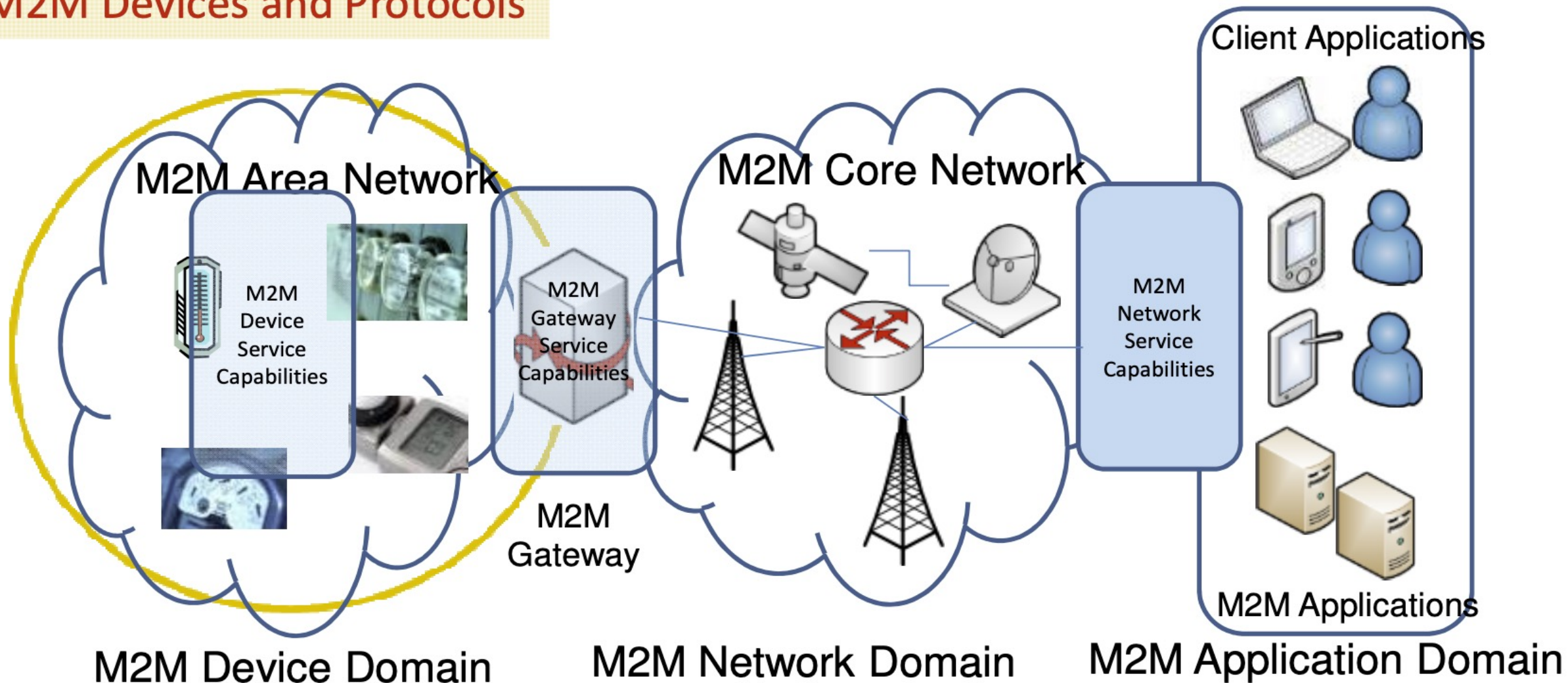


M2M Devices and Protocols



IoT/M2M Area Network

- IoT/M2M Sensors and Devices

- Đang phát triển nhanh chóng!

IoT/M2M Area Network Protocols

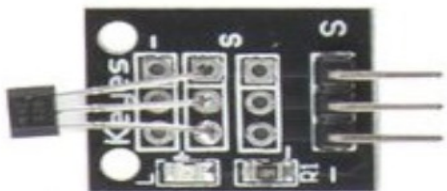
- ANSI C12 Suite
- Zigbee (IEEE 802.15.4)
- Bluetooth Low Energy (BLE)
- WiFi
- Power Line Communication
- BACnet
- KNX
- 6LoWPAN/RPL/CoAP ...

