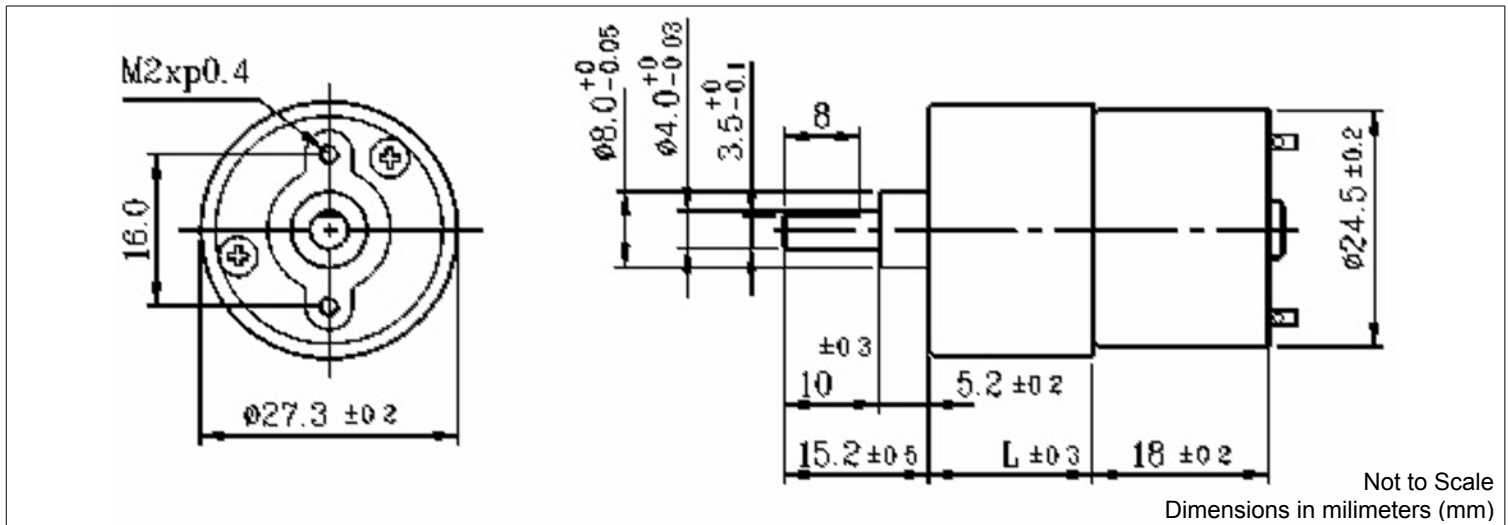


Spur Gearmotor - 27.3 mm Ø



12 Volt Low Cost Short Inline Spur Gearmotor

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
6.2:1	12.0	81 %	801 rpm	0.021 Amp	19 mNm	3 mNm	17.3 mm	62.0 grams	Same	S280006GM20
10.0:1	12.0	81 %	500 rpm	0.021 Amp	30 mNm	4 mNm	17.3 mm	62.0 grams	Same	S280010GM20
15.0:1	12.0	73 %	334 rpm	0.021 Amp	40 mNm	6 mNm	17.3 mm	63.0 grams	Opposite	S280015GM20
21.3:1	12.0	73 %	235 rpm	0.021 Amp	57 mNm	9 mNm	17.3 mm	63.0 grams	Opposite	S280021GM20
30.0:1	12.0	65 %	167 rpm	0.021 Amp	72 mNm	11 mNm	17.3 mm	64.0 grams	Same	S280030GM20
44.0:1	12.0	65 %	114 rpm	0.021 Amp	105 mNm	16 mNm	17.3 mm	64.0 grams	Same	S280044GM20
60.0:1	12.0	65 %	83 rpm	0.021 Amp	143 mNm	22 mNm	17.3 mm	64.0 grams	Same	S280060GM20
76.8:1	12.0	65 %	65 rpm	0.021 Amp	183 mNm	28 mNm	17.3 mm	64.0 grams	Same	S280077GM20
100.1:1	12.0	65 %	50 rpm	0.021 Amp	239 mNm	36 mNm	17.3 mm	65.0 grams	Same	S280100GM20
112.6:1	12.0	65 %	44 rpm	0.021 Amp	269 mNm	40 mNm	17.3 mm	65.0 grams	Same	S280113GM20
150.0:1	12.0	50 %	33 rpm	0.021 Amp	275 mNm	42 mNm	17.3 mm	65.0 grams	Opposite	S280150GM20
170.7:1	12.0	50 %	29 rpm	0.021 Amp	313 mNm	47 mNm	17.3 mm	65.0 grams	Opposite	S280171GM20

