

ADAM46P20 Simulator V1.0.10

User's Manual

**ETA Chips, Co., Kr., 2011
By W.S.YOU**

1. ADAM46P20 Simulator

ADAM46P20 Simulator is a S/W simulation tool for ADAM46P20 Device.

It is possible to develop any application without emulator and oscilloscope.

1.1 Feature

- Waveform viewing is possible without oscilloscope.
- Pulse Width measure is possible without oscilloscope.
- Set PC Break point to all Code Area.
- Set RAM Break point to all RAM Area
- Symbolic Level RAM Dump
- Symbolic Level Peripheral Dump
- Symbolic Level Debugging
- Support MCU clock from 1MHz to 16MHz
- All Timer function can be simulated. (Interval Timer, Input Capture, PWM, External Clock)
- All external interrupt can be simulated. (EXT INT, VDI)

1.2 Main Screen

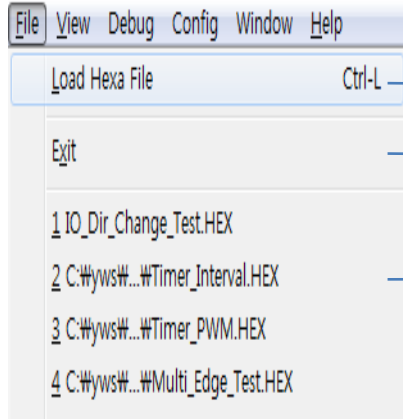
It consists of five child windows, tool bar and main menu.

The screenshot displays the ADAM4 Simulator interface with several callouts pointing to specific windows and features:

- MENU**: Points to the top menu bar (File, View, Debug, Config, Window, Help).
- Tool Bar**: Points to the toolbar below the menu bar.
- Disasm Window**: Points to the assembly window showing instructions like `LRI TOMR0, #0Ch` and `RET`.
- RAM Dump Window**: Points to the RAM dump window showing memory addresses and hex values.
- Peripheral Dump Window**: Points to the peripheral dump window showing I/O register values.
- CPU Window**: Points to the CPU Registers window showing registers A, X, Y, SP, and PC.
- Waveform Window**: Points to the waveform editor showing digital signals for PA0, PA1, PA2, PA3, PB0, PB1, PB2, PB3, PD0, PD1, PD2, and PD3.
- MCU Status**: Points to the status bar showing `ADAM46P2016` and `IDLE`.
- MCU Execution Time**: Points to the status bar showing `EXE Time = 82500 Code (000,041,250 usec)`.

The background features the text: **ETA Chips ADAM4 Simulator**.

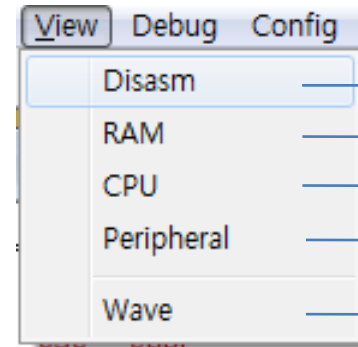
2. Main MENU



Load Hex File with symbol file

Exit program

Recent Files



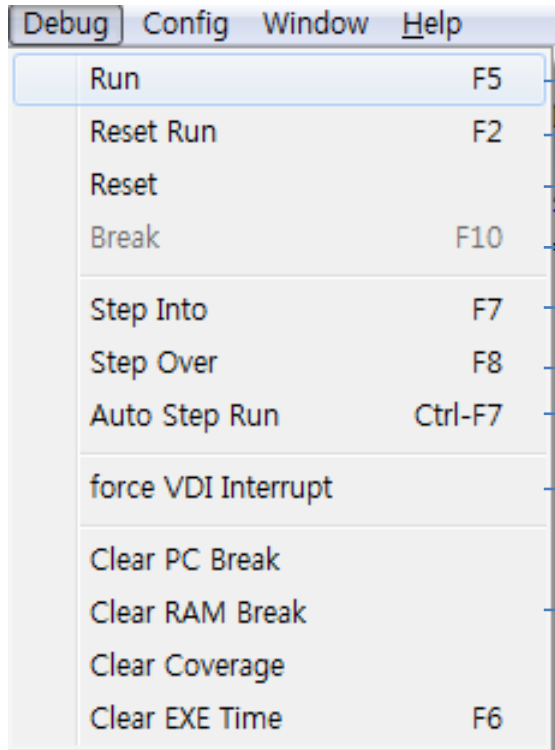
Open Disasm Window

Open RAM Dump Window

Open CPU Window

Open Peripheral Dump window

Open Waveform window



Continue RUN from current address

MCU Reset and RUN from address zero.

