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NAAC ACCREDITED 'A' GRADE

Topic: pin description

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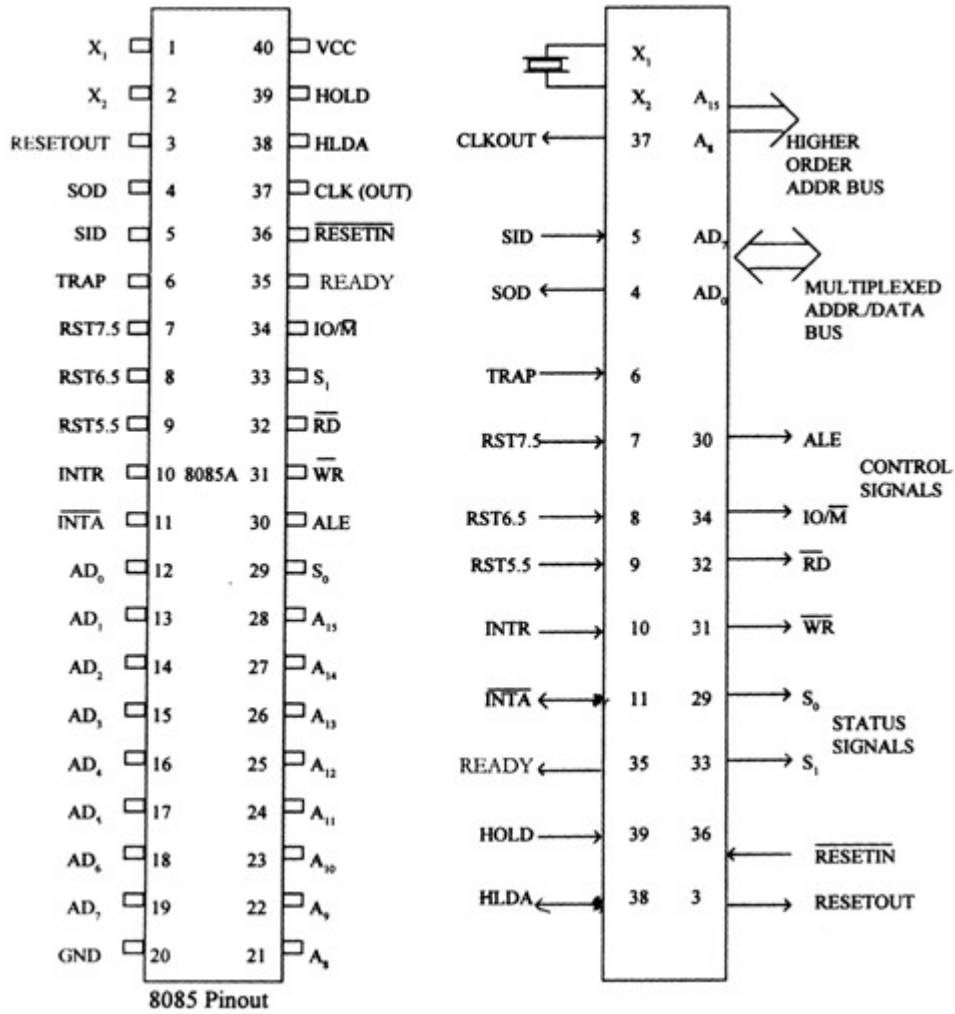
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8085 pin description:

MPU 8085 is a 40 pin IC which operates on +5v power supply and 3 MHz frequency.

