NEW CEIBO DEBUGGER

Menus and Commands

Ceibo Debugger Menus and Commands

D.1. Introduction

CEIBO DEBUGGER is the latest software available from Ceibo and can be used with most of Ceibo emulators. You will find a detailed description of the menus and their related commands in the following paragraphs. As the debugger is general for all the 8051 derivatives, some specific functions may not apply to all the derivatives.

D.2. Global and Local Menus

- A Global Menu is the list of commands easily accessible from a bar which runs along the top of the window. A pull-down menu is available for each item on the menu bar and allows executing a command, opening a pop-up menu and checking an option to select it. Global menus are accessed by using the mouse to click the option, pressing F10 and arrow keys or pressing Alt and typing the underlined letter of the menu name.
- Ceibo Debugger is context-sensitive and uses Local Menus specifying different windows. Local menus are tailored to the particular window you are in. To prompt a local menu press Alt-F10 or click the right button of your mouse. Menu placement and contents depends on which window or pane you are in and where your cursor is.

D.3. Toolbars

The buttons on the *Toolbar* are the commands you need to operate the most useful functions:



FIGURE D.1: Debug bar

Windows Menus and Commands

Debug bar buttons from left to right: Go, Break, Restart, Toggle Breakpoint, Origin, Trace Into, Step Over, Step Out, Go to Cursor, Output, Watch, Variables, Modules and Registers, Memory, Stack and CPU.



FIGURE D.2: Windows bar

Windows bar buttons from left to right: New Windows, Split, Cascade Windows, Tile Horizontal and Tile Vertical.



FIGURE D.3: Edit bar

Edit bar buttons from left to right: Cut, Copy and Paste.



FIGURE D.4: Main Bar

Main bar buttons from left to right: Open File, Find File, About and Help

D.4. Status Line

The *status line* on the bottom of the main application window displays messages related to the cursor position in the Module window, chip type, operating mode (simulation or emulation) and current status (program running, ready, error). It also provides on-line help information on selected menus.

Important: if SIM appears on that bar, the system is in SIMULATION MODE and your code will not run in real time. Select EMULATION MODE in the Options Menu and connect your Ceibo Emulator to your computer.

For Help, press F1	Ready	SIM	0x0	DS89C450

FIGURE D.5: Status Bar

D.5. File Menu

The File menu options deal with operations external to the Ceibo Debugger, such as loading programs for debugging, and leaving the application. The available commands are: Load, Close, Unload, Print, Print Preview and Exit. This menu also provides a list of the last opened files, so you may load a file just by clicking on the desired file name.

P.	Ceibo Debugger - [Cl	test.c]	
•	<u>File E</u> dit <u>V</u> iew <u>R</u> ur	i <u>B</u> reakpoints <u>O</u> ptio	ns <u>W</u> indow <u>H</u> elp
C	Load <u>C</u> lose	Ctrl+O	C C C C C C C C C C C C C C C C C C C
	<u>U</u> nload		
	<u>P</u> rint	Ctrl+P	
	Print Pre <u>v</u> iew		
	P <u>r</u> int Setup		
	1 D:\CEIBO\Ctest.a	ibs	
3	E <u>x</u> it	Shift+F4	

FIGURE D.6: File Menu

Load

The Load command loads a program for debugging from a disk. You may select the directory and the file name to be loaded, as well as the format of the file to achieve complete debug information compatibility.

The supported file formats are: Intel Hex, OMF51, Keil, IAR-UBROF, Tasking-IEEE695 and many others.

Utility programs and software updates may be released in the future to support new compilers with different formats.

From the File Menu you can specify the Symbol Only option, thus loading only the symbol information in the file for debugging ROM applications. Code is not loaded in this case.

The Startup Skip option is used to run the program automatically until the first line of your main program is reached.

If selected, the program will run from 0000h to the Main label while debugging C. Uncheck the Skip Startup Code box if you want to start debugging from address 0000h.

Load			? ×
Look jn: 🔂) debugger	🖃 🖻 🖻	
Ctest.abs			
1			
File <u>n</u> ame:			Load
Files of type:	Keil Format (*.abs;*.)		Cancel
	🗖 Skip startup code	🗖 Sumbola only loos	lina
		j Symbols only load	ung.
			1.

FIGURE D.7: File Open Dialog

Select the software vendor before loading a file. Use the File of Type list to make your selection.

