



## DCM50xxx/57xxx Series

### DC Brush Servo Motors



#### Product Description

The DCM50xxx/57xxx series motors are permanent magnet DC brush servo motors. The motors are ideal for cost sensitive applications. They include an attached encoder which provides position feedback to controllers.

#### Features

High performance (Smooth operation, High precision

and Low noise)

- | Low cost
- | Small disturbance
- | Encoder optional (1000 line or 500 line), Positional error can be eliminated to one pulse
- | Mounting dimensions of DCM57xxx brush servo motors are the same as those of NEMA frame size 23 motors

#### Typical Applications

- | Engraving machines, Cutting machines, Jet-ink machines
- | Experimental installations and Instructional machines
- | Measuring devices, such as Imager, Analytic Instruments, etc.
- | Electronic packaging equipments and Loading and unloading devices
- | Medical instruments

#### Brush Servo Motor Specifications

No.	Parameter	Symbol	Units	DCM50202A	DCM57202	DCM5x205	DCM 5x207
1	Continuous Torque (Max)	$T_C$	N·m	$98.9 \times 10^{-3}$	$98.9 \times 10^{-3}$	$218.9 \times 10^{-3}$	$353.1 \times 10^{-3}$
2	Peak Torque (Stall)	$T_{PK}$	N·m	0.76	0.76	1.59	2.90
3	No-load Speed	$S_{NL}$	rpm	4600±10%	4600±10%	4000±10%	3600±10%
4	Rated Speed	$S_R$	rpm	3500	3500	3000	2900
5	Rotor Inertia	$J_M$	kg·m <sup>2</sup>	$1.62 \times 10^{-5}$	$1.62 \times 10^{-5}$	$3.11 \times 10^{-5}$	$4.73 \times 10^{-5}$
6	Maximum Winding Temperature	$\theta_{MAX}$	°C	155	155	155	155
7	Thermal Impedance	$R_{TH}$	°C/watt	9.00	9.00	7.30	4.98
8	Motor Weight (Plus encoder)	$W_M$	g	694	754	1182	1338
9	Motor Length (Plus encoder)	$L_1$	mm	121±2	129±2	161±2	196±2
10	Rated Voltage	E	V	24	24	24	30.3
11	Rated Current	I	A	1.79	1.79	2.95	3.94
12	Torque Constant	$K_T$	N·m/A	$55.1 \times 10^{-3}$	$55.1 \times 10^{-3}$	$74.2 \times 10^{-3}$	$89.7 \times 10^{-3}$
13	Resistance	$R_T$	Ω	1.73	1.73	1.11	0.93
14	No-Load Current	$I_{NL}$	A	0.5	0.5	0.8	0.6
15	Peak Current (Stall)	$I_P$	A	13.9	13.9	21.6	32.6
16	Encoder Specification	—	Lines/rev	500/1000	500/1000	500/1000	500/1000



### Mechanical Specifications

Mechanical specification of DCM57202 motor (plus encoder) is shown as Figure 1.

