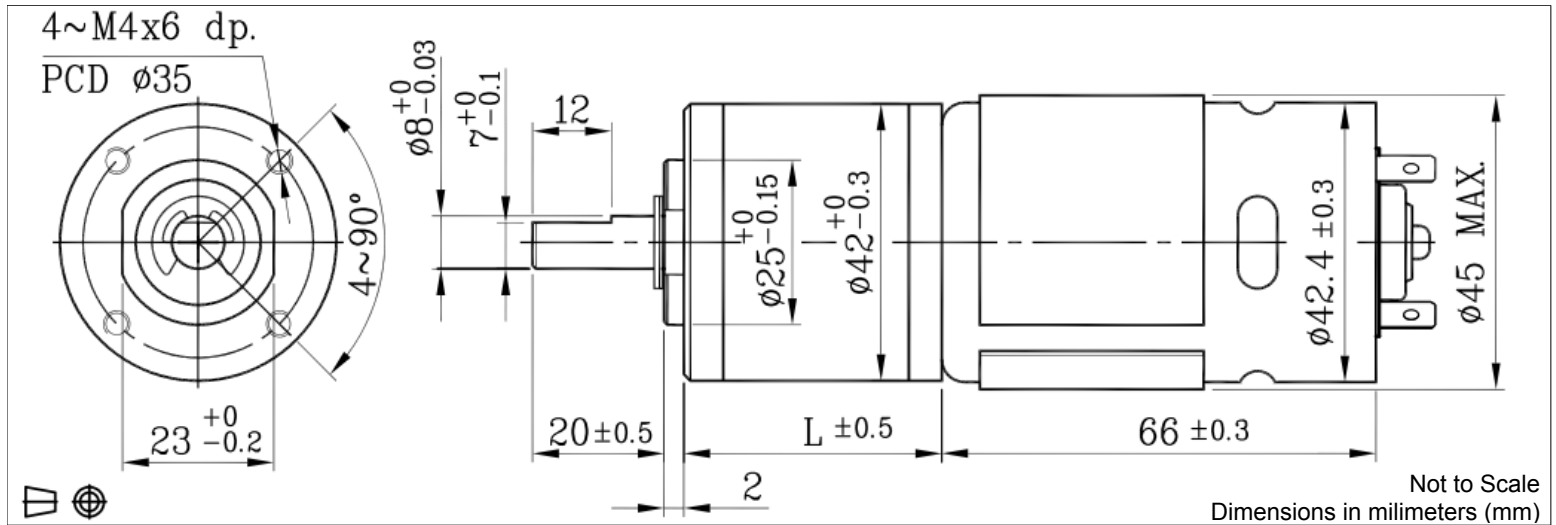


# Planetary Gearmotor - 45 mm Ø



Sleeve Bearing - 35 Watt Plus Output Power

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque Nm	Continuous Torque Nm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
4.0:1	12.0	80 %	1,741 rpm	1.350 Amp	1.38 Nm	0.216 Nm	32.5 mm	499.0	Same	A450004GM00
14.0:1	12.0	70 %	497 rpm	1.350 Amp	4.24 Nm	0.637 Nm	39.4 mm	551.0	Same	A450014GM00
17.3:1	12.0	70 %	410 rpm	1.350 Amp	5.15 Nm	0.794 Nm	39.4 mm	551.0	Same	A450017GM00
24.0:1	12.0	70 %	290 rpm	1.350 Amp	7.27 Nm	0.981 Nm	39.4 mm	551.0	Same	A450024GM00
49.0:1	12.0	60 %	142 rpm	1.350 Amp	12.72 Nm	1.765 Nm	45.9 mm	591.0	Same	A450049GM00
60.7:1	12.0	60 %	114 rpm	1.350 Amp	15.83 Nm	1.765 Nm	45.9 mm	591.0	Same	A450061GM00
84.0:1	12.0	60 %	83 rpm	1.350 Amp	21.80 Nm	1.765 Nm	45.9 mm	591.0	Same	A450084GM00
104.0:1	12.0	60 %	67 rpm	1.350 Amp	26.99 Nm	1.961 Nm	45.9 mm	591.0	Same	A450104GM00
144.0:1	12.0	60 %	48 rpm	1.350 Amp	37.37 Nm	1.961 Nm	45.9 mm	591.0	Same	A450144GM00
212.3:1	12.0	50 %	33 rpm	1.350 Amp	45.85 Nm	2.452 Nm	52.6 mm	641.0	Same	A450212GM00
294.0:1	12.0	50 %	24 rpm	1.350 Amp	63.58 Nm	2.452 Nm	52.6 mm	641.0	Same	A450294GM00
504.0:1	12.0	50 %	14 rpm	1.350 Amp	109.00 Nm	2.942 Nm	52.6 mm	641.0	Same	A450504GM00

