

Experiment 4: OPERATION OF SEPARATELY EXCITED DC SHUNT GENERATOR

Purpose : Observing the remanance voltage of the machine, analyzing the relation between the excitation I_u and the generator voltage U , obtaining the no-load characteristic curve.

Equipments :

- Experiment board with energy unit Y-036/001
- Railed motor table Y-036/003
- D.C shunt machine Y-036/023-A
- Three phase asynchronous motor Y-036/015
- Three phase asynchronous motor controller Y-036/026
- D.C measurement unit Y-036/006
- 50 Ω 1000w rheostat Y-036/066
- Tachometer (speedometer)
- Jagged cable, cable with IEC plug

Connection diagram for the experiment :

Y-036/001

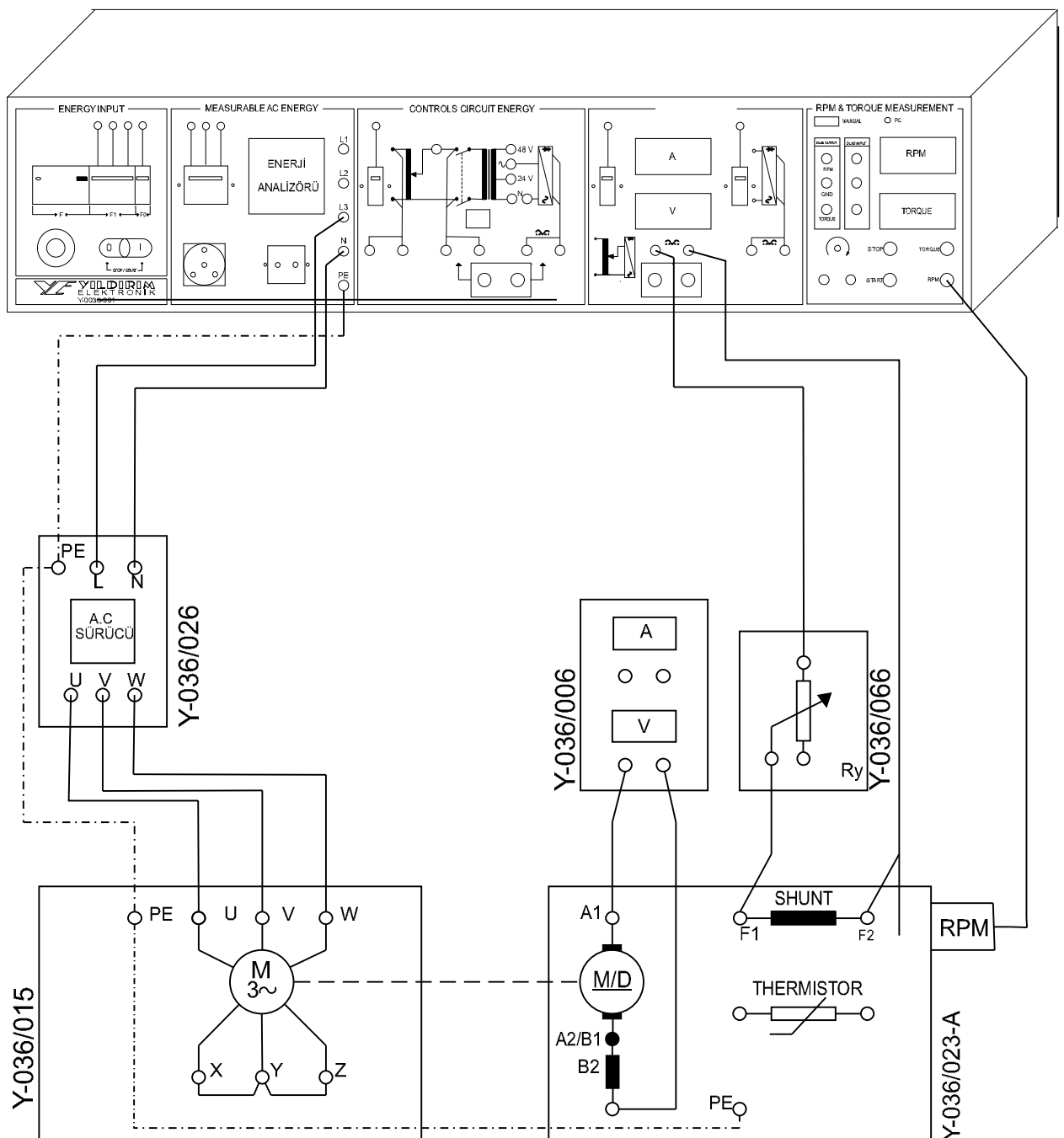


Figure 4.1: Connection diagram for the no-load operation of the separately excited DC shunt generator.

