



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

Sekolah Pendidikan Profesional dan  
Pendidikan Berterusan  
(UTMSPACE)

**PROGRAM KEJURUTERAAN ELEKTRIK  
PUSAT PENGAJIAN DIPLOMA (PPD), SPACE  
UNIVERSITI TEKNOLOGI MALAYSIA  
KUALA LUMPUR**

**MECHATRONICS ENGINEERING LABORATORY  
(DDWE 3711)**

**INDUSTRIAL AUTOMATION**

**EXPERIMENT 3**

**HANDLING SYSTEM WITH ROLLER CONVEYOR MODULE**

<b>Group members</b>	1.
	2.
	3.
	4.
	5.
<b>Lecturer</b>	:
<b>Date</b>	:

No.	PO	CO	Student Marks	Marks
1	PO2	CO2		30%
2	PO3	CO4		20%
3	PO4	CO2		50%
<b>Total Marks</b>				<b>/100%</b>

- OBJECTIVES:**
- i. To understand the components in the system and their characteristics.
  - ii. To make electrical and pneumatic connections based on sensors diagram, I/O list and pneumatic diagram.
  - iii. To understand the PLC program and the system workflow
  - iv. To understand the integration using difference system input and output

**PARTS LIST:**

<u>PART</u>	<u>QUANTITY</u>
CYLINDER	3
ROTARY	1
VACUUM INJECTOR	1
VACUUM S/W	1
F/R UNIT	1
REED S/W	5
MICRO SENSOR	1
PROXIMITY SENSOR	2
VACUUM PAD	1
END VALVE	1
S, VALVE	6

<u>CONTROL PANEL PARTS</u>	<u>QUANTITY</u>
IND LAMP	3
PUSH BUTTON	2
EMG S/W	1
RELAY	2
POWER SUPPLY	1
PLC(FP1 C40)	1

**INSTRUCTIONS:**

1. Table 1 shows the position of cylinders provided in attachment 1. You are instructed to write down the pneumatic circuit according into Table 1.

Example: CYLINDER 1 should be connected to the first 5/2way valve (Y0) and so on.

<b>ACTUATOR</b>	<b>SOLENOID VALVE</b>
Cylinder 1	Solenoid 1 (Y0)
Cylinder 2	
Cylinder 3	
Cylinder 4	
Rotary 1	
Suction cup / vacuum 6	

Table 1

2. Verify the pneumatic tube connections between solenoid valves and actuators. With the aid of solenoid valves diagram (attachment 2), fill up the solenoid labels into Table 3. You are advised not to push the 'manual override' buttons on the solenoid valves to test the system.
3. Study the sensor diagram (attachment 3). With referring to I/O list in page 3, fill up the labels as you see on the system into Table 2.
4. Connections from valves to actuators have been made. Understand the drawing (Attachment 1 to 3). With referring to Table 2 and 3, cable up the connecting panel to the PLC panel. You are advised to use the colored wires accordingly. For example, use the blue wire to connect the input signal (X labels on PLC panel ) to sensors label. (S labels on connecting panel). {PO3, CO4} / 20
5. Inform your supervisor before you on the power supply
6. Insert all the 'cover' pieces into the feeding shaft. Push PB button. If the system fails to work successfully, you have to do troubleshooting procedures.
7. Explain your observation the process in module 4. { PO4, CO2} / 20
8. Write down the BND and BLD of the PLC program. {PO4, CO2}
9. explain the application in industries. {PO4, CO2} / 20 / 10

**I/O LIST**

INPUT LIST:

INPUT NO.	REMARKS	SYMBOL
X0	ROTARY IN	
X1	ROTARY OUT	
X2	Z CY IN	
X3	PART CONFIRM	
X4	PART CONFIRM	
X5	PUSH ER IN	
X6	PUSHER 1 OUT	
X7	LIFTER UP	
X8	LIFTER DOWN	
X9	X CY IN	
XA	X CY OUT	
XB	VACUUM S/W	
XE	PUSH BUTTON (START)	

