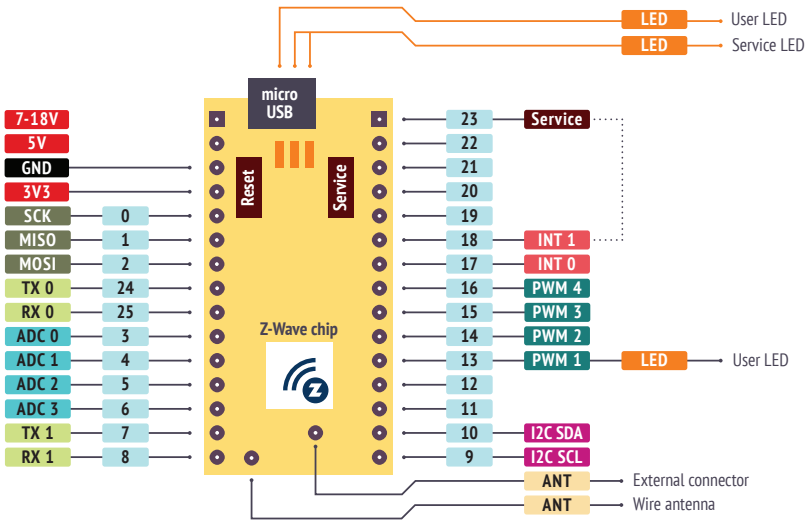
MAKES Z-WAVE OPEN



- Power Pin
- GND Pin
- Digital Pin
- Analog Read Pin
- Analog Write Pin
- UART Pin
- SPI Pin
- Interrupt Pin
- I2C Pin
- LED
- Button

ZUNO

powered by Z-WAVE.ME
BUILDS THE SMART HOME

Developed by Smart Systems Ltd
42 Bolshoy boulevard,
Skolkovo Innovation center,
143026 Moscow, Russia

Produced by Smart Devices Ltd
build. 10A/1, 1905 Goda str.,
123022, Moscow, Russia
z-uno@z-wave.me

Thank you for purchasing Z-Uno 2!

Here are a few steps to help you get started:

1. Unpack your Z-Uno 2
2. Connect the board to the USB port of your computer
3. Confirm the LED is blinking. That's because Blink demo sketch is already loaded inside
4. Open your Z-Wave controller user interface
5. Start Inclusion (Add) mode on your controller
6. Start Learn Mode on Z-Uno 2 using triple click on the Service Button
7. Confirm the device gets included in the Z-Wave network
8. Check the sketch functionality — changing dimmer value should change LED blinking rate
9. Congratulations! Your Z-Uno 2 is up and running

Start writing sketches

with Arduino IDE

1. Download the latest Arduino IDE from **https://www.arduino.cc/en/software**
2. Follow instructions on **https://z-uno.z-wave.me/arduino-install** to install Z-Uno 2 package for Arduino IDE and Z-Uno 2 drivers for your platform

with VS Code

1. Download the latest VS Code from **https://code.visualstudio.com/download**
2. Follow instructions on **https://z-uno.z-wave.me/vs-code-install** to install Z-Uno 2 package for VS Code and Z-Uno 2 drivers for your platform

3. Update your Z-Uno 2 board to the latest version, using «Burn Bootloader» menu item
4. You can found many basic and advanced examples on **https://z-uno.z-wave.me/examples/**
5. Explore a whole new world of knowledge on **http://z-uno.z-wave.me/getting-started/**
6. Create new awesome devices, already compatible with more than 1300 existing Z-Wave products!

Z-Wave Transceiver	Silicon Labs ZGM130S
Wireless Range	Min. 40 m indoor in direct line of sight
Dimensionst	39 x 20 x 16 mm
Frequency range	(865...869 MHz): Europe (EU) [default], India (IN), Russia (RU), China (CN), South Africa (EU), Middle East (EU) (908...917 MHz): America, excluding Brazil and Peru (US) [default], Israel (IL) (919...921 MHz): Australia/New Zealand/Brazil/Peru (ANZ), Hong Kong (HK), Japan (JP), Taiwan (TW), Korea (KR)

Blink Sample Code

```
// initial period of the blink is 1 second
byte dimmerValue = 100; // in 10 ms

// add one Switch Multilevel channel
ZUNO_SETUP_CHANNELS(ZUNO_SWITCH_MULTILEVEL(getter, setter));

// this function runs once, when you press reset
// or power the board
void setup() {
  // set digital pin 13 (built-in LED) as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

// this function loops consecutively forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH); // turn the LED on
  delay(dimmerValue * 10);         // wait for timeout
  digitalWrite(LED_BUILTIN, LOW);  // turn the LED off
  delay(dimmerValue * 10);         // wait for timeout
}

// callback function that runs
// when a new value comes from Z-Wave Network
// this is a setter referenced in channel creation
void setter(byte newValue) {
  // save new value in a variable
  dimmerValue = newValue;
}

// callback function that runs when asked for the
// current blink rate from Z-Wave Network
// this is a getter referenced in channel creation
byte getter(void) {
  // return previously saved value
  return dimmerValue;
}
```

FCC statement

Z-Uno FCC ID: 2ALIB-ZMEZUNO2

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
1. Reorient or relocate the receiving antenna.
2. Increase the distance between the equipment and the receiver.
3. Connect the equipment into an outlet on a different circuit to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for assistance.

