IO Peripherals

Function 8255-I	Address	Function 8255-II	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 P1O to P13 is connected through buffer & driving circuit to the winding of the stepper motor. The codes for clockwise movement of stepper motor are F5, 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 & F4. 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.

Experiment Name / No.: 19. STEPPER MOTOR

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Aim

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

Theory

STS 8086LCD uses two 8255 IC's for getting total of 48 I/O pins. The Intel 8255 (or i8255) 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.

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.

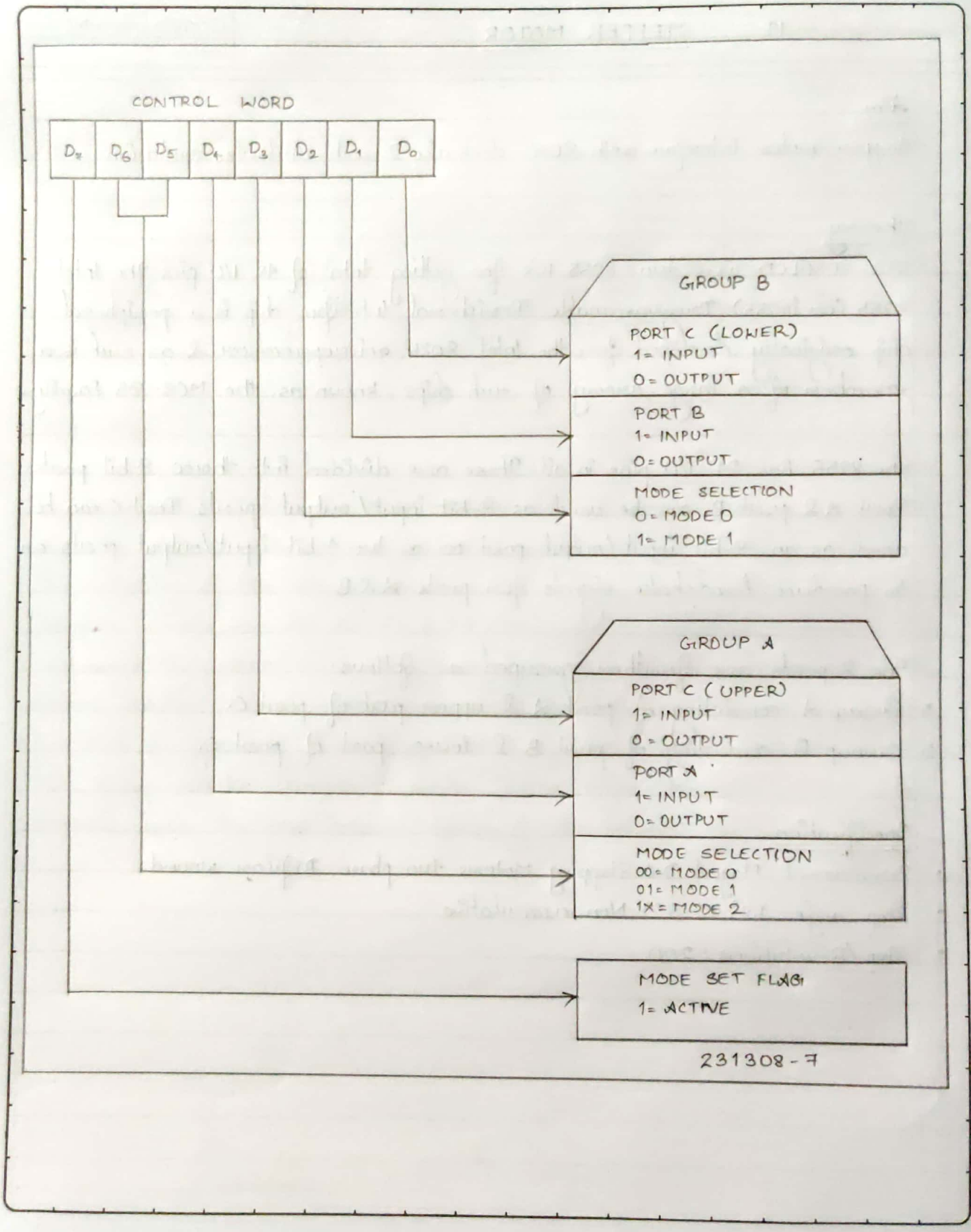
The 3 ports are further grouped as follows:

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

- Permanent Magnet D.C. Stepping Motors two phase Bifilar wound.
- Step angle: 1.8° +/- 5% Non-cumulative.
- Step / Revolutions: 200

Teacher's Signature:



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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, OFFFFH	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: