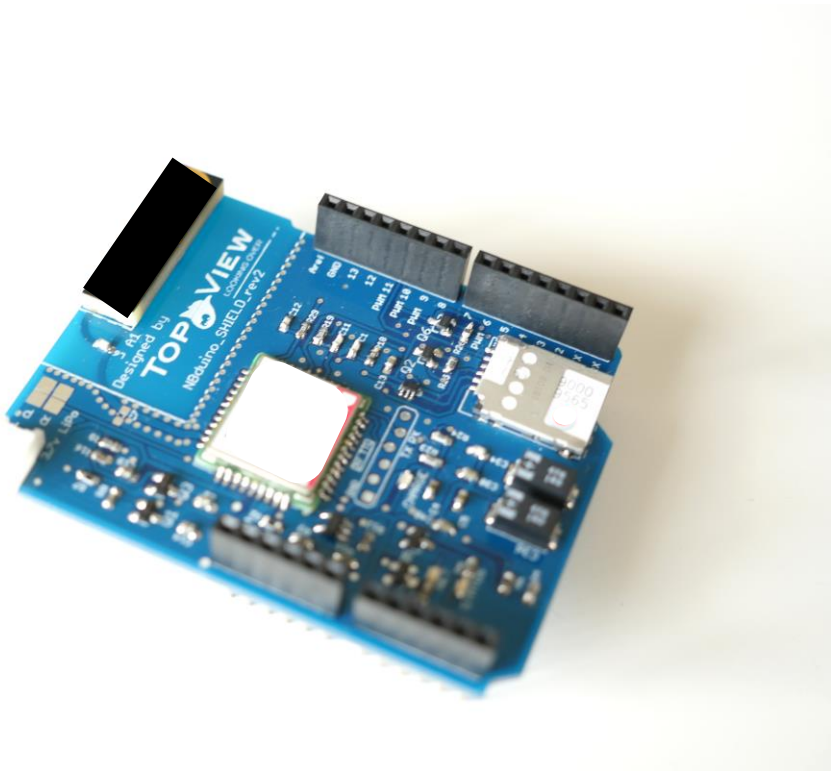

NBduino

NARROWBAND SHIELD ARDUINO COMPLIANT

DESCRIPTION

NBduino is the new shield that allows you to send data from your Arduino board directly to the cloud via the NB-IoT network.

You can plug the shield on the "Arduino" boards or it can be standalone with a self own LiPo battery.

With simple codes and libraries (check the link), it's possible to develop fastly your application and view your data directly on the Cloud.

TOPVIEW LOOKING OVER

PLUG AND PLAY
(ARDUINO COMPATIBLE)

POWER MODES (USB or LiPo battery)

LOW POWER (5µA)

LONG RANGE (7 Km)

CLOUD STORAGE
(MQTT BROKER READY)