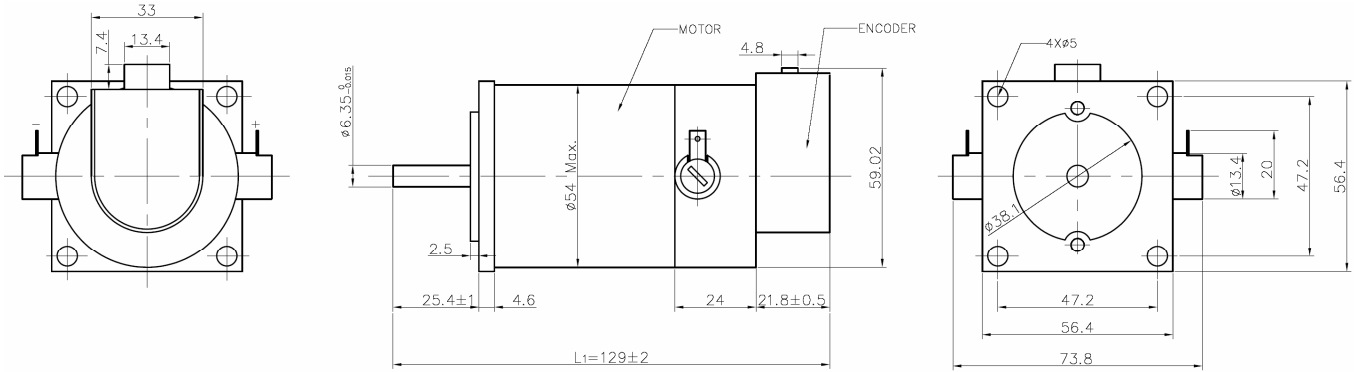


Figure 1: Mechanical specification of DCM57202 motor (plus encoder)

Mechanical specification of DCM57205 motor (plus encoder) is shown as Figure 2.

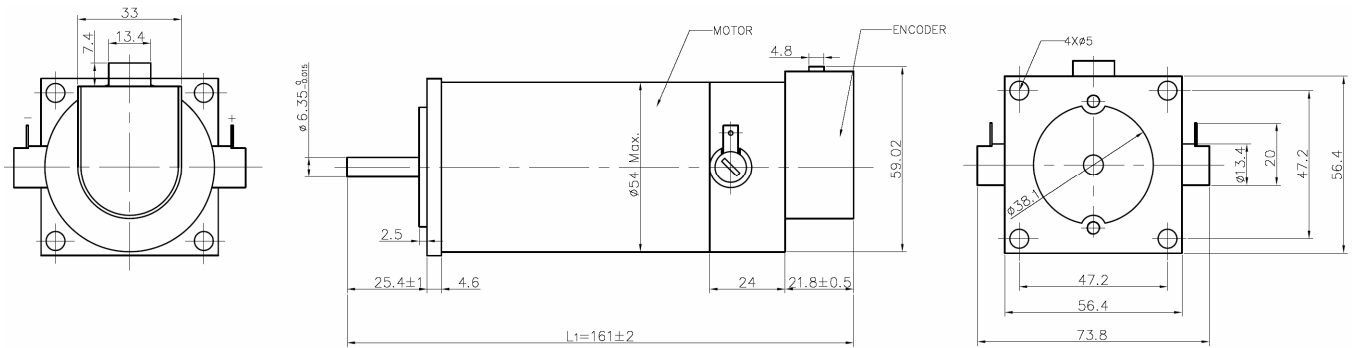


Figure 2: Mechanical specification of DCM57205 motor (plus encoder)

Mechanical specification of DCM57207 motor (plus encoder) is shown as Figure 3.

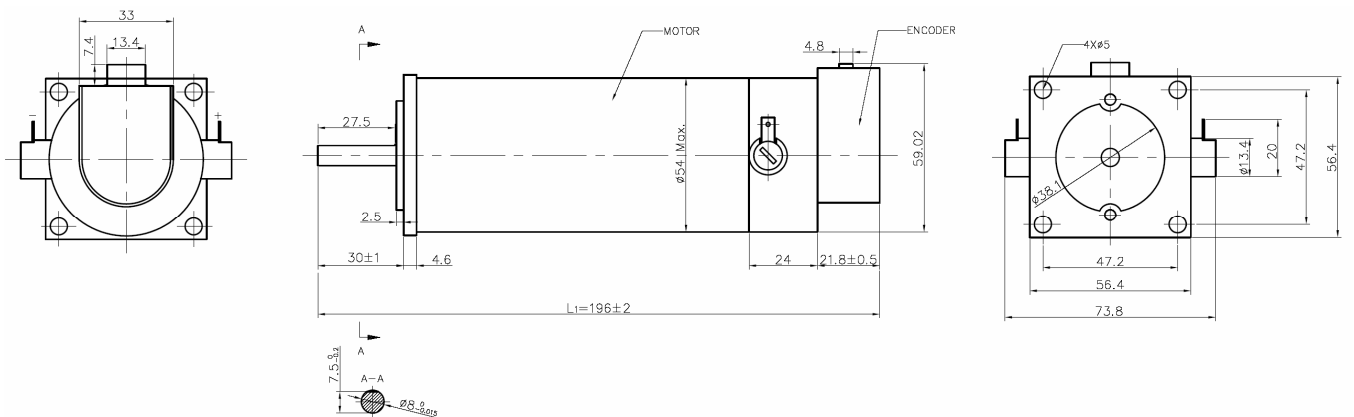


Figure 3: Mechanical specification of DCM57207 motor (plus encoder)



Mechanical specification of DCM50202A motor (plus encoder) is shown as Figure 4.

