



NIKOLIN
FUEL CONTROL

NAVIGATION CONTROLLER "PRO"



1. GENERAL INFORMATION

Navigation controller "PRO" (hereinafter referred to as the Controller).

Navigation controller "PRO" is an electronic microprocessor-controlled device. The Controller includes:

- a printed circuit board with electronic components installed on it;
- connectors for peripheral devices and the power supply source;
- indicators of device operating modes.

The Controller is designed to receive GNSS (Global Navigation Satellite Systems) signals and determine, on their basis, the movement parameters of a vehicle (geographical coordinates, travel speed, etc.), to record and store the collected information in non-volatile memory, and to transmit it to a dispatch center (server) via GSM channels.

The Controller contains electronic components from global brands:

SAMSUNG



MICROCHIP



SHARP



QUECTEL

life.augmented

2. FUNCTIONAL FEATURES

- The device supports operation in 2G or 4G networks, depending on the purchased modification;
- Remote change of the Controller embedded firmware parameters by sending commands via the server and by SMS messages;
- Remote firmware update capability;
- Open data transmission protocol and compatibility with various popular software solutions;
- Storage of 4 MB of data (coordinates, time, etc.) in the device non-volatile memory when the GSM network signal is unavailable. When the GSM signal is restored, accumulated data are automatically uploaded to the server;
- Ability to connect sensors from various manufacturers of navigation equipment;
- Anti-theft alarm function with remote vehicle blocking;
- Security mode with automatic notification of the vehicle owner when the vehicle leaves a specified geofence;
- Ability to connect a special connector to the Controller for power supply from a vehicle cigarette lighter socket;
- Supported protocols: ModBus, LLS Omnicomm, CAN-LOG.
- Custom CAN J1939 configuration.
- Unique ExtraFix mounting method: cable ties, self-tapping screws, or suction cups.

3. TECHNICAL SPECIFICATIONS

COMMUNICATION	
GSM module	Neoway
Navigation module	N58
Supported navigation systems	GLONASS / GPS / Galileo
Data transmission standard	LTE Cat. 1: B1, B3, B7, B8, B20, B28, B38, B40, B41
GLONASS / GPS / Galileo antenna	External, FAKRA connector
Bluetooth	BLE 4.0
GSM / GPRS	900 / 1800
GSM antenna	Internal
SIM card type	Mini-SIM, 2 SIM holders
Coordinate accuracy, not worse than	5 m
Network operation	2G / 4G
POWER	
Supply voltage	10 V to 44 V
Average power consumption	not more than 1.5 W
Typical current consumption (12 V)	120 mA
Protection against pulse voltage surges	+ (up to 250 V)
Reverse polarity protection	+
CONNECTIONS	
Digital interfaces	1-Wire, RS-485, RS-232, CAN J1939
RS485 / 232 protocol support	ModBus, LLS Omnicomm, CAN-LOG
Number of analog and discrete inputs	4 (3 discrete, 1 universal (discrete / analog))
Number of outputs	1 (discrete)

FUNCTIONS

Accelerometer	+
Engine blocking relay	+
Eco driving	+
Immobilizer	+ (data storage for 20 iButton keys in non-volatile memory)
Built-in backup battery	250 mAh (optional)
Non-volatile memory capacity	4 MB
FOTA (firmware-over-the-air)	+

ENCLOSURE

Housing material	plastic
Weight, not more than	68 g
Overall dimensions (without mounting / with mounting)	77 x 69 x 20 mm / 77 x 90 x 20 mm
Operating temperature	-40°C to +80°C
Relative ambient humidity	up to 95% (non-condensing)
Housing protection rating	IP54

4. SCOPE OF SUPPLY

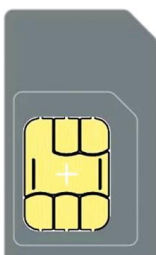
Navigation controller	1
System connector	1
External GNSS antenna	1
Connecting wire set (quantity optional)	3+ ____
Passport	1
Connector for connection to vehicle socket	optional
Rechargeable battery	optional
Suction cup set	optional

5. SIM CARD INSTALLATION

Purchase a SIM card with internet traffic from a mobile operator and activate it. For operation 40 hours per week, at least 40 MB of monthly internet traffic is recommended at maximum settings (data request every second). If additional sensors are connected to the Controller and/or the vehicle operates actively for more than 40 hours per week, a tariff with traffic from 50 MB is recommended.