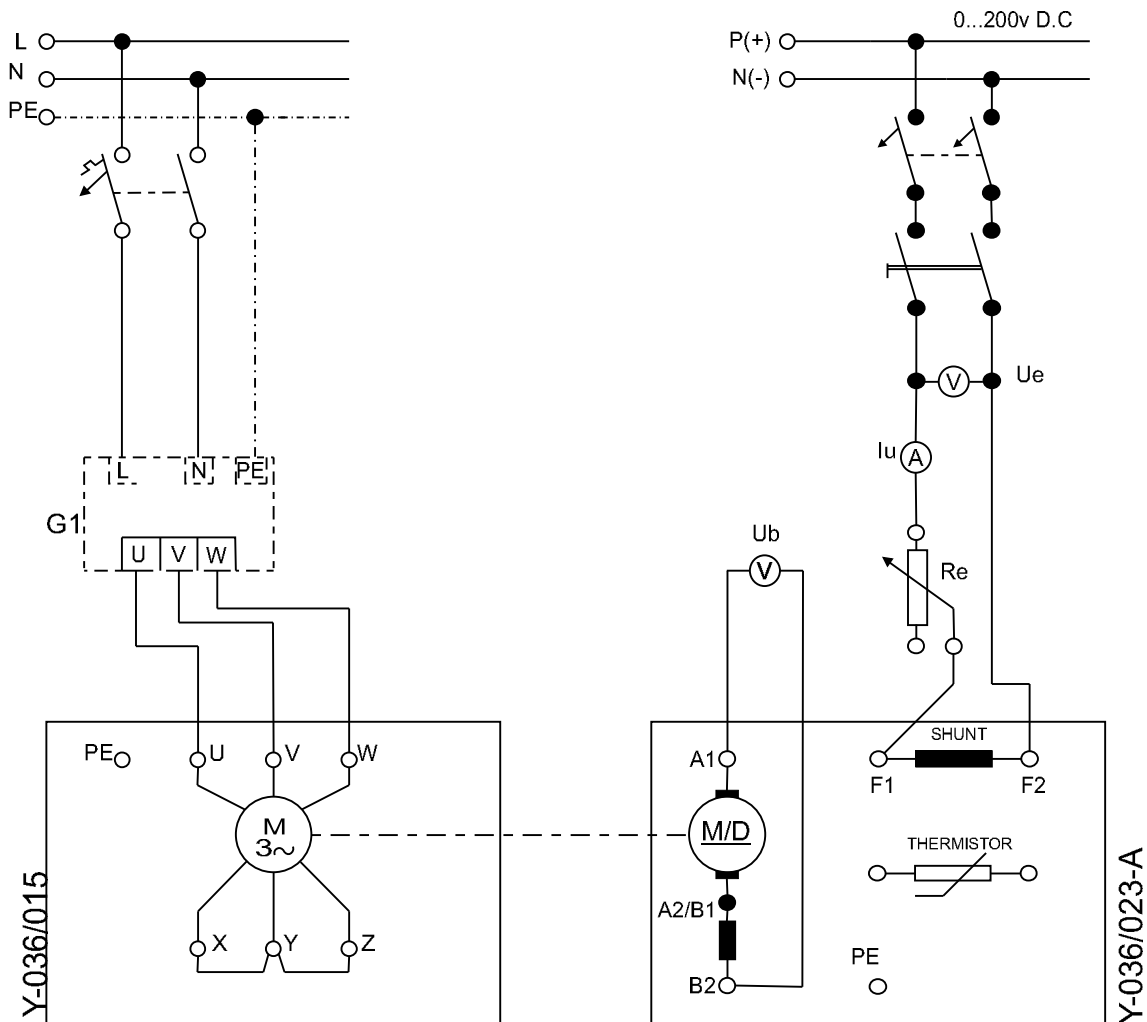


Figure 4.2: Connection diagram for the no-load operation of the separately excited DC shunt generator.

Procedure:

Not:*Analyze the documents for the AC asynchronous motor controller. Set the speed of the motor to a value over the rated value.

* Analyze the rated values of the DC shunt machine.

*You can use a variable DC to supply the excitation circuit without using an excitation rheostat.

- Connect the circuit shown in the figure.
- Set the DC energy in the DC energy part to 200v.
- Set the speed of the motor to its rated value(1500rpm) while the excitation circuit is open and record the value of U_b .
- Apply DC energy to the excitation circuit while the excitation rheostat is at the maximum position. Take note of the values U_b - U_e - I .
- Decrease the excitation resistance step by step until the generator voltage takes its rated value (200v). Take note of the values U_b - U_e - I in each step.
- Set the generator voltage to 1.1 times the rated value using the excitation rheostat. (Vary the excitation voltage if necessary) Take note of the values U_b - U_e - I .
- Decrease the excitation current by increasing the excitation resistance step by step. Take note of the values U_b - U_e - I in each step.
- Decrease the excitation current by increasing the excitation resistance until it reaches to zero (Decrease the excitation voltage if necessary). step by step. When it reaches to zero, turn of the energy of the excitation circuit, measure and record the value of U_b .
- Turn of the energy and finish the experiment.

Values recorded in the experiment:

Speed	Ub	Ue	lu	State

Question 1:

Question 2:

Question 3:

