



Aim

To familiarize with the 8086 trainer kit.

Theory

5 The "STS 8086LCD" trainer is a MICROPROCESSOR trainer, which can work on 8086 CPU. This kit can be used as a developer kit for 8086 based programs & interfaces. This trainer kit contains strong monitoring program which is user friendly & can be easily handled by a beginner in the field of microprocessors. Key features of STS 8086LCD trainer are

- User friendly monitoring program
- Built in inline assembler for entering programs as mnemonics
- Disassembler to examine the programs
- Single stepping & Break point feature to debug program
- PS/2 Keyboard interface
- Contain most of the interface modules such as 8255, 8253, 8251 etc.
- Simple menu operated commands, easy to use
- User friendly text editor to enter text for assembler
- Proper error messages to identify assembling errors
- Commands to enable, disable & edit break points
- Remembrance starting & ending addresses of move & fill commands when repeat the command.
- View/Modify command to edit contents of RAM location.
- Fill command to fill RAM locations with a particular data.
- Move command move a block of data from a location to another location

System Specifications

CPU	: 8086 / 88 (16-bit processor)
25 Clock Frequency	: 6.144 MHz
Keyboard	: PS/2, IBM Compatible
Display	: 16*2 LCD Module

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RAM : 64KB (62256 \* 2)

EPROM : 64KB (27256 \* 2)

IO Lines : 48 lines (8255 \* 2)

Timers/Counter : 8253

5 Interrupt Controller : 8259

Interface : UART (8251)

Bus : Address, data &amp; control lines (TTL compatible)

Power : 5V 800mA

Operating Temp : 0-50°C

10 Memory Mapping

Program memory

ROM : 8000:0000 - 8000:FFFF H

RAM : 0000:0000H - 0000:FFFF H

NOTE: User can enter their program from location 0400H to FFFFH.

15 Peripherals

IO Mapping

8255-1 : PORTA: 40H, PORTB: 42H, PORTC: 44H CONTROL

WORD: 46H

8255-2 : PORTA: 60H, PORTB: 62H, PORTC: 64H CONTROL

20 WORD: 66H

8251 : DATA: A0H, CONTROL WORD: A2H

8253 : TIMER0: C0H, TIMER1: C2H

TIMER2: C4H CONTROL WORD: C6H

8259 : DATA WORD: E0H CONTROL WORD: E2H

25 Menu Commands

Command: A, B, D, E, F, G, M, R, S  
, T

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A:- Assemble

B:- Block Move

D:- Disassemble

F:- Fill data

5 G:- Go &amp; Execute

M:- Modify/View Memory

E:- Edit/View Memory

R:- Register view/Edit

S:- Single Step

10 T:- View/Edit Break point

MENU 'A': ASSEMBLE

User can enter the assembly language directly in to the kit, assembler will assemble the 8086 instruction in machine code.

ASSEMBLER

ENTER START ADDR: \_

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Now, user can enter address to start assembly & press 'ENTER' key on keyboard. The system will show a text address screen. Enter a valid instruction & press 'ENTER'.

MENU 'G': GO/EXECUTE

This command is used to perform execution of program. Select 'G' for execution.

20 The display will show

Execute

Enter starting address...

Now enter starting address of program & press 'ENTER' again.

Executing.....

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MENU 'M': MODIFY / VIEW MEMORY

In this mode, users can view the memory contents directly. After selecting this option, the screen will ask for starting address; the display will show

Modify Memory

Enter Starting Addr: \_

Then enter starting address & hit 'ENTER' then the screen will be

Modify Memory

400:00

10 Enter the new HEX value using 0-9 keys for numbers & A-F keys for data keys. Press ENTER to accept the data & Backspace to decrement the data. Users can view the contents by pressing 'ENTER' up memory address & 'Back Space' for down memory address.

Press 'Esc' to exit from this mode.

15 Result

Familiarized with the 8086 trainer kit.

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Teacher's Signature: