



# MANUAL

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### DSM70 geared ECG Series

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The Smart EC motor is a high-performance BLDC motor with a hollow shaft and an electronic commutation circuit.

The gear train of the smart EC motor is a cycloid gear train and IG planetary gearhead

The use of existing DSM series products with an adapted design results in robust, space-saving drive solution with high power density.

Configured, combine and order EC motors(DSM), driver(ECIP), gearheads(ECG), brakes(BXW) and encoders(ECM) that match your individual needs.

Smart EC motors can be configured and ordered online. Fast , easy and online : [www.dnj.co.kr](http://www.dnj.co.kr) ([dnj@dnj.co.kr](mailto:dnj@dnj.co.kr))

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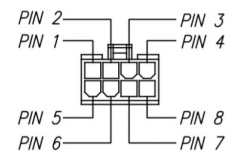
GEARED EC MOTOR

Ø70 mm, 24V, 40 Watt, Cycloid gear, Brushless, Standard hollow shaft

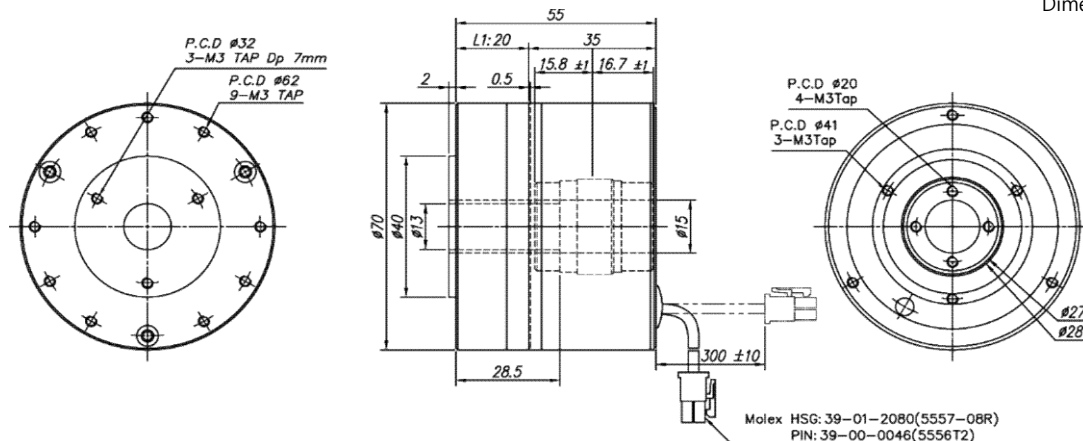
- Cycloid gear train.
- External diameter Ø70
- Output shaft : Free cutting steel
- Rotation direction : CW/CCW (View from output shaft)
- Concentric gear input and output
- Motor posture : Horizontal (output shaft)
- High reduction ratio in a small space
- Favorably priced and space-saving
- Hall sensor (5~24Vdc, open-collector)

Nominal data [ Geared motor ]		DSM 701 -24V -40P - HG [ Reduction Ratio ]			
Reduction Ratio		22.8	51.3	98.7	203.0
Exact Reduction Ratio		187/4275	187/9595	51/5035	51/10355
Gearhead Length L1	mm	20.0	20.0	20.0	20.0
Rated Torque	N.m	2.4	5.1	9.8	18.3
Rated Speed	RPM	95.8	42.6	22.1	10.8
Max. Momentary Tolerance torque	N.m	20	20	40	40
Average Backlash (no load)	min	10	10	10	10
No load Speed	RPM	116.2	51.7	26.8	13.1
No load Current	mA	570	570	570	570
Weight	g	810	820	850	880
* Noise	dB	50	50	50	50
* Condition of measurement : DC24V, Rad.30[cm], With no load, Fix on sponge					
Max. permissible axial load	Nm	45	45	45	45
Max. permissible force for press fits	Nm	59	59	59	59
Protection class		IP50			
Temperature ratings (Operation)		Dry bulb temp (-10~50°C), Relative humidity ( 0~85%)			
Temperature ratings (Storage)		Dry bulb temp (-10~60°C), Relative humidity (10~90%)			

Motor specification		701-24V-40P	Pin Allocation	(Molex 5557-08R)
Rated Voltage	V	24	1 black GND	Motor UL1061 AWG 22
Rated Speed	RPM	2300	2 blue Motor winding W	Hall sensor UL1061 AWG 26
Rated Torque	N.m	0.18	3 green Motor winding V	
Rated Current	A	2.5	4 yellow Motor winding U	
Rated Power	W	40	5 red Vhall 5 ... 24Vdc	
No load speed	RPM	2650	6 brown Hall sensor C	
No load current	mA	320	7 gray Hall sensor B	
			8 white Hall sensor A	



