

## Automatic Device for Determining the Color of Colored Materials in Industry through the CNY70 Sensor

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This automatic device was made based on the local conditions together with the teachers in the circle of circuit engineering and robotics organized at the President's school in Karshi. The key element in this automatic color detector is the CNY70 sensor. The CNY70 sensor operates at a constant voltage of 6v. The CNY70 sensor consists of two parts, one LED and one phototransistor. To activate the CNY70 sensor, a voltage of +6 volts is supplied to the anode part of the LED and the collector part of the phototransistor. The cathode part of the LED is connected to the negative voltage with a resistor R470 ohm. A signal is emitted from the emitter part of the phototransistor, this output signal is amplified by the Q12222 N-P-N transistor through a constant resistance of 1 k. This amplified signal is connected to pin 5 of the LM3514N chip. LM3514N microcircuit is connected to +6v pin 3 and -6v voltage to pin 4. LM3514N chip is connected to the blue LED on pin 1 and green LED is connected to pin 17. A red LED is connected to pin 18. It is chosen to indicate the color of three-color paper. Or to indicate the color of other materials, this circuit is connected anywhere. In this scheme, 9, 10, 11, 12, 13, 14, 15, 16 legs remain empty. We can make automatic industrial devices based on local conditions. For example, we can make automatic devices that detect pressure, detect temperature, detect water level, and automatically turn on street lights. LM3514N chips with CNY70 sensor are shown in the following pictures. Similar automatic devices are bought at very high prices if ready-made devices are bought from abroad. Students in the circuit engineering and robotics classes are allowed to make their own devices with their own hands. many automation devices are being taught to control with Arduino. But arduino is not widely installed in many areas, therefore, if we teach localization through integrated microcircuits and circuit engineering and robotics, we will achieve great success. We use 3 buttons and 4 buttons for control of these microcircuits. I think it will be a practice for students and teachers to master the science of circuit engineering. Higher education, schools from 0.5 A to 25 A Finding a device that provides a voltage of This power supply device is supplied with a constant voltage of 0V-40V. 1x 15V transformer, 4x diode, 25v 1000 $\mu$ F liquid capacitor, 1x LM7812 stabilizing element, R1,R2,R3,R4,R5, R6,R7, R8,R9,R10,R11,R12 constant resistors R13 variable resistor, C1,C2,C3,C4,C6 100 nf constant capacitor composed of 4 pieces 1RFZ44N N-P-N MOSFET TRANSISTOR, 1-lm358 operational amplifier.

