UNO – 3 SENSORS PROJECT

ARDUINO UNO / LCD/
3 SENSORS TEMP & HUM / RAIN / MICROPHONE)

AlbaElektronica

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Required hardware & software

Connect Arduino UNO with computer / Raspberry Pi by wired cable

The Arduino app / software / IoT from Arduino.cc

Inside the box

Arduino Uno R3	Arduino board	
Charger Arduino	USB A / USB B	
Liquid Crystical Display	LCD 1602 / IIC I2C module	
Connectors	male-female / male-male	
Sensors	Temperatur & Humidity sensor (DHT11)	
	MH Rain sensor	
	Microphone KY 037 like	
Manual	Description / Tips	

Arduino Uno

- ➔ Download software from Arduino.cc; Install
- ➔ Select Tools / Manage libraries / Arduino Uno board
- ➔ Select Tools / Post / the port of the connection (COM1 or COM6 in Windows)
- ➔ Check Tools / Get board info (if the board is correctly connected)

A basic Liquid Crystal Display (LCD)

Connect the LDC 1602 IIC I2C display

- ➔ Turn on the LCD
- ➔ Connect the pins Arduino ←→ IIC I2C module with male / female connectors (see tips)
- ➔ Run File / Examples / Wire / i2c_scanner to find the address of the display
- ➔ Open Tools / Serial monitor; observe the output (see tips for troubleshooting)
- ➔ Install from Arduino libraries Tools / Manage libraries / LiquidCrystal I2C
- ➔ Compile and upload the HelloWorld application

Tips

- ➔ For more examples : search LCD I2C tutorial on Arduino.cc
- ➔ Pinout Arduino / LCD: A5 → SCL, A4 → SDA, 5V →VCC, GND → GND
- ➔ If initialised correctly you will see at first a black line
- ➔ If the screen is too bright or too dark, then tune with screw the blue potentiometer of the MH module on the backside of LCD
- ➔ Often the serial output for LCD is 0x27; if you cannot find the example i2c_scanner just use this address
- ➔ Include in the program LiquidCrystal I2C.ino the following line
    - LiquidCrystal_I2C lcd(0x27,16,2);

Experiments with sensors

Temperature and humidity in one sensor

Connect the Arduino with the sensor KY-015 type DHT11 with three male / female connectors

- ➔ Select Tools / Manage libraries / Install DHT library of Adafruit and also the required additional libraries (like Adafruit Unified Sensor)
- ➔ Open Tools / Examples / DHT sensor library / DHT_Unified_Sensor.ino
- ➔ Open Tools / Serial monitor / Compile and upload the application

Tips

- ➔ Pinout S → 2, + → 3.3V, - → GND
- ➔ Select from the program DHT_Unified_Sensor
  - #define DHTTYPE DHT11
- ➔ For connecting the LCD and DHT11 you find the combined code on github.com/alba-elektronica/Arduino-Uno-LCD-3-sensors
- ➔ The DHT11 sensor may get very hot; the reading of temperature is disturbed

Rain sensor

Connect MH-RD sensor to Arduino

- ➔ Connect the module to the MH sensor series with 4 x female, male connectors
- ➔ MH-RD sensor has two parts which need to be connected with 2 x male, male connectors
- ➔ Put some drops of water on the sensor

Tips

- ➔ Pinout: Vcc → 7, GND → 14 (GND), D0 → 8, A0 → A0
- ➔ Combine the LCD and humidity and rain sensors
- ➔ Code available from github.com/alba-elektronica/Arduino-Uno-LCD-3-sensors

Microphone

Connect MH Microphone (KY - 037) with Arduino

Tips

- ➔ Pinout: D0 → 9, Vcc → 6, GND → 14 (GND), A0 → A0
- ➔ Connect the LCD and combine it with the sensor
- ➔ It is possible to combine all the sensors at once
- ➔ Amplify the analog number with a large number; Open Serial Plotter