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HUMAN LIFE SAFETY SYSTEM WITH ELECTRICAL INFORMATION

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ABSTRACT:

An electric shock is the effect of passing an electric current through the body. The minimum current a human can feel is thought to be about 1 milliampere (mA). The effect can range from minor tingling to muscle spasms, tissue damage, fibrillation of the heart, loss of consciousness, and even death. These effects depend on a variety of factors, including the strength of the current, duration of the current, the area of the body through which the current passes, and whether the person is grounded or insulated from the ground. Death caused by an electric shock is referred to as electrocution.

Keywords:*ELCB,GSM, hand watch, zig-bee ,Energy meter, Relay ,Potential sensor, Comparator,LCD.*

1. INTRODUCTION:

A device providing for discharging static electricity between a person and an grounded object to prevent un pleasant static shock to the person includes an insulated housing supporting a first contact arranged for manual engagement, a second contact for contacting the grounded object and a conductor of high resistance there between for allowing transmission of current at a rate which is sufficiently low to avoid shock. An electric shock preventer provides electrical shock protection for human, which consist of shock sensing element and transceiver module.

2. LITERATURE SURVEY:

2.1.ELECTRIC SHOCK

It is a sudden agitation of the nervous system of a body due to the passage of electric current. When electric current pass through the body, it causes a sudden jerk and paralyses the nerve centers, stops breathing and upsets normal heart functions. Its effects are sudden and extremely painful. Victim may become unconscious and even die.

2.2 ELECTRIC FIELDS IN THE HUMAN BODY RESULTING FROM 60-HZ CONTACT CURRENTS

Contact currents in anatomically realistic models of an adult and a child have been computed using accurate and previously validated numerical methods. Induced electric field and current-density quantities are provided for specific organs and body segments, normalized to a common 0.1-mA current-to-ground

2.3 A SUMMARY OF IEC PROTECTION AGAINST ELECTRIC SHOCK

The protection practice against electric shock points to solve the contact "collision" by the active measure of automatic disconnection limiting the time duration. Analyzing the components of electric hazard as waves evolving in time, the fault opens a time window of risk, and the protection has to close it.

2.4 PERSONNEL PROTECTION DEVICES FOR USE ON APPLIANCES

An immersion detection circuit interrupter provides protection against electric shock resulting from the immersion of an appliance in an isolated or grounded tub. The application of the device to an end product may require modification in the strain relief and power supply cord and the addition of internal sensing wires or electrodes

2.5 A COMPLETE ELECTRICAL SHOCK HAZARD CLASSIFICATION SYSTEM AND ITS APPLICATION

The Standard for Electrical Safety in the Workplace, NFPA 70E, and relevant OSHA electrical safety standards evolved to address the hazards of 60-Hz power that are faced primarily by electricians, linemen, and others performing facility and utility work. This leaves a substantial gap in the management of electrical hazards in Research and Development (R&D) and specialized high voltage and high power equipment.

3. EXISTING SYSTEM:

An ELCB ((earth leakage circuit breaker) in that they are intended to trip when the current is not confined to the current carrying conductors. Another name used is current balance circuit breaker. These are all used with grounded power supplies.

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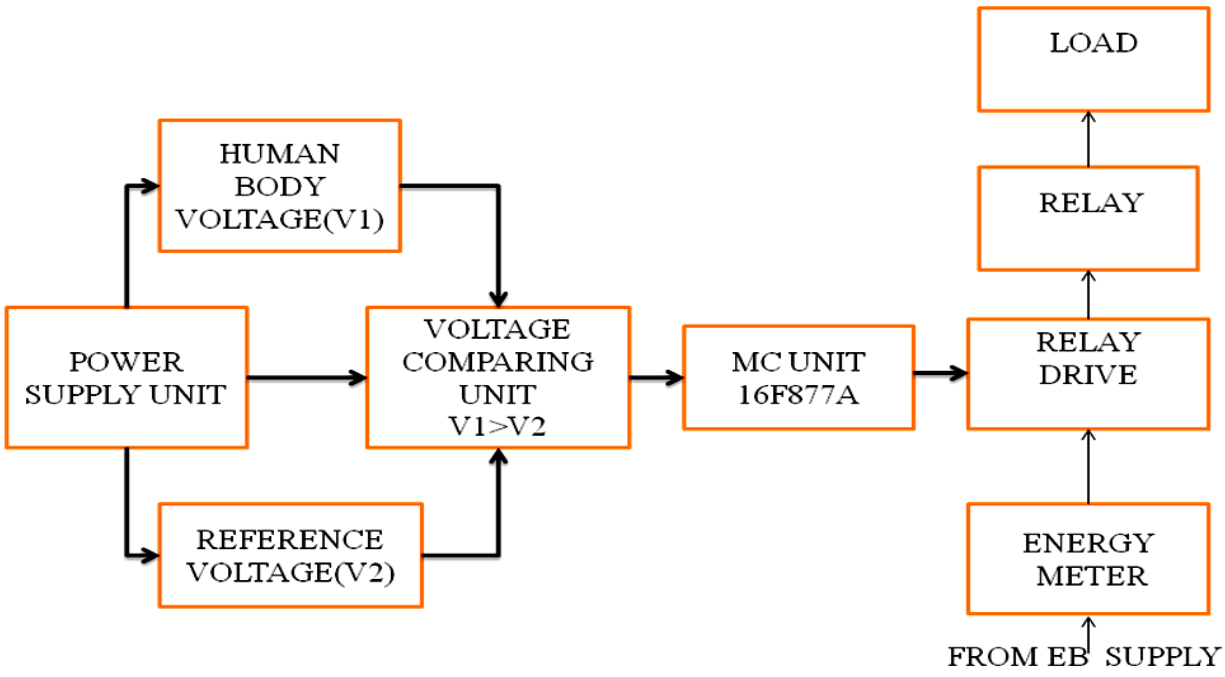
4. PROPOSED SYSTEM