Use of the shielded cable is required to comply with Class B limits in Subpart B of Part 15 of the FCC rules.
Do not make any changes or modifications to the equipment unless otherwise specified in the manual. If such changes or modifications should be made, it may be necessary to stop the operation of the equipment.

NOTE: If static electricity or electromagnetism causes data transfer to discontinue midway (fail), restart the application or disconnect and connect the communication cable (USB, etc.) again.

Radiation Exposure Statement: This equipment complies with the set out FCC radiation exposure limits for an uncontrolled environment.

Co-location warning: This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

OEM integration instructions: This module has a LIMITED MODULAR APPROVAL, and is intended only for OEM integrators under the following conditions: As a single, non-colocated transmitter, this module has no restrictions in relation to a safe distance from any user. The module shall be only used with the antenna(s) that has/have been originally tested and certified with this module. As long as these conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements necessary for this installed module (for example, digital device emissions, PC peripheral requirements, etc.).

2.2 List of applicable FCC rules
FCC Part15 Subpart C, Section 15.249

2.3 Summarize the specific operational use conditions
The information in this article, including the URL for reference, if there is any change, without prior notice. Documents are provided by the current version without any guarantee responsibility, including merchantability, suitable for any particular purpose or non-infringement guarantees, and any guarantees presented by any proposal, specification, or sample mentioned elsewhere. This document has no any responsibility, including the use of the information within this document produced by the infringement of any patent rights. This document in this, by estoppel or otherwise, grant any intellectual property licensing, whether express or implied license.

The Z-Wave marks shall be owned by the Z-Wave Alliance.

All the mentioned brand names, trademarks and registered trademarks presented in this document are the property of their respective owners, and hereby declare.

It is suggested not to place devices closer than 20 cm from other RF transmitters. Doing that might result in interference and decrease of radio range.

FCC regulatory information:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

End Device Labeling

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID: 2ALIB-ZMEZUNO2" any similar wording that expresses the same meaning may be used.

RF Exposure Compliance

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Part 15B Compliance of End Device

If embedded in another product, the OEM integrator is responsible for ensuring that the host product which is installed and operating with the module is in compliant with Part 15B unintentional Radiator requirements, please note that For a Class B digital device or

peripheral, the instructions furnished the user manual of the end-user product shall include the following or similar statement, placed in a prominent location in the text of the manual:

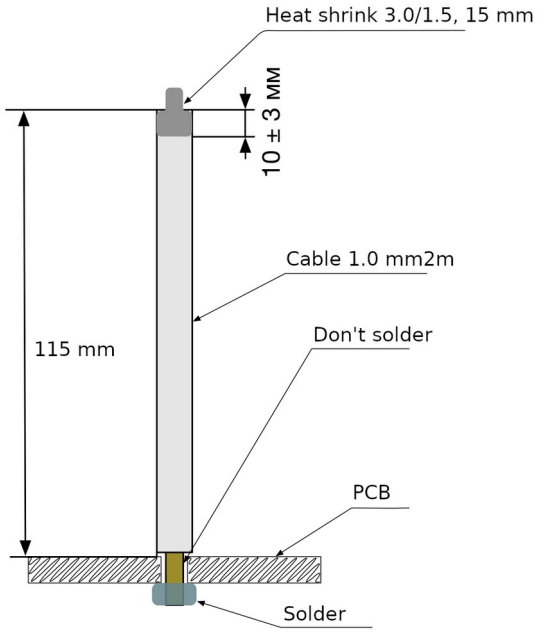
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2.4 Limited module procedures

This module is an unrestricted module

2.5 Trace antenna designs



2.6 RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FCC INFORMATION (additional)

OEM INTEGRATION INSTRUCTIONS:

If embedded in another product, the module must be installed by an OEM in the host equipment such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal antenna(s) that has been originally tested and certified with this module. As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2.7 Antennas
The module has its own wire antenna (included) and doesn't need a host's printed board microstrip trace antenna etc.

2.8 Label and compliance information
In case of usage as part of other product the final end product must be labeled in a visible area with the following: “Contains FCC ID:2ALIB-ZMEZUNO2”. Information that must be placed in the end user manual:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual. The module not applicable Limited module procedures. The module is a Single module and complies with the requirement of FCC Part 15.249.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to IC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the

user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2.9 Information on test modes and additional testing requirements

Module test instructions are provided in the online manual in RF tests section.

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

RADIATED EMISSION TEST (BELOW 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture). For the test results, only the worst case was shown in test report.

RADIATED EMISSION TEST (ABOVE 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is **only** FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on above. If used as part of other product, the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product requires Part 15 Subpart B compliance testing with the modular transmitter installed.