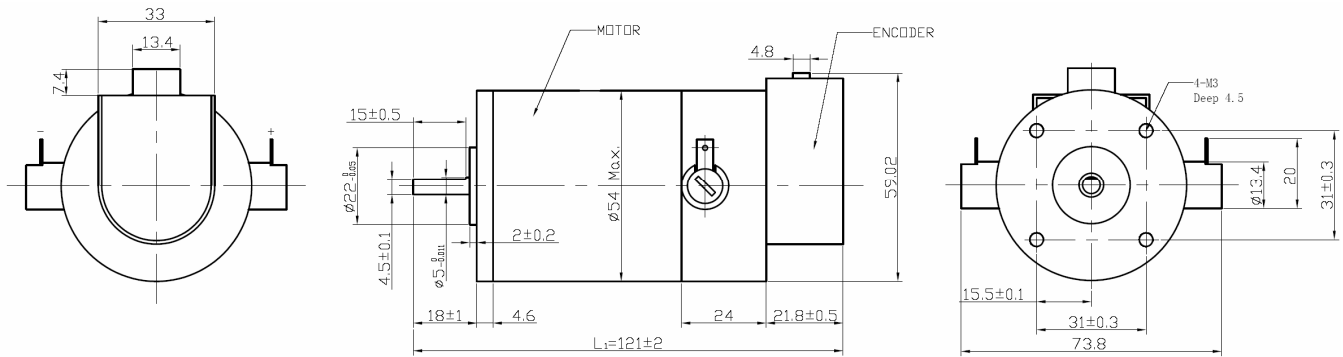


Figure 4: Mechanical specification of DCM50202A motor (plus encoder)

Mechanical specification of DCM50205 motor (plus encoder) is shown as Figure 5.

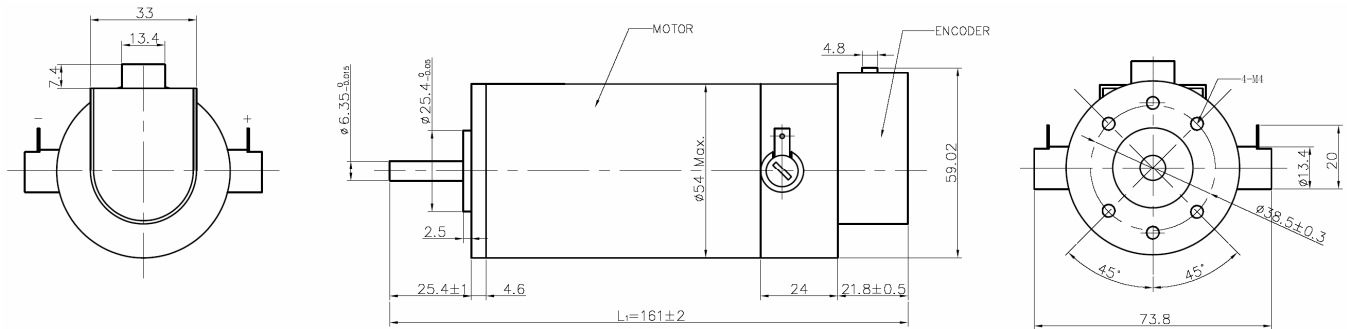


Figure 5: Mechanical specification of DCM50205 motor (plus encoder)

Mechanical specification of DCM50207 motor (plus encoder) is shown as Figure 6.