In order to overcome the problem in the existing system, the proposed system is employed.To avoid injury by an electric shock, the embedded based shock preventer is used where it controls the total power unit of a factory or department which prevents human life from electric shock.

5. BLOCK DIAGRAM:



6.MODULES:

- Transmitter
- Receiver

6.1. MODULE DESCRIPTION:

6.1.1. TRANSMITTER MODULE

When either switch is closed, power is applied to the encoder IC, A5884, to the LED and to an oscillator coil. The A5884 has 10 address bits and two data bits. The 12 bits of binary information are serially transmitted on pin 17 when either data pin is taken low by pressing the switch. The ten address lines can be tied high, low or left floating.

As supplied all are left floating. It is easy to tie some or all of A0 to A9 to ground since a ground track has been provided on the transmitter PCB right next to these pins. To allow easy matching of a code we have provided a similar ground next to the decoder IC pins. A trim cap on the tank circuit can vary the output frequency between 300 MHz & 375 MHz approximately. It is set to 318MHz at the factory.

6.1.2. RECEIVER MODULE

It is based on a complete front-end module which processes the signal via a band pass filter, amplifier and Schmitt trigger. Its output delivers a digital pulse train to the input of the decoder IC.

Normally pin 17 is low. This pulls down the clock inputs to the 4013 to about 0.6V which is the voltage drop across D2 & D3. Pins 12 & 13 are normally high. On the receiver module, pin 1 is the pin closest to the end of the PCB. Pin 3 is the signal out pin. Pins 4 & 5 are connected to ground. (You can see this when you look at the PCB. The track connected to pins 4 & 5 encircles the PCB.)

When the decoder IC receives data with a valid address code, pin 17 goes high, and pin 12 or 13 goes low according to whichever of the corresponding pins on the encoder IC was pressed. Let us assume button II is pressed on the transmitter. Pin 12 on the decoder IC goes low. Pin 13 remains high. But on the other side of the 100K resistor on pin 13 the line is now pulled high via D2 to pin 17 Sothe clock input pin 3 goes high, and relay 1 is closed. The flip-flops (FF) are connected to toggle each time a positive going pulse appears at the clock input. This is done by connecting the Q/ output to the D input via an RC network. The time constant of this network plus the C5 & C7 capacitors prevent false triggering due to noise. When power is applied, IC2, the 4013, is reset by C8 & R18. Reset is caused by sending the reset inputs of IC2 high. When C8 is charged the voltage across R10 falls to zero. The Q output of each FF connects to a driver transistor via a 3K3 resistor. When Q is high the transistor is turned on and the relay is closed. Protection diodes are connected across each relay coil to limit the back-EMF when the relay is de-energized.

7. CONCLUSION:

The protection practice against electric shock points to solve the contact “collision” by the active measure of automatic disconnection limiting the time duration. Analyzing the components of electric hazard as waves evolving in time, the fault opens a time window of risk, and the protection has to close it. In electrical installations, safe protection is conventionally guaranteed if the colliding time makes permissible the prospected touch voltage or at least assumes a value as low as possible (additional protection). In fact, as a minimal objective, the protection has to limit fault exposure persistence in a conventional time (probable protection).

In a complementary way, operating on the single components of the electrical installation in the case of portable (mobile) electrical equipment, a practical recommendable criterion to avoid or mitigate the injury or damage

occurring with electrical equipment is to prevent the appearance of electrical potential using double insulation and Class II equipment. Whereas in the case of fixed electrical equipment, it can be sufficient to limit the persistence of electrical potential by grounding and automatic disconnection of supply.

8. FUTURE ENHANCEMENT:

Adjustable Sensitivity.Tripping Time Less Than 30 Milli Seconds.The ESP will automatically cuts off power supply thus preventing electrical deaths.Available in single phase & three phase with 10 mA to 300 mA sensitivity.

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