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www.topview.it

Mon- Fri
09-18

NBDUINO

NARROWBAND SHIELD ARDUINO COMPLIANT

INDEX

SHIELD PINOUT DIAGRAM

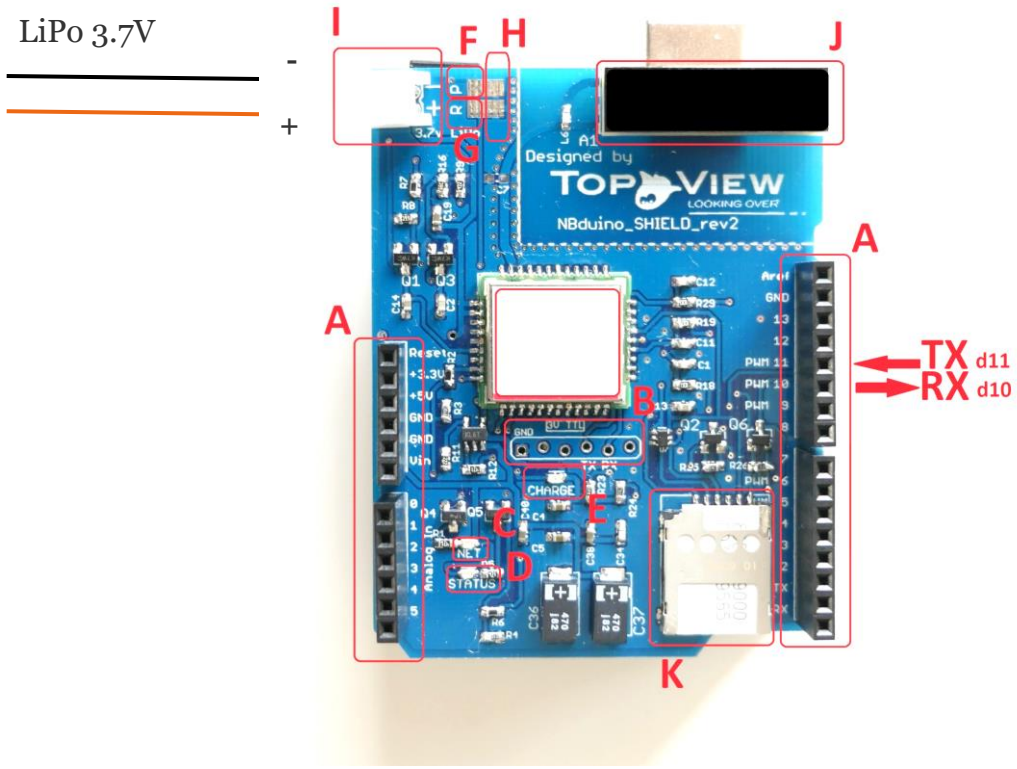


Figura 1: *NBduino Shield Pinout*

A. ARDUINO PINOUT, a voltage greater than 3.0V is present at the pin (5V boards) a voltage greater than 2.0V volts is present at the pin (3.3V boards)
B. FTDI PORT
C. NET LED (fast blink = wait to attach, slow blink = attached);
D. STATUS LED (Fixed = module ON)
E. CHARGE LED (ON = charging, OFF = charged)
F. PowerKey PAD (to wake up the module – without arduino)
G. Reset PAD (resets the module)
H. GND PAD
I. LiPo 3.7V slot
J. EMBEDDEDANTENNA
K. MICRO SIM SLOT

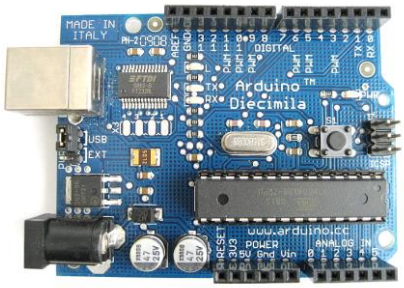
NBDUINO

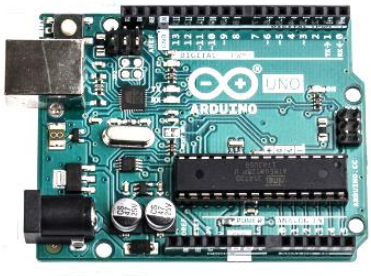
NARROWBAND SHIELD
ARDUINO COMPLIANT

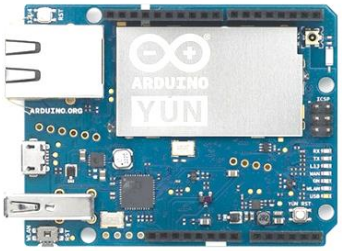
PLUG & PLAY

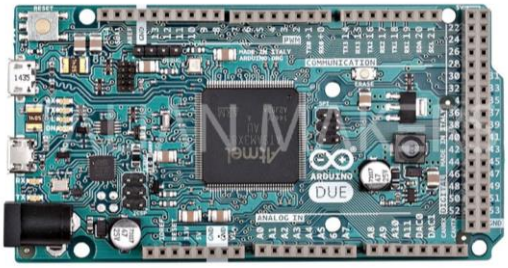
You can plug this SHIELD on the follow Arduino boards:

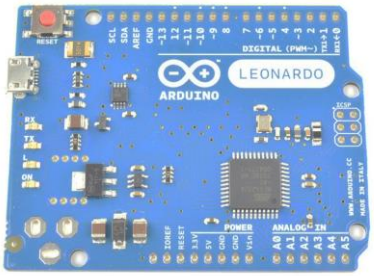
- Diecimila
- Due
- Duemilanove
- Uno
- Leonardo
- Mega2560
- Yun

