

BAGET-53

Airborne Digital Computer Family



BAGET 53-18

The Baget-53 family airborne digital computers are designed to equip navigation and navigation-sighting systems of aircraft and helicopter. The computers have open modular architecture, sophisticated software, set of single commands and modules of sequential data communication. They employ a VME system bus and an automatic control system.

The computer software includes the real-time operating system, tests of built-in, scaled-up and autonomous control and input/output libraries.

Basic specifications

Central processor module:	Based on MP R3081 50 MHz, 1890BM2T 80 MHz
static RAM	6 Mbytes
program ROM	16 Mbytes
interrupt controller, timer, PDP controller	
sequential port	RS232C
FLASH-memory module	256 Mbytes
Single command module	32 inputs, 32 outputs
MPI module	as per GOST 2676551-86 (Q – bus)
Multiplex data communication module	as per GOST 26765.52-87 (4 channels with redundancy, functions: controller, terminal, monitor)
Sequential data communication module	as per GOST 18977-79 (16 inputs, 8 outputs with debugging program for frequencies of 12.5, 50, 100 kHz), built-in controller 386EX, 25 MHz
Construct	as per GOST 26765.16-87 (4K, 3K) in variants of connectors layout, both on front and rear panels (cut-in connector)
Module construct	'Euromechanics 6U' with board measuring 160 x 233.4 mm

Reprogrammable Memory Unit

The reprogrammable memory unit is designed for operation with the standard cards of the FLASH-memory. It has a socket for connection of the standard of type I and type II with a capacity from 1 to 512 Mbytes and performs writing and reading functions.

The unit can be used for loading flight missions and for airborne recording. Standard hardware and software for the cards of the PCMCIA standard are used as the ground facilities for preparation of flight missions and post-flight data processing.



BRP-3

Basic specifications

Interface	2 input and 1 output channel of the ARINC-429 standard (GOST 18977-79)
Mean time between failures	10,000 hours
Power supply	115 V 400 Hz (11 W) and 27 V (25 W)
Construct	404 1/4 ATR (GOST 26765 16-87 within dimensions of 1K)
Weight, kg	3

BGS-3

Airborne Graphic Station

The BGS-3 airborne graphic station is designed to provide:

- synthesis of 2D and 3D pictures with the flight-navigation information overlaid
- shaping of the 'flyby' and 'bypass' paths at low altitudes of flight
- shaping of terrain avoidance warning signals at low altitudes, landing and takeoff
- correction of coordinates with reference to the surface relief and 'urban zones' by the correlation-extreme method to reduce psychophysical stress suffered by the flight crew during take-off, landing and low-altitude flights.



Basic specifications

Central processor based on	AMD Elan SC520-100
Graphical processor based on	MULTIKOR-11
Plug-in module of FLASH-memory PC CARD ATA, Gbytes	1
Power consumed, W	≤ 80
Mean-time-between failures, flying hours	> 10 000
Dimensions, mm	157 x 194 x 320
Weight of monoblock with memory unit, kg	8

Helicopter pilots use night vision goggles (NVG) for visual flight control during take-off, hovering, low-altitude flight, approach and landing performed at night on unequipped and unprepared sites; obstacle detection and reading flight instrumentation in the cockpit.

The binocular goggles incorporate third-generation electro-optical biplanar image intensifiers with a high spectral sensitivity photocathode and an integrated automatic brightness adjustment system activated to prevent crew blinding if lighting conditions change.

The goggles feature a minimum detection range of 500 m for electric power lines, tangent towers, forest borders, stand-alone trees, and trucks against vegetation background.

For NVG use the helicopter's external and internal lighting is adapted by means of special optical filters suppressing illumination in the goggles' operational waveband.

In the GEO-ONV-1 goggles the IR filters are mounted on light conductors, control panels,



and flight instruments in the helicopter cockpit. Equipment designed to adapt the helicopter cockpit lighting to the OVN-1 Skosok NVG combines light filters and semiconductor light sources. The filters are made of high-quality coloured glass with solid multi-layered interference coating. The semiconductor light sources are represented by narrow-band light emission structures used in light-emitting diodes. The light-emitting crystals in the light-emitting elements are so oriented as to provide the necessary colour, directional diagram, and light intensity.

Basic specifications

	GEO-ONV-1	OVN-1 Skosok
Magnification, power	1	1
Binocular covering power, deg	40	40
Angular resolution, parallel lines/mrad	0.65	0.85
Exit pupil diameter, mm	8	10
Exit pupil distance, mm	22	20
Eyepiece-to-eyepiece adjustment range, mm	56 to 72	56 to 72
Dioptre lens adjustment range, dioptre	± 4	± 4
Weight (without storage battery), kg	0.510	0.515
Power supply, aircraft electric system, V	27	27
AA batteries, pcs	2	2

Helmet-Mounted Target Designation and Display System



The helmet-mounted target designation and display system is designed to operate as part of helicopter equipment and provides:

- around-the-clock operation of the helicopter under standard and adverse weather conditions

- day-and-night surveillance of airspace and display of current flight, navigation, sighting and other graphic information
- execution, jointly with the avionics suite, of navigation, surveillance and sighting missions.

Basic specifications

<i>Measurement range</i>	
<i>angular coordinates</i>	
<i>of helmet position, deg:</i>	
<i>azimuth</i>	-90 to +90
<i>elevation</i>	-60 to +30
<i>Measurement error</i>	
<i>angular coordinates</i>	
<i>of helmet position,</i>	
<i>angular min</i>	15, max
<i>Field of view of helmet-mounted</i>	
<i>micro-display, deg</i>	30 - 40
<i>Weight of helmet-mounted</i>	
<i>elements, g</i>	500, max

52Sh

Optical Location System

The 52Sh optical location system is designed to detect targets by their heat signatures, automatically track air targets, find range to air and ground targets for gunfire delivery, and designate ground targets with the laser beam for laser guided missile employment.

The system incorporates a field-of-view stabilisation system, a thermal direction finder, and a laser rangefinder/designator.

Basic specifications

<i>Angle of view range, deg:</i>	
<i>azimuth</i>	± 60
<i>elevation</i>	22.5/+52.5
<i>Weight, kg</i>	200

The 52Sh optical locator is designed for the Su-35 aircraft.

13S

Infrared Search and Track System

The 13SIRST is designed for the MiG-29 aircraft to search, detect and track targets against their thermal radiation at all altitudes, in the lookup and lookdown modes, day and night and in the jamming environment as well as provide air or ground target ranging by means of a laser range-finder.

High maintenance performance is provided by the built-in test system that allows quick evaluation of the main channels operability.

