



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



**M68ICS05COM/D**

April 1998

**M68ICS05C  
HC705C IN-CIRCUIT SIMULATOR  
OPERATOR'S MANUAL**

## **Important Notice to Users**

While every effort has been made to ensure the accuracy of all information in this document, Motorola assumes no liability to any party for any loss or damage caused by errors or omissions or by statements of any kind in this document, its updates, supplements, or special editions, whether such errors are omissions or statements resulting from negligence, accident, or any other cause. Motorola further assumes no liability arising out of the application or use of any information, product, or system described herein; nor any liability for incidental or consequential damages arising from the use of this document. Motorola disclaims all warranties regarding the information contained herein, whether expressed, implied, or statutory, *including implied warranties of merchantability or fitness for a particular purpose*. Motorola makes no representation that the interconnection of products in the manner described herein will not infringe on existing or future patent rights, nor do the descriptions contained herein imply the granting or license to make, use or sell equipment constructed in accordance with this description.

## **Trademarks**

This document includes these trademarks:

Motorola and the Motorola logo are registered trademarks of Motorola Inc.

IBM is a registered trademark of IBM Corporation.

Windows is a registered trademark of Microsoft Corporation.

CASM05W, ICS05CW, and WinIDE software are © P & E Microcomputer Systems, Inc, 1996; all rights reserved.

Motorola Inc. is an Equal Opportunity /Affirmative Action Employer.

---

---

## TABLE OF CONTENTS

### CHAPTER 1 INTRODUCTION

1.1 OVERVIEW.....	1-1
1.2 TOOLKIT COMPONENTS.....	1-1
1.3 HARDWARE AND SOFTWARE REQUIREMENTS.....	1-2
1.4 TOOLKIT FEATURES.....	1-2
1.5 SPECIFICATIONS .....	1-3
1.6 ABOUT THIS USER'S MANUAL.....	1-3
1.7 QUICK START INSTRUCTIONS.....	1-4

### CHAPTER 2 POD INSTALLATION

2.1 OVERVIEW.....	2-1
2.2 INSTALLING THE M68ICS05C POD.....	2-1

### CHAPTER 3 SOFTWARE INSTALLATION AND INITIALIZATION

3.1 OVERVIEW.....	3-1
3.2 THE ICS05CW SOFTWARE COMPONENTS.....	3-1
3.2.1 The WinIDE Editor .....	3-1
3.2.2 CASM05W.....	3-1
3.2.3 ICS05CW .....	3-2
3.3 INSTALLING THE ICS05CW SOFTWARE.....	3-2
3.3.1 Installation Steps .....	3-2
3.3.2 Starting the ICS05CW Software .....	3-3
3.3.3 ICS Communication.....	3-3

### CHAPTER 4 THE WinIDE USER INTERFACE

4.1 OVERVIEW.....	4-1
4.2 THE WINDOWS INTEGRATED DEVELOPMENT ENVIRONMENT.....	4-1
4.3 WinIDE MAIN WINDOW .....	4-2
4.3.1 Main Window Functions.....	4-2
4.3.2 Main Window Components .....	4-2

---

---

**CHAPTER 4 THE WinIDE USER INTERFACE (continued)**

4.4 GETTING STARTED.....	4-3
4.4.1 Prerequisites for Starting the WinIDE Editor.....	4-3
4.4.2 Starting the WinIDE Editor.....	4-4
4.4.3 Opening Source Files .....	4-4
4.4.4 Navigating in the WinIDE Editor.....	4-4
4.4.5 Using Markers .....	4-5
4.5 COMMAND-LINE PARAMETERS.....	4-6
4.6 WinIDE TOOLBAR.....	4-7
4.7 WinIDE MENUS .....	4-9
4.8 WinIDE FILE OPTIONS .....	4-11
4.8.1 New File .....	4-11
4.8.2 Open File .....	4-12
4.8.3 Save File.....	4-12
4.8.4 Save File As.....	4-12
4.8.5 Close File.....	4-13
4.8.6 Print File.....	4-13
4.8.7 Print Setup .....	4-14
4.8.8 Exit .....	4-14
4.9 WinIDE EDIT OPTIONS.....	4-14
4.9.1 Undo .....	4-14
4.9.2 Redo .....	4-15
4.9.3 Cut .....	4-15
4.9.4 Copy .....	4-15
4.9.5 Paste .....	4-16
4.9.6 Delete.....	4-16
4.9.7 Select All .....	4-16
4.10 WinIDE ENVIRONMENT OPTIONS .....	4-16
4.10.1 Open Project.....	4-17
4.10.2 Save Project.....	4-18
4.10.3 Save Project As .....	4-18
4.10.4 Close/New Project.....	4-18
4.10.5 Setup Environment.....	4-18
4.10.5.1 The General Environment Tab.....	4-19
4.10.5.2 General Editor Tab .....	4-20
4.10.5.3 Assembler/Compiler Tab .....	4-22
4.10.5.4 Executable 1 (Debugger) and Executable 2 (Programmer) Tab.....	4-26

