

Smart Geared motor

DSEM-7024-50-A 24VDC brushless



GEARED EC MOTOR

- The gear train of the smart motor is a 3K epicyclic gear train.
- Compactness : Disk shape
- Gear Ratio : Up to 2,500
- Multi-pole motor design for optimum power density (14-pole)
- Hollow shaft
- Digital(PWM) speed control
- Current limit
- Blockage protection : Detect a motor lock if motor shaft is blocked for longer than 3 sec.
- Alarm output function at time of error
- FG out

Nominal data	Reduction Ratio	Exact Reduction Ratio	Rated Torque	Max. Momentary Torque	Torque Transfer Efficiency	Backlash	Torque Constant	No Load Speed	No Load Current	* Noise	Length L1	Length L2	Mass
Model			N.m	N.m	%	min	N.m/A	RPM	A	dB	mm	mm	Kg
DSEM-7024-50-A	1/50	5/252	10	90	81	10	5	40	0.35	50	46	19	0.7
DSEM-7024-102-A	1/102	5/512	20	90	81	10	10	20	0.35	55	46	19	0.7

*Condition of measurement : DC24V, Rad.30[cm], With no load, Fix on sponge

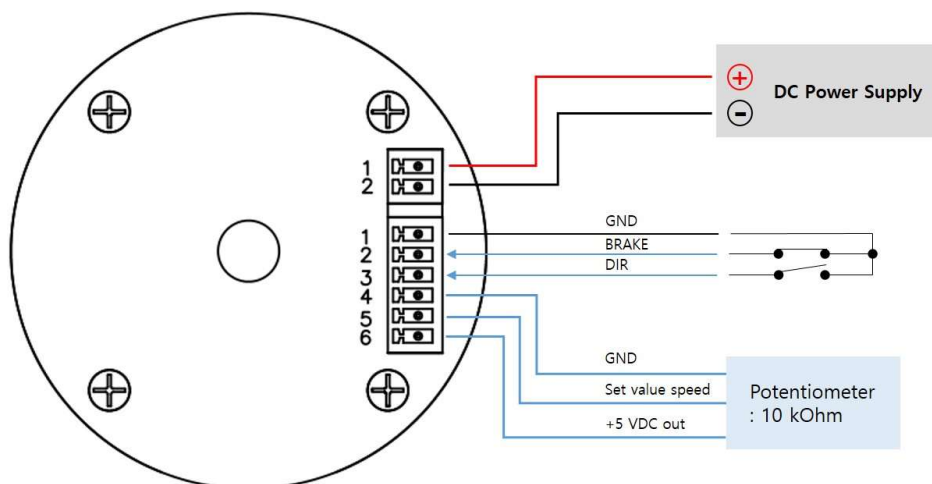
Characteristics	DSEM-7024-50-A
Interface	
1 Input	BRAKE, DIRECTION, SPEED, GND
2 Output	+5 VDC
Protective function	
1 Current limit	A 3.5
2 Thermal shutdown (IC temperature/design specification.)	°C 160±10
3 Motor lock protection	sec 3
Ambient condition	
1 Operation condition- Dry bulb temp	°C -10~50
2 Operation condition- Relative humidity	% 0~85
3 Storage condition - Dry bulb temp	°C -10~60
4 Storage condition - Relative humidity	% 10~90
Mechanical characteristics	
1 Stator Length	mm 10
2 Stator Diameter	Ø 68
3 Shaft Diameter	Ø 43
4 Rotational Direction	CW/CCW
Other Specifications	
1 Number of pole pairs	14
2 Number of phases	3
3 Weight of motor	g 767
4. Protection class	IP40
5. Insulation class	F

Features

Smart 3K geared motor

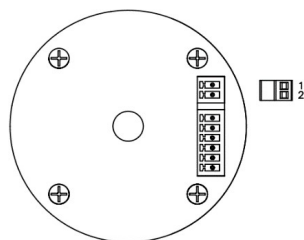
3K epicyclic gear train has a large gear ratio (up to 2500) comparing with 3K paradox epicyclic gear train.
 3K epicyclic gear train has a simple structure and the same structure regardless gear ratio.
 3K epicyclic gear train is compact and has a large torque density.