Dimensions in [mm]





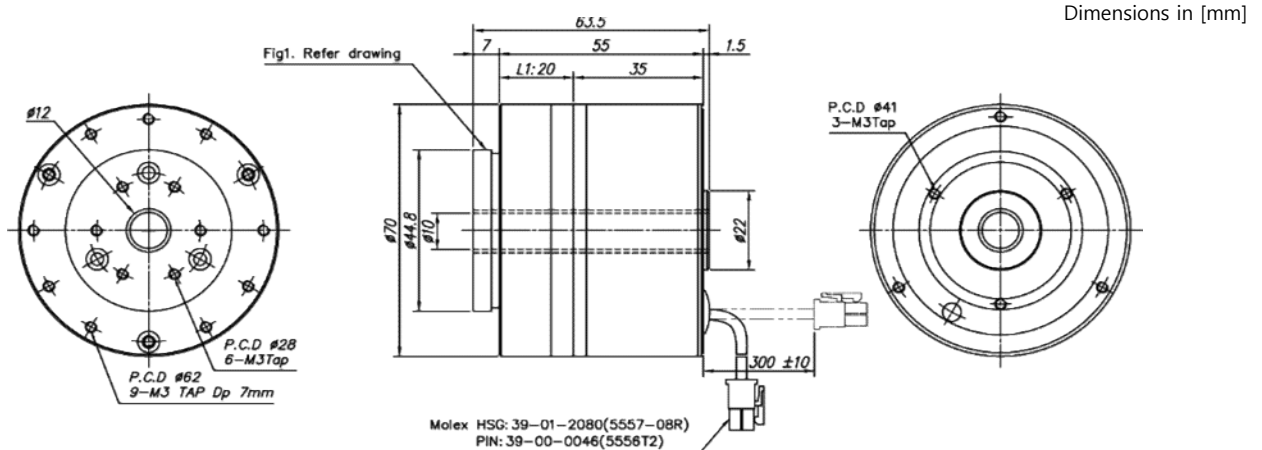
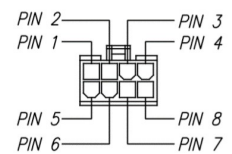
GEARED EC MOTOR

Ø70 mm, 24V, 40 Watt, Cycloid gear, Brushless, Hollow disc flange option

- Cycloid gear train.
- External diameter Ø70
- Output shaft : Free cutting steel
- Rotation direction : CW/CCW (View from output shaft)
- Concentric gear input and output
- Motor posture : Horizontal (output shaft)
- High reduction ratio in a small space
- Favorably priced and space-saving
- Hall sensor (5~24Vdc, open-collector)

Nominal data [ Geared motor ]		DSM 701 -24V -40P - HG [ Reduction Ratio ]			
Reduction Ratio		22.8	51.3	98.7	203.0
Exact Reduction Ratio		187/4275	187/9595	51/5035	51/10355
Gearhead Length L1	mm	20.0	20.0	20.0	20.0
Rated Torque	N.m	2.4	5.1	9.8	18.3
Rated Speed	RPM	95.8	42.6	22.1	10.8
Max. Momentary Tolerance torque	N.m	20	20	40	40
Average Backlash (no load)	min	10	10	10	10
No load Speed	RPM	116.2	51.7	26.8	13.1
No load Current	mA	570	570	570	570
Weight	g	870	880	910	940
* Noise	dB	50	50	50	50
* Condition of measurement : DC24V, Rad.30[cm], With no load, Fix on sponge					
Max. permissible axial load	Nm	45	45	45	45
Max. permissible force for press fits	Nm	59	59	59	59
Protection class		IP50			
Temperature ratings (Operation)		Dry bulb temp (-10~50°C), Relative humidity ( 0~85%)			
Temperature ratings (Storage)		Dry bulb temp (-10~60°C), Relative humidity (10~90%)			

Motor specification	701-24V-40P	Pin Allocation	(Molex 5557-08R)
Rated Voltage	V 24	1 black GND	Motor UL1061 AWG 22
Rated Speed	RPM 2300	2 blue Motor winding W	Hall sensor UL1061 AWG 26
Rated Torque	N.m 0.18	3 green Motor winding V	
Rated Current	A 2.5	4 yellow Motor winding U	
Rated Power	W 40	5 red Vhall 5 ... 24Vdc	
No load speed	RPM 2650	6 brown Hall sensor C	
No load current	mA 320	7 gray Hall sensor B	
		8 white Hall sensor A	







