ZigBeeNet™ Software 1.0

Application Note

Using external UID chip with ZigBit

Summary

This application note describes how to use an external Unique ID (UID) chip with ZigBit modules (e.g. for storing the MAC address of the device built around ZigBit).

Intended audience

This paper is intended for system designers and hardware developers who want to add the Unique ID functionality to the devices built around MeshNetics ZigBit modules.

Related documents:

[1] ZigBit™ OEM Modules. Product Datasheet. MeshNetics Doc. M-251~01

[2] ZigBeeNet™ Product Datasheet. MeshNetics Doc. M -252~08

What is UID chip?

Unique ID (UID) chip is an integrated circuit (in this example, manufactured by Maxim/Dallas Semiconductor) that contains a unique 64-bit value. UID value can be retrieved from the chip at any time by means of 1-Wire digital interface (which can be used for working with other 1-Wire devices at the same time).

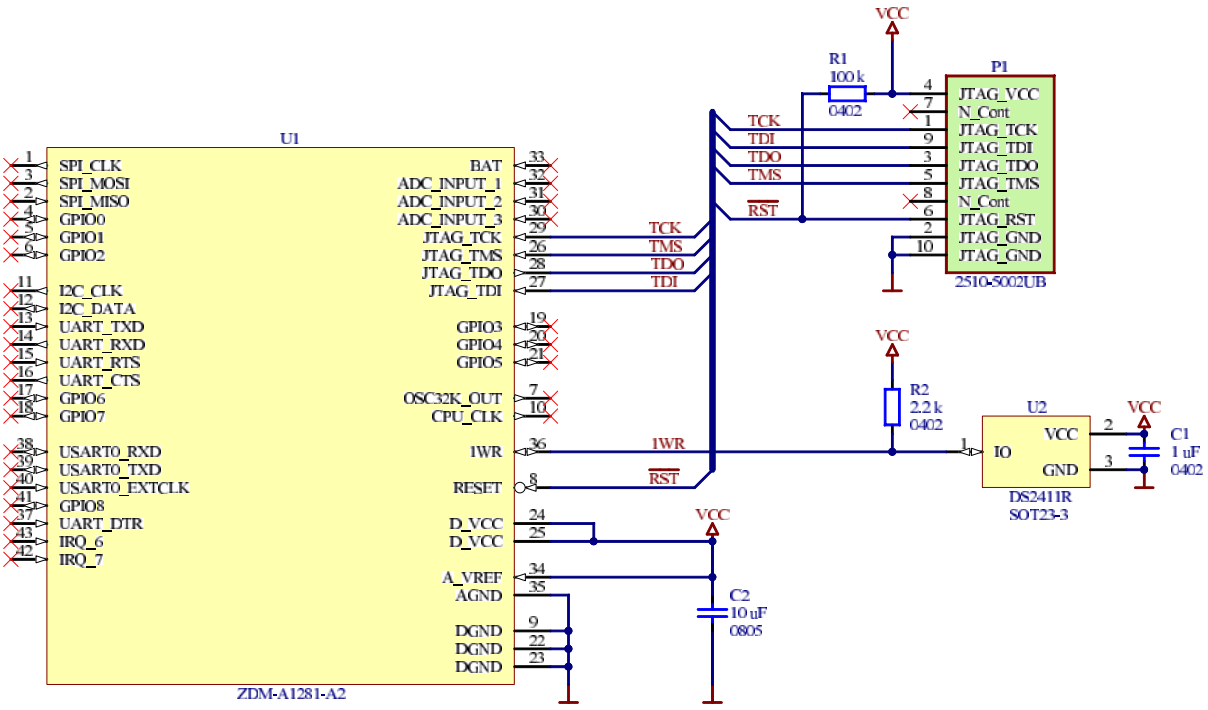
Purpose of the UID chip

Since ZigBit modules [1] do not come programmed with a unique MAC address, system designers have 2 choices:

1. Assign MAC addresses themselves (which presumes purchasing an address space from the IEEE, and assigning individual MAC addresses to all of their devices at the time of manufacturing). This is the best approach in case of large-scale production.

2. Use the UID chips for providing unique 64-bit MAC addresses. This will only require a bit of additional space on your PCB, plus the UID chip itself and some extra circuitry (resistor and capacitor). Very little change to the existing PCB design is required.

The UID chip from Maxim enables the second option: you can mount it on your PCB and read the MAC address value from it when necessary, storing it in the EEPROM of the ZigBit module for future use by the ZigBee stack or your own application. This approach is used, for example, on MeshNetics' MeshBean development board. While the ZigBit module itself has no factory-assigned MAC address, each board has its own unique MAC address by utilizing the external UID chip. The following schematic demonstrates how the UID chip (DS2411R) is connected to the ZigBit module on the MeshBean board and can be used as a reference for your own PCB design.



MeshNetics ZigBee stack **Error! Reference source not found.** is set up to automatically detect the presence of DS2411R on the 1-wire bus. If you choose to use another UID chip, then you must assign the MAC address programmatically at the application start. Please consult the stack's API reference manual for further details.

Conclusion

The UID chip can be used for providing unique 64-bit MAC address at the additional expense and slight modifications to the PCB design. It is up to developers to decide, whether or not this approach is suitable for the system being designed (based on projected manufactured quantities, device prices, etc.)