

# Ashling debug tools for Microchip®PIC32

## Source Debugger, Ultra-high-speed EJTAG Debug Probe

Microchip's new PIC32™ controller family is based on the high-performance MIPS® M4K RISC core. Building on Microchip's 8- and 16-bit PIC® microcontrollers, the PIC32™ MCU family delivers 32-bit performance to power increasingly-complex embedded designs.

Developed in co-operation with Microchip Technology, Inc. and supplied and supported by Arcadi Systems, the Ashling toolset offers a comprehensive solution for PIC32™ application development. The toolset includes:

- **Opella-XD** fast, easy-to-install EJTAG hardware debug interface
- **PathFinder** Source-level Debugger Software
- **GNU GDB MIPS Server**, allowing use of Opella-XD hardware interface with GNU GDB MIPS/Eclipse debuggers

### Opella-XD EJTAG Debug Probe

Ashling's **Opella-XD EJTAG Debug Probe** is the fastest-available debug probe for embedded development on PIC32.

Advanced features of Opella-XD include:

- Fast, easy-to-install USB 2.0 High-Speed Interface (480Mb/s)
- Supports all popular hardware debug protocols
- Works with Windows and Linux hosts
- Hot-plug support allows post-mortem debugging
- Fast, trouble-free Plug-and-Play installation
- Small, versatile Target Probe Cable fits on any target board
- Fast in-target Flash Programming
- Wide target voltage range: 0.9V to 3.6V
- Supports latest EJTAG 4.10 MIPS™ debug protocol
- Versatile Target-Reset and Test-Port-Reset support
- Unique Auto-conditioning Probe provides maximum possible download speed to target with fastest JTAG clock frequencies
- Built-in diagnostics instantly show status of Target, Debug Probe and USB link
- Universal Hardware-Debug platform for all popular target architectures and compilers



Benefits of **Opella-XD** to the embedded hardware developer include:

- Accelerates the entire embedded-hardware debug process: ultra-fast installation, code download and flash programming saves time at every code rebuild
- Instantly auto-configures to target system
- Long-term investment: works with all popular target architectures and compilers
- Helps with the most difficult debugging tasks: hardware bring-up, operating-system boot, post-mortem debugging
- Future-proof: works with latest hardware-debug protocols, all popular host operating-systems
- Compact, easy-to-install target probe cables support all popular debug interfaces

### Opella-XD Debug Probe Specification

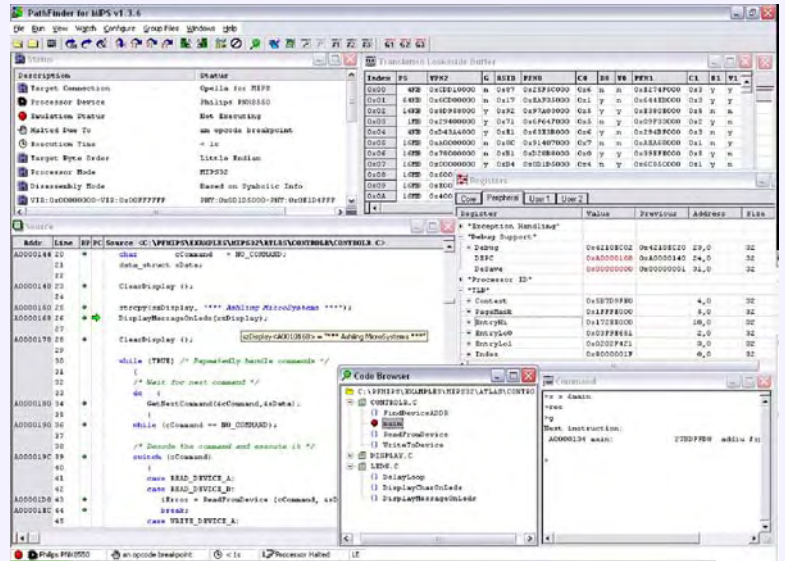
- High-speed USB2.0 (480Mb/s) interface to host PC or Linux (x86) workstation
- Target JTAG clock rates up to 100MHz
- Auto-conditioning for fast EJTAG clock frequencies
- Sustained code download to target at over 3MB/s (using 100MHz EJTAG clock)
- Supports all MIPS™ hardware-debug standards: EJTAG 4.10, 3.10, 2.6x, 2.5x, 2.0x and 1.5x
- 14-way or 20-way IDC target EJTAG connectors
- Configurable Target-Reset and Test-Port-Reset, under full user control
- Fine-grained adjustment of EJTAG clock frequency from 1KHz to 100MHz
- Supports target operating voltages from 0.9V to 3.6V. Opella-XD detects and configures for the appropriate voltage.
- Supports RTCK adaptive clocking of debug data from target (EJTAG 4.10)
- "Hot-plug" support; allows connection to a running target without resetting or halting
- Fully powered by USB interface; no external power-supply needed
- Support for all on-chip hardware breakpoints; unlimited number of software breakpoints
- Big-endian and little-endian target architectures supported
- Full support for MIPS16™/MIPS16e™ code compression

