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AVR ONE!

Quick-start Guide

EVK1101 + Windows®

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Section 2

Section 3

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Section 6

Section 1

Introduction

1.1 General

This document contains a quick-start guide describing how to get up and running using the AVR® ONE! debugger with AVR32 Studio. In addition to the AVR ONE! debugger, you need the following items:

- AVR32 Studio 2.5 software
- AVR32 GNU Toolchain 2.4
- EVK110x Evaluation board

Software and documents can be found at www.atmel.com/avrone

1.2 Requirements

This example was created on a PC running Microsoft® Windows® XP Professional. For other versions of Windows, the behaviour when installing software and drivers may be slightly different.

Please read the AVR32 Studio 2.5 release notes for information about support for other versions of Windows.

Section 2

Quick-start guide (short version)

2.1 Install Hardware and software

- Download and install avr32-gnu-toolchain-2.4.x and AVR32Studio-2.5.x.
- Connect AVR ONE! to power and USB and turn it on.
- Install AVR ONE! USB driver.
- Connect AVR ONE! to the EVK1101 using the 10pin JTAG connector.
- Connect the EVK1101 to power and turn it on.
- Start AVR32 Studio.
- Select a suitable workspace folder to contain your projects.
- Exit from the welcome screen to workbench.
- Right-click in the *AVR32 Targets* view and select **Scan Targets**.
- Select the AVR ONE! and click on the *Properties*-tab.
- Select *Board*-tab. Set Board to **EVK1101**, MCU to **UC3B0256** or **UC3B256ES**, depending on what MCU is mounted on your EVK1101.
- Right-click on the AVR ONE! in the *AVR32 Target* view and select **Chip Erase**. This operation is only needed one time (when the EVK1101 is new).

2.2 Create a demonstration project

- *Select File>New>Example*.
- Select *EVK1101>Components>Accelerometer example*, then **Next**.
- Enter a name for the project, and click **Finish**.
- Right-click on the project in *Project Explorer* view and select **Build Project** (or use Ctrl+B).

2.3 Configure target MCU for a debug session using trace

- When the build process is finished, right-click on the project in the *Project Explorer*-view and select *Debug As>Debug Configurations*.
- In the *Debug*-view, select **AVR32 Application** and click **New**. A new launch configuration will be created and default values will be filled into all fields.
- Select the *Trace*-tab and click **Enable Trace**.
- Select the preferred trace method. In this case we want **Nano Trace**.
- Select the preferred action when buffer is full. In this case we choose **Break, read out and halt**.
- Deselect the option **Break on application buffer access**
- Set Buffer Size. Select **Specify size and location**, then click **Detect**.

2.4 Start the debug session and configure AVR32 Studio 2.5 for trace

- Click the **Debug**-button. Now the program will be loaded into the target, and run until `main()`.
- When the program halts, add at least a trace start-point (Right-click to the left of the source code line in the source code view).

2.5 Start the trace debug session

- Click **Resume** (green *Play* button in Debug view) and wait until the program halts.
- You can now look at the trace data in the *Trace*-view.

Section 3

Software Installation

3.1 Download the software

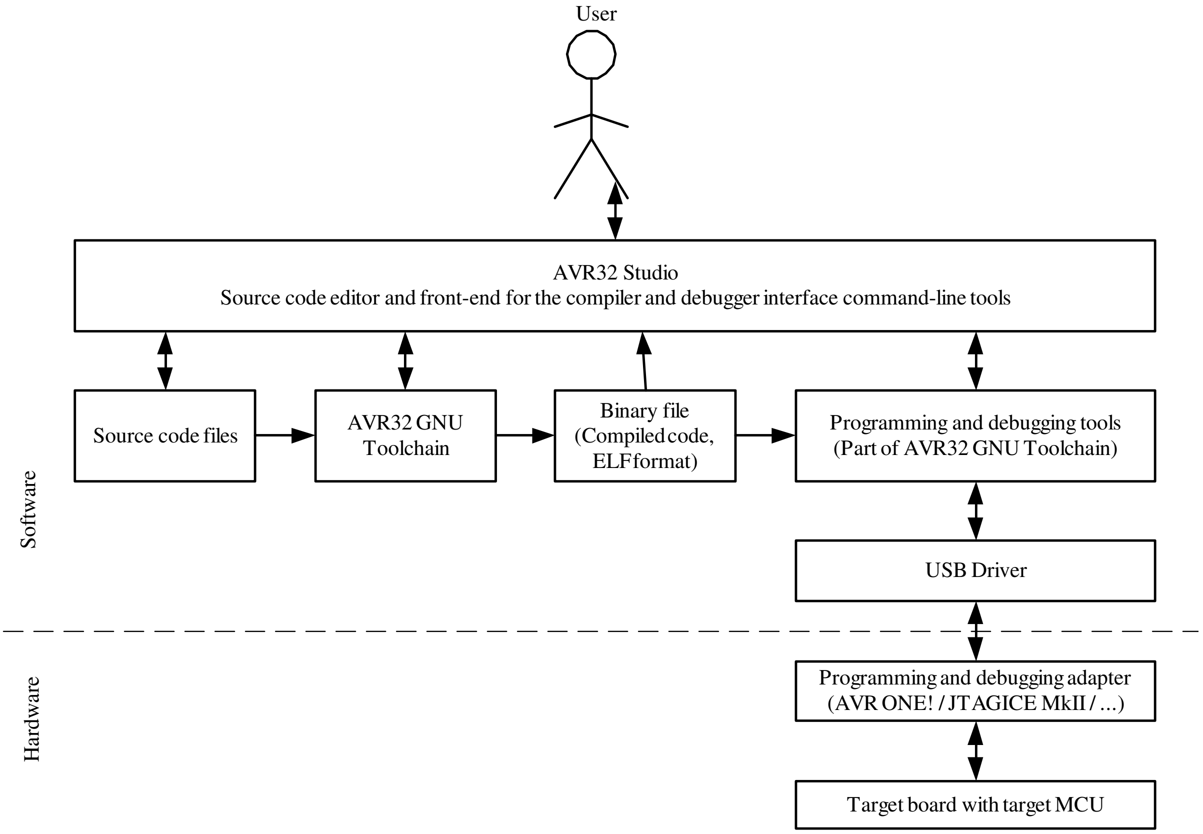
To use the AVR ONE!, you must download and install two software packages:

- avr32-gnu-toolchain-2.4.x.exe
- AVR32Studio-2.5.x.exe

The AVR32 Toolchain is a collection of tools that are required to be able to work with the AVR ONE! It contains command-line tools for controlling the AVR ONE!, and tools to compile code for the AVR32 MCUs.

AVR32 Studio is the front end that uses the AVR32 GNU Toolchain to generate binary code for the target, program the target, and control the debug sessions.