MCU Reset

Quit MCU Running

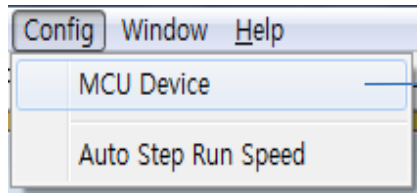
Execute one instruction

Execute one instruction. If instruction is 'CALL', then called subroutine will be executed

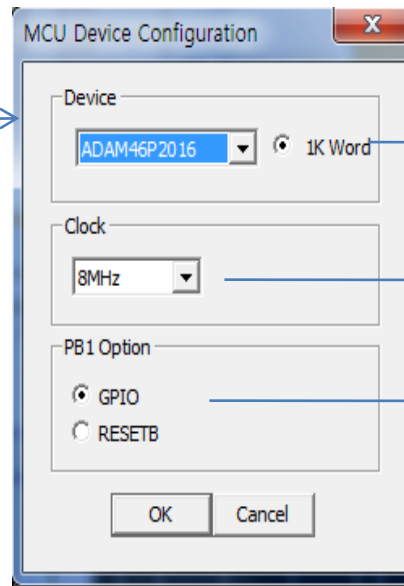
Step Into is executed periodically.

Emulate VDI interrupt occurrence

Clear each PC Break/RAM Break/Coverage/EXE Time



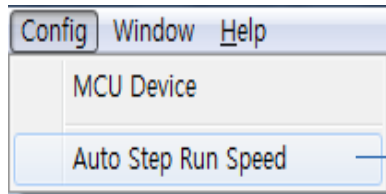
Open MCU config dialog



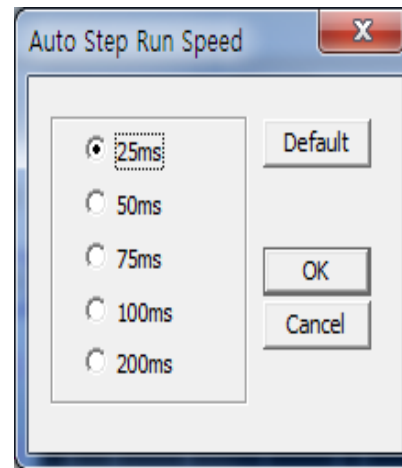
select MCU device type

select MCU operation frequency

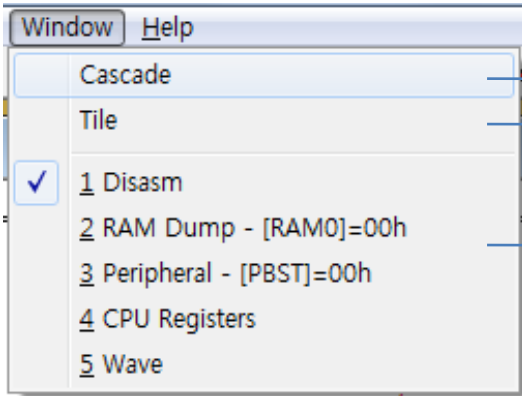
Select PB1 using as GPIO or RESETB



Set Auto Step Run speed



Set Auto Run speed from 25ms to 200ms in this dialog.

