

# MP-Series™ Low-Inertia Motors



Brushless servo motors with absolute feedback

The Allen-Bradley® MP-Series Low-Inertia, high-output brushless servo motors use innovative design characteristics to reduce motor size while delivering significantly higher torque. These compact and highly dynamic brushless servo motors from Rockwell Automation are designed to meet the demanding requirements of high-performance motion systems. This series of servo motors is typically used with the Allen-Bradley Kinetix® 6000, Kinetix 6200, Kinetix 6500, Kinetix 300, and Kinetix 350 servo drive families. Available in nine frame sizes, these motors provide continuous stall torque from 0.26 to 163 Nm (2.3-1440 lb-in.) and peak torque from 0.77 to 278 Nm (6.8-2460 lb-in.)

## MP-Series Low-Inertia Motors Provide:

- Innovative winding technology yields up to 40% higher torque per unit size than conventional servo motors
- Improved winding insulation material for enhanced thermal management and heat transfer, resulting in higher performance
- High-energy rare-earth magnets for quicker acceleration
- New SpeedTEC DIN connectors allow flexible orientation of connectors and use of a single cable family with all MP-Series motors
- Integral 24-volt brake option
- Broad torque range – all within one motor family
- Optional Shaft Seal for IP 66 environmental rating
- Standard IEC 72-1 mounting dimensions
- Operating temperature range: 0 - 40° C (32 - 104° F)
- The MP-Series Low-Inertia Motors are UL recognized components to applicable UL and CSA standards and CE marked for all applicable directives.



Applications where more power is required in a smaller package will benefit from the use of MP-Series Low Inertia Motors. Typical applications include: packaging, converting, electronics assembly, automotive, metal forming and material handling.

## High-Performance Feedback

MP-Series Low-Inertia motors are available with high performance encoders with a choice of single-turn or multi-turn high-resolution feedback.

- Up to 2 million counts per revolution for smooth performance and precise control (MPL-A/B3xx, -A/B4xx, -A/B45xx, -A/B5xx, -B6xx, -B8xx, and -B9xx motors)
- Up to 260 thousand counts per revolution for smooth performance and precise control (MPL-A/B15xx and -A/B2xx motors)
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery
- MP-Series servo motors with high resolution encoders may be used as a component of the Kinetix safe-off feature

## Smart Motor Technology

- On-board memory retains motor identity
- Communication link automatically reports identity to the system upon startup for reduced commissioning time



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## 230 Volt Motor Specifications

Catalog Number	Rated Speed rpm	Rated Output kW	Rotor Inertia* kg-m <sup>2</sup> (lb-in.-s <sup>2</sup> )	Continuous Stall Torque Nm (lb-in.)	Peak Stall Torque Nm (lb-in.)	Continuous Stall Current Amperes (0-peak)	Peak Stall Current Amperes (0-peak)
MPL-A1510V	8000	0.16	0.0000074 (0.000065)	0.26 (2.3)	0.77 (6.8)	1.1	3.4
MPL-A1520U	7000	0.27	0.000013 (0.00012)	0.49 (4.3)	1.58 (14)	1.8	6.1
MPL-A1530U	7000	0.39	0.000023 (0.00020)	0.90 (8.0)	2.82 (25)	2.8	10.1
MPL-A210V	8000	0.37	0.000015 (0.00013)	0.55 (4.9)	1.52 (14)	3.1	10.2
MPL-A220T	6000	0.62	0.000039 (0.00035)	1.61 (14)	4.74 (42)	4.5	15.5
MPL-A230P	5000	0.86	0.000063 (0.00056)	2.10 (19)	8.20 (73)	5.4	23.0
MPL-A310P	5000	0.73	0.000044 (0.00039)	1.58 (14)	3.61 (32)	4.9	14.0
MPL-A310F	3000	0.46	0.000044 (0.00039)	1.58 (14)	3.61 (32)	3.2	9.3
MPL-A320P	5000	1.3	0.000078 (0.00069)	3.05 (27)	7.91 (70)	9.0	29.5
MPL-A320H	3500	1.0	0.000078 (0.00069)	3.05 (27)	7.91 (70)	6.1	19.3
MPL-A330P	5000	1.8	0.00012 (0.0010)	4.18 (37)	11.1 (98)	12.0	38.0
MPL-A420P	5000	2.0	0.00026 (0.0023)	4.74 (42)	10.2 (90)	12.7	46.0
MPL-A430P	5000	2.2	0.00038 (0.0033)	5.99 (53)	19.8 (175)	16.8	67.0
MPL-A430H	3500	1.8	0.00038 (0.0033)	6.21 (55)	19.8 (175)	12.2	45.0
MPL-A4530F	2800	1.9	0.00040 (0.0036)	8.36 (74)	20.3 (180)	13.4	42.0
MPL-A4530K	4000	2.5	0.00040 (0.0036)	8.13 (72)	20.3 (180)	19.5	62.0
MPL-A4540C	1500	1.5	0.00052 (0.0046)	10.2 (90)	27.1 (240)	9.4	29.0
MPL-A4540F	3000	2.6	0.00052 (0.0046)	10.2 (90)	27.1 (240)	18.4	58.0
MPL-A4560F	3000	3.0	0.00078 (0.0067)	14.1 (125)	34.4 (305)	22.0	66.0
MPL-A520K	4000	3.5	0.000783 (0.0069)	10.7 (95)	24.3 (215)	23.0	65.0
MPL-A540K	4000	5.5	0.00147 (0.013)	19.4 (172)	48.6 (430)	41.5	120.0
MPL-A560F	3000	5.3	0.00213 (0.019)	26.8 (237)	61.0 (540)	42.0	120.0