Figure 3-1. Tools structure


User
AVR32 Studio
Source code editor and front-end for the compiler and debugger interface command-line tools
Source code files
AVR32 GNU Toolchain
Binary file (Compiled code, ELF format)
Programming and debugging tools (Part of AVR32 GNU Toolchain)
USB Driver
Software
Hardware
Programming and debugging adapter (AVR ONE! / JTAGICE MkII / ...)
Target board with target MCU

3.2 Download the two installation files to your disk.

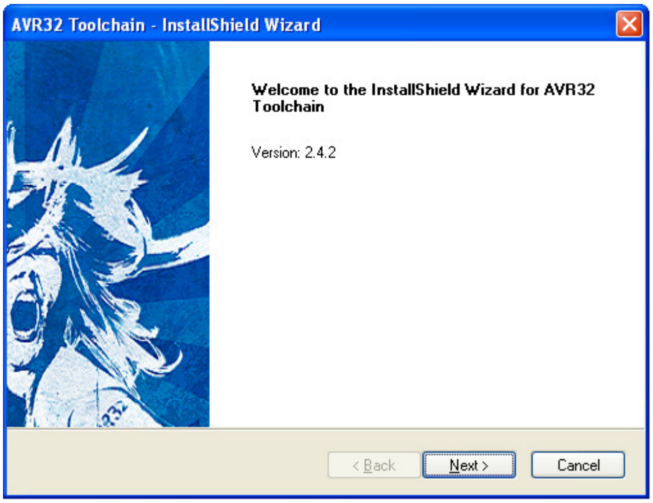
The installation files can be found at this location: **www.atmel.com/avrone**

3.3 Install AVR32 GNU Toolchain

If you have any AVR tools connected to the USB hub, turn them off now. Otherwise the USB driver installation may fail.

Double-click on avr32-gnu-toolchain-2.4.x to start the installation process.

Figure 3-2. AVR32 GNU Toolchain installation welcome



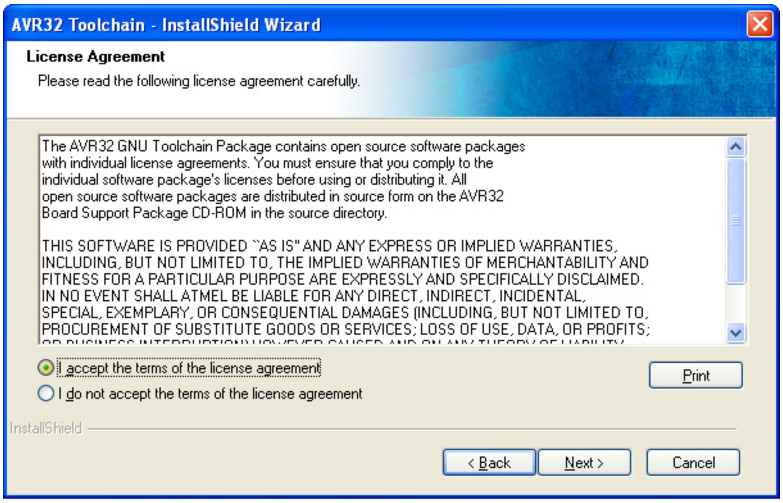
AVR32 Toolchain - InstallShield Wizard

Welcome to the InstallShield Wizard for AVR32 Toolchain

Version: 2.4.2

Click **Next**.

Figure 3-3. AVR32 GNU Toolchain License Agreement form



AVR32 Toolchain - InstallShield Wizard

License Agreement

Please read the following license agreement carefully.

The AVR32 GNU Toolchain Package contains open source software packages with individual license agreements. You must ensure that you comply to the individual software package's licenses before using or distributing it. All open source software packages are distributed in source form on the AVR32 Board Support Package CD-ROM in the source directory.

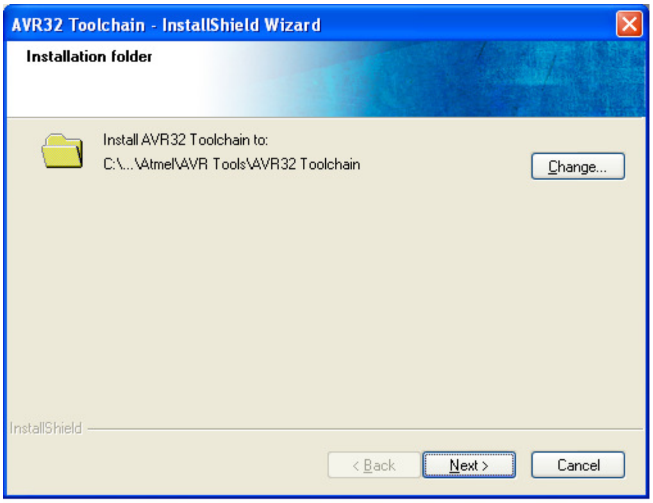
THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY AND SPECIFICALLY DISCLAIMED. IN NO EVENT SHALL ATMEL BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY

● I accept the terms of the license agreement

○ I do not accept the terms of the license agreement

Select **I accept the terms of the licence agreement**, then click **Next**.

Figure 3-4. AVR32 GNU Toolchain installation folder select



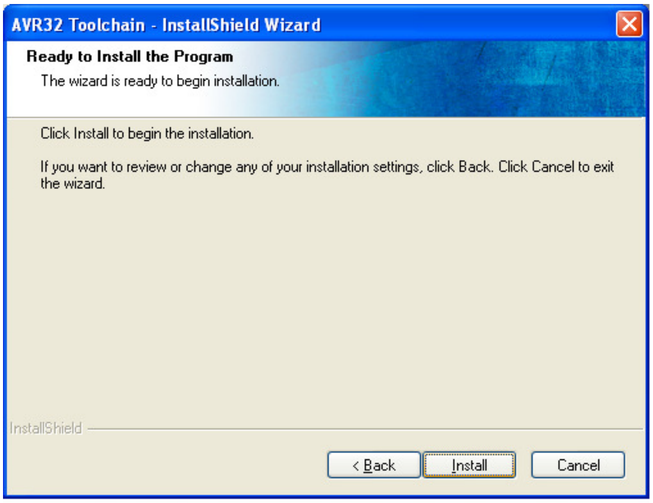
AVR32 Toolchain - InstallShield Wizard

Installation folder

Install AVR32 Toolchain to:
C:\...\Atmel\AVR Tools\AVR32 Toolchain

Check that the installation folder is correct and click **Next**.

Figure 3-5. AVR32 GNU Toolchain installer configuration finished



AVR32 Toolchain - InstallShield Wizard

Ready to Install the Program

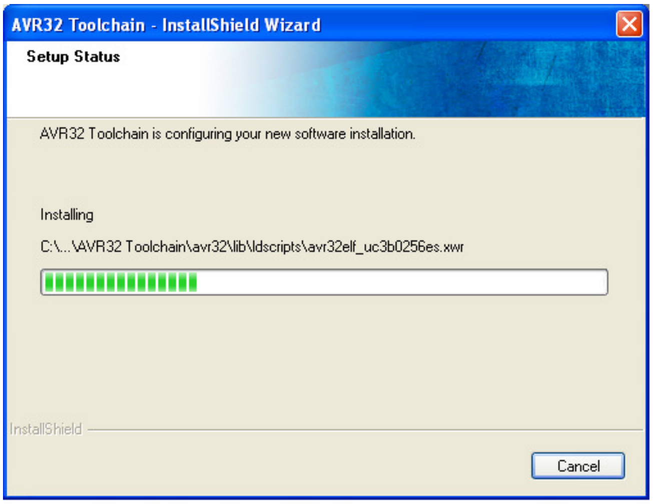
The wizard is ready to begin installation.