Files of <u>type</u> :	Keil Format (*.abs;*.)	-
	Keil Format (*.abs;*.)	-
	IAR UBROF (*.dbg;*.d03)	
	IAR BANKED (*.dbg;*.d03)	
	BSO/TASKING OMF (*.o51)	
	BSO/TASKING IEEE695 (*.abs)	
	2500AD (*.abs)	
	INTEL ASM/PLM51 (*.abs)	
	METALINK (*.dba)	
	OMF51 FORMAT (*.abs:*.obi)	
	FOMF (*.abs:*.obi)	-

FIGURE D.8: Files of Type

Close

The Close command closes the loaded file.

Unload

This command deletes all the symbol information loaded by the Load Command, thus clearing symbols and code.

Print

This command prints the loaded file. You may preview the file and also define the print setup.

Exit

The Exit command terminates the debugging session. The hot key Alt-F4 can also be used to leave the debugger. The Windows Alt-Tab key sequence may also be used to leave temporarily the session without closing it.

D.6. Edit Menu

The Edit menu commands are standard for editing, finding and replacing text y the loaded file. The available commands are Cut, Copy, Paste, Find, Find in Files and Replace.

🜩 Ceibo	o Deb	ugger	- [Cte	est.c]								
🍷 <u>F</u> ile	<u>E</u> dit	⊻iew	<u>R</u> un	<u>B</u> reak	points	Ор	tions	W	indov	v <u>H</u>	elp	
] ≌∣	0 <u>0</u> E	lu <u>t</u> Jopy Jaste		Ctrl+X Ctrl+C Ctrl+V	C	٩	⇔	}	0 +	{ } }	*()	66^
	E F E	ind ind in F leplace	iles	Ctrl+F Ctrl+H								

FIGURE D.9: Edit Menu

From the Find Dialog you may specify what to find and the direction in the text, as well as other text attributes.

Find		? >
Find what: my string		Find Next
Match whole word only		<u>M</u> ark All
📕 Match <u>c</u> ase	C Up	Cancel
🥅 Regular <u>e</u> xpression	Cown	
E Search <u>all</u> open documents		

FIGURE D.10: Find Dialog

You may also specify in which files to find a string from the Find in Files Dialog.

Find in Files				? ×
Find <u>w</u> hat:			-	Eind
In files/files types:	.cpp;*.c;*.	h;*.inl;*.cxx	Ŧ	Cancel
In f <u>o</u> lder:			.	
Match whole wo	rd only	🔽 Look in	subfolders	
Match <u>c</u> ase		🗖 Output t	o pane2	
🗖 Regular <u>e</u> xpressi	on			

FIGURE D.11: Find in Files Dialog

D.7. View Menu

The View menu commands open windows that display different aspects of the program being debugged.

You may open as many windows as you need. The following figure shows an example.

🌩 Ceibo D	buggar - Cdalay.e				_ 6 ×
Eile Edit y	iew <u>Run Breakpoints Options</u>	<u>W</u> indow <u>H</u> elp			
🛋 A)	8 18 3 18 3 49 49 4	🖓 🔂 🖓 🖑 🖓			
) j, ng (10 III III III III III III III III III I			A.	
😪 Cdelay.	0		🜩 Ctost. a		<u>_0×</u>
/*		-	void main()		-
ant concer	C-51 Demo program	for CEIBO 51 Det-			
Cinit.c			POSLPCSO1		
11	C-51 Demo program	for CEIBO 51 Det	C:016C 31Å0	acall Init	
H		<u> </u>	1		
xl r	1	- I			
Begister D	Addres P (ven	5	Yalua NGS	B Modules	AYC 🗐
POMI	P.0x94		0.0	- CINIT	.c 🔳
	ort /	3	ъа		👰 flegisters
si -	1				territe and a second second
-	3				may
		C:000020 OD DD C	00 00 00 00 00 00 00	ac	dinz I
नन	wiid 🖉 ज 🖂 🖂 📊	CODE (DATA) XDATA)	LSF I	-1 0	Imp
					
X Variable	Value		X Variable Type	Address	Vake 🔺
			PatternDPL unsigne PatternBDL unsigne	dichar D10xA dichar D10xB	MO T
	And A Contract of Manager of the		PatternRDR unsigne	t char D:04C	M _
	wren't Voice 5 Yours i		Coper Vrocel V		
			Ready SIM 0x185 F	P99LPC901 [Ln 1; Col 1	

FIGURE D.12: Opening Multiple Windows

The available commands are: Debug Space, Status Bar, Output, Toolbars, Breakpoints, Memory Windows, Debug Windows, Target and Trace.

