



# TBM2G Frameless Motors

High Performance. Compact Form. Ready to Do More.

**KOLLMORGEN**

# Simply Better Design

TBM2G motors deliver next-generation torque in a more compact electromagnetics package. Designed for direct embedding in your machine, these 48 VDC motors help you engineer each axis to be smaller, lighter, stronger, faster, smoother.

## **Ready to Do More.**

**Ready to Perform.** TBM2G motors deliver significantly higher torque density in a more compact form factor. And they incorporate advanced materials and windings for more consistent performance across all speeds and torque demands. Achieve faster, smoother movements in a lighter, more compact motor with higher load capacity, greater energy efficiency and lower thermal rise.

**Ready to Design.** With an exceptionally short total height and a large thru-bore, TBM2G motors are ideal for applications that require high torque in a compact axial design. Seven frame sizes, each with three winding stack options, provide 21 options to achieve an ideal fit. These motors are optimized to pair with off-the-shelf harmonic gearing designs without modification.

**Ready to Scale.** There's no need to risk supply and quality issues. Kollmorgen has highly automated manufacturing processes in place to manufacture TBM2G motors in quantity, including standard modifications to meet your specifications. When you are ready to scale up to full production, we can supply the motors you need with assurance of quality and consistency.

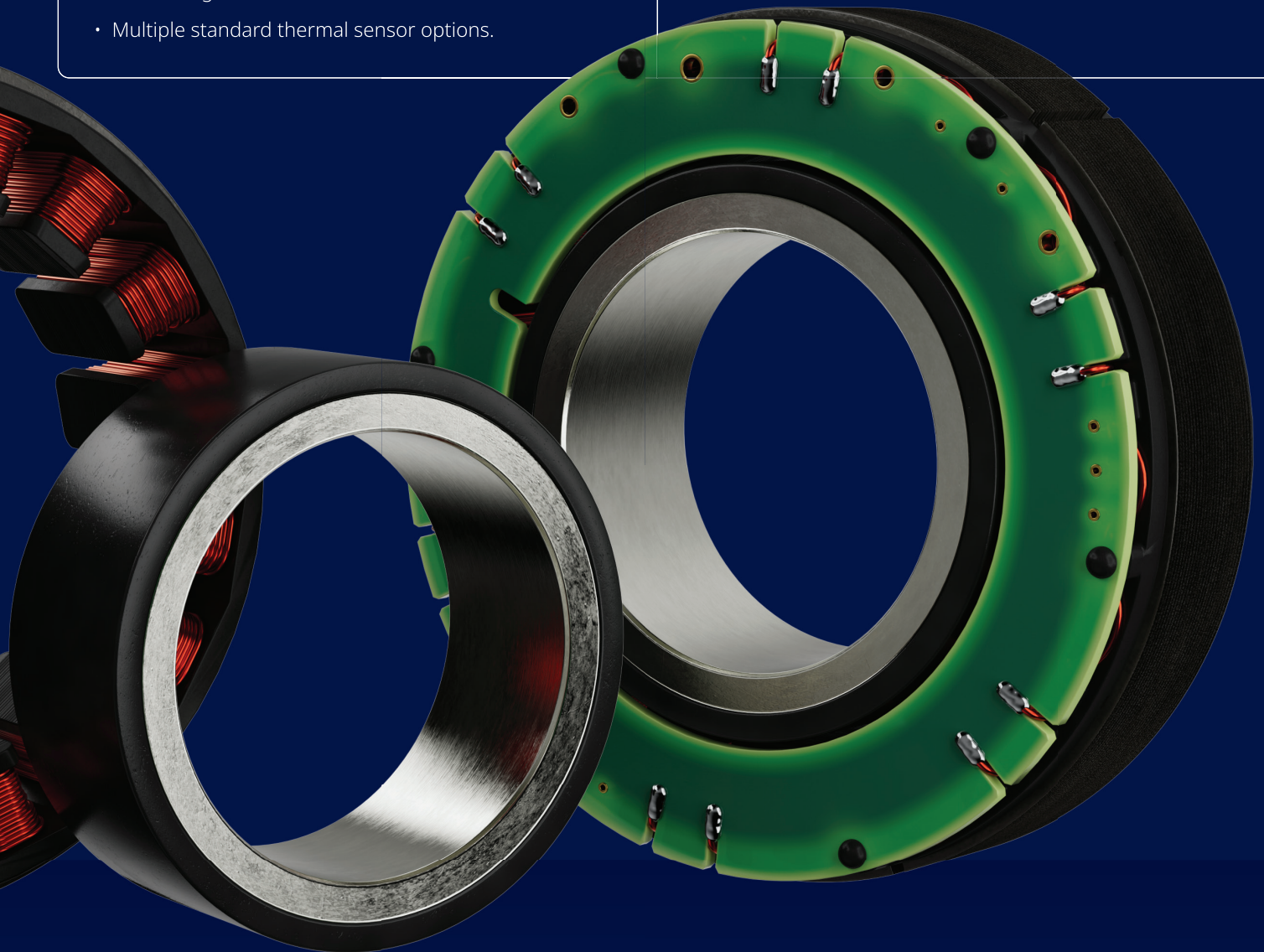


## TBM2G: Ready to Deliver More

- Seven most popular frame sizes used in embedded applications such as collaborative and surgical robots.
- Standard sizing optimized to pair with off-the-shelf harmonic gearing.
- Three winding options per frame size to meet precise speed and torque requirements.
- Optimized for operation at 48 VDC and below, ideal for battery-operated and mobile applications such as autonomous mobile robots (AMR).
- Designed to perform well without exceeding 85°C, but also capable of sustaining full performance at up to 155°C winding temperature on a continuous basis.
- Large inner diameter thru-bore to accommodate encoders, cables, hoses, shafts, tools, etc.
- Optional integrated Hall sensors that don't increase motor length.
- Multiple standard thermal sensor options.

## Kollmorgen: Ready to Partner for Your Success

- Automated processes to rapidly scale from prototype to mass production.
- Highly precise manufacturing for consistent performance.
- Global manufacturing and distribution.
- Local application support and service.
- Co-engineering expertise to help you achieve ideal specifications and fit.
- The resources and commitment to ensure consistent supply for years to come.
- More than a century of motion leadership and innovation.



## TBM2G Frameless Motors

### Performance Data

			Frame											
			TBM2G-050xx			TBM2G-060xx			TBM2G-068xx			TBM2G-076xx		
Parameters	Sym	Units	08	13	26	08	13	26	08	13	26	08	13	26
Continuous Torque at Stall	$T_c$	Nm	0.27	0.38	0.64	0.45	0.6	0.96	0.63	0.86	1.54	0.89	1.13	2.06
		lb-in	2.39	3.36	5.66	3.98	5.31	8.5	5.58	7.61	13.6	7.88	10	18.2
Rated Speed	$N_{rtd}$	rpm	8000	8000	6700	8000	8000	4200	8000	6600	3300	8000	6600	2900
Motor Constant	$K_m$	Nm/ $\sqrt{W}$	0.061	0.083	0.128	0.087	0.114	0.176	0.119	0.157	0.251	0.157	0.193	0.324
		lb-in/ $\sqrt{W}$	0.54	0.74	1.13	0.77	1.01	1.56	1.05	1.39	2.22	1.39	1.71	2.87
Rated Power	$P_{rtd}$	kW	0.204	0.271	0.368	0.329	0.415	0.366	0.467	0.538	0.506	0.588	0.605	0.56
		Hp	0.274	0.364	0.493	0.442	0.556	0.491	0.627	0.721	0.678	0.789	0.812	0.751

			Frame								
			TBM2G-085xx			TBM2G-094xx			TBM2G-115xx		
Parameters	Sym	Units	08	13	25	08	13	26	08	13	26
Continuous Torque at Stall	$T_c$	Nm	1.21	1.65	2.69	1.58	2.05	3.67	1.9	3.04	6.03
		lb-in	10.7	14.6	23.8	14	18.1	32.5	16.8	26.9	53.4
Rated Speed	$N_{rtd}$	rpm	8000	5200	2700	8000	5800	2900	5800	4900	3300
Motor Constant	$K_m$	Nm/ $\sqrt{W}$	0.203	0.271	0.419	0.263	0.331	0.528	0.31	0.464	0.802
		lb-in/ $\sqrt{W}$	1.79	2.4	3.7	2.33	2.93	4.67	2.74	4.1	7.09
Rated Power	$P_{rtd}$	kW	0.741	0.725	0.67	0.86	0.87	0.945	0.711	0.969	1.463
		Hp	0.994	0.972	0.899	1.153	1.167	1.267	0.954	1.3	1.962



TBM2G Nomenclature TBM2G - 060 13 A - A N A A - 00

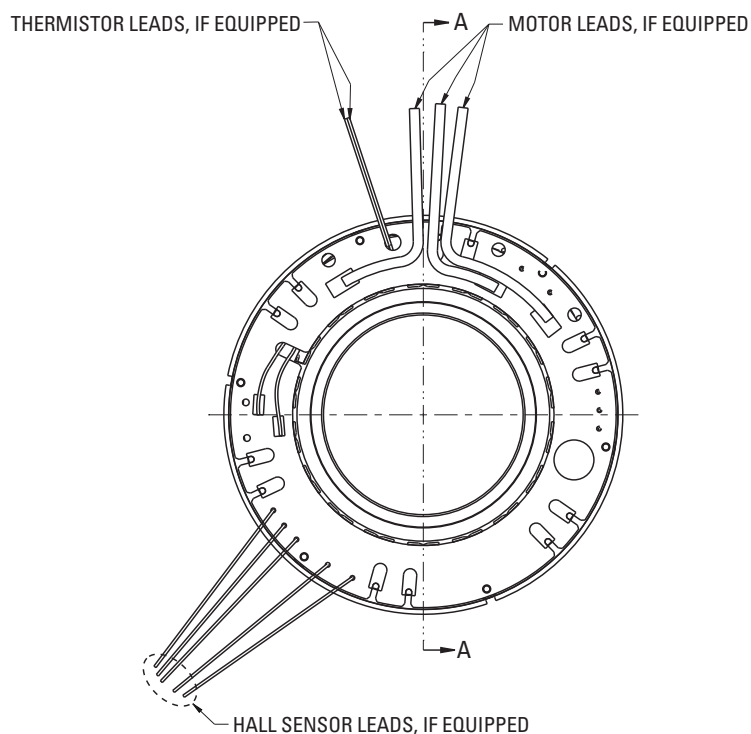
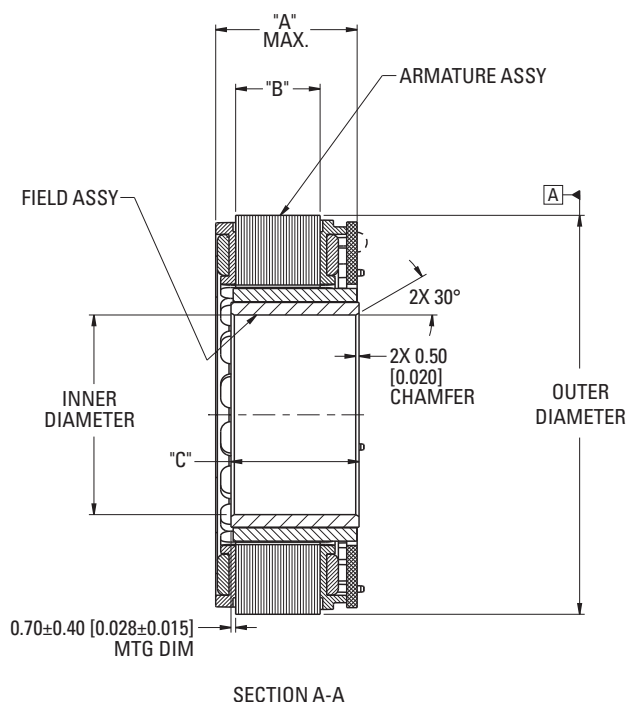
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		Available Motor						
Motor Series		TBM2G						
1	Frame	050	060	068	076	085	094	115
2	Size in mm	50	60	60	76	85	94	115
3	<b>Lamination Stack Length</b>							
	08 = 8.2 mm stack	•	•	•	•	•	•	•
	13 = 12.7 mm stack	•	•	•	•	•	•	•
	26 = 26.3 mm stack	•	•	•	•	•	•	•
4	<b>Motor Winding</b>							
	A = Wye Connected	•	•	•	•	•	•	•
	C = Parallel Wye Connected	•	•	•	•	•	•	•
	D = Parallel Delta Connected	•	•	•	•	•	•	•