Radial Load Rating ≤ 2.9 N
 Radial Load Distance 10 mm
 Axial Load ≤ 2.0 N
 Press Fit Force - Max ≤ 19.6 N

Radial Play ≤ 0.05 mm
 Axial Play ≤ 0.30 mm
 Backlash ≤ 2.0 °

Max Temperature Oper. -10°C
 Min Temperature Oper. 50°C
 Relative Humidity Oper. 20% to 85%

Options

Bearing Sleeve

CAUTION. Stall Torque is a theoretical calculation- NOT a rating/maximum value. Continuous Torque is the lesser of the Gearbox Continuous Torque Rating or the Motor's Continuous Torque Rating at gearbox output shaft.

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* Rotational Sense of Gearbox Output Shaft to Motor Shaft

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Commutation Type:
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RoHS Compliant

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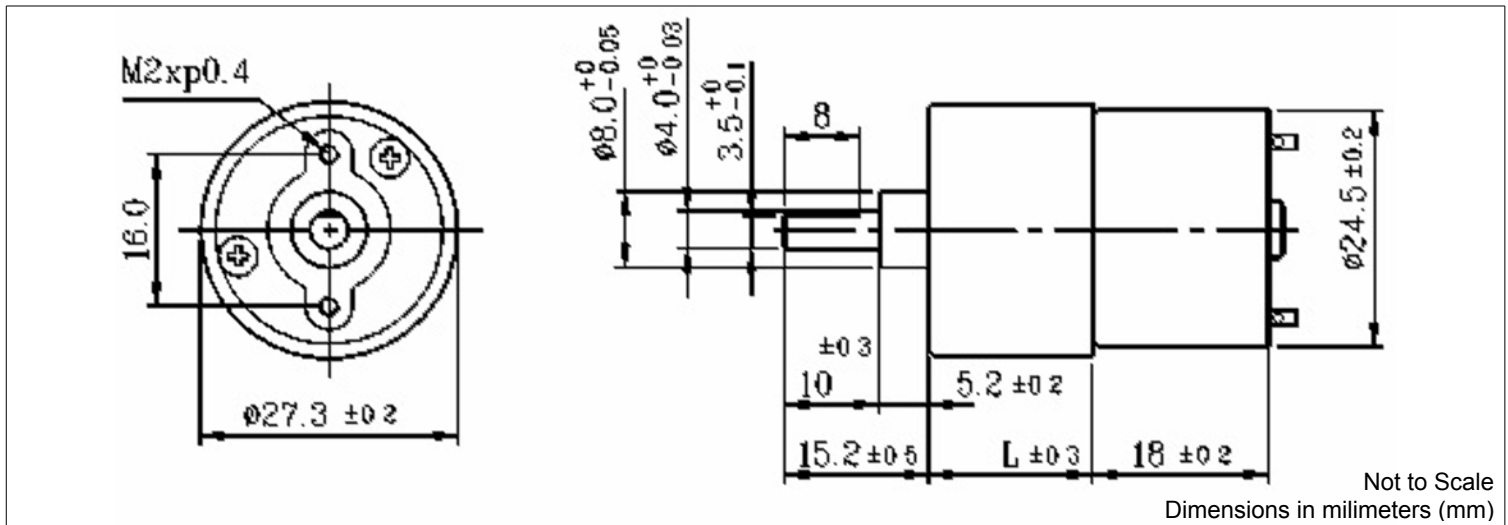
Specifications Subject to change without notice