---

---

**CHAPTER 4 THE WinIDE USER INTERFACE (continued)**

4.10.6 Setup Fonts .....	4-28
4.11 WinIDE SEARCH OPTIONS.....	4-29
4.11.1 Find.....	4-29
4.11.2 Replace .....	4-30
4.11.3 Find Next.....	4-31
4.11.4 Go to Line.....	4-31
4.12 WinIDE WINDOW OPTIONS.....	4-31
4.12.1 Cascade.....	4-32
4.12.2 Tile .....	4-33
4.12.3 Arrange Icons .....	4-34
4.12.4 Minimize All .....	4-35
4.12.5 Split .....	4-36

**CHAPTER 5 ASSEMBLER INTERFACE**

5.1 OVERVIEW.....	5-1
5.2 CASM05WASSEMBLER USER INTERFACE.....	5-2
5.2.1 Passing Command Line Parameters to the Assembler in Windows 3.x .....	5-3
5.2.2 Passing Command Line Parameters to the Assembler in Windows 95.....	5-4
5.3 ASSEMBLER PARAMETERS.....	5-4
5.4 ASSEMBLER OUTPUTS .....	5-5
5.4.1 Object Files.....	5-5
5.4.2 Map Files.....	5-6
5.4.3 Listing Files.....	5-6
5.4.4 Files from Other Assemblers.....	5-6
5.5 ASSEMBLER OPTIONS.....	5-7
5.5.1 Operands and Constants .....	5-7
5.5.2 Comments.....	5-8
5.6 ASSEMBLER DIRECTIVES .....	5-8
5.6.1 BASE.....	5-8
5.6.2 Cycle Adder.....	5-9
5.6.3 Conditional Assembly .....	5-11
5.6.4 INCLUDE.....	5-11
5.6.5 MACRO .....	5-12

## CHAPTER 5 ASSEMBLER INTERFACE (continued)

5.7 LISTING DIRECTIVES .....	5-13
5.7.1 Listing Files .....	5-13
5.7.2 Labels .....	5-15
5.8 PSEUDO OPERATIONS.....	5-16
5.8.1 Equate (EQU).....	5-16
5.8.2 Form Constant Byte (FCB) .....	5-17
5.8.3 Form Double Byte (FDB).....	5-17
5.8.4 Originate (ORG).....	5-17
5.8.5 Reserve Memory Byte (RMB).....	5-17
5.9 ASSEMBLER ERROR MESSAGES .....	5-18
5.10 USING FILES FROM OTHER ASSEMBLERS.....	5-20

## CHAPTER 6 ICS05CW SIMULATOR USER INTERFACE

6.1 OVERVIEW.....	6-1
6.2 THE ICS05CW IN-CIRCUIT SIMULATOR.....	6-1
6.2.1 ICS05CW Simulation Speed.....	6-1
6.2.2 System Requirements for Running the ICS05CW.....	6-2
6.2.3 File Types and Formats .....	6-2
6.3 STARTING ICS05CW.....	6-5
6.4 ICS05CW WINDOWS.....	6-7
6.5 CODE WINDOWS .....	6-7
6.5.1 To Display the Code Windows Shortcut Menus.....	6-8
6.5.2 Code Window Shortcut Menu Functions .....	6-8
6.5.3 Code Window Keyboard Commands.....	6-9
6.6 VARIABLES WINDOW .....	6-9
6.6.1 Displaying the Variables Shortcut Menu .....	6-10
6.6.2 Variables Window Shortcut Menu Options .....	6-10
6.6.3 Variable Window Keyboard Commands.....	6-11
6.7 MEMORY WINDOW .....	6-12
6.8 STATUS WINDOW .....	6-13
6.9 CPU WINDOW.....	6-15
6.9.1 Changing Register Values.....	6-15
6.9.2 CPU Window Keyboard Commands .....	6-16

---

---

**CHAPTER 6 ICS05CW SIMULATOR USER INTERFACE (continued)**

6.10 CHIP WINDOW .....	6-17
6.10.1 Reading Values in the Chip Window .....	6-17
6.10.2 Chip Window Keyboard Commands .....	6-17
6.11 CYCLES WINDOW .....	6-18
6.12 STACK WINDOW .....	6-18
6.12.1 Interrupt Stack .....	6-19
6.12.2 Subroutine Stack .....	6-19
6.13 TRACE WINDOW .....	6-20
6.14 BREAKPOINT WINDOW .....	6-21
6.14.1 Adding a Breakpoint .....	6-21
6.14.2 Editing a Breakpoint.....	6-22
6.14.3 Deleting a Breakpoint.....	6-22
6.14.4 Removing All Breakpoints.....	6-23
6.15 PROGRAMMER WINDOWS.....	6-23
6.16 REGISTER BLOCK WINDOW.....	6-24
6.17 ENTERING DEBUGGING COMMANDS.....	6-25
6.18 ICS05CW TOOLBAR.....	6-25
6.19 ICS05CW MENUS .....	6-27
6.20 FILE OPTIONS.....	6-28
6.20.1 Load S19 File .....	6-29
6.20.2 Reload Last S19.....	6-29
6.20.3 Play Macro.....	6-30
6.20.4 Record Macro.....	6-30
6.20.5 Stop Macro .....	6-31
6.20.6 Open Logfile.....	6-31
6.20.7 Close Logfile .....	6-32
6.20.8 Exit .....	6-32
6.21 ICS05CW EXECUTE OPTIONS .....	6-33
6.21.1 Reset Processor.....	6-33
6.21.2 Step.....	6-33
6.21.3 Multiple Step .....	6-34
6.21.4 Go.....	6-34
6.21.5 Stop.....	6-34
6.21.6 Repeat Command.....	6-34



## CHAPTER 6 ICS05CW SIMULATOR USER INTERFACE (continued)

6.22 ICS05CW WINDOW OPTIONS .....	6-35
6.22.1 Open Windows .....	6-35
6.22.2 Change Colors .....	6-35
6.22.3 Reload Desktop .....	6-36
6.22.4 Save Desktop .....	6-36

## CHAPTER 7 ICS05CW DEBUGGING COMMAND SET

7.1 OVERVIEW .....	7-1
7.2 ICS05CW COMMAND SYNTAX .....	7-2
7.3 COMMAND-SET SUMMARY .....	7-3
7.3.1 Argument Types .....	7-3
7.3.2 Command Summary .....	7-4
7.4 COMMAND DESCRIPTIONS .....	7-9

## CHAPTER 8 EXAMPLE PROJECT

8.1 OVERVIEW .....	8-1
8.2 SETTING UP A SAMPLE PROJECT .....	8-1
8.2.1 Set Up the Environment .....	8-1
8.2.2 Create the Source Files .....	8-2
8.2.3 Assemble the Project .....	8-3

## APPENDIX A S-RECORD INFORMATION

A.1 OVERVIEW .....	A-1
A.2 S-RECORD CONTENT .....	A-1
A.3 S-RECORD TYPES .....	A-2
A.4 S-RECORD CREATION .....	A-3
A.5 S-RECORD EXAMPLE .....	A-3
A.5.1 The S0 Header Record .....	A-4
A.5.2 The First S1 Record .....	A-5
A.5.3 The S9 Termination Record .....	A-6
A.5.4 ASCII Characters .....	A-6

---

---

**APPENDIX B SUPPORT INFORMATION**

B.1 OVERVIEW .....	B-1
B.2 FUNCTIONAL DESCRIPTION OF THE KIT.....	B-1
B.2.1 The Emulator .....	B-1
B.2.2 Programming .....	B-2
B.3 TROUBLESHOOTING THE QUICK START.....	B-2
B.4 TROUBLESHOOTING THE PROGRAMMER .....	B-4
B.5 SCHEMATIC DIAGRAM AND PARTS LIST.....	B-5
B.6 BOARD LAYOUT.....	B-10

**GLOSSARY****INDEX****FIGURES**

1-1. <i>WinIDE Environment Settings</i> Dialog <i>EXE1 Tab</i> .....	1-5
1-2. <i>WinIDE Environment Settings</i> Dialog <i>Assembler/Compiler Tab</i> .....	1-5
1-3. The WinIDE Debugger Toolbar Button.....	1-6
1-4. The WinIDE Assemble/Compile File Toolbar Button.....	1-6
3-1. The <i>Pick Device</i> Dialog .....	3-4
4-1. WinIDE Window Components .....	4-2
4-2. WinIDE Status Bar.....	4-3
4-3. Edit Shortcut Menu .....	4-5
4-4. Marker Sub-menu .....	4-6
4-5. WinIDE Toolbar .....	4-7
4-6. File Menu .....	4-11
4-7. <i>Open File</i> Dialog.....	4-12
4-8. <i>Print</i> Dialog.....	4-13
4-9. Edit Menu.....	4-14
4-10. Environment Menu .....	4-17
4-11. <i>Specify project file to open</i> Dialog.....	4-17
4-12. <i>Specify project file to save</i> Dialog.....	4-18
4-13. <i>Environment Settings</i> Dialog <i>General Environment Tab</i> .....	4-19
4-14. <i>Environment Settings</i> Dialog: <i>General Editor Tab</i> .....	4-21

