About the UnaShield_V2S

The UnaShield_V2S is a shield design for Arduino UNO R3 platform with key features as …

(1) SIGFOX Module – WISOL WSSFM10R

(2) Accelerometer (G-Sensor) – NXP MMA8451Q

(3) Temperature/Humidity/Pressure Sensor – BOSCH BME280

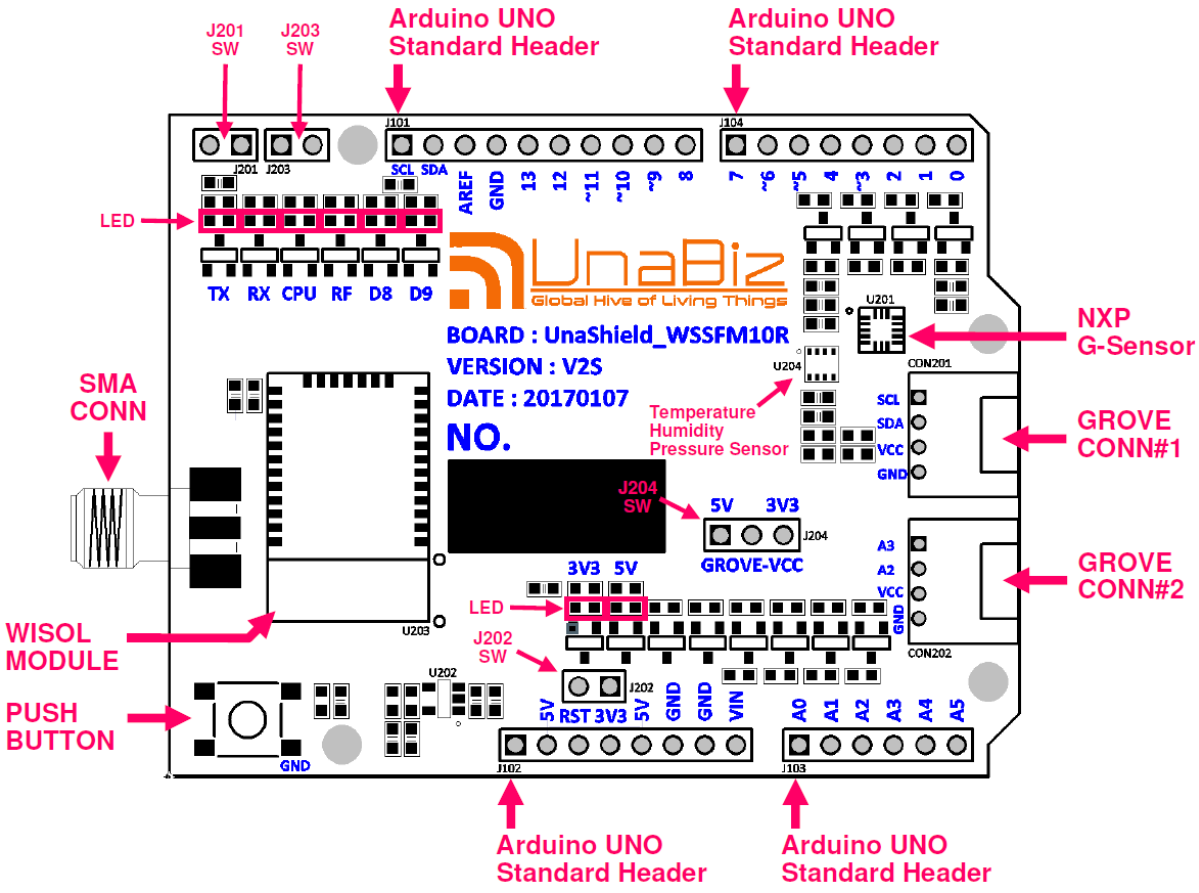
(4) LED Indicators with ON/OFF Switch

(5) Two Grove Connectors with Level-Adjustable Switch

(6) One Push Button

The top-layer view of UnaShield_V2S is captured and features describes below.

【TOP-View】



【Description】

(1) SMA Connector

The SMA connector is used to connect antenna. In order not to damage the WISOL module, always connect an antenna before fire a SIGFOX message. Much better to connect the antenna before the whole platform is powered on.

(2) WISOL Module

UnaShield_V2S is dedicated for WISOL module WSSFM10R series, which connects to MCU of Arduino UNO R3 platform via UART interface.