Spur Gearmotor - 27.3 mm Ø



12 Volt Low Cost Short Inline Spur Gearmotor

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
200.2:1	12.0	50 %	25 rpm	0.021 Amp	367 mNm	84 mNm	17.3 mm	65.0 grams	Opposite	S280200GM20
250.3:1	12.0	50 %	20 rpm	0.021 Amp	459 mNm	69 mNm	17.3 mm	65.0 grams	Opposite	S280250GM20
320.4:1	12.0	50 %	16 rpm	0.021 Amp	588 mNm	88 mNm	17.3 mm	65.0 grams	Opposite	S280320GM20
360.4:1	12.0	50 %	14 rpm	0.021 Amp	661 mNm	103 mNm	17.3 mm	65.0 grams	Opposite	S280360GM20
400.5:1	12.0	40 %	12 rpm	0.021 Amp	588 mNm	103 mNm	19.3 mm	66.0 grams	Same	S280400GM20
500.6:1	12.0	40 %	10 rpm	0.021 Amp	735 mNm	103 mNm	19.3 mm	66.0 grams	Same	S280501GM20
700.0:1	12.0	40 %	7 rpm	0.021 Amp	1,027 mNm	147 mNm	19.3 mm	66.0 grams	Same	S280700GM20
801.0:1	12.0	40 %	6 rpm	0.021 Amp	1,175 mNm	147 mNm	19.3 mm	66.0 grams	Same	S280801GM20
901.1:1	12.0	40 %	6 rpm	0.021 Amp	1,322 mNm	147 mNm	19.3 mm	66.0 grams	Same	S280901GM20
1,153.4	12.0	40 %	4 rpm	0.021 Amp	1,693 mNm	147 mNm	19.3 mm	66.0 grams	Same	S281153GM20

Radial Load Rating ≤ 2.9 N
 Radial Load Distance 10 mm
 Axial Load ≤ 2.0 N
 Press Fit Force - Max ≤ 19.6 N

Radial Play ≤ 0.05 mm
 Axial Play ≤ 0.30 mm
 Backlash ≤ 2.0 °

Max Temperature Oper. -10°C
 Min Temperature Oper. 50°C
 Relative Humidity Oper. 20% to 85%

Options

Bearing Sleeve

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Commutation Type:
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RoHS Compliant

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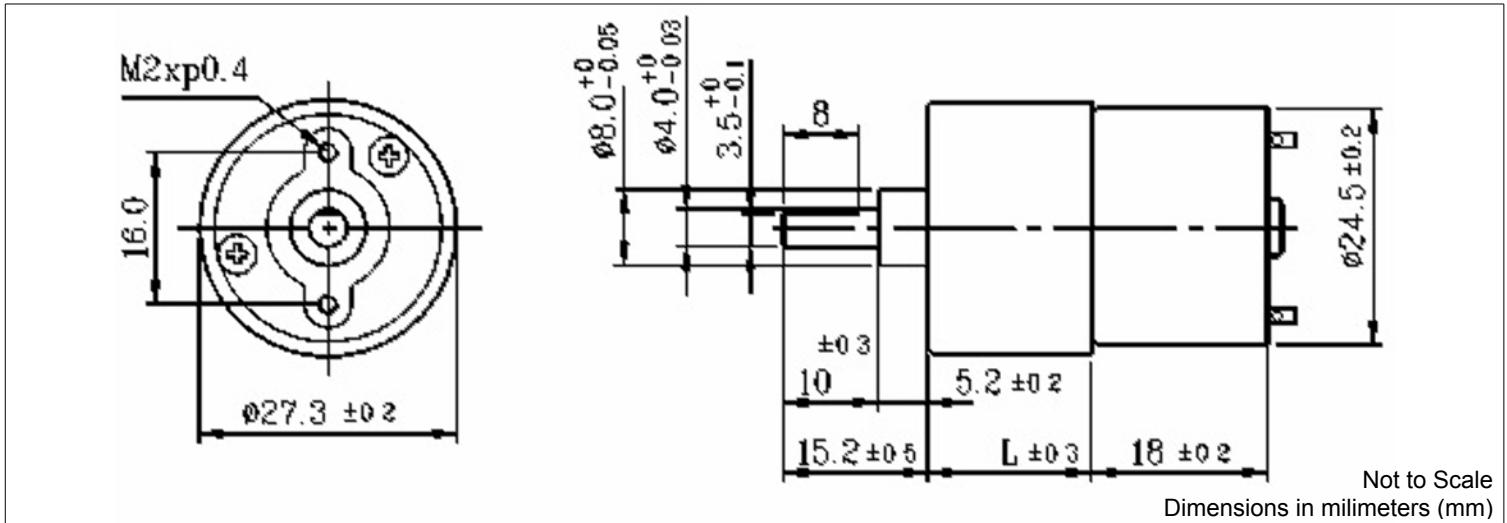
Specifications Subject to change without notice

