



# Ashling's Development Tools for Embedded Systems with ARM™ cores

## ASHLING ARM™ DEVELOPMENT SYSTEMS

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Ashling Microsystems' Opella, Genia, Vitra and PathFinder development tools support development on all popular ARM cores. The full range of Ashling development tools provide Source-Level Debugging, EmbeddedICE runtime control and Real-Time Trace debugging capability based on ARM ETM.

## PRODUCT DESCRIPTIONS

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### PathFinder for ARM

Powerful Source Level Debugger for ARM, based on Ashling's uniquely powerful PathFinder user-interface and ARM's Remote Debug Interface (RDI 1.51).

### Opella for ARM and PathFinder for ARM

Entry-level In-Circuit Emulator and Source-Level Debugger for ARM. Opella for ARM provides run-time control for ARM development, and is ideal for users who want a cost-effective run-time debug tool. Opella for ARM connects to the host PC using the PC's USB port.

### Genia for ARM and PathFinder for ARM

The Ashling stand-alone Genia for ARM emulator connects to the host PC using an Ethernet, RS232 or USB connection. Remote debugging facility is provided via TCP/IP. Genia for ARM provides program-load, run, halt, hardware and software breakpoints, register display and modify, and Source-level Debugging with support for multi-processor and DSP coprocessor debugging. Genia for ARM may be easily upgraded to the trace-capable Vitra for ARM by adding the Real-Time trace expansion card.

### Vitra for ARM and PathFinder for ARM

This very powerful Real-Time In-Circuit Emulator provides a complete environment for development, debugging, optimisation and testing for performance-critical ARM applications requiring instruction and data trace debugging. Trace memory is offered in 64K-frames to 512K-frames options. ARM-based systems that incorporate the on-chip trace core extension, Embedded Trace Macrocell (ETM7 and ETM9) are fully supported. In addition to the on-chip trace trigger facilities, the Vitra for ARM provides the developer with additional configurable triggering resources as well as external trigger out and trigger in controls.

Product	PathFinder for ARM	Opella for ARM	Genia for ARM	Vitra for ARM
Product Description	Source-level debugger	Entry-level run-time-control emulator	Scalable emulator with run-time control	Emulator with Real-Time instruction/data Trace
Hardware	-	Opella emulator unit	Ethernet, USB, RS232 host connected emulator	Vitra emulator unit
Emulator	-	Run-time control and debugging	Run-time control and debugging	Run-time control and debugging with Real-Time trace
General-purpose trace	-	-	-	Up to 23 user-specified pins
PC interface		USB	Ethernet, USB, RS232	Ethernet, USB, RS232
Debugger	PathFinder for ARM	PathFinder for ARM	PathFinder for ARM	PathFinder for ARM
Target connection	-	EmbeddedICE 20-way header	EmbeddedICE 20-way header	ETM AMP "Mictor" connector

<b>Core monitoring</b>	Core status including Internal register banks. Special purpose registers.
<b>System monitoring</b>	On-chip code and target memory. Symbolic disassembly supported. Full support for on-chip peripherals.
<b>Breakpoints</b>	Full software and hardware breakpoints support. Software breakpoints (in RAM code area) cause program to halt at specified instruction. Hardware breakpoints can be set in ROM and RAM code areas, on code execution and/or data access (read or write). Complex breakpoints can be configured.
<b>Triggering</b>	On-chip ARM trigger resources are complemented with Vitra for ARM triggers. Maskable trace port data comparators, with counters and sequencers permit complex trace start/stop triggers to be generated. External trigger control, both input and output are provided. Trace events are time-stamped with 40 bit resolution. Triggers can be specified symbolically and can be set on code execution or data access. PathFinder for ARM's powerful user interface allows easy specification of sequential or boolean trigger conditions.
<b>Trace display</b>	Trace memory available in 64K-frames to 256K-frames options (Vitra for ARM). Display signals in hex, symbolic disassembly or source code. Save/load trace display. Optional user-trace port traces up to 23 user-defined signals.
<b>RTOS Support</b>	RTOS Monitoring Window fully integrated into PathFinder for ARM debugger.
<b>Single stepping</b>	Single Step, Multiple Instruction Step, Step over Functions, Step into Functions, Step over Library-functions only, Return out of Functions at full speed. Step at Source-Level or Assembler level.
<b>User interface</b>	PathFinder for ARM Source Level Debug System: User-controller multi-window emulation control system. Multiple active windows. Mouse, Menu-Bar and Function Key Control. On-line context-sensitive hypertext Help.
<b>Variables</b>	Full expression handling for C, C++ and assembler.
<b>Multi-processor Debugging</b>	Multi-processor and SoC debugging. Full debug support for multi-core ARM systems, including coprocessors.
<b>Macro-language</b>	Powerful C-like macro test language can control, monitor and log all of the functions of the Emulator.
<b>Upgrade Path</b>	Easy upgrades for each ARM processor type.

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**Ashling Microsystems Ltd. is Certified to I.S. EN ISO 9001:2000, NSAI Registration No. 19.09069.**

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