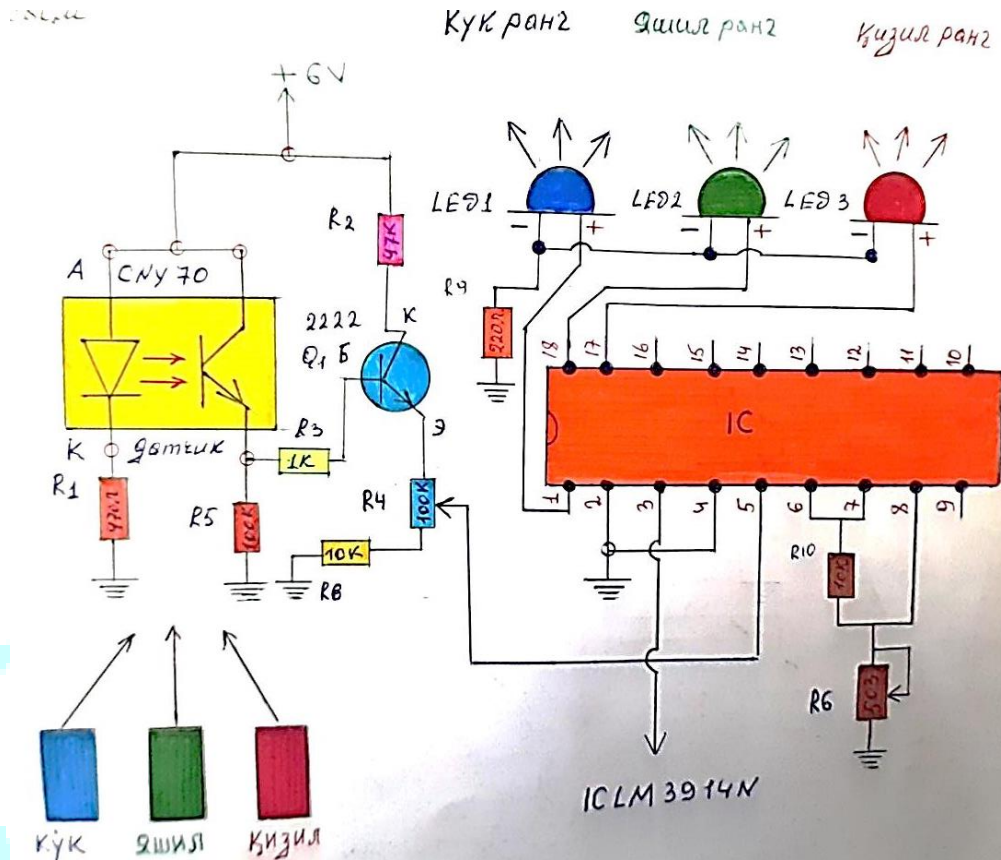


Fig. 1. Schematic of an automatic color detector

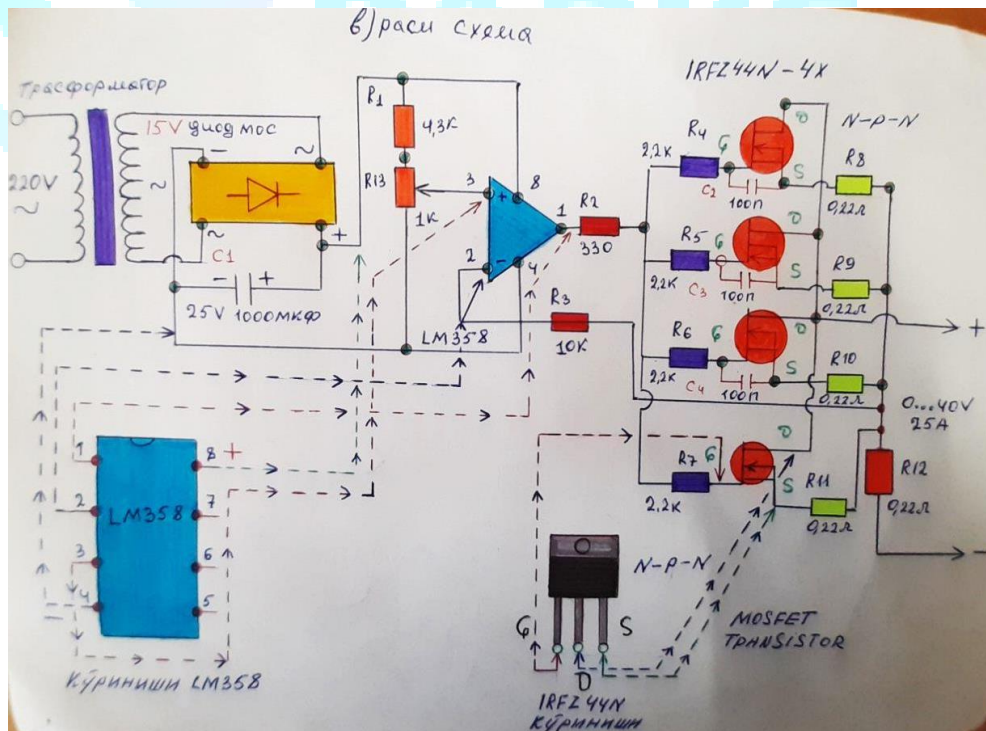


Figure 2. A safety device made based on local conditions

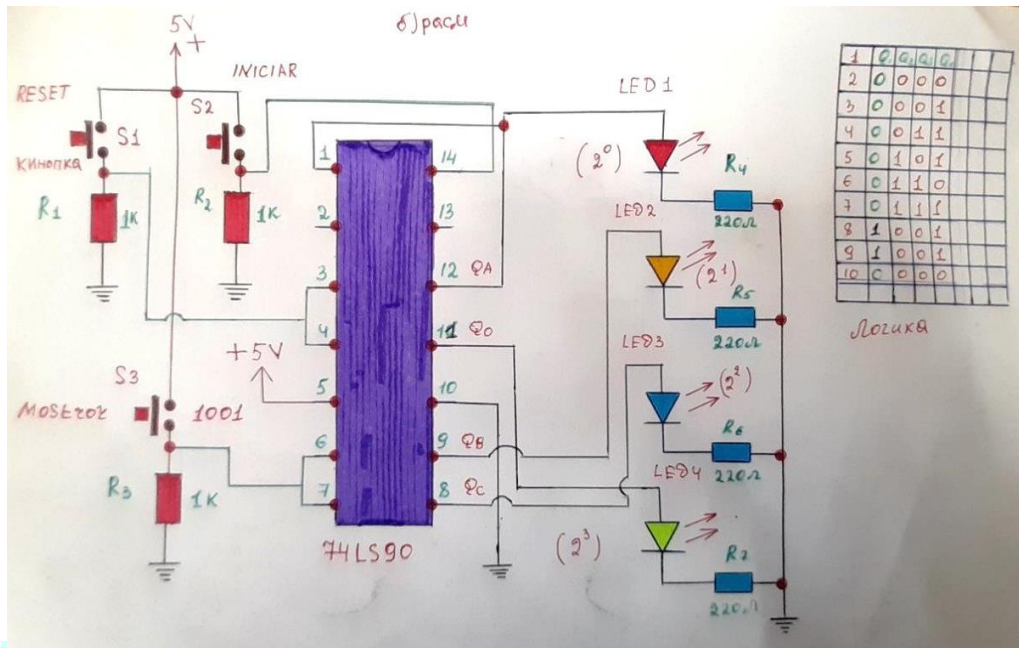


Fig. 3. Device for automatic control of LEDs.

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