\*Rotor inertia values shown are for non-brake encoder motors. Inertias are higher for brake and resolver versions of the motors. The incremental encoder and resolver versions are available in limited sizes.

In addition to the MP-Series Low Inertia servo motors, Rockwell Automation offers a variety of other Allen-Bradley MP-Series motors, enabling you to use exactly the right motor for your application.

Motor	Description	Features	Applications
	<b>MP-Series Food Grade Motors</b> combine the characteristics of the MP-Series Low-Inertia Motors with features specifically designed to meet the unique needs of many food and beverage packaging and handling applications. These motors address the challenges of food environments by incorporating improved sealing techniques and non-corrosive food grade fasteners and coatings.	<ul style="list-style-type: none"> <li>• Can be used in close proximity to food</li> <li>• IP66 and IP67 for low pressure wash and incidental spillage protection</li> <li>• Dilute cleaning compounds can be used</li> <li>• Durable two-part food-grade epoxy</li> <li>• Food-grade grease</li> <li>• All stainless steel fasteners and shaft</li> <li>• High-resolution feedback standard</li> <li>• Speeds up to 5000 rpm</li> </ul>	<ul style="list-style-type: none"> <li>• Food packaging</li> <li>• Volumetric filling</li> <li>• Form, fill, seal</li> <li>• Food handling</li> <li>• <i>For meat, poultry, dairy, and applications, the MP-Series Stainless Steel motors are recommended</i></li> </ul>
	<b>MP-Series Stainless Steel Motors</b> are specifically designed to meet the unique needs of hygienic environments. Use these servo motors even in high pressure, highly caustic washdown conditions, such as meat and poultry and dairy applications.	<ul style="list-style-type: none"> <li>• Can be used in close proximity to food</li> <li>• IP66, IP67 and IP69K for 1200 psi caustic washdown</li> <li>• Smooth, passivated 300 series stainless steel cylindrical exterior</li> <li>• Factory sealed and leak tested</li> <li>• High-resolution feedback standard</li> </ul>	<ul style="list-style-type: none"> <li>• Meat, poultry and dairy</li> <li>• Food slicing and filling</li> <li>• Raw food handling</li> <li>• Processing</li> <li>• Closing machinery</li> <li>• Life science</li> <li>• Consumer products</li> </ul>

