



## PRODUCT INFORMATION

### *Product Profile*

# MCUdebug™ Source Level Debugger and Integrated Development Environment

MCUdebug consists of a Source Level Debugger (SLD) and Integrated Development Environment (IDE). MCUdebug supports 8-bit MCUs on both the high performance Motorola Modular Development Systems (MMDS) and the cost effective Motorola Modular Evaluation System (MMEVS). Target platforms that have a Background Debug Mode (BDM) connector are also supported.

MCUdebug operates under 32-bit windows and supports source-level debugging for both assembly and C programming languages. The IDE is compatible with MCUasm™ and can be configured to work with other assemblers, compilers and editors. MCUdebug provides the same look-and-feel when used with an emulator, an evaluation system, or when in stand-alone operation. It is not necessary to learn new commands or syntax to move from an evaluation system to an emulator. A user can edit source code, assemble or compile that code, link and download the executable files, and then debug the application without leaving MCUdebug.

#### Features include:

- Common graphical user interface on a variety of target platforms
- Source-level debugging using popular debugging formats, such as the Common Object File Format (COFF) and P&E Microcomputer's Mapfile
- Integrated Development Environment
- Built-in assembler and disassembler
- Project definition and support aid application creation, development and maintenance.
- Short-cut Command Language Interface
- Ability to log and save commands
- Script files which can be used to automate set-up or testing
- Customization of the GUI including, colors, fonts and window layout
- User controlled definition of the editor, compiler and assembler
- Full access to emulator features, including real-time breakpoints and real-time trace buffer
- Automatic detection and configuration of the emulated MCU when working with the MMDS
- Command aliasing capability allows customizing command language.
- Capability to save and restore the current set-up
- On-line help

#### Command Summary

MCUdebug provides a wide variety of commands to assist a user in developing and in debugging applications. **Table 1** contains a complete list of command mnemonics and a brief functional description of each command. Commands can be accessed either through a graphical user interface (GUI) or by means of a command line interface. The GUI is simple, easy to learn, and easy to use — the user simply points and clicks with a mouse.



