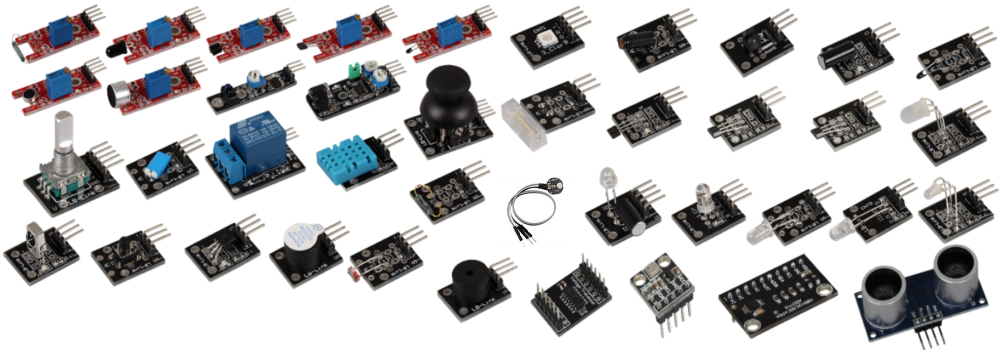


Sensorkit X40



You can find code-examples and software on our website

www.joy-it.net/sensorkit/

Dear customer,
thank you for purchasing our product.
Please find our instructions below:

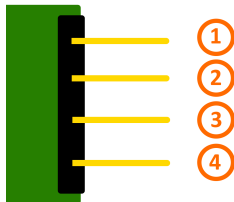
Pin-Assignment

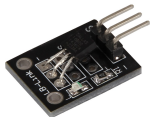
The pin-assignment is also shown in the description of the sensors.

Please find the used numbering on the left side.

It is marked that the contact-pins are pointing away, to the right, from the board.

We recommend to use Dupontcables to connect the sensors to a bread-board or directly to the experimental board.





KY-001 Temperature Sensor Module

Chipset: DS18B20 | Communication protocol: 1-Wire

9 - 12Bit exact temperature measurement in measurement-range from -55°C to $+125^{\circ}\text{C}$

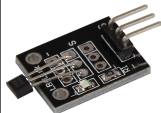
- ① - Signal
- ② - +V
- ③ - GND



KY-002 Shock-Switch Module

The contact between the two input pins is connected when a shock is detected

- ① - Signal
- ② - +V
- ③ - GND

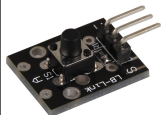


KY-003 Hall Magnetic-Field-Sensor Module

Chipset A3141
Sensortype: Hall Effect Transistor/Switch

The transistor connects when the module is near by a magnetic field. This can be measured as an analog value at the signal output.

- ① - Signal
- ② - +V
- ③ - GND



KY-004 Button-Module

While pressing the button, two signal outputs are connected

- ① - GND
- ② - +V
- ③ - Signal



KY-005 Infrared Transmitter Module

A diode which emits infrared light

Depending on the input voltage, a resistor is necessary

- ① - GND
- ② - [N.C.]
- ③ - Signal



KY-006 Passive Piezo-Buzzer Module

Controlled with PWM-signals in different frequencies, different sounds can be produced.

- ① - GND
- ② - +V
- ③ - Signal

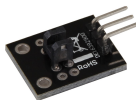


KY-009 RGB LED SMD Module

LED-Module which contains a red, blue and green LED. These are connected with a common cold cathode.

Depending on the input voltage, a resistor is necessary

- ① - GND
- ② - LED Green
- ③ - LED Red
- ④ - LED Blue



KY-010 Light-barrier-Module

The connection between to input pins is interrupted if the light-barrier is interrupted.

- ① - Signal
- ② - +V
- ③ - GND



KY-011 2-color [Red+Green] 5mm LED Module

LED-Module which contains a red and a green LED. These are connected with a common cathode.

Depending on the input voltage, a resistor is necessary

- ① - LED Green
- ② - LED Red
- ③ - GND

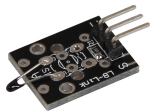


KY-012 Active Piezo-Buzzer Module

Tonfrequenz: 2,5kHz

voltage-powered, this active buzzer creates a sound with a frequency of 2,5 kHz

- ① - GND
- ② - +V
- ③ - Signal



KY-013 Temperature-Sensor Module

Temperature measuring range: -55°C / $+125^{\circ}\text{C}$

This module contains a NTC Thermistor—this has a declining resistor-value when the temperature is rising.

