



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Sekolah Pendidikan
Profesional dan
Pendidikan Berterusan
(SPACE)

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

**MECHATRONICS ENGINEERING LABORATORY
(DDWE 3711)
ELECTRICAL MACHINE AND DRIVES**

**EXPERIMENT 3
INDUCTION MOTOR DRIVE WITH AC VOLTAGE
CONTROL**

Group members	1.
	2.
	3.
	4.
Lecturer	:
Date	:

No.	PO	CO	Student Marks	Marks
1	PO1	CO1		40%
2	PO2	CO3		50%
3	PO8	CO6		10%
Total Marks				/ 100%

TITLE : INDUCTION MOTOR DRIVE WITH AC VOLATGE CONTROL

OBJECTIVES;

After doing this experiment, you will be able to:

1. Construct three pulse induction motor drive.
2. Identify the operation of AC voltage control.
3. Understand the function of induction motor drive with AC voltage control.

EQUIPMENTS;

1. Lab volt experimental panel
2. Power supply module (8821-2A)
3. Four Pole Squirrel Cage Induction Motor (8221)
4. Data acquisition module (9062-15)
5. Power tyristors module (8841-2A)
6. Firing tyrhristor unit (9030-30)
7. Tachometer
8. Desktop

COMPONENTS;

1. Wire jumper

1. Now set up the circuit as shown in Figure 1.

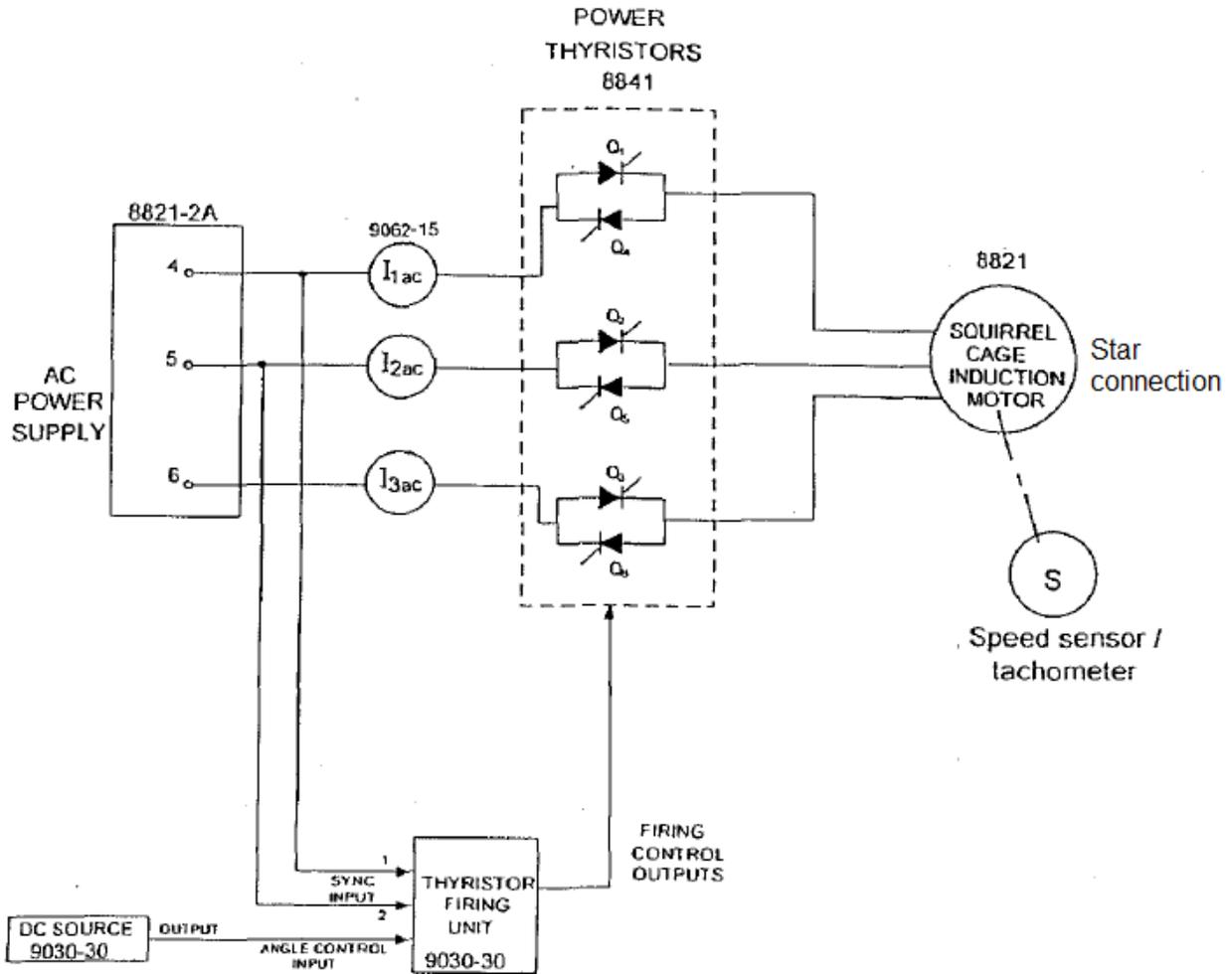


Figure 1

2. Then make the following settings.

On the power supply

Voltage selector ---- **4-N (240 V)**

On the Firing Unit

ANGLE CONTROL COMPLEMENT ---- **0**
 ANGLE CONTROL ARC COSINE ---- **0**
 FIRING CONTROL MODE ---- **3~**
 Set the DC SOURCE control ---- **MIN.**

3. On the Power Supply, set the 24 Vac power switch and the main power switch to 1 (ON) and **vary slowly** the voltage control knob so that the voltage indicated by the power supply voltmeter is equal to **240 V**.
4. Record the rated/nominal speed of motor.

Rated /Nominal speed = rpm

PO1	CO1 /5m
------------	------------	-----------

5. Slowly increase the firing angle and record in **Table 1**.

Firing angle (0°)	Speed (rpm)
0°	
5°	
10°	
15°	
20°	
25°	
30°	
35°	
40°	
45°	
50°	
55°	
60°	
65°	
70°	
75°	
80°	

Table 1

PO1	CO1 /10m
------------	------------	------------

6. What do you observe?

.....

PO1	CO1 /5m
------------	------------	-----------

7. Is the speed control linear? Draw a graph of speed versus firing angle.

.....
.....
.....
.....

PO1	CO1	/10m
-----	-----	-------	------

CONCLUSION

.....
.....
.....
.....
.....
.....
.....
.....
.....

PO1	CO1	/10m
-----	-----	-------	------

TOTAL MARKS (PO1, CO1) = / 40 marks