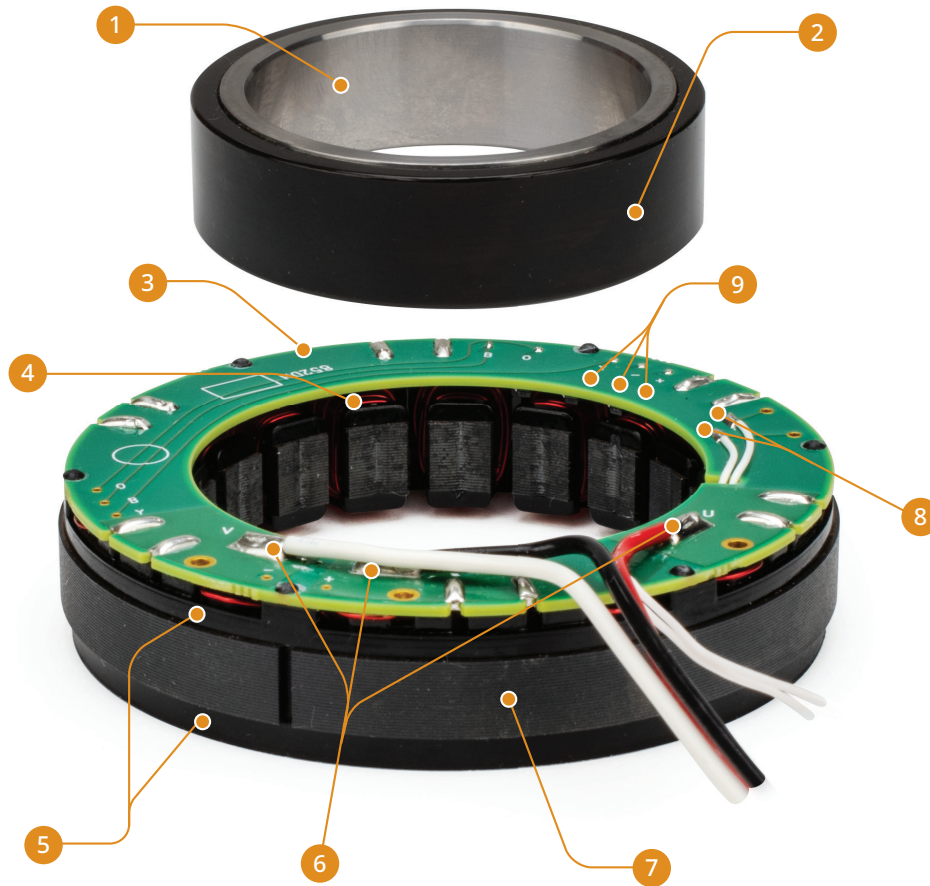
		Available Options						
Motor Series		TBM2G						
	Frame	050	060	068	076	085	094	115
5	<b>Thermal Device</b>							
	N = None	•	•	•	•	•	•	•
	A = PT1000	•	•	•	•	•	•	•
	B = 3 PTC's	•	•	•	•	•	•	•
6	<b>Sensor Option</b>							
	N = None	•	•	•	•	•	•	•
	H = Hall Sensors	•	•	•	•	•	•	•
	A = Hall Sensors (Alternate Location)	•	•	•	•	•	•	•
7	<b>Lead Options</b>							
	N = None	•	•	•	•	•	•	•
	A = 0.5 m Flying Leads	•	•	•	•	•	•	•
8	<b>Field Options</b>							
	A = Standard	•	•	•	•	•	•	•
9	<b>Custom Options</b>							
	00 = Standard	•	•	•	•	•	•	•

# TBM2G Frameless Motors

## Dimensional Overview



TBM2G Series	Frame	Outer Diameter	Inner Diameter	"A" Max			"B" REF +/- 0.35			"C" +/- 0.075		
				08	13	26	08	013	26	08	13	26
	050	50	24.75	20.64	25.14	38.74	8.2	12.7	26.3	14.76	19.26	32.86
	060	60	30	17.58	22.08	35.68	8.2	12.7	26.3	14.76	19.26	32.86
	068	68	34	18.58	23.08	36.68	8.2	12.7	26.3	14.76	19.26	32.86
	076	76	38	18.51	23.01	36.61	8.2	12.7	26.3	14.76	19.26	32.86
	085	85	42.5	19.58	24.08	37.68	8.2	12.7	26.3	14.76	19.26	32.86
	094	94	47	19.93	24.43	38.03	8.2	12.7	26.3	14.76	19.26	32.86
	115	115	57.5	26.2	30.7	44.3	8.2	12.7	26.3	14.76	19.26	32.86



- |  |   |   |
|--|---|---|
| <p><b>1</b> Yoke<br/>• Material: SS400 Series</p> <p><b>2</b> Ring Magnet<br/>• Material: NdFeB (Neodymium)<br/>• Coating: Epoxy</p> <p><b>3</b> Printed Circuit Board (PCB)</p> | <p><b>4</b> Coil<br/>• Material: Copper<br/>• Coating: Varnish</p> <p><b>5</b> End Insulators<br/>• Material: Polymer Resin</p> <p><b>6</b> Power Leads</p> | <p><b>7</b> Lamination Stack<br/>• Material: Electric Steel</p> <p><b>8</b> Optional Thermal Devices (mounted underneath PCB)<br/>• PT1000<br/>• PTC Avalanche (3 in series)</p> <p><b>9</b> Optional Hall Sensors (mounted underneath PCB)<br/>• Allegro A1260</p> |
|--|---|---|

### TBM2G Product Features

- 7 frame sizes with 3 stack lengths each
- Integrated Hall sensor option
- PT1000 and PTC thermal sensor options
- Available with or without flying leads
- Low cogging design
- Optimized for high efficiency across a wide speed range
- Three standard winding options per frame/stack
- Stainless steel yoke rings for corrosion protection

## About Kollmorgen

Kollmorgen has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, linear actuators, gearheads, AGV control solutions and automation platforms. We deliver breakthrough solutions that are unmatched in performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

Kollmorgen is a brand of Altra Industrial Motion Corp. (NASDAQ: AIMC), a premier global designer and producer of a wide range of motion control and power transmission solutions. With engineered components and systems that provide the essential control of equipment speed, torque, positioning and other functions, Altra products can be used in nearly any machine, process or application involving motion.

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