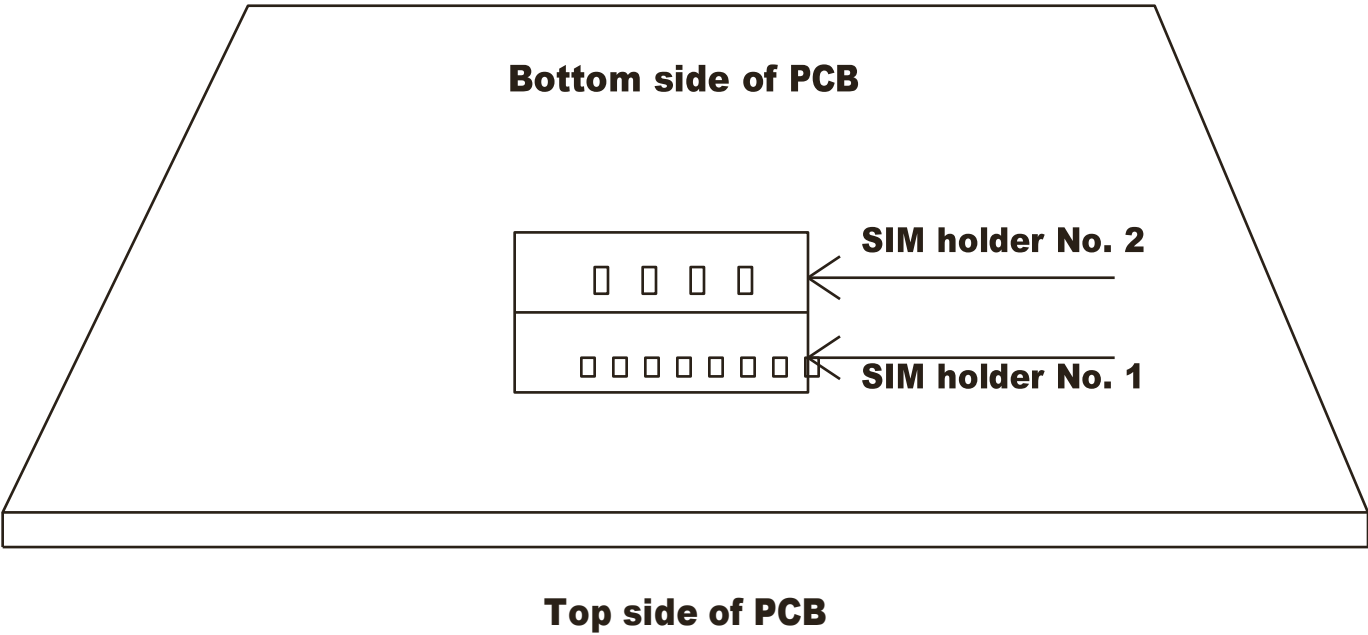
In online mode, the Controller transmits information only within the territory served by the operator and according to its tariffs, including roaming.

Important! Use a utility knife or a flat screwdriver to remove the upper housing cover and avoid damaging the housing fasteners.



**The SIM holder is intended
only for standard-size
SIM cards - Mini-SIM.**

Carefully remove the Controller board from the lower part of the housing. Turn the board over. The SIM holders are located on the reverse side.



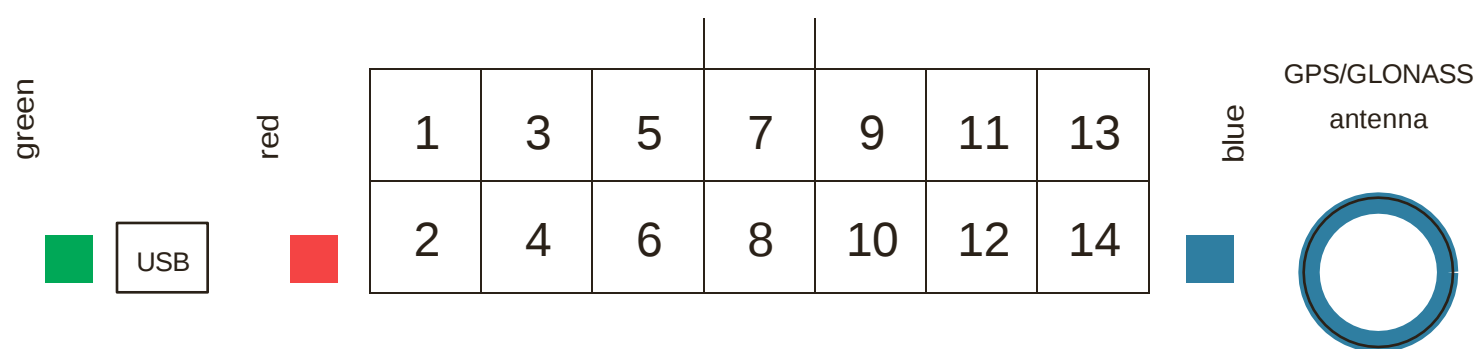
Location of SIM holders on the PCB
of the "PRO" Controller

Insert a SIM card with the PIN code disabled into SIM holder No. 1 of the Controller.

