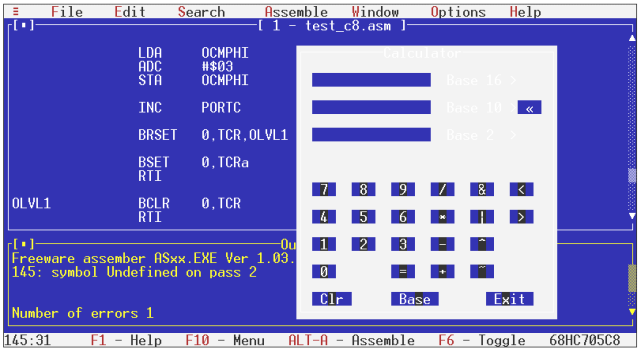
68HC05 & 68HC11 Development Tools

Oztechnics Development Systems

The Oztechnics **68HC05** and **68HC11** Development Systems are low cost PC based development systems for Motorola micro controllers. Both development systems provide all the hardware and software development tools required for single chip micro controller development.

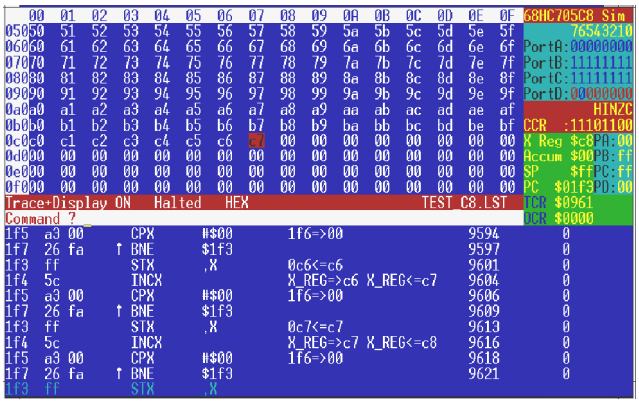
The development system software includes an Integrated Text Editor (ITEE), In Circuit Software Simulator (ICS), cross assembler, disassembler, programming software and demonstration routines.



The **text editor** *(above)* is the main working environment for developing code. The editor includes all the normal text editing features such as cut/copy/paste, undo, search/replace, book mark, mouse support, print, DOS shell, customisable screen setup & multiple source code editing of text files up to 4 megabytes in length.

In addition to the usual features found in a text editor, the editor has special features for developing assembly code, such as on-line technical data on Motorola micro controllers and instruction set, built in programmers calculator, ASCII chart and file work time history. The editor also integrates the cross assembler, disassembler, simulator and programming software to form a powerful code development and debugging environment.

Once a program is written it is assembled using the built in cross assembler. During the assembly process, the editor captures the output of the cross assembler and displays the error log in a separate window. To make debugging easier, the cursor in the edit window can be automatically positioned to the lines within the source code that have been flagged by the cross assembler.



The **simulator** is used to test and debug HC05 and HC11 code on the PC before committing it to the micro controller's EPROM.

Micro controller specific code can be loaded and exercised interactively with all the features you need to catch bugs eliminating the traditional 'burn and crash' method of micro controller software development.

When each instruction is simulated, a trace of the instruction appears at the bottom of the screen along with the next instruction to be executed. All values displayed on the simulator screen can be viewed in either hexadecimal, decimal or ASCII format.

The simulator features powerful debugging features including single instruction stepping, undo instruction step, running to breakpoints in address and registers, auto loading of I/O ports, session logging to disc, instruction and interrupt instruction clock cycle stamping, In Circuit Simulation, memory and register manipulation.

The simulator traps many common programming errors such as stack overflow, stack corruption, watchdog time-out, writing to read only memory locations, illegal instructions and illegal addresses.

Interactive prompts, menus and an on-screen command summary make the simulator quick and simple to operate with all commands entered into the simulator requiring only one simple key stroke.

All I/O ports of the micro controller are displayed on the screen in a binary and hexadecimal, decimal or ASCII format. All Input and Output lines are colour coded for easy identification. The source code can be viewed on the screen along with the instructions simulated making debugging even easier.

The simulator supports **In Circuit Simulation** which allows all I/O processing to be performed externally by the target hardware by running a monitor program in a controller on the programmer board.

External Interrupts, Timer Input captures and RESETS can be generated from the keyboard or from the actual target hardware.

All software updates and demonstrations are available FREE from the Oztechnics WEB site.

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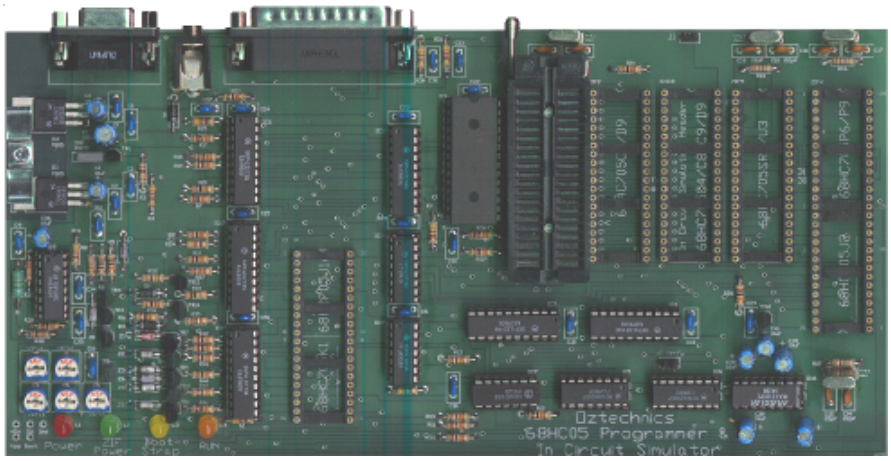
OZTEC-05



The OZTEC-05 Development System consists of a powerful software development package and universal 68HC05 programmer board.

