



AIRPORT SIGNAL LAMP CONTROL AND MONITORING

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ABSTRACT In this paper a proposal for informing the pilot regarding the location of the airdrome in approaching the landing path by using microcontroller base on navigation by communication system. It also explain the critical period of landing in the runway and during take-off the weather which prevents outside visual things to celestial fix. It gives idea regarding the current risk level proposed by the DHS by having appropriate colour green indicates guarded yellow indicates elevated, orange indicates high and red indicates server. It can be available with steady on LED and flashed by the use of relay and microcontroller.

KEYWORDS Microcontroller, Transistor, Airdrome, CONTROL, LCD.

INTRODUCTION:

This paper presents the monitoring the airdrome to take off by using master signal light to be on. Control room in the ground station monitors the master signal light .The microcontroller Controls and monitors the system by interfacing hardware with the output LED which is placed in the control room. Master lamp uses current transformer and executes its output to the microcontroller. If it fails to receive the output from master lamp immediately alarm turns ON, the LCD displays the lamp failed when the signal is switched on the controller checks for the status should be glowing. If the signal is not fused, the microcontroller drives the alarm circuit which is not in contact with switch to get turn on the signal light. Buzzer indicates the failure by monitoring the bulb toggles which makes the light failure. Airdrome landing lamp system makes microcontroller based system to work regarding its situation. It is using KEIL software tool in embedded C programming.

The airdrome traffic signal lamps are red and green in colour. The colour lamp indicates steady and flashing for various indicators. If the LED1 gets on then the green LED glows which indicates the land is vacant and the flight can land at this time. If the both the LED's had any failure it gives alarm then green and red LED gets blink

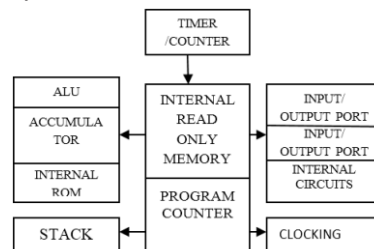
TABLE 1

TYPE OF SIGNAL	AIRDROME IN FLIGHT	AIRDROME ON GROUND
Steady Green Light	Unoccupied to Land	Unoccupied to Take-off
Steady Red Light	Giving Path for the other Airdrome and Continue Circling	Stop
Series of Green Lights	Return to Land	Unoccupied to taxi
Series of Red Lights	Do Not Land. It is an unsafe place	Landing area in Use
Series of White Lights	Cleared to Land and Proceed to Apron	Come Again to the starting point
Red Flare	Do not Land at this time. Cancels the preceding permission to Land	

DESCRIPTION:

The MC SSD89E51RD provides higher speed, low power consumption and it consumes a less amount of memory in RAM

and ROM. It possess less number of the I/O pins and thus cost is reduced. This benefit makes the user to develop for some other considerations. It has CMOS 8 bit microcomputer with flash programmable memory of 4K bytes and erasable read only memory. It can be used to control the signals to transmit and receive the signals at a proper time.It has a fixed CPU in it which can be able to store the amount of memory present in it.It can be able to do only one task at a time.



LM324 OP-AMP:

The LM324 OP-AMP acts as a comparator which is also called as decision making circuit. It provides a high gain when it is in open loop state (no feedback resistor).

The operation of the comparator is to compare the magnitude of two input voltage and executes the output of higher values is dependent on the power supply. Since, the OP-AMP provides a high open. Loop gain the output voltage could exist in both the directions with infinity magnitude.

OP-AMP power supply gives **Vout=+Vcc** and **Vout=-Vcc**

The OP-AMP operates the output either in positive or negative voltage by comparing the DC reference voltage with input voltage. The input voltage is provided with voltage divider to set the input reference voltage but instead of voltage divider here potentiometer can also be used.

RELAY:

Relay as an electrically operated switch. It uses an electromagnet that makes to act as switch. Relay can be used to control the low power signals. When the electric current is passed through the coil it produces the magnetic field which activates the armature the movement produced in them makes it to have affixed contact when the contact it will be de-energized and when the contact is open it breaks the connection (vice versa). The amount of force is

supplied by the spring.

LAMP:

It usually consists of two lamp master lamp and slave lamp. They are operated when the master lamp is not working the slave lamp will blink. When the master lamp is in abnormal condition it will give buzzer. The buzzer can reset by using the reset button in the circuit.

POWER SENSOR:

The power sensors are used for covering wide ranges of **N8480** series. It can provide an integration of DC reference source and the switching circuits. Present in power sensor store the data in the EEPROM and can also stores the calibration factors such as linearity, connector, temperature and bandwidth correction data. The connector has a precision 2.4mm which is standard. The sensor is usually fixed to the sensor cable.

TRANSISTOR:

The transistors usually act as a switch they are used to amplify the current. It can amplify a small output current. So, that it can be used in the relay, lamp. It can be used to convert the changing voltage. In many cases it can be used for amplifying the voltage. Hence, the amount of current amplification in the circuit is called the current gain.

SOFTWARE IMPLEMENTATION

Embedded C uses the semantics and the syntax of the standard. It can provide an ease of management for the large embedded projects and it can be able to support access to input. It is necessary to read or write the data on a given address. It can also able to access and modify the addresses since the pointers are used as a high level language feature. Hence the high level languages are used for the embedded system designing.