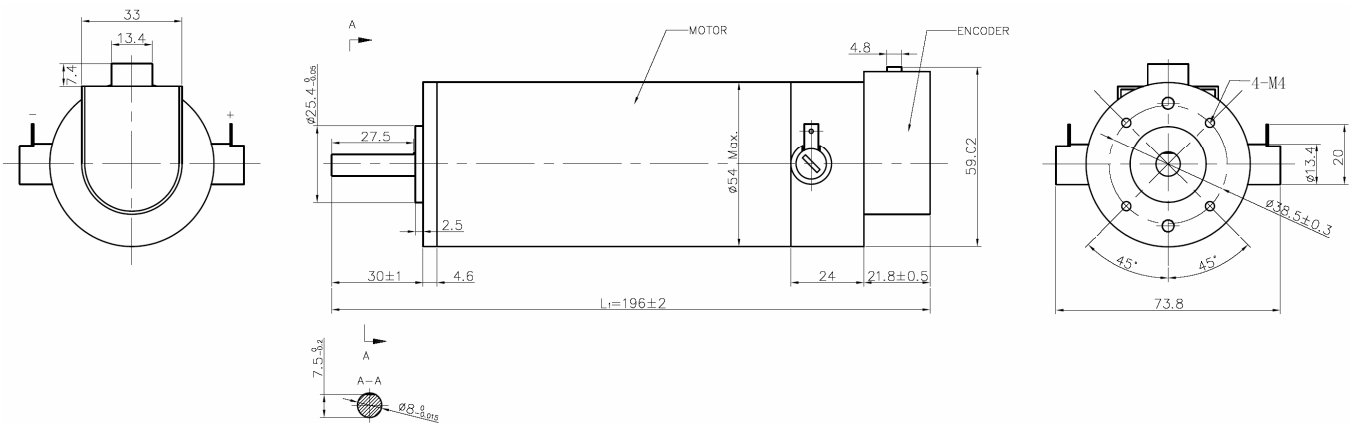


Figure 6: Mechanical specification of DCM50207 motor (plus encoder)



**Encoder** (Line Count and Signal Type Optional)

DCM5xxxx series motors include an attached encoder, and the user can select line count and signal type of the encoder. The DCM5xxxx-1000 models include a 1000 line single-ended encoder and the DCM5xxxx-500 models include a 500 line single-ended encoder; while the DCM5xxxxD-1000 models include a 1000 line differential encoder and the DCM5xxxxD-500 models include a 500 line differential encoder. All encoders on the standard models have A signal and B signal. No Z signal is offered by the standard models, please specify the requirement when placing an order if the user needs an encoder which has Z signal.

**I Connection Chart for Single-ended Encoder:**

Pin	Colour	Connection (DCS303, DCS810/DCS810S, DCS811)
1	Blue	Channel B (EB/EB+)
2	Yellow	Channel A (EA/EA+)
3	Red	VCC (E+5V/E+5V)
4	Black	Ground (EGND/EGND)
5	Green	Index/NC (NC/NC)

**I Connection Chart for Differential Encoder:**

Pin	Colour	Connection (DCS810, DCS811)
1	Black	Channel A+ (EA+)
2	Blue	Channel A- (EA-)
3	Yellow	Channel B+ (EB+)
4	Green	Channel B- (EB-)
5	Red	VCC (E+5V)
6	White	Ground (EGND)

