC and firmware updates	USB 2.0	USB 2.0
Automaticupdatesoffirmware viaGPRS	+	+
Configuration	USB/GPRS	USB/GPRS
GSM chip	SIM900	SIM900
SATELITE chipIridium	optionally	optionally
GPS/GPS+GLONASS chip	Navia	MTK EB-500
Indicator of GSM, GLONASS, power, operation, № SIMcard	+	+
Antenna connector	SMA	SMA
Interfaceconnector	carriersocket	carriersocket
data-transfertime, sec	20-60	20-35
Slotless RTC (real time clock)	option	option
Transmitter frequency range, MHz	900/1800	900/1800
Average operating time of storage battery, hours	8	8
Temperaturerange, °C	- 40 ... + 85	- 40 ... + 85
Operability, altitude	0-9999	0-9999
Humidity	0...90% (0...35 °C); 0...70% (35...55 °C)	0...90% (0...35 °C); 0...70%
Overallsize, MM	150x65x29	150x65x29

5. Assignment of interfaces and description of outputs

The device is a plastic case with a mounted possibility on clamps, with a efficient microcontroller and GSM modem. The microcontroller completes all actions for the collection and processing the signals. All electronic components are placed on the printed circuit board, mounted to the base.

All interface contacts are involved and have the following significance:

Front side of the device (Fig. 1)

- (1) - Connector GLONASS, GPS or GLONASS / GPS antenna, SMA-FEMALE type
- (2) - Jack in the front panel for an output of bonding wires.
- (3) - Status indicators of the device operation and the selected SIM card. Descriptions of the status see Table 3.
- (4) - The connector of the computer USB interface for configuring, change of firmware.

