Joy Of Electronics Project:

WATER/SANITISER DISPENSER

Done by :

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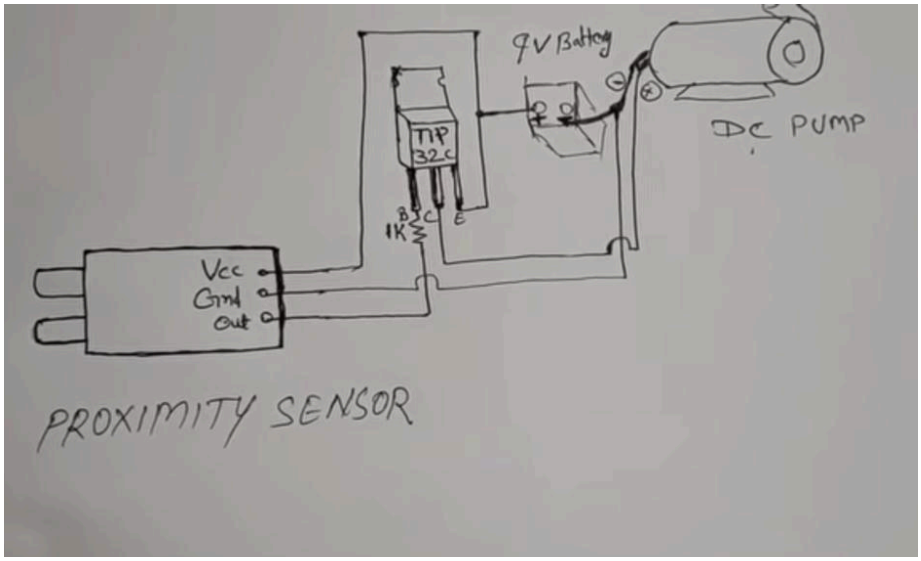
Intro:

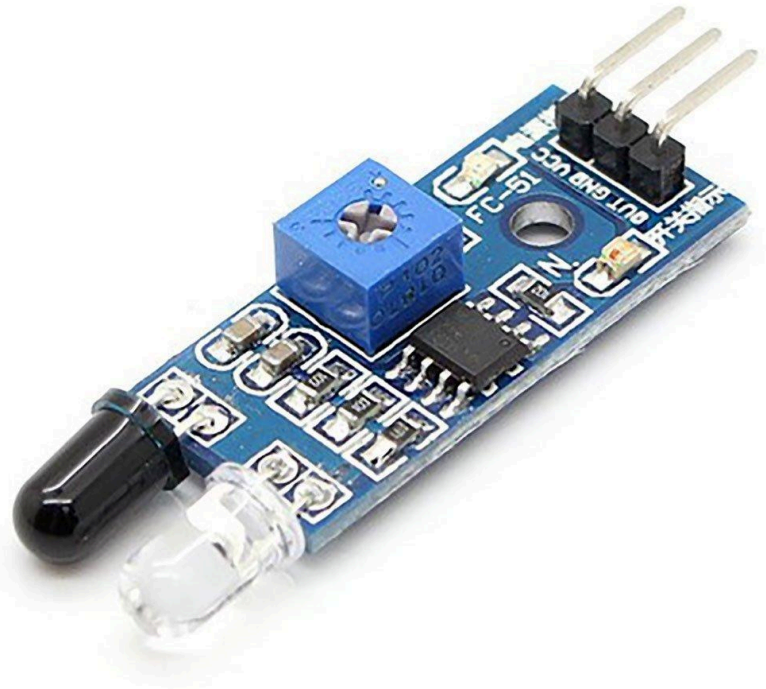
A branded automatic water dispenser is usually expensive. So, a relatively low-cost do-it-yourself solution is presented here. It is a portable general-purpose automatic water dispenser perfectly suitable for homes to wash hands or feed water to pets. The presented system also offers many possibilities for extensions.

Diagram

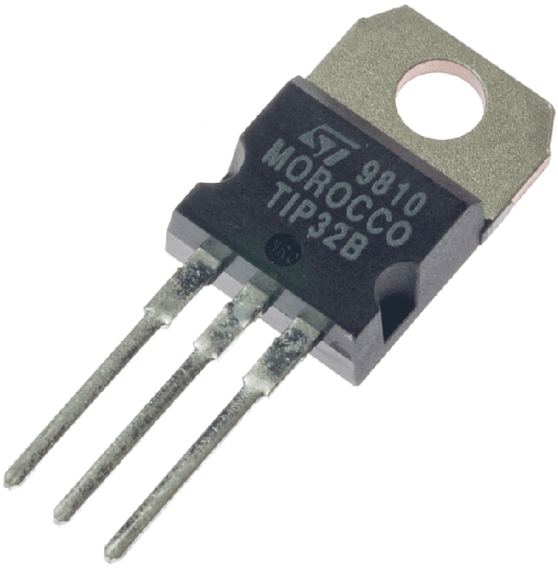

9V Battery
TIP 32C
B
C
E
1K
Vcc
Gnd
out
DC PUMP
PROXIMITY SENSOR

Components used :