---



---

**FIGURES (continued)**

4-15. <i>Environment Settings</i> Dialog: <i>Assembler/Compiler</i> Tab .....	4-23
4-16. Error Format List.....	4-26
4-17. <i>Environment Settings</i> Dialog: <i>EXE 1 (Debugger)</i> and <i>EXE 2 (Programmer)</i> Tabs .....	4-27
4-18. <i>Setup Fonts</i> Dialog.....	4-28
4-19. Search Menu .....	4-29
4-20. <i>Find</i> Dialog .....	4-29
4-21. <i>Replace</i> Dialog.....	4-30
4-22. <i>Go To Line Number</i> Dialog.....	4-31
4-23. The Window Menu .....	4-32
4-24. WinIDE with Subordinate Windows Cascaded.....	4-32
4-25. WinIDE with Subordinate Windows Tiled.....	4-33
4-26. WinIDE with One Source Window Displayed and Remaining Windows Minimized .....	4-34
4-27. The WinIDE Editor with Subordinate Windows Minimized.....	4-35
4-28. Cascaded Windows with Active Window Split.....	4-36
5-1. WinIDE with CASM05W Assembler Window Displayed.....	5-2
5-2. Windows 95 Program Item Property Sheet (Shortcut Property for CASM05W.EXE).....	5-3
5-3. CASM05W for Windows Assembler Parameters.....	5-4
6-1. <i>Can't Contact Board</i> Dialog .....	6-6
6-2. The ICS05CW Windows Default Positions.....	6-7
6-3. Code Window in Disassembly Mode with Breakpoint Toggled.....	6-8
6-4. Code Window Shortcut Menu .....	6-8
6-5. <i>Window Base Address</i> Dialog .....	6-9
6-6. Variables Window with Shortcut Menu.....	6-10
6-7. <i>Add Variable</i> Dialog .....	6-10
6-8. Memory Window with Shortcut Menu .....	6-12
6-9. Status Window .....	6-13
6-10. Results of Entering the LF Command in the Status Window .....	6-14
6-11. <i>Specify Output LOG File!</i> Dialog .....	6-14
6-12. The <i>Logfile Already Exists</i> Message.....	6-14
6-13. CPU Window with Shortcut Menu .....	6-15
6-14. The <i>Change CCR</i> Dialog .....	6-16
6-15. Chip Window .....	6-17
6-16. Cycles Window .....	6-18
6-17. Stack Window .....	6-19
6-18. Trace Window.....	6-20
6-19. Breakpoint Window with Shortcut Menu .....	6-21
6-20. <i>Edit Breakpoint</i> Dialog .....	6-21

---

---

**FIGURES (continued)**

6-21. PROG05C Programmer Pick Window .....	6-23
6-22. Programmer Files Window .....	6-24
6-23. The Register Block Window.....	6-24
6-24. The WinReg Window with Typical Register File Information.....	6-25
6-25. WinIDE Toolbar .....	6-25
6-26. File Menu .....	6-28
6-27. <i>Specify S19 File to Load</i> Dialog .....	6-29
6-28. <i>Specify MACRO File to Execute</i> Dialog .....	6-30
6-29. <i>Specify MACRO File to Record</i> Dialog .....	6-30
6-30. <i>Specify Output LOG File</i> Dialog.....	6-31
6-31. <i>Logfile Already Exists</i> Dialog .....	6-31
6-32. A Sample Output Log File.....	6-32
6-33. ICS05CW Execute Menu.....	6-33
6-34. Window Menu .....	6-35
6-35. <i>Change Window Colors</i> Dialog .....	6-36
7-1. Assembly Window — ASM Command with (left), without (right) Argument.....	7-11
7-2. <i>Pick Device</i> Dialog.....	7-26
7-3. <i>Modify Memory</i> Dialog .....	7-59
7-4. PROG05P Programmer Pick Window.....	7-67
8-1. CASM05W Window.....	8-4
B-1. M68ICS05C Schematic Diagram (Sheet 1 of 2).....	B-6
B-2. M68ICS05C Schematic Diagram (Sheet 2 of 2).....	B-7
B-3. M68ICS05C Board Layout.....	B-11