**Typical Connections**

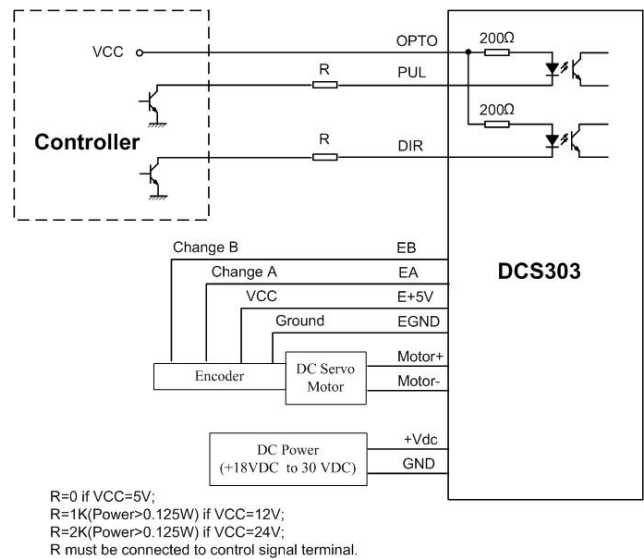


Figure 7: Typical connections of DCM5xxxx series motors and DCS303 servo driver

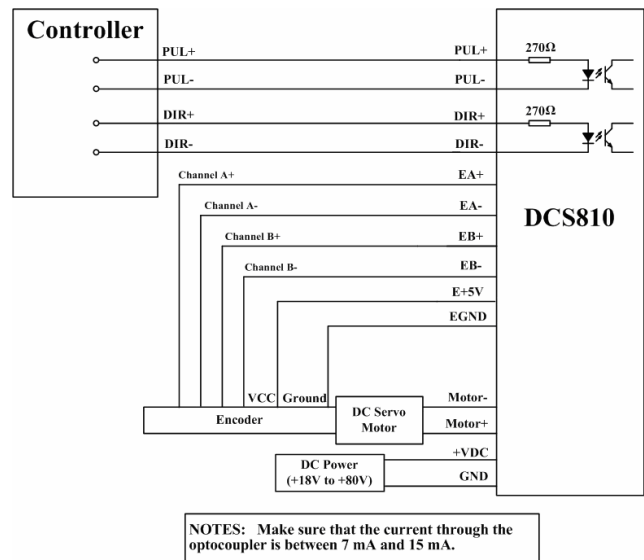


Figure 8: Typical connections of DCM5xxxx series motors and DCS810 servo driver

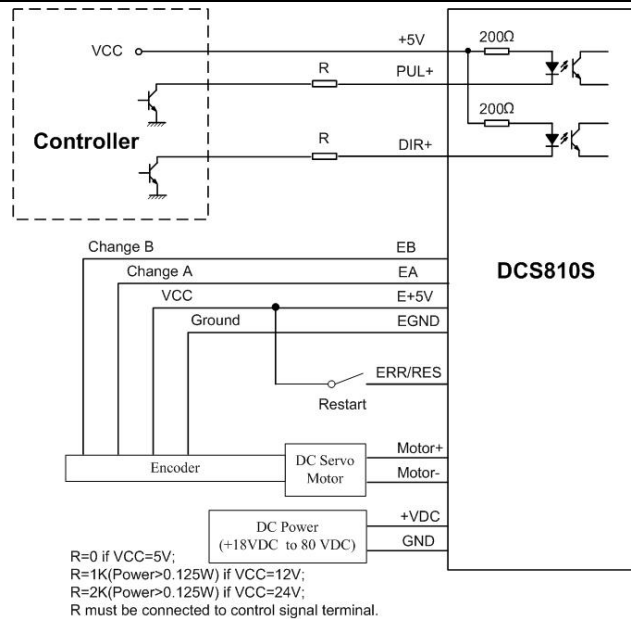


Figure 9: Typical connections of DCM5xxx series motors and DB810S servo driver

### Speed-Torque Characteristics

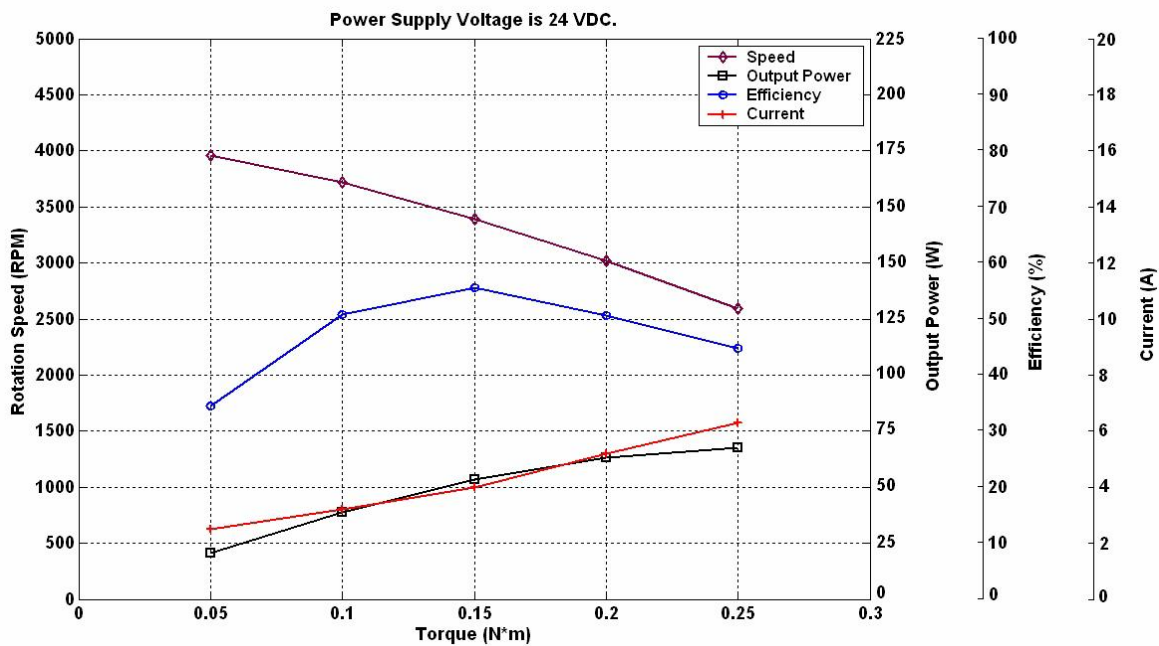


Figure 10: Speed-torque characteristics of DCM5x202 and DCM50202A

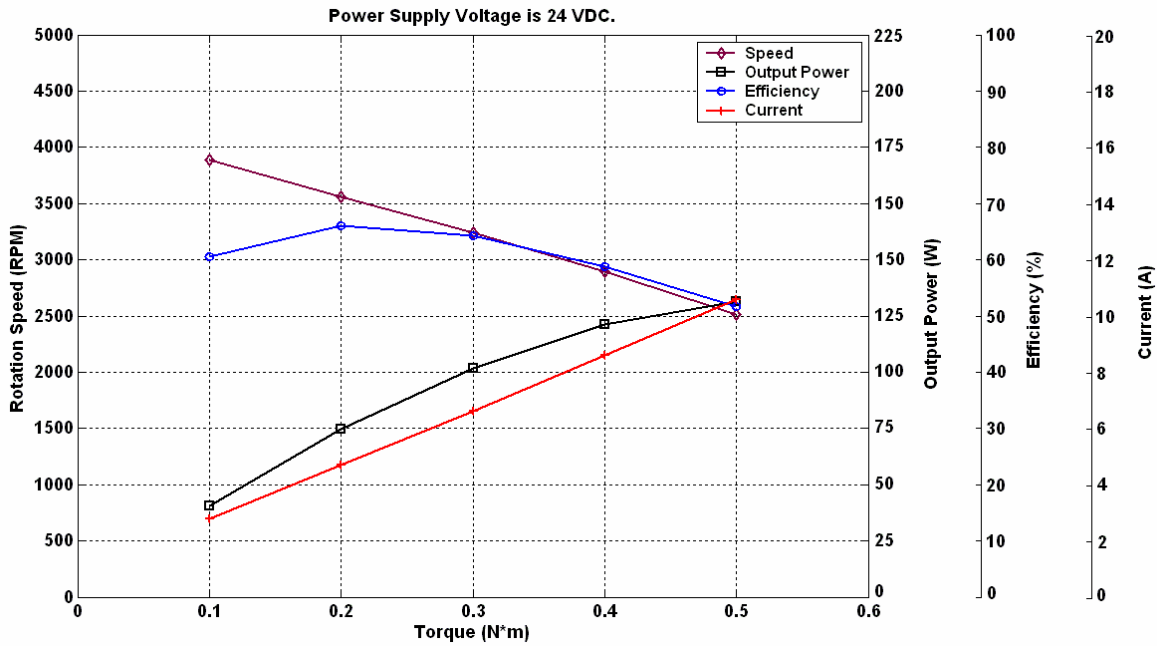


Figure 11: Speed-torque characteristics of DCM5x205

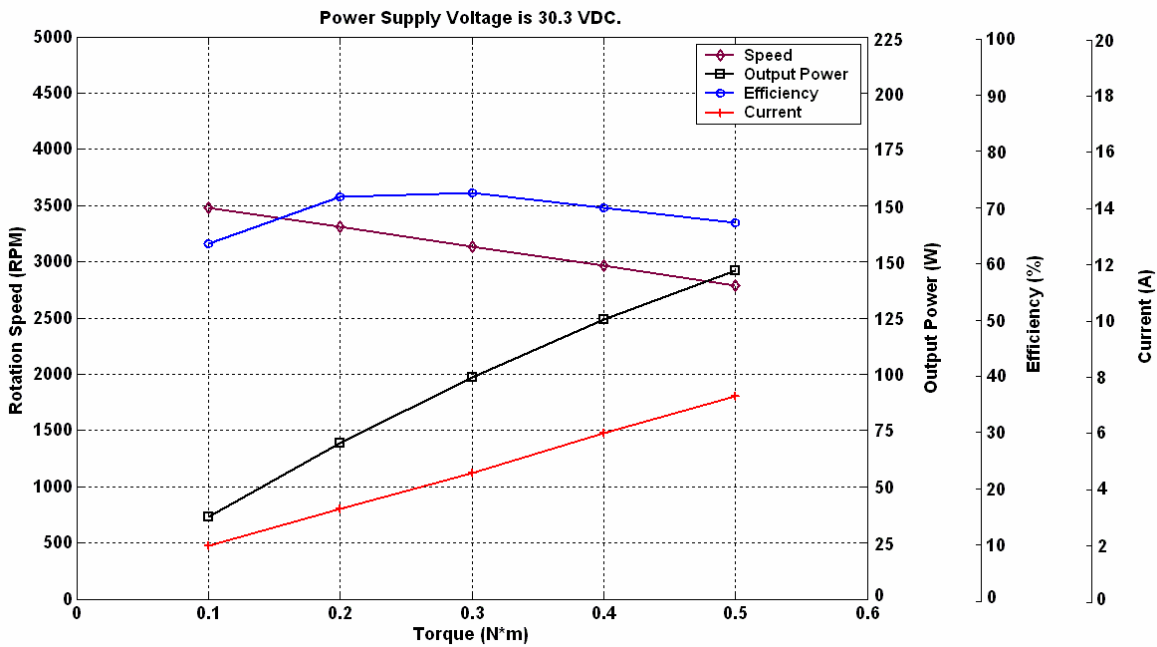


Figure 12: Speed-torque characteristics of DCM5x207



### **Order Information**

- U DCM50xxx-1000 is a bolting motor including a single-ended 1000 line encoder, such as the DCM50202A-1000 motor, the DCM50205-1000 motor and the DCM50207-1000 motor.
- U DCM50xxx-500 is a bolting motor including a single-ended 500 line encoder, such as the DCM50202A-500 motor, the DCM50205-500 motor and the DCM50207-500 motor.
- U DCM57xxx-1000 is a flange connected motor including a single-ended 1000 line encoder, such as the DCM57202-1000 motor, the DCM57205-1000 motor and the DCM57207-1000 motor.
- U DCM57xxx-500 is a flange connected motor including a single-ended 500 line encoder, such as the DCM57202-500 motor, the DCM57205-500 motor and the DCM57207-500 motor.
- U DCM50xxxD-1000 is a bolting motor including a differential 1000 line encoder, such as the DCM50202AD-1000 motor, the DCM50205D-1000 motor and the DCM50207D-1000 motor.
- U DCM50xxxD-500 is a bolting motor including a differential 500 line encoder, such as the DCM50202AD-500 motor, the DCM50205D-500 motor and the DCM50207D-500 motor.
- U DCM57xxxD-1000 is a flange connected motor including a differential 1000 line encoder, such as the DCM57202D-1000 motor, the DCM57205D-1000 motor and the DCM57207D-1000 motor.
- U DCM57xxxD-500 is a flange connected motor including a differential 500 line encoder, such as the DCM57202D-500 motor, the DCM57205D-500 motor and the DCM57207D-500 motor.

**Note:** No Z signal is offered by the standard models, please specify the requirement when placing an order if the user needs an encoder which has Z signal.