DSM701, 24V, 40 Watt, IG52 Planetary Gearhead, Brushless



GEARED EC MOTOR

- Planetary Gearhead : straight teeth
- Output shaft : stainless steel
- Bearing at output : ball bearing
- Rotation direction : CW/CCW (View from output shaft)
- Motor posture : Horizontal (output shaft)
- For transferring high torques up to 10N.m
- Concentric gear input and output
- Reduction ratios of 3:1 to 936:1
- Hall sensor (5~24Vdc, open-collector)

Nominal data [ Geared motor ]		DSM 701 -24V -40P - IG52 [ Reduction Ratio ]															
Reduction Ratio		3	4	12	15	19	21	26	43	53	66	81	100	113	126	150	230
		285	353	488	546	676	756	936									
Gearhead Length L	mm	53.0	53.0	68.5	68.5	68.5	68.5	68.5	84.0	84.0	84.0	84.0	84.0	84.0	84.0	99.5	99.5
		99.5	99.5	99.5	99.5	99.5	99.5	99.5									
Rated Torque	N.m	0.43	0.58	1.51	1.89	2.39	2.65	3.28	4.64	5.72	7.13	9.81	9.81	9.81	9.81	9.81	9.81
		9.81	9.81	9.81	9.81	9.81	9.81	9.81									
Max. momentary tolerance torque	N.m	2.94	2.94	8.83	8.83	14.7	14.7	14.7	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
		29.4	29.4	29.4	29.4	29.4	29.4	29.4									
Efficiency	%	80	80	70	70	70	70	70	60	60	60	60	60	60	60	50	50
		50	50	50	50	50	50	50									
Rated Speed	rpm	743.7	557.8	184.0	147.2	116.2	105.1	84.9	50.8	41.2	33.1	27.0	21.9	19.3	17.3	14.6	9.5
		7.7	6.2	4.5	4.0	3.2	2.9	2.3									
No load speed	rpm	883.3	662.5	220.8	176.7	139.5	126.2	101.9	61.6	50.0	40.2	32.7	26.5	23.5	21.0	17.7	11.5
		9.3	7.5	5.4	4.9	3.9	3.5	2.8									
Weigth	g	1080	1080	1265	1265	1265	1265	1265	1455	1455	1455	1455	1455	1455	1455	1625	1625
		1625	1625	1625	1625	1625	1625	1625									

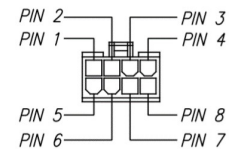
Temperature ratings (Operation)

Dry bulb temp (-10~50°C), Relative humidity ( 0~85%)

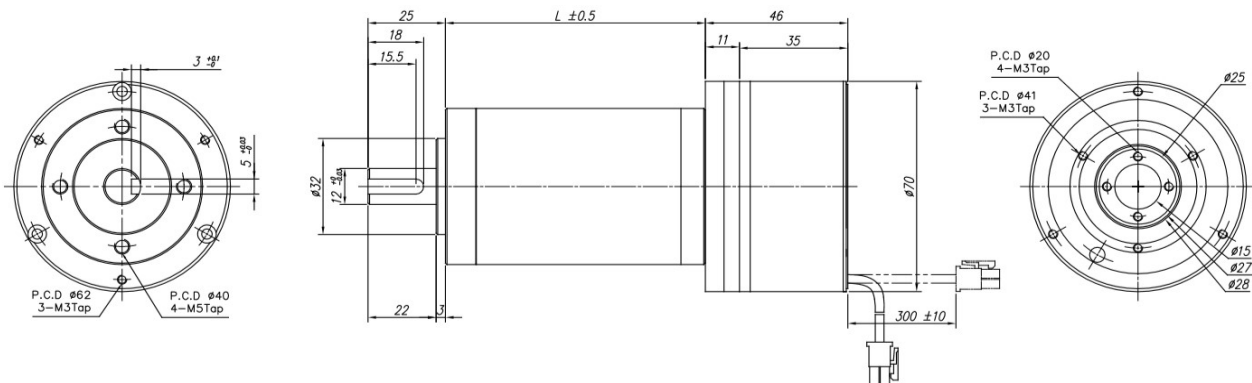
Temperature ratings (Storage)

