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CLASSIFICATIONS BY AREAS OF USE SPECIALIZED DIGITAL NETWORKS CREATED ON THE BASE OF THE CAN-NETWORK

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Abstract. *As a result of the conducted research, the areas in which specialized digital networks, which were developed on the basis of the CAN network, were used were determined. According to the results of the conducted research, a classification of specialized digital networks developed on the basis of the CAN network was created, according to areas of use. The developed classification will allow automation system specialists to quickly and efficiently choose the specialized digital network they need.*

Key words: *Classification, specialized digital network, specialized computer network, fieldbus, CAN.*

Introduction.

The specialized CAN digital network was developed by Robert Bosch GmbH in 1983. The main characteristics of the network were presented in 1986 at the conference of the Society of Automotive Engineers (SAE) in the city of Detroit (USA). The first CAN controller chips were introduced by Intel in 1987. In 1991, the first serial car Mercedes-Benz W140 was produced, which had a multiplex wiring system based on the CAN network [1].

Despite the fact that the specialized CAN digital network was developed specifically for the control system of systems and nodes in cars, the solutions proposed in this network turned out to be so successful that in the future many new specialized digital networks were developed on its basis, which can be applied in various fields [2-6].

The use of the classification of specialized digital networks allows you to increase the efficiency of choosing the necessary specialized digital network for a specific case. It should be noted that in the already existing classifications of specialized digital networks, insufficient attention was paid to specialized digital networks created on the basis of the CAN network [7-9].

In connection with the above, there was a need for classification by areas of use of specialized digital networks created on the basis of the CAN network. Such a classification would allow automation system specialists to quickly and efficiently choose the specialized digital network they need, depending on the task at hand.

Main text.

As a specialized digital network, the CAN network was originally developed for cars, therefore one of the areas of use of networks developed on the basis of this network is the field of transport (and not only auto transport).

Industry is one of the spheres of human activity where products are created with the highest indicators of added value from an economic point of view. Therefore, the desire to use the advantages of the CAN network in this area was among many owners of industrial facilities and developers of control and automation systems that focus on them. The problem of the direct use of a specialized CAN network in industry was the lack of an implemented application level of the ISO/OSI model in this network, and accordingly, not the ability to quickly and conveniently communicate with the network and influence end nodes through it. The above created the basis for the initiation and development of specialized digital networks for industry by various manufacturers, who first of all, in addition to the first and second levels of the ISO/OSI model, which were the existing CAN networks, created their own application level of the ISO/OSI model, and then some manufacturers had place and implementation of other levels of the ISO/OSI model.

The flexibility and reliability of the CAN network, the autonomy of the end nodes, the possibility of deploying networks with a large number of nodes using various data transmission media contributed to the fact that some developers of networks for "smart home" systems also took a specialized digital CAN network as a basis.

Considering the above, specialized digital networks developed on the basis of the CAN network can be classified according to the areas of use shown in Fig. 1.
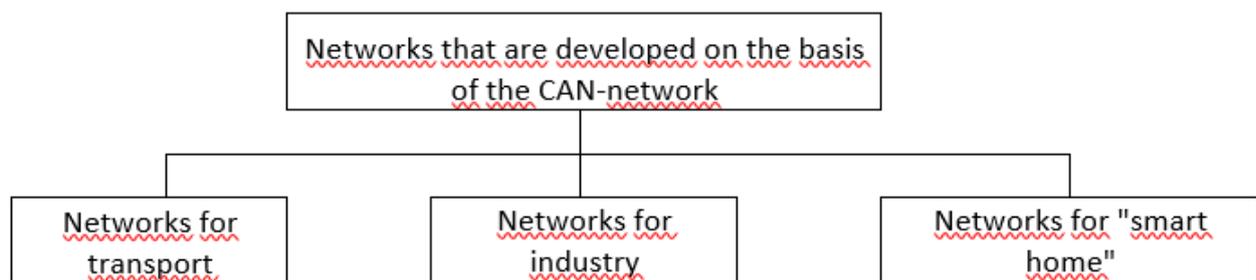
Figure 1 - Classifications by areas of use specialized digital networks created on the base of the CAN-network

Conclusion.

As a result of the conducted research, the areas in which specialized digital networks, which were developed on the basis of the CAN network, were used were

determined. According to the results of the conducted research, a classification of specialized digital networks developed on the basis of the CAN network was created, according to areas of use. The developed classification will allow automation system specialists to quickly and efficiently choose the specialized digital network they need.

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