**TABLES**

1-1. M68ICS05C Specifications.....	1-3
3-1. The ICS05CW Software Files.....	3-3
4-1. WinIDE Toolbar Buttons .....	4-8
4-2. WinIDE Menus and Options Summary .....	4-9
4-2. WinIDE Menus and Options Summary (continued).....	4-10
5-1. Change Base Prefixes/Suffixes .....	5-8
5-2. Assembler Directives .....	5-10
5-3. Listing Directives.....	5-13
5-4. Listing File Fields .....	5-14
5-5. Pseudo Operations Allowed by the CASM05W.....	5-16
5-6. Assembler Error Messages.....	5-18

---



---

**TABLES (continued)**

5-6. Assembler Error Messages (continued).....	5-19
6-1. Base Prefixes and Suffixes.....	6-11
6-2. ICS05CW Toolbar Buttons.....	6-26
6-3. ICS05CW Menus and Options Summary .....	6-27
6-3. ICS05CW Menus and Options Summary (continued).....	6-28
7-1. Argument Types.....	7-3
7-2. ICS05CW Command Overview.....	7-4
7-2. ICS05CW Command Overview (continued).....	7-5
7-2. ICS05CW Command Overview (continued).....	7-6
7-2. ICS05CW Command Overview (continued).....	7-7
7-2. ICS05CW Command Overview (continued).....	7-8
7-2. ICS05CW Command Overview (continued).....	7-9
7-3. PROGRAM Commands.....	7-68
A-1. S-Record Fields.....	A-1
A-2. S-Record Field Contents .....	A-2
A-3. S-Record Types.....	A-3
A-4. S0 Header Record .....	A-4
A-5. S1 Header Record .....	A-5
A-6. S-9 Header Record.....	A-6
B-1. M68ICS05C Parts List .....	B-8
B-1. M68ICS05C Parts List (continued).....	B-9
B-1. M68ICS05C Parts List (continued).....	B-10

## CHAPTER 1

### INTRODUCTION

#### 1.1 OVERVIEW

This chapter provides an overview of the M68ICS05C In-Circuit Simulator Kit components and a Quick Start guide to setting up a development project.

The Motorola M68ICS05C In-Circuit Simulator Kit is a development toolkit for designers who develop and debug target systems that incorporate M68HC705 C4, C8, and C9 (A) Microcontroller Units (MCU) devices. The toolkit contains all of the hardware and software needed to develop and simulate source code for and program the Motorola M68HC705C microcontrollers.

Together, the M68ICS05C printed circuit board (pod) and the ICS05CW software form a complete simulator and non-real-time I/O emulator for the M68HC705 C4, C8, and C9 (A) devices. When you connect the pod to your PC and your target hardware, you can use the actual inputs and outputs of the target system during simulation of code.

Use the M68ICS05C toolkit with any IBM-Windows 3.x or Windows 95-based computer with a serial port.

#### 1.2 TOOLKIT COMPONENTS

The complete M68ICS05C toolkit contains:

- Hardware:
  - The M68ICS05C in-circuit simulator pod.
  - Sample M68HC705C8A and M68HC705C9A EEPROM MCUs.
  - A 40-pin DIP target emulation cable.
- Windows-optimized software components, collectively referred to as ICS05CW software, and consisting of:
  - WINIDE.EXE, the integrated development environment (IDE) software interface to your target system for editing and performing software or in-circuit simulation.
  - CASM05W.EXE, the CASM05W command-line cross-assembler.

- 
- ICS05CW.EXE, the in-circuit/standalone simulator software for the M68ICS05C target MCU.
  - Documentation:
    - The *M68ICS05C In-Circuit Simulator Operator's Manual*.
    - Technical literature, including *Understanding Small Microcontrollers*, an introductory guide to understanding and using Motorola MC68HC05 family microcontrollers.

### 1.3 HARDWARE AND SOFTWARE REQUIREMENTS

The ICS05CW software requires this minimum hardware and software configuration:

- An IBM-compatible host computer running Windows 3.x or Windows 95 operating system.
- Approximately 640 Kb of memory (RAM) and 2 Mb free drive space.
- A serial port for communications between the M68ICS05C and the host computer.

### 1.4 TOOLKIT FEATURES

The M68ICS05C toolkit is a low-cost development system that supports in-circuit simulation. Its features include:

- Software and in-circuit simulation of M68HC705 C4, C8, and C9 (A) MCUs
- Ability to program M68HC705 C4, C8, and C9 (A) EPROM microcontrollers
- Communication with the host PC via a serial port
- ICS05CW software, including editor, assembler, and assembly source-level simulator
- 64 instruction breakpoints
- SCRIPT command for automatic execution of a sequence of commands
- Emulation cable for connection to the target system
- On-screen, context-sensitive Windows Help
- CHIPINFO command supplies M68ICS05C pod memory-map, vector, register, and pin-out information
- Software responds to both mouse and keyboard controls

---

---

## 1.5 SPECIFICATIONS

Table 1-1 summarizes the M68ICS05C hardware specifications.