Dry bulb temp (-10~60°C), Relative humidity (10~90%)

Motor specification		701-24V-40P	Pin Allocation	(Molex 5557-08R)
Rated Voltage	V	24	1 black GND	Motor UL1061 AWG 22
Rated Speed	RPM	2300	2 blue Motor winding W	Hall sensor UL1061 AWG 26
Rated Torque	N.m	0.18	3 green Motor winding V	
Rated Current	A	2.5	4 yellow Motor winding U	
Rated Power	W	40	5 red Vhall 5 .... 24Vdc	
No load speed	RPM	2650	6 brown Hall sensor C	
No load current	mA	320	7 gray Hall sensor B	
			8 white Hall sensor A	



Dimensions in [mm]





GEARED EC MOTOR

**DSM701, 24V, 60 Watt, IG52 Planetary Gearhead, Brushless**

- Planetary Gearhead : straight teeth
- Output shaft : stainless steel
- Bearing at output : ball bearing
- Rotation direction : CW/CCW (View from output shaft)
- Motor posture : Horizontal (output shaft)
- For transferring high torques up to 10N.m
- Concentric gear input and output
- Reduction ratios of 3:1 to 936:1
- Hall sensor (5~24Vdc, open-collector)

Nominal data [ Geared motor ]		DSM 701 -24V -60P - IG52 [ Reduction Ratio ]															
Reduction Ratio		3	4	12	15	19	21	26	43	53	66	81	100	113	126	150	230
		285	353	488	546	676	756	936									
Gearhead Length L	mm	53.0	53.0	68.5	68.5	68.5	68.5	68.5	84.0	84.0	84.0	84.0	84.0	84.0	84.0	99.5	99.5
		99.5	99.5	99.5	99.5	99.5	99.5	99.5									
Rated Torque	N.m	0.46	0.61	1.60	2.00	2.53	2.79	3.46	4.90	6.04	7.52	9.81	9.81	9.81	9.81	9.81	9.81
		9.81	9.81	9.81	9.81	9.81	9.81	9.81									
Max. momentary tolerance torque	N.m	2.94	2.94	8.83	8.83	14.7	14.7	14.7	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
		29.4	29.4	29.4	29.4	29.4	29.4	29.4									
Efficiency	%	80	80	70	70	70	70	70	60	60	60	60	60	60	60	50	50
		50	50	50	50	50	50	50									
Rated Speed	rpm	970.0	727.5	240.0	192.0	151.6	137.1	110.8	66.3	53.8	43.2	35.2	28.5	25.2	22.6	19.0	12.4
		10.0	8.1	5.8	5.2	4.2	3.8	3.0									
No load speed	rpm	1166.7	875.0	291.7	233.3	184.2	166.7	134.6	81.4	66.0	53.0	43.2	35.0	31.0	27.8	23.3	15.2
		12.3	9.9	7.2	6.4	5.2	4.6	3.7									
Weigth	g	1075	1075	1260	1260	1260	1260	1260	1450	1450	1450	1450	1450	1450	1450	1620	1620
		1620	1620	1620	1620	1620	1620	1620									

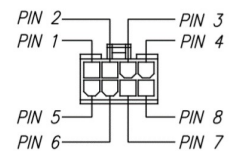
Temperature ratings (Operation)

Dry bulb temp (-10~50°C), Relative humidity ( 0~85%)

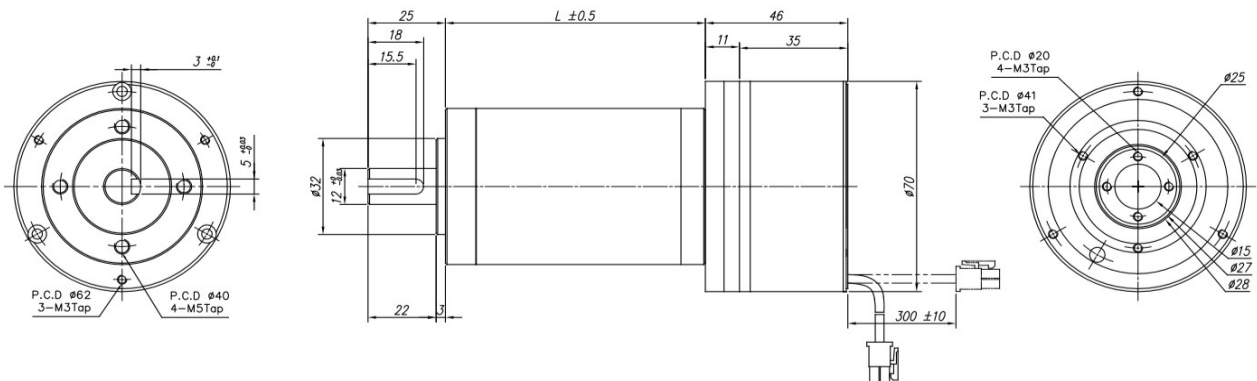
Temperature ratings (Storage)