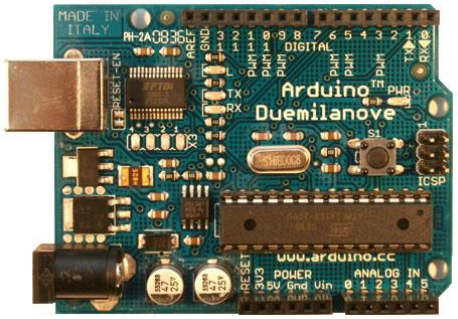


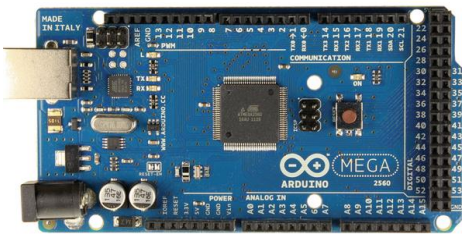












NBDUINO

NARROWBAND SHIELD ARDUINO COMPLIANT

POWER MODES

WARNING!!! Do NOT Connect Arduino to the 12V power supply

1. – USB -

Plug the SHIELD on the Arduino Board, connect USB cable and run the sketch

The module is powered by Arduino's 5v pin and the LiPo battery charger starts to charge (you can see the fixed CHARGE LED, it will turn off when charging is complete

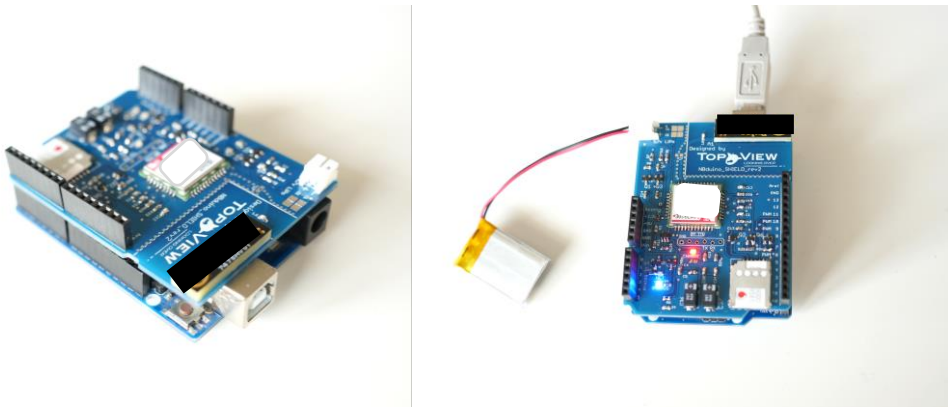


Figure 2: a) the NBduino SHIELD plugged on Arduino UNO, b) The System powered by USB cable and LiPo battery charging

2. - STANDALONE with Arduino -

Plug the SHIELD on the Arduino Board, connect 3.7V LiPo battery and run the scketch

WARNING!!! Do NOT Connect Arduino to the 12V power supply

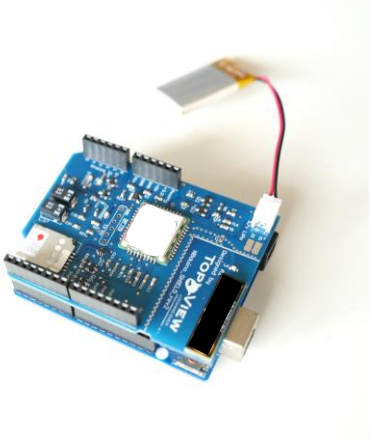


Figure 3: the NBduino SHIELD plugged on Arduino UNO, both powered by 3.7v LiPo battery

3. - STANDALONE without Arduino –

Connect 3.7V LiPo battery, wake-up the SHIELD pushing “P” pad and GND pad together for 500 ms (it also sleep the SHIELD).

You can directly control the module with a FTDI cable by your personal computer.

