

Atmel ATF15xx CPLD ISP Software (ATMISP)

Quick Start Tutorial

This tutorial will introduce you to the features of the **Atmel ATF15xx CPLD In-System Programming (ISP) Software (ATMISP) v6.x** for the ATF15xx family of JTAG ISP Complex Programmable Logic Devices (CPLDs). This tutorial will describe 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 ATF15xx-DK3 CPLD Development/Programmer Kit will be used. Please refer to the **Getting Started** section of the ATMISP Online Help for more information on how to setup other ISP hardware platforms.

Step I : Setup ATMISP Software

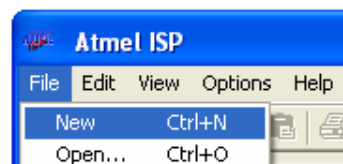
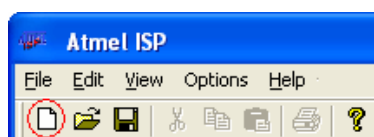
Step II : Setup ISP Hardware

Step III : Execute ISP Instructions

Step I : 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.

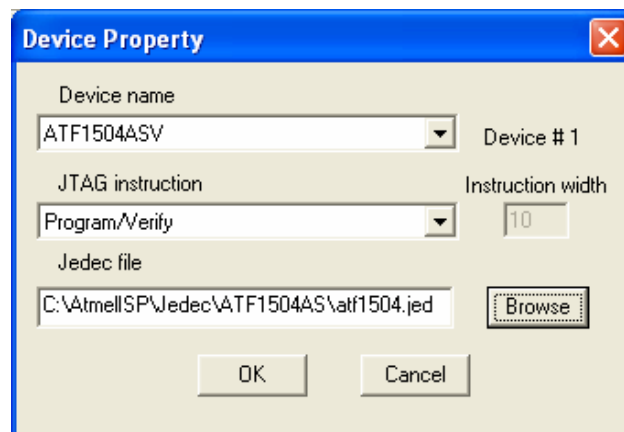
3. The first piece of information that the software asks for when creating a new chain is the number of devices in the JTAG hardware chain. Therefore, simply enter how many JTAG devices are chained together in your target system. For this tutorial, enter **1** and then click **OK** since you will be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



- 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.

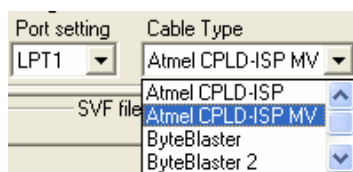


If there is more than one device in the JTAG chain, then the JTAG Device Properties window will open again for the second device, third device, and so on until the JTAG Device Properties window for the last device in the JTAG chain is closed.

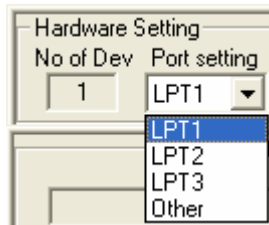
A new chain is now created and it will be displayed in the *Chain File Hierarchy* window of the ATMISP Software. You can easily add or delete devices by using the **Add Device** or **Delete Device** command respectively. These two commands are available through the *Edit menu* and the *right-click drop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

- The default cable type setting is set to the **Atmel CPLD-ISP MV**, which corresponds to Rev 6.x of the Atmel ATF15xx CPLD ISP Download Cable (ATDH1150VPC). For Rev 5.0 or earlier of the Atmel CPLD-ISP cable, please select **Atmel CPLD-ISP** as the cable type. If you are using an Atmel ATDH1150USB (USB port only) JTAG ISP cable, **USB (v2.0/1.1)** will be setup in port setting option automatically after you select ATDH1150USB as the cable type in the software.

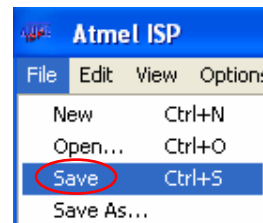
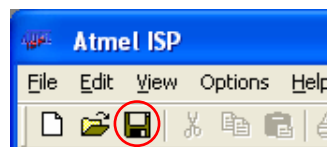
If you are using the ByteBlaster/MV/II cable, please change the **Cable Type** field to ByteBlaster, ByteBlasterMV or ByteBlaster 2 respectively.



