
Atmel ATF15xx CPLD ISP Software - ATMISP

Quick Start Tutorial

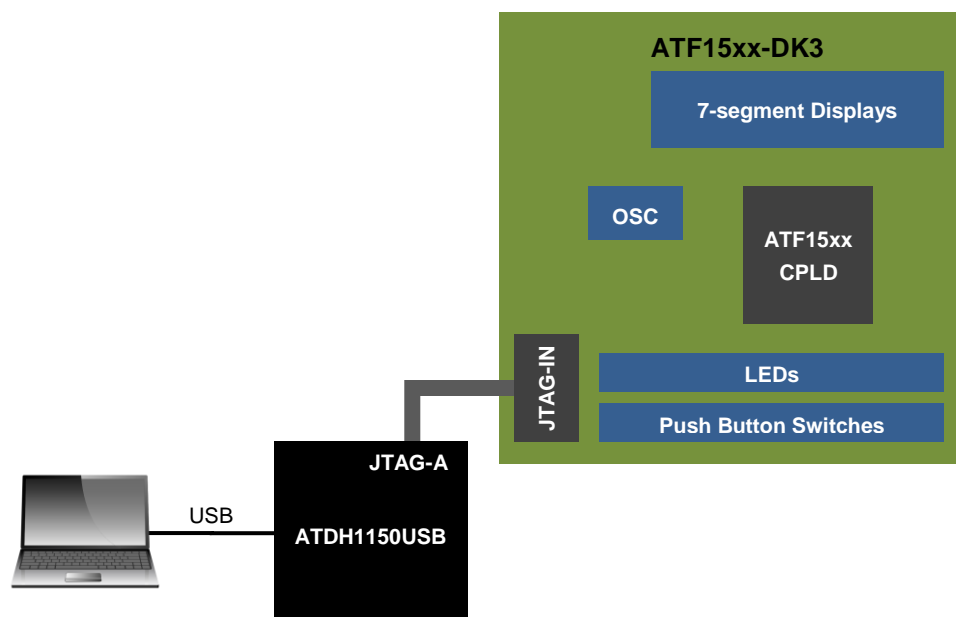
This tutorial introduces the features and usage of the **Atmel ATF15xx CPLD In-System Programming (ISP) Software [ATMISP]** v7.x for the ATF15xx family of JTAG ISP supported Complex Programmable Logic Devices (CPLDs). It describes the entire ISP process from setting up the JTAG device chain file (.CHN) using ATMISP to executing the JTAG ISP instructions onto the JTAG device on the target JTAG ISP hardware system. For this tutorial, the Atmel ATF15xx-DK3 CPLD Development/Programmer board will be used along with the ATDH1150USB USB based ATF15xx JTAG ISP cable. This ISP cable is also available from Kanda (www.kanda.com) and the Kanda ordering code is "ATDH1150USB-K". Please refer to the **Getting Started** section of the ATMISP Help File for information on how to setup other ISP hardware platforms.

Step I : Setup ISP Hardware

For this section of the tutorial, the **ATF15xx-DK3** CPLD Development/Programmer board is used as the target ISP hardware along with the ATDH1150USB cable. To setup the ATF15xx-DK3 and ATDH1150USB for programming, follow the steps below.

1. Connect the USB cable contained in the ATDH1150USB kit to the USB port of the computer and the USB connector of the ATDH1150USB ISP cable.
2. Connect the 10-wire ribbon cable contained in the kit to the **JTAG-A** port of the ATDH1150USB and to the JTAG header (**JTAG-IN**) of the ATF15xx Development/Programmer board.

NOTE: The selection jumper at **JP-TDO** on the ATF15xx-DK3 board should be plugged into the "TO ISP CABLE" side.



3. Insert the 44-TQFP socket adapter board (ATF15xx-DK3-SAA44) onto main ATF15xx-DK3 board if it is not already inserted.
4. Set both the VccIO and VccINT selection jumpers on the ATF15xx-DK3 board to 3.3V.

NOTE: The Power Switch for the ATF15xx-DK3 must be turned OFF before changing the positions of the VccIO and VccINT Selection jumpers.

5. Connect the 9V DC power source to the power connector at **JPower** of the ATF15xx-DK3 board.
6. Insert a blank ATF1504ASV 44-pin TQFP device into the 44-pin TQFP socket. Please note that pin 1 of the device should be at the upper left hand corner of the socket facing the U1 label.
7. Turn the power on by bringing the Power Switch of the ATF15xx-DK3 board to the ON position.