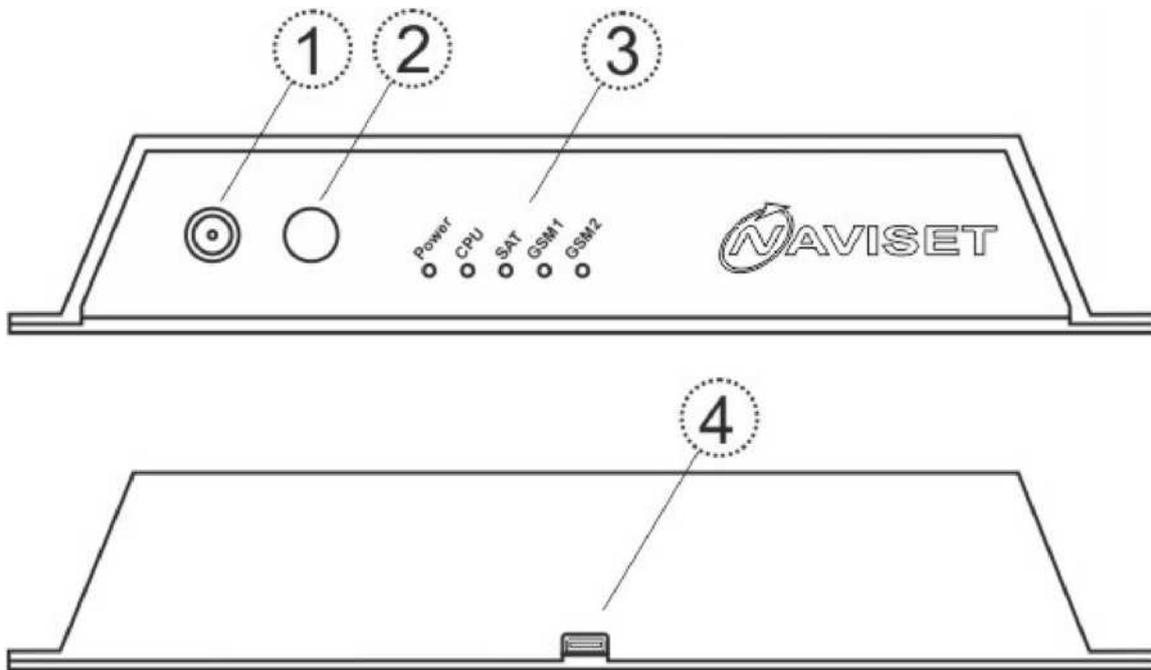


Figure 1. Description of outputs

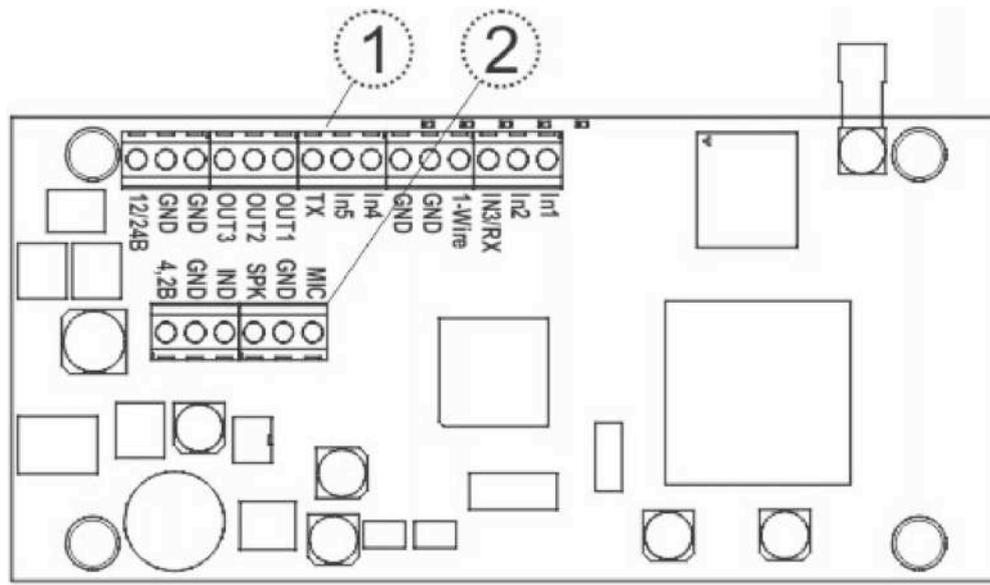


Figure 2. Carrier socket description for external periphery

Table 2. Description of connector functions

Carrier socket 1	Functional area
IN1	Analog input 0-5B, 0-36V, frequency
IN2	Digital, analog input0-36V
IN3/RX	Digital,discrete input, RS232-RX
IN4	Pulse input (inverting) increment (++)
IN5	Pulse input (inverting) decrement (--)
TX	RS232-TXoutput (date transmit)
1-Wire	DS1820 temperature sensorsand I-Button key contactor
OUT1	PGM output - impedance,closed-loop, inversion
OUT2	PGM output - impedance, closed-loop, inversion
OUT3	PGM output - impedance, замкнут, инверсия
12/24B	Power input for vehicle network connection
GND	General power wire, minus
Carrier socket 2	Functional area
MIC	Output of an external PTT microphone connection
SPK	Output of an external PTT speaker connection
IND	Status display of voice connection
4,2B	Output of a PTT power
GND	General power wire, minus

The Naviset GT-10 device has two SIM cards on the bottom side of the processor board. To install the SIM card unscrew 4 fixing screws and remove the processor board out of the device case. See Figure 3. To install accurately move upper cover of holder to the antenna connector, tilt, set the SIM card into the slot cover, close and move to the opposite direction of antenna connector.

