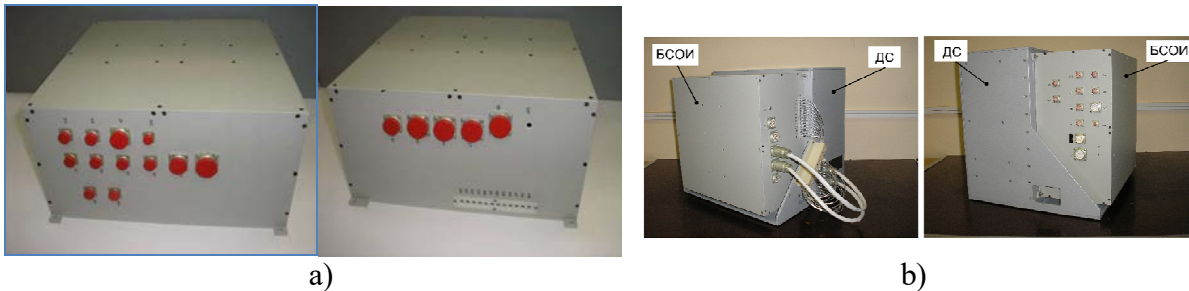


# Multichannel information acquisition and processing unit of the spectrometric equipment complex designed for radiation situation monitoring



- a) Information acquisition and processing unit is a part of scientific spectrometric equipment complex.
- b) Scientific spectrometric equipment complex is designed for monitoring of radiation situation and space weather from spacecraft.

## Purpose

Information acquisition and processing unit (IAPU) is a part of scientific spectrometric complex, which is designed for monitoring of radiation situation and space weather from spacecraft. IAPU is designed for acquisition, processing, accumulation and transmission to spacecraft computer of scientific information, received from detector system, based on multilayer scintillation detectors, which provide separate registration of electron, proton, helium nuclei, neutron and gamma-quantum flows variations.

## Range of application

On-board scientific complex for radiation situation monitoring.

## Capabilities

- Reception of commands from spacecraft systems
- On-board power supply voltage reception from spacecraft systems via three independent feeders and distribution of power supply voltage to multilayer scintillation detector (MSD) and neutral particles detector (NPD) units
- Logic and analogue signals reception from MSD and NPD units
- Analogue signals digitization
- Logic signals selection for generation of triggering signals
- Information arrays acquisition, accumulation and transmission via telemetry channels RS-422A with data transfer rate up to 1Mb/s and Ethernet with data transfer rate up to 10Mb/s
- Reception of on-board time code (not less than once per day) and command word from spacecraft systems via RS-422A channel
- Synchronization of internal time with spacecraft on-board time
- Delivery of spacecraft on-board information-telemetering signal

- Reception of up to eight discrete (on-off type) duplicated commands from spacecraft and acknowledgements delivery

## Structure

IAPU comprises:

- scientific information acquisition system based on single-board computers;
- power supply system;
- amplifier-splitter;
- events selection unit;
- amplitude analysis unit;
- signal amplification and discrimination unit;
- communication device;
- analogue signal splitter.

In order to provide desired reliability IAPU comprises two independent identical semi-kits of primary and backup channels. IAPU functioning is controlled by dedicated software.

## Specifications

<b>Parameter name and unit of measurement</b>	<b>Value</b>
Processor module	CPC304, CPC306
ADC number of bits	8-12
Memory capacity, MB	256
Amount of information transmitted, MB/day	48
Number of telemetering channels	21
Backup mode	“cold” backup
Weight, kg	less than 10
Dimensions, LxBxH, mm	408x390x200
Power supply voltage, V	23-29
Power consumption, W	less than 15