Spur Gearmotor - 27.3 mm Ø



24 Volt Low Cost Short Inline Spur Gearmotor

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
6.2:1	24.0	81 %	1,270 rpm	0.024 Amp	23 mNm	3 mNm	17.3 mm	62.0 grams	Same	S280006GM30
10.0:1	24.0	81 %	794 rpm	0.024 Amp	36 mNm	4 mNm	17.3 mm	62.0 grams	Same	S280010GM30
15.0:1	24.0	73 %	529 rpm	0.024 Amp	49 mNm	6 mNm	17.3 mm	63.0 grams	Opposite	S280015GM30
21.3:1	24.0	73 %	372 rpm	0.024 Amp	70 mNm	9 mNm	17.3 mm	63.0 grams	Opposite	S280021GM30
30.0:1	24.0	65 %	265 rpm	0.024 Amp	87 mNm	11 mNm	17.3 mm	64.0 grams	Same	S280030GM30
44.0:1	24.0	65 %	180 rpm	0.024 Amp	128 mNm	16 mNm	17.3 mm	64.0 grams	Same	S280044GM30
60.0:1	24.0	65 %	132 rpm	0.024 Amp	174 mNm	22 mNm	17.3 mm	64.0 grams	Same	S280060GM30
76.8:1	24.0	65 %	103 rpm	0.024 Amp	223 mNm	28 mNm	17.3 mm	64.0 grams	Same	S280077GM30
100.1:1	24.0	65 %	79 rpm	0.024 Amp	291 mNm	36 mNm	17.3 mm	65.0 grams	Same	S280100GM30
112.6:1	24.0	65 %	70 rpm	0.024 Amp	327 mNm	40 mNm	17.3 mm	65.0 grams	Same	S280113GM30
150.0:1	24.0	50 %	53 rpm	0.024 Amp	335 mNm	42 mNm	17.3 mm	65.0 grams	Opposite	S280150GM30
170.7:1	24.0	50 %	47 rpm	0.024 Amp	382 mNm	47 mNm	17.3 mm	65.0 grams	Opposite	S280171GM30

Radial Load Rating ≤ 2.9 N
 Radial Load Distance 10 mm
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Options