💎 Ceibo Debi	ugger - [Ctest.c]	
🍷 <u>F</u> ile <u>E</u> dit	<u>View</u> <u>R</u> un <u>B</u> reakpoints	<u>O</u> ptions <u>W</u> indow <u>H</u> elp
□	 Debug Space Status Bar Output Toolbars Breakpoints Memory Windows Debug Windows Target 	(4) (4) (1) (1) (4) (2)

FIGURE D.13: View Menu

Debug Space

From this window you may select the module of the loaded project to set breakpoints, watch variables, source level debugging and more. By using the local menu you may find a file or open all the modules. You may also select one module from the list just by clicking on its name.



FIGURE D.14: Debug Space - Modules

From the Module window you can use the local menu add a variable to the Watch window, define the program counter (New pc) or go to the certain line. The Origin command refreshes the screen to the current position of the program counter. Set directly a breakpoint by moving the cursor to the desired line and pressing F2. Furthermore, you can drag a variable to the Watch window.



FIGURE D.15: Debug Space - Modules

The Registers page shows the CPU main registers and the local menu can be used to modify them.

Register		Value	
🖃 🖾 Registers			
SP		0x10	
DPL		0x00	
DPH		0x00	
ACC		0x00	
В		0x00	
R0		0x00	
R1		0x00	
R2		0x00	
R3		0x00	
R4	Increment	0x00	
R5	<u>D</u> ecrement	0x00	
R6	Zero	0x00	
R7	Change	0x00	
🖂 🛄 PSW		0x00	
bit P		0x00	
bit F1		0x00	
bit OV		0x00	
bit RS0		0x00	
•			

FIGURE D.16: Debug Space - Registers

Status Bar

This command is used to turn on or off the status bar. It is used to arrange windows according to your preferences.

Output

-	Los D: SCEIBO VCS1D5 De stabs	
1	Bo Hait at 0x16C Dea	
	Log T ≥ [\Build \Debug \Find in Ries 1 \Find in Ries 2	

FIGURE D.17: View Output

Use this window to log and display debug activities. This is useful to review the sequence of the debug session.

Toolbars

This command is used to turn on or off the main, debug, edit and windows bar. It is used to arrange windows according to your preferences.

Breakpoints

The Breakpoints menu commands let breakpoints be displayed, set and cleared. The different options may be accessed through the Local menu of this window and they are used to add, delete, enable or disable breakpoints.



FIGURE D.18: Breakpoints Local Menu

Memory Windows

The Memory windows show the specified areas of memory. Data can be viewed as raw hex bytes with their corresponding ASCII representation. You may open a page showing internal data memory (Data), code memory (Code) and external data accessed by MOVX instructions (Xdata). Click on a value to modify it.

jis i	Edit Yien Bun	Break	point	s <u>D</u>	plion	s <u>y</u>	Zindo	мł	telp									
]enaem
1	C:000110	54	80	FF	BF	80	DA	E 5	90	25	χo	44	01	75	90	80	06	TD
I	C:000120	ES	90	25	EO	75	90	0.5	10	BO	DB	22	$\otimes \mathbf{F}$	OF	75	10	01	······································
l	C:000130	ES	10	$\mathbb{D}\mathbb{B}$	95	0F	50	11	31	BO	₹5	90	54	01	FF	BF	01	P.1T
l	C:000140	DA.	£5	90	C3	13	44	80	75	90	80	06	$\mathbf{E5}$	90	C3	13	75	.1D
l	C:000150	90	0.5	10	80	DB	22	87	0F	75	10	01	E5	10	D3	95	OF	······u·····
l	C:000160	50	09	31	BO	63	90	FF	05	10	80	FD	22	31	80	31	BD	P.1.c1.1
I	C:000170	BS	U.A.	90	7F	08	31	56	31	BO	85	DC	90	7T	07	31	28	1V11.
l	C:000180	31	BO	85	DC	90	75	07	31	2.0	31	БО	85	OБ	90	78	07	11.1
l	C:000190	31	00	31	BO	85	0B	90	7F	07	31	00	31	ΞO	80	CF	22	1.11.1
I	C:0001.40	75	αD	11	75	OΣ	55	E-9	75	Dλ	75	DB	01	75	DC	80	22	uu.Uuu
I	C:0001B0	75	80	OD	75	09	D1	DЗ	IS	09	95	DE	E5	80	95	αD	50	uu
I	C:0001C0	DA.	0.5	09	85	09	70	σz	05	05	80	ED	22	$7\overline{0}$	75	<u>E 4</u>	76	p
1	C:0001D0	DB	$F\mathbb{D}$	75	81	10	02	01	6C	00	00	00	00	00	00	00	00	··· H.·····
I	C:0001E0	00	00	00	00	00	DD	00	00	00	00	DD	00	00	DD	00	00	

FIGURE D.19: Memory Windows

Debug Windows

The Debug windows show information related the debug session: variables in your code, watch windows with your defined variables to be displayed, Stack values and CPU window with the assembly code.

Variables

The Variables command opens a Variables window displaying a list of the program global (or public) and local symbols, and their locations.

Variable	Тура	Address	Yelus
PatternCPL	unsigned char	D:OxA	0x0
PatternROL	unsigned char	0:0:8	0x0
PatternROR	unsigned char	D:0xC	0x0
DelayValue	unsigned int	D:0xD	0w0
RegP1	unsigned char	D:0x90	0xFF
BolP1	void ()	C:0x100	C:0x100
RorP1	waid ()	C:0x128	C:0x128
Cp IP1	void B	C:0x156	C:0x156
main	void []	C:0x16C	C:0x16C
fini	void ()	C:0x140	C:0x1A0
Delay	vaid ()	C:0x1B0	C:0x180
Global Local /		1	

FIGURE D.20: Variables Window

Click on a variable to change the value.

Enter new value	×
	OK
D×0	Cancel



Watches

The Watches command shows the value of specified variables. You may drag a variable from the module window or type in the name of the variable.

-	Variable	Value
1	Add watch Ins Edit Delete Del Delete <u>A</u> l	UNFF
	Watch 1 (Wetch 2) Watch 3) Watch 4 /	T

FIGURE D.22: Variable Local Menu

These Local menu is used to add a watch, edit and delete.

You may enter any predefined symbol like P1, P1.0, R3, etc. or make an absolute reference using the first letter to define the variable type followed by a colon and the address. Furthermore, absolute references may be expressed with a length.

The syntax is:

absolute_reference:address,length

Absolute references are D for the on-chip RAM, X for XRAM, P for ports and any SFR (special function registers), C for code memory and B for bit memory. Some examples are:

D:100,5

B:0x80,5

X:0x1000,8

P:0x431

Addresses are entered using the syntax of the selected language in the Options menu, Environment, Interface. Length is always decimal.

Your entries use the syntax of the selected language in the Options menu. For example, if you select C and you want to enter 9Fh, just type 0x9F. The 9FH entry is recognized if the selected language is ASM. In case that you are using Pascal, enter \$9F.

A string may be changed by entering values separated by commas or blank spaces.

Stack

The Stack window shows the stack bytes with the associated addresses relative to the stack pointer. For example, the address -2 means stack pointer contents minus 2.

Offset	Value .
-0	0x00
-1	0600
-Z	CM00
-3	0x00
-4	0x00
-5	0x00
-6	0x00
-7	0x00
-0	0x00
-9	0x00
-10	Ox00
-11	OM00
-12	0x00
-13	0600
-14	0x00
-15	0.400
-16	0400
T T Steck	<u>x</u>

FIGURE D.23: Stack

CPU

The CPU command opens a CPU window displaying the disassembled instructions of your program. An instruction may be displayed with symbol information, and mixed with source code lines. You may also patch-up code using the built-in assembler.

