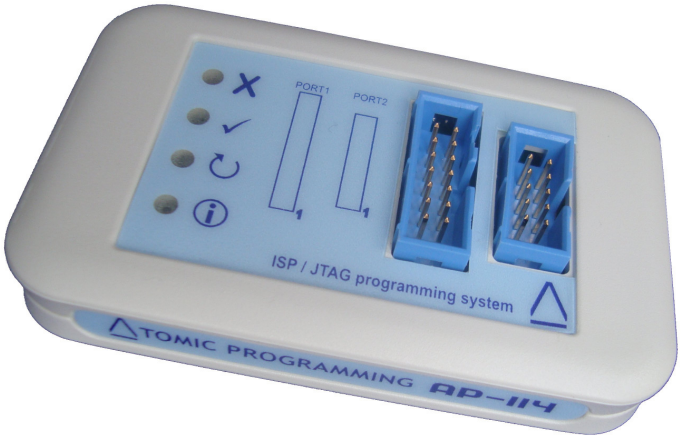
AP-114

ISP/JTAG Programming System & Boundary Scan Test Platform



- **Universal Hardware Platform for Infinity suite of JTAG software tools**
- **Universal ISP/JTAG Programming & Testing**
- **Boundary Scan Testing**
- **EEPROM and SPI Flash Out-of-Circuit Programming**
- **Generic GDB Proxy Server**
- **Jennic JN5148 ZigBee Development Applications**

FEATURES

- JTAG Programming, configuration and testing for all JTAG / IEEE 1149.1 compatible devices
- In-System Programmer for Serial Flash & EEPROMs, Atmel AVR, Microchip PIC, etc.
- Standalone Programming for SPI Flash and SPI, I2C & MicroWire serial EEPROMs
- Generic GDB Proxy server - converts GDB messages into JTAG sequences
- Optional cable for Jennic JN5148 ZigBee Wireless Microcontroller debugging
- Multi-programmer support - link 16 units together
- Optional Boundary Scan Test using Infinity SCAN software
- Option JTAG debugging & testing of non-JTAG devices using Infinity APEL software
- Powerful and flexible user software includes ApPC and Infinity EXPRESS
- SVF & STAPL(JAM) Player - plays STAPL, JAM, JBC, SVF files
- COM Object command-line software & DLL to add AP-114 to your own system
- Built in Power supply from 1.8 to 3.3 Volts
- Dual port headers support a range of JTAG pinouts, including Altera & Xilinx

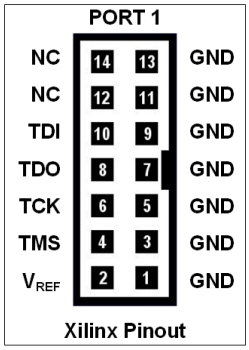
JTAG Features

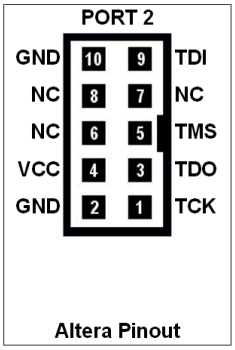
- USB2.0 Compatible
- Xilinx & Altera Headers for JTAG/Master Serial Programming
- JTAG / IEEE 1149.1 compatible.
- GDB Proxy server – GNU Project Debugger - converts GDB messages into JTAG sequences
- SVF Player
- JTAG Baudrate up to 6Mbits/sec (programmable)
- All JTAG signals are 5V tolerant down to 1.8V
- Integrate the AP114 into your own system using the supplied DLL

The programmer is supplied with two IDC ports, which support 10- and 14-way JTAG connections. Both ports can be configured in different modes, according to the requirements of the target device(s), and this changes the configuration of the pinouts.

The most common JTAG format is the 10-pin Altera ByteBlaster, compatible with Altera JTAG, as well as many others. Port 2 supports the 14-pin Xilinx Parallel IV JTAG mode, as well as other ISP modes requiring different pin-counts.

These are supported by a 14-way configurable multi-coloured ribbon cable which is supplied with 2mm pitch flying leads for greater flexibility.





