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"Secure and Maintenance Free Data Transmission using PLCC"

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Abstract:- In Mostly Industries Normally 230v AC Power Supply is available And In this Transmits or Receives Data of industries using power line carrier communication (PLCC). Power line carrier communication is a bi-directional device and its have transmits or receiving data both direction. In which data on transmitting plus is encoding on 50Hz AC supply and decoding at receiving plug. Data of whole industry is graphically represented in lab view (Laboratory Virtual Instrument Engineering Workbench) Software and Device is controlling through PC or Laptop.

Keywords:- PLCC modern, AVR microcontroller, Humidity sensor, Temperature sensor, 16*2 LCD, Lab view, 12v Relay.

I. INTRODUCTION

In big industry so many departments are available. To establish a communication medium between all departments, people are use Bluetooth, zigbee etc but Bluetooth or zigbee have limited range and its use for limited distance. While for long range they were used Web-server and Wi-Fi but Wi-Fi has more maintenance charge. Also In industries PLC automation have used.PLC have more expensive device but it have more costly.The PLCC is a one of the bidirectional device so that data input in power line and output in power line so this will be used in encoding and decoding then lab view is display on laptop is a graphically and digital form so this will be easily understand is human.[1-5]

II. EXPERIMENTAL WORK

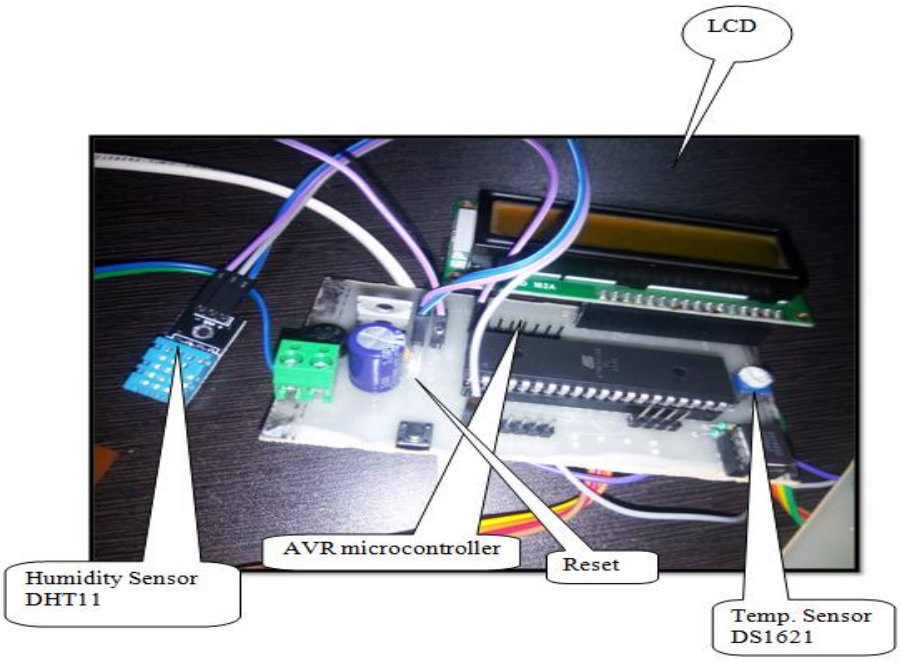

Figure 1:2nd PCB at transmission site

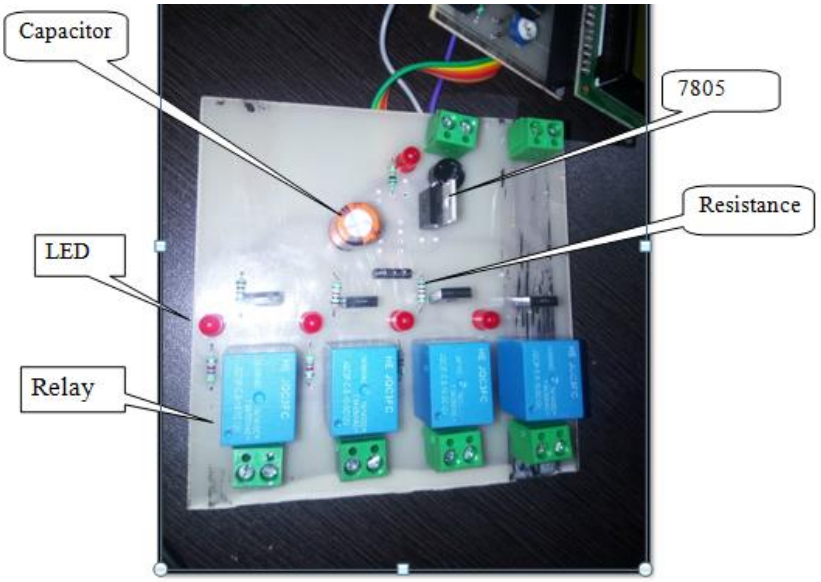

Figure 2: 1st PCB at transmission site

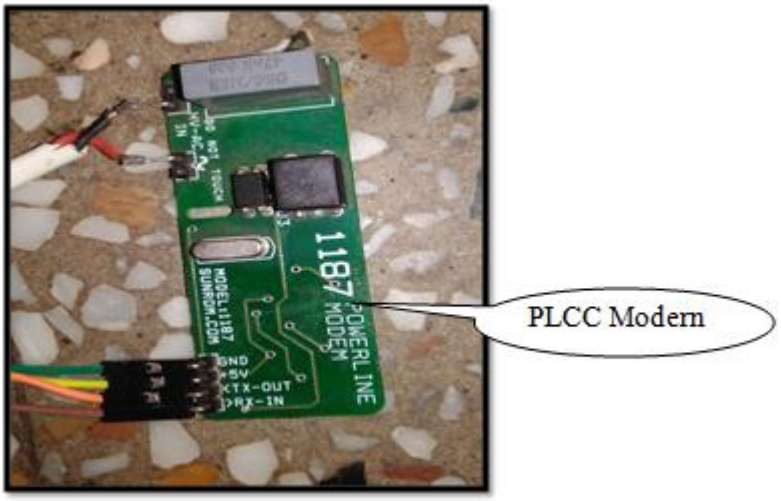

Figure 3: PCB at receiving site