Install the Controller board back into the lower part of the housing.

Important! Some premises, such as hangars with metal roofs, prevent correct GNSS operation. In such premises, the Controller may not come online. Take this into account during setup.

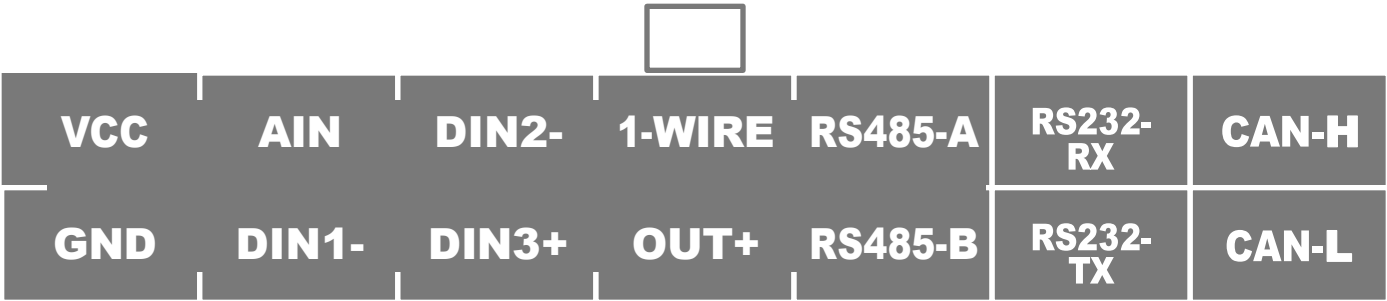
6. LED INDICATION OPERATION



Connectors and indicators on the housing of the "PRO" Controller

Indicator state	Red (power)	Blue (GNSS)	Green (GSM)
Off	No power	GNSS module error	No GSM network
Steady on	Power present, operating mode "Active"	Reliable reception of navigation parameters from satellites	Successful connection and data transmission to the server
Flashes once per second	Power present, operating mode "Sleep"	Unreliable reception of satellite signals	No GPRS connection / no response from server
Flashes twice per second		Searching for satellites / few GNSS satellites (less than 5)	Searching for GSM network

7. CONNECTION DIAGRAM



Pin	Description
VCC	Power supply positive
GND	Power supply negative
D / AIN	First analog input
DIN1	Discrete input
DIN2	Discrete input
DIN3	Discrete input
1-Wire	1-Wire interface
Out	Transistor output
RS485A	RS485 channel line A
RS485B	RS485 channel line B
RS232 RX	RS232 channel RX line
RS232 TX	RS232 channel TX line
CAN-H	CAN J1939 channel line H
CAN-L	CAN J1939 channel line L

8. SERVICE LIFE, STORAGE AND WARRANTY

Warranty period: 5 (five) years from the date of equipment delivery.

Service life: 10 (ten) years from the date of equipment delivery, provided that operating conditions are observed and maintenance is performed in due time.

Service life of the built-in battery: 500 charge/discharge cycles; warranty: 6 months from the date of equipment delivery.

Before the Controller is handed over to the User, storage and transportation must be carried out in the original packaging, in the absence of aggressive substances and vapors, at ambient air temperature corresponding to the Controller technical specifications.

Warranty repair may be refused in the following cases:

- signs of improper operating, transportation, or storage conditions of the Controller;
- signs of chemical, mechanical, or thermal effects (melting, corrosion, cracks, deformation, etc.);
- defects caused by an accident, natural disaster, intentional or negligent actions of the User, incorrect or careless handling, or use in emergency conditions.

Operating condition restrictions:

PROHIBITED:

- use the Controller for purposes other than intended;
- interfere with the Controller operation, or repair or disassemble the Controller independently;
- use and store the Controller in violation of operating and storage conditions.

9. DISPOSAL

The Controller must be disposed of in accordance with the procedure established by the Federal Law "On Production and Consumption Waste".

Packaging disposal: biodegradation or recycling.

10. INFORMATION ON PRECIOUS METAL CONTENT

The "RC miniPRO" navigation controller does not contain precious metals or components in quantities subject to registration and accounting.

11. SERVICE AND REPAIR NOTES

12. ADDITIONAL NOTES