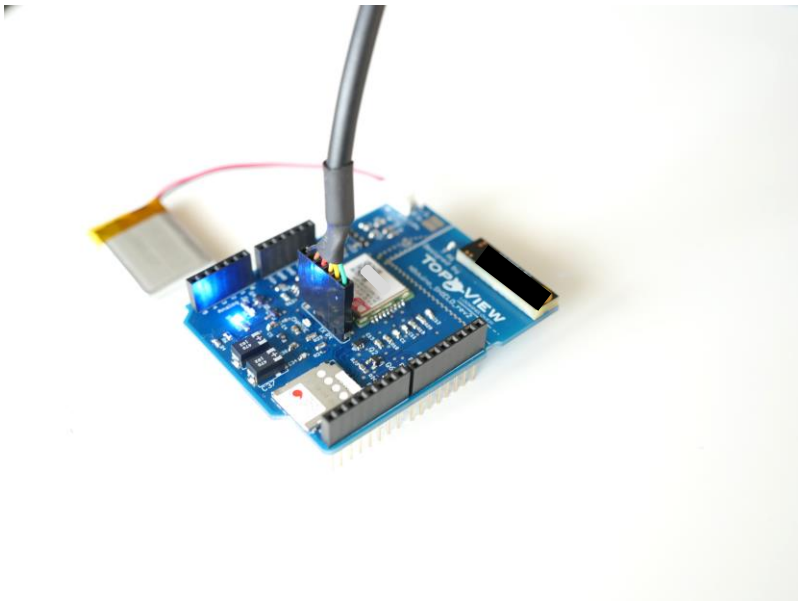


Figure 4: the NBduino SHIELD “standalone” powered by 3.7v liPo battery

NBDUINO

NARROWBAND SHIELD ARDUINO COMPLIANT

LOW POWER

The NB chip on board is the “SIM7020E” by SIMCOM;

it has an ultra low power consumption (5 µA in “Power Save Mode”).

You can find every specification about SIMCOM product inside “SIM7020 Hardware Design_V1.00” and “SIM7020 Series MQTT Application Note”.

NBDUINO

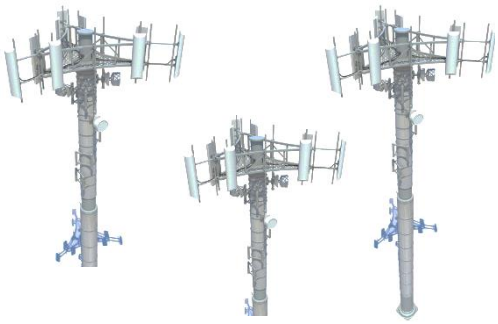
NARROWBAND SHIELD ARDUINO COMPLIANT

LONG RANGE

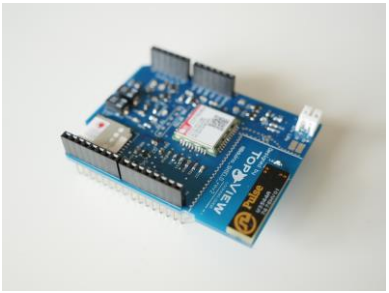
It can be used directly in the cloud using the mobile vendors infrastructure and it's possible to develop its own application to MQTT broker that manages all data.

TOPVIEW provides to his clients the SIM card with some traffic available and space on cloud to manage the data.

Here is the network structure for NB-iot communications:

