

## VOLTAGE CHANGES VS. PERFORMANCE

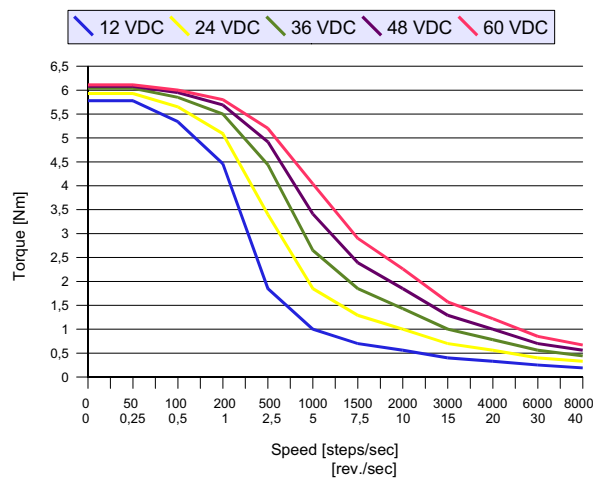
Low speed performance is not appreciably affected by supply voltage. One step time is sufficient for full motor winding inductance charging for high as well as low supply voltage. For this reason torque/speed curves do not decrease considerably at the low speed range. The high speed range begins at the point where the motor torque curve starts to decrease. Motor torque reduction is approximately proportional to supply voltage reduction.

Supply voltage decrease, however, results in speed and motor torque reduction, for example values change on a half approx. when 24 VDC is used instead of 48 VDC.

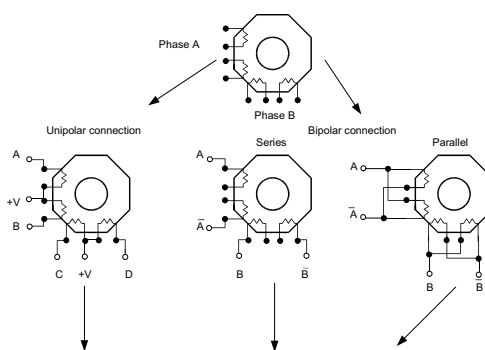
Higher voltages result in increased motor heating regardless of motor speed. Maximal motor winding temperature 130 °C must not be exceeded. As the motor winding temperature measurement is difficult, the motor outer surface temperature can be used also.

Auxiliary cooling is not necessary if the motor operates without forced air cooling and the motor outer surface temperature does not exceed 60 °C.

Torque/speed curves of SM32-5008 stepper motor (serial connection, drive setting 5 A per phase)



## PHASE SEQUENCING



		Unipolar Full Step Phase Sequencing				Bipolar Full Step Phase Sequencing					
CW ↓	Step	A	B	C	D	A	$\bar{A}$	B	$\bar{B}$	↑ CCW	0 = OFF or open + = positive current flow - = negative current flow
	1	GND	0	GND	0	+	-	-	+		
	2	0	GND	GND	0	-	+	-	+		
	3	0	GND	0	GND	-	+	+	-		
	4	GND	0	0	GND	+	-	+	-		
1	GND	0	GND	0	+	-	-	+			

Due to better performance Microcon delivers bipolar drives only and all torque/speed curves are specified for bipolar drives.