

# CodeTAP<sup>®</sup>-BDM for Motorola CPU32

## Highlights

- Support for all CPU32 processors and controllers, both 3- and 5-volt, with display windows for processor peripheral registers and chip selects
- CodeTAP<sup>®</sup>-BDM joins Applied's advanced CPU32 emulators to provide a full range of debug power at low cost
- MWX-ICE debugger supports compiler and target debug needs:
  - point-and-click operation
  - optimized C/C++ debugging
  - robust peripheral register and target interface features
  - common interface with other Applied emulation tools
- Ethernet communications (optional on Windows PC hosts) provides LAN connectivity and high-speed downloads to target systems
- RTOS-Link<sup>™</sup>/KA option provides high-level view of RTOS data structures and allows task qualification for breakpoints from within MWX-ICE
- Fully transparent system requires no target memory space, I/O ports, interrupts, or chip selects
- External triggers facilitate using CodeTAP-BDM with other instruments

## Companion Products

- CodeTEST<sup>™</sup> Software Verification Tools provide a suite of tools for software developers and testers, including memory allocation analysis, performance analysis, code coverage analysis and trace analysis. CodeTEST and CodeTAP-BDM are designed to work together to provide comprehensive embedded software debug control and measurement.

## CodeTAP-BDM—The Low-Cost CPU32 Pocket Debugger.



## Debug Software in Your Target

CodeTAP<sup>®</sup>-BDM puts compact, low-cost debug power in the hands of every CPU32 software engineer. Using the Background Debug Mode resources found on every CPU32 processor and controller, CodeTAP-BDM allows the software engineer to plug the powerful MWX-ICE debugger into any CPU32 target without linking code, writing drivers, reserving interrupts, or modifying hardware.

## Intuitive Multi-Windowed Debugger

The MWX-ICE debugger helps get your product to market fast. It combines extraordinary power to debug optimized C/C++ code with an easy-to-use multi-windowed interface for both workstation and PC platforms. And MWX-ICE provides a modern, point-and-click interface for display and setup of CPU32 peripheral registers. With the RTOS-Link/KA option, one debugger combines all the functions you need from initializing the CPU to monitoring high-level OS calls. That means no more switching between debuggers or using low-level terminal mode commands to move from peripheral bit-setting to high-level C++ application code.



Applied  
Microsystems  
Corporation

We also offer tools to support these Motorola Products:  
68020/EC020, 68030/EC030, 68040/EC/LC040, 68040V, 68060/EC/  
LC060, 68000/EC/HC000, 68330/340, 68331/2, 68302, ColdFire



### Get Active Control for Passive Instruments

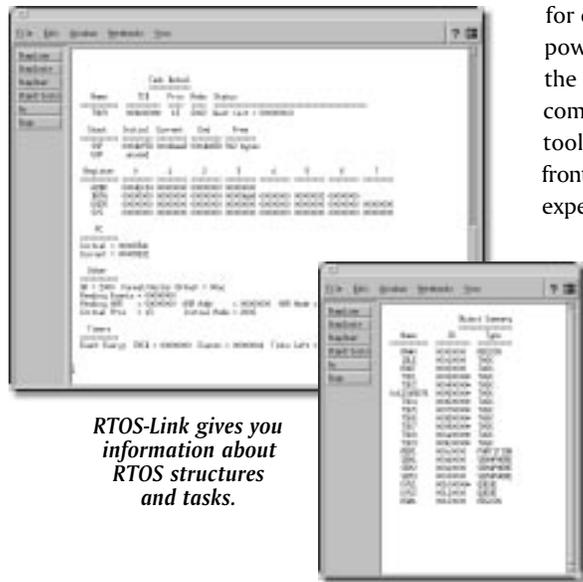
External triggers allow CodeTAP-BDM to be an active controller for passive bus and logic monitoring instruments. The triggers provide run/pause signals to external instruments such as logic analyzers. The external break input allows another instrument to signal CodeTAP-BDM to break. Active control allows CodeTAP-BDM to serve as the central element in production test, service, and hardware verification environments.

### RTOS-Level Visibility and Control

Applied's RTOS-Link/KA option provides access to important RTOS data structures and task status summaries. You can use task-qualified breakpoints to focus on specific tasks in a debug session.

