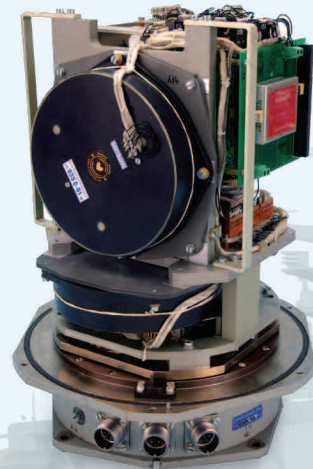


# Miniature gyroscopic stabilization system

## BEKAR-E



### FEATURES:

- Based on FOGs
- Digital input and output
- Short readiness time
- Long service life
- Low power consumption and heat generation
- Low weight and small dimensions
- Unlimited continuous operation within complete mean resource life of 120 000 h
- Various operation modes

### GENERATES:

- Geographical heading
- Roll angles measured in the transverse sectional plane
- Pitch angles measured in the vertical plane
- Angular rates of roll/pitch and heading change
- Components of linear speed over the ground
- Components of speed caused by the ship oscillations and orbital motion total deck inclination
- Latitude and longitude (in observation mode)

## APPLICATION

Bekar-E is a FOG-based system functioning in all latitudes, temperature ranges and under roll/pitch up to 45 deg. The system operates in autonomous mode and provides continuous operation without special maintenance.

## SPECIFICATIONS

	Limiting errors
Geographical heading	$0.4^{\circ} \cdot \text{sec}\varphi$
Roll/pitch and yaw angles	6 arc min
Position (in observation mode)	0.15 km
Angular rates of roll/pitch and heading change	$0.3^{\circ}/\text{s}$
Components of linear speed with constant heading	0.3 m/s
Components of linear speed during the turn	0.6 m/s
Total deck inclination	$0.2^{\circ}$

## OPERATION MODES

**Observation mode** is a basic mode set automatically after the system start and input of valid position and speed data from GNSS receiver.

**Autonomous mode** is set automatically if valid position and speed data from GNSS receiver are unavailable, but valid speed data are available from the log.

**Manual input mode** is set by the operator and used if position and speed data from external aids are unavailable. Position and speed data are entered manually from the control console.

## IMPLEMENTATIONS:

**Minimal (complex)** version, comprising the central device VIIM-2

**Base version** comprising the central device VIIM-2, power supply, control console, translator, and junction box.

## READINESS TIME

with heading error  $\pm 1.0^{\circ}\text{sec}\varphi$

max 30 min (accelerated)

with heading error  $\pm 0.3^{\circ}\text{sec}\varphi$

max 60 min (accelerated)

with roll/pitch error  $\pm 6'$

max 3 min

## COMPONENTS:

- Central device (VIIM-2), a strapdown measurement unit on FOGs.
- Control console (PU), a touch screen used to set the operation modes, display the system current condition and generated parameters, perform diagnostics, and record input, output data and data on the system condition throughout operation.

**Recording capacity is unlimited.**

- Power supply device (PP-6) provides power supply from 50 Hz and 400 Hz onboard networks.

**The system can be completed with an additional power supply device in case of two board power supply systems.**

- Digital translator (TTs), a digital computer interfacing Bekar-E with external users and aids (GNSS, log). Manchester-2 and RS-232 (RS-422) interfaces are used.

**Bekar-E can be used with unlimited number of users connected.**

- Junction box (YaS-1), 28.5 $\pm$ 0.9V DC distributor.

