

# DOBOT Sensor Kit

For Magician

## Product Overview

The DOBOT Sensor Kit for Magician can be programmed using Python and graphic programming. It is easy to get started with and is suitable for beginners. The kit includes the Magic Box and the AI Camera Kit to enable more automation scenarios.

## Sensor Modules

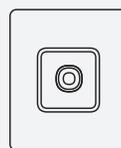
No.	Modules	Communication Mode	Interface	Note
1	Light sensor. Knob Sensor. Sound sensor.	ADC	Port3/Port4	Analog input
2	Joystick. Humiture sensor. Gesture sensor. Color sensor.	I2C	Port1~Port6	Digital input
3	Micro servo	PWM	Port3 ~Port6	PWM input
4	LED module	Single-bus	Port1~Port6	-
5	PIR sensor. Dual button. Photoelectric switch.	IO	Port1~Port6	General IO

### Magic Box



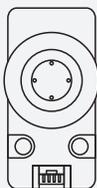
MCU: ARM 32-bit Cortex-M4  
Main Frequency: 168 MHz  
Programming Language: MicroPython  
Voltage: 100 ~ 240V AC, 50/60 Hz  
Power Consumption: 60W Max  
Working Environment: -5° ~ 45° C

### AI Camera



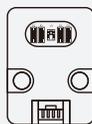
Sensor Format: 1/4 inch CMOS  
Sensor Resolution: 1M  
Voice Input: Integrated microphone  
Maximum Transfer Rate: 1280 x 720 @ 30fps  
Voltage: 5V DC  
Working Environment: 0° ~ 50° C

## Joystick



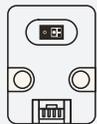
**Connection mode:** connect to any green port of Magic Box (Port1~Port6)  
**Communication mode:** I2C  
**Wiring Cable:** Universal Sensor Cable  
**X/Y output value:** 10~250  
**Z output value:** 0: release; 1: press  
**Voltage:** 5V  
**Current:** 50mA

## Color Sensor



**Connection mode:** connect to any green port of Magic Box (Port1 ~ Port6)  
**Communication mode:** I2C  
**Wiring Cable:** Universal Sensor Cable  
**Color detection result:** 0: no color; 1: red; 2: green; 3: blue; 4: yellow; 5: black; 6: white  
**Color value RGB:** 0~200 (a larger value indicates a darker color)  
**Voltage:** 5V  
**Current:** 50mA

## Gesture Sensor



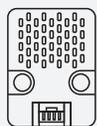
**Connection mode:** connect to any green port of Magic Box (Port1~Port6)  
**Communication mode:** I2C  
**Wiring Cable:** Universal Sensor Cable  
**Support gestures:** up, down, left, right, forward, backward, clockwise, counterclockwise  
**Effective recognition distance:** 5cm~15cm  
**Voltage:** 5V  
**Current:** 50mA

## Sound Sensor



**Connection mode:** connect to any green port of Magic Box (Port3 or Port4)  
**Communication mode:** ADC  
**Wiring Cable:** Universal Sensor Cable  
**Value range:** 0~1023  
**Sensitivity:** (48dB ~ 52dB) @1kHz  
**Microphone impedance:** 2.2k ohms  
**Microphone frequency:** 16-20 kHz  
**SNR S/N:** 54dB

## Humiture Sensor



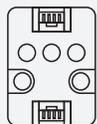
**Connection mode:** connect to any green port of Magic Box (Port1~Port6)  
**Communication mode:** I2C  
**Wiring Cable:** Universal Sensor Cable  
**Temperature range:** 0~60°C/±1°C  
**Humidity range:** 10~90% RH ± 5% RH  
**Voltage:** 5V  
**Current:** 50mA

## Dual Button



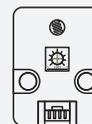
**Connection mode:** connect to any green port of Magic Box (Port1~Port6)  
**Communication mode:** IO  
**Wiring Cable:** Universal Sensor Cable  
**Voltage:** 5V  
**Current:** 50mA

## LED Module



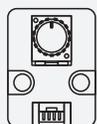
**Connection mode:** connect to any green port of Magic Box (Port1 ~ Port6)  
**Communication mode:** monobus  
**Wiring Cable:** Universal Sensor Cable  
**RGB range:** 0~255  
**Brightness range:** 0~100%  
**Voltage:** 5V

## Light Sensor



**Connection mode:** connect to Magic Box green port (Port3 or Port4)  
**Communication mode:** I2C  
**Wiring Cable:** Universal Sensor Cable  
**Color detection result:** 0: no color; 1: red; 2: green; 3: blue; 4: yellow; 5: black; 6: white  
**Color value RGB:** 0~200 (a larger value indicates a darker color)  
**Voltage:** 5V  
**Current:** 50mA

## Knob Potentiometer



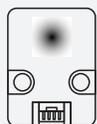
**Output voltage:** 0~2500mV  
**Connection mode:** connect to Magic Box green port (Port3 or Port4)  
**Communication mode:** ADC  
**Wiring Cable:** Universal Sensor Cable  
**Brightness return value:** 0-407 (extreme fluctuation is normal)  
**Voltage:** 5V  
**Current:** 50mA

## Micro Servo



**Connection mode:** connect to Magic Box green port (Port3~Port6)  
**Communication mode:** PWM  
**Wiring Cable:** Universal Sensor Cable  
**Servo speed:** 0.1sec/60°/4.8V; 0.09sec/60°/6.0V  
**Torque:** 1.6kg·cm/4.8V; 1.8kg·cm/6.0V  
**PWM frequency:** 50Hz/0.5~2.5MS  
**Voltage:** 4.8-6.0V  
**Non-load Current:** 60mA

## PIR Sensor



**Connection mode:** connect to any green port of Magic Box (Port1~Port6)  
**Communication mode:** IO  
**Wiring Cable:** Universal Sensor Cable  
**Detection distance:** 150cm  
**Delay period:** 2s  
**Induction range:** < 100°  
**Static current:** < 60uA  
**Operating temperature:** -20 ~ 80°C  
**Voltage:** 5V  
**Current:** 50mA

## Photoelectric Sensor



**Connection mode:** connect to any green port of Magic Box (Port1 ~ Port6)  
**Communication mode:** IO  
**Wiring Cable:** Already attached  
**Value range:** 0 (no shield), 1 (with shield)  
**Standard detection environment:** sunlight less than 10000LX, incandescent lamp less than 3000LX  
**Object to be detected:** transparent or opaque object  
**Operating temperature:** -25°C ~ 55°C  
**Response time:** <2ms