## 460 Volt Motor Specifications

Catalog Number	Rated Speed rpm	Rated Output kW	Rotor Inertia* kg-m <sup>2</sup> (lb-in.-s <sup>2</sup> )	Continuous Stall Torque Nm (lb-in.)	Peak Stall Torque Nm (lb-in.)	Continuous Stall Current Amperes (0-peak)	Peak Stall Current Amperes (0-peak)
MPL-B1510V	8000	0.16	0.0000074 (0.000065)	0.26 (2.3)	0.77 (6.8)	.95	3.1
MPL-B1520U	7000	0.27	0.000013 (0.00012)	0.49 (4.3)	1.58 (14)	1.8	6.1
MPL-B1530U	7000	0.39	0.000023 (0.00020)	0.90 (8.0)	2.82 (25)	2.0	7.2
MPL-B210V	8000	0.37	0.000015 (0.00013)	0.55 (4.9)	1.52 (13)	1.8	5.8
MPL-B220T	6000	0.62	0.000039 (0.00035)	1.61 (14)	4.74 (42)	3.3	11.3
MPL-B230P	5000	0.86	0.000063 (0.00056)	2.10 (19)	8.20 (73)	2.6	11.3
MPL-B310P	5000	0.77	0.000044 (0.00039)	1.58 (14)	3.61 (32)	2.4	7.1
MPL-B320P	5000	1.5	0.000078 (0.00069)	3.05 (27)	7.91 (70)	4.5	14.0
MPL-B330P	5000	1.8	0.00012 (0.0010)	4.18 (37)	11.1 (98)	6.1	19.0
MPL-B420P	5000	1.9	0.00026 (0.0023)	4.74 (42)	13.5 (120)	6.4	22.0
MPL-B430P	5000	2.2	0.00038 (0.0033)	6.55 (58)	19.8 (175)	9.2	32.0
MPL-B4530F	3000	2.1	0.00040 (0.0036)	8.25 (73)	20.3 (180)	7.0	21.0
MPL-B4530K	4000	2.6	0.00040 (0.0036)	8.25 (73)	20.3 (180)	11.0	31.0
MPL-B4540F	3000	2.6	0.00052 (0.0046)	10.2 (90)	27.1 (240)	9.1	29.0
MPL-B4560F	3000	3.2	0.00078 (0.0067)	14.1 (125)	34.4 (305)	11.8	36.0
MPL-B520K	4000	3.5	0.000783 (0.0069)	10.7 (95)	23.2 (205)	11.5	33.0
MPL-B540D	2000	3.4	0.00147 (0.013)	19.4 (172)	41.0 (362)	10.5	23.0
MPL-B540K	4000	5.4	0.00147 (0.013)	19.4 (172)	48.6 (430)	20.5	60.0
MPL-B560F	3000	5.5	0.00213 (0.019)	26.8 (237)	67.8 (600)	20.6	68.0
MPL-B580F	3000	7.1	0.00289 (0.023)	34.0 (301)	87.0 (770)	26.0	94.0
MPL-B580J	3800	7.9	0.00289 (0.023)	34.0 (301)	87.0 (770)	32.0	115.0
MPL-B640F	3000	6.1	0.00400 (0.0354)	36.7 (325)	72.3 (640)	32.1	65.0
MPL-B660F	3000	6.15	0.00580 (0.051)	48.0 (425)	101.1 (895)	38.5	96.0
MPL-B680D	2000	9.3	0.00775 (0.0685)	62.8 (556)	154.2 (1365)	34.0	94.0
MPL-B680F	3000	7.5	0.00775 (0.0685)	60.0 (531)	108.5 (960)	48.0	96.0
MPL-B680H	3500	7.5	0.00775 (0.0685)	60.0 (531)	146.9 (1300)	51.0	140.0
MPL-B860D	2000	12.5	0.0169 (0.150)	83.0 (735)	152.5 (1350)	47.5	95.5
MPL-B880C	1500	12.6	0.0224 (0.198)	110.0 (973)	203.0 (1800)	47.5	97.5
MPL-B880D	2000	12.6	0.0224 (0.198)	110.0 (973)	147.0 (1300)	67.0	96.0
MPL-B960B	1200	12.7	0.0273 (0.242)	130.0 (1150)	231.0 (2050)	42.5	94.0
MPL-B960C	1500	14.8	0.0273 (0.242)	124.3 (1100)	226.0 (2000)	55.0	125.0
MPL-B960D	2000	15.0	0.0273 (0.242)	124.3 (1100)	226.0 (2000)	70.0	125.0
MPL-B980B	1000	15.2	0.0354 (0.313)	162.7 (1440)	278.0 (2460)	40.0	94.0
MPL-B980C	1500	16.8	0.0354 (0.313)	158.2 (1400)	271.0 (2400)	68.0	140.0
MPL-B980D	2000	18.6	0.0354 (0.313)	158.2 (1400)	260.0 (2300)	79.0	140.0
MPL-B980E	2750	13.0	0.0354 (0.313)	141.0 (1250)	237.0 (2100)	105.0	230.0

\*Rotor inertia values shown are for non-brake encoder motors. Inertias are higher for brake and resolver versions of the motors. The incremental encoder and resolver versions are available in limited sizes.

## Connectors and Cables

New SpeedTEC DIN connector versions of MP-Series Low-Inertia Motors allow flexible orientation of connectors and use of a single cable family with all MP-Series motors.

The SpeedTEC DIN connectors are designed to provide a quick, one-quarter turn connection. This provides an easy, yet secure servo connection.

The connectors meet a wide range of codes and standard requirements:

- UL-Listed
- NFPA 79 compliant
- DESINA cable jacket coloring
- Tray cable rating
- RoHS and REACH
- 600V insulation rating

### Motor Cables

Rockwell Automation offers a comprehensive selection of power, feedback, and brake cables for your MP-Series motors. Offerings include standard and continuously flexing cables, in lengths ranging from 1 meter to 90 meters.

The continuously flexing power and brake cables comply with RoHS and NFPA-79 tray ratings, and are composed of UL-listed bulk cable. Jacket coloring is compliant with DESINA specifications.

### Motor Accessories

Shaft seal kits are available for all frame sizes of the MP-Series Low Inertia motors. When installed correctly, the seals yield an IP66 rating at the shaft. Note that shaft seals are wearing parts that will need to be replaced periodically. Refer to the Motion Control Selection Guide to select the shaft seal kit for your specific motor.

Motor-end connector kits are available for most MP-Series motors. They are used by customers who choose to build their own cables. The kits utilize metallic backshells, compression-style sealing to the cable jacket, and are solder-style or crimp-style connector sockets depending on the kit. Crimping tools are offered by Rockwell Automation for crimp-style sockets.

*For more information refer to our website: [www.ab.com/motion](http://www.ab.com/motion), or the Kinetix selection guide, GMC-SG001x.*

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**[www.rockwellautomation.com](http://www.rockwellautomation.com)**

### Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846



Cables are available for MP-Series Motors and other Allen-Bradley motors and actuators with DIN style connectors.