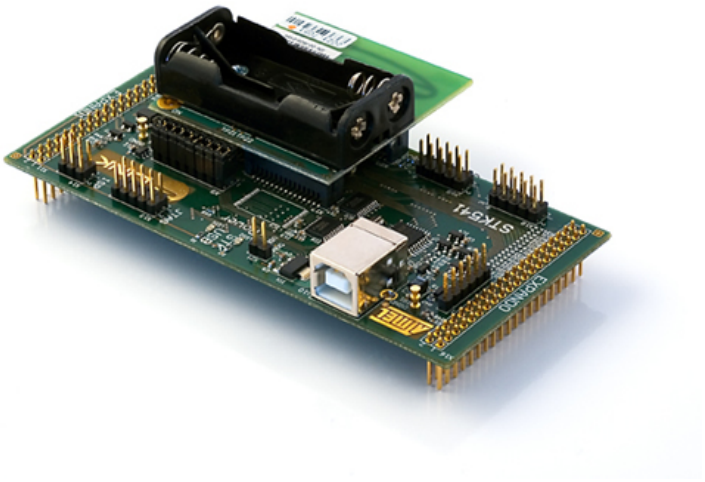
DaintreeNetworks

Using the Atmel AVR Z-Link USB Adapter Board with the Daintree Networks Sensor Network Analyzer

Application Note AN004



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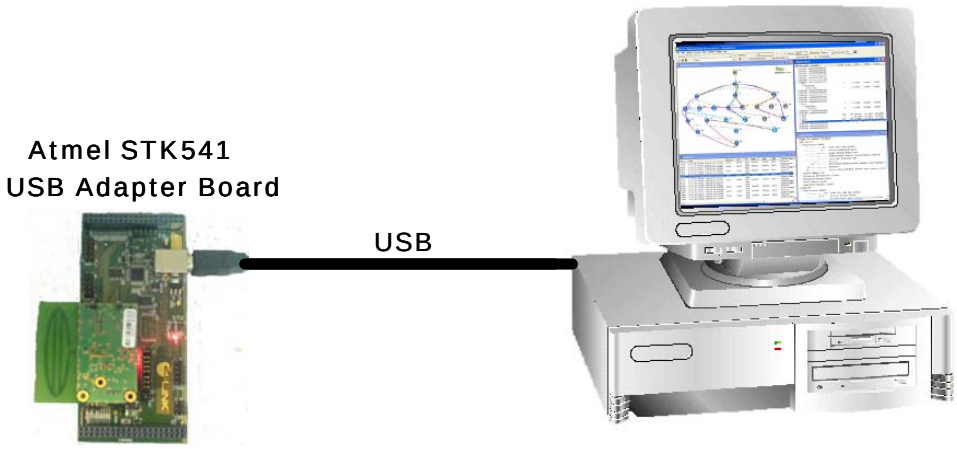
Sensor Network Analyzer Release 2.3 (2008-07-31)

About the Sensor Network Analyzer

The Daintree Networks Sensor Network Analyzer (SNA) combines a powerful protocol analyzer with network visualization, measurements and diagnostics for IEEE 802.15.4™ and ZigBee™ applications. It provides automatic display of network formation, topology changes, and router and coordinator state changes allowing rapid detection of incorrect network behavior and identification of device or network failures.

The SNA works in conjunction with Daintree's 2400E Sensor Network Adapter to provide analysis for small and large networks. With multi-node capture, analysis of large networks across wide areas (such as multiple rooms within a facility) is possible.

This software is compatible with the Atmel Z-Link USB Adapter. This is included as part of the Atmel Z-Link Development Kits. No additional hardware is required.