Catalog of IoT/M2M Sensors (1)

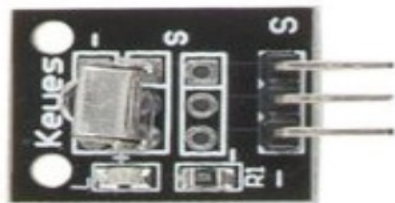
- Được nhúng trong điện thoại thông minh

- Accelerometer : Đo gia tốc ba trục
- Magnetic : Đo vector tiềm năng từ tính
- Orientation : Đo hướng
- Gyroscope : Đo hướng, dựa trên động lượng góc
- Temperature : Đo nhiệt độ
- Light: Đo độ sáng
- Pressure : Đo áp suất
- Proximity : Đo xem có đối tượng nào đang đóng
- GPS : Định vị vĩ độ và kinh độ hiện tại
- NFC : Cho phép điện thoại thông minh truyền dữ liệu cho nhau trong vòng 10 cm ...

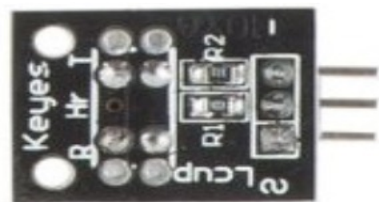
Catalog of IoT/M2M Sensors (2)



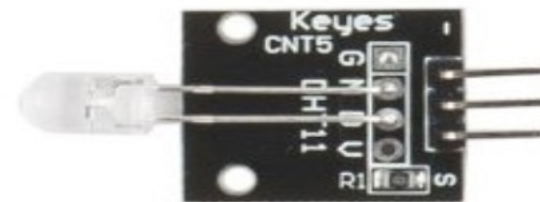
Analogy-hall sensor



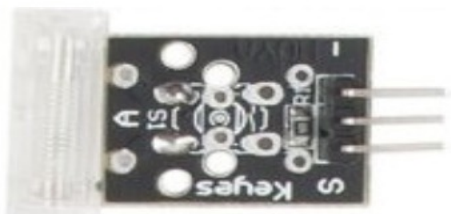
Infrared-receiver



Light break sensor



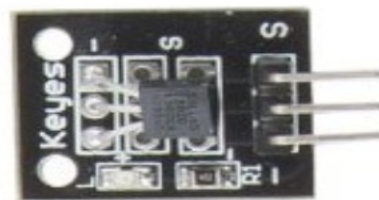
Colorful Auto-flash



Knock sensor



Passive buzzer



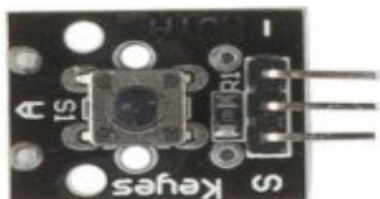
18B20 Temperature Sensor



Tilt-Switch



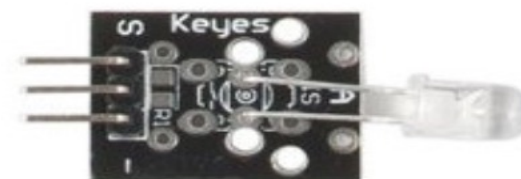
Laser-transmit



Push button

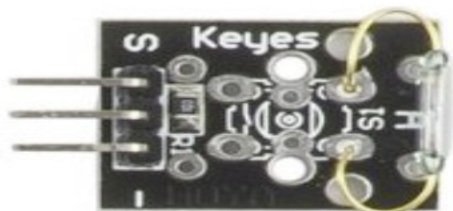


Active buzzer



Infrared-transmitter

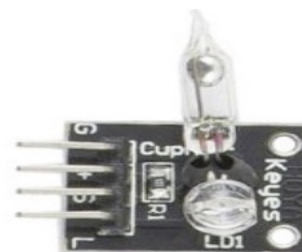
Catalog of IoT/M2M Sensors (3)