- ① - +V
- ② - GND
- ③ - Signal



KY-015 Combination-Sensor Temperature+Humidity Chipset: DHT11 | Communicationprotocoll: 1-Wire

Measuring range humidity: 20-90%RH

Measuring range temperature: $0-50^{\circ}\text{C}$

- ① - GND
- ② - +V
- ③ - Signal



KY-016 RGB 5mm LED Module

LED-Module which contains a red, blue and green LED which are connected with a common cathode.

Depending on the input voltage, a resistor can be necessary

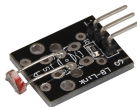
- ① - GND
- ② - LED Red
- ③ - LED Green
- ④ - LED Blue



KY-017 Tilt Switch Module

Depending on the tilt, a switch connects the input pins.

- ① - Signal
- ② - +V
- ③ - GND



KY-018 Photoresistor Module

Conains a LDR-resistor—ist resistor-value is declining if the environment is getting brighter.

- ① - GND
- ② - +V
- ③ - Signal



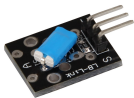
KY-019 5V Relais Module

Voltage range: 240VAC / 10A | 28VDC / 10A
A relays to toggle higher voltages with a 5V output.

Security information: VDC =< 30V

Higher voltages can result in extremely dangerous injuries.

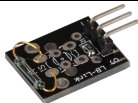
- ① - [-]
- ② - [+]
- ③ - Signal



KY-020 Tilt-Switch-Module

Depending on the tilt, a switch connects the input pins.

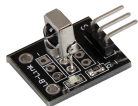
- ① - GND
- ② - +V
- ③ - Signal



KY-021 Mini Magnet Reed Module

If a magnetic field is detected, both input pins are connected

- ① - GND
- ② - +V
- ③ - Signal



KY-022 Infrared Receiver Module

Carrier frequency: 38kHz

Can receive infared signals and writes them to the signal output as an digital sequence.






- ① - Signal
- ② - +V
- ③ - GND

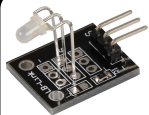


KY-023 Joystick Module (XY-Axes)

X and Y position of the joystick are transferred as analog voltage to the output pins.

- ① - Button
- ② - Y-Position
- ③ - X-Position
- ④ - +V
- ⑤ - GND

	<p>KY-024 Linear magnetic Hall Sensor</p> <p>Chipset: A3141 OP-Amplifier: LM393</p> <p>The magnetic field is measured by the sensor and transferred as an analog voltage. The sensitivity of the sensor can be adjusted with the potentiometer.</p> <p>Digital Output: If a flame is detected, a signal is given here</p> <p>Analog Output: Direct measured value of the sensor unit</p>	<ul style="list-style-type: none"> ① - digital signal ② - +V ③ - GND ④ - analog signal
	<p>KY-025 Reed Module</p> <p>If a magnetic field is detected, its given out to the digital output.</p>	<ul style="list-style-type: none"> ① - digital signal ② - +V ③ - GND ④ - analog signal
	<p>KY-026 Flame-Sensor Module</p> <p>The mounted photodiode is sensitive to the spectral range of light which are created by flames.</p> <p>Digital Output: A signal is given out if a flame is detected</p> <p>Analog Output: Direct measurement value of the sensor</p>	<ul style="list-style-type: none"> ① - digital signal ② - +V ③ - GND ④ - analog signal
	<p>KY-016 RGB 5mm LED Module</p> <p>LED-Module which contains a red, blue and green LED which are connected with a common cathode.</p> <p>Depending on the input voltage, a resistor can be necessary</p>	<ul style="list-style-type: none"> ① - LED ② - Signal ③ - +V ④ - GND
	<p>KY-028 Temperature Sensor Module (Thermistor)</p> <p>Temperature measurement range: -55°C / +125°C</p> <p>This module contains a NTC Thermistor—it has a declining resistor value on a raising temperature.</p> <p>Analog output: direct measurement of the temperature sensor</p> <p>Digital output: If the temperature is rising above a limit, its given out here. The limit can be controlled with the potentiometer.</p>	<ul style="list-style-type: none"> ① - digital signal ② - +V ③ - GND ④ - analog signal



KY-029 2-color [Red+Green] 3mm LED Module

LED-Module which contains a red and a green LED. These are connected with a common cathode.

Depending on the input voltage, a resistor can be necessary

- ① - LED **Green**
- ② - LED **Red**
- ③ - GND



KY-031 Knock-Sensor Module

If the sensor is exposed to a knock/shock, both output pins are connected.

- ① - GND
- ② - +V
- ③ - Signal



KY-032 Obstacle Detection Module

If the emitted infrared light hits an obstacle, the light is being reflected and detected by the photodiode. The detection range can be controlled with the two controllers.