## PathFinder Source Debugger

**PathFinder-MIPS** is Ashling's Source-level Debugger for Microchip PIC32 devices, with multiple user-configurable windows, point-and-click, rag-and-drop, hover data display, splitter windows, menu-bar, and script (macro)-file controls. PathFinder's Object-Oriented monitoring and Editing System provides tree-structured "click to expand" access to all memory-areas, register sets, registers and bits of the MIPS core and co-processors, with a logical and friendly display.

**PathFinder** features include:

- Full C and assembly source level debug support including step-into, step-over and step-out-of
- Built-in Code Browser allowing rapid navigation of application source code
- Call Stack (Backtrace) window shows current function stack with optional parameter display
- Support for all PIC32™ toolsets, including Microchip's C32 (MPLAB), MIPS™ SDE and all other ELF/DWARF compliant compilers
- Powerful script language to control, monitor and log all Emulator functions from within PathFinder
- Remote Control Interface allows external applications to control PathFinder/Emulator via TCP/IP-based API
- Operating System Debug using integrated TOS monitoring window based on open-standard Kernel Debug Interface (KDI) API
- Full run-time control debug support for cached applications
- Hardware and unlimited software breakpoint support
- Translation Lookaside Buffer (TLB) window allowing easy setup and interrogation of the TLB
- Integrated flash programming and debug support
- Support for Windows Vista/XP/2000



## GDB-Server-MIPS

Ashling's **GDB-Server-MIPS** software package allows Ashling's Target Debug Probes to be used with the GNU GDB MIPS open-source debugger. The Ashling GNU GDB Server is available for Windows and Linux (x86-based) hosts and supports GNU GDB and all Eclipse CDT-based debuggers, including MontaVista Devrocket.

## Devices Supported

Microchip PIC32MX300, PIC32MX320, PIC32MX340, PIC32MX360.  
Contact Arcadi for support on new PIC32 devices.

## Order Codes

Product	Order Code
<b>Opella-XD-MIPS Debug Probe.</b> Includes USB 2.0 cable, documentation and diagnostic software	Opella-XD-MIPS
<b>14-pin Target Probe Cable</b> with 0.1"-pitch IDC connector. EJTAG versions 2.5 – 4.10. Supports target voltages 0.9V to 3.3V	TPAOP-MIPS14
<b>PathFinder-MIPS Source Debugger</b> software for Windows hosts; supports all popular MIPS compilers.	PF-XD-MIPS
<b>GDB-Server-MIPS drivers:</b> Connects GNU GDB-Server-compliant Source Debuggers (Windows and Linux hosts) to Opella-XD Probe	GDB-Server-MIPS-XD

*Ashling Microsystems Ltd. reserves the right to alter product specifications at any time and without notice*



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