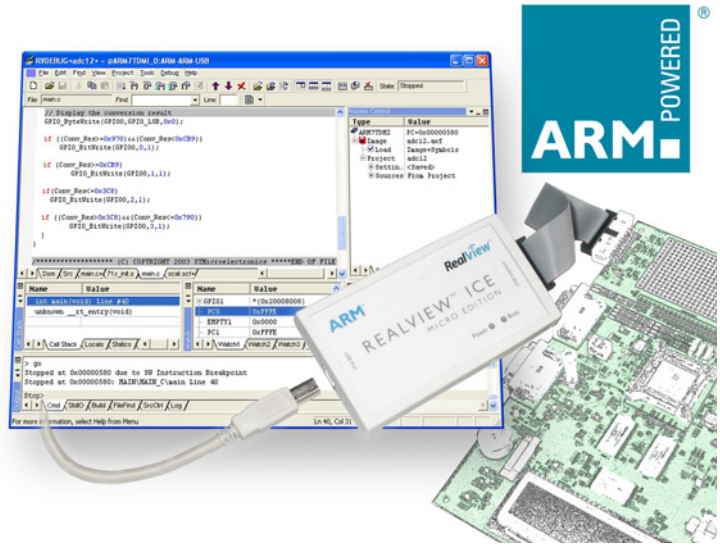
Development Tools

RealView Developer Kit for STR7

Master the Possibilities of ST ARM Core-based Microcontrollers

To help you keep pace with the rapid evolution of 32-bit microcontrollers, STMicroelectronics and ARM have teamed up to bring you the ARM RealView Developer Kit (RVDK) for STR7 32-bit, ARM core-based microcontrollers.

The RealView Developer Kit for ST is a powerful complete, low-cost development solution that allows you to build, debug and optimize applications for any ***STR71x***, ***STR720*** microcontroller. It includes the RealView C compilation tools, windows-based debugger and the RealView ICE Micro Edition (RVICE-ME) JTAG run control unit, all developed specifically for our line of STR7 devices.



Compiling and Optimizing

RealView C Compilation Tools for STR7

Compiler [1]	• Full ISO C/C++ [2] support • 16-bit Thumb and 32-bit ARM instruction sets • Selectable optimization level • Macro assembler for ARM and Thumb instruction sets • Objects conform to ARM Application Binary Interface (ABI) standard
Linker	• Object files and debug table formats based on ELF/ DWARF formats • Scatter-loading for code and data placement within sophisticated target memory maps • Seamless inter-working of 32-bit ARM and 16-bit Thumb object code
Image Conversion Tool	• ELF image conversion into binary, Motorola 32-bit S-record, Intel Hex-32 and Byte oriented Hex formats • Input file information display, e.g. disassembly output or symbol listings.
ARM Object Librarian / Archiver	• Collection and updating of ELF objects in libraries. • Merging of libraries.
C & Rogue Wave C++ Libraries	• ISO standard C libraries with - Functions defined by ISO C library standard - Target-dependent functions - C/C++ compiler helper functions • The floating-point library based on IEEE 754 standard for binary floating-point arithmetic. • Rogue Wave C++ Standard Template Library

[1] Outputs proprietary object and image formats only for the supplied debugger.

[2] Compiling C++ source files requires RVDK C++ compiler option.

RealView C Compilation Tools

The RealView Compilation Tools (RVCT) included with RVDK for ST, provide optimum support for the ARM core-based STR7 microcontrollers. Based on the proven features of ARM's robust C/C++ compiler, this toolset includes the macro assembler, linker, ISO standard C/C++ libraries and the Rogue Wave C++ library.

The fully optimizing C compiler provides a complete range of optimizations for both code size and code performance.