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

Click **Install**.

Figure 3-6. AVR32 GNU Toolchain installation progress indicator



AVR32 Toolchain - InstallShield Wizard

Setup Status

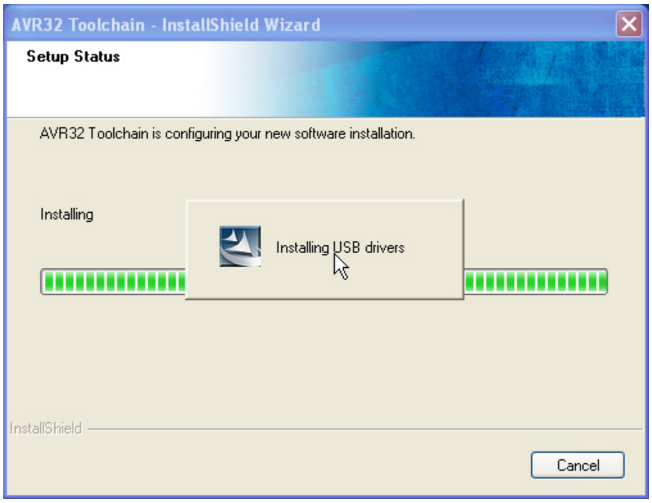
AVR32 Toolchain is configuring your new software installation.

Installing

C:\...\AVR32 Toolchain\avr32\lib\ldscripts\avr32elf_uc3b0256es.xwr

The AVR32 GNU Toolchain is now being installed. As a part of the installation process, USB drivers for all supported programming and debugging adapters are installed.

Figure 3-7. USB Drivers installation start



AVR32 Toolchain - InstallShield Wizard

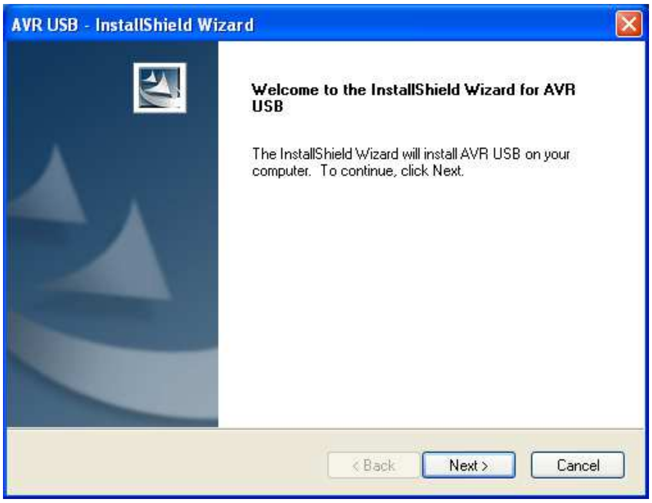
Setup Status

AVR32 Toolchain is configuring your new software installation.

Installing

Installing USB drivers

Figure 3-8. USB Driver installer welcome



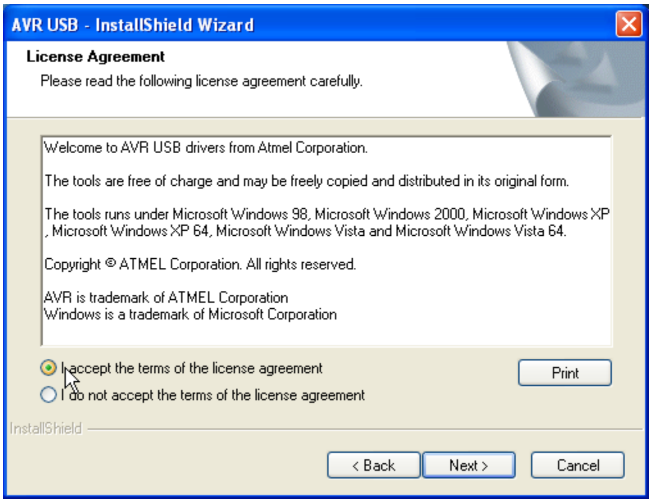
AVR USB - InstallShield Wizard

Welcome to the InstallShield Wizard for AVR USB

The InstallShield Wizard will install AVR USB on your computer. To continue, click Next.

Click **Next**.

Figure 3-9. USB Drivers licence agreement form



License Agreement

Please read the following license agreement carefully.

Welcome to AVR USB drivers from Atmel Corporation.

The tools are free of charge and may be freely copied and distributed in its original form.

The tools runs under Microsoft Windows 98, Microsoft Windows 2000, Microsoft Windows XP , Microsoft Windows XP 64, Microsoft Windows Vista and Microsoft Windows Vista 64.

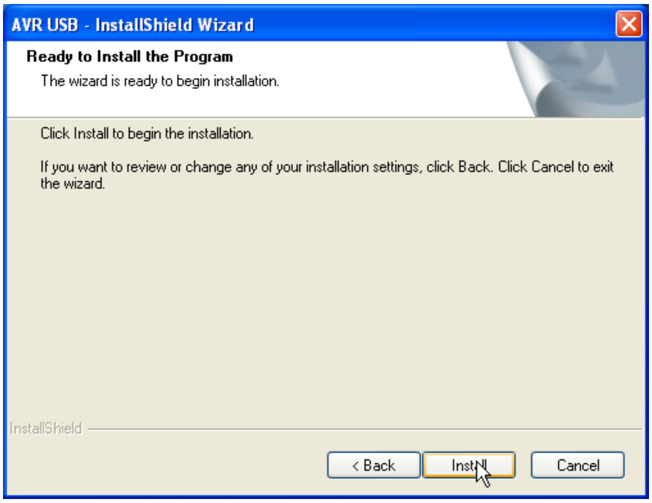
Copyright © ATMEL Corporation. All rights reserved.

AVR is trademark of ATMEL Corporation
Windows is a trademark of Microsoft Corporation

● I accept the terms of the license agreement
○ I do not accept the terms of the license agreement

Select **I accept the terms of the licence agreement**, then click **Next**.