Wiring diagram



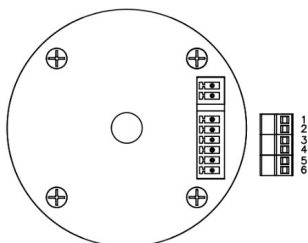
Pin configuration

Power



PIN	DESCRIPTION / NOTES	I/O
1 +Vm	DC power input	I
2 GND	Power ground	Power GND

Signal



PIN	DESCRIPTION / NOTES	I/O
1 GND	Ground	Signal GND
2 BRAKE	Brake active/not active	I
3 DIRECTION	Direction of rotation	I
4 GND	Reference ground	Reference GND
5 Set speed	Set value speed reference : Analog input	I
6 +5V out	+5 Vdc out	O

Terminals

Power

Male header PCB : ECH350R-2P, 1 row, Pitch : 3.5 mm

Suitable plug : EC350V-2P

Suitable for wire cross section : AWG#22 UL1007

Signal I/O

Male header (PCB) : ECH350R-6P, 1 row, Pitch : 3.5 mm

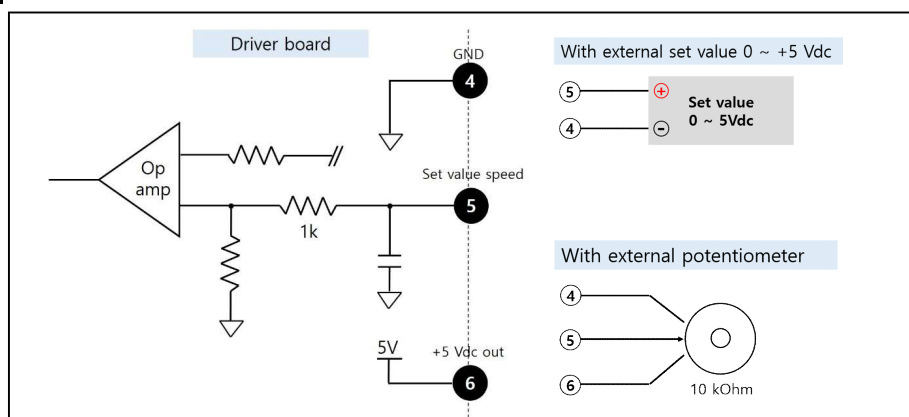
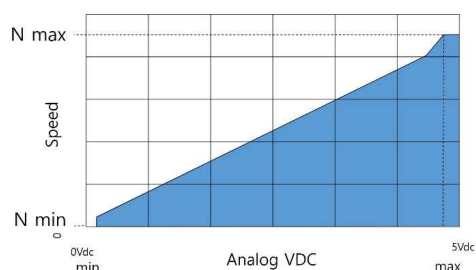
Suitable plug : EC350V-6P

Suitable for wire cross section : AWG#26 UL1007

Inputs and outputs

Set value speed

Speed control



Control input brake <BLK>

The motor shaft slows down in an uncontrolled fashion to a standstill by short-circuiting the motor windings.

You should connect a Schottky Barrier Diode between each signal line to ground to prevent IC from damage.

Input voltage range	High(1) : 3.3 to 5 V or Input OPEN	Brake function active
	Low(0) : 0 to 0.8 V or Input to GND	Brake function not active
Interface		

Control input rotation <Direction>

When the level changes, motors shaft slows down in an uncontrolled fashion to a standstill by short-circuiting the motor windings, and accelerates in the opposite direction, until the nominal speed reaches again.

Change CW/CCW input signal after motor had stopped completely.

If you change the CW/CCW signal during motor running, there is a danger of the damage of electronic parts inside motor.

Input voltage range	High(1) : 3.3 to 5 V or Input OPEN	Counter-clockwise rotation
	Low(0) : 0 to 0.8 V or Input to GND	Clockwise rotation
Interface		

Motor protection

No	Specification	Note
1 Current limit	3.5 [A] Typ	
2 Thermal shutdown	160±10 [°C]	When the IC reaches the defined temperature, the motor current automatically cuts off. There is no guarantee of proper operation when thermal shutdown motor is reused.
3 Motor lock detection	3 sec	When the motor locks, the motor current automatically cuts off within the defined time. The motor restarts by power supply reset.

Product safety

1. Locked motor
2. Circuit Protect

No burning after locked rotor condition at rated voltage by using a specified drive circuit.

This motor does not have the protect circuit for over voltage and wrong connection.
So, don't apply to surge voltage such as over rated voltage and wrong connection.

Dimension Drawing

Dimensions in [mm]