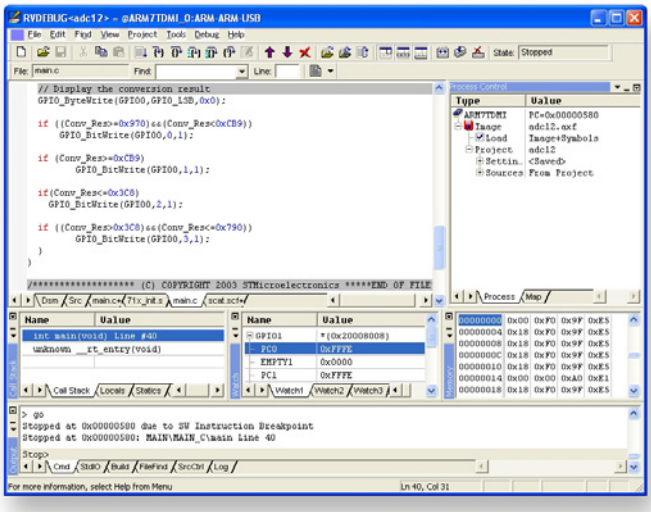
Optimizations include:

- Dead code elimination (compiler)
- Unused area elimination (linker)
- Peephole optimization based on ARM and Thumb instruction sets
- Common sub-expression elimination
- Loop body invariants
- Automatic inclining of suitable functions
- Tailcall optimization
- User-forced inlining of chosen functions
- Small structures to registers
- Constant divide reductions
- Expression tree simplifications
- Instruction scheduling to fit pipeline specific to ARM architecture

RealView Debugger

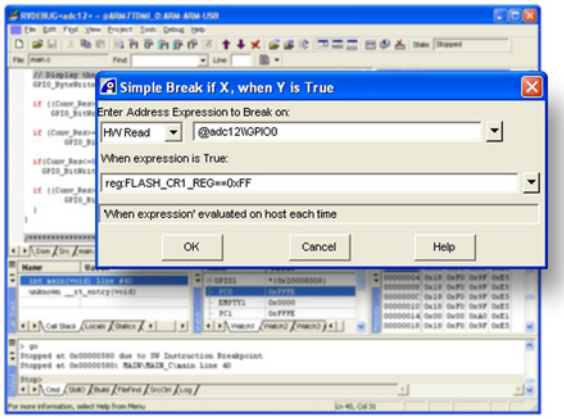
The RealView Debugger, with the RealView ICE-ME run control unit, use the STR7's embedded ICE Macrocells to provide total control of program execution, allowing quick and easy isolation and correction of errors in the application code. From an easy-to-use, windows-based environment, the debugger provides a complete range of run control, breakpoint and OS awareness features.

RealView Debugger for STR7	
User Interface	• Windows-based interface • Toolbar with frequently used buttons • Hierarchical connection control pane (emulator/ debug monitor/CPU/network view) • Point and click mouse commands • Context and language sensitive menus on 'right-click'
Breakpoint support	• Conditional breakpoints • Hardware breakpoints on instruction, read, write or access • Complex breakpoints that you can save: Break if in Range... While in func/range, Break if X... Break if X, then if Y... Break on Data Value Match... • Breakpoint history
OS Aware debugging	• View and navigate OS processes by thread • OS Resource viewer • Zero target overhead
Extended target visibility	• User defines visibility of peripherals, registers and memory locations • Interpretive descriptions of complex bitfields • Predefined configuration files



Proven Ease and Power

The RealView Debugger implements the proven graphical and debugging features of the RealView Developer Suite, in a version that is targeted to developers of STR7 applications. Graphical interface features include point-and-click mouse commands for common tasks such as setting breakpoints and accessing contextual commands. The debugger provides complete breakpoint support, including support of **complex breakpoints** that you can configure and save.



Operating System Awareness

The RealView Debugger's **thread display** and color-coded **resource viewing** provide a detailed picture of concurrent OS functions and the evolution of OS resources throughout application execution. OS awareness places no additional overhead requirements on the target system.

Extended Target Visibility

For improved visibility of the target system and reduced user error, **BCD files** allow users to define how mapped peripherals, registers and memory locations are displayed. Standard BCD files for your STR7 are included with RVDK for ST. Additional files supporting new STR7 devices and evaluation boards are available for download.

RealView ICE-ME JTAG run control unit

The RealView ICE-ME run control unit provides the hardware interface debugging and programming STR7 microcontrollers. Via an industry standard JTAG interface (20-pin connection), users download code to the target STR7, modify memory and registers and control the execution of an application.

