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NGT-701
IoT Development Platform

NGT-701 IoT development platform uses Arduino, popular electronic modules, and industrial sensors to collect environmental data and sent it to remote locations via the different communication channel, such as Wi-Fi, Bluetooth, IrDA, LoRa, and RF Transceiver, for further processing.

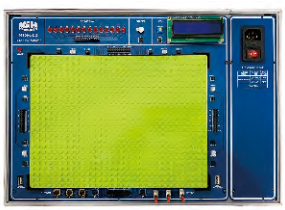
The platform contains more than 35 electronic blocks under 8 categories: Digital Input, Analog Input, Display, Sound, Sensor, Motor, Communication, and Tool. Students will learn and familiar with each module individually and combine these modules to create advanced IoT projects.

Integration experiments contain various popular cloud-based IoT projects, such as Line Notify, ThingSpeak, IFTTT, and local-based wireless applications, such as IrDA remote control, Bluetooth lamp, LoRa Messenger, etc. Students can efficiently learn and create various IoT projects through simple connections and sample Arduino codes in the tutorials provided.

● Features

1. The main unit includes fixed I/O peripherals suitable for common I/O controlled projects
2. Modular electronic blocks allow users to build their projects with high flexibility
3. An independent power supply is provided to maximize the number of peripheral modules
4. Four sets of I/O ports are extended around the working area for easy signal connection.
5. Two sets of USB power to supply power directly to Arduino

● Specifications



Main Unit (MTS-300)

1. Power
   (1) Input : 110V/220V AC, 50Hz/60Hz
   (2) Output : +5V/2A
2. Prototyping area
   (1) I/O device : Touch button x 3
   Toggle switch x 3
   LED x 14
   External drive E-M buzzer x 1
   Serial 16x2 LCD display x 1
   (2) Power jack : +5V/GND wafer socket x 6
   +5V USB type-A jack x 2
   (3) Node header : 4-pin branch node x 12
   (4) I/O socket : 26-pin female connector x 4
   (5) Brick plate : 32 x 24 brick unit

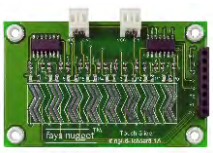
● faya-nugget Electronic Blocks

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

1. Controller
   Arduino ATMEGA328
2. Digital input
   (1) BCD Switch
   (2) Encoder Switch
   (3) Touch Slider

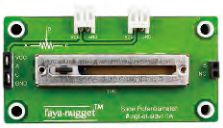

BCD Switch


Encoder Switch


Touch Slider

3. Analog Input
   (1) Joystick Switch
   (2) Slide Potentiometer
   (3) Variable Resistor


Joystick Switch


Slide Potentiometer


Variable Resistor

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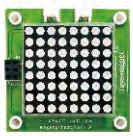
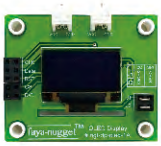
4. Display
   (1) RGB LED
   (2) 4-digit 7-segment display
   (3) Serial 8x8 matrix display
   (4) Color sticker
   (5) OLED display


RGB LED

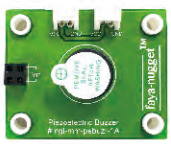

4-digit 7-segment display


Serial 8x8 matrix display

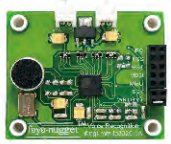

Color sticker


OLED display

5. Sound
   (1) Piezoelectric buzzer
   (2) Stereo speaker
   (3) Voice reorganization


Piezoelectric buzzer


Stereo speaker


Voice reorganization

6. Sensor
   (1) Light sensor
   (2) Humidity and temperature sensor
   (3) Gas sensor
   (4) Photo interrupter
   (5) Color sensor
   (6) Proximity sensor
   (7) Ultrasonic distance sensor
   (8) Digital pressure sensor
   (9) UV sensor
   (10) Dust sensor


Light sensor


Humidity & temperature sensor


Gas sensor

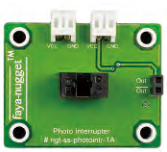
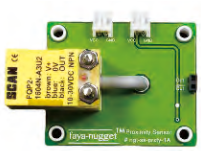