💎 Ceibo Debugger - (Pt	stPCs01)	
🗢 Die 1st Dev Bun	Instants Options Window H	ebX
		80880
#CTSST#1081	1313 D F	×
CID16C 3180	acali Init	
#CTXST\$108:	Delay())	
C:DIGE 31BD	acall Dolog	
#CTISTW109:	RegPi = PatternCPL;	
C: D170 850,k90	nov RegPl, 0.8h	
#CTISTW110:	Cy1F1(5)7	
C: D173 7808	nov c7,#05b	Add Watch
C: D175 3156	avall _CplF1	Dripin
#CT1ST#111:	belap()	Gete
C1D177 3180	anali Deley	New pc
gCTENT\$112:	RegP1 = PattersROR;	
C: D179 GSOC90	nov RegP1, OCh	* Fireq
#CTISTW115:	RozP1(7);	TUDA NAME
C:D17C 1F07	nov c7,407h	formable.
C: DL7E 3128	acall Porpi	Constant .
#CITEINIIG:	Deley()	Print to Ma
CID180 3180	aball Delay	
#GTEBT#L181	Hearl - Fattershowi	
CIDERC SHOLMD	Dorod (Dor	
C148111181	BOLPI(r) /	
C: D1 07 0420	areall Dorbi	
C. DEDY JEED	Delevit.	
C.DISS 3180	anall Delen	
ACTESTNI 18-	Deall = DettersDOL	
COLOR STORED	new Real of the	
ECTENTED 191	BOIRICTUR	
CID188 7807	HOY 17, 1075	-
w1		
Far Help, press F1		Ready SM 0ir185 P99LPC901 Lv8. Cil 28

FIGURE D.24: CPU

The Local menu enables the following commands: *Add Watch*, *Origin* that refreshes the screen to the current position of the program counter, *Go to* a specified address, *New PC* setting the program counter to the current position of the cursor, *Mixed* to display lines with source information, *Toggle Source* to toggle between disassembled code and code embedded with source line numbers,

Assemble to on-line modify your code and finally, *Print to File* saving any portion of your code in ASCII format to a disk file.

Target

This command opens different windows that are related to the target microcontroller emulated or simulated by the debugger.

😤 Ceibo Debugger - [P89LPC901]					_ @ X
Pile Edit View Bun Breakpoints	Dations Window Help				_(#) X
Debug Space			1.0		
🖌 Status Bar					
#CTEST# Dutnut					
C:016C Loobau k	10	1.0			
#CTEST#	1	Port			
C:O16E Breakpoints	Lay	Register	Address	Value	
#CTEST# Memorylafischus	PatternCPL;	P0	P:0:00	OVEE	- 11 12
C:0170	1,0Ah	F0N1	P:0+94	0x0	
#CTEST# Debug Windows ►	0.2	F0N2	P:0+85	0x0	
C:0173	IDBN	F1	P:0+90	OwFF	
C:0175 Target	🛩 Pot	P1N1	P:0#91	0x0	
#CTEST# -	Interrupt	P1M2	P:0(52	0x0	
C:0122	Seial	P3	P:0(80	0x0	
ACTESTA112. BerrD1	Missedanaur	P3M1	P:0+81	0x0	
WOLLDIWILLS NOUPI	Enseena leetos	P3M2	P:0+82	0x0	
CICIAA BEDCAC WOA Neo	<u>1</u> mer	PTOAD	P:0+F6	0x0	188
#CTEST#113: RorP1(CPU	_			
 C:017C 7FD7 mov x7, 	Power				
C:017E 312B acall _	Elash Control	Port Port	(<u>1</u>	P	- 88
<pre>#CTEST#114: Delay(</pre>	Watchdoo				-
C:0180 3180 acall D	Check				100
#CTEST#115: ReoPl	COUL				
C:0182 BSDC90 mov Recr	ω				100
dCTFST#116 DorP1/	7) -				100

FIGURE D.25: Target Menu

The available windows that may be opened depend on the microcontroller and they may be Port, Interrupt, Serial and many others.

From any of there windows you may click on a variable to change its value.

Trace

The Trace menu allows the current Trace window to be opened, as well as viewing the trace status. Trace functions are enabled in both emulation and simulation modes.

The Trace window allows the current trace buffer to be viewed, display different formats for the trace selected, filter data from the trace display and search data patterns in the buffer. *Go to s*ets the cursor to the specified frame number.

*Origin d*isplays the window starting from the first recorded frame. *Inspect* shows additional information about the variables recorded in the trace buffer.

Display Mode selects source code, disassembled instruction or mixed source and disassembled code.

Time Stamps is used to display the absolute cycles (accumulated number of cycles), absolute time (accumulated time according to the XTAL selection in the Options menu) and relative cycles (number of cycles of each frame).

Clear Trace deletes all the accumulated data. *Print to File* saves the trace buffer in a disk file.