**Table 1 Command Summary**

<b>A</b>	Set Accumulator	<b>ACC</b>	Set Accumulator
<b>ADDASM</b>	Add an asm source file to project	<b>ADDC</b>	Add a C source file to project
<b>ALIAS</b>	Alias an existing command	<b>ANIMATE</b>	Single step forever
<b>ARCH</b>	Define the project architecture	<b>AS</b>	Set the project assembler
<b>ASM</b>	Assemble instructions	<b>ASMOPT</b>	Set assembler options
<b>BAUD</b>	Set communications baud rate	<b>BC</b>	Clear breakpoints
<b>BD</b>	Disable breakpoints	<b>BE</b>	Enable breakpoints
<b>BELL</b>	Sound bell	<b>BF</b>	Block fill memory range
<b>BINPATH</b>	Set project binary path	<b>BL</b>	List breakpoints
<b>BP</b>	Set breakpoint	<b>BR</b>	Set breakpoint
<b>BUILD</b>	Build the project	<b>C</b>	Set/clear the C bit of CCR
<b>CCL</b>	Clear command log	<b>CCOM</b>	Set project C compiler
<b>CCOPT</b>	Set C compiler options	<b>CCR</b>	Set condition code register
<b>CF</b>	Execute command file	<b>CHIPINFO</b>	Chip help information
<b>CLEARMAP</b>	Remove symbols	<b>CLOSEPOJ</b>	Close current project
<b>CLRSYM</b>	Remove symbols	<b>COLORS</b>	Set screen colors
<b>COMPILE</b>	Compile/assemble source file	<b>DASM</b>	Disassemble instructions
<b>DELETE</b>	Delete source file from project	<b>DIFF</b>	Compare two files
<b>EDITPROJ</b>	Pop the project dialog	<b>EVAL</b>	Evaluate argument
<b>EXIT</b>	Terminate host session	<b>G</b>	Begin program execution
<b>GO</b>	Begin program execution	<b>GOTIL</b>	Execute program until address
<b>H</b>	Set/clear H bit of CCR	<b>HELP</b>	Display help information
<b>HREG</b>	Set H register(HC08)	<b>I</b>	Set/clear I bit of CCR
<b>INCPATH</b>	Set project include path	<b>INFO</b>	Information about source line
<b>LC</b>	Set project locator	<b>LCOPT</b>	Set project locator options
<b>LD</b>	Set project linker	<b>LDOPT</b>	Set project linker options
<b>LF</b>	Open log file	<b>LIB</b>	Define project libraries
<b>LIBPATH</b>	Set project library path	<b>LOAD</b>	Load object file
<b>LOADMAP</b>	Load a object file	<b>LOADMEM</b>	Load memory map
<b>LOG</b>	Set logging options	<b>MD</b>	Memory display
<b>MM</b>	Memory modify	<b>N</b>	Set/clear N bit of CCR
<b>NEWPROJ</b>	Start a new project	<b>NOBR</b>	Clear breakpoints
<b>NOLF</b>	Close log file	<b>OBJ</b>	Define project object file
<b>OPENPROJ</b>	Open an existing project file	<b>OSC</b>	Set emulator clock frequency
<b>PALIAS</b>	Display command alias	<b>PC</b>	Set/clear program counter
<b>QUIT</b>	Terminate host session	<b>RD</b>	Register display
<b>REBUILD</b>	Rebuild all project components	<b>REG</b>	Register display
<b>REM</b>	Add comment to script file	<b>RESET</b>	Reset target processor
<b>RESETIN</b>	Reset input enable	<b>RESETOUT</b>	Reset output enable
<b>RM</b>	Register modify	<b>S</b>	Stop the program execution
<b>SAVE</b>	Save current project	<b>SAVEAS</b>	Rename and save project
<b>SCANALL</b>	Scan all source file dependencies	<b>SCRIPT</b>	Execute script file
<b>SETMEM</b>	Customize memory map	<b>SHOWMEM</b>	Display memory map
<b>STEP</b>	Single step (trace)	<b>STEPFOR</b>	Step forever
<b>STEPTIL</b>	Single step to address	<b>STOP</b>	Stop program execution
<b>SYSINFO</b>	Display system information	<b>T</b>	Single step (trace)
<b>UNALIAS</b>	Remove alias	<b>UNVAR</b>	Remove variable from watch
<b>V</b>	Set/clear V bit of CCR	<b>VAR</b>	Display variable
<b>VER</b>	Display software version	<b>VERSION</b>	Display software version
<b>WAIT</b>	Pause command processing	<b>WHEREIS</b>	Display symbol value
<b>X</b>	Set X register	<b>XREG</b>	Set X register
<b>Z</b>	Set/clear Z bit of CCR		

