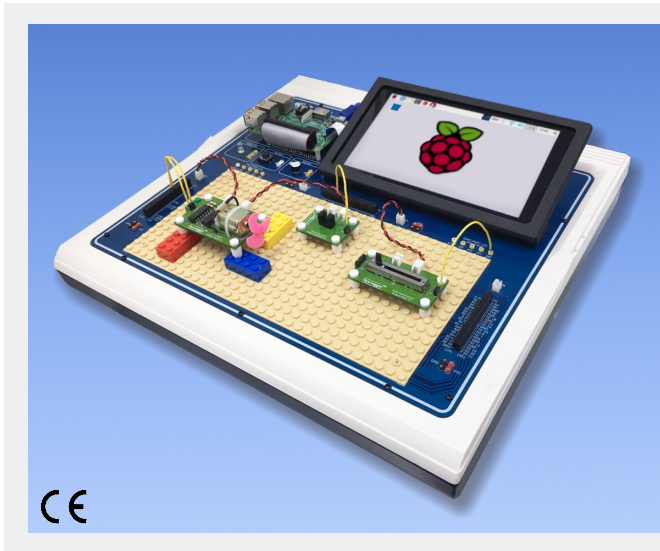


## MTS-200

### Tutor for Raspberry Pi



The Raspberry Pi is a mini computer allowing people of all ages to explore the world of computers and to learn how to code in programming languages, such as Scratch or Python. Just like a desktop PC, this credit card sized computer is capable of browsing the internet, playing videos, making spreadsheets, processing word document, and playing games.

The MTS-200 Tutor for Raspberry Pi provides an environment for Raspberry Pi to interact with the outside world through different forms of electronics (16 faya-nugget electronic blocks). Students can efficiently learn and create various digital maker projects through simple connections and simple Python codes in the tutorials provided.

#### ● Features

1. The trainer includes various I/O peripherals suitable for learning Raspberry Pi projects.
2. There are step-by-step procedures in the experiment manual for the Python programming language.
3. An independent power supply is provided to maximize the number of peripheral modules.
4. Three sets of I/O ports are extended around the working area for easy signal connection.
5. Two sets of independent DAC/ADC are built in to expand more experimental circuits.
6. A touch screen is built in for direct use and control.

#### ● Specifications

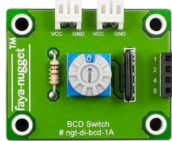
1. Power
  - (1) Input : 110V/220V AC, 50Hz/60Hz
  - (2) Output : +5V/3A, +3.3V/1A
2. Control board
  - (1) Raspberry Pi 4 Model B (4G RAM)
  - (2) Memory card : 16G micro SD card
  - (3) Power : built-in USB power
  - (4) Heat sink, fan and acrylic cover
3. Display
  - (1) Size : 7-inch, touch screen
  - (2) Resolution : 800 x 480 @60fps, 24-bit color
  - (3) Protection : metal frame with protective sticker
4. Prototyping area
  - (1) Device : RGB LED, button, buzzer
  - (2) ADC/DAC : 2 sets, address 0x48 and 0x49  
NXP PCF8591, 8-bit resolution,  
analog input x 4, analog output x 1
  - (3) Power jack : +5V/GND jump wire socket x4  
+5V/GND wafer socket x4
  - (4) I/O socket : 40-pin female connector x 3
  - (5) Brick plate : 32 x16 brick unit

#### 5. faya-nugget electronic blocks (NGT-603)

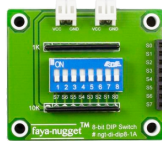
All blocks contain two wafer sockets for power connection, a DuPont pin-holder for signal connection, and four corner holes for perfect fixing on the brick plate.

