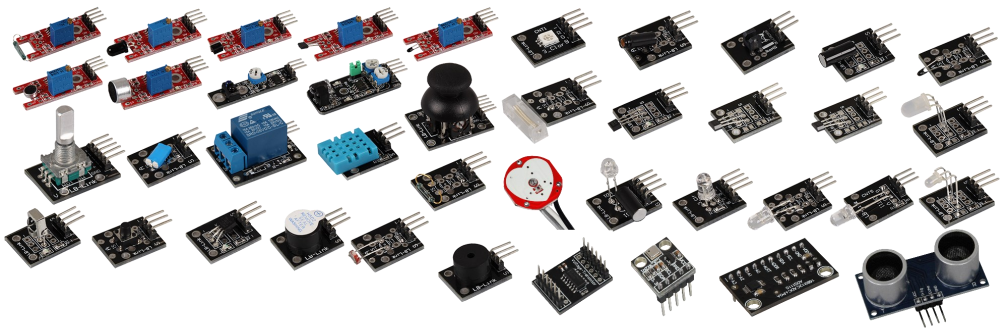
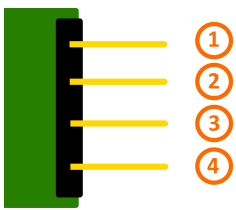
Sensorkit X40



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:

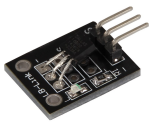
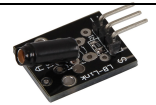
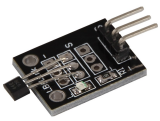
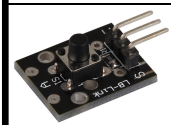
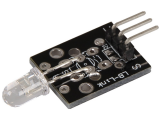


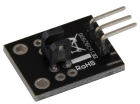
Pin-Assignment

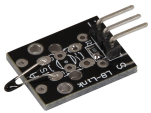
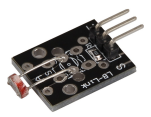
The pin-assignment is also shown in the description of the sensors.

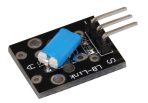
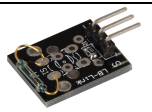
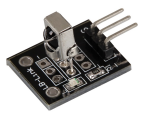
Please find the used numbering on the left side.
It is marked that the contact-pins are pointing away, to the right, from the board.

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 | **Communicationprotocoll:** 1-Wire 9- 12Bit exact temperature measurement in measurement-range from –55°C to +125°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

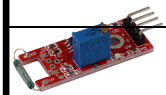
	**KY-013 Temperature-Sensor Module** **Temperature measuring range:** -55°C / +125°C This module contains a NTC Thermistor—this has a declining resistor-value when the temperature is rising.	① - +V ② - GND ③ - Signal
	**KY-015 Combination-Sensor Temperature+Humidity** **Chipset:** DHT11 | **Communicationprotocoll:** 1-Wire **Measuring range humidity:** 20-90%RH **Measuring range temperature:** 0-50°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 relais 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

KY-024 Linear magnetic Hall Sensor

Chipset: A3141 | **OP-Amplifier:** LM393
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.Das Magnetfeld wird vom Sensor gemessen und als analoger Spannungswert ausgegeben. Die Empfindlichkeit des Sensors kann mittels des Potentiometers geregelt werden.
Digitaler Ausgang: Wird eine Flame erkannt, wird hier ein Signal ausgegeben
Analoger Ausgang: Direkter Messwert der Sensoreinheit

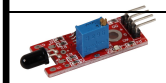
① - digital signal
② - +V
③ - GND
④ - analog signal



KY-025 Reed Module

If a magnetic field is detected, its given out to the digital output.

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



KY-026 Flame-Sensor Module

The mounted photodiode is sensitive to the spectral range of light which are created by flames.
Digitaler Ausgang: A signal is given out if a flame is detected
Analoger Ausgang: Direct measurement value of the sensor

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

KY-027 Magic Light Cup Module

The LED is turned on or off by concussion. The signal, when the led is on, is given out to a signal output.

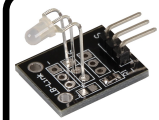
Je nach Eingangsspannung, werden Vorwiderstände benötigt

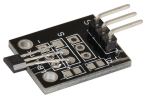
① - LED
② - Signal
③ - +V
④ - GND

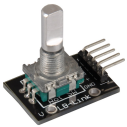
KY-028 Temperature Sensor Module (Thermistor)

Temperature measurement range: -55°C / +125°C
This module contains a NTC Thermistor—it has a declining resistor value on a raising temperature.
Analog output: direct measurement of the temperature sensor
Digital otuput: If the temperature is rising above a limit, its given out here. The luimit can be controlled with the potentiometer.

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 Gren 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 infared light hits an obstacle, the light is being reflected and detected by the photodiode. The detection rage can be controlled with the two controllers.	① - [EN] ② - digital signal ③ - +V ④ - GND
	**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 controller.	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 ist output which shows the intensitiy 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 **Analog output:** direct measurement value of the sensor	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 ② - +V ③ - GND

	**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 ⑤ - GND
	**KY-050 Ultrasonic-Distancesensor** 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 Pressuresensor / Temperaturesensor [BMP180]** This pressuresensor measures the air pressure and gives out the result coded to the I2C-Bus. **A software is necessary to use this sensor**	① - +5V ② - GND ③ - [SCL] ④ - [SDA] ⑤ - +3V3
	**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/microconrollersystem 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/