For the older ATF15xx CPLD ISP kits, please refer to the corresponding User Guide for information on how to setup the hardware to perform JTAG ISP operations. For custom JTAG ISP target hardware systems, please connect the JTAG ISP download cable into the appropriate connector and apply Vcc to the CPLD(s) and JTAG ISP download cable.

The ISP hardware setup process is now completed.

Step II : Setup ATMISP Software

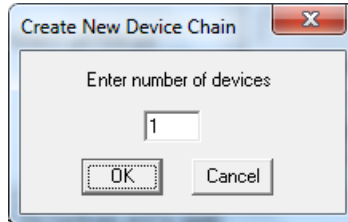
The first step of an ISP flow is to create a new chain file in the ATMISP software. A chain file (.CHN) contains the JTAG device chain information such as the device types, number of devices in JTAG chain, JTAG operations, and the location of the associated JEDEC files that are required to program a single or multiple-device JTAG chain in the target hardware system.

1. To create a new chain file, the **ATMISP software** first needs to be launched either through the *desktop icon* or the *Start ... Programs* menu.
2. To create a new chain file, select the **New** command under the **File** menu or click on the **New** shortcut button.



An existing chain file (with a .CHN extension) that was created by the ATMISP software can be loaded into the software by using the **Open** command under the **File** menu or the **Open** shortcut button.

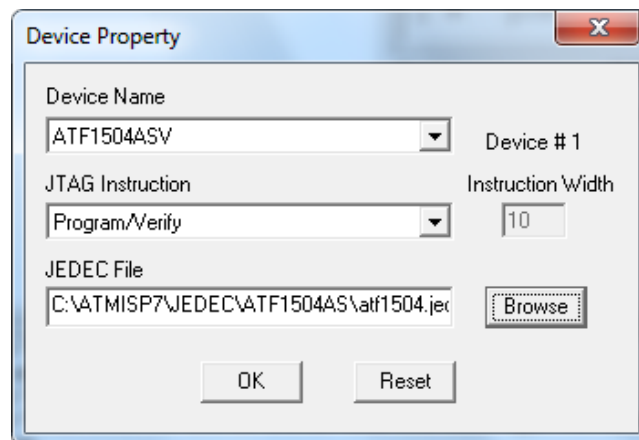
3. The first piece of information that the software asks for when creating a new chain is the number of devices in the JTAG hardware chain. Therefore, simply enter how many JTAG devices are chained together in your target system. For this tutorial, enter **1** and then click **OK** since you will be programming a 1-device JTAG chain in Step III of this tutorial using the Atmel ATF15xx CPLD Development/Programmer board.



4. Next you will need to specify the properties of each JTAG device in the *Device Properties* window. First, you will need to select the target device type of the first device in the JTAG chain. Clicking on the down arrow will open the list of all the supported device types. For this tutorial, please select **ATF1504ASV** as the target device type.

In the *JTAG Instruction* field, you can specify which JTAG instruction to be executed on this device in the chain. Please select **Program/Verify** to program and verify the ATF1504ASV.

The next step is to specify the JEDEC file to be programmed into the target device in the *JEDEC File* field. Click on the **Browse** button, change the directory to the **[..\JEDEC\ATF1504AS]** sub-directory under the ATMISP installation directory and then select **atf1504.JED** as the JEDEC file. Click **OK** to close the *JTAG Device Properties* window when all properties are specified.



If there is more than one device in the JTAG chain, then the JTAG Device Properties window will open again for the second device, third device, and so on until the JTAG Device Properties window for the last device in the JTAG chain is closed.