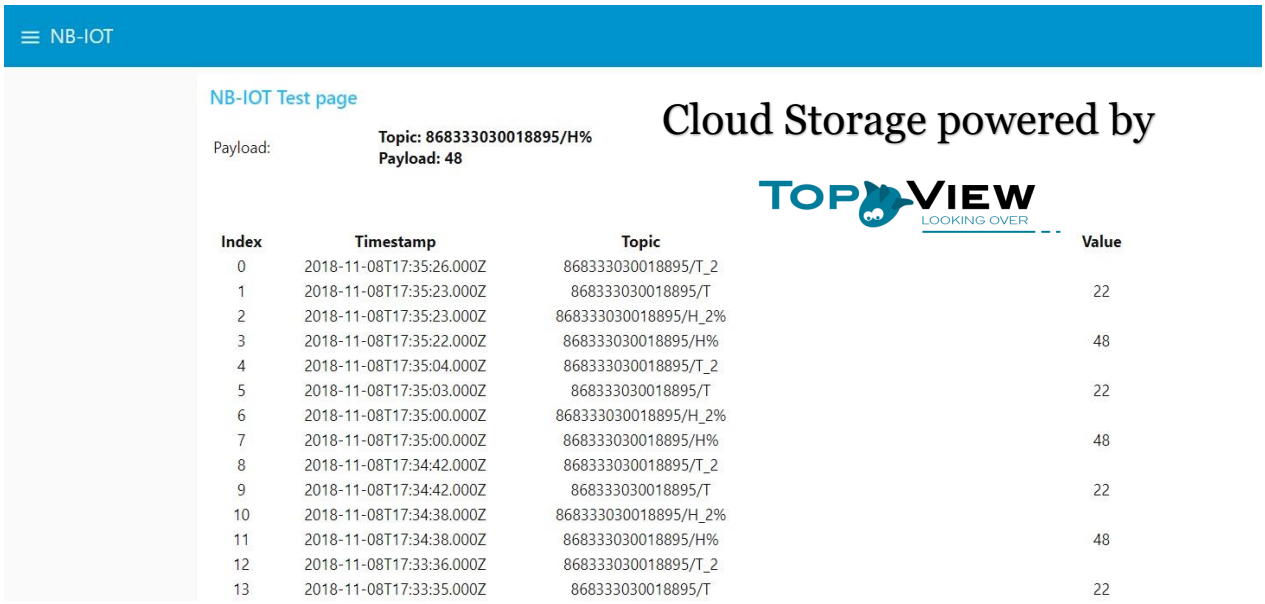


7 Km



cellular LTE Towers

User application



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1	2018-11-08T17:35:23.000Z	868333030018895/T	22
2	2018-11-08T17:35:23.000Z	868333030018895/H_2%	
3	2018-11-08T17:35:22.000Z	868333030018895/H%	48
4	2018-11-08T17:35:04.000Z	868333030018895/T_2	
5	2018-11-08T17:35:03.000Z	868333030018895/T	22
6	2018-11-08T17:35:00.000Z	868333030018895/H_2%	
7	2018-11-08T17:35:00.000Z	868333030018895/H%	48
8	2018-11-08T17:34:42.000Z	868333030018895/T_2	
9	2018-11-08T17:34:42.000Z	868333030018895/T	22
10	2018-11-08T17:34:38.000Z	868333030018895/H_2%	
11	2018-11-08T17:34:38.000Z	868333030018895/H%	48
12	2018-11-08T17:33:36.000Z	868333030018895/T_2	
13	2018-11-08T17:33:35.000Z	868333030018895/T	22

NBDUINO

NARROWBAND SHIELD ARDUINO COMPLIANT

CLOUD STORAGE

TopView provides a cloud service (optional) if it is required, you can see your data on cloud and store it on our database.

We also provide APIs to interface the personal user service with our own.