Radial Load Rating	≤ 49.0 N	Radial Play	≤ 0.05 mm	Max Temperature Oper.	60°C
Radial Load Distance	10 mm	Axial Play	≤ 0.30 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 29.4 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 80%
Press Fit Force - Max	≤ 147.1 N			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.

Options: Magnetic Encoders, Leads, Connectors, Pinion/Gear Mounting, Lubricants, Motor Windings, Gear material, Corless Motors, Bearings.

\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

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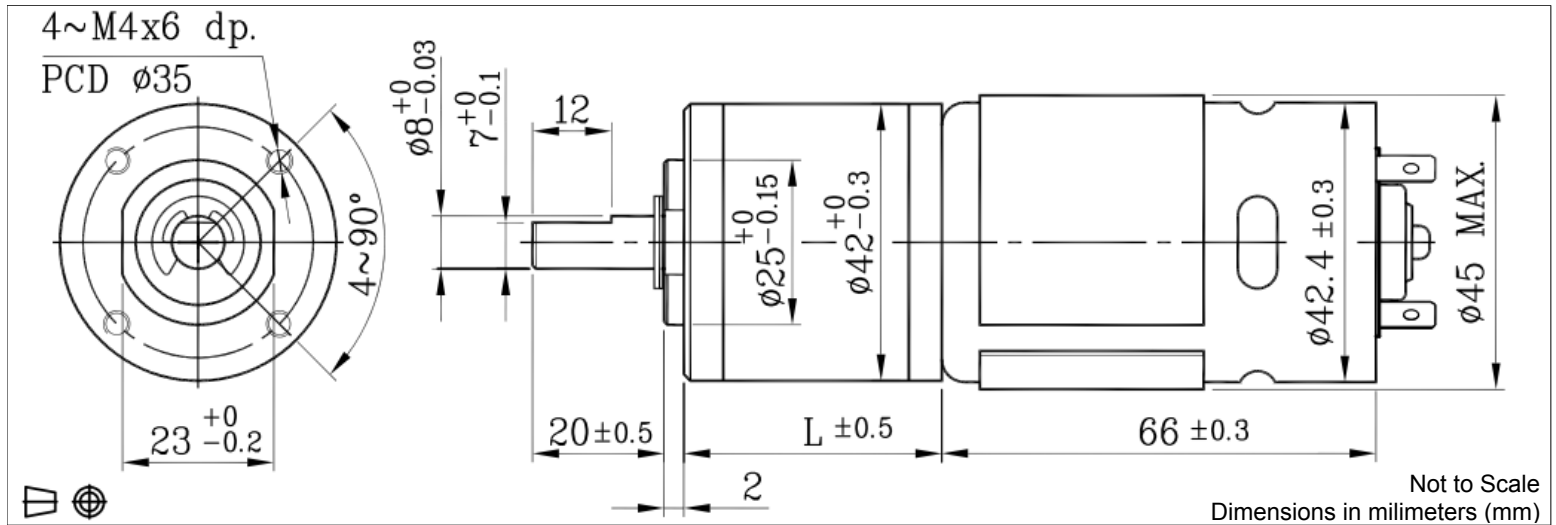
Specifications Subject to change without notice