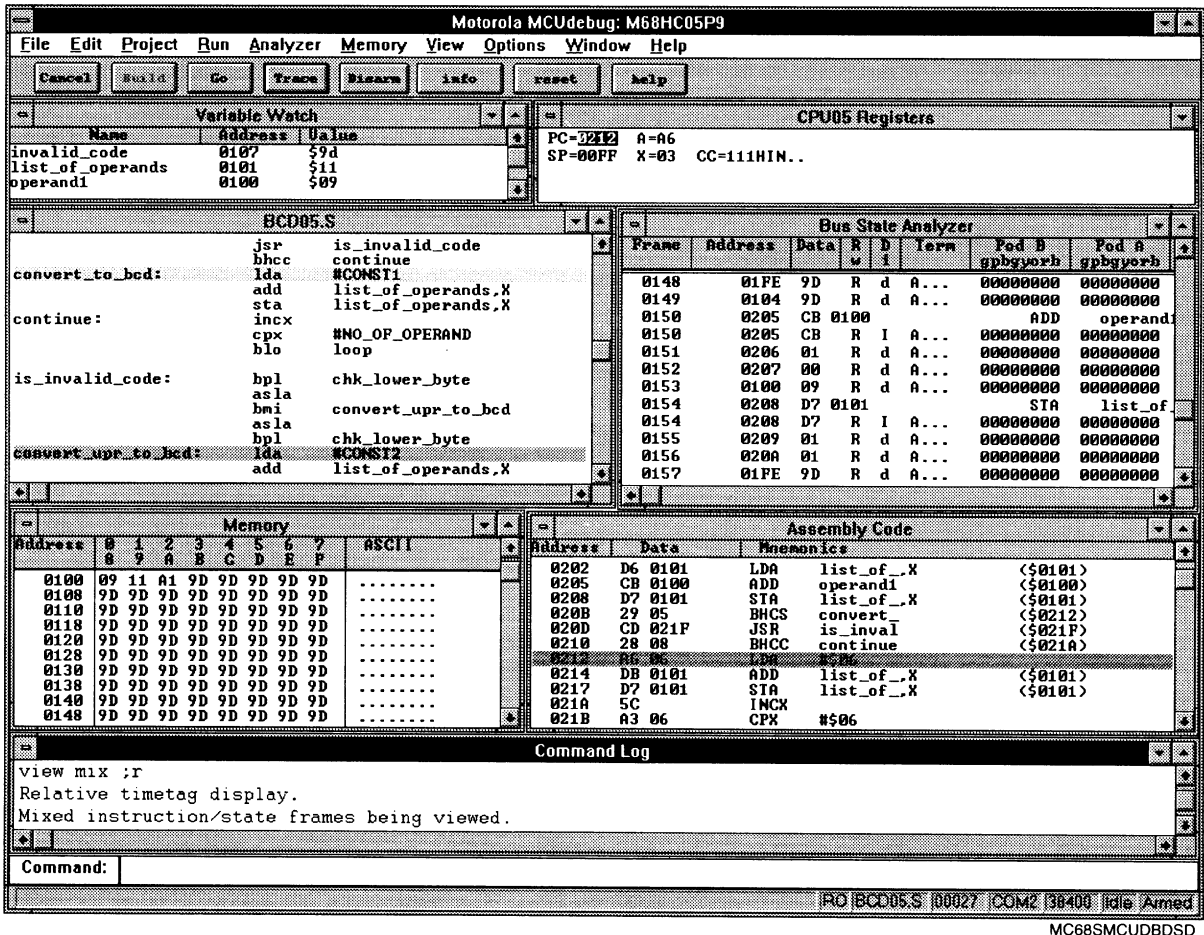


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Evaluation boards provide a basic level of debugging support. For more difficult debugging tasks, more sophisticated debugging support can significantly reduce product cycle time. In-circuit emulators, such as the Motorola MMDS05, provide these features. MCUdebug provides the additional features listed in **Table 2** when connected to an emulator. **Figure 1** shows the GUI in emulator mode.

**Table 2 Additional MMDS Commands**

<b>ARM</b>	Arm bus state analyzer	<b>CT</b>	Clear triggers
<b>DARM</b>	Disarm bus state analyzer	<b>ENDBSA</b>	Go to end of trace buffer
<b>GE</b>	Go to analyzer event	<b>GF</b>	Go to analyzer frame
<b>GP</b>	Go to analyzer pattern	<b>HOMEBSA</b>	Go to start of trace buffer
<b>LOADTRIGGERS</b>	Load a BSA trigger setup	<b>LT</b>	Log trace buffer
<b>NEXTA-E</b>	Go to next A-E event in trace buffer	<b>RTMEM</b>	Set real-time memory block
<b>RTVAR</b>	Display real-time variable	<b>SETMUX</b>	Set BSA multiplexor
<b>SQ</b>	Set analyzer sequencer	<b>ST</b>	Set trigger specifications
<b>SXB</b>	Set BSA multiplexor B	<b>TIMETAG</b>	Time tag clock source
<b>VIEW</b>	Select analyzer view	<b>WAIT4RESET</b>	Wait for target reset



**Figure 1 MCUdebug Emulator Interface**



debug is part of the MCUasm toolset. It is intended for use on IBM PCs and 100% compatible machines which contain an 80486-type (or later) microprocessor running MS-DOS<sup>™</sup> version 5.0 or later and Microsoft Windows<sup>™</sup> version 3.1 or later. 8 MB of RAM is required, and 20 MB of disk storage are needed to install the complete toolset.

## Contents

The MCUdebug package includes:

- Users Manual
- License Agreement
- 3.5 inch DSHD disk (1.44Mb)

The Users Manual includes telephone and facsimile numbers and an Internet address for technical support.

## Technical Support Information

- Telephone Support: 512-891-6276
- FAX Number: 512-891-2720
- Internet Address: [masm@lemond.sps.mot.com](mailto:masm@lemond.sps.mot.com)

## Ordering Information

MCUdebug comes bundled with MMDS05, MMDS08, MMEVS05, MMEVS08 development systems and MCUasm. These products can be ordered through Motorola and participating authorized distributors. For information about a sales office or distributor near you, please call (800) 765-7795, Extension 910.

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For information on Freescale's Environmental Products program, go to <http://www.freescale.com/epp>.

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