**Table 1-1. M68ICS05C Specifications**

<b>Characteristic</b>	<b>Specification</b>
Temperature: Operating Storage	0° to 40° C -40° to +85° C
Relative humidity	0 to 95% (non-condensing)
Power requirement	+9 Vdc @ 0.1 A (maximum) (from included wall transformer)
Dimensions	3.5 x 3.2 in. (89 x 81 mm)

## 1.6 ABOUT THIS USER'S MANUAL

This manual covers the M68ICS05C software, hardware, and reference information as follows:

- Chapter 2** — Pod Installation
- Chapter 3** — Loading and Initializing the ICS05CW Software
- Chapter 4** — WinIDE User Interface
- Chapter 5** — ICS05CW In-Circuit Simulator User Interface
- Chapter 6** — CASM05W Assembler Interface
- Chapter 7** — ICS05CW Debugging Command Set
- Chapter 8** — Example Project
- Appendix A** — S-Record Information
- Appendix B** — M68ICS05C Support Information
- Glossary**
- Index**



---

---

### NOTE

The procedural instructions in this user's manual assume that you are familiar with the Windows interface and selection procedures.

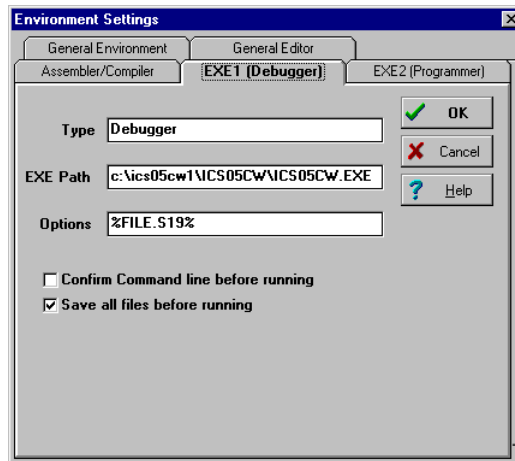
Figures in this manual show ICS05CW windows and dialog boxes as they appear in the Windows 95 environment.

## 1.7 QUICK START INSTRUCTIONS

The following instructions summarize the hardware and software installation instructions of Chapters 2 and 3.

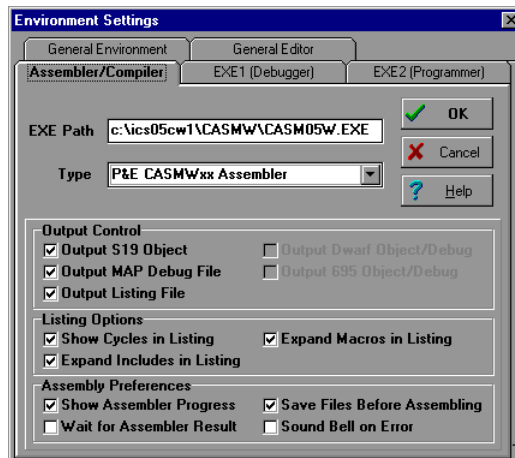
If you are experienced in installing Motorola or other development tools, follow these steps.

- **Install the ICS05CW software:** follow the instructions on the diskette label to run the ICS05CW Setup program. During installation, follow the instructions in the installation wizard: choose the *Typical Install* option to install the files to your hard disk, or choose the *Compact Install* option to copy the files onto another diskette.
- **Connect the M68ICS05C pod:** connect the M68ICS05C pod to the host PC's serial port using the included cable. Plug the cable into the pod connector P2.
- **Supply power to the M68ICS05C pod:** connect the wall-mounted transformer's circular connector to the connector on the left side of the pod, next to the serial connector.
- **Start the WinIDE editor and open the project files:** Double click the WinIDE icon. From the WinIDE Environment menu, choose the *Open Project* option, and choose a project file from the *Specify project file to open* dialog. If no project file exists, choose the *New* option from the File menu to create a new project file. Paragraph 8.3 gives additional information about setting up a sample project.
- **Configure the environment for the ICS05CW software components:** from the WinIDE Environment menu, select the *Setup Environment* option to open the *Environment Settings* dialog and make the following changes:
  - Click on the *EXE1 Debugger* tab to bring the tab (Figure 1-1) to the front. Set the executable type, path and filename, command line options (including optional switches, filenames, or port settings), and other options for the ICS05CW debugger application.



**Figure 1-1. WinIDE Environment Settings Dialog EXE1 Tab**

- Click on the *Assembler/Compiler* tab label to bring the tab (Figure 1-2) to the front. Set the executable path and filename, type, and other options for the CASM05W assembler or other application.



