

AUV LAYERED DISTRIBUTED EMERGENCY CONTROL SYSTEM

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The work considers the concept and implementation of an emergency control system (ECS) to increase the survivability of autonomous underwater vehicles (AUV) of different types and functionality. The task of raising the AUV survivability can be solved in several ways: dual redundancy of software and hardware means and providing their mutual coherent (consistent) functioning. ECS is based on a hierarchal decomposition of solving tasks and includes several software layers and hardware components. The ECS software component controls the software's integrity, prelaunch diagnostic, errors, and emergency monitoring. The ECS hardware component provides capabilities of positioning and emersion of AUV in case of its computational system malfunction. The key feature of the proposed approach is the "relatively independent" behavior of the systems in different operational modes (both routine and emergency) and the capability of the ECS to perform the predetermined task (mission) to the maximum extent. Different scenarios of AUV behavior in emergencies are consid.

Key words: autonomous underwater vehicles, emergency control system, control system, diagnostic, hardware-software means of ECS.

Recommended citation:

Eliseenko G.D., Inzartsev A.V., Pavin A.M. AUV LAYERED DISTRIBUTED EMERGENCY CONTROL SYSTEM // Underwater Investigation and Robotics. 2020. No. 4 (34). P. 23–30. DOI: 10.37102/24094609.2020.34.4.003.

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