Table 2

{ PO2, CO2}

/ 20

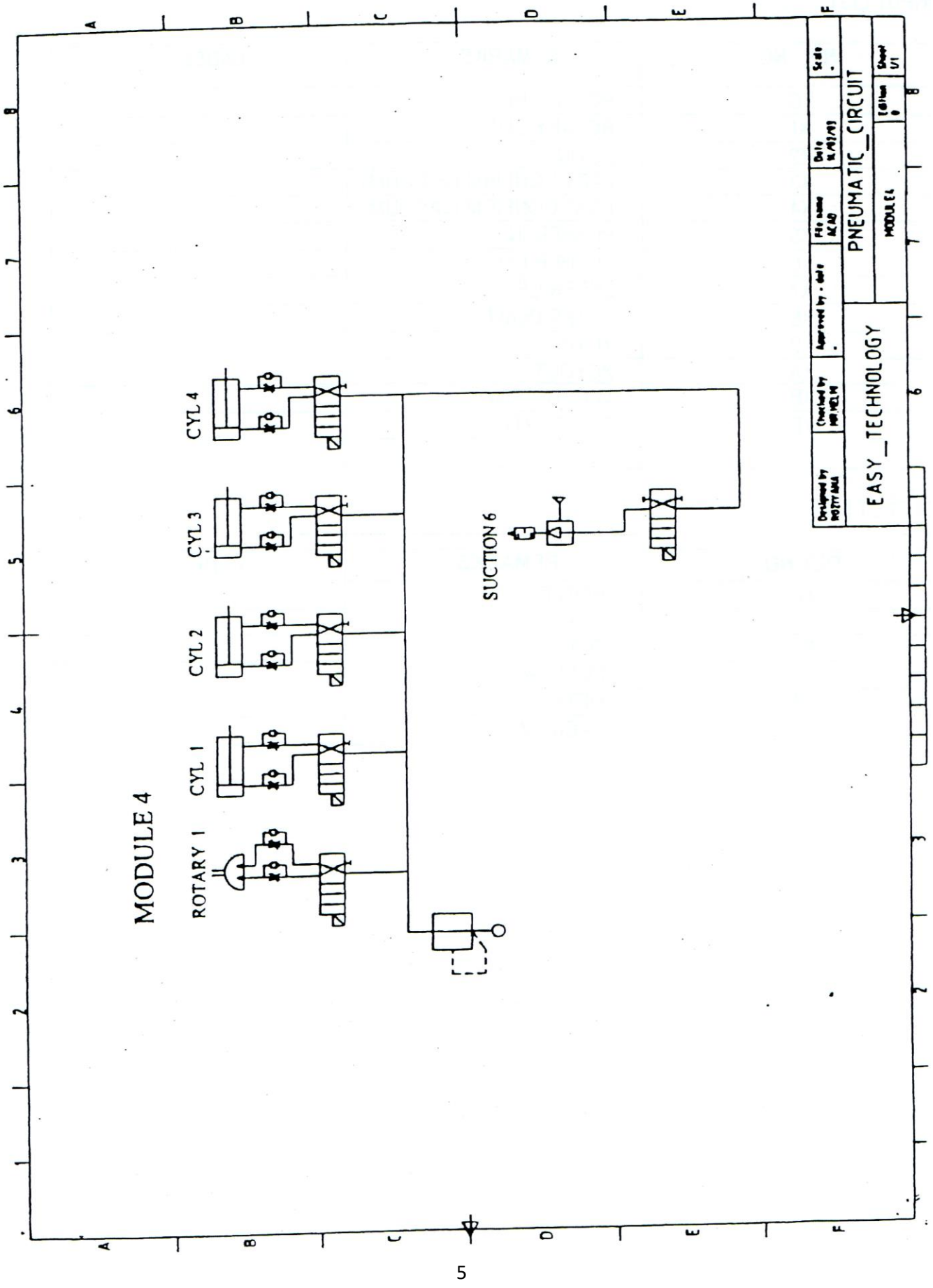
OUT PUT LIST:

OUT NO.	REMARKS	SYMBOL
Y0	ROTARY CY	
Y1	X CY	
Y2	Z CY	
Y3	PUSHER	
Y4	LIFTER	
Y5	VACUUM	

{ PO2, CO2}

/ 10

Table 3



Developed by MSTY/AMA	Checked by MB/MLM	Approved by - Date	File name AZ/AD	Date N/A/19	Scale
<b>EASY TECHNOLOGY</b>			<b>PNEUMATIC CIRCUIT</b>		
			MODULE 4	Edition 0	Sheet 1/1