Fra	Address	Instruction	1	Time	
-29	01C5	inz \$1C9h		40.1	48µs
-28	01C9	simp \$1B6h		37.9	977µs
-27	01B6	setb c		36.8	392µs
-26	01B7	mov a,Delayl	Cnt+1	35.8	307µs
-25	01B9	subb a,Delay	Value+1	34.7	722µs
-24	01BB	mov a,Delayl	Cnt	33.6	537µs
-23	01BD	subb a,Delay	Value	32.5	552µs
-22	01BF	inc CDELAY	#29	30.3	382µs
-21	01C1	inc DelayCnt	+1	29.2	297µs
-20	01C3	mov a,Delayl	Cnt+1	28.2	212µs
-19	01C5	jnz \$1C9h		26.0	042µs
-18	01C9	sjmp \$1B6h		23.8	372µs
-17	01B6	setb c		22.7	786µs
-16	01B7	mov a,Delayl	Cnt+1	21.7	701µs
-15	01B9	subb a,Delay	Value+1	20.6	616µs
-14	01BB	mov a,Delayl	Cnt	19.5	531µs
-13	01BD	subb a,De	Goto		46μs
-12	01BF	jnc CDELA	Osisis		276µs
-11	01C1	inc DelayC	ongin		91µs
-10	01C3	mov a,Del	Inspect		06µs
-9	01C5	jnz \$1C9h	Display mod	e 🕨)36μs
-8	01C9	sjmp \$1B6	Time stamps	•	None
-7	0186	setb c			Absolute cucle
-6	01B7	mov a,Del	Clear trace		Absolute time
-5	01B9	subba,De	Print to file		 Absolute time
-4	01BB	mov a,Del_,			Relative cycle
-3	01BD	subb a,Delay	Value	4.	Relative time
-2	UTBF	Inc CDELAY	#29	2.7	70µs
-1	0101	inc DelayCnt	+1	1.0	85µs

FIGURE D.26: Trace Menu

D.8. Run Menu

The Run menu commands execute the program being debugged. The following options are available: Run, Execute Forever, Go to Cursor, Trace Into, Execute to, Step Over, Animate, Instruction Trace, Continuous Run, Halt and Program Reset.

🌳 Ceibo Debugger	- [Ctest.c]	
🍷 <u>F</u> ile <u>E</u> dit <u>V</u> iew	<u>Run</u> Breakpoints Options	<u>W</u> indow <u>H</u> elp
🛛 😅 🎮 🤋 🍕	<u>G</u> o F9 <u>G</u> o to cursor	0• (}• *0 60 ⊊⊋ ⊊⊅ 🔤 🖬 🖗 💭
Register	<u>I</u> race into F7 <u>S</u> tep over F8 Step <u>o</u> ut	= in()); (1)
DPL	Presentation	ay();
DPH ACC	<u>R</u> estart Ctrl+F2	P1 = PatternCPL;
B	Break Ctrl+Break	_ay();

FIGURE D.27: Run Menu

Go

The Go command executes the program continuously until either the program is halted with the Halt key, or a breakpoint is reached. The F9 key is the hot key that executes this command.

Go to Cursor

The Go to Cursor command executes the program until the instruction or source line pointed by the cursor is reached. The current window must be a CPU window or a Module window in order to determine which location to execute.

Trace Into

The Trace Into command executes a high-level language source line or a single machine instruction. If your code module does not include debug information, the Trace into command executes a single machine instruction that may be observed in the CPU window. In case you have a code module with debug information, this command executes a complete line step. The F7 key is the hot key that executes this command.

Step Over

The Step over command executes a high-level language source line or a single machine instruction. If your code module does not include debug information, the Step over command executes a single machine instruction that may be observed in the CPU window. The only exception occurs when your code has a CALL instruction; then the program execution continues until it returns to the line following the CALL instruction. If the program does not return to the next line it will keep running. The F8 key is the hot key that executes this command.

Step Out

The Step out command executes a high-level language source lines until the end of a function.

Presentation

This command steps automatically though the program.

Restart

The Restart command issues a hardware reset to the emulated Microcontroller, causing all registers and on chip peripherals to return to their reset state. If you loaded a program with the Startup Skip option, the program will execute the startup code as well. Ctrl-F2 is the hot key for this command.

Break

The Break command stops the currently running program. Ctrl-Break is the hot key for this command.

D.9. Breakpoints Menu

The Breakpoints menu commands let breakpoints be set and cleared.