**Figure 1-2. WinIDE Environment Settings Dialog Assembler/Compiler Tab**

- If necessary, change the programmer settings in the *EXE2 (Programmer)* tab.
- Click on the *General Environment* and *General Editor* tabs and make changes in each as necessary.
- When you have specified all the environment settings, press the OK button to save the changes in the *WINIDE.INI* file and close the *Environment Settings* dialog.
- **Create a project file:** The desktop and environment settings you make in the *Environment Settings* dialog are stored in the *WINIDE.INI* file and read each time you start the WinIDE editor. You may also choose to save project-specific desktop and

---

environment settings in a project file (\*.PPF) which is read when you open the project, allowing you to save and use a general environment as well as custom environments for individual projects. To create the project file:

- Specify the project-specific desktop and environment settings in the WinIDE editor.
- Choose the *Save Project As* option from the WinIDE Environment menu to name and save the project to a directory folder.
- **Run the ICS05CW simulator:** With a project or source file open in the WinIDE main window, click the Debugger (EXE1) button (Figure 1-3) on the WinIDE toolbar to start the ICS05CW debugger and debug the contents of the active source window. Additional information about the ICS05CW debugger can be found in Chapter 6 and Chapter 7.



**Figure 1-3. The WinIDE Debugger Toolbar Button**

- **Assemble the code:** Press the *Assemble/Compile File* button (Figure 1-4) on the WinIDE toolbar to assemble the source code in the active WinIDE window. Additional information about the CASM05W assembler can be found in Chapter 5.



**Figure 1-4. The WinIDE Assemble/Compile File Toolbar Button**

If you experience problems with the Quick Start procedures, refer to section B.3 for troubleshooting instructions.

## CHAPTER 2

### POD INSTALLATION

#### 2.1 OVERVIEW

This chapter explains how to install the hardware components of the M68ICS05C in-circuit simulator on your host PC in both interactive and standalone modes.

When the M68ICS05C pod is connected to the serial port of a host PC, you can use the actual inputs and outputs of your target system during simulation of your source code. When the pod is not connected to the PC, you can use the ICS05CW software as a standalone simulator.

#### 2.2 INSTALLING THE M68ICS05C POD

Before beginning, locate these pod components:

- Hardware reset switch S3
- Power On switch S1
- 9-pin RS-232 serial connector P2
- 9 Volt Input Circular connector P1

To install the M68ICS05C Pod:

1. Connect the M68ICS05C pod to the serial port of your computer: attach the supplied 9-pin serial cable to the connector on the M68ICS05C board and attach the other end to the host PC's serial port.
2. Connect the 9-volt power supply: attach the power supply plug to the circular power connector on the M68ICS05C pod and plug the power supply into a surge protection device or wall outlet.
3. To run the ICS05CW software with actual input and output from the target device, connect the M68ICS05C pod to the 40-pin DIP socket on the target board using the 40-pin ribbon cable included in the M68ICS05C kit. When this connection is established and the pod and target system are started up, the target system will provide inputs to and accept output from the ICS05CW software.



## CHAPTER 3

### SOFTWARE INSTALLATION AND INITIALIZATION

#### 3.1 OVERVIEW

This chapter how to install and initialize the ICS05CW software.

#### 3.2 THE ICS05CW SOFTWARE COMPONENTS

The ICS05CW software consists of the following components:

- WINIDE.EXE: the Windows Integrated Development Environment editor
- CASM05W.EXE: the 68HC05 Cross Assembler
- ICS05CW.EXE: the in-circuit Simulator, optimized for the HC05Cx-family Motorola microcontrollers

##### 3.2.1 The WinIDE Editor

The WinIDE editor is a text editing application that lets you use several different programs from within a single development environment. Use the WinIDE editor to edit source code, launch a variety of compatible assemblers, compilers, debuggers, or programmers, and configure the environment to read and display errors from such programs.

If you select error detection options in the *Environment Settings* dialog, the WinIDE editor will highlight errors in the source code, and display the error messages from the compiler or assembler in the editor.

To debug source code in the WinIDE code window, load compatible source-level map files. You can configure the CASM05W to produce such map files as an output.

Because the WinIDE editor is modular, you may, for example, choose to substitute a third party C-compiler or other assembler for the CASM05W cross assembler provided in the toolkit.

##### 3.2.2 CASM05W

The CASM05W is a cross assembler that creates Motorola S19 object files and MAP files from assembly files containing 68HC05 instructions.