Figure 2 shows the 1st PCB layout for the transmission site which is design as per our requirement. Figure 1 shows the 1st PCB which is design for measuring the temperature and humidity of an atmosphere. Figure 3 shows the PCB at receiving site which is connected with the PC to controlling the power line carrier.

III. CONSTRUCTION:

For the designing of "The secure and maintenance free data transmission using PLCC" is a using the components which are given below

1. Two PLCC modem
2. PCB glass(4*4) plain copper
3. Rectifier 12v,1A
4. Relay
5. LED
6. LCD
7. AVR microcontroller
8. Capacitor(10micr,33pf,0.1micr)
9. DHT11 (temperature sensor)
10. DS1621(Humidity sensor)
11. Transformer 12v,1A

12. Pc/laptop
13. Lab view software
14. Max 232 board

- The above given all components is used in our projects. This will be construction in a two PCB is required a glass plain copper PCB .one of the PCB on a sending part is fixed and being the sending parts. Temperature, humidity and relay are the first of all sending path construction in a one PLCC is required and AVR microcontroller chip is required. The AVR is also connected to the LCD, LED and PLCC and Capacitor. this microcontroller is required a 5amp current then the PLCC is also connected with the AVR and transformer are connected to the power step down because of the given power is 50hz and 230 v and required 5amp so that this transformer are require the all component are connected to the AVR and AVR is programmed . So this will be give to the analog data from this data is given to the PLCC and the PLCC is encoding data in a power line.
- Then second path is a receiving path this will be constructed in only one PLCC USB DB9 and Pc, Laptop, MAX232 Board. This components is also required in a receiving path MAX 232 board is connected to the PLCC, USB to DB9 and laptop. The PLCC is decode the data through the MAX 232board and give the USB to DB9 cable is given data to the laptop and laptop will be seen the result on screen with help of the lab view software .