Figure 3-10. USB drivers installer configuration finished



Ready to Install the Program

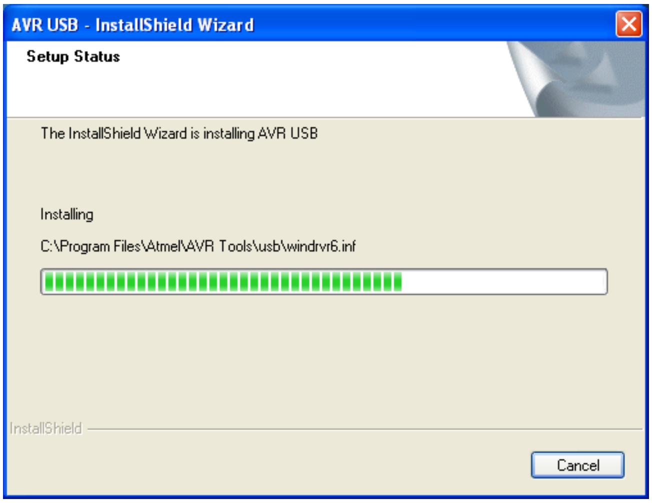
The wizard is ready to begin installation.

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

Click **Install**.

Figure 3-11. USB Drivers installation progress indicator



AVR USB - InstallShield Wizard

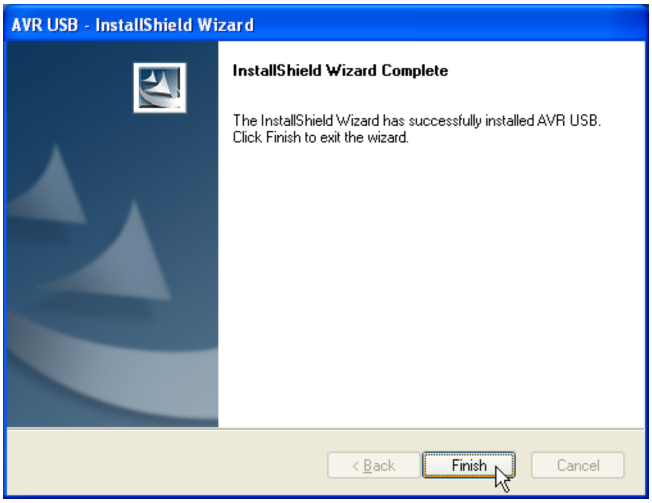
Setup Status

The InstallShield Wizard is installing AVR USB

Installing

C:\Program Files\Atmel\AVR Tools\usb\windrvr6.inf

Figure 3-12. USB Drivers installation complete



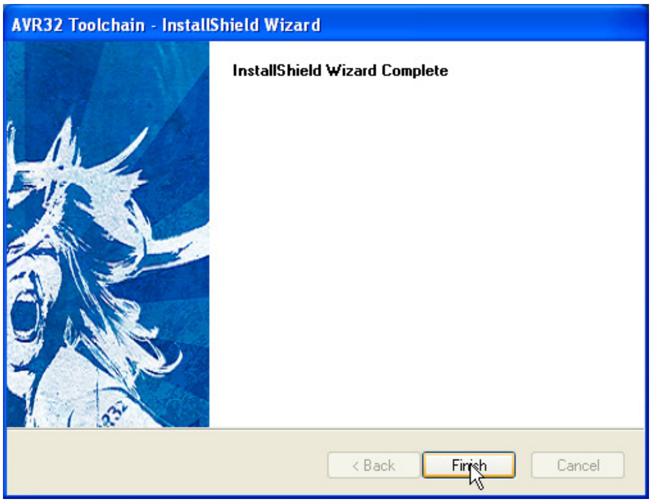
AVR USB - InstallShield Wizard

InstallShield Wizard Complete

The InstallShield Wizard has successfully installed AVR USB.
Click Finish to exit the wizard.

Click **Finish**.

Figure 3-13. AVR32 GNU Toolchain installation complete


AVR32 Toolchain - InstallShield Wizard

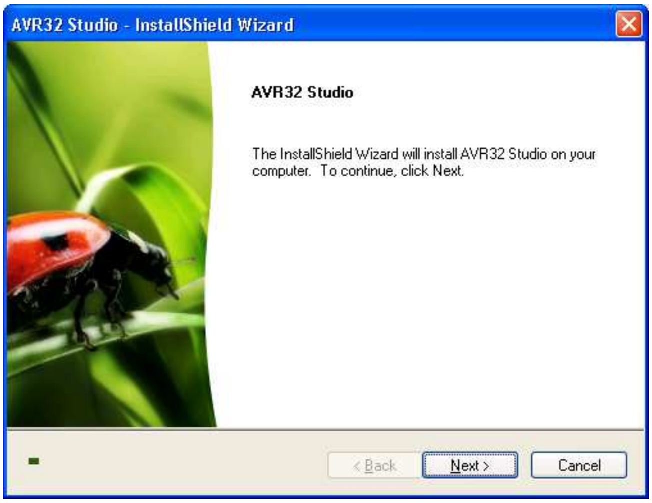
InstallShield Wizard Complete

Click **Finish** to complete the AVR32 Toolchain installation process.

3.4 Install AVR32 Studio 2.5

Double-click on the AVR32Studio-2.5.x.exe file to start the installation process.

Figure 3-14. AVR32 Studio 2.5 installer welcome

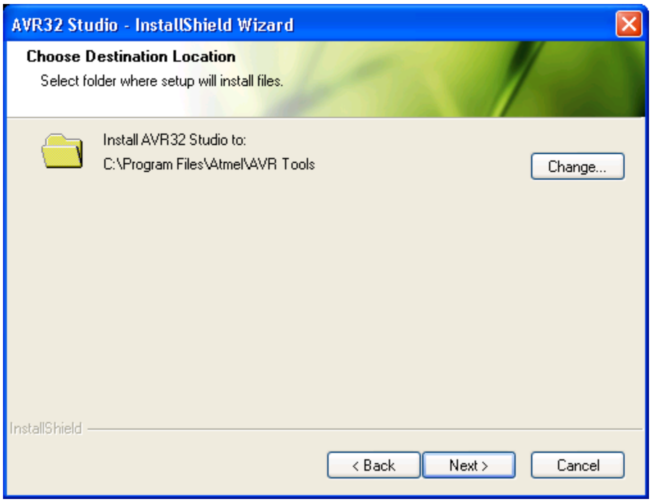

AVR32 Studio - InstallShield Wizard

AVR32 Studio

The InstallShield Wizard will install AVR32 Studio on your computer. To continue, click Next.

Click **Next**.

Figure 3-15. AVR32 Studio installation folder select

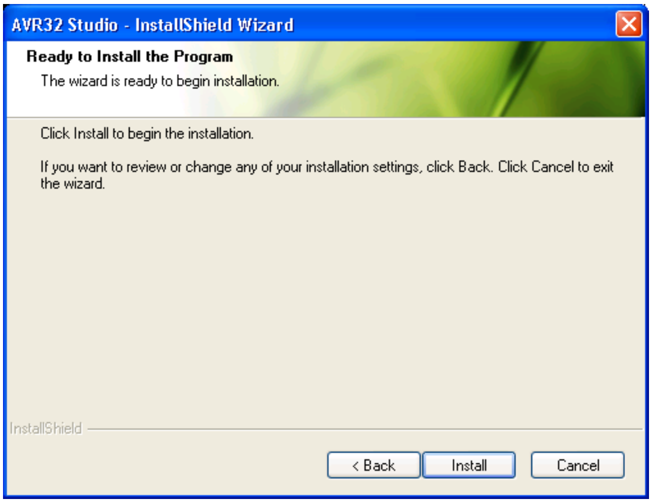


AVR32 Studio - InstallShield Wizard
Choose Destination Location
Select folder where setup will install files.
InstallShield
< Back
Next >
Cancel
Change...

