AUTOTEST-DFB SOFTWARE TOOL FOR AUTONOMOUS TESTING OF SOFTWARE OF MICROPROCESSOR CENTRALIZATION SYSTEMS

Authors: Kovalenko Ya.P., Skarga-Bandurova I.S.

Basic characteristics, essence of the development
The software is aimed at automation of static testing of the functional software (FS) of high reliable computer systems, including microprocessor centralization systems.

Patentable and competitive results
AutoTestDFB software tool enables to:
- Perform testing of the FS during development and adjustment without additional complex of specialized equipment;
- Run the application in test environment and fulfil it gradually or automatically, monitor and change parameter values;
- View and change values of global, local variables and values of input discrete parameters in the window of settings change at any moment of adjustment.
In addition to static testing, AutoTestDFB can be used for preparation of the test protocol of the FS with assessment of test coverage and code analysis for each component of the FS.

Comparison with world analogues
AutoTestDFB is designed to comply with international standards IEC 62279: 2002, EN 50128 "Railway Applications – Communication, Signaling and Processing Systems – Software for Railway Control and Protection Systems" and the State Standard of Ukraine DSTU 4178-2003 "Complexes and Technical Means of Train Management and Control Systems. Functional Safety and Reliability. Requirements and Test Methods".

Economic attractiveness of the development for market promotion, implementation, parameters, price
According to the European standard EN 50128, code static analysis is one of the requirements of functional safety of software of railway automation systems. AutoTestDFB tool allows software developers to automate this type of analysis.
The tool uses mathematical models and abstract tracking of data values to detect and display potential errors during software operation.
Due to ease of installation, users can start testing in minutes, check the quality of the FS and eliminate errors.
AutoTestDFB helps to significantly improve performance and reliability of programmes, to detect errors earlier and as a result, to reduce the cost of design.

Branches, ministries, departments, enterprises and organizations where the development results are going to be implemented
The product is designed for implementation at enterprises of instrument-making industry.

Development readiness level - (100%)
Currently the AutoTestDFB software tool is undergoing testing industrial implementation into the process of designing railway microprocessor centralization systems of PJSC "SNVO "Impulse" in Severodonetsk.

Implementation results
Figure 1 shows a block diagram of options of autonomous testing of the FS.
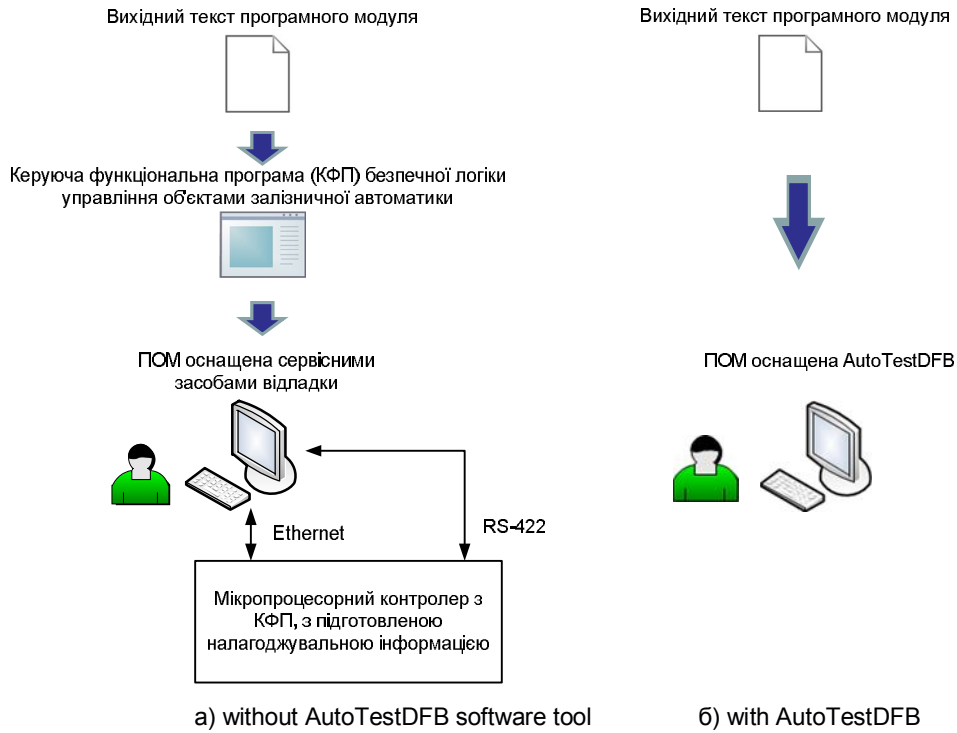
Figure 1 - Block diagram of options of autonomous testing of the FS
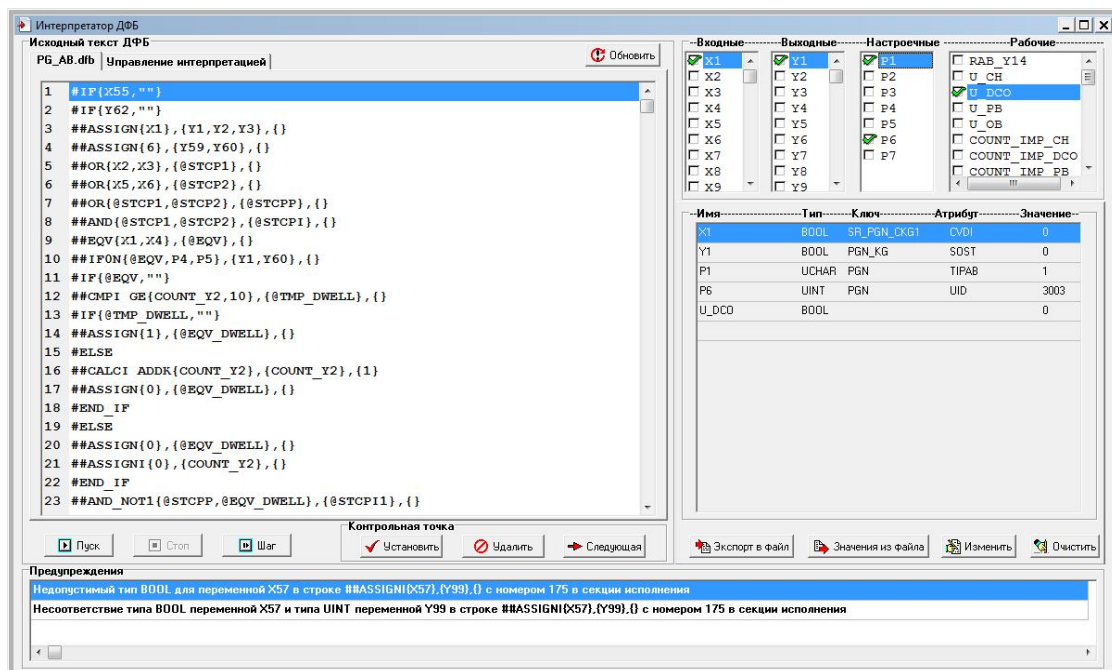
The interface of the main window of AutoTestDFB is shown in Fig. 2.

Figure 2 - Main window of AutoTestDFB