Note: Full functionality of the RealView Debugger requires the connection of the RealView ICE-ME run control unit to the host PC's USB port.

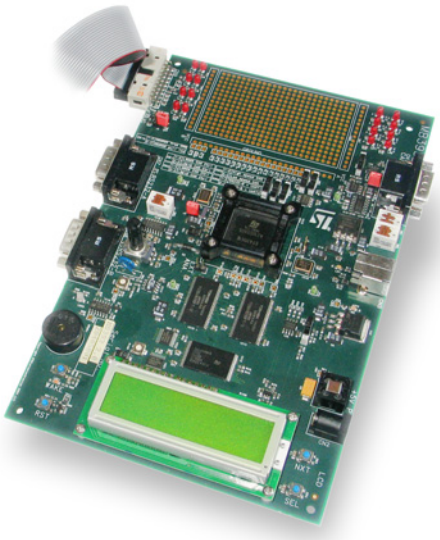
RealView ICE Micro Edition for STR7	
PC Connection	• USB
Application Interface	• JTAG port (20-pin)
Supported Devices	• STR71x, STR720
Clock Frequencies	• 65.5Hz - 8MHz
Download speed	• 100 Kb/sec with 8MHz JTAG clock rate

Ordering and Support

Additional software/hardware support

Standard and USB C libraries provide easy access to standard STR7 peripherals including UART, CAN, Analog digital converter, Flash and USB, to help reduce your development time and improve code maintainability.

ST also provides cost-effective, flexible, open-design **evaluation boards** that incorporate JTAG standard interface and a high performance STR7 device with USB and CAN peripherals.



RVDK ordering, licensing and upgrades

Order the RealView Developer Kit for ST from any STMicroelectronics local distributor or sales office, or from any official ARM distributor.

Each RVDK for ST includes a serial number used to obtain a Windows node-locked license from ARM.

RVDK Licensing and Upgrades

Ordering code	*Description*	Features	Price[3]
STR7-RVDK	**RVDK *Full Version***	• Full optimization (-O0, -O1, -O2) • License for the life of the product • Download speed 100KB/sec • RealView ICE-ME run control unit • Unlimited code size	$2000 (3)
STR7-RVDK/BAS	**RVDK *Basic Edition***	• Optimization levels -O0 and -O1 • One-year license • Download speed 25KB/sec • RealView ICE-ME run control unit • Unlimited code size	$1000 (3)
STR7-RVDK/UPG	**Upgrade from RVDK *Basic Edition* to *Full Version*** [4]		$1000 (3)
STR7-RVDK/CPP	**C++ Compiler**		$800 (3)
STR7-RVICE/ME	**RealView ICE-ME run control unit**	• USB/JTAG connections • CD with RVDK Preview Edition [5]	$200 (3)

[3] All prices are indicative, and may vary between regions or vendors.
[4] For information about upgrading RVDK for ST to RealView Developer Suite, contact ARM.
[5] RVDK Preview Edition is a 45-day trial version.

For more information...

For more information about the RealView Developer Kit for ST, your can refer to the appropriate user manuals, which are available at ***www.arm.com*** and are provided on the ARM RealView Developer Kit for ST CD-ROM.

The following additional information about ST ARM core-base microcontrollers and developing STR7 applications is available for free download at ***www.st.com/mcu***:

- STR71x Datasheet
- STR720 Datasheet

RVDS Compatibility

RealView Developer Suite (RVDS) objects are fully compatible with RVDK for ST. However, because RVDK for ST is tailored to the STR7 microcontrollers, the resulting objects cannot be debugged with the RealView Debugger (RVD) in RVDS.

The RealView ICE-ME run control unit is designed for use with the RealView Developer Kit for ST and cannot be used with RVDS or the RVD Debugger.

Internet support

For the latest software updates and information about RealView Developer Kit for ST, please refer to the ST microcontroller site, **www.st.com/mcu**. Here you will find free software, documentation, training presentations, user groups, FAQs and the all latest products supporting the STR7 family of ARM core-based microcontrollers.

Additional information about ARM core technology and and licensing for RealView Developer Kit can be found at **www.arm.com/support/**.

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Full product information at www.st.com

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