Install AVR32 Studio to:
C:\Program Files\Atmel\AVR Tools

Check that the installation folder is correct and click **Next**.

Figure 3-16. AVR32 Studio installer configuration finished



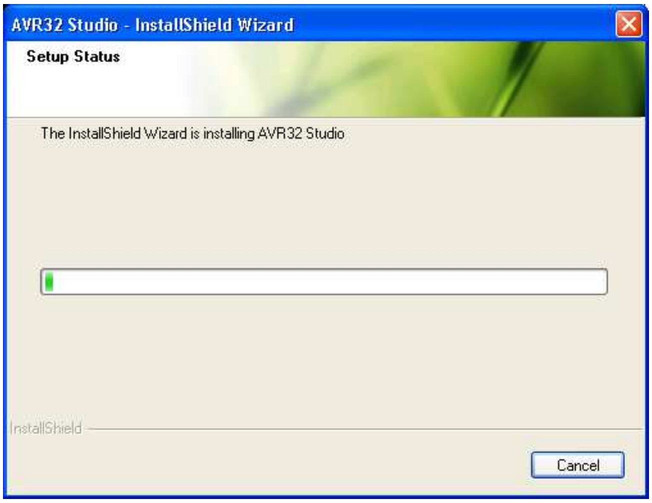
AVR32 Studio - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
InstallShield
< Back
Install
Cancel

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

Click **Install** to start the installation.

Figure 3-17. AVR32 Studio installation progress indicator



AVR32 Studio - InstallShield Wizard

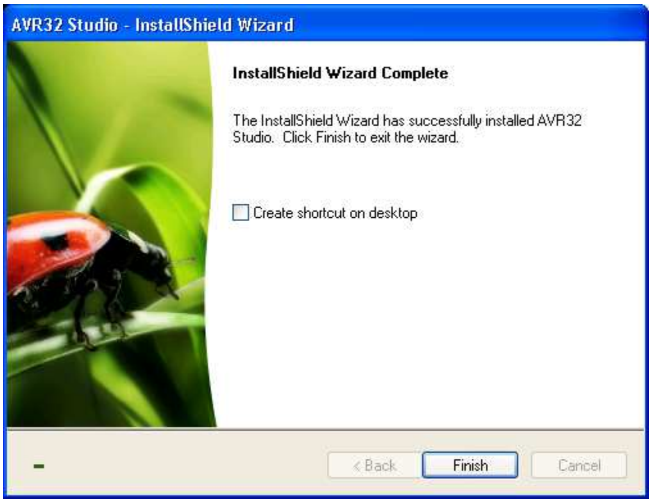
Setup Status

The InstallShield Wizard is installing AVR32 Studio

Wait for the installation process to complete.

If a suitable Java™ runtime is not installed, a Java installer wizard will guide you through the installation procedure.

Figure 3-18. AVR32 Studio installation process complete



AVR32 Studio - InstallShield Wizard

InstallShield Wizard Complete

The InstallShield Wizard has successfully installed AVR32 Studio. Click Finish to exit the wizard.

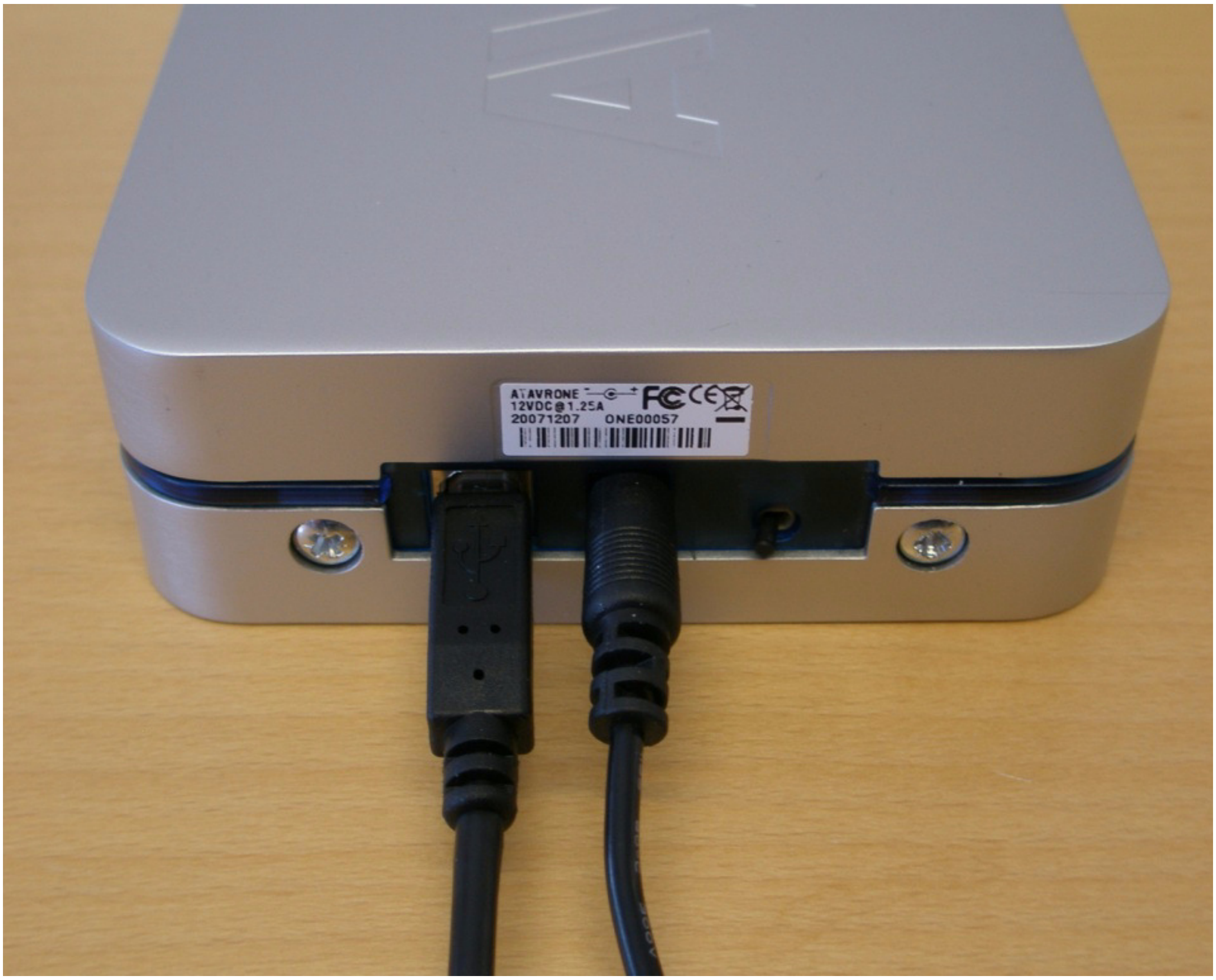
□ Create shortcut on desktop

Tick **Create shortcut on desktop** if you want a shortcut to be created. Then click **Finish**.