The following commands are available: Toggle and Delete All.

🌩 Ceibo Debugger - [Cte	est.c]		
🌪 <u>F</u> ile <u>E</u> dit <u>V</u> iew <u>R</u> un	<u>B</u> reakpoints	Options	<u>W</u> indow <u>H</u> elp
🛛 🗃 👭 🤋 😽 📗	<u>T</u> oggle <u>A</u> t	F2	ት በት ብ ተነ ቆኅ
	Delete Al	i.	

FIGURE D.28: Breakpoints Menu

Toggle

The Toggle command sets or clears a breakpoint at whatever address the cursor is pointing to in the CPU window or in the Module window. The program will stop each time it reaches a line where a breakpoint has been set, or a global or hardware breakpoint occurs. The F2 key is the hot key that executes this command.

At..

The At command executes the program and stops the program at a specific location. The address can be entered in any of the valid address formats.



FIGURE D.29: Breakpoint At..

Delete All

The Delete All command deletes all the breakpoints from the program. This includes software, hardware, or expression true global breakpoints. This command is used when debugging is to be continued without stopping the program at any previously set breakpoint location.

D.10. Options Menu

The Options menu allows adjustment of some options that have a global effect on the conduct of the Windows Debugger, and the remote emulator system.

The following are the available options: Environment, Module List File, Mode, Communication, Chip, Architecture, Debug Controls, Save Options and Restore Default.



FIGURE D.30: Options Menu

Environment

The Environment option allows you to control the general environment parameters of Windows Debugger. The following options are available: Path, Format and Interface.

I ama manage		
c: 'mypath	Tel 🗸	

FIGURE D.31: Options Menu - Environment - Path

The Path for Source List option defines the directory trees in which the debugger will search for the source list files of your program.

The Format option is used to set your preferred font and color for each window.

Category All Windows	Eont Courier New ▼ Size
Cpu Window Memory Window Module Window	
Register Window Source Window Stack Window Target Window Trace Window Variables Window Watch Window	Background Background Selection Breakpoint Background Breakpoint Text Comment Error Background Error Text
Sample	Foreground Background
Sample	Beset áll

FIGURE D.32: Options Menu - Environment Format

The Interface option selects the source language for your value entries and several display options.

Memory windows	Source language
One space	● C
Enter a number(1-3):	C PLM
1 copies	C Assembler
Use the option for multiple views of memory spaces(like CODE, DATA).	Presentation Delay time 100 ms
Target windows	
🗖 One space	Integer display format
f the option is checked all targets	C Decimal
vill be browsed in a one tabbed	Hex
) Dana ay karabasinta	C Binary
E Enable	C All

FIGURE D.33: Options Menu - Environment Interface

The Language command determines the base and syntax of your entries. For example, if you choose C Language, 55 is a decimal value and 0x55 is a hexadecimal number. In case the Assembler is selected, you should type 55h to enter the same hexadecimal value.

The Integer Display Format command defines the base of the display in the Watches Window. You can select hexadecimal, decimal or both bases for displaying your variables.

Module List File

The Module List File option is used to set the list file name associated with each module of the program being debugged.

The Module command will only allow access to modules with valid list files found in your disk.

Use the File Find button to redefine the list file names and paths. First click on a module name to select it. Then, use the File Find button to open the Module List Files Dialog Box.

Whenever loading an ASM program for the first time, the default setting will be the module_name.LST. It is therefore recommended to keep the module name equal to the list file name, as it will prevent you from having to configure this setting. Otherwise you will need to assign the list file name for each module after loading a new program to debug for the first time.

	1.00	Directory	Find me
CTEST	CTEST.C	D:\CEIBO\C51D\	
	CINIT.C	D:\CEIBO\C51D\	OK
DELAY	CDELA	D://CEIBU/C51D/	
			Cancel

FIGURE D.34: Module List Dialog Box

Mode

The Mode option allows you to select the operation mode of Windows Debugger. The following options are available: Emulation and Simulation.

Emulation: The Emulation Mode option sets the Debugger to operate in full emulation mode. In this mode your program will be executed in real time on the remote emulator system. This mode requires the use of a Ceibo Emulator connected to your PC. Communication error will result if the emulator is not found on the selected COM port.