# Planetary Gearmotor - 45 mm Ø



Sleeve Bearing - 35 Watt Plus Output Power

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque Nm	Continuous Torque Nm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
624.0:1	12.0	50 %	11 rpm	1.350 Amp	134.95 Nm	2.942 Nm	52.6 mm	641.0	Same	A450624GM00
720.0:1	12.0	50 %	10 rpm	1.350 Amp	155.71 Nm	2.942 Nm	52.6 mm	641.0	Same	A450720GM00
864.0:1	12.0	50 %	8 rpm	1.350 Amp	186.85 Nm	2.942 Nm	52.6 mm	641.0	Same	A450864GM00
1,061.7	12.0	40 %	7 rpm	1.350 Amp	183.74 Nm	2.942 Nm	59.6 mm	686.0	Same	A451062GM00
1,470.0	12.0	40 %	5 rpm	1.350 Amp	254.33 Nm	2.942 Nm	59.6 mm	686.0	Same	A451470GM00
2,500.0	12.0	40 %	3 rpm	1.350 Amp	432.53 Nm	2.942 Nm	59.6 mm	686.0	Same	A452500GM00
3,000.0	12.0	40 %	2 rpm	1.350 Amp	519.03 Nm	2.942 Nm	59.6 mm	686.0	Same	A453000GM00
3,600.0	12.0	40 %	2 rpm	1.350 Amp	622.84 Nm	2.942 Nm	59.6 mm	686.0	Same	A453600GM00

Radial Load Rating	≤ 49.0 N	Radial Play	≤ 0.05 mm	Max Temperature Oper.	60°C
Radial Load Distance	10 mm	Axial Play	≤ 0.30 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 29.4 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 80%
Press Fit Force - Max	≤ 147.1 N	<b>Options</b>	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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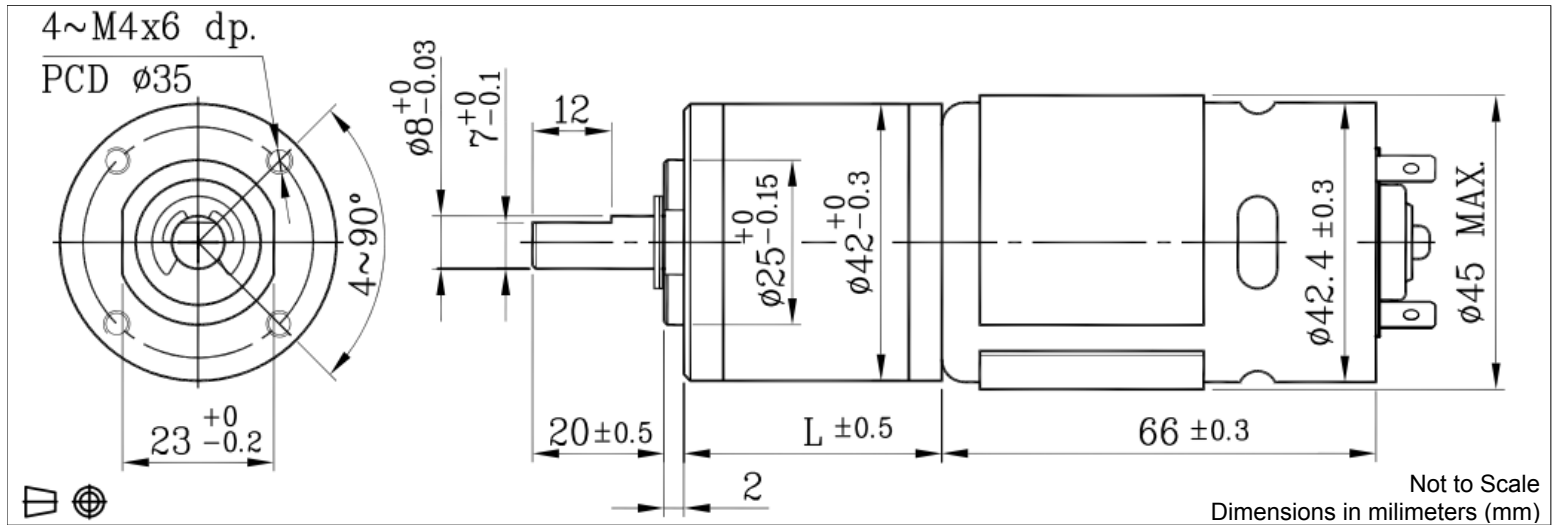
\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