3.5 Connect the AVR ONE! to power and USB host

- Connect the AVR ONE! to power using the supplied power supply.
- Connect the AVR ONE! to the USB host (PC) using the supplied USB cable
- Turn on the AVR ONE! using the power switch next to the power connector

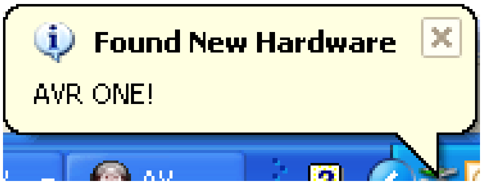
Figure 3-19. AVR ONE! connected to power and USB



3.6 Install AVR ONE! Driver

When the AVR ONE! is powered up and connected to the PC for the first time, the proper USB driver must be installed. Since the PC is keeping track of the serial number of each USB device, this will happen every time a new AVR ONE! is connected to the PC, even if the driver is the same as for all other AVR ONE!s that have been connected previously. This is a property of the operating system, and is not controlled by any Atmel software installed.

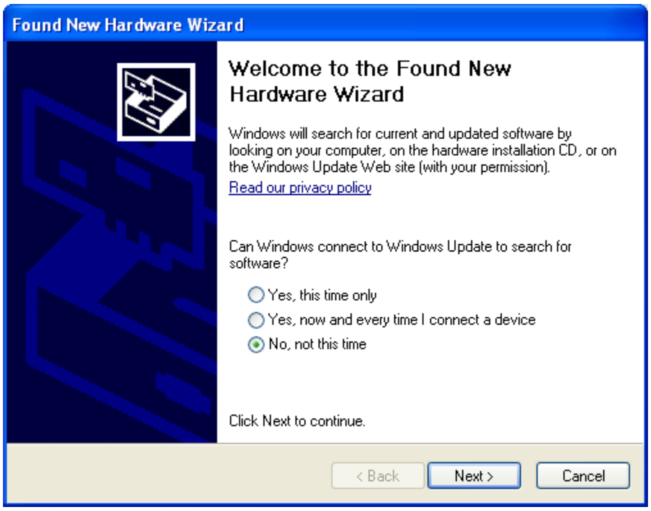
Figure 3-20. "New hardware" notification pop-up



Found New Hardware

AVR ONE!

Figure 3-21. AVR ONE! Hardware installation wizard



Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).

Read our privacy policy

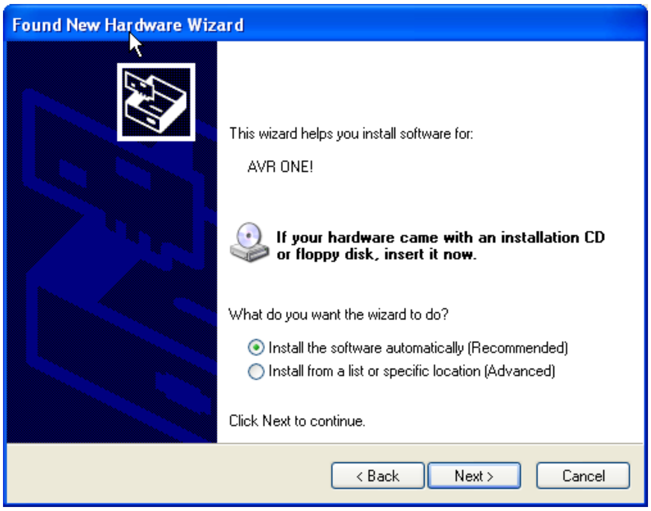
Can Windows connect to Windows Update to search for software?

○ Yes, this time only
○ Yes, now and every time I connect a device
● No, not this time

Click Next to continue.

When the hardware installation wizard pops up, select **No, not this time** and click **Next**.

Figure 3-22. Hardware installation wizard configuration



This wizard helps you install software for:

AVR ONE!

If your hardware came with an installation CD or floppy disk, insert it now.

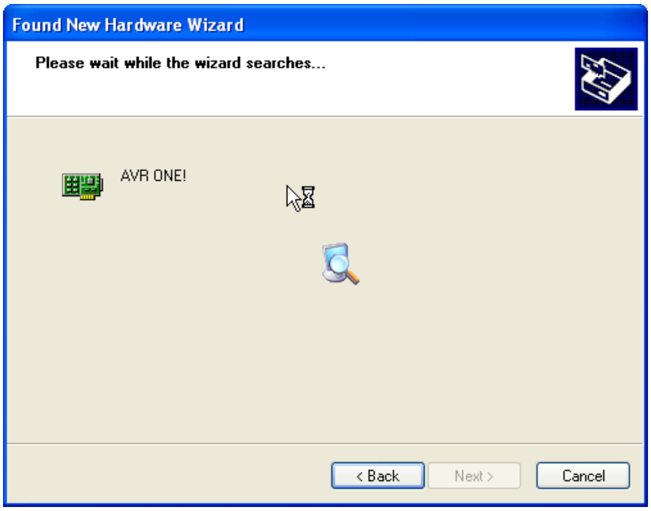
What do you want the wizard to do?

● Install the software automatically (Recommended)
○ Install from a list or specific location (Advanced)

Click Next to continue.

Select **Install the software automatically** and click **Next**.

Figure 3-23. Hardware installation in progress

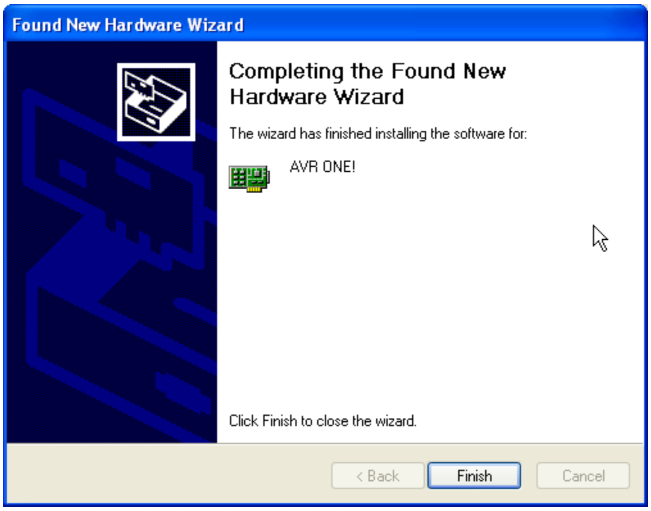


Please wait while the wizard searches...

AVR ONE!

Wait for the installation process to complete.