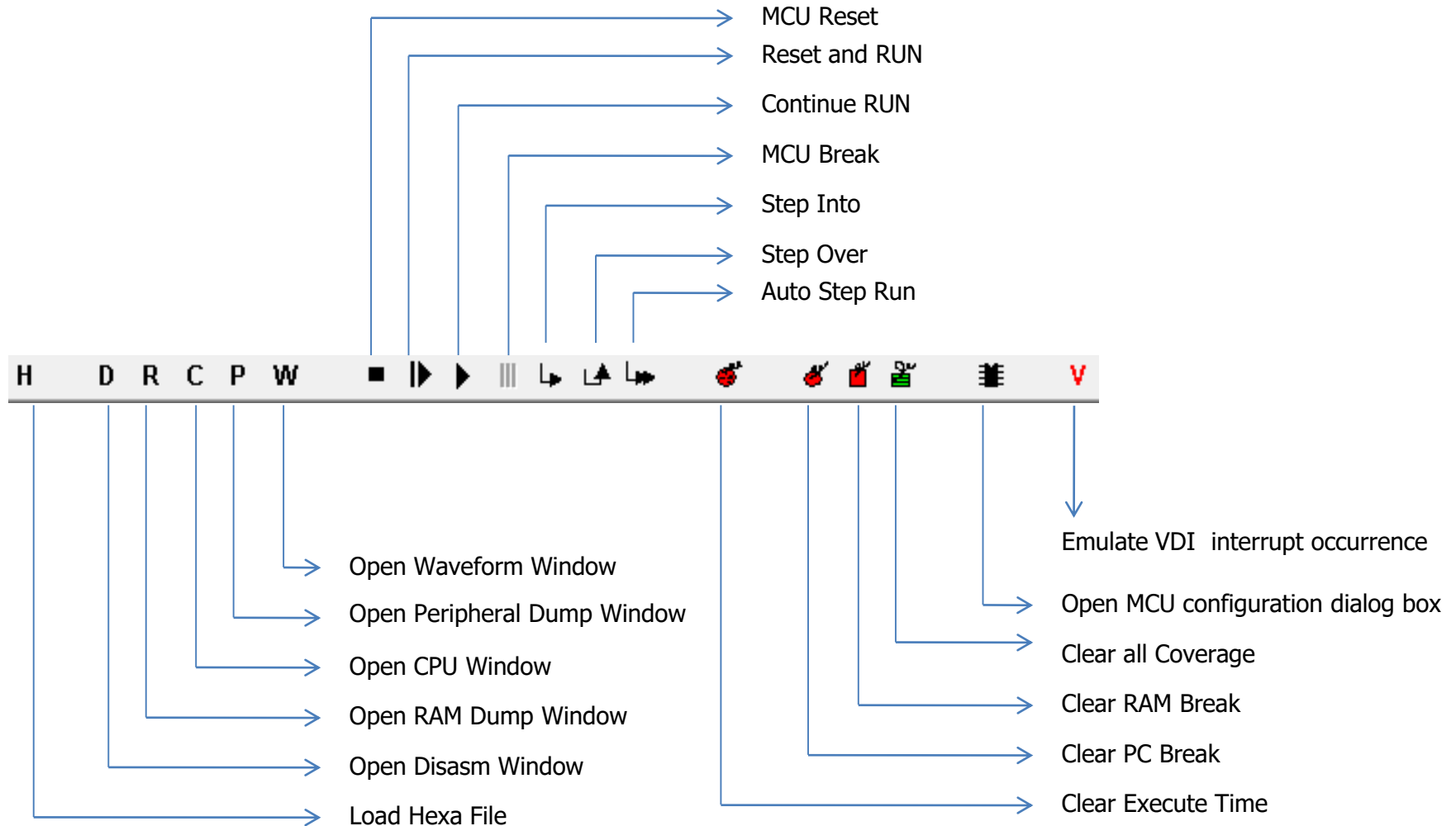


→ Rearrange child windows to cascade viewing

→ Rearrange child windows to tile viewing

→ child window list which is opened

3. ToolBar



4. Disasm Window

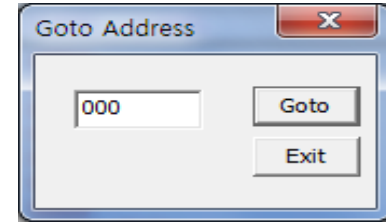
The Disasm Window displays the following assembly code:

ADDR	CODE	LABEL	INSTRUCTION
02E	08D0		LRI PBFN, #00h
02F	0830		LRI PADD, #00h
030	08BF		LRI PBDD, #0Fh
031	099F		LRI PDDD, #0Fh
032	0840		LRI PAST, #00h
033	08C0		LRI PBST, #00h
034	03C0		RET
035	0000	Delay	NOP
036	0000		NOP
037	0000		NOP
038	0000		NOP
039	0000		NOP
03A	0000		NOP
03B	0000		NOP
03C	0000		NOP
03D	0000		NOP
03E	0000		NOP
03F	03C0		RET
040	0000	Main	NOP
041	0000		NOP
042	02A0		EI
043	0800		LRI PADR, #00h
044	0880		LRI PBDR, #00h
045	C02D		CALL !Set_GPIO
046	C01A		CALL !Set_IntervalTimer_fo
047	5000		LDM RAM0, #00h
048	0340	Main_Loop	WDTC
049	0000		NOP
04A	7800		TSTR PADR.0
04B	804F		BR !PDAR0_one
04C	1088		ADDC RAM1, #01h
04D	608F		LDM RAM1, A
04E	7108		LRA PDDR
04F	7007	PDAR0_one	CLRR1 PADR.3
050	C035		CALL !Delay
051	C035		CALL !Delay
052	C035		CALL !Delay
053	C035		CALL !Delay
054	7003		SETR1 PADR.3
055	C035		CALL !Delay
056	C035		CALL !Delay
057	C035		CALL !Delay
058	C035		CALL !Delay
059	8048		BR !Main_Loop
05A	0000		NOP
05B	0000		NOP
05C	0000		NOP
05D	0000		NOP