6. The default LPT port setting in the ATMISP software is **LPT1**, which corresponds to port address 378 (hex). If you are using a different LPT port address, then please change the Port Setting field to the appropriate LPT port address or manually enter the port address by selecting Other. LPT2 and LPT3 correspond to port addresses 278 (hex) and 3BC (hex) respectively. If Atmel ATDH1150USB cable (USB port only) is selected to use in the software, “USB (v2.0/1.1)” should be setup automatically.



7. This chain file should now be saved by selecting the **Save** or **Save As** command in the **File** menu or by clicking on the **Save** shortcut button.

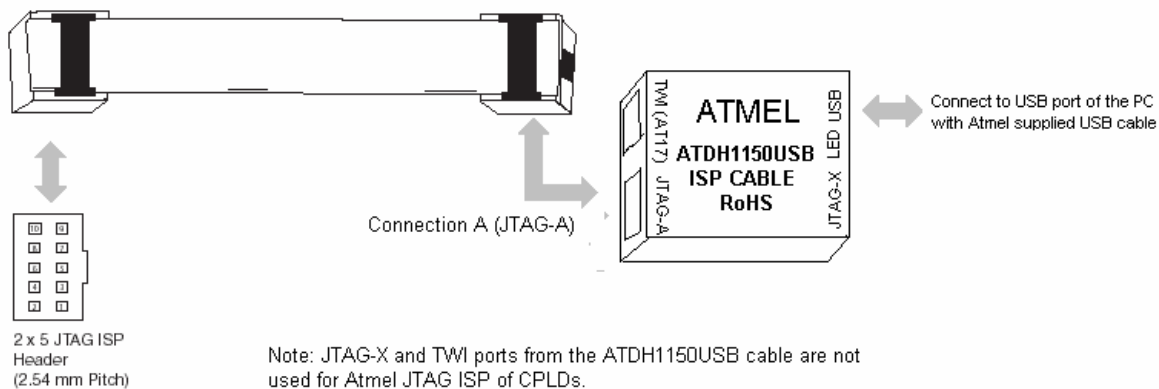


This completes the ATMISP software setup process.

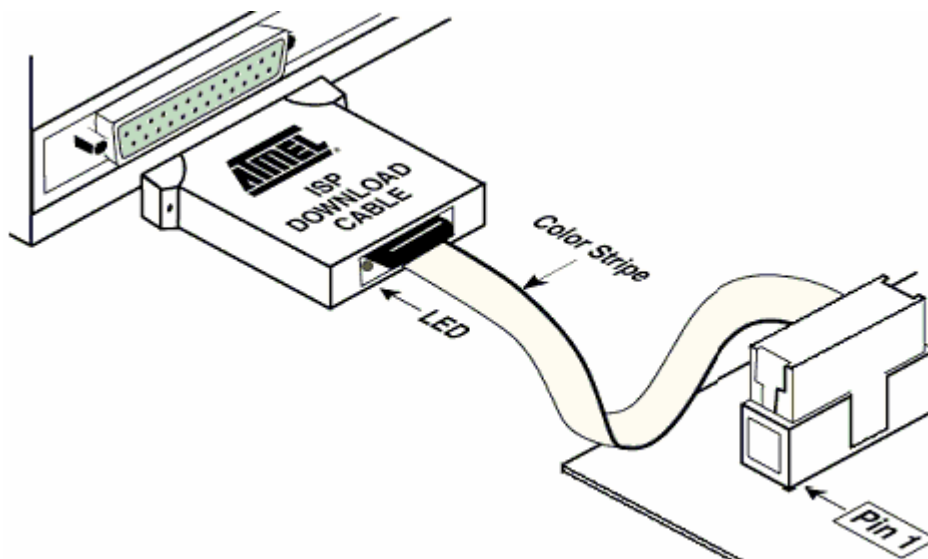
Step II : Setup ISP Hardware

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

1. Connect the 10-pin female header of the Atmel ATF15xx CPLD ISP Download Cable (Rev 6.0) or the ByteBlaster cable or an Atmel ATDH1150USB cable from JTAG-A port into the JTAG header of the ATF15xx Development/Programmer Board.



Note: Above connection is only used for ATDH1150USB cable.



Note: Above connection is used for Atmel ATDH1150VPC JTAG ISP download cable or other Byteblaster/MV/II cables.

2. Insert the 44-TQFP socket adapter board (ATF15xx-DK3-SAA44) onto main ATF15xx-DK3 board if it is not already inserted.
3. Set both the VccIO and VccINT Selection jumpers 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.

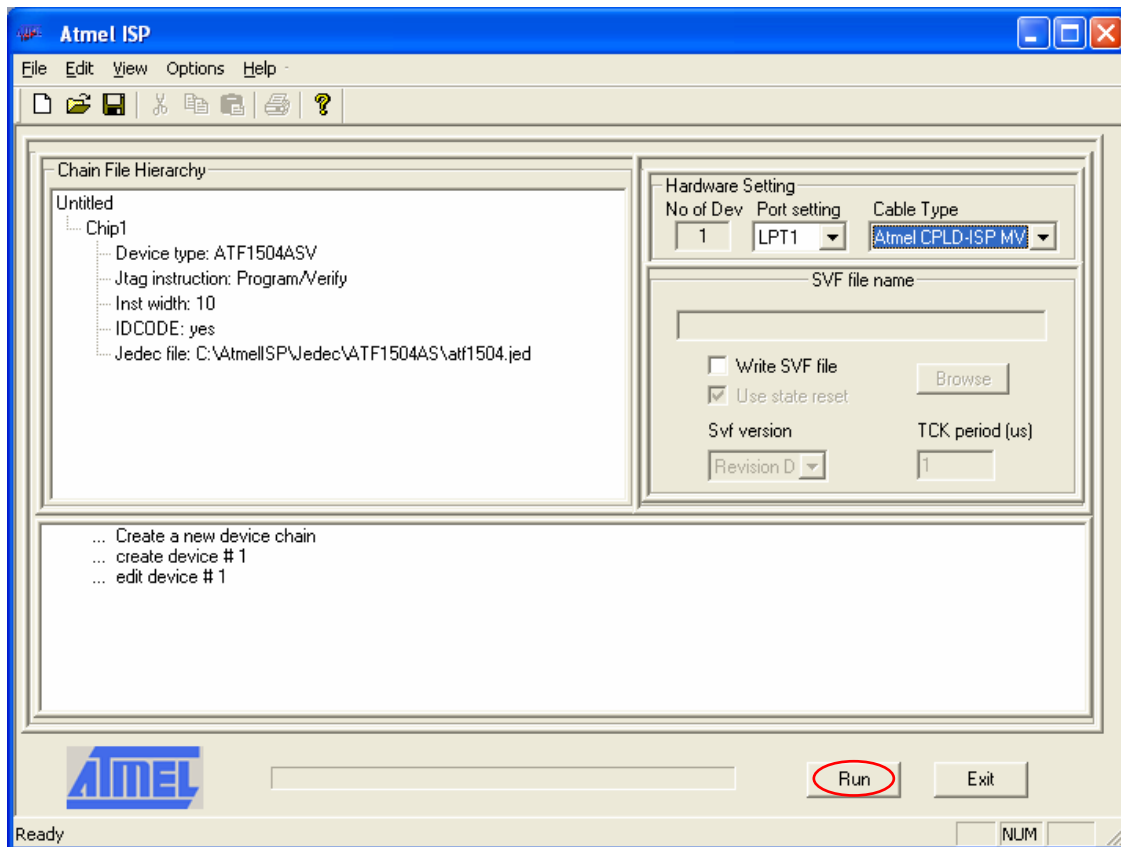
4. Connect the 9V DC power source to the power connector at **JPower**.
5. Insert a blank ATF1504ASV 44-pin TQFP device into the 44-pin TQFP socket. Please note that pin 1 of the device should be at the upper left hand corner of the socket facing the U1 label.
6. Turn the power on by flipping the Power Switch to the ON position. If you are using the Atmel ATF15xx CPLD ISP Download Cable (parallel port only) or Atmel ATDH1150 (USB port only) JTAG ISP Cable, please make sure that the Red LED on the back of the cable is turned on.
7. Connect the 25-DB connector of the Atmel ATF15xx CPLD ISP Download Cable or ByteBlaster/MV/II cable into the parallel (LPT) port of the computer, or connect the USB cable from Atmel ATDH1150USB cable to the USB port of the computer.

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 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 transcript window 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.

Technical Support

Submit questions online at: <http://www.atmel.com/dyn/products/support.asp>

FAQ: http://www.atmel.com/dyn/products/tech_support.asp?Faq=y