PLC based Multi Three-Phase Induction Motors Motion Controller

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Abstract

Fast advances in digital systems have given designers the possibility of implementing variety of industrial application control functions using Programmable Logic Controller (PLC). This paper presents proposed motion controller for synchronize four 3-ph induction motors based on PLC capability. In general, several control methods are existed to drive the 3-ph induction motor with the aid of Variable Frequency Drive (VFD) under commonly known mode of operation named constant V/F. Master/Slave technique has been adopted in creation of PLC’s algorithm because it has an important role that solves the problems behind synchronization of motors such as the sudden changes in speed and load. The serial communications RS485 and digital to analog converter have been used for the purpose of data transmission between the PLC and VFDs. Fuzzy logic controller with two input variables (error and change of error) has been utilized to be part of the complete control system to implement a speed controller for 3-ph induction motor. The proposed system has been tested under different operation conditions and the obtained results proved its validity.
References


Index Terms

Computer Science

Control Systems

Keywords

PLC, VFDs, multi-motor simulation, FLC.