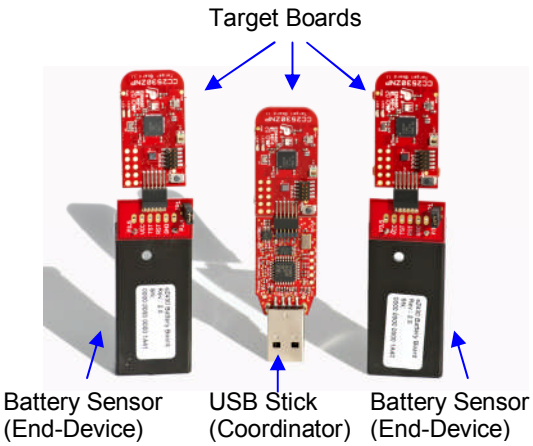
# CC2530ZNP Mini Kit Quick Start Guide

## STEP 1 – Introduction

This guide describes how to set up a CC2530 ZigBee® Network Processor (ZNP) development kit using the preprogrammed devices of the CC2530ZNP Mini Kit.




The ZigBee Network Processor development kit is designed to give a simple introduction to ZigBee wireless networks. The hardware consists of a CC2530 ZigBee device preprogrammed with ZigBee software and an MSP430F2274 microcontroller that controls the ZigBee device.

The development kit demonstrates examples of typical sensor networks with temperature, light, voltage, and movement sensors.

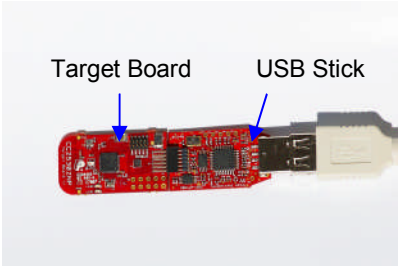
The target board connected to the USB stick is programmed with a **coordinator** sample application. The coordinator sets up the network and configures the ZigBee network parameters. A ZigBee system can only have one coordinator.

The battery powered sensors are **end-devices** that periodically report their key data to the coordinator. The devices can also be programmed as **routers**. Routers are typically used to extend the ZigBee network since they can route messages from other devices. Note that hardware for all the target boards is identical. Each of the boards can be programmed to be coordinator, router, or end-device.

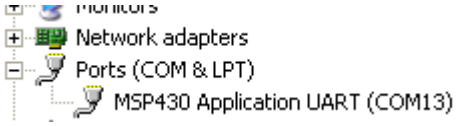
## STEP 2 – Install the sample software and connect the USB stick

Download the CC2530ZNP example software from
http://www.ti.com/cc2530znp

Double-click the installer file to install the example software package and drivers. After installation the default location for the sample software is
C:\Texas Instruments\CC2530ZNP Mini Kit




Connect the USB stick to a USB port on the PC. The Windows new device driver will request a new device driver to be installed. Normally the driver should be detected automatically. If the driver is not detected it can be found at the default location:
C:\Texas Instruments\CC2530ZNP Mini Kit\Drivers

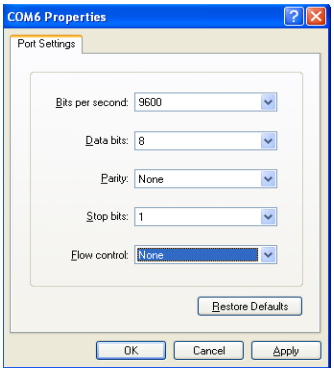



After installation a new COM port will be installed on the PC. To see the COM port number, open the **Windows Control panel – System – Hardware – Device Manager** and check the COM port number under Ports (COM and LPT).

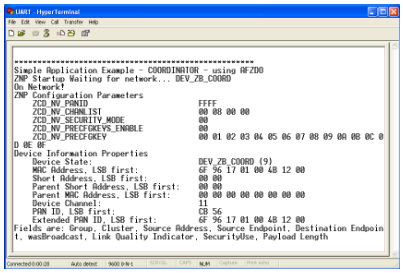
The USB stick serves both as a virtual serial port interface and as debugger/programmer. This means that during normal operation the USB stick should be connected to the **coordinator** target board. The USB stick can also be used to program and debug the **end-device** target boards using the IAR Embedded Workbench.

