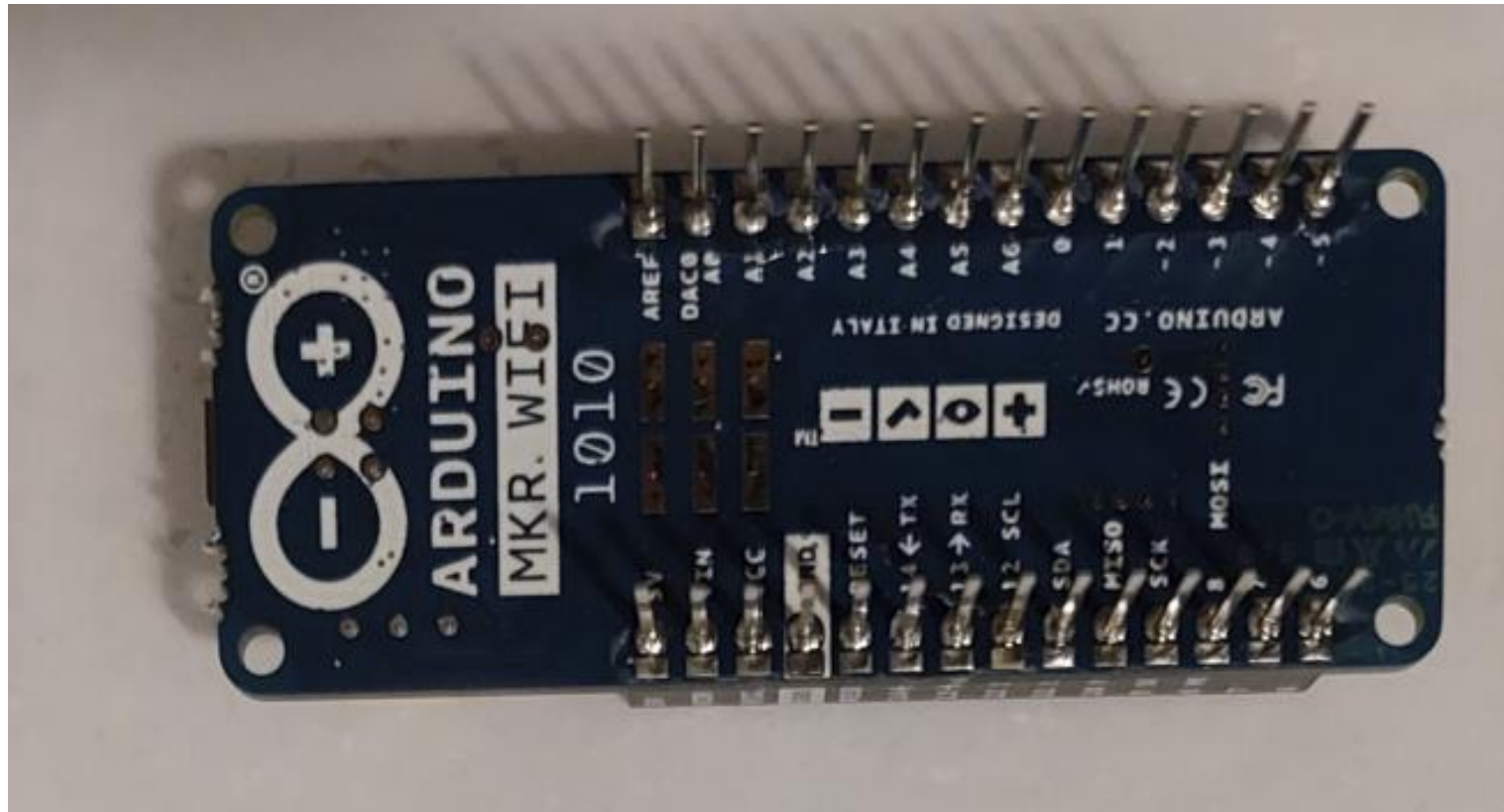


Arduino IoT kit

Arduino MrkWifi1010



