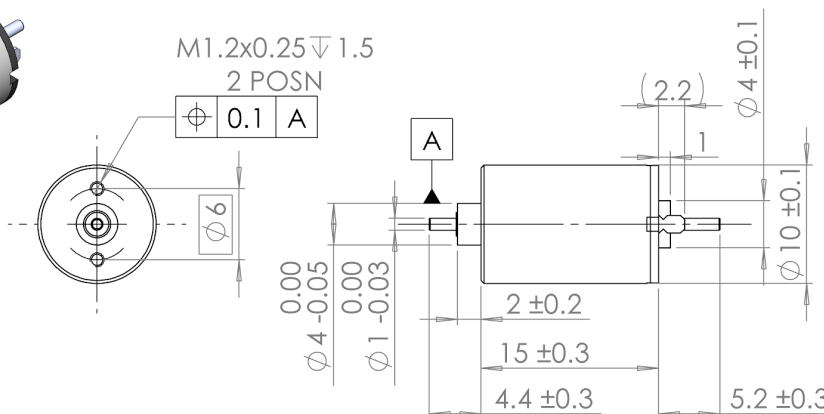
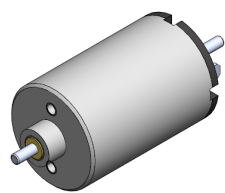


110-202 Brushed motor Coreless (precious metal brushes)

Ø10 x 15mm / customizable housing / fit for gearbox and encoder



DIMENSIONS ARE IN mm
SURFACE FINISH: N7
TOLERANCES:
LINEAR: ± 0.2
ANGULAR: ±1°

Design and accessories		Units	Samples available	Manufacturable on request	Custom design
			110-202	110-203	110-XXX
A	Availability		Stocked design	8 weeks	8 weeks
B	Motor Type		Brushed	Brushed	Brushed
C	Commutation		Precious metal brush	Precious metal brush	Precious metal brush
D	Shafts		Dual	Dual	Single / Dual
E	Gearbox		Not fitted	Not fitted	Range 1:3.5 ~ 1:1024
F	Encoder		Not fitted	Not fitted	Magnetic / optical
G	Connections		Terminals	Terminals	Terminals / leads / connectors
H	Cable		N/A	N/A	
I	Housing Material		Nickel plated steel	Nickel plated steel	Nickel plated steel
J	Body diameter	mm	10	10	
K	Body length	mm	15	15	
L	Weight	g	4.9	4.9	

Performance characteristics					
1	Nominal voltage	V	10.0	6.0	Nominal load, no load, and stall points, and efficiency will depend on the winding design. Please contact support@pmdri.com
2	No load speed	rpm	18 740	18 250	
3	No load current	A	0.015	0.035	
4	Nominal speed	rpm	14 005	14 090	
5	Nominal torque	mNm	0.75	0.75	
6	Nominal current	A	0.180	0.300	
7	Stall torque	mNm	2.97	3.29	
8	Stall current	A	0.665	1.200	
9	Maximum efficiency	%	66.4	63.7	

Winding specific characteristics					
10	Terminal resistance	Ω	15.10	5.00	Winding dependent
11	Terminal inductance	uH	265	90	
12	Torque constant (Kt)	mNm/A	4.98	3.05	
13	Speed constant (Kv)	rpm/V	1 917	3 133	
14	Speed / torque gradient	rpm/mNm	6 313	5 544	
15	Mechanical time constant	ms	6	5	
16	Rotor inertia	g·cm ²	0.08	0.08	

Motor body characteristics				Performance curve (based on ambient 25°C)																																				
17	Thermal resistance housing-ambient	°C/W	50.0	110-202 Speed Current Power Out Efficiency The graph displays four performance metrics for the 110-202 motor as a function of torque (0 to 2.5 mNm). The left y-axis represents Speed [rpm] (0 to 18k) and Current [mA] (0 to 600). The right y-axis represents Power [mW] (0 to 1400) and Efficiency [%] (0 to 60). Speed (green line) decreases linearly from ~18,740 rpm at 0 torque to 0 rpm at 2.5 mNm. Current (red line) increases linearly from 0 mA at 0 torque to ~665 mA at 2.5 mNm. Power Out (orange line) starts at 0, peaks at ~1,400 mW around 1.5 mNm, and returns to 0 at 2.5 mNm. Efficiency (blue line) starts at 0, peaks at ~66.4% around 0.4 mNm, and returns to 0 at 2.5 mNm. <table border="1"><caption>Approximate data points from the performance curve</caption><thead><tr><th>Torque [mNm]</th><th>Speed [rpm]</th><th>Current [mA]</th><th>Power Out [mW]</th><th>Efficiency [%]</th></tr></thead><tbody><tr><td>0.0</td><td>18740</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0.4</td><td>17000</td><td>133</td><td>400</td><td>66.4</td></tr><tr><td>1.0</td><td>13500</td><td>333</td><td>1100</td><td>40</td></tr><tr><td>1.5</td><td>10000</td><td>500</td><td>1400</td><td>20</td></tr><tr><td>2.0</td><td>6500</td><td>665</td><td>800</td><td>10</td></tr><tr><td>2.5</td><td>0</td><td>665</td><td>0</td><td>0</td></tr></tbody></table>		Torque [mNm]	Speed [rpm]	Current [mA]	Power Out [mW]	Efficiency [%]	0.0	18740	0	0	0	0.4	17000	133	400	66.4	1.0	13500	333	1100	40	1.5	10000	500	1400	20	2.0	6500	665	800	10	2.5	0	665	0	0
Torque [mNm]	Speed [rpm]	Current [mA]	Power Out [mW]			Efficiency [%]																																		
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2.0	6500	665	800			10																																		
2.5	0	665	0			0																																		
18	Thermal resistance winding-housing	°C/W	20.0																																					
19	Thermal time constant winding	s	4																																					
20	Thermal time constant motor	s	120																																					
21	Ambient temperature	min °C	-20																																					
		max °C	+60																																					
22	Max. permissible winding temperature	°C	+85																																					
23	Max. permissible rotor speed	rpm	25 000																																					
24	Axial play at axial load	mm	0.3 max																																					
25	Max. axial load (dynamic)	N	0.1																																					
26	Max. force for press fits (static)	N	10.0																																					
	with shaft supported	Dual-shaft version only																																						
27	Max. radial loading (3mm from flange)	N	0.3																																					
28	Number of magnet pole pairs		1																																					