## STEP 3 – Start the network

The ZigBee coordinator on the USB stick connects to the PC using a virtual USB serial port. The serial port interface can be accessed through a terminal program. The Windows default terminal interface can be found on the **Windows Start menu - Accessories-Communication – Hyperterminal.**



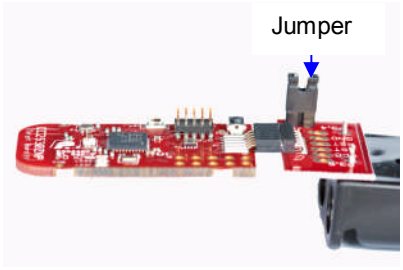

After starting HyperTerminal, give a name to the connection and select the COM port used by the USB stick. In the COM port properties, select 9600 baud, 8 data bits, no parity, 1 stop bit, no flow control



Push the button on the target board to display the status window of the network after the terminal has connected. Information about the ZNP and device is displayed. The coordinator is now ready to connect to other devices on the network. For more information about the message format, please see the Simple Application wiki page:
http://processors.wiki.ti.com/index.php/Simple_Applications_Examples

## STEP 4 – Add end-devices

Insert batteries in one or more of the battery boards and make sure the jumper is connected to power the end-device.

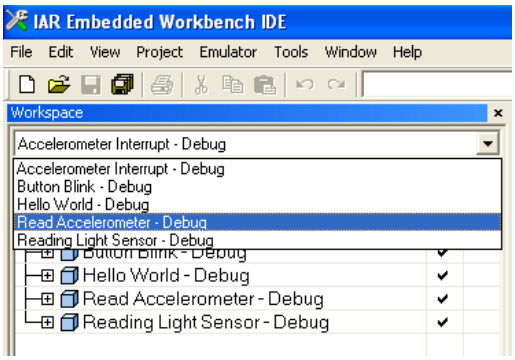



When the end-device sends information to the coordinator, an RX-message will appear in the terminal. The green LED on the end-devices will blink when they are sending a message. If the end device loses connection to the coordinator the green LED will be on constantly.

The message includes network information as well as battery voltage and light sensor readings. The messages are sent every 4 seconds periodically when the board is not moving. If the board is moving the messages are sent when the accelerometer generates an interrupt.

## STEP 5 –Using IAR Embedded Workbench for programming/debugging

To test the software examples, use IAR Embedded Workbench for MSP430. A free "kickstart" edition with 4 Kbyte (16 Kbyte for MSP430F2274 when using the --ks_version linker option) code size limitation is available from http://www.ti.com/iarkickstart. Download the compiler and install the IAR Embedded Workbench. Most of the example codes included with the CC2530ZNP-Mini kit are below 4 Kbyte.




Open one of the four the workspace file (xx.eww) in IAR. It is recommended to start with the **Hardware Interface Examples**. The workspace files are located at C:\Texas Instruments\CC2530ZNP Mini Kit\ZNP Examples\IAR.
For detailed information about the sample applications, please check the CC2530ZNP wiki page:
http://www.ti.com/cc2530znp

Plug the USB stick with a target board into the USB port and press "Download and Debug" from the "Project" menu.

If you need more information how to use the IAR Embedded Workbench for compiling and debugging please see the user's guide: http://www.ti.com/iarkickstart

## STEP 6 – Next steps and more Information

Extensive examples are provided to help you get started. Building and running each example is recommended to become acquainted with the device. Start with the Hardware Interface Examples, then the ZNP Interface Examples, and finally the Communications Examples. Refer to the examples' wiki page for more information.

Use ZNP target board connected to the USB stick to test these examples and keep a UART terminal window open to see the data sent to the PC. The board connected to the USB cable should normally be selected as **Coordinator** while the battery boards are **End-Devices.** The development kits are shipped with the "**Simple Applications**" coordinator and end-devices programmed. Hex files for the MSP430 sample applications and for CC2530ZNP can be found at: C:\Texas Instruments\CC2530ZNP Mini kit\Bin. These files can be programmed with the SmartRF Flash Programmer.

For detailed information about the sample applications please see the following resources:

- CC2530ZNP wiki page: http://processors.wiki.ti.com/index.php/CC2530ZDK-ZNP-MINI
- CC2530ZNP product web page: http://focus.ti.com/docs/toolsw/folders/print/cc2530zdk-znp-mini.html
- CC2530 product web page www.ti.com/cc2530
- ZigBee training material: http://processors.wiki.ti.com/index.php/Low_Power_RF_Solutions_Workshop
- The Low Power RF Online Community has forums, blogs and videos. Use the forums to find information, discuss and get help with your design. Join us at www.ti.com/lprf-forum
- If you want to modify the CC2530ZNP image to fit your application the source code can be found on the Z-stack product page: www.ti.com/z-stack

**Important note:** The CC2530ZNP Mini kit is an educational tool that allows developers to get get familiar with basic ZigBee networks. It is **not** intended as a ZigBee reference design. It is based on a 32Kbyte flash MSP430, because of this it does not support official ZigBee profiles that are required to make ZigBee certified products.

Do you need more than 32Kbyte of flash? The full ZigBee development kit allows development of public ZigBee profiles. Try the ZigBee Application Processor with support for ZigBee profiles: http://focus.ti.com/lit/wp/slyy022/slyy022.pdf. Texas Instruments has ZigBee solution for any application; see the complete offering on www.ti.com/zigbee

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