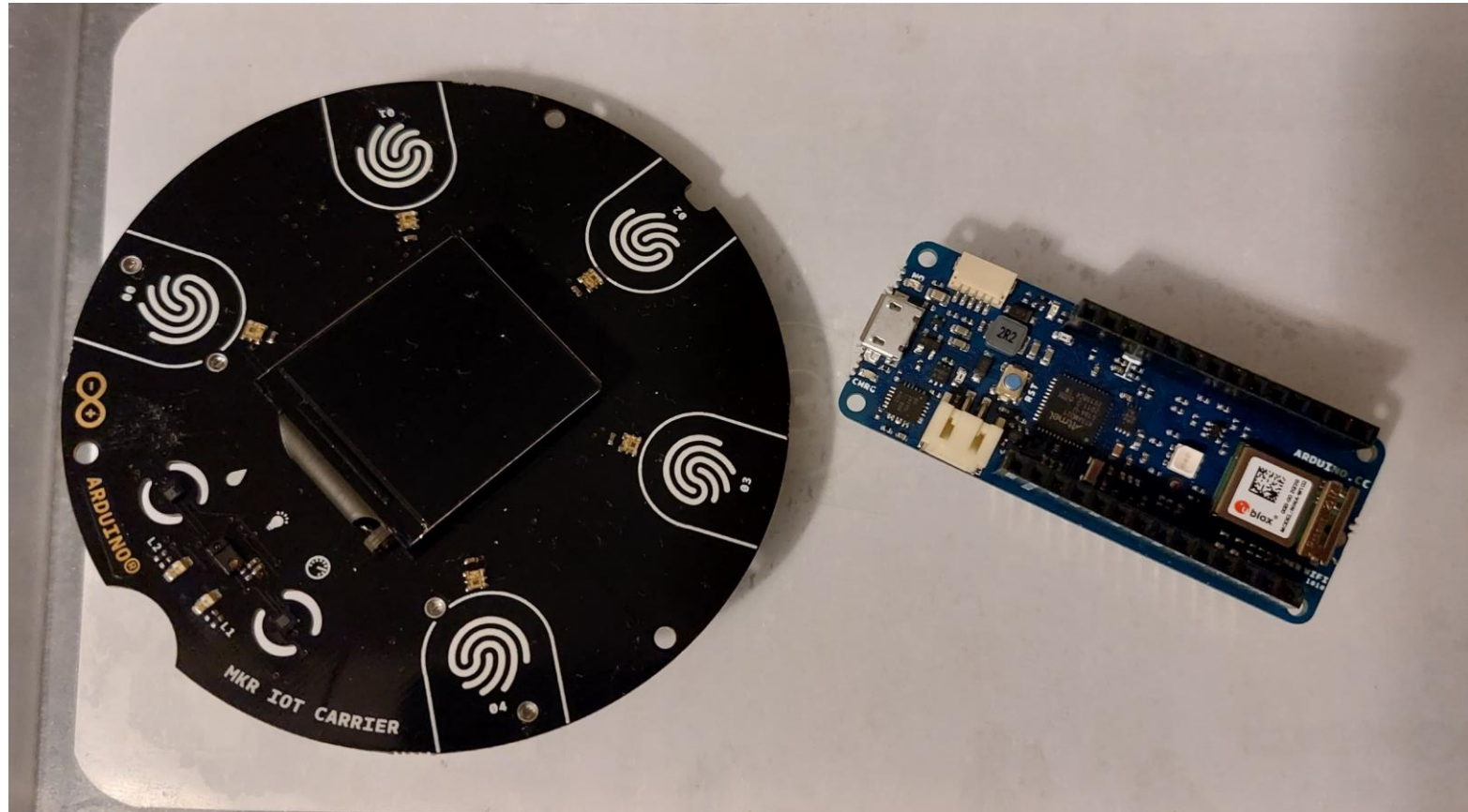
<https://docs.arduino.cc/hardware/mkr-wifi-1010>