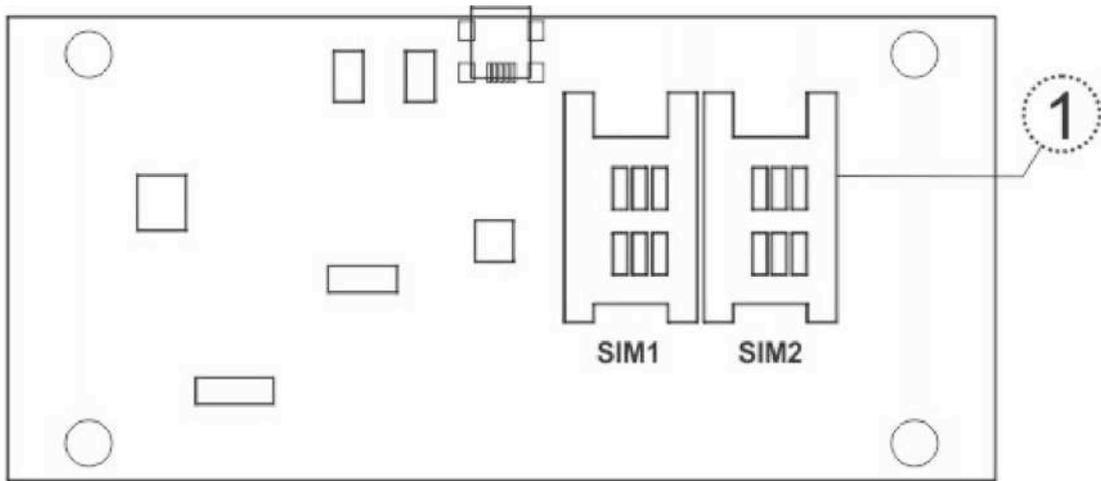


Figure 3. Configuration of SIM card holders

Table 3. Description of the display device

	Indicator SAT	Indicator SIM	Indicator PWR	Indicator CPU
Illuminate continuously	-	no SIM card	There is an external power	Normal operation mode
One flash per 2 seconds	Coordinate sarevalid	Server connection	-	there is no external power operation via storage battery
Two flashes per 2 seconds	Coordinates are not valid	no connection with a server	-	Uploader mode
Three flashes per 3 seconds	Antenna circuit, there is no communication with the receiver	-	-	-
Four flashes per 2 seconds	Satellite initialization	GSM module Initialization	-	a computer connection

6. Connection of the additional periphery

6.1 Peripherery connection to inputs

Universal input circuits are designed for analog, pulse, discrete sensors. All inputs are classified on the executed functionality, described in Table 4.

Table 4 - The contactor functions

Functional area/ Inputs	1	2	3	4	5	1-Wire
Analog mode, the measurement voltage 0-5V0-36V	+	+				
Analog mode, the measurement voltage 0-5V	+					
Pulse counting++				+		
Pulse counting - - - - -					+	
Frequency measurement of a meander	+					
Discrete, activates in a specified voltage range		+	+			
Discrete, arming/disarming (security)						+
Ignitioncontrol	+	+	+			

Connection to any of the inputs is selected by general contact GND. Buttons, sealed contact, circuit breakers and other passive sensors are directly connected to the device. Active devices (fuel level sensors and others), need an additional power supply before connecting these sensors, please read the instructions for each of them.

6.2 Connection of a digital fuel level sensor

For operation with digital sensors of fuel is used digital RS-232 interface. To connect the 3 input shall be configured as RS232 - RX.

Perhaps two types of connection:

1. Passive mode connection. Only TX wire of the sensor interface is connected to the device. To operate in this mode, the sensor shall be pre-configured and make calibration in advance.
2. Active mode connection.

2 sensor wires of TX and RX are connected to device. Before selecting a connection, make sure that use of the external connection isn't planned, as display can be connected only in case of the passive mode of fuel sensor connection. Example of connection is shown in Table 5.

Table 5. Connection of fuel level sensor in active and passive mode

Type of connection	Contactor Naviset GT-10	Contactor fuel level sensor
Passive	IN3/RX	RS232 - TX
	--	RS232 - RX
Active	IN3/RX	RS232 - TX

Before connection, please read the manufacturer's instruction, which is provided by the sensor manufacturer, observe a polarity of a power and the data bus.

WARNING! The interface is designed for digital sensors, analog sensors are connected to the 1-5 inputs, see 6.1 part.

6.3 Connection of the PTT button of Voice communication

PTT is connected to a 2 peripheral board. See Figure 2. For connection see data sheet of plugged PTT. If for PTT operation requires additional power and operating voltage is in the range 3.3-5V, connect directly to a specialized output of a PTT power.

WARNING! PTT output has a power output 4.2 V DC. The peak load should not exceed 200mA.

Speaker output and microphone input is a line plug, use the PTT button with differential input is impossible.