- ① - [EN]
- ② - digital signal
- ③ - +V



KY-033 Tracking Sensor Module

The sensor-module recognizes if a light-reflecting or light-absorbing surface is in front of the sensor. The digital output is giving out the result. This e.g. can be used to follow a line. The sensitivity of the sensor can be controlled with the con-

- ① - Signal
- ② - +V
- ③ - GND



KY-034 7 color LED Flash-Module

If this module is powered, a sequence of color-changes is emitted by the LED. This contains 7 different colors.

Depending on the input voltage, a resistor can be necessary

- ① - GND
- ② - [N.C.]
- ③ - Signal



KY-035 Bihor Magnet Sensor Module

Chipset: AH49E

The sensor gives an analog voltage to its output which shows the intensity of a magnetic field.

- ① - Signal
- ② - +V
- ③ - GND



KY-036 Metal-Touchsensor Module

Gives out a signal if the front metal tip is touched. The sensitivity can be controlled with the controller.

Digital output: If a touch is detected, its given out here

- ① - digital signal
- ② - +V
- ③ - GND
- ④ - analog signal



KY-037 Microphone Sensor Module [high sensitivity]

Analog output: direct microphone-signal as voltage level

Digital output: A limit can be set with the potentiometer. The digital output toggles if the limit is reached.

- ① - digital signal
- ② - +V
- ③ - GND
- ④ - analog signal



KY-038 Microphone Sound Sensor Module

Analog output: direct microphone-signal as voltage level

Digital output: A limit can be set with the potentiometer. The digital output toggles if the limit is reached.

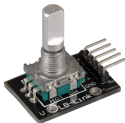
- ① - digital signal
- ② - +V
- ③ - GND
- ④ - analog Signal



KY-039 Heartbeat Sensor Module

If a finger is palced between the diode and the phototransistor, the pulse can be measured at the signaloutput.

- ① - Signal (black)
- ② - +V (white)
- ③ - GND (grey)



KY-040 Rotary Encoder

The current position of the rotary switch is given out coded on the output.

- ① - [CLK]
- ② - [DT]
- ③ - Button
- ④ - +V



KY-050 Ultrasonic-Distance sensor

If a signal (falling peak) is given to the trigger-input, a distance measurement is executed and given out as a PWM-TTL signal to the echo-output.

Measureable distance: 2cm—300cm **Measurement-resolution:** 3mm

- ① - GND
- ② - Echo
- ③ - Trigger
- ④ - +V



KY-051 Voltage Translator / Level Shifter

This level-shifter transfers digital signals from a voltage into another. 4 channels are available which can be used.

PIN-assignment is printed to the module-board



KY-052 Pressure sensor / Temperature sensor [BMP280]

This pressure sensor measures the air pressure at the sensor output (small hole on the silver sensor housing) and outputs the result coded on the I2C bus.

A software is necessary to use this sensor

- ① - SDO
- ② - CSB
- ③ - [SDA]
- ④ - [SDL]
- ⑤ - VCC
- ⑥ GND



KY-053 Analog Digital Converter

With appropriate commands to the I2C-Bus, up to 4 analog inputs can be measured to an accuracy of up to 16 Bit. The result is given out coded to the I2C-Bus.

A software is necessary to use this sensor

PIN-assignment is printed to the module-board

Software und Codexamples

On our website

www.joy-it.net/sensorkit/

we offer a collection of code-examples for e.g. the Arduino and the Raspberry Pi.

For some modules (e.g. the analog-digital-converter) you need an additional software to read the measurement results.

You can find these also on our website.

Voltage Level

Depending on the experimentalboard/microcontrollersystem you use, different voltagelevels can occur.

Please note the voltage supply and also the compatibility of the input voltage of the used systems.

For example, older Arduino-Systems tolerate 5V input voltages, but to the Raspberry Pi, signals above 3.3V must not be applied.

You can find further informations in your systems manual/datasheet.

To avoid the mentioned problem, you can find the [KY-051 Voltage Translator / Level Shifter](#) in the set. This allows you a safe operation on structures with different voltage levels.

You can find an accurate listing of which sensor can be used with which voltage on our website www.joy-it.net/sensorkit/

You can find more supplies for Raspberry Pi and Arduino on our website: www.joy-it.net

Recommendation-

3.2" TFT Touchscreen Display

Resolution 320x240

Interface SPI

Can be plugged directly to the Raspberry Pi



StromPi V2

Widerange power supply with USV-function for Raspberry Pi and other computers with USB power supply

6-61V DC voltage input

Output: 5V @3A