Signal Names:

TCK - Clock signal
TDO - Data from device
TDI - Data to device
TMS - JTAG state machine control
VCC(TRGT) – Target power supply

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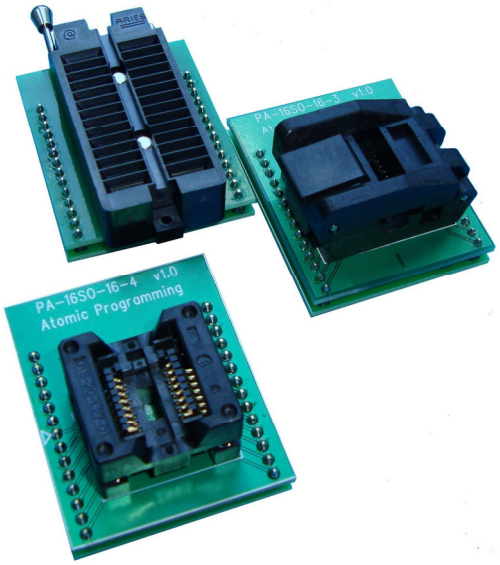
PORTABLE DEVICE PROGRAMMER

In-System Programming

In-System programming for non-JTAG devices is available for a wide range of memory and microcontroller parts, including Serial Flash & EEPROM devices, Atmel AVR and Microchip PIC.

Memory devices are supported by ApPC (Atomic Programming Center). Other parts by the supplied Infinity EXPRESS software, according to the requirements of the specific device.

The built in power supply provides 1.8 to 3.3 Volts – higher Voltages would be supplied directly to the target board.



Out-of-Circuit Programming

The AP-114 also works as a portable Out-of-System Stand-alone programmer for 8-pin EEPROM & SPI Flash devices

- SPI serial EEPROMs
- I^2C serial EEPROMs
- Microwire serial EEPROMs
- SPI Flash

Plug-in adapter pods support a range of package options including 8-pin DIP, JEDEC SOIC & EIAJ SOIC

FLEXIBLE POWERFUL SOFTWARE

JTAG applications are driven by ***Infinity EXPRESS***. A flexible software interface that incorporates a number of different applications into a single user-friendly GUI. As new applications are added, Infinity EXPRESS will simply incorporate these in a separate tab. Current JTAG applications supported by Infinity EXPRESS include:

- Altera FPGA & EPCS programming
- JAM Player
- JBC Player
- SVF Player
- GDB Proxy Server

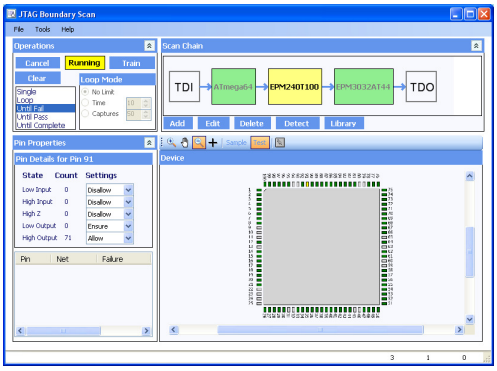
All the JTAG, ISP and Com Object software applications are included with the AP-114 as standard

Additional non-JTAG In-System Programming (ISP) applications are available as separate utilities for support of ***Atmel AVR*** and ***Microchip PIC*** Microcontrollers. Atmel's range of AtTiny and AtMega AVR devices uses the SPI interface and offers full support of all device configuration features.

Out of System programming, and ISP programming of Serial Flash and EEPROM devices is handled by ***AP Programming Center*** (***ApPC)***, the same powerful software interface that controls the AP-1164 Universal Device Programmer.

COM Object command line software enables full functionality of the ApPC & Infinity software through command line scripts, without the need to run the GUI. It allows integration with external software, including LabVIEW, for manufacturing test applications

BOUNDARY SCAN TESTING USING INFINITY SCAN



Infinity SCAN provides JTAG Boundary Scan testing for IEEE-1149.1 JTAG compliant circuit boards. An extensive supplied library of BSDL files allows for the JTAG Scan Chain to be automatically detected, with a BSDL file import function allowing new devices to be added to the library.

A training feature means that ***Infinity SCAN*** can learn the status of the board by itself, significantly reducing the functional test setup time. Automatic data comparison allows for quick evaluation with simple pass/fail results.

A Production Mode plug-in allows for detailed statistics to be stored, for evaluation as required. The Netlist importer plug-in allows PCB information to be imported to ease the setup process.