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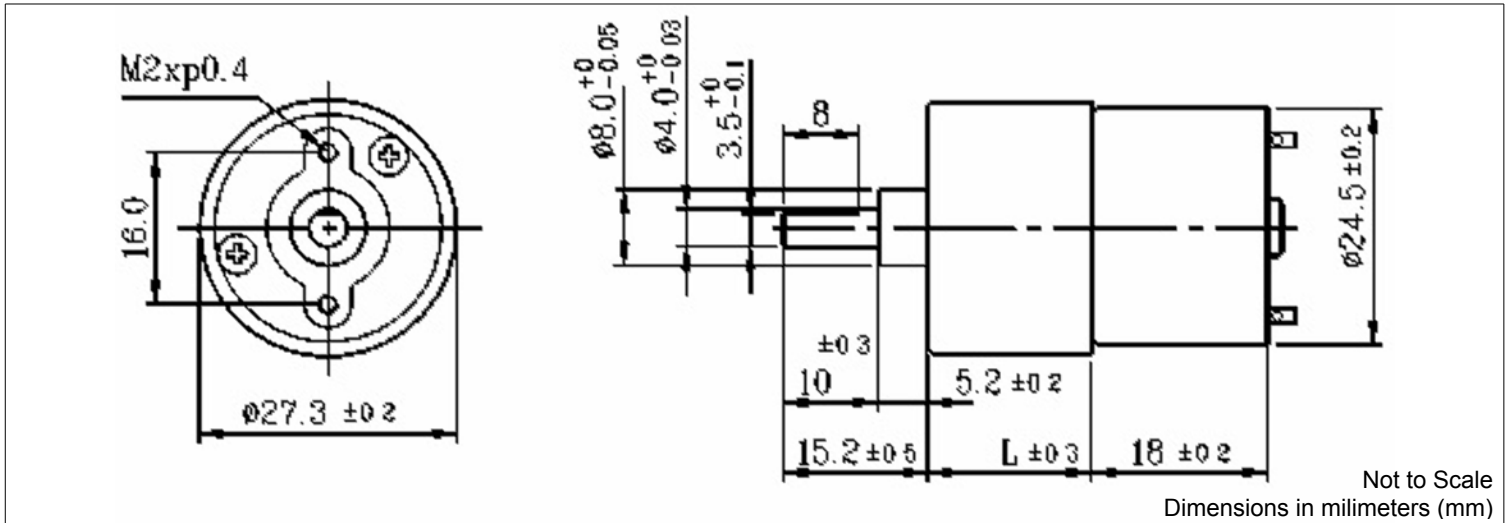
Specifications Subject to change without notice

Spur Gearmotor - 27.3 mm Ø



24 Volt Low Cost Short Inline Spur Gearmotor

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
200.2:1	24.0	50 %	40 rpm	0.024 Amp	448 mNm	84 mNm	17.3 mm	65.0 grams	Opposite	S280200GM30
250.3:1	24.0	50 %	32 rpm	0.024 Amp	560 mNm	69 mNm	17.3 mm	65.0 grams	Opposite	S280250GM30
320.4:1	24.0	50 %	25 rpm	0.024 Amp	716 mNm	88 mNm	17.3 mm	65.0 grams	Opposite	S280320GM30
360.4:1	24.0	50 %	22 rpm	0.024 Amp	806 mNm	103 mNm	17.3 mm	65.0 grams	Opposite	S280360GM30
400.5:1	24.0	40 %	20 rpm	0.024 Amp	716 mNm	103 mNm	19.3 mm	66.0 grams	Same	S280400GM30
500.6:1	24.0	40 %	16 rpm	0.024 Amp	895 mNm	103 mNm	19.3 mm	66.0 grams	Same	S280501GM30
700.0:1	24.0	40 %	11 rpm	0.024 Amp	1,252 mNm	147 mNm	19.3 mm	66.0 grams	Same	S280700GM30
801.0:1	24.0	40 %	10 rpm	0.024 Amp	1,433 mNm	147 mNm	19.3 mm	66.0 grams	Same	S280801GM30
901.1:1	24.0	40 %	9 rpm	0.024 Amp	1,612 mNm	147 mNm	19.3 mm	66.0 grams	Same	S280901GM30
1,153.4	24.0	40 %	7 rpm	0.024 Amp	2,063 mNm	147 mNm	19.3 mm	66.0 grams	Same	S281153GM30

Radial Load Rating ≤ 2.9 N
 Radial Load Distance 10 mm
 Axial Load ≤ 2.0 N
 Press Fit Force - Max ≤ 19.6 N