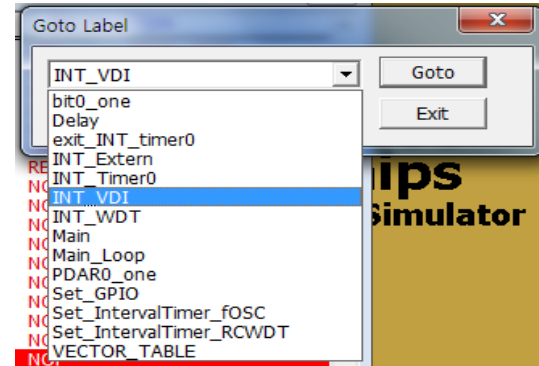
Annotations in the image:

- ADDR Area:** Points to the ADDR column.
- LABEL Area:** Points to the LABEL column.
- Red Highlight:** Row 03E (NOP) is highlighted in red.
- Blue Highlight:** Row 04F (CLRR1 PADR.3) is highlighted in blue.
- Blue Arrow:** Points to the ADDR field of row 04F.
- Blue Arrow:** Points to the LABEL field of row 04F.

Double Click this area, and select address for moving



Double Click this area, and select symbol for moving



Indicate current Program Counter

PC Break can be toggled by double clicking Mouse-L-Button

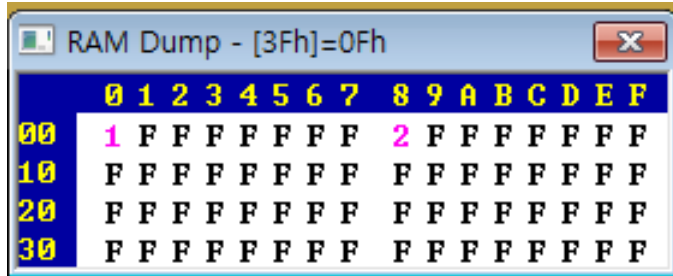
Coverage Color

→ Executed instruction displayed as red color, others displayed as black color.

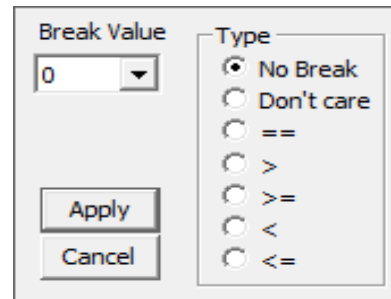
5. RAM Dump Window

Internal RAM memory can be dump in this window.

Data written address displayed as red color, other address display as black color.

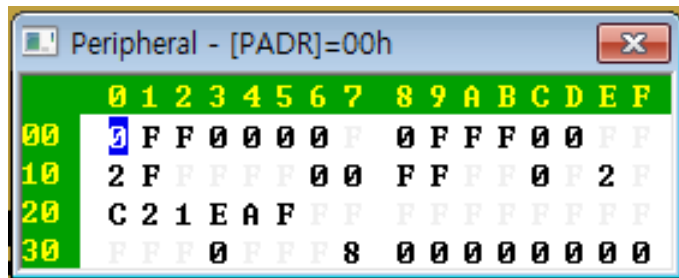


If want set RAM Break, then double click wanted address, then set RAM Break in this window



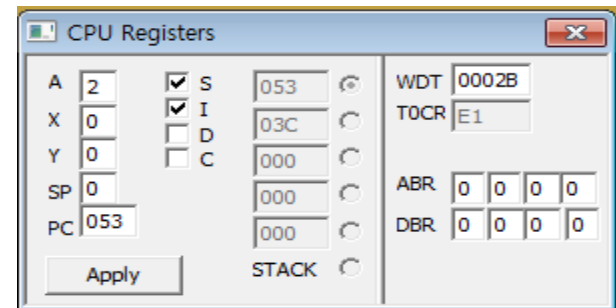
6. Peripheral Dump Window

Peripheral registers can be dump in this window with symbolic level.