The 68HC05 programmer board directly supports the **68HC705 C4, C4A, C8, C8A, C9, C9A, D9, D9A, J1A, J2, K1, SR3, SU3, P6, P9 & 68HC805C4** micro controllers.

With the addition of small adaptor boards the **B5, B16, MC4, E1, P18** and HMOS **P3, U3 & R3** controllers can be programmed as well.

The programmer board measures 250x125mm and requires a 9-12Vdc power supply. The board incorporates a DC-DC inverter for supplying the various programming voltages (Vpp) to the micro controllers. The programmer board is controlled by a PC, eliminating the need for complex jumper and switch settings.

The program to be burnt into the controller is automatically downloaded into the on board RAM of the programmer board eliminating the need to create mask EPROM's. For normal operation the board connects to the parallel port. An option serial port connection is required for In Circuit Simulation and reading the micro controller's internal EPROM.

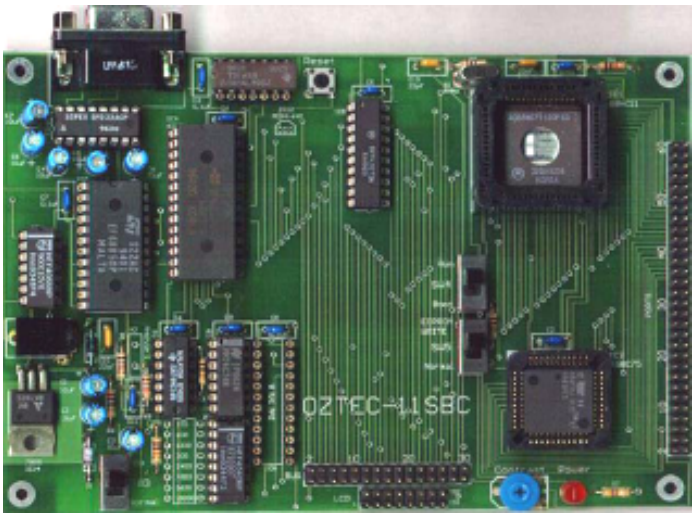
In Circuit Simulation (ICS) allows all I/O processing to be performed externally by the target hardware. The target circuit under test is connected to the programmer board's In Circuit Emulation (ICE) socket via a multi-way cable.

A 68HC705C8 controller programmed with the supplied ICS monitor program is then inserted into the programmer board to perform all I/O processing in the target hardware. This powerful technique allows both the hardware and software to be tested and debugged.

Some of the main features of the programming software include EPROM dump display; program; verify; blank test, batch programming, secure PROM; up load/down load program; execute program in RAM/PROM and display statistics on program loaded. The programming software also checks the loaded .S19 file against the specified controller type and reports any anomalies. A binary image of the EPROM can also be loaded if required.

A programmer board diagnostics utility is supplied for verifying correct controller, programmer board and PC operation.

OZTEC-11



The OZTEC-11 Development System consists of a powerful software package and a combined HC11 single board computer (SBC) and programmer board.

The OZTEC-11 board's main features include,

- A-series and E-Series support
- 52 PLCC ZIFF socket
- 32K SRAM
- 8K EEPROM
- X68C75 micro peripheral port replacement chip
- address/data bus access for off board expansion
- 60 pin header for HC11 I/O access
- LCD port
- 2nd Serial Port for monitor program to PC

The X68C75 is a port replacement chip for HC11 expanded mode operation and also contains an 8K EEPROM. This EEPROM is ideal for use with a Monitor/Debugger, BASIC or C interpreters that reside in EEPROM with the users program located in SRAM.

The HC11 operates in expanded mode with no loss of I/O lines and consists of 26 general purpose I/O lines (3 input captures, 5 out put compares), pulse accumulator, real-time interrupt, watchdog timer, 2 external hardware interrupts, 8 channel 8 bit A/D, 3 wire serial peripheral interface and RS232 asynchronous serial interface.

The OZTEC-11 board can be used to program any member of the '711' A-series and E-Series packaged in a 52-pin PLCC. The board is powered from a 12-15Vdc supply.

Oztechnics

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Order Form

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OZTEC-05 Starter Pack - HC05 programmer board and development software, plug pack, serial & parallel cable, 68HC705C8ACS micro controller, 100 page manual, 40 Way ICS Cable	$600
OZTEC-11 Starter Pack - HC11 single board computer and programmer, software, plug pack, serial cable, 68HC11E0 micro controller, 100 page manual	$600
OZTEC-05 & OZTEC-11 Development Systems	$1100
P3/U3/R3 Programmer adaptor board	$55
B5/B16/B32 Programmer adaptor board	$95
J1A/J2 ICS (In Circuit Simulation) adaptor board	$40
P3/SP3 ICS adaptor board	$40
U3/SU3/R3/SR3 ICS adaptor board	$40
P6/P9 ICS adaptor board	$40
16/20/28 way SOIC adaptor board	$85
40 DIL to 44 PLCC adaptor board (ie C8/C9 controller)	$85
40 way ICS cable	$25
28 way ICS cable	$25
20 way ICS cable	$25
16 way ICS cable	$25
68HC705C8ACS (windowed)	$45
68HC705C8ACP (OTP)	$20
68HC705SR3S (windowed)	$60
68HC705B16FS (windowed)	$70
68HC11E9FS (windowed)	$45
68SEC811E2FN	$40
Freight	$10 or
Airmail	$35 or
FedEx International AIR	$75

TOTAL AUD $

ex TAX prices not available, Minimum purchase order $100 - DC plug packs only shipped in Australia and New Zealand