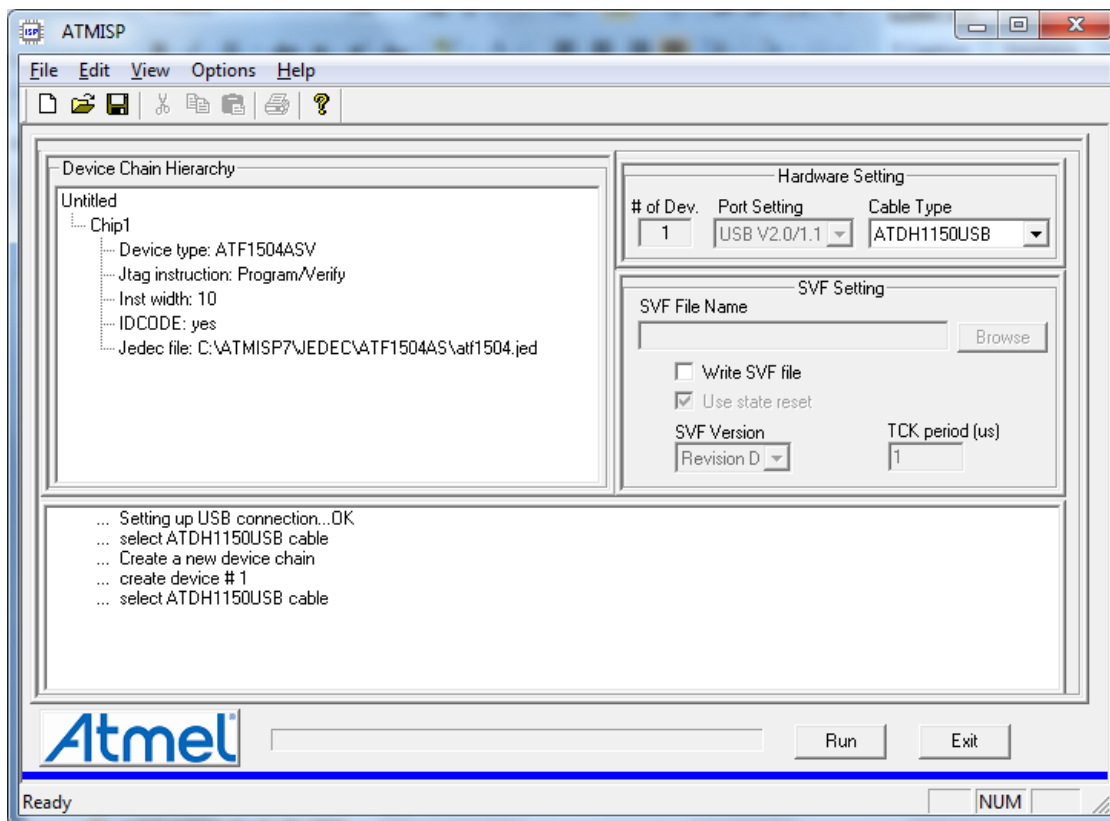
A new chain is now created and it will be displayed in the **Chain File Hierarchy** window of the ATMISP Software. You can easily add or delete devices by using the **Add Device** or **Delete Device** command respectively. These two commands are available through the *Edit menu* and the *right-click drop down menu* in the Chain File Hierarchy window. To edit the device properties, you can use the **Edit Device** command in the Edit menu or by double clicking any part of the chain in the Chain File Hierarchy window.

5. For ATMISP v7.x, the only cable type supported is the ATDH1150USB USB based ATF15xx JTAG ISP cable and the only port type supported is USB (v1.1/2.0/3.0). If you are using an LPT based JTAG ISP cable (i.e. ATDH1150VPC), please use ATMISP v6.x on a Windows 2K or XP PC instead.
6. This chain file can now be saved by selecting the **Save** or **Save As** command in the *File* menu or by clicking on the **Save** shortcut button. Saving the chain file is optional but recommended.

This completes the ATMISP software setup process.

Step III : Execute ISP Instructions

Now that both the ISP software and hardware are properly setup, it is time to program the JEDEC file [atf1504.JED] into the target CPLD [ATF1504ASV] on the target ISP board [ATF15xx-DK3]. To start the ISP process, click on the **Run** button at the bottom of the ATMISP window.



The programming process will now start and the progress bar will indicate the progress of the programming cycle. Once the programming is completed, ATMISP will generate a prompt indicating that the JTAG operation was completed successfully or not. The message pane at the bottom will also show the information related to the programming process. However, the atf1504.jed file was not created to show any meaningful display on the LEDs of the ATF15xx-DK3.

PLD Technical Support:

Email - pld@atmel.com

Hotline - 1-408-436-4333

Online Support Form - <https://secure.atmel.com/design-support/>

Product Information - <http://www.atmel.com/products/other/spld-cpld/default.aspx>