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# MICROCONTROLLER NETWORKING ADDRESSES SAFETY ISSUES OF RAIL JOURNEY

**R. N. PANDA, PRAJIT PAUL, A. KUMAR AND P. K. GHOSH**

**Abstract**

Integrating R&D into Rail transport is a good way to make sure that motorman's decisions reflect safety needs.Deploying robust security architecture and best brand components in the design of a safety system can ensure railway commutation in the elevated security domain.Paperless electronic communication is the key(6).Managing sucurity through proactive monitoring,maintenance(1) and event management is the key for achieving desired results.Safety and Punctuality the two watch words of IR,on the otherhand, need not be mutually exclusive.Through technological innovations(2) excellence at both ends are possible simultaneously.For example,electromechanically designed,age-old and ineffective (ACP) alarm chain pulling system of MEMU coaches are replaced by a system of networked microcontroller boards through the existing electrical setups and by appropriate digital signal processing in an electrically flashy environment as detailed hereunder. The innovations described in this paper combines P89C51RD2(9) microcontoller's powerful instruction repertoire and other outstanding hardware features like open-ended architecture,communicating in RS-485 mode in the networked configuration backed up by an unique analog Engineering.Simplicity(3) in design,use of inexpensive industry standard hardwares and a non-blocking communication in the networked envirnment either in polling or interrupt mode,compact assembly level programming can make this product setup very cost effective ,highly reliable and worthy of use in MEMUs.In the ensuing sections,each layer of the design,its implementation will be detailed sequentially to describe how passenger' safety is unfailingly ensured during an otherwise unsafe and vulnerable commutation throgh electric trains.Alarm chain pull indication circuit engineered appropriately and mounted on the rear end of each compartment of a moving carriage will not only provide an audio visual indication on the dashboard of the motorman of the moving carraige but also will provide many more vital information during the exigencies as will be discusesed further in this paper.

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**Keywords :** MEMU-Main line electrical multiple unit,ACP-Alarm chain pulling, IR-Indian Railways, Rake-Four coach units of MEMU.NM-noise margin.