This application note describes how to use the SNA software with the Atmel Z-Link USB Adapter (with a Radio Controller . You can find out more about the SNA software in general, refer to the following:

- **Quick Start Guide:** Included with the SNA application. From the SNA **Help** menu, select **Quick Start Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > SNA Quick Start Guide**.
- **User Guide:** Included with the SNA application. From the SNA **Help** menu, select **User Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > SNA User Guide**.
- **FAQs and other support resources:** These are available from the Daintree Networks web site at www.daintree.net/support

Getting started

In summary, getting started involves the following steps, each of which is described in detail in the following sections:

1. Install the Sensor Network Analyzer software.
2. Connect the Atmel Z-Link USB Adapter to your PC using a USB cable, and then install USB Drivers.
3. Program the sniffer firmware into the Radio Controller Board.
4. Start the SNA software, and then select the Atmel Z-Link USB Adapter as a capture device.

Once connected and configured, you can use the Atmel Z-Link USB Adapter as a packet sniffer/capture node with the Sensor Network Analyzer.

1. Installing the SNA software

This software contains the USB drivers you need for the Atmel Z-Link USB Adapter, so you need to install it before connecting the board to your PC.

1. Go to www.daintree.net/register to register your software and download the latest release.
2. Enter your email address together with the 15-digit alpha-numeric registration code from the software CD case. After you click Next, an activation code will be emailed to the address you supply.
3. Follow the link provided to download the latest release of the SNA software, plus the *Sensor Network Analyzer Quick Start Guide*. Daintree **strongly** recommends that you download the latest version of the software to ensure you have the latest functionality and fixes.
4. Follow the instructions in the *Quick Start Guide* to install and activate the software.

2. Connecting the USB Adapter

1. Use a USB cable to connect the USB port of the Atmel Z-Link USB Adapter to the USB connector of your PC. The first time you connect this board to your PC, a Found New Hardware wizard will open (USB <-> Serial, USB Serial Converter, USB Serial Port).
2. If asked **Can Windows connect to Windows Update to search for software?** select **No, not this time** and then click **Next**.
3. Select to **Install from a list or specific location**, and then click **Next**.
4. Select to **Search for the best driver in these locations**.
5. Select to **Include this location in the search** and then click **Browse** and select the **Daintree Networks\Drivers\Atmel** directory.
6. Click **Next**. The wizard will locate and start installing the required driver.
7. When a message warns that the software has not passed Windows Logo testing, click **Continue Anyway**.
8. Repeat steps 2–6 when requested to complete the driver installation. A message is displayed when the New Hardware is ready for use.

3. Program "sniffer" firmware to the Radio Controller Board

To use the USB Adapter Board as a capture device ("sniffer") it must include the Radio Controller Board as an attachment. Furthermore, special sniffer firmware must be downloaded to the board.

- Follow the instructions provided with your Atmel Development Kit to download the sniffer firmware to the Radio Controller board via the USB Adapter Board.

  Firmware is provided with the Daintree Networks' Sensor Network Analyzer installation in the "Daintree Networks\Firmware\Atmel" directory.

4. Selecting the Atmel Z-Link USB Adapter as the current capture device

1. In the SNA main window, select the Atmel Z-Link USB Adapter (shown as Atmel STK541 RF Sniffer Board) from the **Source** list.

   If the Atmel Z-Link USB Adapter is not available from the list, click to get the SNA software to search/scan for capture devices and refresh the Source list.

2. Select the **Channel** on which you want to capture traffic.

   Click to start the capture.

Known limitations

If the Atmel Z-Link USB Adapter is in use by the SNA application, it cannot be used concurrently by any other application.

Where to next?

We recommend that you start exploring the SNA menus to get an understanding of the full capabilities of this product.

Detailed descriptions of all options are available in the *Sensor Network Analyzer User Guide*, which you can open from the SNA **Help** menu and the Windows **Start** menu. You can also find FAQs and other supporting information on the Daintree web site at www.daintree.net/support

The Daintree web site includes other useful information, such as

- www.daintree.net/solutions for product information including data sheets and an animated tour
- www.daintree.net/purchase to purchase Daintree products online
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