COM Object script control allows full integration of software into user's GUI. Infinity SCAN is fully compatible with LabVIEW

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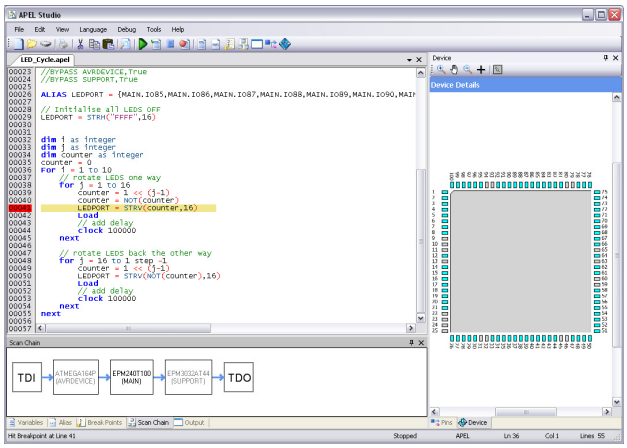
COMPLETE BOARD TEST COVERAGE USING INFINITY APEL

Infinity APEL JTAG Embedded-test Language allows quick and easy testing development of complex PCBs, including testing and programming of non-JTAG devices.

APEL allows variables and bus definitions and supports complex loops, functions, delays and conditional execution.

The ***APEL Studio*** Script Editor provides breakpoints, single-step execution, Variable and Bus tracing and editing and device chain visualisation. Write your own custom test sequences, generate script automatically using the Script Wizard or use code provided by Atomic Programming.

COM Object script control allows full integration of software into the user's GUI, and a Console mode run scripts from DOS command prompts. The ***APEL Player*** function means scripts can be compiled to be run at remote sites without having to release the source code



ADDITIONAL FEATURES

Jennic JN5148 ZigBee Microcontroller Debugging

With an additional cable assembly, the AP-114 can be used to debug the Jennic JN5148 ZigBee Wireless Microcontroller. It allows the unit to connect directly to the Jennic JN5148-EK010 evaluation kit Sensor and Controller boards, and runs directly on the kit using software supplied by Jennic on their SDK JN-SW-4041

Programming Support for JN5148 Flash Devices

The AP-114 offers In-system (ISP) and Stand-alone programming support for the JN5148 flash devices. The following Jennic features are also supported:

1. Jennic Mac Address files. - Take a new MAC address and automatically place it in you binary during the programming cycle and marking the MAC address as used
2. Zigbee Pro Security Data Serialisation

For additional details, see ***www.jennic.com***. The Jennic features require the additional Jennic cable and/or the Training Platform board

Atmel AVR-isp

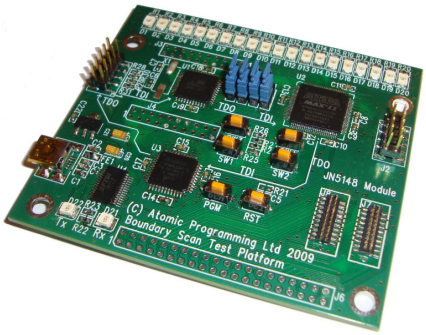
In-System Programming (ISP) using SPI interface to support Atmel's range of AtTiny and AtMega AVR microcontrollers. This Includes full support for all device configuration features. Included with the AP-114 as standard

Generic GDB Proxy server

The GDB (GNU project debugger) proxy server translates commands from GDB such as read memory, read registers and set breakpoints and converts them into JTAG sequences that can be used to access actual hardware. Included with the AP-114 as standard

JTAG Training Platform

Designed specifically to work with the AP-114, the Training Platform is an ideal solution for Educational use and general equipment training. It provides everything required to help your understanding of JTAG Boundary scan testing and FPGA configuration, ISP programming of Atmel AVR microcontrollers and SPI memory, as well as a development kit for Jennic ZigBee PRO applications based on the JN5148 wireless microcontroller.



TECHNICAL SPECIFICATIONS

Electrical Requirements

- Operating Voltage: 5V (powered by USB Port)
- Power Consumption: 500Mw
- CE approved & RoHS compliant

Physical Specifications

- Dimensions: 83 x 52 x 16 mm (3.3" x 2" x 0.7")
- Weight: 200g (8oz)

Environmental Requirements

- Operating Temperature: +32℉ to 122℉ (0℃ to 50℃)
- Storage Temperature: +32℉ to 158℉ (0℃ to 70℃)
- Humidity: Up to 80% non-condensing

Computer Requirements

- PC with CD-ROM drive running Microsoft® Windows 2000, XP, Server 2003, Vista or Windows 7
- Pentium 4 or above, 50MB (min) Hard Disk space, USB interface port, Mouse, Keyboard & Monitor

Included Accessories

- 10 & 14-pin 2.54mm pitch IDC cable assemblies
- 14-way configurable interface cable assembly
- USB Cable
- Software CD incl. APPC and APSELECTOR

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