6.4 Connection of TOUCH MEMORY CONTACTOR

To connect an external Touch-Memory contactor use interface connector contacts of 1-WIRE and GND. Connect the contactor according to the diagram shown on the Figure 4

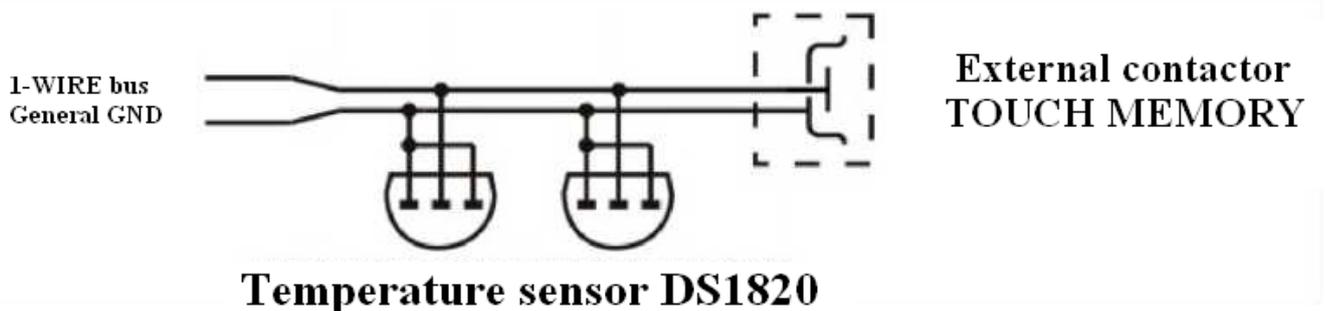


Figure 4. Connection TM and temperature sensors

6.5 Connection of temperature sensor DS1820

Connection is completed according to the diagram provided on the Fig. 4.

The maximum line length should not exceed 10 m. You can connect up to 8 sensors.

Many digital temperature sensors use not compatible protocol with this device, so we recommend to use only the Dallas Semiconductor DS1820.

6.6 Connection of the THE SIBLINK SL-CAM-1 camcorder (SL-CAM-2)

The camcorder is connected to the digital interface RS232. Using is possible only in the absence of a digital fuel sensor. Installed in accordance with Table 6.

Table 6. Connection of camcorder

Type of camcorder	Naviset GT-10 contactor	Camcorder contactor
SL-CAM-1	IN3/RX	Green
	TX	yellow
	4.2B	red
	GND	black
SL-CAM-2	IN3/RX	green
	TX	yellow
	12/24B	red
	GND	black

Before connecting, make sure that the type of camcorder is compatible with the device Naviset GT10.

Camcorder SL-CAM-1 has no overvoltage protection and to connect a camcorder power is necessary strictly to the terminal 4,2V.

If after camcorder connection, in case of request of video frame of a configurator, the image isn't passed, it is necessary to swap the green and yellow wires.

7. Control and setting change via SMS

To control and change settings via SMS is used specialized command set. These commands are sent from any authorized phone(entered in the device memory). The list of available commands and their value are provided in table 5.