Arduino MKR WiFi 1010

- **Microcontrollore:** SAMD21 Cortex-M0+ 32bit low power ARM MCU
- **Alimentazione (USB/VIN):** 5 VDC
- **Supporta alimentazione a batteria:** 1 batteria Li-Po a singola cella da 3,7 Volt – minimo 700 mAh
- **Tensione operativa:** 3,3V
- **I/O digitali:** 8
- **PWM:** 12 (pin 0, 1, 2, 3, 4, 5, 6, 7, 8, 10, A3 o 18, A4 o 19)
- **UART:** 1
- **SPI:** 1
- **I2C:** 1
- **Connettività:** Wi-Fi
- **Ingressi analogici:** 7 (ADC 8/10/12 bit)
- **Uscite analogiche:** 1 (DAC 10 bit)
- **Interrupt esterni:** 8 (0, 1, 4, 5, 6, 7, 8, A1 o 16, A2 o 17)
- **Corrente DC per pin I/O:** 7 mA
- **Memoria Flash:** 256 KB
- **SRAM:** 32 KB
- **EEPROM:** No
- **Velocità di Clock:** 48 MHz
- **Dimensioni (mm):** 61,5x25x20,80
- **Peso:** 32 grammi



MkrIoTcarrier



https://www.arduino.cc/reference/en/libraries/arduino_mkriotcarrier/

<https://docs.arduino.cc/hardware/mkr-iot-carrier>

<http://docs.arduino.cc/tutorials/mkr-iot-carrier/mkr-iot-carrier-01-technical-reference>

Programmare Arduino

- Installare l'IDE sul proprio PC
- Utilizzare l'IDE on-line

Collegando Arduino alla porta USB è possibile

- Fare l'upload del programma da eseguire
- Comunicare attraverso l'interfaccia seriale con l'IDE

L'IDE di Arduino

The image shows the Arduino IDE interface with a sketch titled "SimpleWebServerWiFi-DHCP-Carrier". The code is written in C++ and includes several headers and variable declarations. The code is as follows:

```
// MODIFICATO PER FAR ACCENDERE UN LED SUL MkrIoTcarrier
#include <Arduino_MKRIoTCarrier.h>
#include <SPI.h>
#include <WiFiNINA.h>

MKRIoTCarrier carrier;

//*****
// Use the following line to setup a static IP address
//IPAddress ip(192,168,1,15);
//*****

#include "arduino_secrets.h"
/////////please enter your sensitive data in the Secret tab/arduino_secrets.h
char ssid[] = SECRET_SSID;          // your network SSID (name)
char pass[] = SECRET_PASS;          // your network password (use for WPA, or use as key for WEP)
int keyIndex = 0;                    // your network key Index number (needed only for WEP)

int status = 0;
// IP address in static mode
```

The IDE interface includes a menu bar (File, Modifica, Sketch, Strumenti, Aiuto), a toolbar with icons for saving, running, and uploading, and a tab bar showing the current sketch and "arduino_secrets.h". The status bar at the bottom indicates "1" and "Arduino MKR WiFi 1010 su COM3".

Esempio 1: connessione alla WiFi

Utilizza alcune librerie:

```
#include <SPI.h>
```

```
#include <WiFiNINA.h>
```

E per interfacciarsi con lo shield (il Carrier)

```
#include <Arduino_MKRIoTCarrier.h>
```

setup e loop

I programmi comprendono una funzione setup(), eseguita una sola volta all'avvio, e una funzione loop() ripetuta all'infinito.

```
WiFiServer server(80);
```

```
void setup() { ... status = WiFi.begin(ssid, pass);  
               ... server.begin(); }
```

```
void loop() { ... WiFiClient client = server.available();  
              while (client.connected()) {          // loop while the client's connected  
                if (client.available()) {           // if there's bytes to read from the client,  
                  char c = client.read();  
                  ... } // legge una riga alla volta = richiesta proveniente dal client (via browser)  
                  client.print("Click <a href=\"/H\">here</a> turn the LED on pin LED_BUILTIN on<br>");  
                  client.print("Click <a href=\"/L\">here</a> turn the LED on pin LED_BUILTIN off<br>");  
                  if (currentLine.endsWith("GET /H")) {  
                    Carrier.leds.setPixelColor(0, color); // set Led 0 to color "color"  
                    carrier.leds.show();                  // Refresh strip  
                  ... }  
                  client.stop();
```