KEIL COMPILER:

KEIL provides nine basic data types which also include the 32. Bit IEEE floating point. In C it can be able to write the interrupt function. For source level debugging complete type and symbols are used bit, data, bdata, idata can provide a flexible variable allocation. They are usually an bit addressable data objects. RTX51 real time kernel has a built in interface

LITERATURE SURVEY:

A new application for intelligent traffic monitoring system, this paper says that there is a demand for vehicles and it must be controlled. This paper highlights traffic monitoring using Internet of Things. It identifies the "EPC" code of vehicle license plate and RFID reader to the RF EM wave by EPC code. It solves all the weather operations [1]

IOT strategic research read map, these project describes the idea of upcoming internet creates on regular communication protocols. The integration of computer networks and internet of things (IOT) into a mutual universal IT platform of unified network. The upcoming system of network resolves port out as public infrastructure, private infrastructure and vigorously extended and upgrade by designed shaped by the "THINGS" linking to one another [2].

Intelligent transportation system architecture, in this paper highlights that unique creatures of Bluetooth and "WSEN" wireless sensor network WSNS is a small device that works based on an autonomous manner which senses the surrounding. The Bluetooth protocols are used for the purpose of inter vehicle communication on Bluetooth device so, that the vehicle equipped. "ITS" intelligent transportation systems are combination of transportation and computer technology. This results in having more safeties for the passengers to travel in road [3].

Estimating dynamic roadway travel times using automatic vehicle identification for low sampling rates, this describes by predicting the average roadway travel using "AVI" data there are three aspects in these method. In first algorithm it is mainly designed to handle the constant means and varying mean traffic

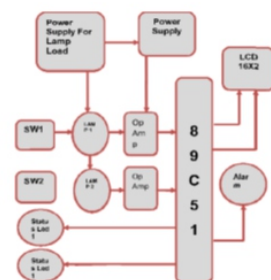
condition, in second algorithm we will be applied for low level (less than 1%) of market penetration and in third algorithm it works freeway and signalized roadway. The size of the window varies by number of observation with current sampling interval, which is the previous interval. The algorithm has the application of two AVL that is freeway link and arterial link [4].

Real time traffic information collecting and monitoring system based on Internet of Things, in this paper describes the real time information collecting and monitoring system. This system has several advanced technologies such as RFID and WSN to get the information transmission processing by design of HW and SW the system will collect monitoring of traffic flow and the information and it is used to improve traffic situation [5].

A fuzzy logic controller for a traffic junction, this paper describes the implementation of fuzzy logic controller for one way streets. The typical the interaction is defined then conformed and the usage of the concept of fuzzy groups in building a controller creates a linguistics control instructions is presented. The results for the fuzzy logic controller are arranged against effective vehicle controller. It is identified based on performance criterion existence of the normal interruption of vehicle that results in a better performance [6].

SYSTEM DESIGN:

Components used are transformer, power sensor, transistor, OP-AMP LM324, potentiometer, microcontroller BSD89E51RD. Transformer gives a power supply of 230v AC. Then by using rectifier it is converted into 12V DC. The positive voltage is given to the lamp and the negative voltage is given to the low resistance at this point there will be a drop in the power supply of about less than 2 ohms. Then the dropped voltage is supplied to the OP-AMP through potentiometer which can trap the given voltage. If dropped voltage is less than one then the lamp will be in OFF condition. If the dropped voltage is greater than one the lamp will be in ON state. At this state transistor will be '0' bit act as an inverter. Then the collector terminal is connected with the microcontroller and from the other side a switch is connected to it.



MERITS AND DEMERITS:

It can be able to install everything innovatively. It is not necessary to control manually. Lamp failure and the place at which it has got failed can be easily identified the lights can be get switched off depending on the category level. It can be installed at a low cost and it will be present in small size. It can be used to consume more power in the existing system because of discrete it will be present huge in size. If the system gets failure it cannot be easily identified.

RESULT:

The system designed in tested and it is shown in "fig2" and their operations are discussed as shown in the "Table3" the system designed works on the sequence of operations that are being stated above by the microcontroller and by using embedded C programming.

Sl.No	Knob position	Hub LED	Airstrip Light	LCD Display
1	SW1 'INEDIBLE'	GREEN' INEDIBLE'	LIGHT A 'INEDIBLE'	LIGHT A 'INEDIBLE'
	SW2 'INEDIBLE'	RED' INEDIBLE'	LIGHT B 'INEDIBLE'	LIGHT B 'INEDIBLE'

2	SW1 'EDIBLE'	GREEN 'EDIBLE' RED 'EDIBLE'	LIGHT A 'EDIBLE' LIGHT B 'INEDIBLE'	LIGHT A 'EDIBLE' LIGHT B 'INEDIBLE'
3	SW2 'EDIBLE'	GREEN 'INEDIBLE' RED 'EDIBLE'	LIGHT A 'INEDIBLE' LIGHT B 'EDIBLE'	LIGHT A 'INEDIBLE' LIGHT B 'EDIBLE'

The results and the signals on the LCD displays are observed as shown in the table3 which gives successful operations for the experiment.

FUTURE SCOPE:

It can provides surveillance regarding driver behaviour security and serviceability with the help of GSM and PS technology it can be used to track and monitor the airdrome using existing communication networks. Information regarding the vehicles during travel can be obtained using GPS technology. It can be very helpful in the emergency services such as crash reporting.

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