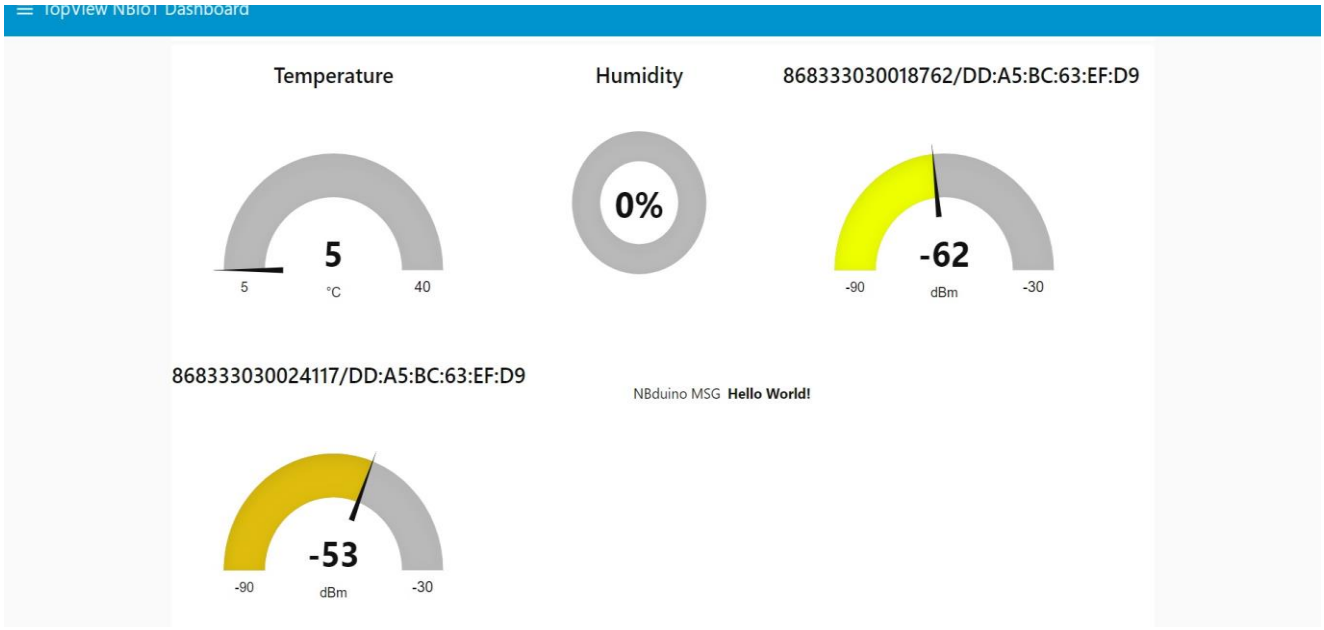


Figura 5: *data storage and management by TopView Dashboard*

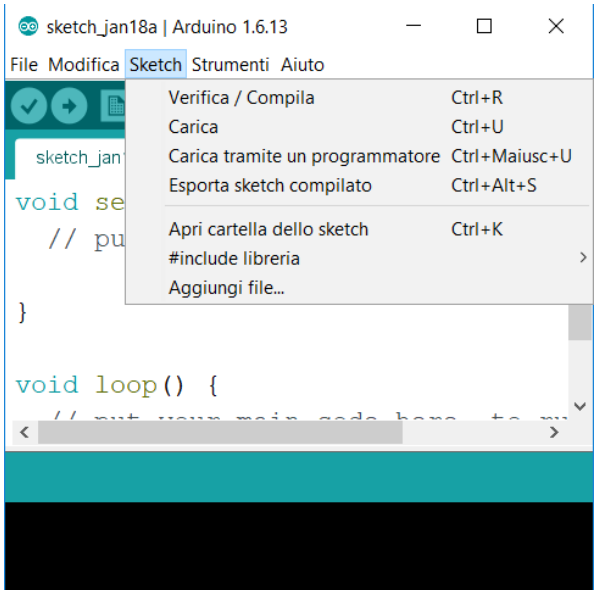
NBDUINO

NARROWBAND SHIELD ARDUINO COMPLIANT

Reference

https://github.com/TopViewsrl/NBduinoShield

1)