Dry bulb temp (-10~60°C), Relative humidity (10~90%)

Motor specification		701-24V-60P	Pin Allocation	(Molex 5557-08R)
Rated Voltage	V	24	1 black GND	Motor UL1061 AWG 22
Rated Speed	RPM	3000	2 blue Motor winding W	Hall sensor UL1061 AWG 26
Rated Torque	N.m	0.19	3 green Motor winding V	
Rated Current	A	3.5	4 yellow Motor winding U	
Rated Power	W	60	5 red Vhall 5 .... 24Vdc	
No load speed	RPM	3500	6 brown Hall sensor C	
No load current	mA	450	7 gray Hall sensor B	
			8 white Hall sensor A	



Dimensions in [mm]





GEARED EC MOTOR

**DSM701, 24V, 40 Watt, IG71 Planetary Gearhead, Brushless**

- Planetary Gearhead : straight teeth
- Output shaft : stainless steel
- Bearing at output : ball bearing
- Rotation direction : CW/CCW (View from output shaft)
- Motor posture : Horizontal (output shaft)
- For transferring high torques up to 10N.m
- Concentric gear input and output
- Reduction ratios of 4:1 to 611:1
- Hall sensor (5~24Vdc, open-collector)

Nominal data [ Geared motor ]		DSM 701 -24V -40P - IG71 [ Reduction Ratio ]															
Reduction Ratio		4	13	16	20	50	60	75	91	102	126	189	242	300	363	414	493
		543	611														
Gearhead Length L	mm	49.3	65.8	65.8	65.8	82.3	82.3	82.3	82.3	82.3	82.3	98.8	98.8	98.8	98.8	98.8	98.8
		98.8	98.8														
Rated Torque	N.m	0.58	1.64	2.02	2.52	5.40	6.48	8.10	9.83	12.26	12.26	12.26	12.26	12.26	12.26	12.26	12.26
		12.26	12.26														
Max. momentary tolerance torque	N.m	4.4	20.6	20.6	20.6	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8
		36.8	36.8														
Efficiency	%	80	70	70	70	60	60	60	60	60	60	50	50	50	50	50	50
		50	50														
Rated Speed	rpm	557.8	169.8	138.0	110.4	44.2	36.8	29.4	24.3	21.4	17.3	11.6	9.0	7.3	6.0	5.3	4.4
		4.0	3.6														
No load speed	rpm	662.5	203.8	165.6	132.5	53.0	44.2	35.3	29.1	26.0	21.0	14.0	11.0	8.8	7.3	6.4	5.4
		4.9	4.3														
Weigth	g	1495	1825	1825	1825	2155	2155	2155	2155	2155	2155	2495	2495	2495	2495	2495	2495
		2495	2495														

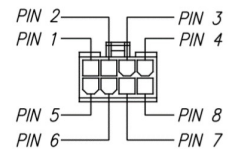
Temperature ratings (Operation)

Dry bulb temp (-10~50°C), Relative humidity ( 0~85%)

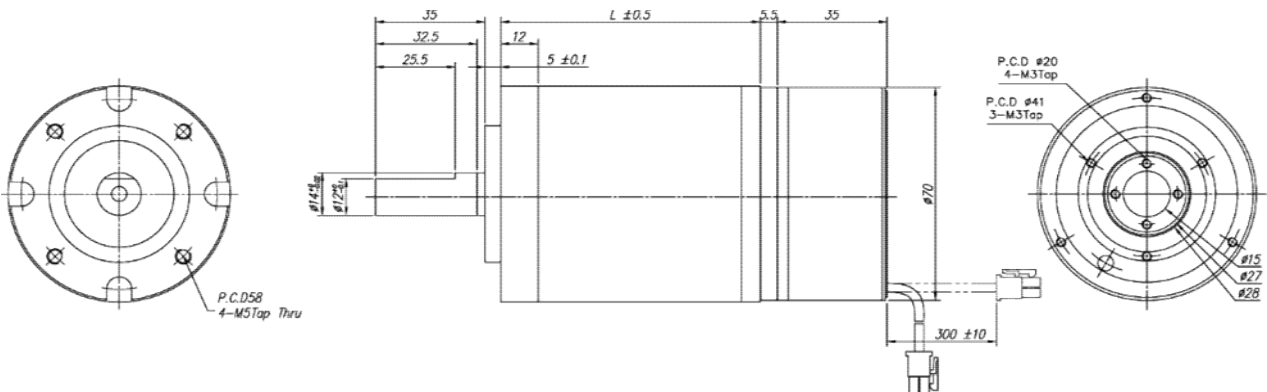
Temperature ratings (Storage)

