

RADIOSONDE FACILITIES



Mobile atmospheric sounding system "POLUS" GLONASS/GPS/GALILEO PNZSA "Polus"

APPLICATION

PNZSA "Polus" is applied in radiosounding to forecast future weather conditions, as well as unusual weather activities. Radiosounding is made under the navigation satellite platform GLONASS/GPS

PECULIARITIES

- To be used in the field environment.
- AWD vehicle equipped with the rear single-loop air suspension, ABS, ESP, HLA, EBA
- Equipped with weather station for atmospheric measurement (direction, wind speed, temperature, relative humidity, atmospheric pressure) at the surface.
- Equipped with aerologic navigation system for atmospheric measurement from the surface up to 40km in height.
- Equipped with global positioning system receiver and GSM wireless modem for transmitting telegrams to be generated. It generates basic aerological telegrams and tables: TAE-3, LAYER, SURFACE LAYER, TAE-16, climat-temp, KN-04, BUFR
- Sounding requires no exact leveling and orientation.
- Requires no massive radar
- It includes diesel generator, expendable kit for one week sounding, expanded airship hangar for shell ballooning.

MAIN TECHNICAL SPECIFICATIONS:

- Max attitude for sounding: 40km
- Autotracking radiosonde range: 10-250,000m
- Carrier receiving frequency (range of one channel): 400,15-406 MHz
- Temperature measuring range: -90...+50°C
- Absolute error limit in temperature measuring: ± 0.6 °C



- Relative humidity measuring range: 0...100%
- Absolute error limit in relative humidity measuring:
 - within 10...90% range: $\pm 5\%$
 - within 0...10% and 90-100% range: $\pm 8\%$
- Atmospheric pressure measuring range: 1100...2GPa
- Mean square error in atmospheric pressure measuring: 1GPa
- Method of atmospheric pressure measuring: MEMS, barometric formula
- Mean square error in altitude measuring: 10m
- Mean square error in coordinate measuring in the plan view: 15m
- Average wind speed measuring range: 0...200 m/s
- Mean square error in average wind speed measuring: 0.7m/s
- Average wind direction measuring range: 0...360°
- Mean square error in average wind direction measuring: 1.5°
- Fuel: diesel fuel oil



Arctic Region

In October-November 2016 experimental operation and field testing of radiosonde "Polus" was made in Scientific and observation station "Ice base "Cape Baranov" at Arctic and Antarctic Research Institute in Bolshevik island.

Testing was made by launching MRZ-N1 radiosonde within the sounding UTC standard time 00 and 12 together with the operational sounding system of Scientific and observation station "Ice base "Cape Baranov" VAISALA DigiCora III applying RS92-SGP radiosonde. Good results were demonstrated by "Polus" system.

REVIEWS:

Quick calculations, real-time compilation of data and telegrams under the sounding process. Reliable radiosonde signal processing at any distance and noise, reliable navigation signal processing by MRZ-N1 radiosonde received from satellites. User-friendly software interface. Ease of adjusting critical points.



Cosmodromes

Since 2011 radiosonde system "Polus" has been operating in Baikonur. The system is used to get aerological data on air condition and moving air before launch vehicle launching.

In 2015 "Polus" system was delivered to Vostochny cosmodrome providing historical launching of "Soyuz-2.1a" with aerological data.

Total shipped:

To Baikonur – Radiosonde base station "Polus", "Polus-U" and "Polus-M" as a part of the mobile system. To Vostochny cosmodrome - Radiosonde base station "Polus-S" and "Polus-M" as a part of the mobile system.

Mobile atmospheric sounding system

In December 2016 two mobile atmospheric sounding systems "Polus" installed to AWD Ford Transit were manufactured and shipped to Roshydromet network.

The systems were shipped to FSBI "Centralnoe Territorial Administration for Hydrometeorological and Environmental Monitoring" and FSBI "Krymskoe Territorial Administration for Hydrometeorological and Environmental Monitoring".

The systems were tested for acceptance and qualified for making standard synoptic sounding in Roshydromet network.

Since early 2017 the systems have been put into operation in Roshydromet network.