# Planetary Gearmotor - 45 mm Ø



Ball Bearing - 35 Watt Plus Output Power

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Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque Nm	Continuous Torque Nm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
4.0:1	12.0	80 %	1,741 rpm	1.350 Amp	1.38 Nm	0.216 Nm	32.5 mm	499.0	Same	A450004GM10
14.0:1	12.0	70 %	497 rpm	1.350 Amp	4.24 Nm	0.637 Nm	39.4 mm	551.0	Same	A450014GM10
17.3:1	12.0	70 %	402 rpm	1.350 Amp	5.25 Nm	0.794 Nm	39.4 mm	551.0	Same	A450017GM10
24.0:1	12.0	70 %	290 rpm	1.350 Amp	7.27 Nm	0.981 Nm	39.4 mm	551.0	Same	A450024GM10
49.0:1	12.0	60 %	142 rpm	1.350 Amp	12.72 Nm	1.765 Nm	45.9 mm	591.0	Same	A450049GM10
60.7:1	12.0	60 %	115 rpm	1.350 Amp	15.74 Nm	1.765 Nm	45.9 mm	591.0	Same	A450061GM10
84.0:1	12.0	60 %	83 rpm	1.350 Amp	21.80 Nm	1.765 Nm	45.9 mm	591.0	Same	A450084GM10
104.0:1	12.0	60 %	67 rpm	1.350 Amp	26.99 Nm	1.961 Nm	45.9 mm	591.0	Same	A450104GM10
144.0:1	12.0	60 %	48 rpm	1.350 Amp	37.37 Nm	1.961 Nm	45.9 mm	591.0	Same	A450144GM10
212.3:1	12.0	50 %	33 rpm	1.350 Amp	45.92 Nm	2.452 Nm	52.6 mm	641.0	Same	A450212GM10
294.0:1	12.0	50 %	24 rpm	1.350 Amp	63.58 Nm	2.452 Nm	52.6 mm	641.0	Same	A450294GM10
504.0:1	12.0	50 %	14 rpm	1.350 Amp	109.00 Nm	2.942 Nm	52.6 mm	641.0	Same	A450504GM10

Radial Load Rating	≤ 78.5 N	Radial Play	≤ 0.04 mm	Max Temperature Oper.	60°C
Radial Load Distance	10 mm	Axial Play	≤ 0.30 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 29.4 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 85%
Press Fit Force - Max	≤ 147.1 N	<b>Options</b>	Bearing	Ball	

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\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

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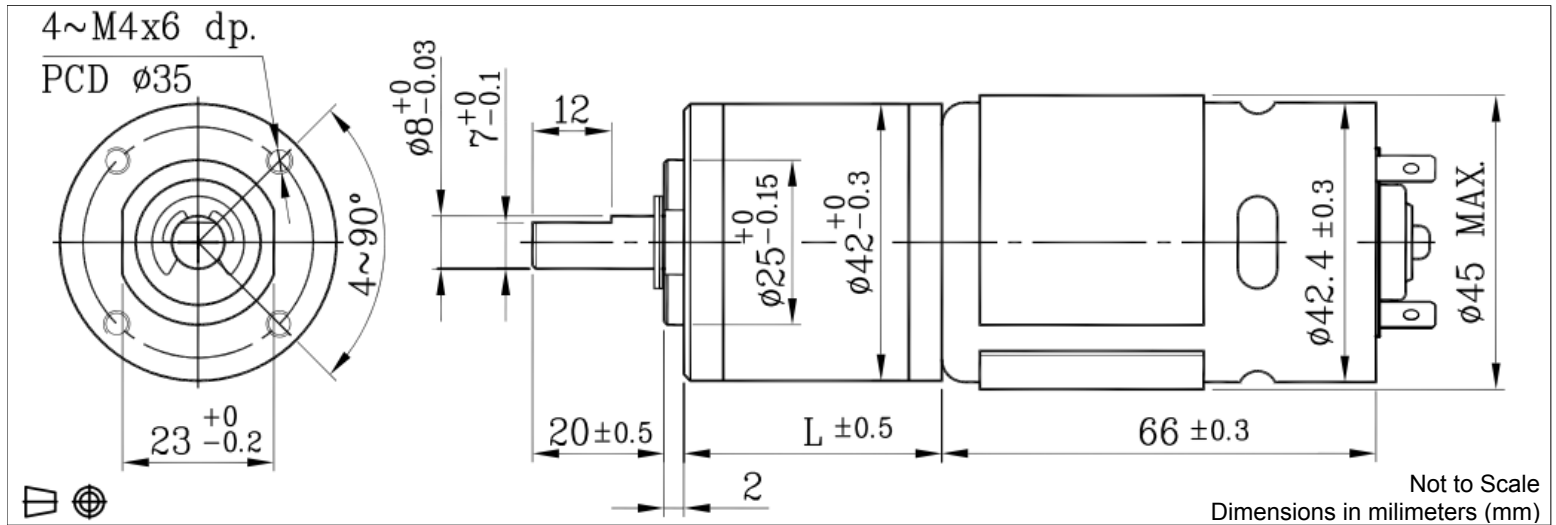
Specifications Subject to change without notice