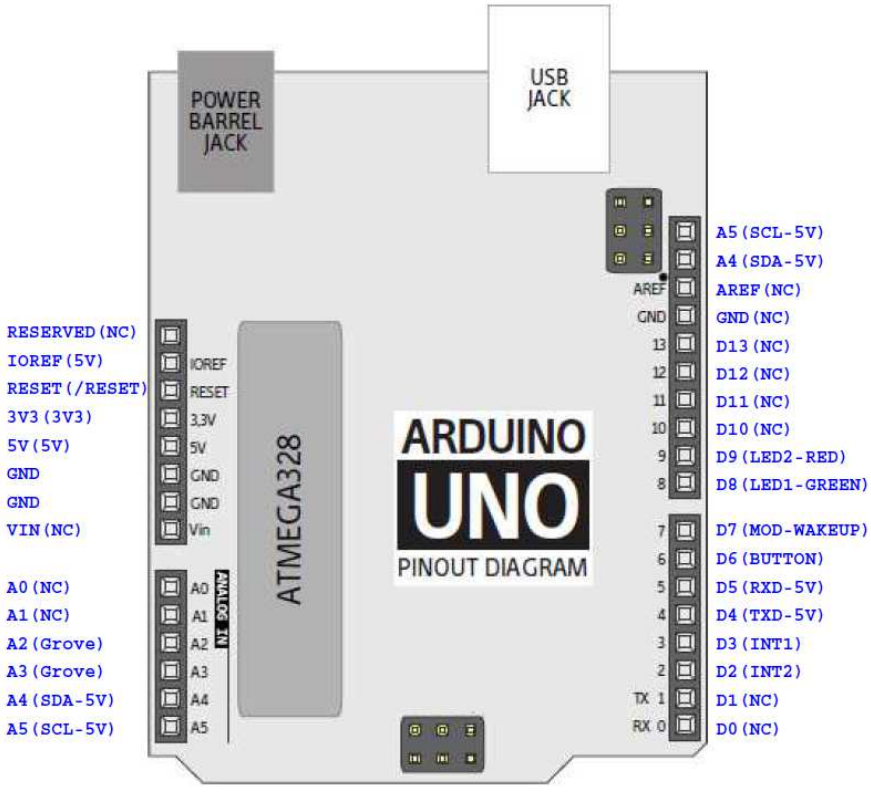
(3) Push Button

A tact-switch is connected to D6 of the Arduino UNO R3 Platform.

(4) Arduino UNO Standard Header

There are four Arduino Standard headers. The pin definition is printed on the silkscreen of the UnaShield_V2S for convenience usage. For more detailed pin usage, please check the specification of Arduino UNO R3.

<u>Pin mapping between Arduino UNO R3 & UnaShield_V2S</u>



* Expression of Pin Connection
Expression : Arduino Pin Definition (Connection to UnaShield)
EX : A5(SCL-5V) => Assign A5 as the I2C-SCL with 5V DC level.

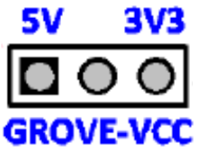
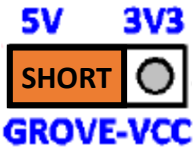
(5) Grove Connector

UnaShield_V2S equips with two Grove Connectors. Users can plug-in the sensor module with grove interface to build the IoT prototype easily. The control interface of these two Grove Connectors are different;

Grove Connector #1：I2C interface with SCL & SDA pins of Arduino UNO R3

Grove Connector #2：PWM interface with A2 & A3 pins of Arduino UNO R3

Each Grove Connector has a ground pin, GND, and a power pin, VCC. The VCC voltage can be altered between 3.3V and 5V by J204 configuration.

Grove-VCC Voltage	Floating	5V	3.3V (Default)
J204 Configuration			

(6) LED Indicator & Manual Switches

There are eight LEDs used to indicate some UnaShield_V2S. A few switches, 2.54mm pin headers, are used to enable/disable the indication function by the 2.54mm pin jumper to short circuit to save more powers when the indication isn't necessary.

a. J201 – the switch for LED status of WISOL module (TX, RX, CPU & RF)

Indication Function	Disabled	Enabled (Default)
J201 Configuration		

b. J202 – the switch for LED status of onboard powers (3V3 & 5V)

Indication Function	Disabled	Enabled (Default)
J202 Configuration		

c. J203 – the switch for LED status of GPIO Control (D8 & D9)

Indication Function	Disabled	Enabled (Default)
J203 Configuration		

(7) I2C Interface

I2C interface is a two-wire and bi-directional protocol, which consists of one data line (SDA) and one clock (SCK). I2C works in the daisy-chain configuration, so one master device can communicate with more than one slave device by the unique addressing. Not only the two on-board sensors, but also the **Grove Connector #1** are linked by a unique and alternative I2C address code by hardware setting.

a. NXP Accelerometer (G-sensor) – MMA8451Q

SA0	I2C Address	Default
LOW	0x1C	V
HIGH	0x1D	

b. BOSCH Temperature/Humidity/Pressure Sensor – BME280

SD0	I2C Address	Default
LOW	0x76	V
HIGH	0x77	

c. Grove Connector #1

Depending on the sensor connected through the Grove Connector #1, the I2C address should be set to an un-used one to avoid the address confliction.