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Design of Functional Safe Motor Control Systems in Automotive Applications

Authors : Jae-Woo Kim, Kyung-Jung Lee, Hyun-Sik Ahn

Abstract : This paper presents a design methodology for the motor driven automotive subsystems with the consideration of the functional safety. There are many such modules in vehicles which use DC/AC motors for an electronic throttle control system, a motor driven power steering, a motor driven seat belt systems and for HVAC systems. The functional safety for the automotive electrical and electronic parts are standardized as ISO 26262, but the development procedure is very complex to be followed. We focus on the functional safe motor controller design process and show the designed motor controller hardware satisfies the required safety integrity level by using metric calculations with the safety mechanism.

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