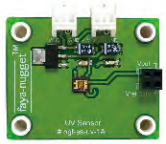
Photo interrupter


Color sensor


Proximity sensor


Ultrasonic distance sensor


Digital pressure sensor


UV sensor


Dust sensor

7. Motor
   (1) DC Motor
   (2) Step Motor
   (3) 2-axix Servo


DC Motor

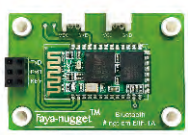

Step Motor


2-axix Servo

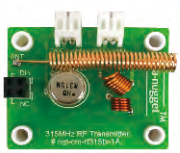
8. Communication
   (1) IR Transmitter
   (2) IR Receiver
   (3) Bluetooth
   (4) Wi-Fi
   (5) RF Transmitter
   (6) RF Receiver
   (7) LoRa

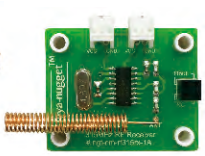

IR Transmitter

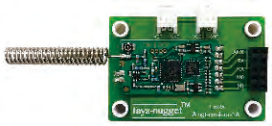

IR Receiver


Bluetooth

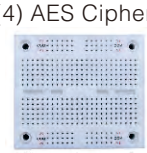

Wi-Fi

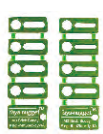

RF Transmitter

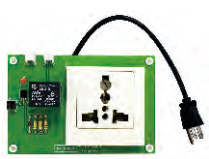

RF Receiver


LoRa

9. Tool
   (1) Breadboard for brick
   (2) Brick Buddy
   (3) Relay Outlet
   (4) AES Cipher


Breadboard for brick


Brick Buddy


Relay Outlet


AES Cipher

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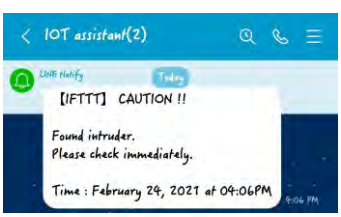
List of Experiment

1. Main Unit
   (1) Hardware introduction
   (2) LED display control
   (3) Touch button control
   (4) Toggle switch control
   (5) Buzzer control
   (6) Serial LCD display control
2. Modules
   (1) Digital Input
      a. BCD switch control
      b. Encode switch control
      c. Touch slider control
   (2) Analog Input
      a. Joystick switch control
      b. Slide potentiometer control
      c. Variable resistor control
   (3) Display
      a. RGB LED control
      b. 4-digit 7-segment display control
      c. Serial 8x8 matrix display control
      d. Color sticker control
      e. OLED display control
   (4) Sound
      a. Piezoelectric buzzer control
      b. Stereo speaker control
      c. Voice reorganization
   (5) Sensor
      a. Light detection
      b. Humidity and temperature detection
      c. Gas detection
      d. Photo interrupter detection
      e. Color detection
      f. Proximity detection
      g. Ultrasonic distance detection
      h. Digital pressure detection
      i. UV detection
      j. Dust detection
   (6) Motor
      a. DC motor control
      b. Step motor control
      c. 2-axix servo control
   (7) Communication
      a. IR transmission
      b. Bluetooth transmission
      c. Wi-Fi transmission
      d. RF transmission
      e. LoRa transmission
   (8) Tool
      a. Breadboard for brick tutorial
      b. Brick buddy tutorial
      c. Relay outlet control
      d. AES cipher tutorial
3. IOT Integration
   (1) IrDa
      a. Remote control for channel selection
      b. Remote control for volume
   (2) Bluetooth
      a. Bluetooth lamp controlled by mobile phone
      b. Bluetooth lamp controlled by voice
      c. Smart outlet
   (3) Wi-Fi
      a. Personal assistant - Using LINE
      b. Intelligent house - Using IFTTT
      c. Weather Station - Using ThingSpeak
      d. Data Transmission - Using MQTT
   (4) LoRa
      LoRa Messenger
   (5) RF Transceiver
      Parking alarm system

Wi-Fi : Weather Station - Using ThingSpeak



Wi-Fi : Personal assistant - Using LINE

Accessories

1. Operational Manual (Main unit) x 1
2. Experiment Manual (Modules) x 1
3. Experiment Manual (IOT Integration) x 1
4. Experiment CD x 1
5. Power Cord x 1
6. Jump Wire Set x 1
7. Brick Set x 1
8. Brick Post Set x 1
9. Brick Cap Set x 1
10. Brick Power Wire set x 1
11. Module Storage Case x 1
12. Micro USB Cable x 1