IR Proximity Sensor

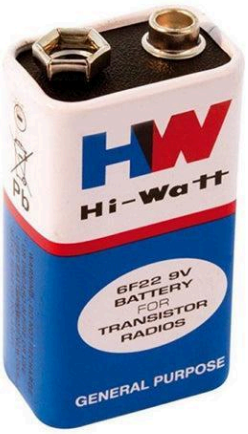


Transistor Tip 32



Mini DC Pump 3V-9V

9Volt Battery



Resistance Kit

Female Micro Usb Connectors

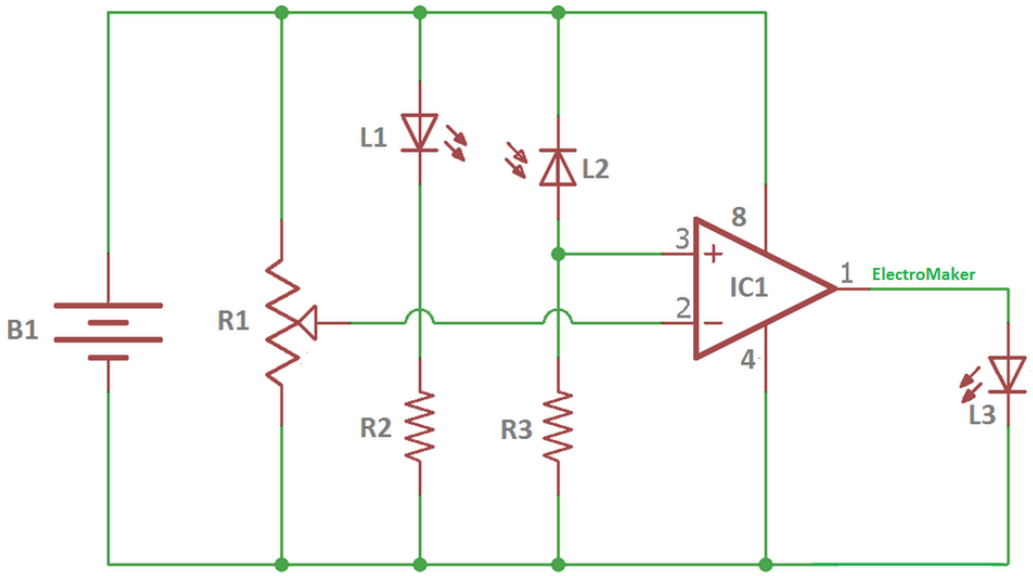
The system consists of three key segments: infrared (IR) proximity sensor, submergible mini dc 3v-9v water pump , 1k resistor , 9v battery.

IR proximity sensor design

The use of an IR proximity sensor is a practical way to build an automatic water dispenser.

This IR Proximity Sensor is a multipurpose infrared sensor which can be used for obstacle sensing, color detection, fire detection, line sensing, etc and also as an encoder sensor. The sensor provides a digital output.

Its construction is quite simple – its made by using an operational amplifier which is **an integrated circuit that can amplify weak electric signals** (used as a comparator which compares two voltages or currents and outputs a digital signal which is larger) , a variable resistor , IR LED/IR Transmitter , IR Photo Diode , LED .

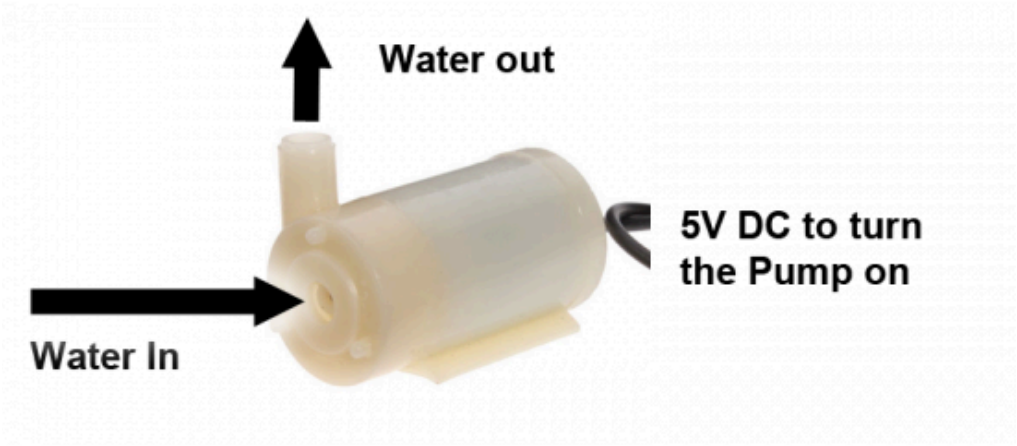


Schematic For Infra-Red Proximity Sensor

Water pump driver

Any 3-6V water pump motor should work with this little driver built around transistor T2. (It is recommended to use a prime version water pump for a permanent fixture.) Just attach a small rubber/silicone hose to the motor outlet, and submerge it in water to run it. Make sure that the water level is always higher than the motor as dry run will damage the water pump motor in a flash. Fortunately, we can prevent such a mishap by adding a mini float switch to the wiring of the water pump.

Here, S8550 pnp transistor (T2) is used as a high-side switch to drive the water pump motor (M1). Since the transistor switches the high voltage on and off (instead of ground), the setup provides a good return path when the water pump motor is turned off, and hence there's not much undesired electromagnetic interference (EMI).



How it works:

The IR Proximity sensor senses the presence of a hand / cup and it signals the set up to let the water / hand sanitiser be pumped out through the pipe that's prolonged out of the cup hole .

Once the object is out of reach from the IR Proximity Sensor it stops pumping the water up hence acting like a dispenser

What It's useful for:

It can be used for our everyday purposes , it can be used to dispense any liquid in the house or an office environment . Its extremely useful to avoid using manpower to meet everyday requirements like lifting a bottle – instead use the dispenser .

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