Table 5. List of the control and configuring command

Command	Possessing the value
COM0 PASS Device state request	PASS is a current password set in the device. Manufacturer's value is 1234. EXAMPLE: COM0 1234 Message of current state will received after command completion
COM1 OLD_PASS, NEW_PASS Password change	OLD_PASS is a current password set in the device. Manufacturer's value is 1234. NEW-PASS is a new password. that will change the previous password. EXAMPLE: COM1 1234.4321 Confirmation 'NEW_PASS: 4321' will come after command completion
COM2 PASS,ID Change ID number of device	PASS - текущий пароль, установленный в приборе Manufacturer's value is 1234. ID is a number of device, takes on a value of 1 to 65535. EXAMPLE: COM2 1234 8888 Confirmation 'NEW_ID: 8888' will come after command completion
COM3 PASS,IP,PORT Server setting	PASS is a current password set in the device. Manufacturer's value is 1234. IP is a IP address of remote collection server. PORT is a IP port of remote collection server. EXAMPLE: COM3 1234 255 255 255 255 15000 Confirmation 'IP: 255.255.255.255:15000' will come after command completion
COM4 PASS,IN,OUT,MEM Security option	PASS is a current password set in the device. Manufacturer's value is 1234. IN is a time of disarming. принимает значение от 0 до 255 сек. OUT is a arming time value is range of 0 to 255 sec MEM is a time of reactivating of a interrogating, value is range of 0 to 255 min. EXAMPLE: COM4 1234 10 10 1 Confirmation 'NEW_TIMES: 10,10,1' will come after command completion
COM5 PASS,IP,PORT Remote configuration	PASS is a current password set in the device. Manufacturer's value is 1234. IP is a IP address of remote configuration server. PORT is a IP port of remote configuration server. EXAMPLE: COM5 1234 255 255 255 255 12500 The device will switch on following address after command completion
COM6 PASS,MAP Location information	PASS is a current password set in the device. Manufacturer's value is 1234. MAP - Web-card. 0 - OpenStreet, 1 - Google. EXAMPLE: COM6 1234 0 After command completion the SMS will received with coordinates and details of selected card .
COM7 PASS,OUTNUM,ON/OFF Output control	PASS is a current password set in the device. Manufacturer's value is 1234. OUTNUM is a number of an output. Available value (1,2,3 or 4) ON/OFF – Output state after completion. 1 – turn on, 0 turn off. EXAMPLE: COM7 1234 3 1 Confirmation 'OUT3: ON' will come after command completion
COM8 PASS,SW Auto switching of a SIM card	PASS is a current password set in the device. Manufacturer's value is 1234. SW is a state. 0 – to forbid auto switching of a SIM cards, 1 – to allow. EXAMPLE: COM8 1234 1 Confirmation 'Autoswitch SIM ON' will come after command completion

<p>COM9 PASS,MOVE,PARKING Period of packet transmission</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234. MOVE is a period of packet transmission in motion (by default 30 sec). PARKING is a period of packet transmission during the parking (by default 120 sec). EXAMPLE: COM9 60,300 Confirmation 'NEW SEND PACK: 60,300' will come after command completion</p>
<p>COM10 PASS Disarming (security)</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234. EXAMPLE: COM10 1234 Confirmation 'DISARM XX:XX' will come after command completion, where XX:XX is time of disarming</p>
<p>COM11 PASS Arming (security)</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234. EXAMPLE: COM11 1234 Confirmation 'ARM XX:XX' will come after command completion, where XX:XX is time of arming</p>
<p>COM12 PASS,SIM Switch on another SIM card</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234. SIM is a number of SIM card. that is needed to be active. EXAMPLE: COM12 1234,2 – switch on another SIM card for operation. Confirmation 'Switch to SIM 2' will come after command completion</p>
<p>COM13 PASS,SIM,APN,LOGIN,PASS2# Change APN SIM cards</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234. SIM- number of Sim cards. APN - APN provider. LOGIN is an user name. PASS2 is a user password. Line shall terminate # (hash). EXAMPLE: COM13 1234.1. mymtnet. logm. pass# - to write the APN parameters for the first SIM card. Confirmation 'APN update' will come after command completion</p>
<p>COM97 PASS To remove a track from the device memory</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234. EXAMPLE: COM97 1234 Confirmation 'TRACK DELETED' will come after command completion</p>
<p>COM98 PASS Reboot the device</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234. EXAMPLE: COM98 1234.</p>
<p>COM99 PASS, IP, PORT, DAY FW update via GPRS</p>	<p>PASS is a current password set in the device. Manufacturer's value is 1234.IP- the IP address of a remote server of firmware up-dating PORT- IP port of update remote server DAY- a date of auto update, accepts values from 0 to 31. Value distinct from zero allows auto update, equal to zero is forbidden.. EXAMPLE: COM99 1234,255.255.255.255,5001,10 After the updating you receive Firmware load confirmation.</p>

8. Approval certificate

Naviset GT-10 IRIDIUM devices are made in accordance with the technical regulations and recognized serviceable.

Date of issue " __ " _____ 2012

Responsible for acceptance/ _____ ./. /

Manufacturer: DTT

9. Warranty obligations

The manufacturer guarantees operability of products within 12 months from the date of commissioning provided that the conditions and rules of transportation, storage, installation and operation are ensured by the consumer.

The warranty lifetime is 20 years.