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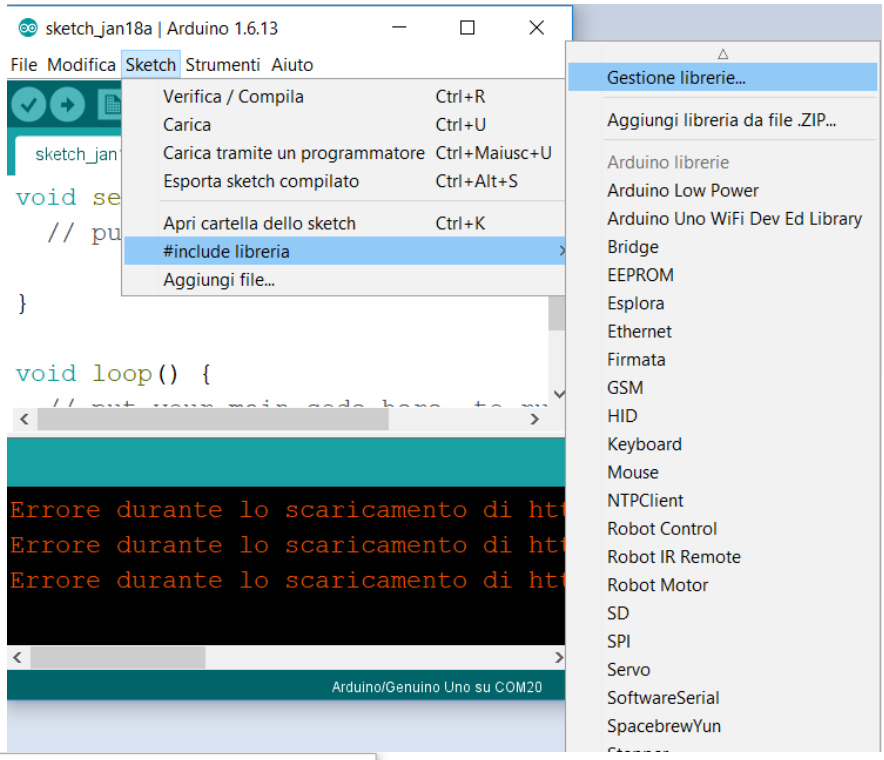
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Carica Ctrl+U
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#include libreria
Aggiungi file...
Gestione librerie...
Aggiungi libreria da file .ZIP...
Arduino librerie
Arduino Low Power
Arduino Uno WiFi Dev Ed Library
Bridge
EEPROM
Esplora
Ethernet
Firmata
GSM
HID
Keyboard
Mouse
NTPClient
Robot Control
Robot IR Remote
Robot Motor
SD
SPI
Servo
SoftwareSerial
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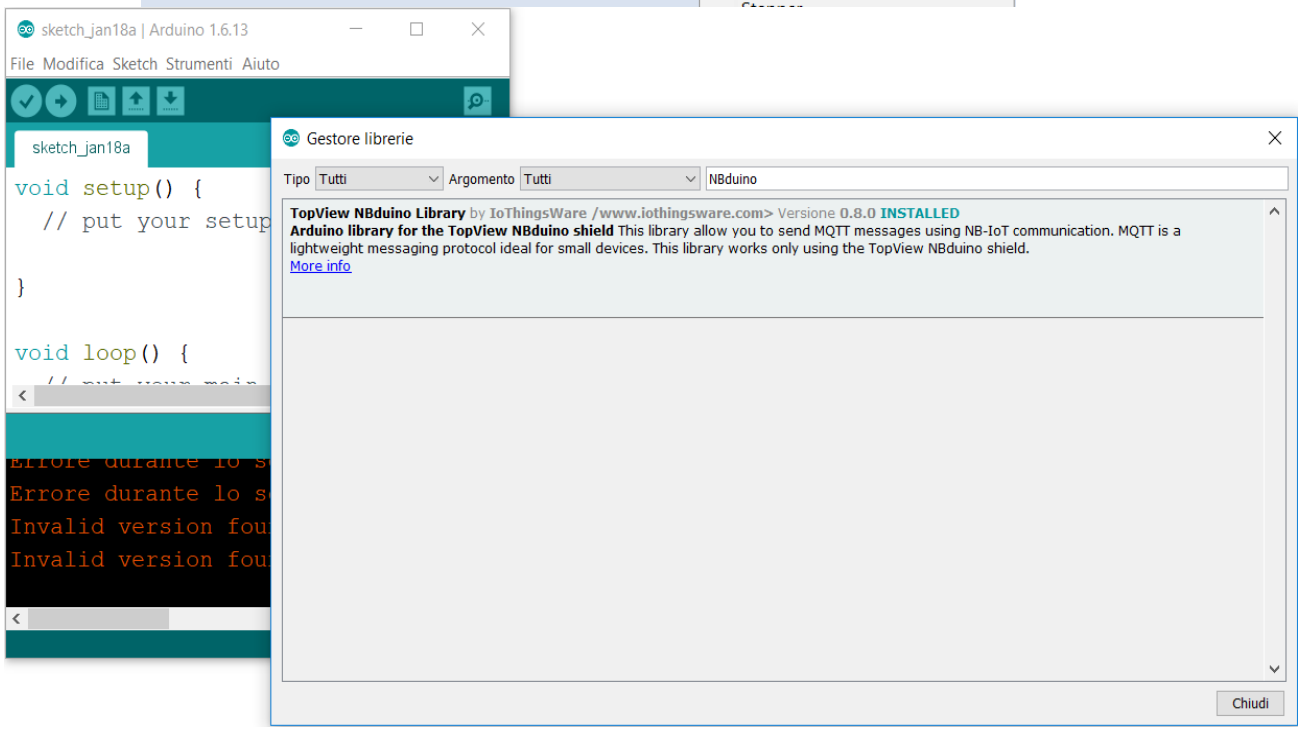
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void setup() {
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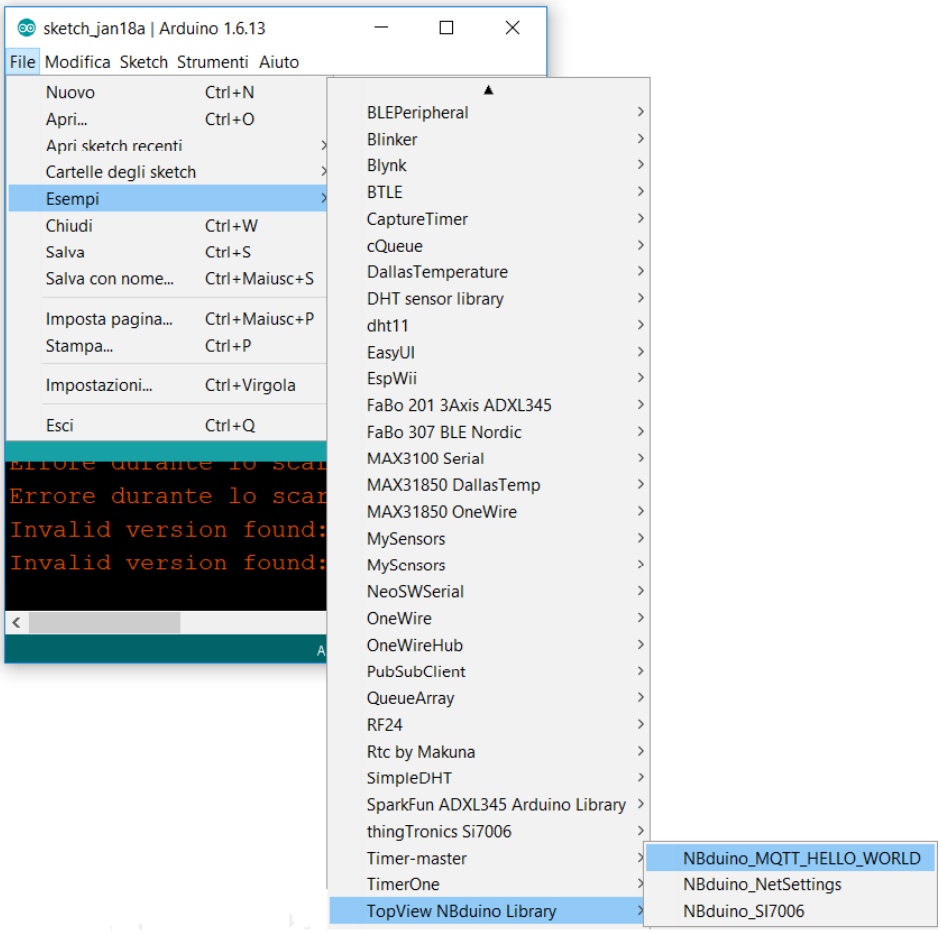
Gestore librerie
Tipo Tutti Argomento Tutti NBduino
TopView NBduino Library by IoThingsWare /www.iothingsware.com> Versione 0.8.0 INSTALLED
Arduino library for the TopView NBduino shield This library allow you to send MQTT messages using NB-IoT communication. MQTT is a lightweight messaging protocol ideal for small devices. This library works only using the TopView NBduino shield.
More info
Chiudi

4)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Blinker
Blynk
BTLE
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DallasTemperature
DHT sensor library
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EasyUI
EspWii
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