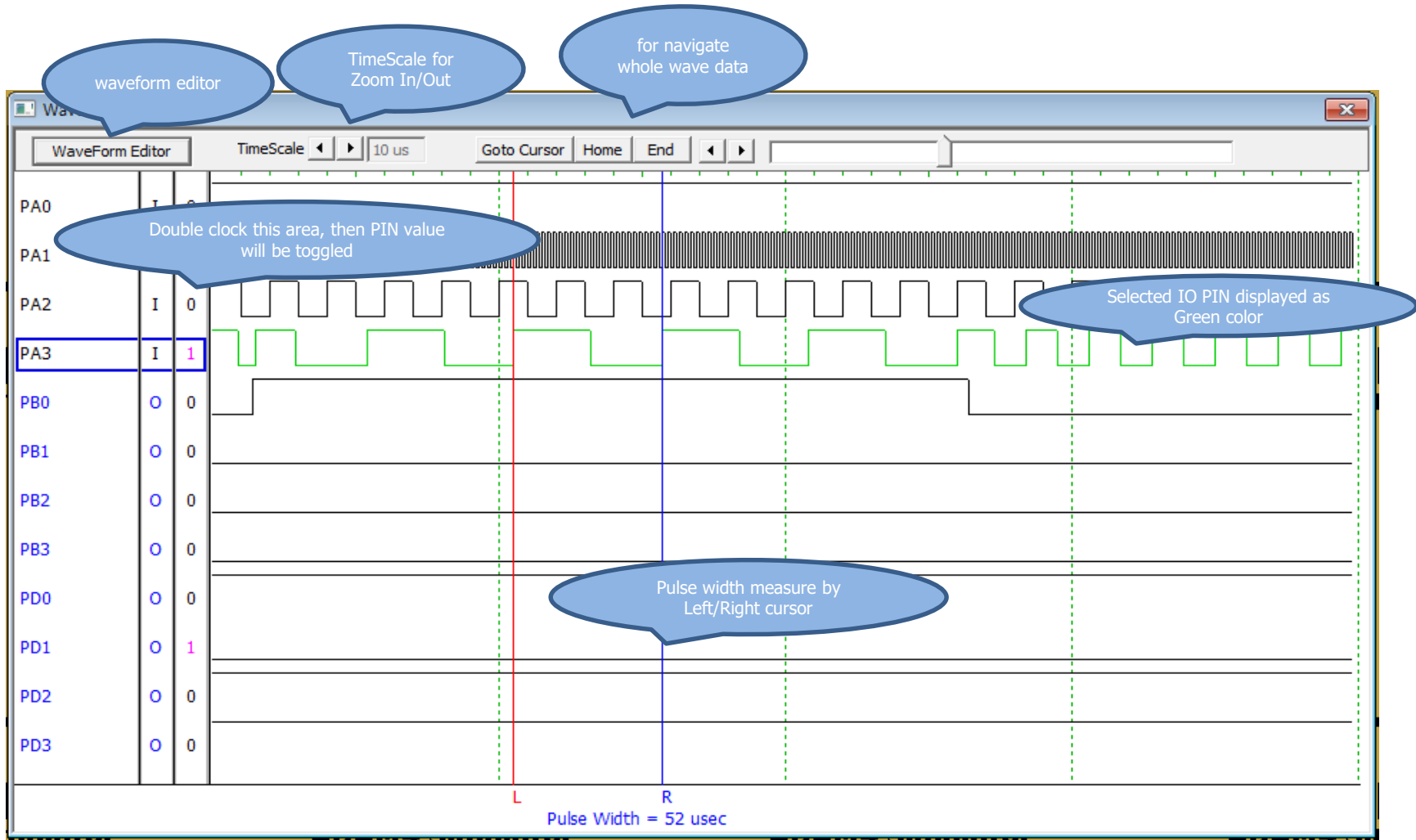
7. CPU Window

CPU registers can be dump in this window.



8. Waveform Window

It is possible to view IO PIN status as Graphical waveform in this window.
Also, can measure pulse with left/right cursor.
Simple input waveform can be edit.



L Cursor is selcted by Mouse-L-Button R Cursor is selcted by Mouse-R-Button