Experiment 10:THE CHARACTERISTIC AND LOADED OPERATION OF THE DC SHUNT MOTOR

Purpose: Operating the DC shunt motor with load, analyzing the relation between motor current Im and speed (n), observing the decrease in the speed with the increasing motor current.

Equipments :

-Experiment board with energy unit	Y-036/001	-Magnetic powder brake	Y-036/024A
-Railed motor table	Y-036/003	-(RL) rheostat 50 Ω 1000w	Y-036/065
-Switch with two poles	Y-036/052	-(Re) rheostat 100 Ω 500w	Y-036/066
-D.C measurement unit	Y-036/006	-Tachometer (speedometer)	
-D.C shunt machine	Y-036/023-A	-Jagged cable ,cable with IEC plug	

Connection diagram for the experiment : Y-036/001

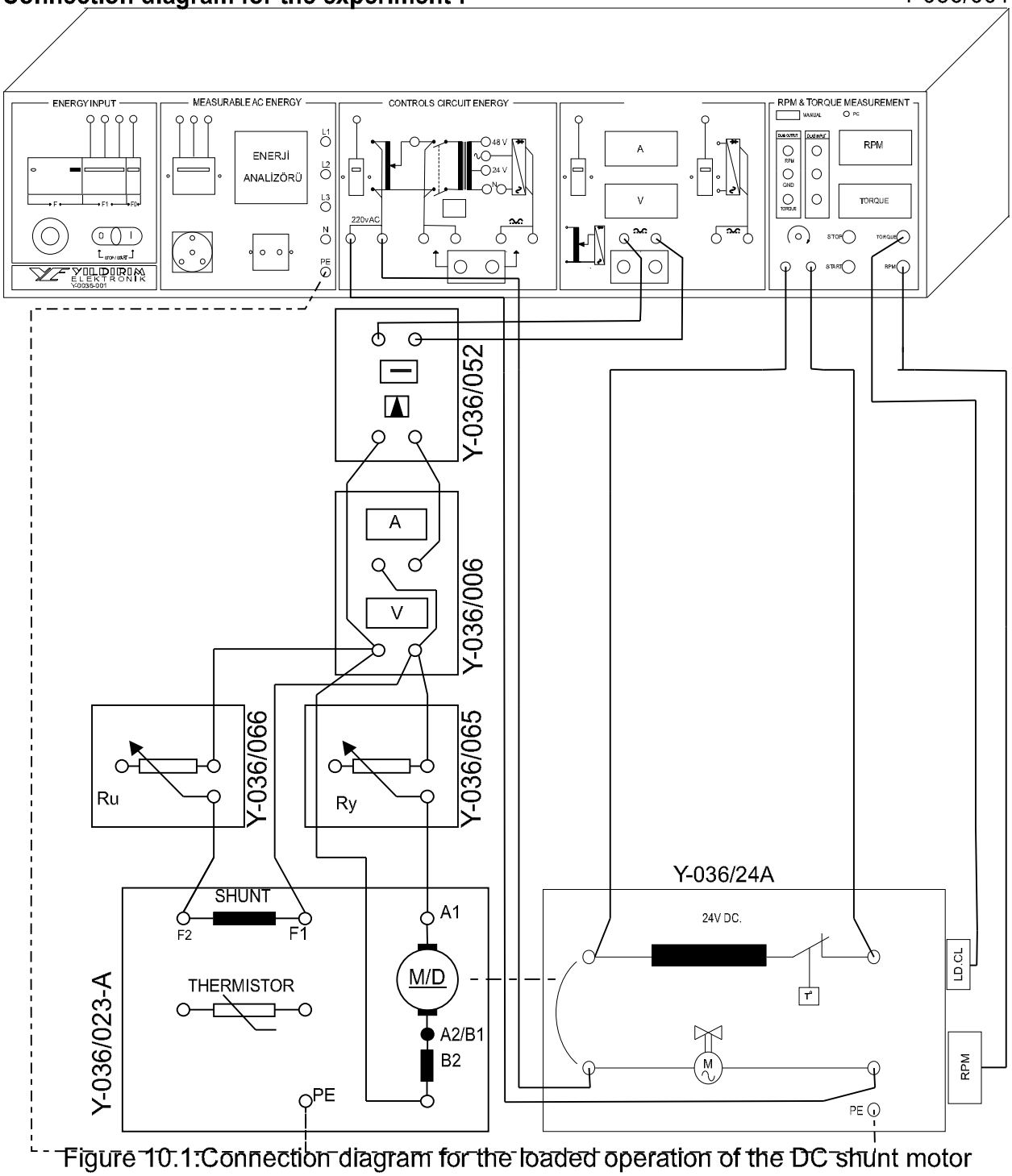

Figure 10.1:Connection diagram for the loaded operation of the DC shunt motor

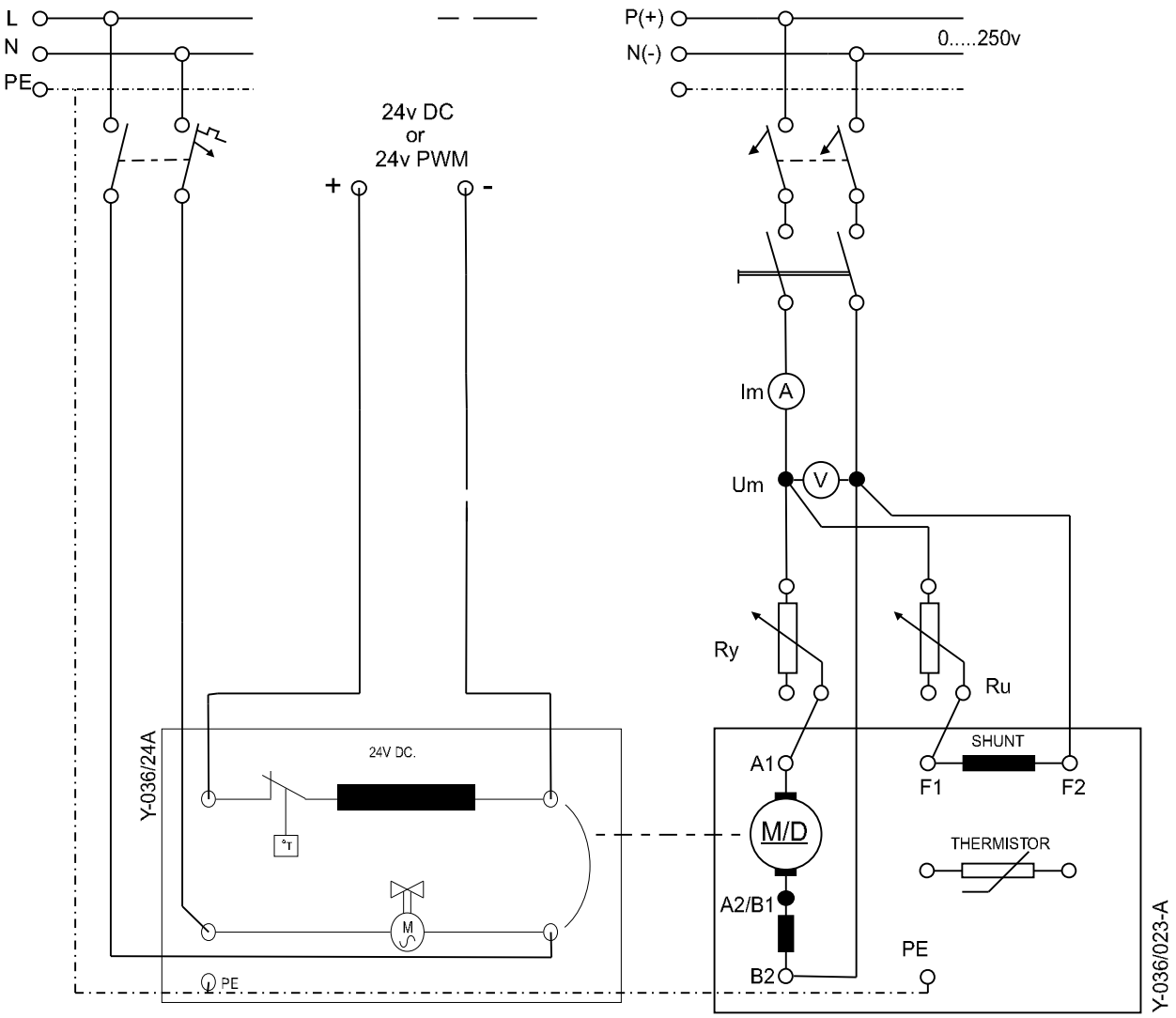

Figure 10.2:Connection diagram for the loaded operation of the DC shunt motor

Procedure :

Not:∗Read the rated values for the magnetic powder brake. If it operate over the rated value for a long time thermal protection is engaged.

∗Read the rated values for the D.C shunt machine.

∗Before applying power to the DC shunt machine set the starter rheostat (RL) to its maximum position and set the excitation rheostat(Re) to its minimum position.

-Connect the circuit shown in figure 10.1 and figure 10.2.
-Set the DC supply Y-036/001 to 200v or the variable DC supply to 200v.
-Apply power to the DC shunt motor and start it using the starter rheostat (Rs).
-Set the speed of the DC shunt motor to its rated value using the excitation rheostat (Re). Take note of the values Um, Im and n.
-Load the motor setting the magnetic powder brake voltage to 0v (0-24v or PWM driver). Set the voltage applied to the motor to rated value. Take note of the values Im,n and torque.
-Increase the voltage of the magnetic powder brake step by step up to the rated load. Set the voltage applied to the motor to rated and take note of the values Im,n and torque in each step.
-Load the motor with 1.2 times the rated power using the magnetic powder brake. Set the voltage applied to the motor to rated value. Take note of the values Im,n and torque.
-Turn of the energy and finish the experiment.

Values recorded in the experiment:

Um	Im	Ie	n	Nm	Explanation

Question 1

Question 2

Question 3