***Fire detection circuit***



The fire detection circuit is designed with IR LED, OP\_AMP(IC LM358), Photodiode and Transistor. Photo Diode which is connected in the reverse bias condition. Here the OP\_AMP is used as a voltage comparator. The Photo Diode is connected to the non-inverting terminal Pin No 3 of the OP\_AMP to provide the potential difference. The inverting terminal Pin No 2 of the OP\_AMP get the potential difference & variable resistor (10 KΩ), to adjust the Reference Voltage or a set value of the parameter. The LED connected at the collector gives an indication of sensing parameter when it exceeding the threshold value. The radiation of the fire is detected by the photo diode and saturate according to the density of fire radiation

When the fire detected the light beams emitted by the IR LED falls on the fire location i.e. IR rays emitted hit the fir e radiation and are reflected back to Photo Diode, thus photo diode goes to saturate. Now at this instant the potential difference between two inputs at comparator also changes and the output of the comparator is at its high state. Hence the NPN transistor (BC 548) turn activate (Saturate) the transistor. This signal is given to the microcontroller, transmitter or relay to activate the further action. The control actions may be to spray a water or fire extinguisher chemical with spraying pump.