

WIRELESS PLC COMMUNICATION AND SYNCHRONIZATION BETWEEN TWO TRAFFIC LIGHT SYSTEMS

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This paper describe about wireless PLC communication and synchronization between two traffic lights system using a RF 433 MHz Transmitter receiver module and Arduino Uno boards. Nowadays traffic lights are major characters of traffic jams reducing systems, because traffic jams can be reduced without using human involved manual system. Though a considerable number of traffic lights have already been established within the roads in Sri Lanka, traffics are not reduced sufficiently so far. Therefore, synchronization method has been implemented using cable method making it possible for vehicles to start moving from one place and reach the destination at an average speed without being subjected to stopping for red lights. It is noted that making changes to roads in terms of cutting and drilling is time consuming and an expensive procedure due to many roads in the country being developed well. Therefore cable method is not suitable for traffic light synchronization. So an effort must be taken to implement wireless method for synchronization using RF 433 MHz Transmitter receiver module and Arduino Uno boards. While some countries already use this method, in sir Lanka this method is not deployed yet for the color light system.

PLC takes major place of color light system and automation system as it is more efficient than relay system. There are various kinds of PLC with different brand names. Ladder is the language that uses to program PLC. Simatic s7-1200 is a very powerful and highly functioning PLC which has been used for this project. Voltage of PLC I/O is 24V DC. Therefore voltage converting device is used between Simatic s7-1200 PLC and Arduino Uno board.

After implementing this system, suitable timing must be added to the program that we developed. Peak hours and normal hours must be found as the flow of vehicles change with time.

Keywords: Programmable logic controller (PLC), Radio Frequency (RF), Input Output (I/O)