# Planetary Gearmotor - 45 mm Ø



Ball Bearing - 35 Watt Plus Output Power

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque Nm	Continuous Torque Nm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
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720.0:1	12.0	50 %	10 rpm	1.350 Amp	155.71 Nm	2.942 Nm	52.6 mm	641.0	Same	A450720GM10
864.0:1	12.0	50 %	8 rpm	1.350 Amp	186.85 Nm	2.942 Nm	52.6 mm	641.0	Same	A450864GM10
1,061.7	12.0	40 %	7 rpm	1.350 Amp	183.68 Nm	2.942 Nm	59.6 mm	686.0	Same	A451062GM10
1,470.0	12.0	40 %	5 rpm	1.350 Amp	254.33 Nm	2.942 Nm	59.6 mm	686.0	Same	A451470GM10
2,500.0	12.0	40 %	3 rpm	1.350 Amp	432.53 Nm	2.942 Nm	59.6 mm	686.0	Same	A452500GM10
3,000.0	12.0	40 %	2 rpm	1.350 Amp	519.03 Nm	2.942 Nm	59.6 mm	686.0	Same	A453000GM10
3,600.0	12.0	40 %	2 rpm	1.350 Amp	622.84 Nm	2.942 Nm	59.6 mm	686.0	Same	A453600GM10

Radial Load Rating	≤ 78.5 N	Radial Play	≤ 0.04 mm	Max Temperature Oper.	60°C
Radial Load Distance	10 mm	Axial Play	≤ 0.30 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 29.4 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 85%
Press Fit Force - Max	≤ 147.1 N	<b>Options</b>	Bearing	Ball	

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\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

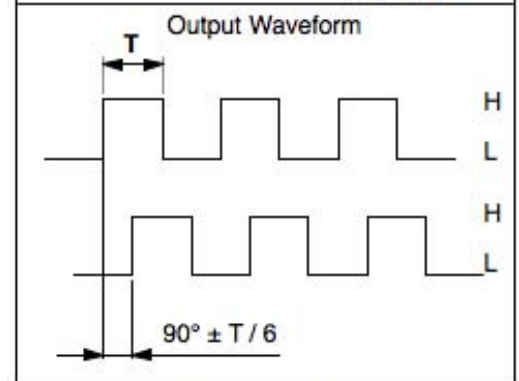
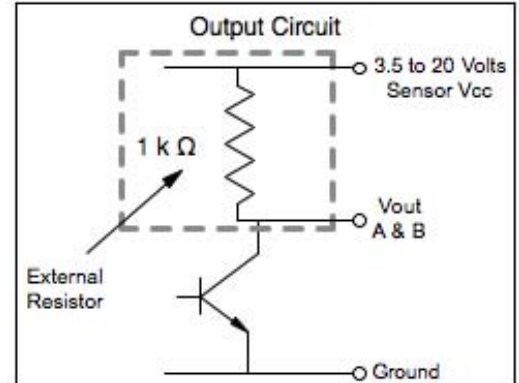
# Magnetic Encoders - Integrated

## Low Cost - Single & Quadrature Channels



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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

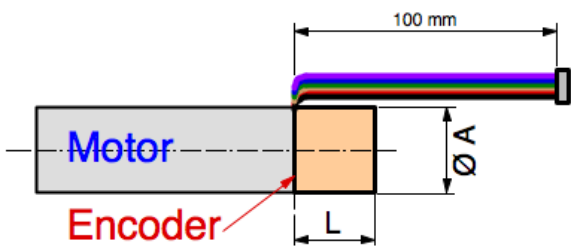
### One Channel Encoder

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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