Simulation: The Simulation Mode option sets the Windows Debugger to operate in full simulation mode. In this mode, your program instruction execution will be simulated by the debugger built-in simulator. This mode can be operated without connecting any remote emulator system, thus allowing software debugging to be done while the emulator is used for hardware debugging, or other projects. This is *not a real-time mode*; only basic functions are supported and not all SFRs belonging to particular derivatives. *Set the system to emulation mode*, while using the debugger with a Ceibo Emulator.



FIGURE D.35: Options Menu - Mode

Communication

The Communication option allows selection of the host PC COM port number to be used for communication with the remote emulator system.

Make sure that there are no resident programs hooked up to the selected COM port, when being used for remote emulation interface.

Autodete	ction	
€ СОМ1 С	сома С со	мз 🔿 сом4
Baud rate(bps © 9600) O 28800	C 57600
C 19200	C 38400	C 115200

FIGURE D.36: Options Menu - Communication

The Chip option is used to tell the debugger which microcontroller is being used by the emulator or simulator. It defines SFRs and other parameters accordingly.

hip		? ×
Vendor ALL	Chip list	OK Cancel Current Chip Info Chip: DS89C450 ROM: 65536 bytes On-chip 256 bytes
Chip Description	1	
Please, select a	a chip and press OK or	press CANCEL.

FIGURE D.37: Options Menu - Chip

Architecture

This command defines specific emulator options in case which are required by the hardware configuration, as the same debugger supports many microcontroller derivatives with different hardware emulators. The available options are Data Map, Xtal and Halt Mechanism.

Data Map specifies the memory accessed by MOVX instructions. It can belong to the on-chip memory or to the target board.

Architecture			>	٢
DATA Map Xtal	Halt mechani	sm		
· · · · · · · · · · · · · · · · · · ·				
C Internal				
@ External				
🔿 On - Chip				
	ОК	Cancel	Help	

FIGURE D.38: Architecture - Data Map

Xtal sets the clock frequency applied to the microcontroller. A programmable clock generator is implemented in the emulator to support this feature.

Windows Menus and Commands

Architecture		x
DATA Map Xtal	Haltmechanism	
Xtal frequency	MHz	
	OK Cancel Help	

FIGURE D.39: Architecture - XTal

Halt Mechanism sets the options to stop the emulation while it cannot be done by a breakpoint. More details about this important setup are given in the Emulator User Manual.

Architecture		×
DATA Map Xta	Haltmechanism	
		_
Serial		
C Interrupt 0		
C Interrupt 1		
C Reset		
	OK Cancel	Help

FIGURE D.40: Architecture - Halt Mechanism

Debug Controls

Debug Controls dialog is used to define the following:

Reload Setting: you may define whether the last loaded code will be automatically reloaded or not. Automatic reloading is possible while powering up the system or when a program reset is executed.

Origin Enable: this option specifies where the cursor will point to while stopping the emulation. If the box is checked, that enables the origin and the cursor will point to the actual program counter value in the CPU and Module windows. If it is not checked, those windows will remain in the same state as they have been while running the program.

Debug Controls	×
Reload settigs	
Reload after power up	
Reload after reset	
OK Cancel	Help

FIGURE D.41: Debug Controls

Save Options

Select this command if you want to save the setup while leaving the debugger. This setup will be restored while invoking again the debugger. It saves window layouts at any time and with any filename.

Restore Defaults

The Restore Defaults command allows you to load a configuration file from disk. The configuration file should have been previously saved by using the Save Options command.

D.11. Windows Menu

The Window menu allows various operations on the currently open windows with the following commands: New, Tile, Cascade and Arrange Icons.



FIGURE D.42: Windows Menu

D.12. Help Menu

The Help menu commands open a help window for whichever subject will be selected from the menu. This menu offers the following options: Help Topics and About.

💎 Ceibo Debuggei	- [Ctest.c]			
🍷 <u>F</u> ile <u>E</u> dit <u>V</u> iew	<u>Run</u> Breakpoints	<u>O</u> ptions <u>W</u> indow	<u>H</u> elp	
🖻 🗃 🤋 K	? 1 🛒 🗈	· · · · · · · · · · · · · · · · · · ·	Help Topics	- B 5
		<pre>void main()</pre>	About Debugger	

FIGURE D.43: Help Menu

Not all the help contexts are listed, only the useful subjects and starting points. Shift-F1 is the hot key that executes this command.

The About command displays the debugger software version.