---

The CASM05W assembler has the same functionality as the DOS version of the assembler, optimized to take advantage of the Windows graphical environment. Using the assembler in conjunction with the WinIDE editor, you can edit standard ASCII files (such as the .ASM assembly files), and use menu options and toolbar buttons to call other customized assemblers, compilers, or debuggers. The resulting environment can allow assembled files to be downloaded and tested while the original source code is modified and assembled, all without leaving the WinIDE editing environment.

Paragraph 5-5 gives additional information about assembler options and how to use them.

### **3.2.3 ICS05CW**

The ICS05CW is a simulator for HC705C series microcontrollers that can get inputs and outputs (I/O) for the device when the external M68ICS05C pod is attached to the host computer. If you want to use I/O from your own target board, you can attach the M68ICS05C pod to your board through the extension cable that comes with the toolkit. You can also program HC05C devices using the ICS05C board and ICS05CW software.

You can start or move to the ICS05CW in-circuit simulator software from the WinIDE editor. The ICS05CW software can also be started using standard Windows techniques and run independently of the WinIDE editor.

The ICS05CW simulator accepts standard Motorola S19 object code files as input for object code simulation and debugging. If you are using a third party assembly- or C-language compiler, the compiler must be capable of producing source-level map files to allow source-level debugging.

## **3.3 INSTALLING THE ICS05CW SOFTWARE**

The ICS05CW software is supplied on two 3.5" diskettes containing a setup program that automatically installs the software on your hard drive.

### **3.3.1 Installation Steps**

To install the software on your host computer's hard drive, follow these steps:

1. Insert the ICS05CW diskette into the 3.5-inch disk drive.  
For Windows 3.x: in the Program Manager, select Run from the File menu.  
For Windows 95: from the Start Menu, select the Run option.
2. In the Run dialog, enter Setup (or click the Browse button to select a different drive and/or directory) and press OK.

3. In the ICS05CW Microsoft Setup Wizard, follow the instructions that appear on the screen.

#### NOTE

Select either the Typical Installation type to install the files to your hard disk, or choose Compact Installation to copy the files to another diskette.

Table 3-1 lists the files and directories required to control the ICS05CW program modules.

**Table 3-1. The ICS05CW Software Files**

Directory	Filename	Description
Casmw	casm05w.exe	Windows Cross Assembler for the 68HC05
ics05cw	ics05cw.exe	Windows In-Circuit Simulator
WinIDE	winide.exe	Windows integrated Development Environment (WinIDE) program file
	Winide.hlp	Help for WinIDE

### 3.3.2 Starting the ICS05CW Software

Depending on the operating system you are using, choose the appropriate method for starting the WinIDE software:

- From the Windows 3.x Program Manager, double-click the WinIDE and/or ICS05CW icon(s).
- From the Windows 95 Start Menu, select the WinIDE and/or ICS05CW icon(s).

You can start the ICS05CW simulator alone or from within the WinIDE.

### 3.3.3 ICS Communication

When you double-click the ICS05CW icon, the software attempts to communicate with the pod using the specified COM port, baud rate, and default parameters. When the software connects to the pod, the Status Bar contains the message, "Contact with pod established."

If the pod is not installed, or the ICS05CW software cannot establish communications with the pod through the specified COM port, the *Can't Contact Board* dialog appears, with options for changing the COM port or baud rate and retrying the connection, or choosing to run the simulator in standalone mode (with no input or output from the pod).



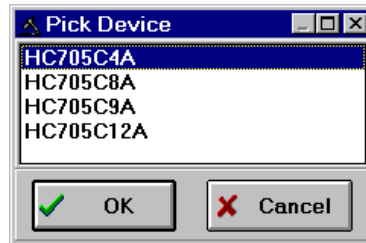
---

---

**NOTE**

The COM port assignment defaults to COM 1 unless you specify another port in the startup command.

The first time you attempt to connect to the pod after installing the ICS05CW software, the software asks you to select chip from the *Pick Device* dialog (Figure 3-1):



**Figure 3-1. The *Pick Device* Dialog**

To open the *Pick Device* dialog, enter the CHIPMODE command in the ICS05CW Status Window command line.

## **CHAPTER 4**

### **THE WinIDE USER INTERFACE**

#### **4.1 OVERVIEW**

This chapter is an overview of the WinIDE windows, menus, toolbars, dialogs, options, and procedures for using each.

#### **4.2 THE WINDOWS INTEGRATED DEVELOPMENT ENVIRONMENT**

The Windows Integrated Development Environment (the WinIDE editor) is a graphical interface for editing, compiling, assembling, and debugging source code for embedded systems using the M68ICS05C In-Circuit Simulator.

The WinIDE interface consists of standard Windows title and menu bars, a WinIDE toolbar, a main window containing any open source or project file windows, and a status bar. The WinIDE components are labeled in Figure 4-1 and described in paragraph 4.3.2.