- (1) Digital input
  - a. BCD switch
  - b. 8-bit DIP switch
  - c. Self-lock switch
  - d. 5-bit TACT switch
  - e. Toggle switch
- (2) Analog input
  - a. Joystick switch
  - b. Slide potentiometer
- (3) Environment detection
  - a. AD-590 temperature sensor
  - b. Hall sensor
  - c. Photo interrupter
  - d. Proximity sensor
  - e. Reed switch
- (4) Output module
  - a. Piezoelectric buzzer
  - b. Step motor
  - c. DC motor
  - d. 2-axis servo
- (5) Accessories
  - a. Experiment manual x 1
  - b. Wire pack x 1
  - c. Brick pack x 1
  - d. 32 x16 brick plate x 2
  - e. Brick post x 75
  - f. Brick cap x 75
  - g. Power wire x 20
  - h. Magnet x 1

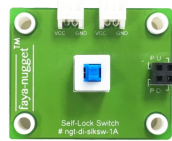
## ► Digital Input



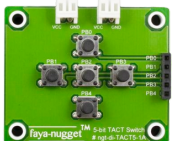
BCD Switch  
# rgt-di-bcd-1A



8-bit DIP Switch  
# rgt-di-dip-1A



Self-Lock Switch  
# rgt-di-ekaw-1A



5-bit TACT Switch  
# rgt-di-tacts-1A

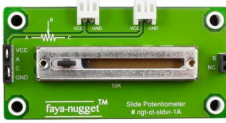


Toggle Switch  
# rgt-di-toggl-1A

## ► Analog Input

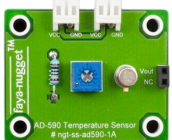


Joystick Switch  
# rgt-di-joyst-1A

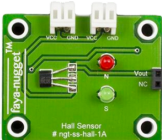


Slide Potentiometer  
# rgt-di-aler-1A

## ► Environment Detection



AD-590 Temperature Sensor  
# rgt-ss-ad590-1A



Hall Sensor  
# rgt-ss-hall-1A

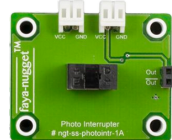
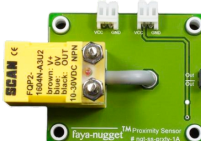
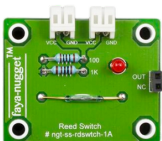


Photo Interrupter  
# rgt-ss-photo-1A

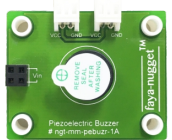


Proximity Sensor  
# rgt-ss-prox-1A

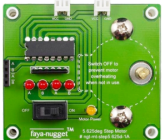


Reed Switch  
# rgt-ss-reed-1A

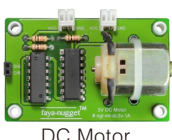
## ► Output Module



Piezoelectric Buzzer  
# rgt-om-buzz-1A



Step Motor  
# rgt-om-step-1A



DC Motor  
# rgt-om-dc-1A



2-axis Servo  
# rgt-om-servo-1A

## ● List of Experiments

1. Digital Input Experiment
  - (1) Button
  - (2) BCD Switch
  - (3) 8-bit DIP Switch
  - (4) Self-Lock Switch
  - (5) 5-bit TACT Switch
  - (6) Toggle Switch

## 2. Analog Input Experiment

- (1) Joystick Switch
- (2) Slide Potentiometer

## 3. Environment Detection Experiment

- (1) AD-590 Temperature Sensor
- (2) Hall Sensor
- (3) Photo Interrupter
- (4) Proximity Sensor
- (5) Reed Switch

## 4. Output Module Experiment

- (1) RGB LED
- (2) Buzzer
- (3) Piezoelectric Buzzer
- (4) Step Motor
- (5) DC Motor
- (6) 2-axis Servo

## ● Accessories

1. Operational manual x 1
2. Power cord x 1
3. Experiment CD x 1

## ● Optional

1. Raspberry Pi camera-V2 (with acrylic cover for protection & extended Flex PCB Cable)(MTS-23001)
2. Logitech C270 HD webcam (MTS-23002)



Raspberry Pi Camera



Logitech C270 HD Webcam

## 3. Carry case



### Note:

1. A USB keyboard and a mouse are required for operating all experiments.
2. A HDMI monitor is highly suggested for effective training.
3. More faya-nugget electronic blocks are available upon request.