- i. X_1, X_2 (INPUT): these are two input line across which a crystal or RC oscillator circuit is connected to provide the required clock frequency to the microprocessor. The frequency stability of crystal oscillator is high typically 6 MHz. Now frequency generated by the oscillator is divided by 2 to give the internal operating frequency of the MPU. So MPU frequency = crystal oscillator freq/2 = 6/2 = 3 MHz. The MPU frequency is divided by 2 because the frequency is applied to the system through a T flip flop which divided the incoming oscillator frequency by 2. We know in a T flip flop the output frequency is equal to the half of the input frequency according to frequency divider. So $f_o = f_i/2$ where f_o = MPU freq and f_i = crystal oscillator frequency.]
- ii. V_{cc} pin: for + 5v supply
- iii. V_{ss} pin: used for ground reference.
- iv. RD pin: it is active low signal. When this signal is low it indicates that the MPU wants to read a data either from memory or input output device.
- v. WR pin: it is active low signal. When this signal is low it indicates that the MPU wants to write a data either from memory or input output device.
- vi. IO/M pin: when this signal is low it means a read or write operation will take place from memory and when it is high it means a read or write operation will take place from input output.
- vii. S_0, S_1 pin: this pin use as a status signal.
- viii. SID pin: SID stands for serial input data. This line is used in serial data communication. Through this pin the serial data is received by the processor.
- ix. SOD pin: SOD stand for serial output data. This line is also used for serial data communication. Through this pin the serial data is transmitted by the processor.
- x. ALE (address latch enable) pin : if ALE =1 then $AD_7- AD_0$ act like address



1. What is opcode and operand in 8085

Ans. opcode + operand= instruction

So opcode is a part of a instruction that identifies a specific operation and operand is a part of a instruction that represent a value on which the instruction acts. For ex MOV C,A here MOV is the opcode and C,A is the operand.

2. Describe the different addressing mode of 8085.

Ans. The way in which the operand is specified in an instruction is called addressing mode. There are five type of addressing mode in 8085.

- i> **Register addressing mode:** in this mode the 8 bit data is transfer from one register to another register. Ex: MOV A,B MOV A,M
- ii> **Register indirect addressing mode:** in this mode the address of the operand is given in an indirect way with the help of register pair. Hence it is called register indirect addressing mode. Ex: LDAX B STAX B
- iii> **Direct addressing mode:** the mode of addressing in which the 16 bit address of the operand is directly available in the instruction itself is called direct addressing mode. Ex: LDA 9000H STA 9000H
- iv> **Immediate addressing mode:** the mode of addressing in which the operand is a part of instruction itself is known as immediate addressing mode. Ex: MVI A, 05H ADI 32H
- v> **Implicit addressing mode:** the mode of addressing which do not specify the operand in the instruction but it is implicated is called as implicit addressing mode i.e operand is automatically considered to be in the accumulator. Ex: CMA CMC RLC RRC DAA

3. WHAT IS PSW (Program status word)

Ans. In 8085 after any operation the result store in the accumulator and status of the result store in the flag register that is for why both accumulator and flag register value is known as the PSW.

4. What is machine cycle in 8085?

Ans. The number of T state required to access a peripheral device is called machine cycle. Access a peripheral device means to perform a read or write operation either from memory or an input output. A machine cycle may consist of 3 to 6 T state.

5. What is instruction cycle in 8085?

Ans. Instruction cycle is the total number of machine cycle require to execute a complete instruction or the number of machine cycle is required to fetch and execute an instruction is called an instruction cycle. In 8085 an instruction cycle consists of one to five machine cycle.

6. What is opcode fetch machine cycle?

Ans. The opcode fetch machine cycle fetch the instruction from memory and deliver it to the instruction register (I.R) of MPU. IR is an 8 bit register that is used to receive the 8 bit opcode of an instruction. Next the instruction decoder (I.D) receives input from the IR. The ID output drives the control unit and control unit generate appropriate control signal to execute the instruction. Opcode fetch machine cycle require 4 T state of 8085. Opcode fetch machine cycle is memory operation. The first operation of any instruction is opcode fetch.

7. What is instruction decoder and instruction register in 8085?

Ans. Instruction register: this register holds the opcode of the instruction. when MPU execute a program it reads the opcode from the memory , this opcode is stored in the Instruction register.

Instruction decoder (ID): the ID receives the input from the IR. The ID output drive the control unit .Finally the control unit generates **the** appropriate control signal to execute the instruction.

8. What is main feature of 8085?

Ans. It can accept process or provide 8 bit data simultaneously.

It operates on clock cycle with 50% duty cycle.

It has 16 address line hence it can access 2^{16} kbytes of memory.

It can operate 3 MHZ clock frequency.

It provides 8 bit I/O port address to access 256 I/O ports.