### A Selection of Compatible Tools

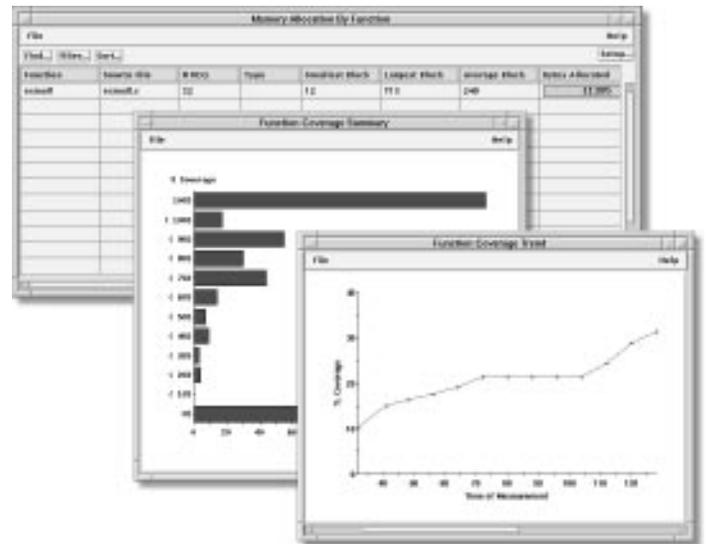
CodeTAP-BDM joins Applied's family of emulators for CPU32 processors so engineers and project managers can choose both lower-cost tools for everyday use and more powerful tools to root out the toughest bugs. A compatible family, all the tools share a common debug front-end to leverage experience and training.



*RTOS-Link gives you information about RTOS structures and tasks.*

### CodeTEST Companion Tools Test, Analyze and Measure Code Performance

Software development is made from equal parts of debugging and testing code. The CodeTAP-BDM provides an exceptional set of tools to debug code; CodeTEST offers the same for testing code. In fact, CodeTEST is the first software verification tool suite crafted specifically for embedded software. It offers memory allocation analysis to help you locate memory leaks and detect improper uses of malloc() and free(). Performance analysis provides real-time module duration and call-pair linkages for up to 32,000 functions. The coverage analysis package clarifies the effectiveness of your test suite to help you develop higher quality code. Finally, the trace analysis package offers multiple ways to view the execution history of your program and, thereby, see the "big picture" about the operation of your software.



*CodeTEST is a new family of tools for embedded software developers and testers.*

# CodeTAP-BDM for Motorola CPU32

## Microprocessor Support

3- and 5-volt Motorola CPU32 microprocessors and microcontrollers with Background Debug Mode

## Host Requirements

### PC Environment

PC386, Microsoft Windows 3.1 or higher, 16 MB RAM, ISA or EISA slot

### Sun Environment

Sun SPARC, Sun OS 4.1, 16 MB RAM Solaris 2.2 or above

### HP Environment

HP 9000, HP-UX 9.0 or above, 20 MB swap

## Communications

RS-232C serial interface (PC)  
High-speed Synchronous Serial interface (PC)  
Ethernet (Sun/HP standard, PC optional)

## Power Requirements

2A at 5V maximum; 1.3A at 5V typical  
Powered from target or external supply

## Physical Specifications

Dimensions (LHW): 5.6 X 1.0 X 3.0"  
(14.22 X 2.54 X 7.62 cm)  
Weight: 5 oz.  
Ambient Humidity: 0–90% non-condensing  
Operating temperature: 32–104° F  
(0–40° C)

## Optional Software Development Tools

ANSI C/C++ cross-compiler  
Cross-assembler  
Embedded linking loader  
Object module librarian

## MWX-ICE High-Level Debugger

**Efficient Source-Level Debug**  
Window-oriented interface (X-Window support on Sun SPARCstation and HP 9000)  
Support for C/C++ on PC, Sun, and HP  
Access to all global, local, stack-based and register-based variables in source-code form  
Full C-typing features for commands and macros  
Execution breakpoints can be set on line numbers, C statements, program labels, and memory addresses  
Line assembler patches code directly

## Target and CPU Awareness

Window register displays for CPU32 peripherals and chip selects  
Decode register-bit value definitions (331/332 and 360 processors)  
Automatic CPU32 register initialization  
Control of bus-width and function code attributes for all target bus cycles  
**Advanced Testing and Set-Up Capabilities**  
Construct complex macros containing C-like statements and debugger commands  
Record and play back debugging sessions

## File Format Compatibility

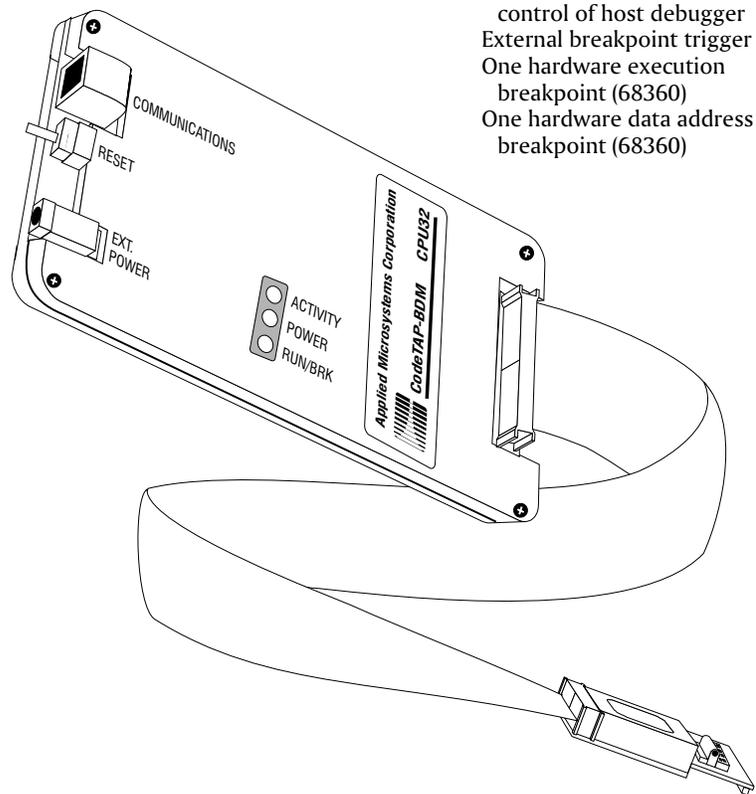
MRI toolchain; IEEE 695; a.out

## RTOS-Link/KA

View RTOS data structures, qualify breakpoints by task

## Breakpoint System

64 software execution breakpoints  
Asynchronous breaking allowed under control of host debugger  
External breakpoint trigger in and out  
One hardware execution breakpoint (68360)  
One hardware data address breakpoint (68360)



**Applied  
Microsystems  
Corporation**

**U.S. and Canada**  
Applied Microsystems Corporation  
5020 148th Avenue N.E.  
P.O. Box 97002  
Redmond, WA 98073-9702  
Tel: 206-882-2000  
Toll-Free: 1-800-426-3925  
TRT Telex 185196  
Fax: 206-883-3049

**Europe**  
Applied Microsystems Corporation Ltd.  
AMC House, South Street  
Wendover, Buckinghamshire, HP22 6EF  
United Kingdom  
Tel: +44 (0)1296-625462  
Fax: +44 (0)1296-623460

**France**  
Applied Microsystems S.A.R.L.  
ZA1 de Courtaboeuf  
7, Avenue des Andes  
F-91952 Les Ulis Cedex  
France  
Tel: +33-1-64-463000  
Fax: +33-1-64-460760

**Germany**  
Applied Microsystems GmbH  
Stahlgruberring 11a, 81829 Muenchen  
Germany  
Tel: +49 (0)89-427-4030  
Fax: +49 (0)89-427-40333

**Japan**  
Applied Microsystems Japan, Ltd.  
Arco Tower 13 F  
1-8-1 Shimomeguro, Meguro-ku  
Tokyo 153  
Japan  
Tel: +81-3-3493-0770  
Fax: +81-3-3493-7270

**For more information, call 1-800-426-3925  
e-mail [info@amc.com](mailto:info@amc.com), or browse <http://www.amc.com>**

CodeTAP is a registered trademark and CodeTEST is a trademark of Applied Microsystems Corporation. All other brand names, product names or trademarks cited herein belong to their respective holders.

This document may contain preliminary information and is subject to change without notice. Applied Microsystems Corporation assumes no responsibility or liability for any use of the information contained herein. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Applied Microsystems Corporation or third parties. NO WARRANTIES OF ANY KIND, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE OFFERED IN THIS DOCUMENT.

© Applied Microsystems Corporation 1996 All rights reserved.