IV. WORKING:

- Our project is a first of all for the power management. 12v power supply is convert into the 5v is convert through the transformer then the AVR is required a 5amp power so that the capacitor is 8tor and accurate power given to the AVR is poor power through the capacitor.
- Then the sensor working, the two sensors are required in this project. One of the temperature sensors and second one is the humidity sensor.
- The temperature sensor is sense the room temperature and given the data reading to the AVR microcontroller in Analog from same as the humidity sensor is also sense the vapour in room atmosphere and give the data AVR microcontroller is sense a Analog and digital data signal .
- So, the Microcontroller is give the all data Programming show in a LCD and LCD is display to the reading a temperature and humidity sensor reading in a digital form this will be also included a voltage regulator. This will be display to the voltage rating and then the LCD is given the all data in Analog to the PLCC and the PLCC is transmitted to the all data in a power line in 50 Hz and 230v power line.
- Then the other receiving side PLCC is decode the data in a power line and given to the MAX232board is take all the data in Analog form and then this data will be given to the USB DB9 through laptop/pc and the laptop screen show all the result through the lab view software.
- This type the over project are working to the data encoding and decoding through the PLCC and other components.

V. RESULTS;

Table 1: Results of different output at lamp site

SR No.	Instrument	Input	Output			
			Lamp 1	Lamp 2	Lamp 3	Lamp 4
1	Laptop	0	OFF	OFF	OFF	OFF
2		1	ON	OFF	OFF	OFF
3		2	OFF	ON	OFF	OFF
4		3	OFF	OFF	ON	OFF
5		4	OFF	OFF	OFF	ON
6		5	ON	ON	ON	ON

VI. CONCLUSION

In big industry many departments are available & in which normally 230v AC supply is available so Transmits or Receives Data using power line career communication (PLCC) & it's a bi-directional device. In which data on transmitting plug is encoding on 50Hz AC supply and decoding at receiving plug. Data of industry is graphically represented in LAB view software and Device is controlling through pc or laptop.

VII. FUTURE SCOPE

In future if there is a large demand of this type of invention. we can manufacture the whole circuit in printed circuit board, so that circuit becomes smaller and can be easily fitted into electric-board. This type of technology can be implemented for the big industry so reduce the workers' demands

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REFERENCES:-

[1]. Pandi Jothi M., Chenthamarai Selvam, Sabitha Ramakrishnan, "Implementation and Testing of Power Line CommunicationbNetwork for Lamp Control Application", 2014 IEEE International Conference on Advanced Communication Control and Computing Technologies (ICACCCT).

[2]. Alwin Vinifred Christopher, Guhesh Swaninathan, Maheedar Subramanian, Pravin Thangaraj "Distribution Line Monitoring System for the Detection of Power Theft using Power Line Communication", IEEE.

[3]. Abdul Mannan, D.K.Saxena, Mahroosh Banday "A Study on Power Line Communication", International Journal of Scientific and Research Publications, Volume 4, Issue 7, July 2014 1 ISSN 2250-3153.

[4]. Subhra J. Sarkar, Palash K. Kundu, Ipsita Mondal "Modified DCSK Communication Scheme for PLCC based DAS with Improved Performance", 2016 2nd International Conference on Control, Instrumentation, Energy & Communication (IEEE).

[5]. Luca Di Bert, Andrea M. Tonello, Salvatore D'Alessandro "An Interconnection Approach and Performance Tests for In-home PLC Networks",2012 IEEE International Symposium on Power Line Communications and Its Applications.