

Synchronization of Bus Frames during Universal Serial Bus Transfer

Authors : Petr Šimek

Abstract : This work deals with the problem of synchronization of bus frames during transmission using USB (Universal Serial Bus). The principles for synchronization between USB and the non-deterministic CAN (Controller Area Network) bus will be described here. Furthermore, the work deals with ensuring the time sequence of communication frames when receiving from multiple communication bus channels. The structure of a general object for storing frames from different types of communication buses, such as CAN and LIN (Local Interconnect Network), will be described here. Finally, an evaluation of the communication throughput of bus frames for USB High speed will be performed. The creation of this architecture was based on the analysis of the communication of control units with a large number of communication buses. For the design of the architecture, a test HW with a USB-HS interface was used, which received previously known messages, which were compared with the received result. The result of this investigation is the block architecture of the control program for test HW ensuring correct data transmission via the USB bus.

Keywords : analysis, CAN, interface, LIN, synchronization, USB

Conference Title : ICAE 2024 : International Conference on Automotive Engineering

Conference Location : Prague, Czechia

Conference Dates : July 04-05, 2024