Universität Stuttgart
Institut für Steuerungstechnik der Werkzeugmaschinen und Fertigungseinrichtungen

MEDIS – Module 2

Microcontroller based systems for controlling industrial processes

Lab 3.3: Amplifier Circuits

M. Seyfarth, Version 0.1

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Aims of the lab

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- Know electric wiring for amplifier circuits
- Draw basic amplifier circuits
- Connect Sensors and Actuators to a microcontroller
- Build up simple electric circuits

Work orders

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1. You want to control a single traffic light (cars and pedestrians). There is one push button on each side of the road. Each color of the traffic light is a combination of 50 high power LEDs. Draw the electrical circuit to connect all sensors and actuators to a microcontroller.
2. You want to measure the temperature of an oven. You choose the sensor KTY 84-130. The range for measurement should be 50…300°C. Wire this sensor with an appropriate resistor to an analog input pin of the microcontroller.
3. You want to connect a DC-motor of 250 W (24 V supply voltage) to a microcontroller and control it with two directions of variable revolution. Draw the electric circuit and calculate the necessary elements.

Conclusion

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1. Know basic circuits for connection of LEDs, sensors and motors to a microcontroller.

2. Know the symbols of electric elements in circuits.