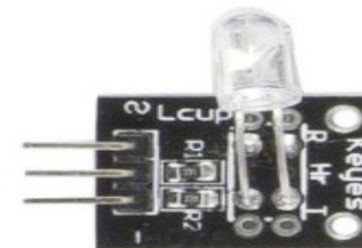
Magnet-ring sensor



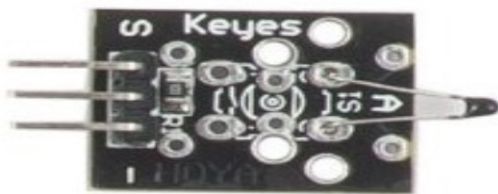
Rotate-encode



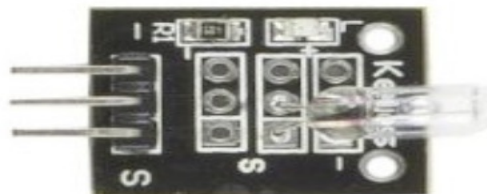
Magic-ring



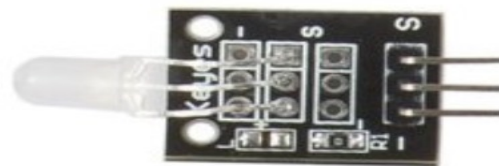
Finger-Pulse sensor



Analog-temperature
sensor



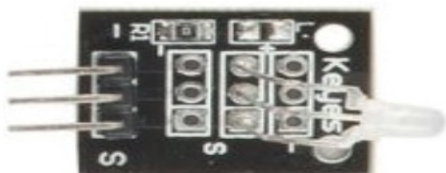
Hydrargyrum-switch
sensor



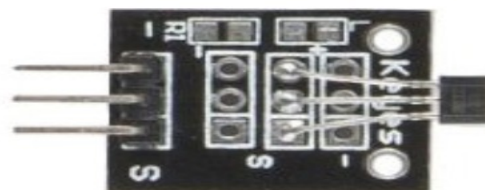
Two-color
Common Cathode (陰極) LED



Photo resistor sensor



Common-Cathode Red
& Green LED



Hall sensor



Humiture sensor



Shock-switch sensor

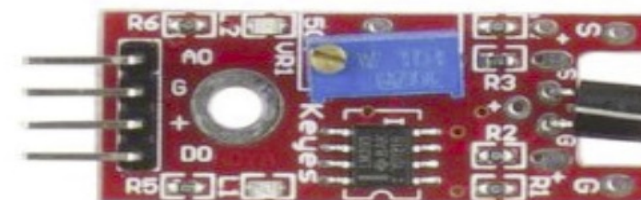
Catalog of IoT/M2M Sensors (4)



Obstacle avoidance sensor



Line Tracking sensor



Metal touch sensor



Microphone sensor



Digital-Temperature sensor



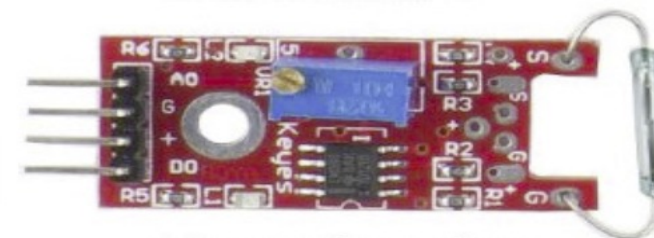
Flame sensor



Linear-Hall sensor



High-Sensitive voice sensor



Magnetic spring

Catalog of IoT/M2M Sensors (5)



Ultrasonic Sensor



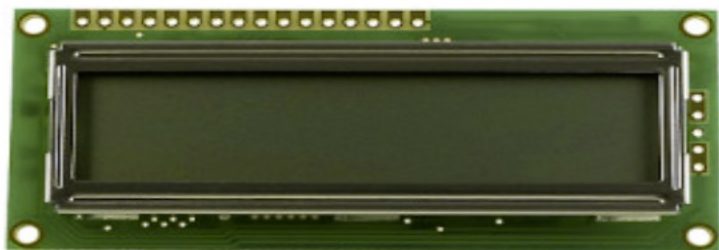
Graphic LCD 5110



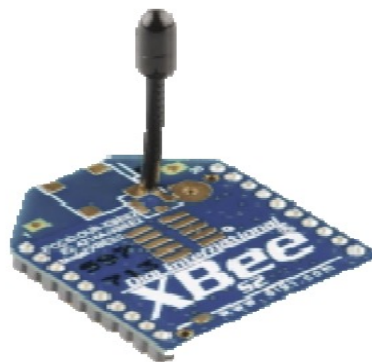
Gas sensor



PIR* sensor
*Passive infrared



16 pin LCD module



Xbee S2 wire antenna

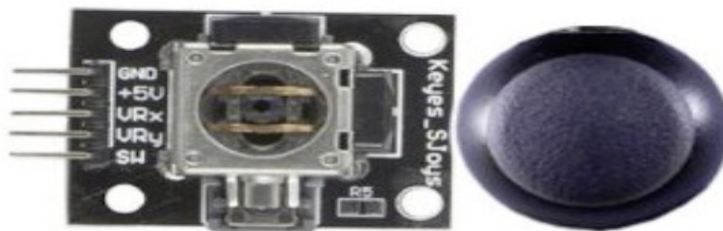


9 gram Plastic Servo Motor
(伺服馬達)