Figure 3-24. Hardware installation wizard complete



Found New Hardware Wizard

Completing the Found New Hardware Wizard

The wizard has finished installing the software for:

AVR ONE!

Click Finish to close the wizard.

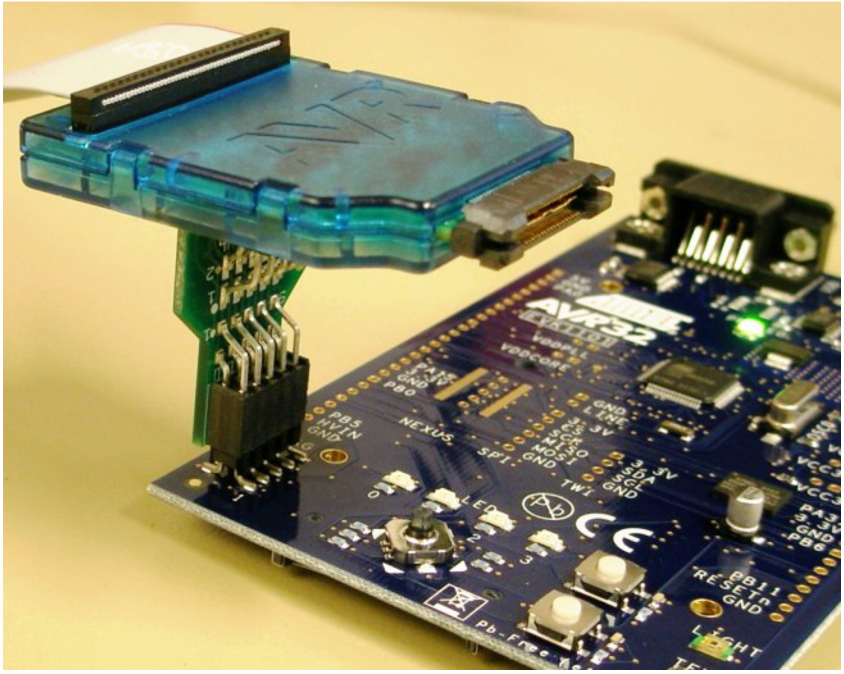
Click **Finish**.

Section 4

4.1 Connect the AVR ONE! to the EVK1101

Connect the AVR ONE! debugger to the EVK1101 evaluation board using the 10 pin JTAG connector. To make it possible to use the joystick while the AVR ONE! is connected to the JTAG connector, the 100mil - 100mil JTAG stand-off adapted can be used.

Figure 4-1. AVR ONE! connected to the EVK1101

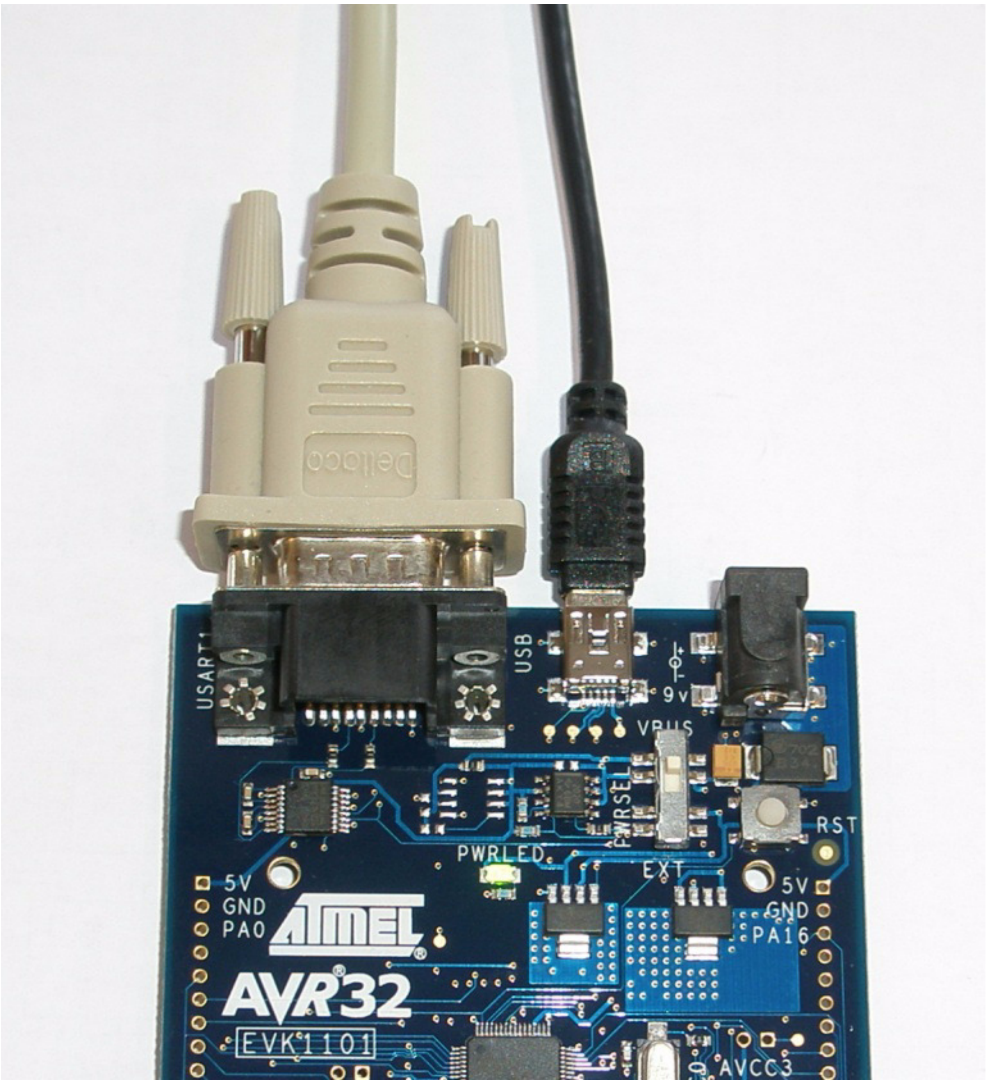


4.2 Connect the EVK1101 to power and RS232

Connect the EVK1101 to power and turn it on. The easiest way to provide power is to use the supplied USB cable. Also connect the RS232 port to your PC using the supplied RS232 cable.

Switch it on by setting the power switch to **VBUS**.

Figure 4-2. Powering the EVK1101 using the USB cable



Note: If the EVK1101 contains the Control Panel Demo Application, you may be requested to install drivers for it. Just cancel this request (you do not need to install this driver).

Section 5

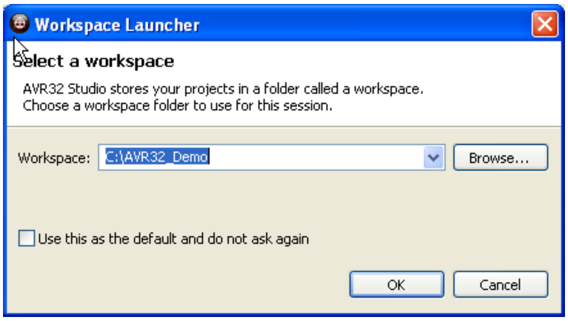
Create demo application

5.1 Start AVR32 Studio

Start AVR32 Studio. Start-up may take a while (because of all the Java libraries being loaded).