Radial Play ≤ 0.05 mm
 Axial Play ≤ 0.30 mm
 Backlash ≤ 2.0 °

Max Temperature Oper. -10°C
 Min Temperature Oper. 50°C
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Options

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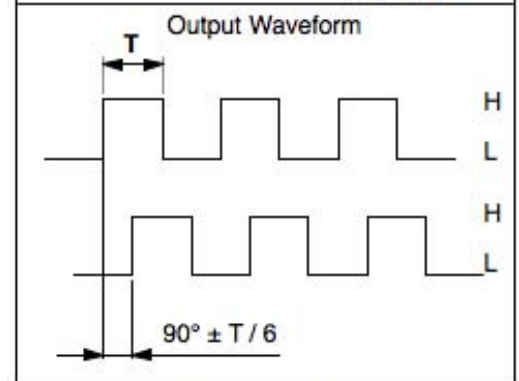
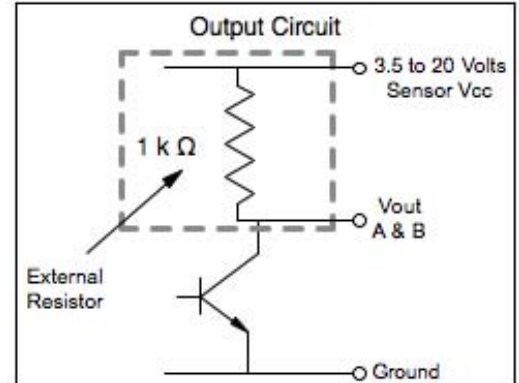
Magnetic Encoders - Integrated

Low Cost - Single & Quadrature Channels



Global Motion Products

Supply Voltage - Max	20.0 Volt
Supply Voltage - Min	3.5 Volt
Supply Voltage - Symbol	Vcc
Output Saturation Voltage - Max	700 mVolts
Output Saturation Voltage - Ref	300 mVolts
Output Saturation Voltage - Symbol	Vce(sat)
Output Saturation Voltage - Test Conditions	Vcc = 14 Volts; Ic = 20mA
Output Leakage Current - Max	10.0 µAmp
Output Leakage Current - Ref	< 0.1 µAmp
Output Leakage Current - Symbol	Icex
Output Leakage Current - Test Conditions	Vce = 14 Volts; Vcc = 14 V
Supply Current - Max	10 mAmp
Supply Current - Ref	5 mAmp
Supply Current - Symbol	Ice
Supply Current - Test Conditions	Vcc = 20 Volts, Output Open
Output Rise Time - Max	1.5 µSec
Output Rise Time - Ref	0.3 µSec
Output Rise Time - Symbol	tr
Output Rise Time - Test Condition	Vce = 14 Volts; RI = 820 Ω; CI = 20pF
Output Fall Time - Max	1.5 µSec
Output Fall Time - Ref	0.3 µSec
Output Fall Time - Symbol	tf
Output Fall Time - Test Conditions	Vce = 14 Volts; RI = 820 Ω; CI = 20pF
Max Temperature - Operating	60°C
Min Temperature - Operating	-10°C
Relative Humidity - Operating	20% to 85% RH



Two Channel Encoder

Connector Pin	Color	Function
1	Black	- Motor
2	Red	+ Motor
3	Brown	Hall Sensor Vcc
4	Green	Hall Sensor Ground
5	Blue	Hall Sensor A Vout
6	Purple	Hall Sensor B Vout

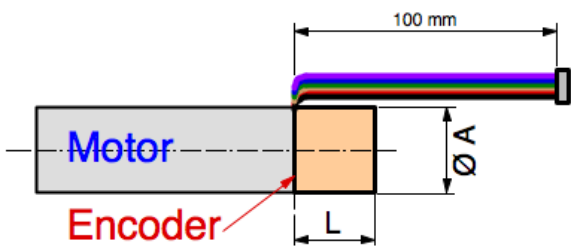
One Channel Encoder

Connector Pin	Color	Function
1	Black	- Motor
2	Red	+ Motor
3	Brown	Hall Sensor Vcc
4	Green	Hall Sensor Ground
5	Blue	Hall Sensor A Vout
6	Purple	No Function

