

4.1 Measurements with no compensation

Run the DC motor open loop, without IR drop compensation. In order to do this, make sure that the IR compensation is off on the web interface window. Without compensation as the load of the motor increases, the speed is reduced.

Do the following:

1. Check that the DC bus voltage has been set to 150 V. This voltage is displayed in the user interface window.
2. Program the FPGA by clicking on the appropriate button on the web interface.
3. Turn on the power converter (run motor).
4. Collect the data to fill out Table I and Table II below. Each table requires a different speed setting (#1 and #2 respectively on the user interface window), which sets the voltage V_a :
 - a. Record the armature and field current readings from the oscilloscope. You can use the average function in the scope to get the DC value of the currents. (measure menu, add measurement, measurement type 'mean').
 - b. Record the motor speed (in rpm) from the user interface window.
5. Stop the motor after completing the data recording.

Table I: Data for the case without IR compensation at various loads with speed setting #1

load_duty	IA (amps)	IF (amps)	SPEED (RPM)
0%			
7%			
13%			
20%			
24%			
35%			

Table II: Data for the case without IR compensation at various loads with speed setting #2

load_duty	IA (amps)	IF (amps)	SPEED (RPM)
0%			
7%			
13%			
20%			
24%			
35%			