Figure 5-1. AVR32 Studio splash screen

Figure 5-2. AVR32 Studio workspace selection



Workspace Launcher

Select a workspace

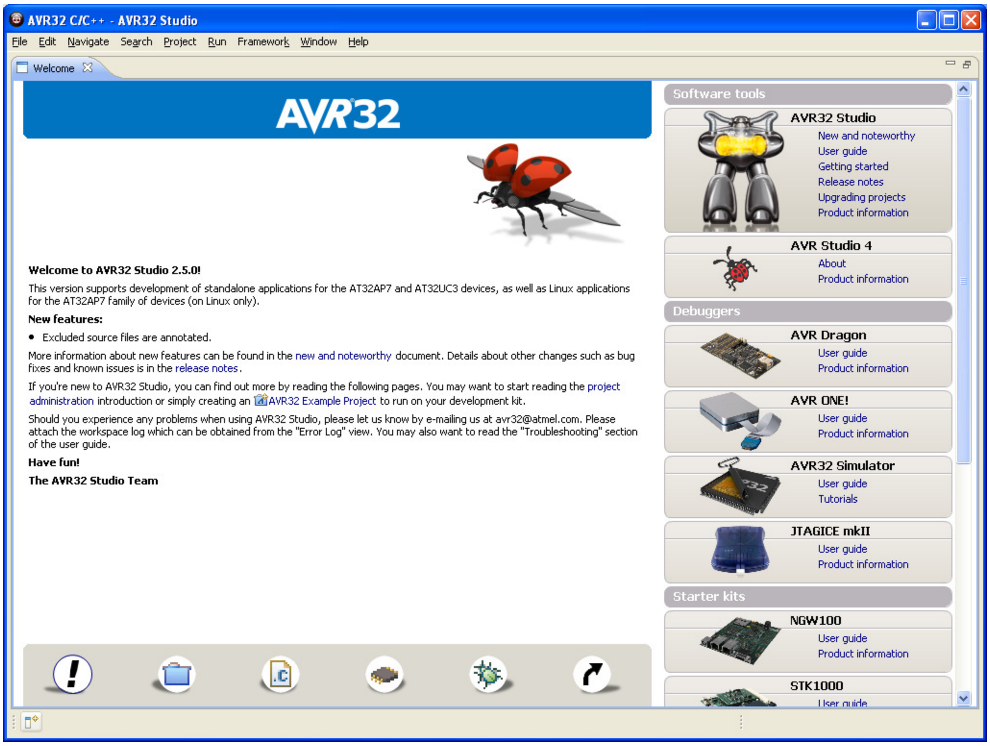
AVR32 Studio stores your projects in a folder called a workspace.
Choose a workspace folder to use for this session.

Workspace: C:\AVR32_Demo

□ Use this as the default and do not ask again

Select a suitable workspace folder for your project files. If you want to use the same folder for your workspace every time you start AVR32 Studio, you should tick the box before clicking **OK**.

Figure 5-3. AVR32 Studio Welcome view



Welcome to AVR32 Studio 2.5.0!

This version supports development of standalone applications for the AT32AP7 and AT32UC3 devices, as well as Linux applications for the AT32AP7 family of devices (on Linux only).

New features:

- Excluded source files are annotated.

More information about new features can be found in the new and noteworthy document. Details about other changes such as bug fixes and known issues is in the release notes.

If you're new to AVR32 Studio, you can find out more by reading the following pages. You may want to start reading the project administration introduction or simply creating an AVR32 Example Project to run on your development kit.

Should you experience any problems when using AVR32 Studio, please let us know by e-mailing us at avr32@atmel.com. Please attach the workspace log which can be obtained from the "Error Log" view. You may also want to read the "Troubleshooting" section of the user guide.

Have fun!

The AVR32 Studio Team

Exit from the welcome screen to the workbench by clicking on the **Close Page** icon (Arrow).

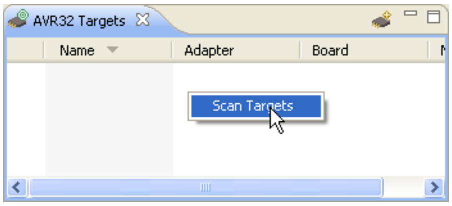
5.2 Configure adapter and target

Before you can use the AVR ONE! and the EVK1101, you have to tell AVR32 Studio what type of equipment is connected to your PC.

“Target” refers to the MCU on the EVK1101 evaluation board, and “Adapter” refers to the tool connecting the target to the PC (in this case, the AVR ONE!).

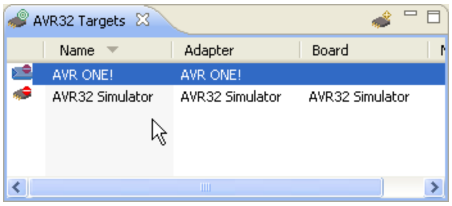
5.2.1 Add and configure the adapter (AVR ONE!)

Figure 5-4. Scan Targets



Right-click in the **AVR32 Target**-view and select **Scan Targets**.

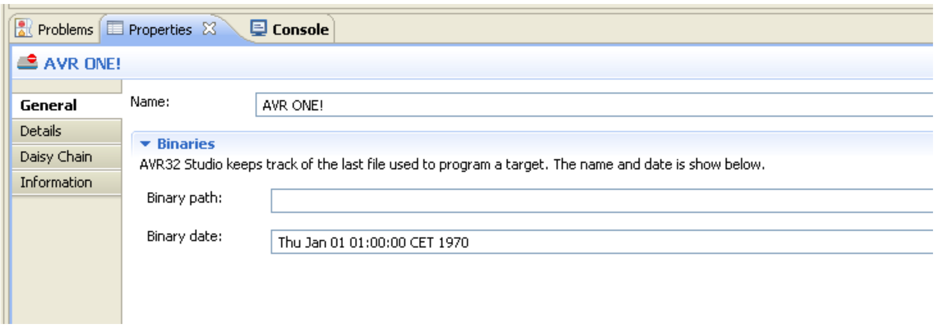
Figure 5-5. Available targets



Name	Adapter	Board
AVR ONE!	AVR ONE!	
AVR32 Simulator	AVR32 Simulator	AVR32 Simulator

Select the AVR ONE!

Figure 5-6. Selecting the properties view



Name: AVR ONE!

AVR32 Studio keeps track of the last file used to program a target. The name and date is show below.

Binary path:

Binary date: Thu Jan 01 01:00:00 CET 1970

Click on the **Properties** tab.

You are now looking at the *Target* properties. If you have several adapters connected at the same time, this is the place where you can give them unique names. Just type the name you want to use in the **Name** field.