CONNECTOR A
JST ZHR-6, P=1.5-6P
26 AWG, UL 1061 Wires

CONNECTOR B
JST PHR-6; P=2.0-6P
24 AWG, UL 1007 Wires

CONNECTORS C - Two
JST PHR-4; P=2.0-6P
24 AWG, UL 1007 Wires
Molex 09-50-3021; P= 3.96-2P
18 AWG 18, UL 1007 Wires



Note:

For encoder resolution and channel options, how to order, diameter and encoder length details refer to the following pages. Resolution options vary by motor diameter, as do connector(s) and wire gauge(s).

Below 30 mm motor diameter the magnetic encoder does not have the option for a dust cap at this time. The encoder is exposed and the dimensions represent the largest dimension of the encoder. On 30 mm and larger diameter motors an OPTIONAL Dust Cap is available. Part Numbers here represent no Dust Cap.

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Magnetic Encoders - Integrated



Low Cost - Single & Quadrature Channels

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Pulses per Revolution per Track	Track Number	Dust Cap Option	Cover ØA mm	Cover or Encoder L - mm	Connector Type(s)	Compatible Gearmotor Series	Order Part Number
1	X	No	12.0	6.5	A	A12----GM--	EM120001X00
3	X	No	12.0	6.5	A	A12----GM--	EM120003X00
1	X	No	15.4	6.5	A	A16----AS--	EM160001X00
3	X	No	15.4	6.5	A	A16----AS--	EM160003X00
1	X	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210001X00
3	X	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210003X00
1	X	Yes	30.0	12.6	B	A30----GM--	EM300001X00
3	X	Yes	30.0	12.6	B	A30----GM--	EM300003X00
7	X	Yes	30.0	12.6	B	A30----GM--	EM300007X00
7	X	Yes	32.0	14.3	B	A32----GM--	EM320007X00
7	X	Yes	36.0	13.5	B	A36----GM--	EM360007X00
1	X	Yes	42.5	15.5	C	A45----A---	EM430001X00
5	X	Yes	42.5	15.5	C	A45----A---	EM430005X00
1	X	Yes	52.0	18.0	C	A52----GM--	EM520001X00
1	X	Yes	52.0	18.0	C	A52----GM--	EM520001X00
5	X	Yes	54.0	18.0	C	A54----GM--	EM540005X00
5	X	Yes	54.0	18.0	C	A54----GM--	EM540005X00
1	X & Y	No	12.0	6.5	A	A12----GM--	EM120001Y00
3	X & Y	No	12.0	6.5	A	A12----GM--	EM120003Y00
1	X & Y	No	15.4	6.5	A	A16----AS--	EM160001Y00
3	X & Y	No	15.4	6.5	A	A16----AS--	EM160003Y00
1	X & Y	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210001Y00
3	X & Y	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210003Y00
1	X & Y	Yes	30.0	12.6	B	A30----GM--	EM300001Y00
3	X & Y	Yes	30.0	12.6	B	A30----GM--	EM300003Y00
7	X & Y	Yes	30.0	12.6	B	A30----GM--	EM300007Y00
7	X & Y	Yes	32.0	14.3	B	A32----GM--	EM320007Y00
7	X & Y	Yes	36.0	13.5	B	A36----GM--	EM360007Y00
1	X & Y	Yes	42.5	15.5	C	A45----A---	EM430001Y00
5	X & Y	Yes	42.5	15.5	C	A45----A---	EM430005Y00
1	X & Y	Yes	52.0	18.0	C	A52----GM--	EM520001Y00
1	X & Y	Yes	52.0	18.0	C	A52----GM--	EM520005Y00
5	X & Y	Yes	54.0	18.0	C	A54----GM--	EM540001Y00
5	X & Y	Yes	54.0	18.0	C	A54----GM--	EM540005Y00

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