Esempio 2: comunicazione con MQTT

```
#include <MQTT.h>
MQTTClient client;
#define BROKER_IP   "193.206.52.98"
#define DEV_NAME    "mqttdevice"
#define MQTT_USER   "pissir"
#define MQTT_PW     "pissir2020"
...
void setup() {  client.begin(BROKER_IP, 1883, net);
               client.onMessage(messageReceived);
               ... client.connect(DEV_NAME, MQTT_USER, MQTT_PW);
               ... client.subscribe("/hello");}
void loop() { ... client.publish("/hello", "world"); ... }
```

Esempio 2: comunicazione con MQTT (cont.)

```
void messageReceived(String &topic, String &payload) {  
  Serial.println("incoming: " + topic + " - " + payload);  
  if (topic == "/hello") {  
    if (payload == "open") {  
      Serial.println("open");  
      carrier.leds.setPixelColor(0, color); // set Led 0 to color "color"  
      carrier.leds.show();                  // Refresh strip  
    } else if (payload == "closed") {  
      Serial.println("closed");  
      carrier.leds.setPixelColor(0,0); // switch Led 0 off  
      carrier.leds.show();    }  
    }  
}
```

Grove connectors

Analog compatible

Grove connector

I2C compatible

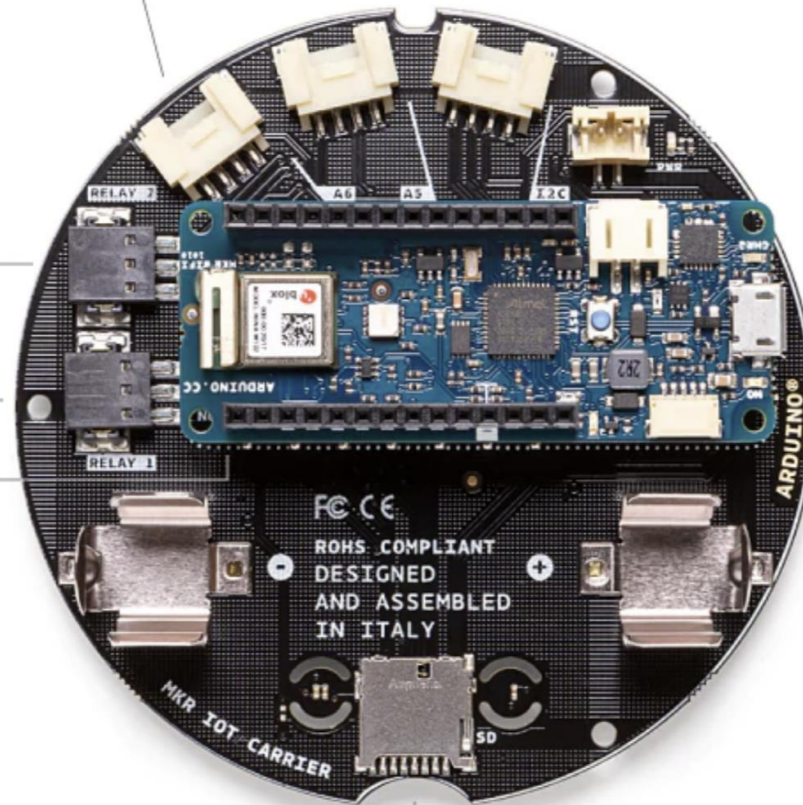
Relay connectors

Piezo

Battery clip

18650 Li-Ion

SD card slot



Capacitive touch buttons

LCD display

RGB 1,2"

RGB LED

IMU sensor

Temperature &
humidity sensor

Pressure sensor

Light, Gesture & Proximity sensor



Due moduli grove esterr:

- Per misurare l'umidità del terreno
- Per rilevare il movimento