Catalog of IoT/M2M Sensors (6)



Relay module



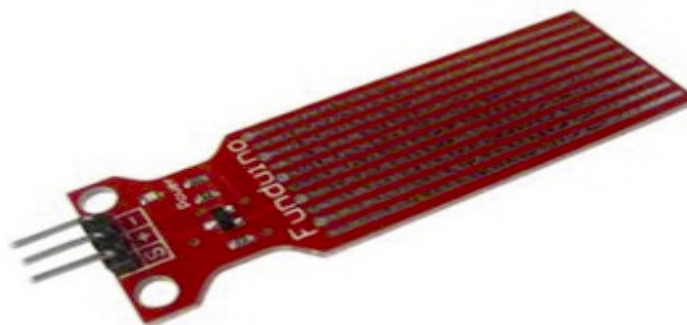
Joystick PS2



LED Digital Indicator



RFID
Card-Reader-Detector
Module



Water level sensor



Stepper motor
(步進馬達)

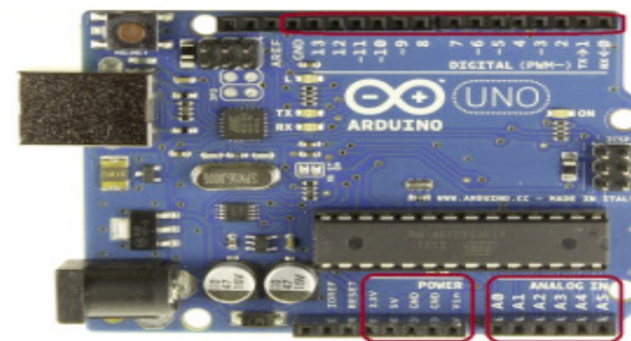
Catalog of Sensor Platforms



Mediatek Linkit



Raspberry Pi



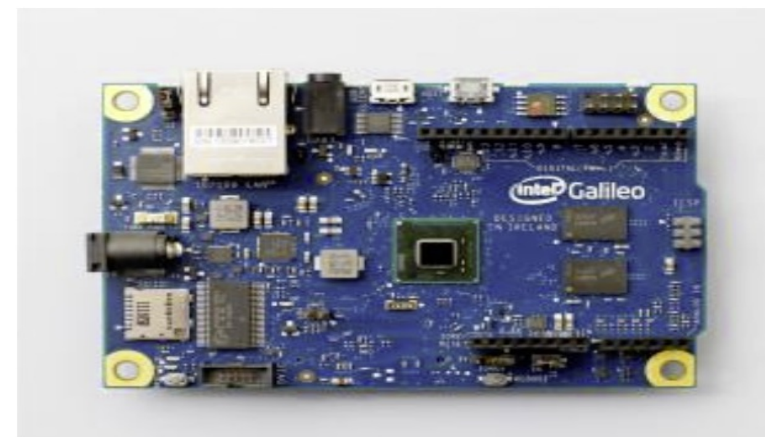
Arduino UNO



Intel Edison



NXP JN516x-EK001



Intel Galileo

Catalog of M2M Area Network Protocols (1)

- CoAP/6LoWPAN/RPL
- RFID
- Bluetooth Low Energy
- WiFi
- Zigbee (based on IEEE 802.15.4)
- Zigbee Smart Energy 2.0
- M-Bus – Đo lường tiện ích
- ANSI C12 – Đo đếm điện
- KNX – HVAC, chiếu sáng và tự động hóa tòa nhà

Catalog of M2M Area Network Protocols (2)

- LonWorks – Điều khiển và tự động hóa
- ModBus – Tự động hóa và đo lường công nghiệp
- Power Line Communications
- BACnet – Xây dựng tự động hóa và điều khiển
- Insteon – Smart Home
- DLMS/COSEM - Đo lường đa tiện ích
- Z-Wave – Tự động hóa gia đình
- Dali – Điều khiển ánh sáng
- X10 - Tự động hóa gia đình
- DLNA/UPnP – chia sẻ đa phương tiện tại nhà...