Dry bulb temp (-10~60°C), Relative humidity (10~90%)

Motor specification		701-24V-40P	Pin Allocation	(Molex 5557-08R)
Rated Voltage	V	24	1 black GND	Motor UL1061 AWG 22
Rated Speed	RPM	2300	2 blue Motor winding W	Hall sensor UL1061 AWG 26
Rated Torque	N.m	0.18	3 green Motor winding V	
Rated Current	A	2.5	4 yellow Motor winding U	
Rated Power	W	40	5 red Vhall 5 .... 24Vdc	
No load speed	RPM	2650	6 brown Hall sensor C	
No load current	mA	320	7 gray Hall sensor B	
			8 white Hall sensor A	



Dimensions in [mm]







GEARED EC MOTOR

**DSM701, 24V, 60 Watt, IG71 Planetary Gearhead, Brushless**

- Planetary Gearhead : straight teeth
- Output shaft : stainless steel
- Bearing at output : ball bearing
- Rotation direction : CW/CCW (View from output shaft)
- Motor posture : Horizontal (output shaft)
- For transferring high torques up to 10N.m
- Concentric gear input and output
- Reduction ratios of 4:1 to 611:1
- Hall sensor (5~24Vdc, open-collector)

Nominal data [ Geared motor ]		DSM 701 -24V -60P - IG71 [ Reduction Ratio ]															
Reduction Ratio		4	13	16	20	50	60	75	91	102	126	189	242	300	363	414	493
		543	611														
Gearhead Length L	mm	49.3	65.8	65.8	65.8	82.3	82.3	82.3	82.3	82.3	82.3	98.8	98.8	98.8	98.8	98.8	98.8
		98.8	98.8														
Rated Torque	N.m	0.61	1.73	2.13	2.66	5.70	6.84	8.55	10.37	12.26	12.26	12.26	12.26	12.26	12.26	12.26	12.26
		12.26	12.26														
Max. momentary tolerance torque	N.m	4.4	20.6	20.6	20.6	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8
		36.8	36.8														
Efficiency	%	80	70	70	70	60	60	60	60	60	60	50	50	50	50	50	50
		50	50														
Rated Speed	rpm	727.5	221.5	180.0	144.0	57.6	48.0	38.4	31.6	27.9	22.6	15.1	11.8	9.5	7.9	6.9	5.8
		5.2	4.7														
No load speed	rpm	875.0	269.2	218.8	175.0	70.0	58.3	46.7	38.5	34.3	27.8	18.5	14.5	11.7	9.6	8.5	7.1
		6.4	5.7														
Weigth	g	1490	1820	1820	1820	2150	2150	2150	2150	2150	2150	2490	2490	2490	2490	2490	2490
		2490	2490														

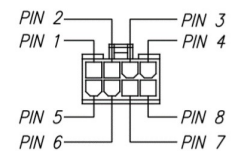
Temperature ratings (Operation)

Dry bulb temp (-10~50°C), Relative humidity ( 0~85%)

Temperature ratings (Storage)

Dry bulb temp (-10~60°C), Relative humidity (10~90%)

Motor specification		701-24V-60P	Pin Allocation	(Molex 5557-08R)
Rated Voltage	V	24	1 black GND	Motor UL1061 AWG 22
Rated Speed	RPM	3000	2 blue Motor winding W	Hall sensor UL1061 AWG 26
Rated Torque	N.m	0.19	3 green Motor winding V	
Rated Current	A	3.5	4 yellow Motor winding U	
Rated Power	W	60	5 red Vhall 5 .... 24Vdc	
No load speed	RPM	3500	6 brown Hall sensor C	
No load current	mA	450	7 gray Hall sensor B	
			8 white Hall sensor A	



Dimensions in [mm]

