

## IO Peripherals

Function 8255-1	Address	Function 8255-11	Address
port A	40	port A	60
port B	42	port B	62
port C	44	port C	64
control register	46	control register	66

## Algorithm

The program initializes the 8255 (P1) in order to make port A as output port. The PA0 to PA3 is connected through buffer & driving circuit to the winding of the stepper motor. The codes for clockwise movement of stepper motor are FA, F6, F5 & F9. These codes are to be output in the sequence they are written. In case of anti-clockwise movement of the stepper motor, output codes are as F9, F5, F6 & FA. The delay routine is called to generate the delay (max. of about 1 sec) between the steps. This delay can be changed to make faster steps. The minimum delay depends upon the maximum speed of the stepper motor specified.

Aim

Stepper motor interface with 8086 clock wise & anti-clockwise rotation.

Theory

5 The 8086 LCD uses two 8255 IC's for getting total of 48 I/O pins. The Intel 8255 (or 8255) Programmable Peripheral Interface chip is a peripheral chip originally developed for the Intel 8085 microprocessor, & as such is a member of a large array of such chips, known as the MCS-85 Family.

10 The 8255 has 24 I/O pins in all. These are divided into three 8-bit ports. Port A & port B can be used as 8-bit input/output ports. Port C can be used as an 8-bit input/output port or as two 4-bit input/output ports or to produce handshake signals for ports A & B.

15 The 3 ports are further grouped as follows:

1. Group A consisting of port A & upper part of port C.
2. Group B consisting of port B & lower part of port C.

Specification

- 20 Permanent Magnet D.C. Stepping Motors two phase Bipolar wound.
- Step angle:  $1.8^\circ \pm 5\%$  Non-cumulative.
- Step/Revolutions: 200

Teacher's Signature: \_\_\_\_\_



Program

Address	Instruction	Comment
0400	MOV AL, 80H	Initialize port
0402	OUT 66H, AL	
0404	LOOP2: MOV CL, 04	Loop count
0406	MOV BX, 500H	Table location
0409	LOOP1: MOV AL, [BX]	Get from table
040B	OUT 60H, AL	Place to port
040D	CALL DELAY	Rotation data
0410	INC BX	Inc pointer
0411	LOOPNZ LOOP1	
0413	JMP LOOP2	Repeat
0415	DELAY: PUSH CX	Save CX
0416	MOV CX, 0FFFFH	Delay loop count
0419	HERE: LOOPNZ HERE	
041B	POP CX	Retrieve
041C	RET	

Result

Completed stepper motor interface with 8086 clockwise & anti-clockwise rotation.

Teacher's Signature: \_\_\_\_\_