

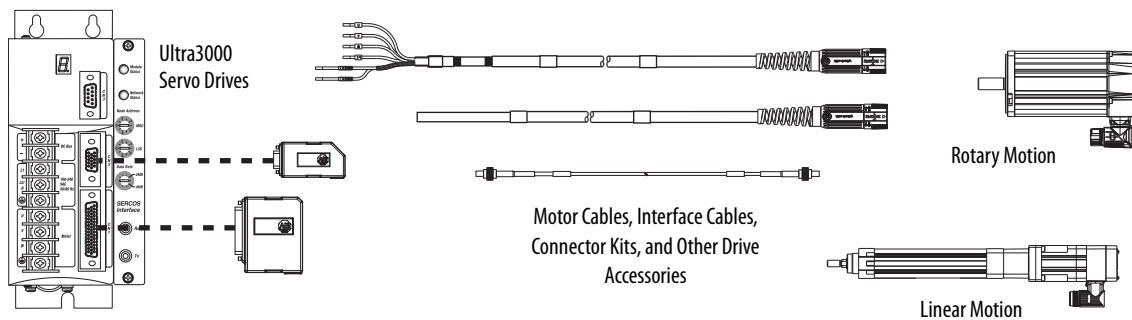
Ultra3000 Drive Systems

Catalog Numbers

2098-DSD-005, 2098-DSD-010, 2098-DSD-020, 2098-DSD-005X, 2098-DSD-010X, 2098-DSD-020X,
 2098-DSD-005-SE, 2098-DSD-010-SE, 2098-DSD-020-SE, 2098-DSD-005-DN, 2098-DSD-010-DN, 2098-DSD-020-DN,
 2098-DSD-005X-DN, 2098-DSD-010X-DN, 2098-DSD-020X-DN,

2098-DSD-030, 2098-DSD-075, 2098-DSD-150, 2098-DSD-030X, 2098-DSD-075X, 2098-DSD-150X,
 2098-DSD-030-SE, 2098-DSD-075-SE, 2098-DSD-150-SE, 2098-DSD-030-DN, 2098-DSD-075-DN, 2098-DSD-150-DN,
 2098-DSD-030X-DN, 2098-DSD-075X-DN, 2098-DSD-150X-DN,

2098-DSD-HV030, 2098-DSD-HV050, 2098-DSD-HV100, 2098-DSD-HV150, 2098-DSD-HV220,
 2098-DSD-HV030X, 2098-DSD-HV050X, 2098-DSD-HV100X, 2098-DSD-HV150X, 2098-DSD-HV220X,
 2098-DSD-HV030-SE, 2098-DSD-HV050-SE, 2098-DSD-HV100-SE, 2098-DSD-HV150-SE, 2098-DSD-HV220-SE,
 2098-DSD-HV030-DN, 2098-DSD-HV050-DN, 2098-DSD-HV100-DN, 2098-DSD-HV150-DN, 2098-DSD-HV220-DN,
 2098-DSD-HV030X-DN, 2098-DSD-HV050X-DN, 2098-DSD-HV100X-DN, 2098-DSD-HV150X-DN, 2098-DSD-HV220X-DN



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Summary of Changes

This publication contains new and updated information as indicated in the following table.

| Topic | Page |
|--|------|
| Updated the external auxiliary encoder Bulletin numbers. | 6 |
| Added footnote to MP-Series™ (Bulletin MPL) motors with change in motor power cable size after 50 m (164 ft). | 15 |
| Added footnote to MP-Series (Bulletin MPM) motors with change in motor power cable size after 50 m (164 ft). | 26 |
| Added Ultra™3000 Digital Servo Drive Specifications removed from the Kinetix® Servo Drives Specifications Technical Data, publication KNX-TD003 . | 76 |
| Added Ultra3000 Digital Servo Drive Accessories removed from the Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004 . | 91 |

Introduction

Use this publication when your application includes the Ultra3000 drive family and compatible Allen-Bradley® servo motors and actuators. For more Kinetix drive and motor information, see the Kinetix Motion Control Selection Guide, publication [KNX-SG001](#), or the Motion Analyzer system sizing and selection tool.

The purpose of this publication is to assist you in identifying the drive system components and accessory items required for Ultra3000 drive and motor/actuator combinations. Diagrams in this publication illustrate how many of the common drive accessory items are used in a typical system.

Also provided are drive/motor or drive/actuator system combinations that include the following:

- Motor/cable combinations table
- Drive and motor/actuator performance specification table
- Torque/speed curves with each motor matched to the drive with optimum performance

Performance specification data and curves reflect nominal system performance of a typical system with motor/drive at rated ambient temperature and line voltage. For additional information on ambient temperatures, line conditions, and valid combinations not shown in this publication, refer to Motion Analyzer.

IMPORTANT These system combinations do not include all possible motor/drive combinations. See Motion Analyzer for system sizing, selection, and to verify compatibility. Access Motion Analyzer at <https://motionanalyzer.rockwellautomation.com>.

Determine What You Need

For each Ultra3000 drive system, you need to know the drive and motor/actuator catalog numbers to determine the motor power and feedback cable catalog numbers. Interface cables and connector kits are also required. Optional equipment includes Bulletin 2090 AC line filter, shunt resistor, and others. Example diagrams of the required equipment listed on this page are shown on [page 4](#).

Ultra3000 Drive Modules

| Ultra3000 Drives Cat. No. | Input Voltage | Output Power (continuous) | Output Current (continuous) | Features |
|------------------------------|---------------|------------------------------|--------------------------------|--|
| 2098-DSD-005X-XX | 200V Class | 0.5 kW | 1.8 A, rms | <ul style="list-style-type: none"> Requires an external 12...24V power supply for proper operation of the digital I/O. Requires an external +5V power supply to maintain logic power when the AC line voltage is removed. ⁽¹⁾ |
| 2098-DSD-010X-XX | | 1.0 kW | 3.5 A, rms | |
| 2098-DSD-020X-XX | | 2.0 kW | 7.1 A, rms | |
| 2098-DSD-030X-XX | | 3.0 kW | 10.6 A, rms | |
| 2098-DSD-075X-XX | | 7.5 kW | 24.7 A, rms | |
| 2098-DSD-150X-XX | | 15 kW | 45.9 A, rms | |
| 2098-DSD-HV030X-XX | 400V Class | 3.0 kW | 5.0 A, rms | Requires an external 12...24V power supply for proper operation of the digital I/O. |
| 2098-DSD-HV050X-XX | | 5.0 kW | 7.8 A, rms | |
| 2098-DSD-HV100X-XX | | 10 kW | 16.3 A, rms | |
| 2098-DSD-HV150X-XX | | 15 kW | 24.0 A, rms | |
| 2098-DSD-HV220X-XX | | 22 kW | 33.2 A, rms | |

(1) Use external 24V I/O power supply to feed drive-mounted breakout boards (catalog numbers 2090-U3CBB-DM12 and 2090-U3CBB-DM44) with 24...5V DC converter.

Ultra3000 Servo Drive Communication Interface

| Drive Type | Drive Cat. No. | Command Interface |
|--|--|-----------------------------------|
| Sercos interface drive | 2098-DSD-xxx-SE and 2098-DSD-HVxxx-SE | Fiber-optic Sercos module |
| Analog drive | 2098-DSD-xxx and 2098-DSD-HVxxx | Analog command interface |
| Digital drive with DeviceNet interface | 2098-DSD-xxx-DN and 2098-DSD-HVxxx-DN | DeviceNet communication interface |
| Indexing drive | 2098-DSD-xxxX and 2098-DSD-HVxxxX | Standalone control |
| Indexing DeviceNet interface drives | 2098-DSD-xxxX-DN and 2098-DSD-HVxxxX-DN | |

Refer to [Ultra3000 Digital Servo Drive Specifications](#) on [page 76](#) for detailed descriptions and additional specifications for the Ultra3000 drive family.

Required Drive Accessories

| Drive Accessory | Description | Cat. No. |
|--|--|--------------------------------|
| 24V power supply | 12...24V DC for control power and motor brakes. | 1606-XLxxx |
| Drive-mounted breakout boards (required for flying-lead cables) | Motor feedback (CN2) connections. | 2090-UXBB-DM15 |
| | Serial interface (CN3) connections. | 2090-UXBB-DM09 |
| | I/O (CN1) connections. These kits apply to all Ultra3000 drives and (catalog numbers 2098-DSD-005, 2098-DSD-010, and 2098-DSD-020) in applications where 5V DC control power (if required) is user-supplied. | 2090-U3BB-DM12 ⁽¹⁾ |
| | | 2090-U3BB2-DM44 |
| Sercos fiber-optic cables (required as needed for Sercos applications) | I/O (CN1) connections. These kits apply to only 2098-DSD-005, 2098-DSD-010, and 2098-DSD-020 drives in applications where a 24...5V DC converter for control power is required. | 2090-U3CBB-DM12 ⁽¹⁾ |
| | | 2090-U3CBB-DM44 |
| | Plastic, in-cabinet duty. | 2090-SCEPx-x |
| | Plastic, on-machine duty. | 2090-SCNPx-x |
| Serial interface cable (required for non-Sercos applications) | Plastic, outdoor and conduit duty. | 2090-SCVPx-x |
| | Glass, outdoor and conduit duty. | 2090-SCVGx-x |
| Motor power and feedback cables | Refer to the specific drive/motor combination for the motor cables required for your system. | 2090-UXPC-D09xx |

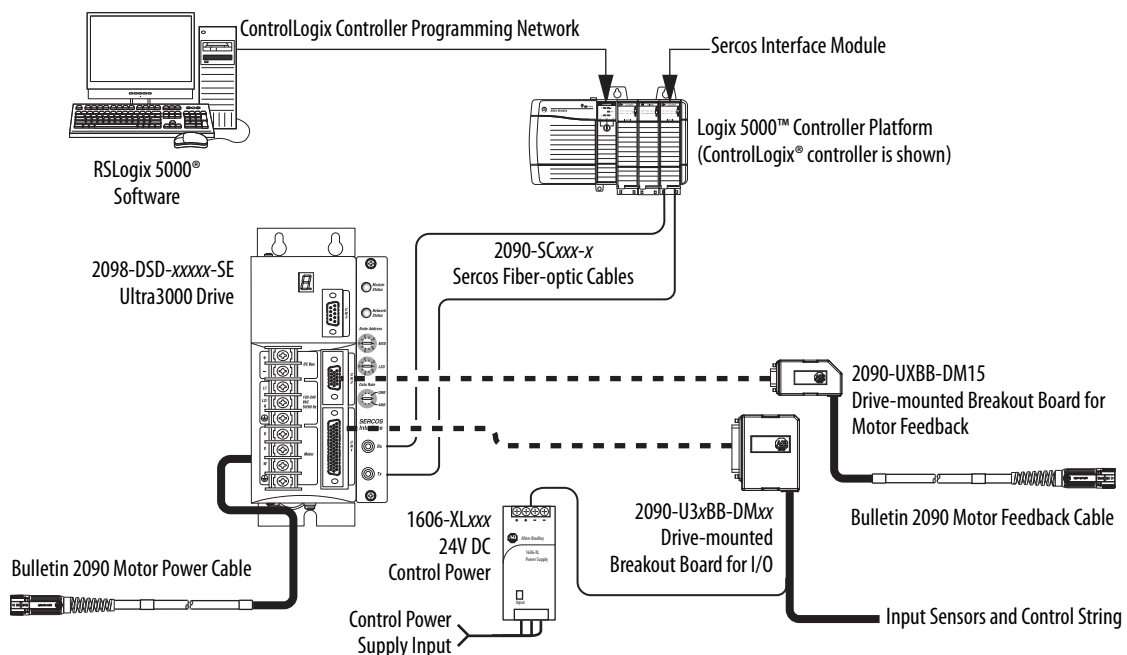
(1) The 12-pin board is intended for use with Sercos drives, but may be used in non-Sercos applications with minimal I/O requirements.

Refer to [Ultra3000 Digital Servo Drive Accessories](#) on [page 91](#) and the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for detailed descriptions and specifications of these servo drive accessories.

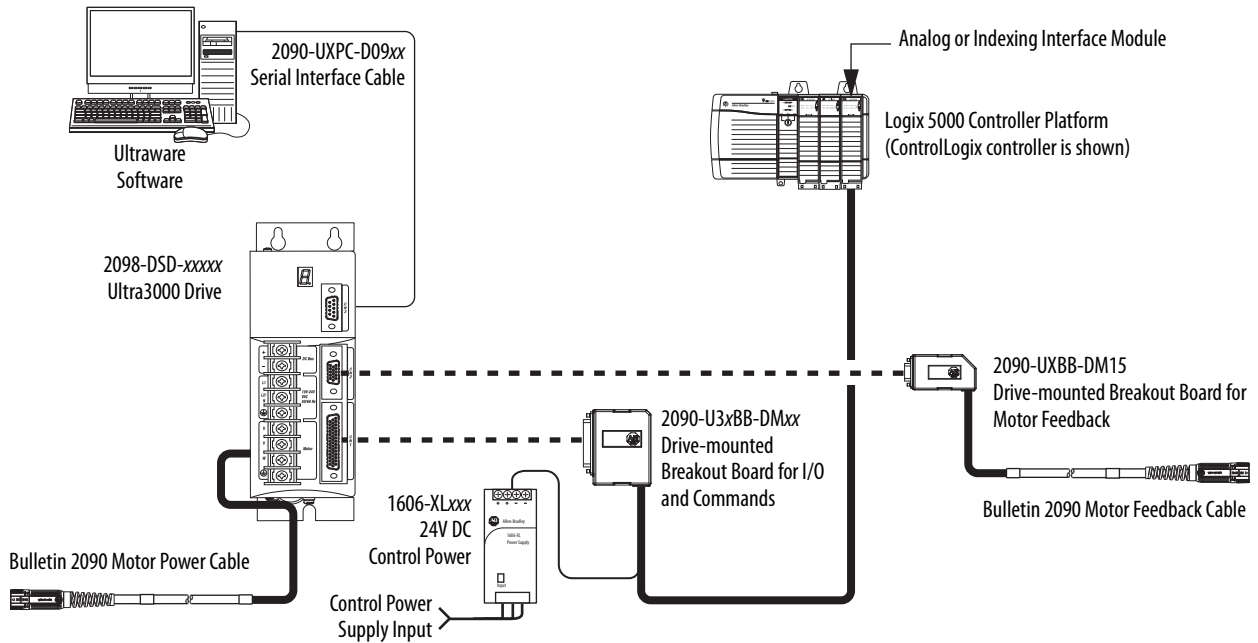
Ultra3000 System Examples

These system examples illustrate how the required drive modules and accessories are used in a typical system.

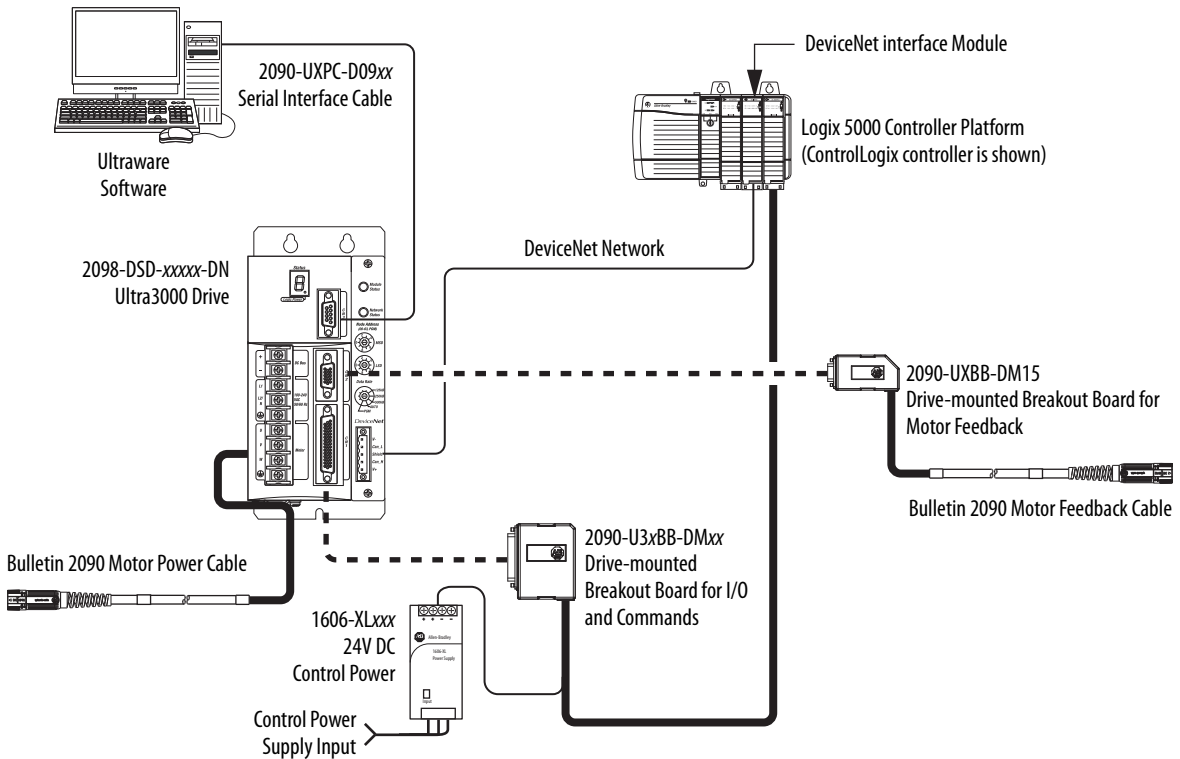
Ultra3000 System Example (Sercos interface)



Ultra3000 System Example (analog or indexing)



Ultra3000 System Example (DeviceNet interface)

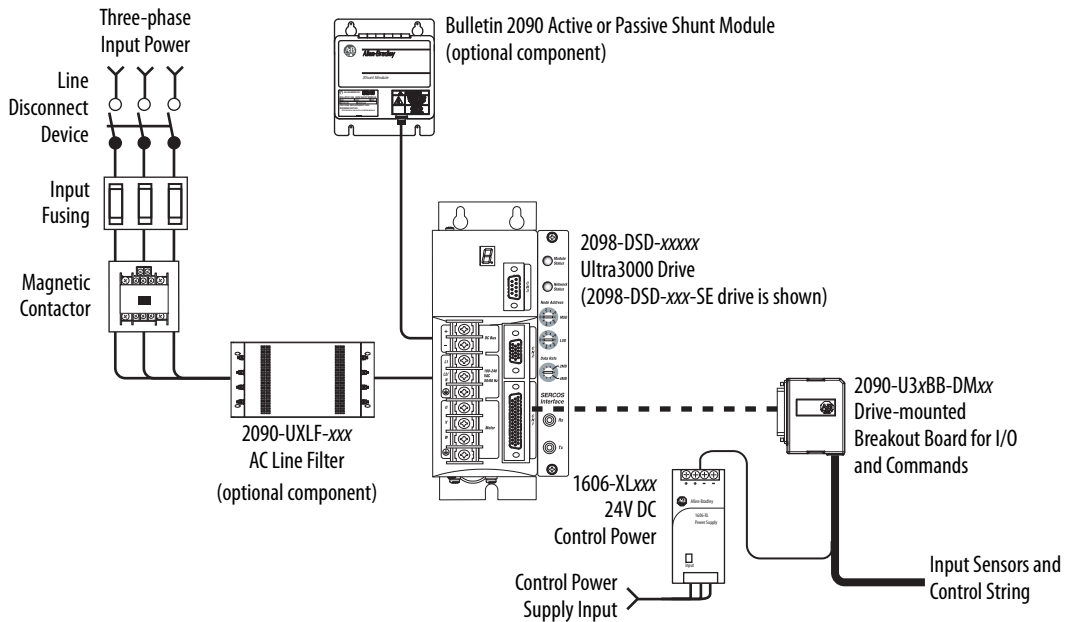


Optional Drive Accessories

| Drive Accessory | Description | Cat. No. |
|---|---|--------------------------------------|
| Drive to 1756-M02AE module interface cable | Single-axis (CN1) flying-lead drive to Logix module cable. | 2090-U3CC-D44xx |
| | Two-axis (CN1) pre-wired drive to Logix module cable. | 2090-U3AE-D44xx |
| Drive-mounted breakout board for serial interface (applies to flying-lead cables as an alternative to serial interface cable) | 9-pin (CN3) breakout board for serial interface. | 2090-UXBB-DM09 |
| Panel-mounted breakout boards (applies to flying-lead cables as an alternative to drive-mounted breakout boards) | DIN rail mounted terminal block and cable for 15-pin (CN2) motor feedback connections. | 2090-UXBK-D15xx |
| | DIN rail mounted terminal block and cable for 44-pin (CN1) I/O connections. | 2090-U3BK-D44xx |
| 2090 AC line filters | AC line conditioning for EMC. Applies to 200V-class drives. | 2090-UXLF-xxx |
| | AC line conditioning for EMC. Applies to 400V-class drives. | 2090-UXLF-HVxxx |
| 2090 shunt modules | Applies to 2098-DSD-HV030, 2098-DSD-HV050, and 2098-DSD-HV100 drives. ⁽¹⁾ | 2090-SRxxx-xx |
| | Applies to 2098-DSD-075 and 2098-DSD-150 drives. | 2090-UCSR-P900 |
| | Applies to 2098-DSD-030 drives. | 9101-1183 |
| | Applies to 2098-DSD-005, 2098-DSD-010, and 2098-DSD-020 drives. | 2090-UCSR-A300 |
| Resistive brake module (RBM) | Physically and electrically separate the drive power output from its corresponding motor. | 2090-XBxxx-xx |
| RBM interface cables | Motor power, RBM to drive. | 2090-UXNRB-10F1P3 |
| | | 2090-UXNRB-8F1P4 |
| | | 2090-UXNRB-6F1P5 |
| External auxiliary encoder | Allen-Bradley sine/cosine and incremental external encoders. | Bulletin 842HR, 844D, 847H, and 847T |

(1) Refer to Rockwell Automation Encompass™ partners for 2098-DSD-HV150 and 2098-DSD-HV220 passive shunt solutions.

Ultra3000 Input Power Example



Motor-end cable connector kits, for use when building your own cables, are also available. Refer to [Ultra3000 Digital Servo Drive Accessories](#) on [page 91](#) for detailed descriptions and specifications of optional servo drive accessories.

2090-Series Motor/Actuator Cables Overview

Feedback Cable Descriptions (standard, non-flex)

| Standard Cable Cat. No. | Description | Cable Configuration | | Motor/Actuator Connector |
|-------------------------|--|---------------------|-----------|--------------------------|
| | | Motor/Actuator End | Drive End | |
| 2090-CFBM7DF-CEAxx | <ul style="list-style-type: none"> Drive-end flying-leads (DF) High-resolution or resolver applications (CE) | | | SpeedTec DIN (M7) |
| 2090-CFBM7DD-CEAxx | <ul style="list-style-type: none"> Drive-end 15-pin connector (DD) High-resolution or resolver applications (CE) | | | |
| 2090-XXNFMF-Sxx | <ul style="list-style-type: none"> Drive-end flying-leads High-resolution or incremental applications | | | Threaded DIN (M4) |
| 2090-CFBM4E2-CATR | <ul style="list-style-type: none"> Drive-end bayonet (E2), transition (TR) cable ⁽¹⁾ Motor-end threaded DIN (M4) All feedback types (CA) | | | |
| 2090-CFBM6DF-CBAAxx | <ul style="list-style-type: none"> Drive-end flying-leads (DF) High-resolution, battery backup or Incremental applications (CB) | | | Circular Plastic (M6) |
| 2090-CFBM6DD-CCAxx | <ul style="list-style-type: none"> Drive-end 15-pin connector (DD) Incremental applications only (CC) | | | |

(1) Threaded DIN connector (motor end) and bayonet connector for 2090-XXNFMF-Sxx cable.

Feedback Cable Descriptions (continuous-flex)

| Continuous-flex Cable Cat. No. | Description | Cable Configuration | | Motor/Actuator Connector |
|--------------------------------|---|---------------------|-----------|--------------------------|
| | | Motor/Actuator End | Drive End | |
| 2090-CFBM7DF-CDAFxx | <ul style="list-style-type: none"> Drive-end flying-leads (DF) High-resolution or incremental applications (CD) | | | SpeedTec DIN (M7) |
| 2090-CFBM7DF-CEAFxx | <ul style="list-style-type: none"> Drive-end flying-leads (DF) High-resolution or resolver applications (CE) | | | |
| 2090-CFBM7DD-CEAFxx | <ul style="list-style-type: none"> Drive-end 15-pin connector (DD) High-resolution or resolver applications (CE) | | | |
| 2090-CFBM7E7-CDAFxx | <ul style="list-style-type: none"> Drive-end (male) connector, extension (E7) ⁽¹⁾ Motor-end SpeedTec DIN cable plug (M7) | | | Threaded DIN (M4) |
| 2090-CFBM7E7-CEAFxx | | | | |
| 2090-CFBM4DF-CDAFxx | <ul style="list-style-type: none"> Drive-end flying-leads High-resolution or incremental applications | | | |

(1) SpeedTec DIN connector (motor end) and male connector for extending SpeedTec or threaded DIN cable.

IMPORTANT Feedback cables with the CE designation, for example 2090-CFBM7DF-CEAxx, are intended for high-resolution encoder or resolver applications and have fewer conductors than feedback cables with the CD designation, for example 2090-CFBM7DF-CDAFxx, which are intended for high-resolution or incremental encoder applications.

Power/Brake Cable Descriptions (standard, non-flex)

| Standard Cable Cat. No. | Description | Cable Configuration | | Motor/Actuator Connector |
|-------------------------|---|---------------------|-----------|--------------------------|
| | | Motor/Actuator End | Drive End | |
| 2090-CPBM7DF-xxAAxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power/brake wires (PB) | | | SpeedTec DIN (M7) |
| 2090-CPWM7DF-xxAAxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power wires only (PW) | | | |
| 2090-XXNPMF-xxSxx | <ul style="list-style-type: none"> • Drive-end flying-leads • Power/brake wires | | | Threaded DIN (M4) |
| 2090-CPBM4E2-xxTR | <ul style="list-style-type: none"> • Drive-end bayonet (E2), transition (TR) cable ⁽¹⁾ • Motor-end threaded DIN (M4) • Power/brake wires (PB) | | | |
| 2090-CPWM4E2-xxTR | <ul style="list-style-type: none"> • Drive-end bayonet (E2), transition (TR) cable ⁽¹⁾ • Motor-end threaded DIN (M4) • Power wires only (PW) | | | |
| 2090-CPBM6DF-16AAxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power/brake wires (PB) | | | Circular Plastic (M6) |
| 2090-CPWM6DF-16AAxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power wires only (PW) | | | |

(1) Threaded DIN connector (motor end) and bayonet connector for 2090-XXNFMP-Sxx cable.

Power/Brake Cable Descriptions (continuous-flex)

| Continuous-flex Cable Cat. No. | Description | Cable Configuration | | Motor/Actuator Connector |
|--------------------------------|---|---------------------|-----------|--------------------------|
| | | Motor/Actuator End | Drive End | |
| 2090-CPBM7DF-xxAFxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power/brake wires (PB) | | | SpeedTec DIN (M7) |
| 2090-CPWM7DF-xxAFxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power wires only (PW) | | | |
| 2090-CPBM7E7-xxAFxx | <ul style="list-style-type: none"> • Drive-end (male) connector, extension (E7) ⁽¹⁾ • Motor-end SpeedTec DIN cable plug (M7) | | | Threaded DIN (M4) |
| 2090-CPBM4DF-xxAFxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power/brake wires (PB) | | | |
| 2090-CPWM4DF-xxAFxx | <ul style="list-style-type: none"> • Drive-end flying-leads (DF) • Power wires only (PW) | | | |

(1) SpeedTec DIN connector (motor end) and male connector for extending SpeedTec or threaded DIN cable.

Ultra3000 (200V class) Drives with MP-Series Low Inertia Motors

This section provides system combination information for the Ultra3000 (200V class) drives when matched with MP-Series low-inertia motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

IMPORTANT The MP-Series low-inertia motors on this page are equipped with DIN connectors (specified by 7 in the catalog number) and are not compatible with cables designed for motors equipped with bayonet connectors (specified by 2 in the catalog number). The motors with bayonet connectors (for example, MPL-A310P-xx2xAA) are being discontinued and require 2090-XXNxMP (bayonet) cables. For help with migration or to select bayonet cables, contact your Rockwell Automation® sales representative.

Bulletin MPL Motor Cable Combinations

| Motor Cat. No. (200V class) | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|---|
| MPL-A1510V-xx7xAA, MPL-A1520U-xx7xAA, MPL-A1530U-xx7xAA | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx ^{(2) (3)} or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPL-A210V-xx7xAA, MPL-A220T-xx7xAA, MPL-A230P-xx7xAA | | |
| MPL-A310F-xx7xAA, MPL-A310P-xx7xAA, MPL-A320H-xx7xAA, MPL-A320P-xx7xAA, MPL-A330P-xx7xAA | | |
| MPL-A420P-xx7xAA, MPL-A430H-xx7xAA | | |
| MPL-A4530F-xx7xAA, MPL-A4540C-xx7xAA | | |
| MPL-A430P-xx7xAA | 2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) ⁽⁴⁾ 2090-CFBM7DF-CDAFxx (continuous-flex) Incremental Feedback |
| MPL-A4530K-xx7xAA, MPL-A4540F-xx7xAA, MPL-A4560F-xx7xAA | | |
| MPL-A520K-xx7xAA | 2090-CPxM7DF-10AAxx (standard, non-flex) 2090-CPxM7DF-10AFxx (continuous-flex) | |
| MPL-A540K-xx7xAA, MPL-A560F-xx7xAA | 2090-CPxM7DF-08AAxx (standard, non-flex) 2090-CPxM7DF-08AFxx (continuous-flex) | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

(2) Applies to Ultra3000 drives and MPL-A3xxx-M/S...MPL-A5xxx-M/S motors with absolute high-resolution feedback.

(3) Applies to Ultra3000/5000 drives and MPL-A15xxx-V/E...MPL-A2xxx-V/E motors with absolute high-resolution feedback.

(4) Applies to Ultra3000 drives and MPL-A15xxx-H...MPL-A45xxx-H motors with incremental feedback.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD009](#), for standard cable lengths.

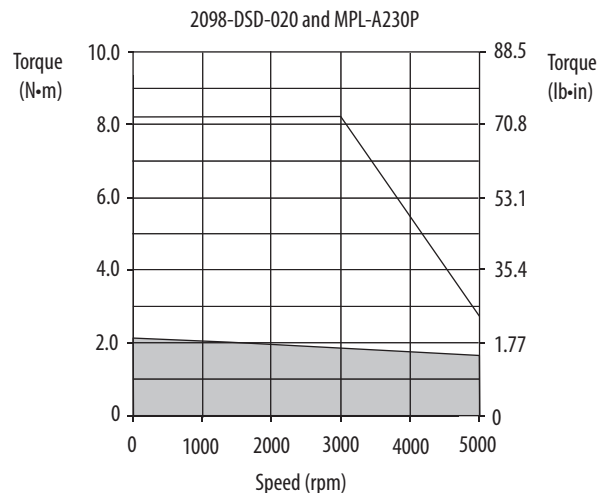
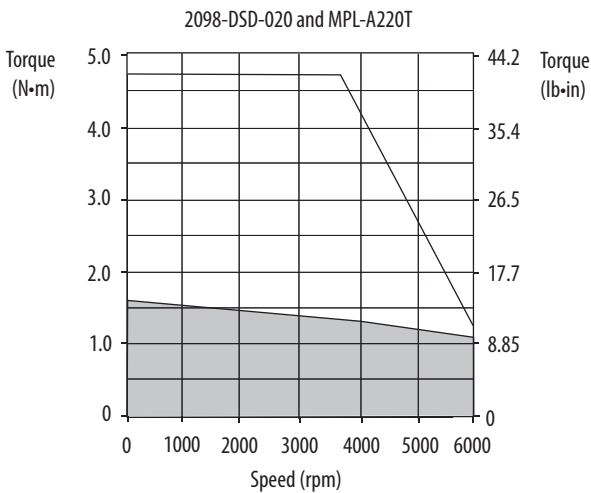
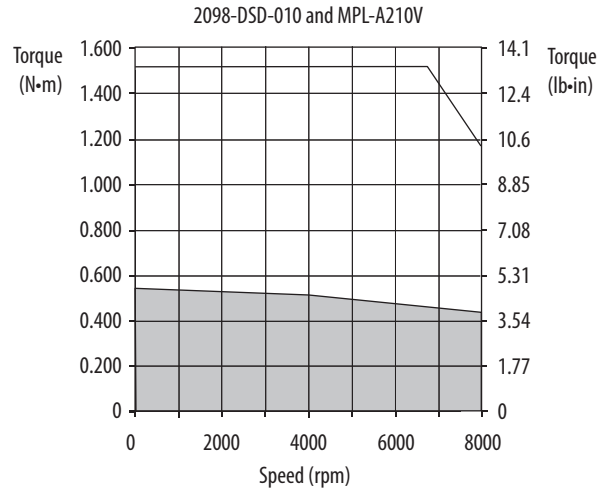
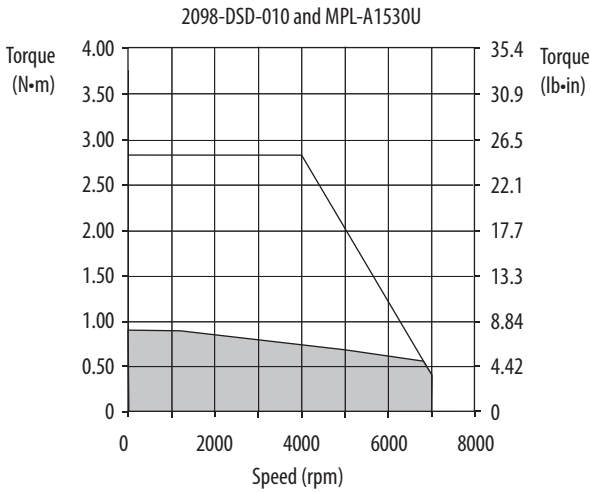
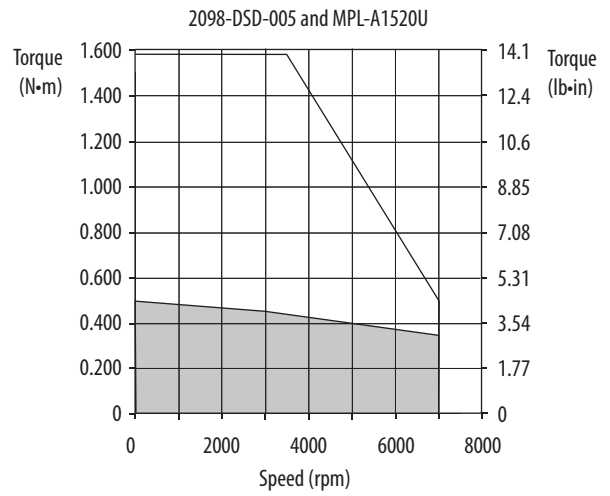
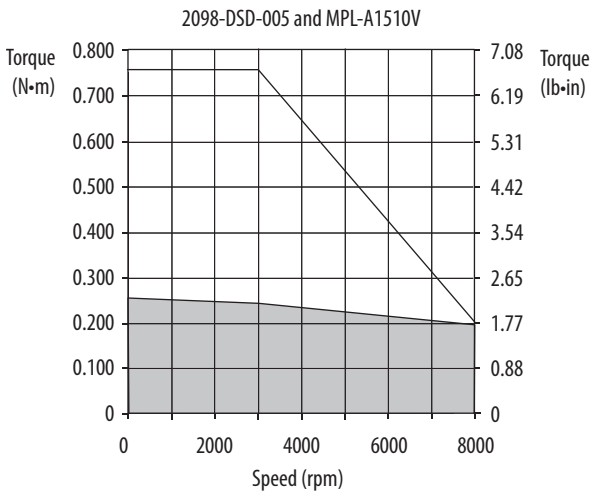
Bulletin MPL Motor Performance Specifications with Ultra3000 (200V class) Drives

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 200V-class Drives |
|--------------|----------------|---|---|-------------------------------------|---|--------------------------|--------------------------------|
| MPL-A1510V | 8000 | 1.05 | 0.26 (2.3) | 3.40 | 0.77 (6.8) | 0.16 | 2098-DSD-005 |
| MPL-A1520U | 7000 | 1.80 | 0.49 (4.3) | 6.10 | 1.58 (13.9) | 0.27 | 2098-DSD-005 |
| MPL-A1530U | 7000 | 2.82 | 0.90 (8.0) | 10.1 | 2.82 (24.9) | 0.39 | 2098-DSD-010 |
| MPL-A210V | 8000 | 3.09 | 0.55 (4.8) | 10.2 | 1.52 (13.5) | 0.37 | 2098-DSD-010 |
| MPL-A220T | 6000 | 4.54 | 1.61 (14.2) | 15.5 | 4.74 (41.9) | 0.62 | 2098-DSD-020 |
| MPL-A230P | 5000 | 5.40 | 2.10 (18) | 23.0 | 8.2 (72.5) | 0.86 | 2098-DSD-020 |
| MPL-A310F | 3000 | 2.50 | 1.24 (11) | 7.5 | 2.94 (26) | 0.46 | 2098-DSD-005 |
| | | 3.20 | 1.58 (14) | 9.3 | 3.61 (32) | | 2098-DSD-010 |

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 200V-class Drives |
|--------------|----------------|---|---|-------------------------------------|---|--------------------------|--------------------------------|
| MPL-A310P | 5000 | 2.50 | 0.79 (6.9) | 7.5 | 1.92 (17) | 0.73 | 2098-DSD-005 |
| | | 4.85 | 1.58 (14) | 14 | 3.61 (32) | | 2098-DSD-010 |
| MPL-A320H | 3500 | 5.0 | 2.48 (22) | 15 | 6.44 (57) | 1.0 | 2098-DSD-010 |
| | | 6.1 | 3.05 (27) | 19.3 | 7.91 (70) | | 2098-DSD-020 |
| MPL-A320P | 5000 | 5.0 | 1.69 (15) | 15 | 3.95 (35) | 1.3 | 2098-DSD-010 |
| | | 9.0 | 3.05 (27) | 29.5 | 7.91 (70) | | 2098-DSD-020 |
| MPL-A330P | 5000 | 12.0 | 4.18 (37) | 30 | 9.60 (85) | 1.8 | 2098-DSD-030 |
| | | | | 38 | 11.1 (98) | | 2098-DSD-075 |
| MPL-A420P | 5000 | 12.7 | 4.74 (42) | 30 | 10.2 (90) | 2.0 | 2098-DSD-030 |
| | | | | 46 | 13.5 (120) | | 2098-DSD-075 |
| MPL-A430H | 3500 | 12.2 | 6.21 (55) | 30 | 14.7 (130) | 1.8 | 2098-DSD-030 |
| | | | | 45 | 19.8 (175) | | 2098-DSD-075 |
| MPL-A430P | 5000 | 15.0 | 5.42 (48) | 30 | 10.2 (90) | 2.2 | 2098-DSD-030 |
| | | 16.8 | 5.99 (53) | 67 | 19.8 (175) | | 2098-DSD-075 |
| MPL-A4530F | 2800 | 13.4 | 8.36 (74) | 30 | 17.5 (155) | 1.9 | 2098-DSD-030 |
| | | | | 42 | 20.3 (180) | | 2098-DSD-075 |
| MPL-A4530K | 4000 | 15.0 | 6.21 (55) | 30 | 11.3 (100) | 2.5 | 2098-DSD-030 |
| | | 19.5 | 8.13 (72) | 62 | 20.3 (180) | | 2098-DSD-075 |
| MPL-A4540C | 1500 | 9.4 | 10.2 (90) | 29 | 27.1 (240) | 1.5 | 2098-DSD-020 |
| MPL-A4540F | 3000 | 15.0 | 8.25 (73) | 30 | 15.8 (140) | 2.6 | 2098-DSD-030 |
| | | 18.4 | 10.2 (90) | 58 | 27.1 (240) | | 2098-DSD-075 |
| MPL-A4560F | 3000 | 22.0 | 14.1 (125) | 66 | 34.4 (305) | 3.0 | 2098-DSD-075 |
| MPL-A520K | 4000 | 23.3 | 10.7 (95.0) | 65 | 24.3 (215) | 3.5 | 2098-DSD-075 |
| MPL-A540K | 4000 | 41.5 | 19.4 (172) | 120 | 48.6 (430) | 5.5 | 2098-DSD-150 |
| MPL-A560F | 3000 | 42.0 | 26.8 (237) | | 61.0 (540) | 5.3 | 2098-DSD-150 |

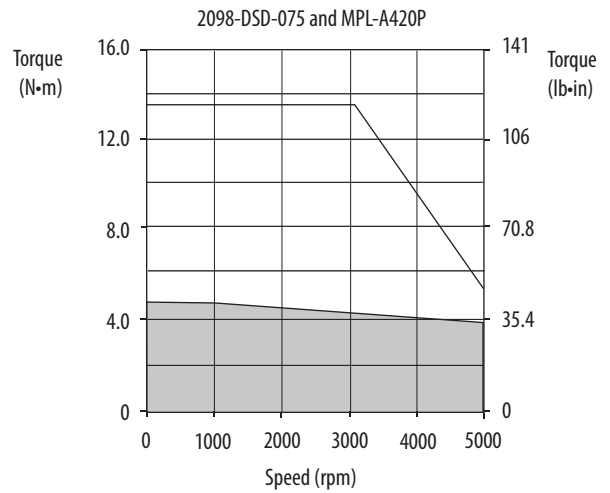
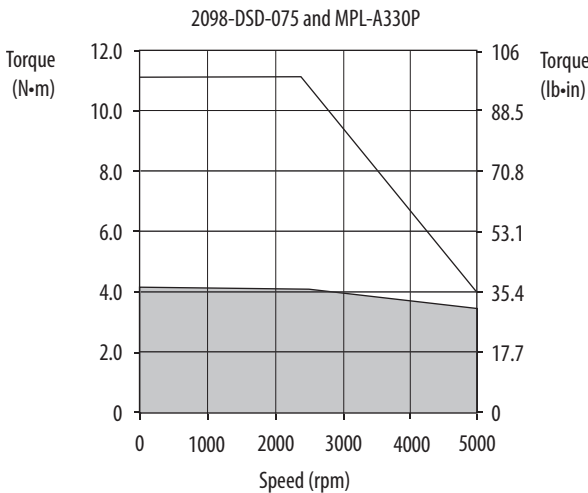
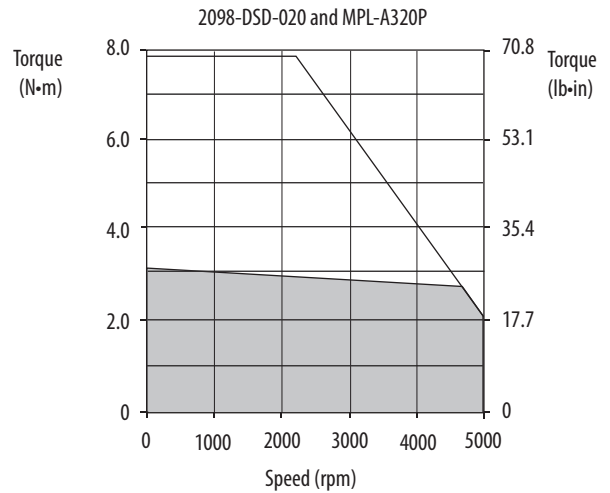
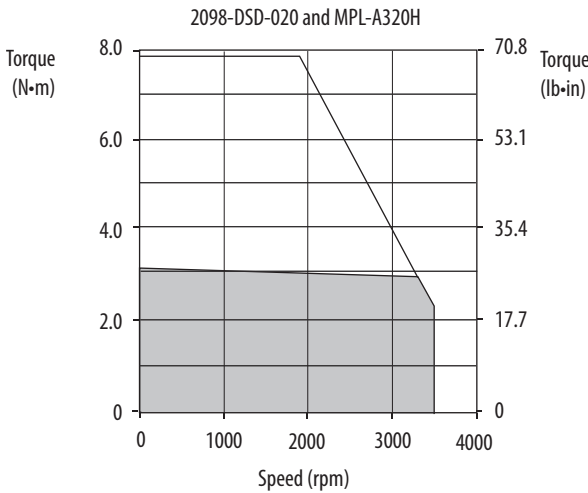
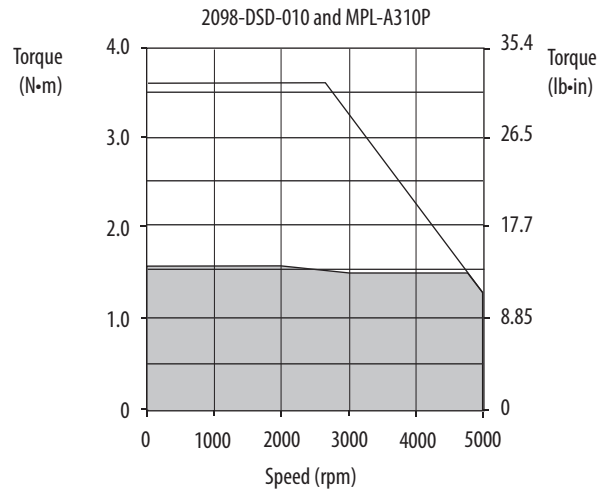
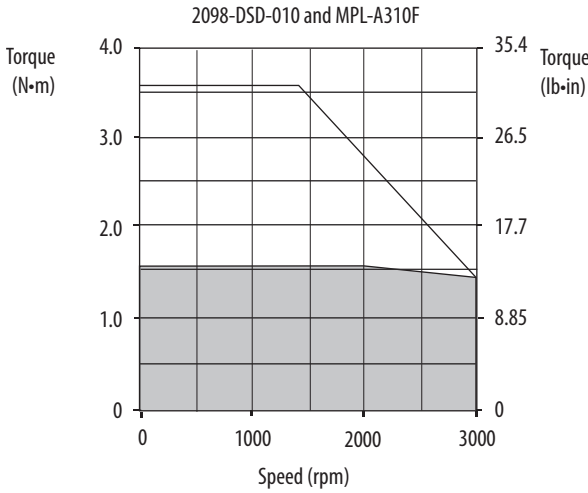
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/MP-Series Low Inertia Motor Curves



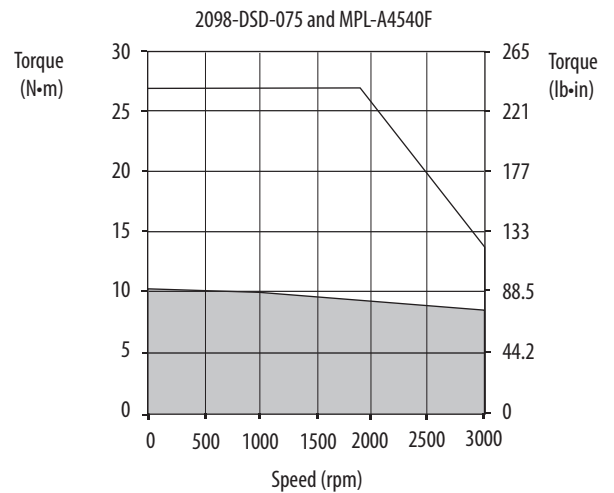
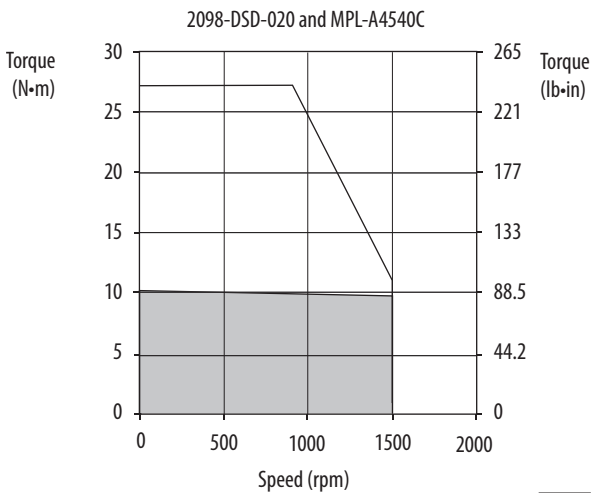
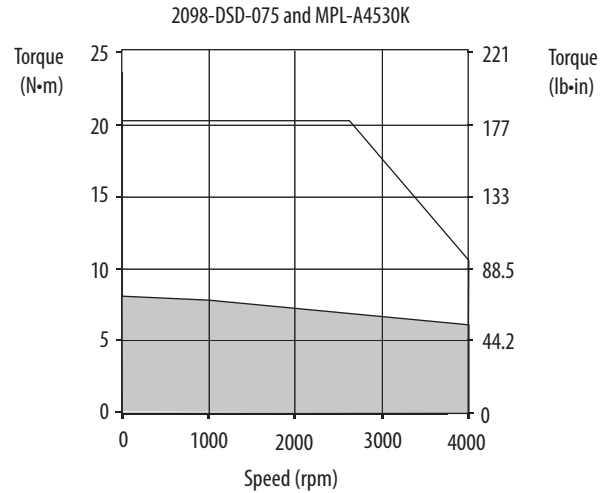
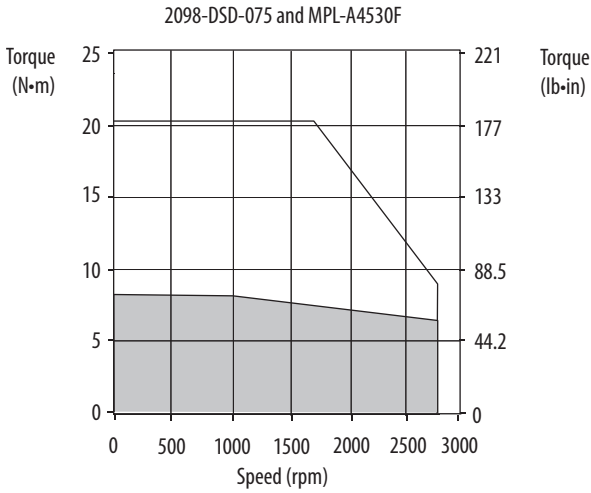
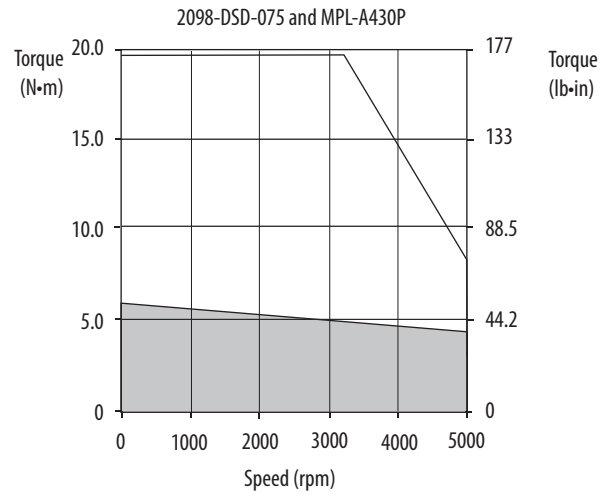
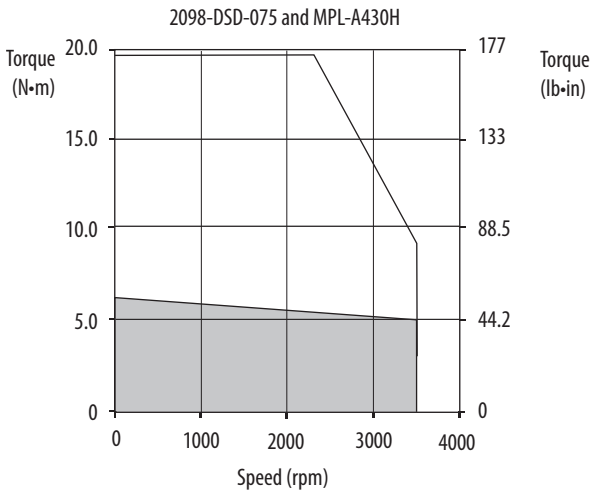
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 = Continuous operating region

Ultra3000 (200V class) Drives/MP-Series Low Inertia Motor Curves (continued)



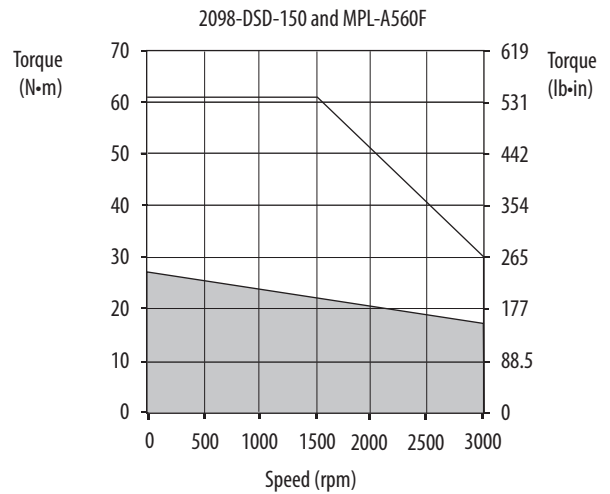
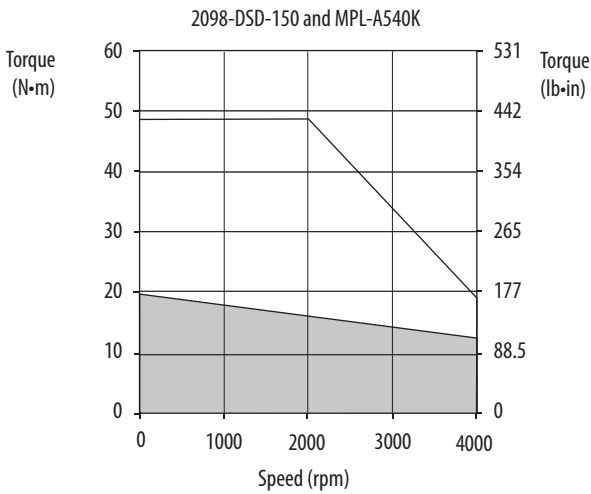
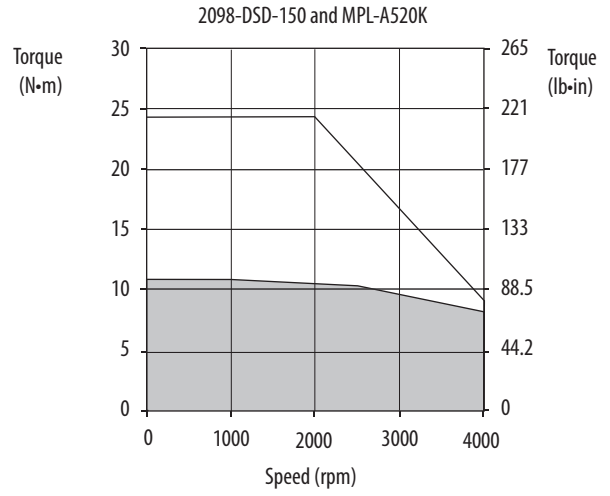
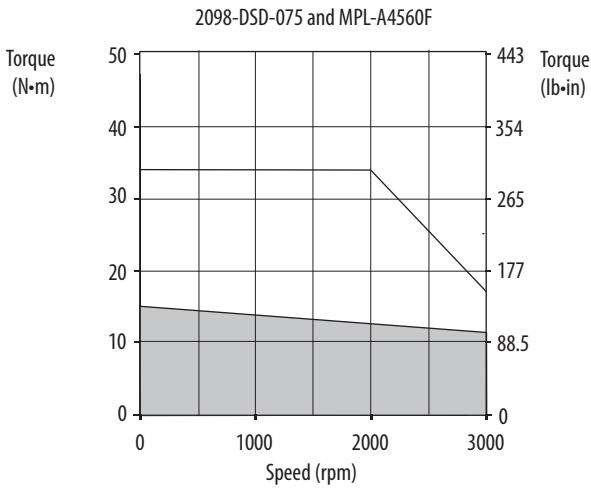
= Intermittent operating region
 = Continuous operating region

Ultra3000 (200V class) Drives/MP-Series Low Inertia Motor Curves (continued)



= Intermittent operating region
 = Continuous operating region

Ultra3000 (200V class) Drives/MP-Series Low Inertia Motor Curves (continued)



= Intermittent operating region
 = Continuous operating region

Ultra3000 (400V class) Drives with MP-Series Low Inertia Motors

This section provides system combination information for the Ultra3000 (400V class) drives when matched with MP-Series low-inertia motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

IMPORTANT The MP-Series low-inertia motors on this page are equipped with DIN connectors (specified by 7 in the catalog number) and are not compatible with cables designed for motors equipped with bayonet connectors (specified by 2 in the catalog number). The motors with bayonet connectors (for example, MPL-A310P-xx2xAA) are being discontinued and require 2090-XXNxMP (bayonet) cables. For help with migration or to select bayonet cables, contact your Rockwell Automation sales representative.

Bulletin MPL Motor Cable Combinations

| Motor Cat. No. (400V class) | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|---|---|--|
| MPL-B1510V-xx7xAA, MPL-B1520U-xx7xAA, MPL-B1530U-xx7xAA | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx or ⁽²⁾ ⁽³⁾ 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPL-B210V-xx7xAA, MPL-B220T-xx7xAA, MPL-B230P-xx7xAA | | |
| MPL-B310P-xx7xAA, MPL-B320P-xx7xAA, MPL-B330P-xx7xAA | | |
| MPL-B420P-xx7xAA, MPL-B430P-xx7xAA | | |
| MPL-B4530F-xx7xAA, MPL-B4530K-xx7xAA, MPL-B4540F-xx7xAA, MPL-B4560F-xx7xAA | | |
| MPL-B520K-xx7xAA | 2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) ⁽⁴⁾ 2090-CFBM7DF-CDAFxx (continuous-flex) Incremental Feedback |
| MPL-B540D-xx7xAA, MPL-B540K-xx7xAA, MPL-B560F-xx7xAA | | |
| MPL-B580F-xx7xAA, MPL-B580J-xx7xAA, MPL-B640F-xx7xAA ⁽⁵⁾ | 2090-CPxM7DF-10AAxx (standard, non-flex) 2090-CPxM7DF-10AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) ⁽⁴⁾ 2090-CFBM7DF-CDAFxx (continuous-flex) Incremental Feedback |
| MPL-B660F-xx7xAA, MPL-B680D-xx7xAA, ⁽⁵⁾ MPL-B960B-xx7xAA, MPL-B980B-xx7xAA ⁽⁵⁾ | 2090-CPxM7DF-08AAxx (standard, non-flex) 2090-CPxM7DF-08AFxx (continuous-flex) | |
| MPL-B680F-xx7xAA, MPL-B860D-xx7xAA, MPL-B880C-xx7xAA, | 2090-CPBM7DF-06AAxx (standard, non-flex) | |
| MPL-B880D-xx7xAA, MPL-B960C-xx7xAA, MPL-B980C-xx7xAA, | 2090-CPBM7DF-04AAxx (standard, non-flex) | |
| | | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

(2) Applies to Ultra3000 drives and MPL-B3xxx-M/S...MPL-B9xxx-M/S motors with absolute high-resolution feedback.

(3) Applies to Ultra3000/5000 drives and MPL-B15xxx-V/E...MPL-B2xxx-V/E motors with absolute high-resolution feedback.

(4) Applies to Ultra3000 drives and MPL-B15xxx-H...MPL-B45xxx-H motors with incremental feedback.

(5) For applications that use these five motors (catalog numbers MPL-Bxxx-xx7AA with the brake option) where the power cable length exceeds 50 m (164 ft), 2090-CPBM7DF-06AAxx (6 AWG) cable is required. Motors without the brake option (catalog numbers MPL-Bxxx-xx72AA) can use the cable size as specified in the table regardless of cable length.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Bulletin MPL Motor Performance Specifications with Ultra3000 (400V class) Drives

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A (0-pk) | System Continuous Stall Torque N·m (lb-in) | System Peak Stall Current A (0-pk) | System Peak Stall Torque N·m (lb-in) | Motor Rated Output kW | Ultra3000 400V-class Drives |
|--------------|----------------|--|--|------------------------------------|--------------------------------------|-----------------------|-----------------------------|
| MPL-B1510V | 8000 | 0.95 | 0.26 (2.3) | 3.10 | 0.77 (6.80) | 0.16 | 2098-DSD-HV030 |
| MPL-B1520U | 7000 | 1.80 | 0.49 (4.3) | 6.10 | 1.58 (13.9) | 0.27 | 2098-DSD-HV030 |
| MPL-B1530U | 7000 | 2.0 | 0.90 (8.0) | 7.20 | 2.82 (24.9) | 0.39 | 2098-DSD-HV030 |
| MPL-B210V | 8000 | 1.75 | 0.55 (4.8) | 5.80 | 1.52 (13.5) | 0.37 | 2098-DSD-HV030 |

Bulletin MPL Motor Performance Specifications with Ultra3000 (400V class) Drives (continued)

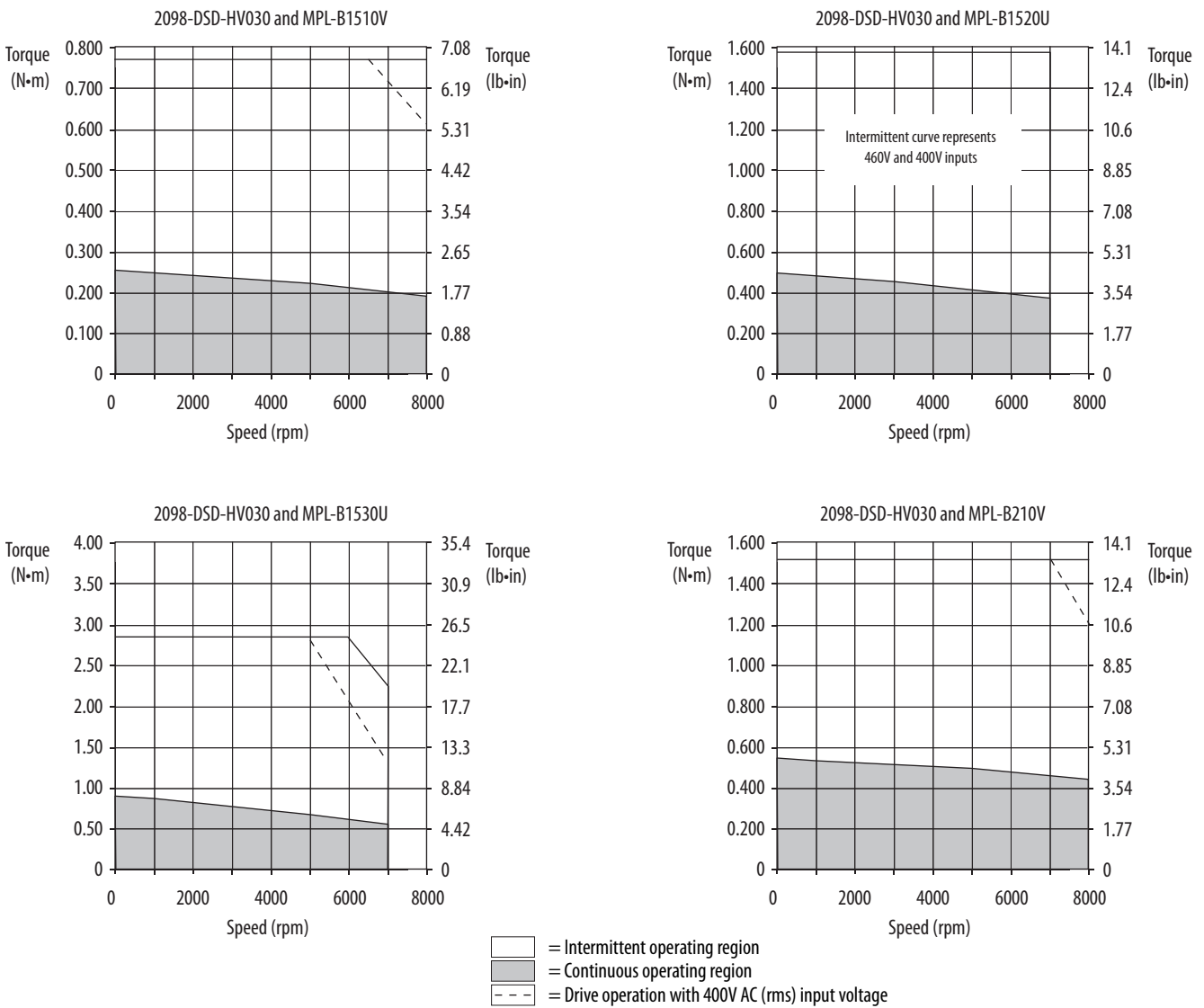
| Rotary Motor | Speed, max rpm | System Continuous Stall Current A (0-pk) | System Continuous Stall Torque N·m (lb-in) | System Peak Stall Current A (0-pk) | System Peak Stall Torque N·m (lb-in) | Motor Rated Output kW | Ultra3000 400V-class Drives |
|--------------|-------------------|--|--|--|--|-----------------------------|--------------------------------|
| MPL-B220T | 6000 | 3.30 | 1.61 (14.2) | 11.3 | 4.74 (41.9) | 0.62 | 2098-DSD-HV030 |
| MPL-B230P | 5000 | 2.60 | 2.10 (18.6) | 11.3 | 8.20 (73.0) | 0.86 | 2098-DSD-HV030 |
| MPL-B310P | 5000 | 2.4 | 1.58 (14) | 7.1 | 3.61 (32) | 0.77 | 2098-DSD-HV030 |
| MPL-B320P | 5000 | 4.5 | 2.94 (26) | 13.0 | 7.91 (70) | 1.5 | 2098-DSD-HV030 |
| MPL-B330P | 5000 | 6.1 | 4.18 (37) | 14.0 | 8.59 (76) | 1.8 | 2098-DSD-HV030 |
| | | | | 17.0 | 11.1 (98) | | 2098-DSD-HV050 |
| MPL-B420P | 5000 | 6.4 | 4.74 (42) | 14.0 | 8.59 (76) | 1.9 | 2098-DSD-HV030 |
| | | | | 22.0 | 12.9 (114) | | 2098-DSD-HV050 |
| | | | | 23.0 | 13.5 (120) | | 2098-DSD-HV100 |
| MPL-B430P | 5000 | 9.2 | 6.55 (58) | 22.0 | 12.9 (114) | 2.2 | 2098-DSD-HV050 |
| | | | | 31.0 | 19.8 (175) | | 2098-DSD-HV100 |
| MPL-B4530F | 3000 | 7.0 | 8.25 (73) | 14.0 | 13.5 (120) | 2.1 | 2098-DSD-HV030 |
| | | 7.1 | 8.36 (74) | 21.0 | 20.3 (180) | | 2098-DSD-HV050 |
| MPL-B4530K | 4000 | 11.0 | 8.36 (74) | 22.0 | 14.5 (128) | 2.6 | 2098-DSD-HV050 |
| | | | | 31.0 | 20.3 (180) | | 2098-DSD-HV100 |
| MPL-B4540F | 3000 | 9.1 | 10.2 (90) | 22.0 | 22.0 (195) | 2.6 | 2098-DSD-HV050 |
| | | | | 26.0 | 27.1 (240) | | 2098-DSD-HV100 |
| MPL-B4560F | 3000 | 11.0 | 13.1 (116) | 22.0 | 21.0 (186) | 3.2 | 2098-DSD-HV050 |
| | | 11.8 | 14.1 (125) | 36.0 | 34.4 (305) | | 2098-DSD-HV100 |
| MPL-B520K | 4000 | 11.0 | 10.3 (91) | 22.0 | 15.8 (140) | 3.5 | 2098-DSD-HV050 |
| | | 11.5 | 10.7 (95) | 33.0 | 23.2 (205) | | 2098-DSD-HV100 |
| MPL-B540D | 2000 | 10.5 | 19.4 (172) | 22.0 | 39.2 (346) | 3.4 | 2098-DSD-HV050 |
| | | | | 23.0 | 41.0 (362) | | 2098-DSD-HV100 |
| MPL-B540K | 4000 | 20.5 | 19.4 (172) | 46.0 | 33.9 (300) | 5.4 | 2098-DSD-HV100 |
| | | | | 60.0 | 45.2 (400) | | 2098-DSD-HV150 |
| MPL-B560F | 3000 | 20.6 | 26.8 (237) | 46.0 | 50.4 (446) | 5.5 | 2098-DSD-HV100 |
| | | | | 68.0 | 67.8 (600) | | 2098-DSD-HV150 |
| MPL-B580F | 3000 | 26.0 | 34.0 (301) | 68.0 | 70.5 (623) | 7.1 | 2098-DSD-HV150 |
| | | | | 94.0 | 87.0 (769) | | 2098-DSD-HV220 |
| MPL-B580J | 3800 | 32.0 | 34.0 (301) | 68.0 | 62.4 (552) | 7.9 | 2098-DSD-HV150 |
| | | | | 94.0 | 81.0 (717) | | 2098-DSD-HV220 |
| MPL-B640F | 3000 | 32.1 | 36.7 (325) | 65.0 | 72.3 (640) | 6.1 | 2098-DSD-HV220 |
| MPL-B660F | 3000 | 34.0 | 40.7 (360) | 68.0 | 73.4 (650) | 6.1 | 2098-DSD-HV150 |
| | | 38.5 | 48.0 (425) | 94.0 | 96.0 (850) | | 2098-DSD-HV220 |
| MPL-B680D | 2000 | 34.0 | 62.8 (556) | 94.0 | 154.2 (1365) | 9.3 | 2098-DSD-HV220 |
| MPL-B680F | 3000 | 48.0 | 58.2 (515) | 94.0 | 101.7 (900) | 7.5 | 2098-DSD-HV220 |
| MPL-B860D | 2000 | 47.5 | 83.1 (735) | 94.0 | 151 (1335) | 12.5 | 2098-DSD-HV220 |
| MPL-B880C | 1500 | 47.5 | 109.9 (973) | 94.0 | 197 (1742) | 12.6 | 2098-DSD-HV220 |
| MPL-B880D | 2000 | 47.0 | 77.4 (685) | 94.0 | 144 (1275) | 12.6 | 2098-DSD-HV220 |

Bulletin MPL Motor Performance Specifications with Ultra3000 (400V class) Drives (continued)

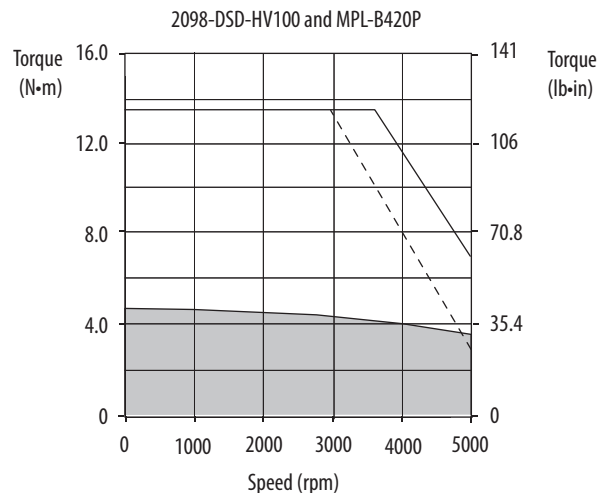
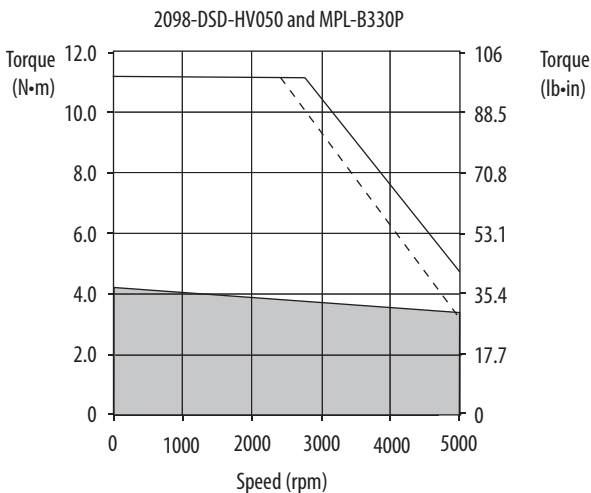
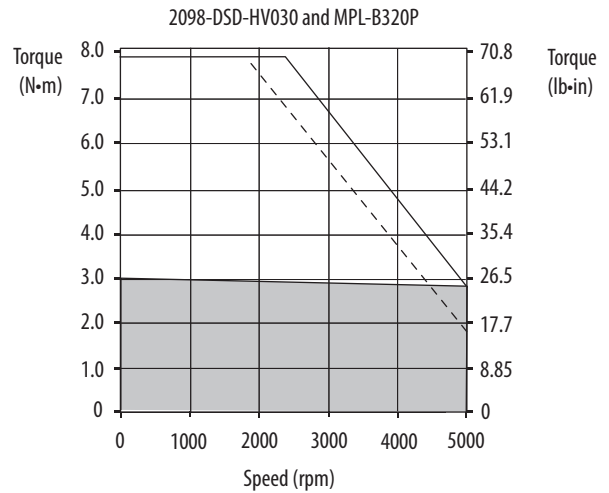
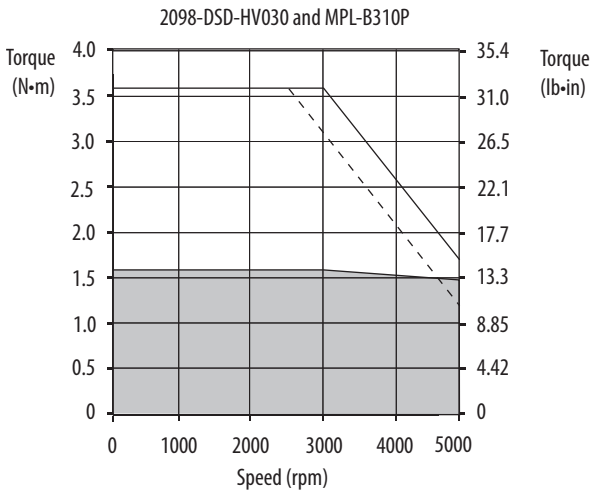
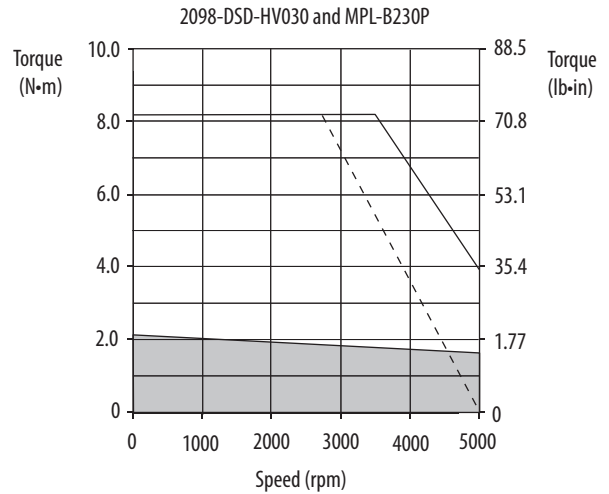
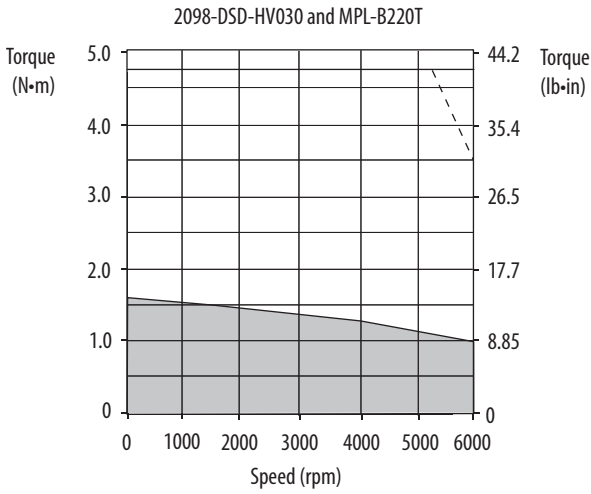
| Rotary Motor | Speed, max rpm | System Continuous Stall Current A (0-pk) | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A (0-pk) | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 400V-class Drives |
|--------------|----------------|--|--|------------------------------------|--------------------------------------|-----------------------|-----------------------------|
| MPL-B960B | 1200 | 42.5 | 130 (1150) | 94.0 | 231 (2050) | 12.7 | 2098-DSD-HV220 |
| MPL-B960C | 1500 | 41.5 | 112 (990) | 94.0 | 181 (1600) | 14.8 | 2098-DSD-HV220 |
| MPL-B980B | 1000 | 40.0 | 163 (1440) | 94.0 | 278 (2460) | 15.2 | 2098-DSD-HV220 |
| MPL-B980C | 1500 | 47.5 | 118.6 (1050) | 94.0 | 213 (1890) | 16.8 | 2098-DSD-HV220 |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (400V class) Drives/MP-Series Low Inertia Motor Curves

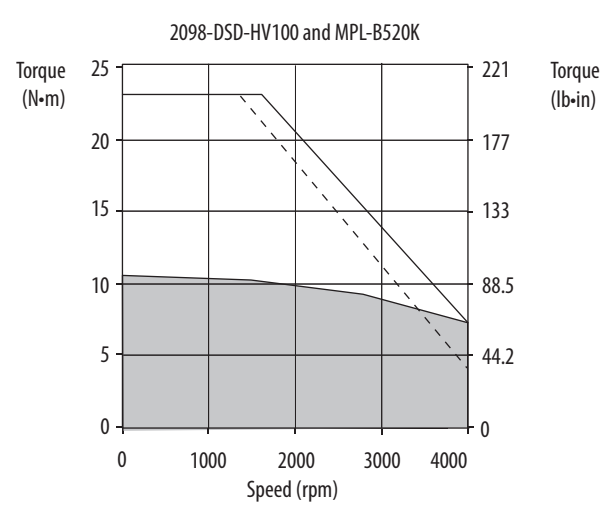
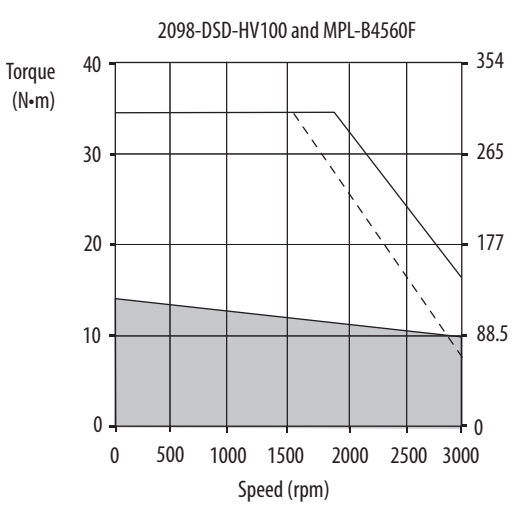
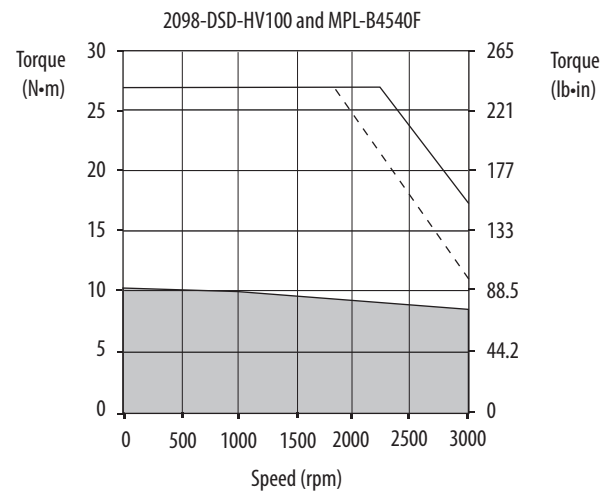
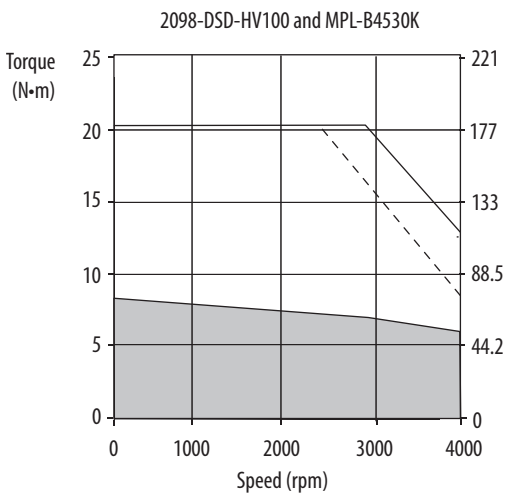
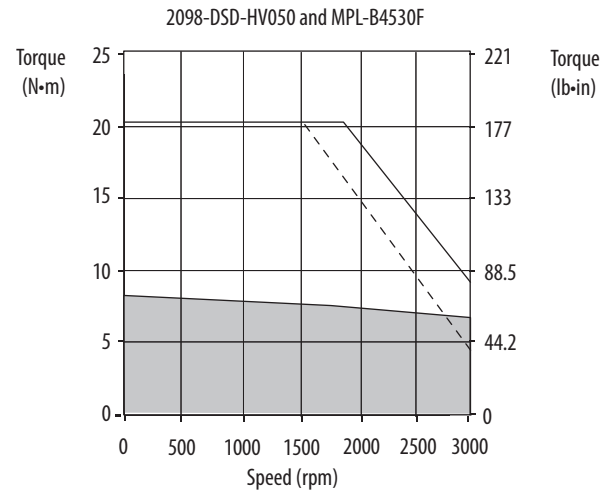
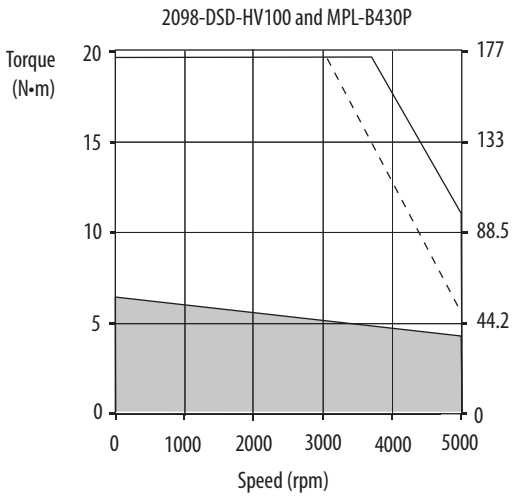


Ultra3000 (400V class) Drives/MP-Series Low Inertia Motors (continued)



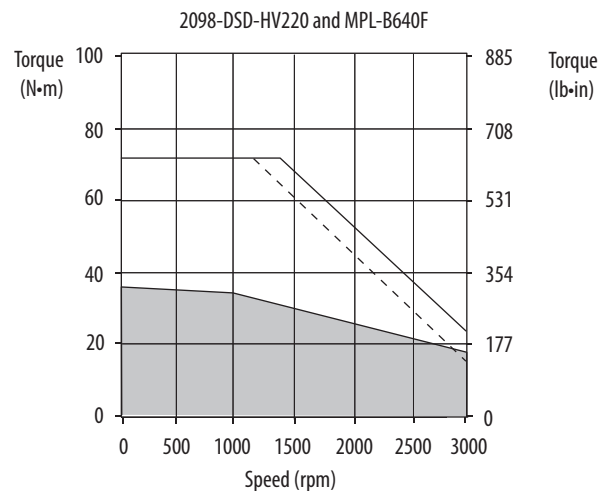
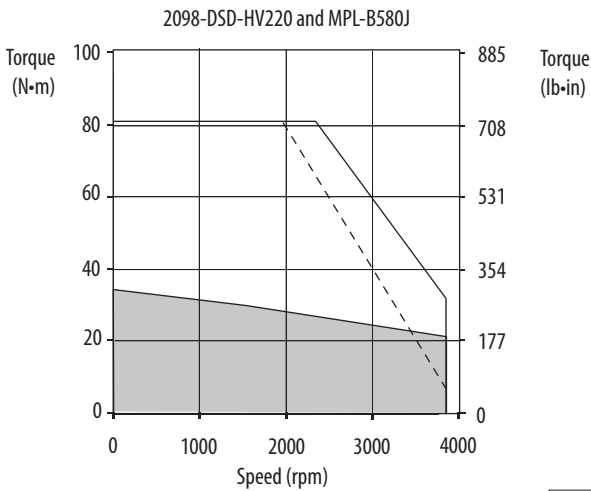
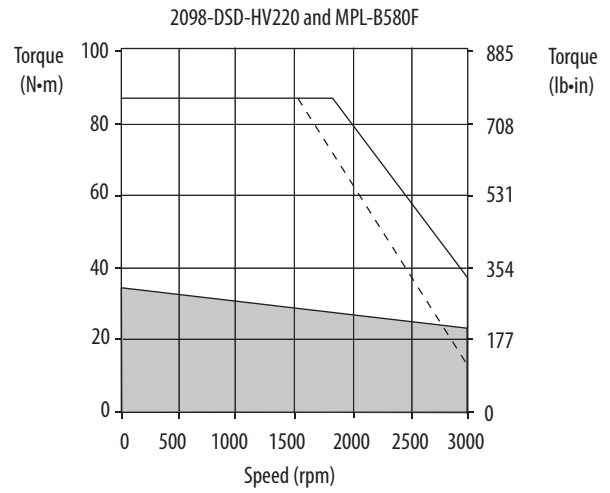
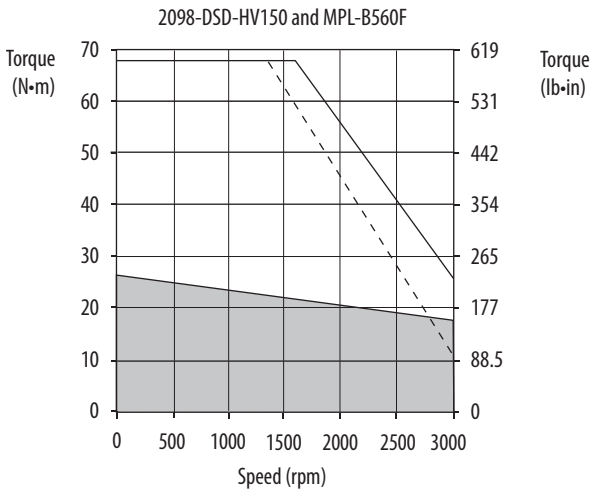
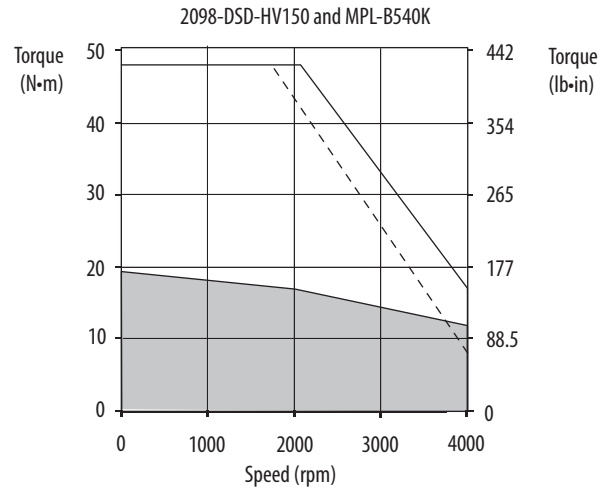
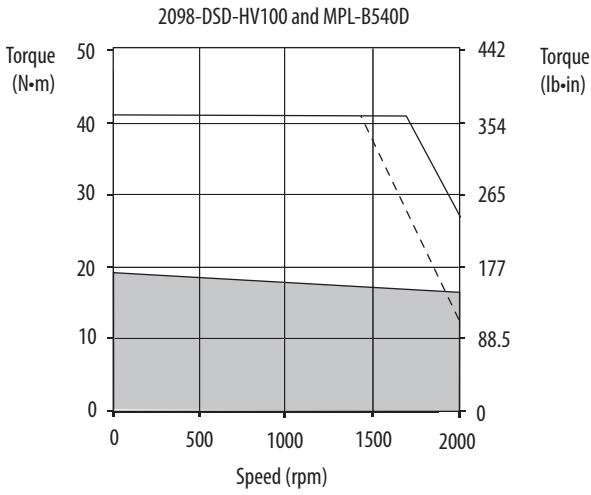
= Intermittent operating region
 = Continuous operating region
 = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Low Inertia Motors (continued)



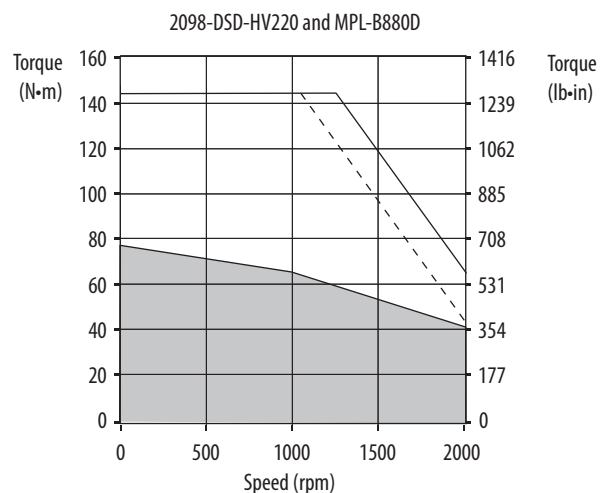
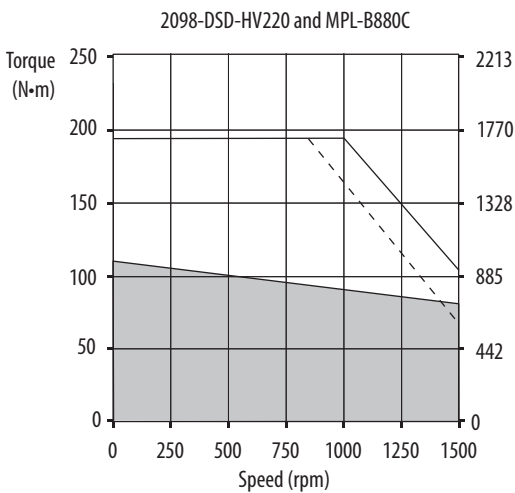
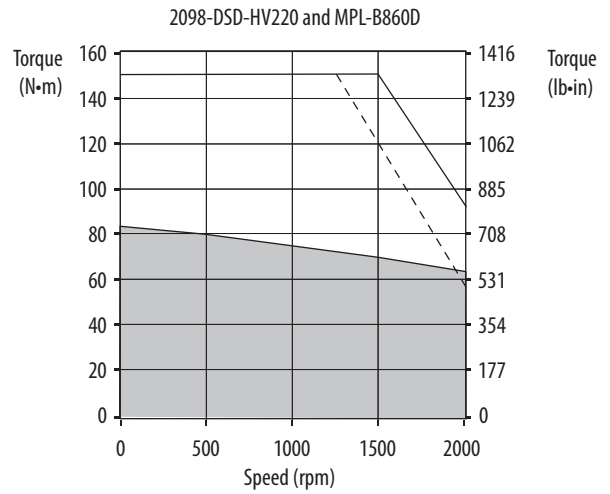
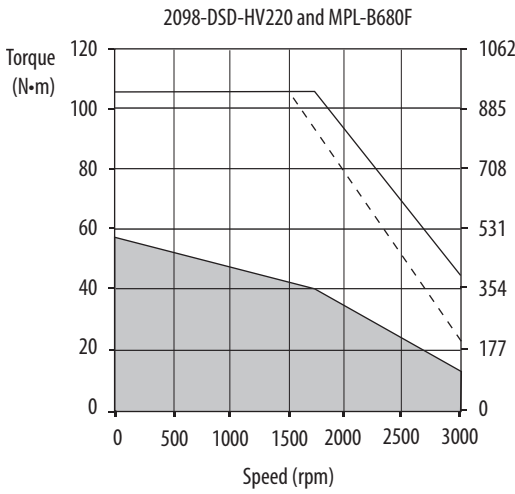
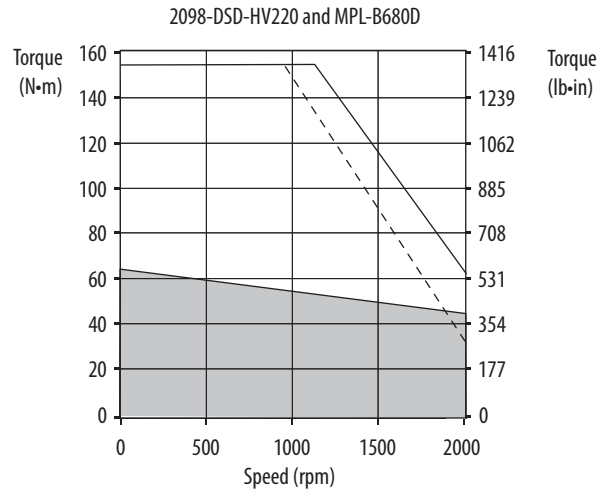
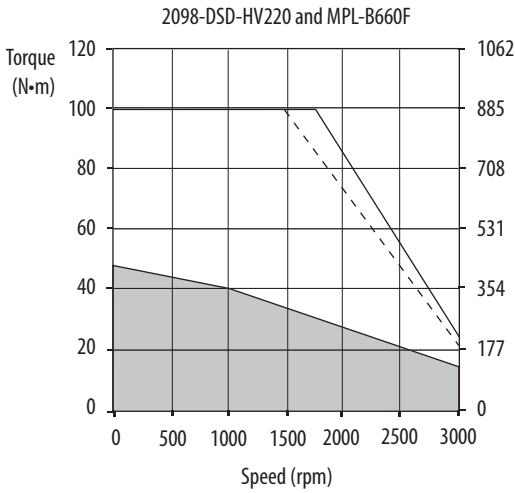
= Intermittent operating region
 = Continuous operating region
 = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Low Inertia Motors (continued)



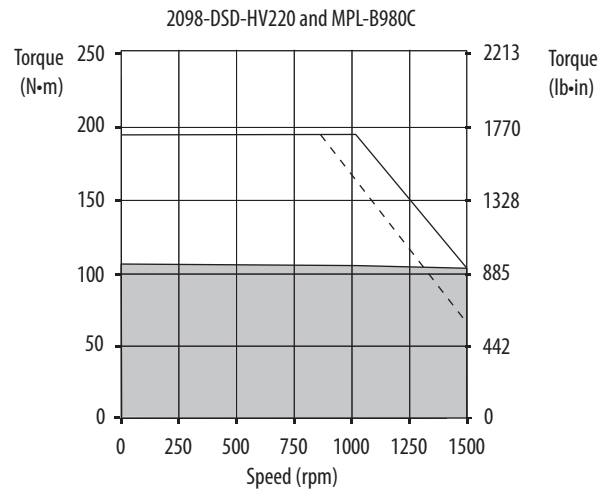
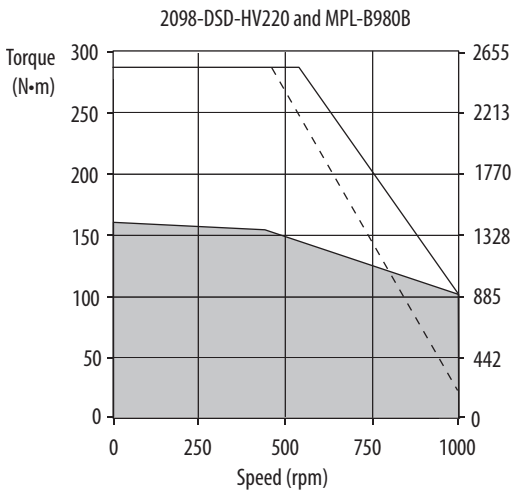
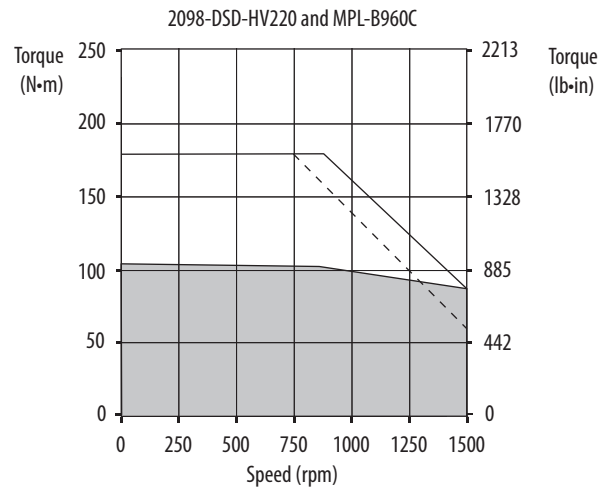
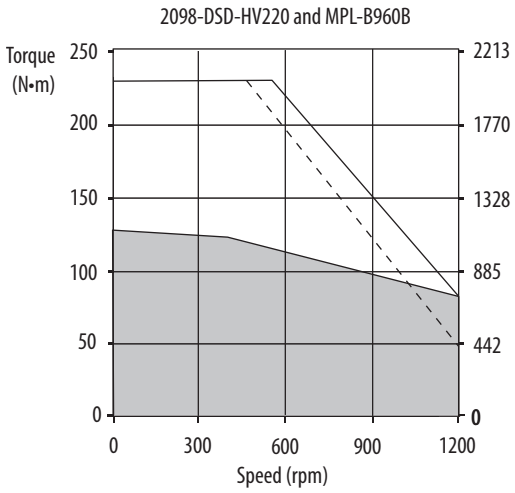
- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Low Inertia Motors (continued)



- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Low Inertia Motors (continued)



- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (200V class) Drives with MP-Series Medium Inertia Motors

This section provides system combination information for the Ultra3000 (200V class) drives when matched with MP-Series medium-inertia motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPM Motor Cable Combinations

| Motor Cat. No. (200V class) | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| MPM-A1151M, MPM-A1152F, MPM-A1153F | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPM-A1302F | 2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex) | |
| MPM-A1304F | 2090-CPxM7DF-12AAxx (standard, non-flex) | |
| MPM-A1651F | 2090-CPxM7DF-10AAxx (standard, non-flex) 2090-CPxM7DF-10AFxx (continuous-flex) | |
| MPM-A1652F, MPM-A1653F | 2090-CPxM7DF-08AAxx (standard, non-flex) 2090-CPxM7DF-08AFxx (continuous-flex) | |
| MPM-A2152F, MPM-A2153F, MPM-A2154C, MPM-A2154E | 2090-CPBM7DF-06AAxx (standard, non-flex) | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

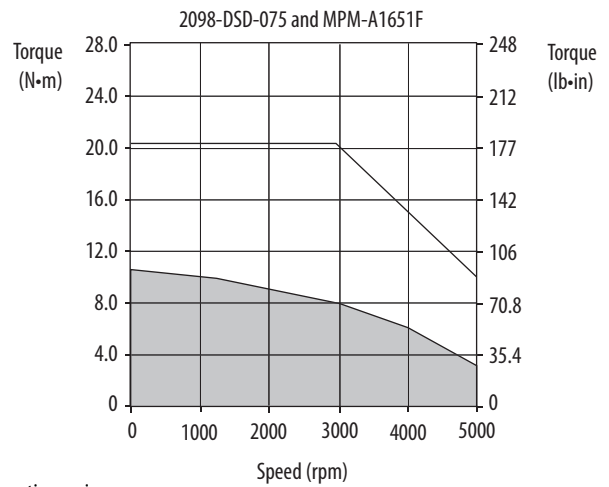
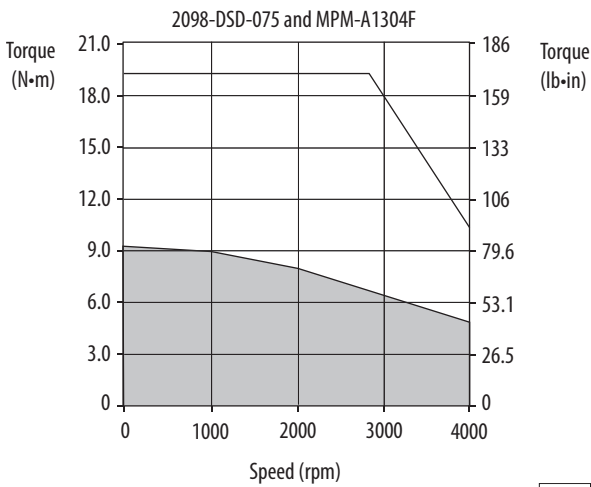
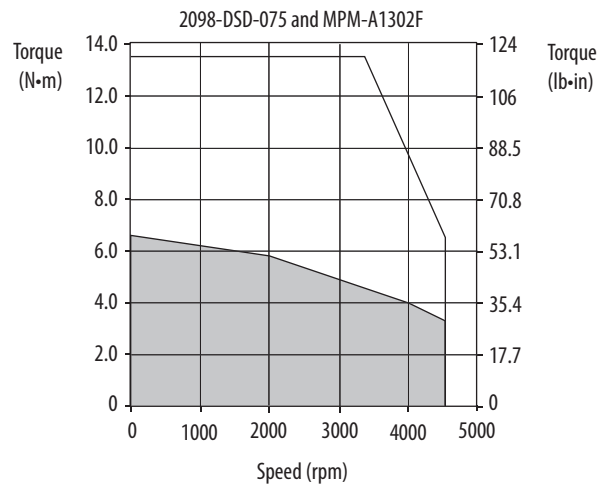
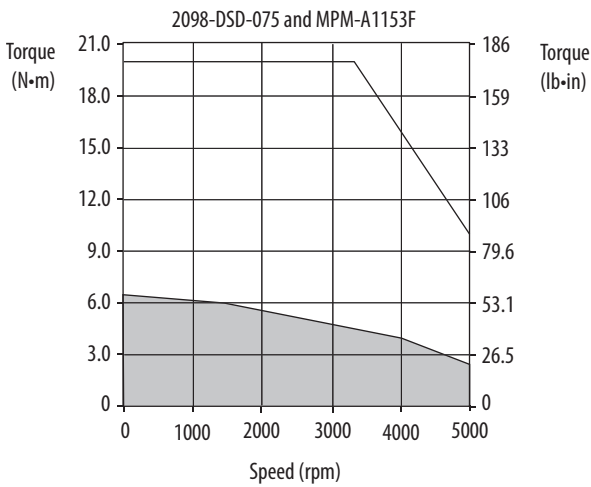
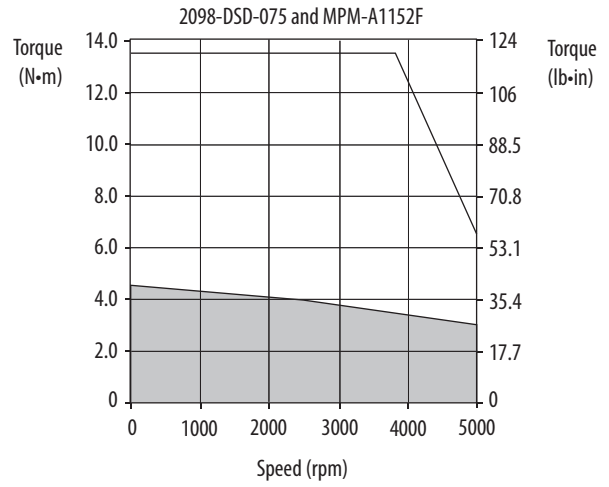
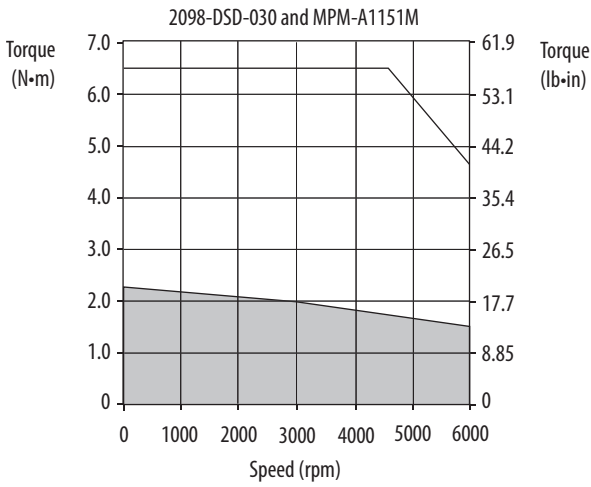
Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-ID004](#), for standard cable lengths.

Bulletin MPM Motor Performance Specifications with Ultra3000 (200V class) Drives

| Rotary Motor | Speed, base rpm | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 200V-class Drives |
|--------------|-----------------|----------------|--|--|----------------------------------|--------------------------------------|-----------------------|-----------------------------|
| MPM-A1151M | 4500 | 6000 | 10.3 | 2.3 (20.3) | 30.5 | 6.6 (58.4) | 0.90 | 2098-DSD-030 |
| MPM-A1152F | 3000 | 5000 | 14.9 | 4.7 (41.6) | 44.8 | 13.5 (119) | 1.40 | 2098-DSD-075 |
| MPM-A1153F | 3000 | 5000 | 18.6 | 6.5 (57.5) | 64.5 | 19.8 (175) | 1.45 | 2098-DSD-075 |
| MPM-A1302F | 3000 | 4500 | 19.8 | 6.6 (58.4) | 50.2 | 13.5 (119) | 1.65 | 2098-DSD-075 |
| MPM-A1304F | 3000 | 4000 | 22.5 | 9.2 (81.4) | 48.3 | 19.3 (171) | 2.20 | 2098-DSD-075 |
| MPM-A1651F | 3000 | 5000 | 30.96 | 10.7 (94.7) | 75.0 | 20.4 (180) | 2.50 | 2098-DSD-075 |
| MPM-A1652F | 3000 | 4000 | 33.54 | 13.4 (119) | 103.2 | 36.0 (318) | 4.03 | 2098-DSD-150 |
| MPM-A1653F | 3000 | 4000 | 42.4 | 18.6 (165) | 119.1 | 41.9 (371) | 5.10 | 2098-DSD-150 |
| MPM-A2152F | 3000 | 4000 | 59.04 | 26.9 (238) | 125.8 | 56.0 (495) | 5.20 | 2098-DSD-150 |
| MPM-A2153F | 3000 | 3600 | 59.65 | 35.2 (311) | 120.4 | 58.0 (513) | 5.80 | 2098-DSD-150 |
| MPM-A2154C | 1500 | 2000 | 58.68 | 55.5 (491) | 127.3 | 106 (938) | 6.50 | 2098-DSD-150 |
| MPM-A2154E | 2250 | 3000 | 59.67 | 44.0 (389) | 128.2 | 83.9 (742) | 7.00 | 2098-DSD-150 |

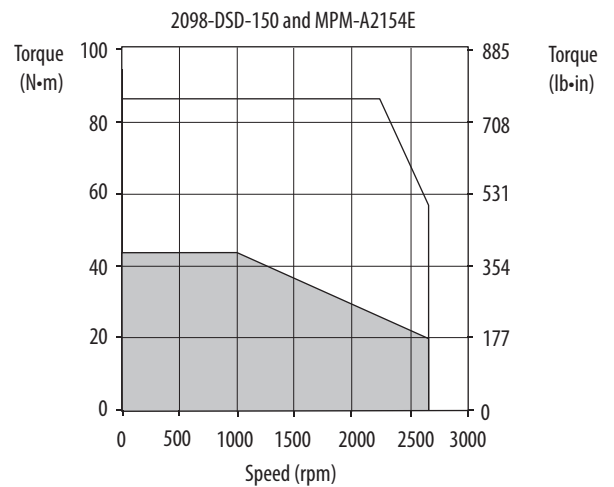
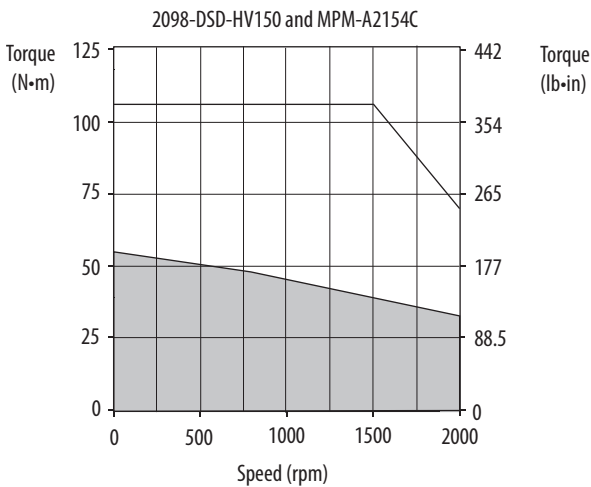
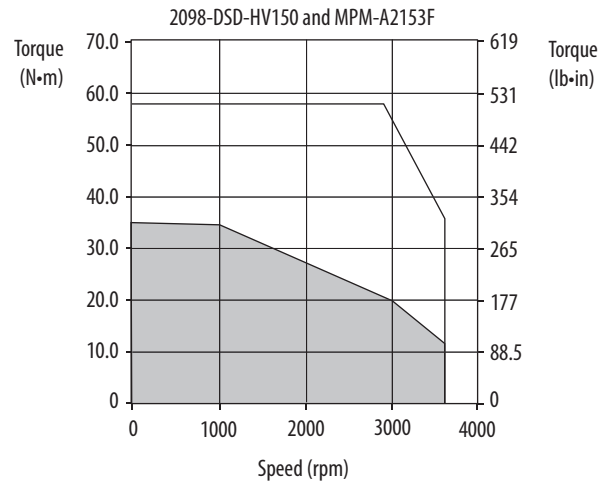
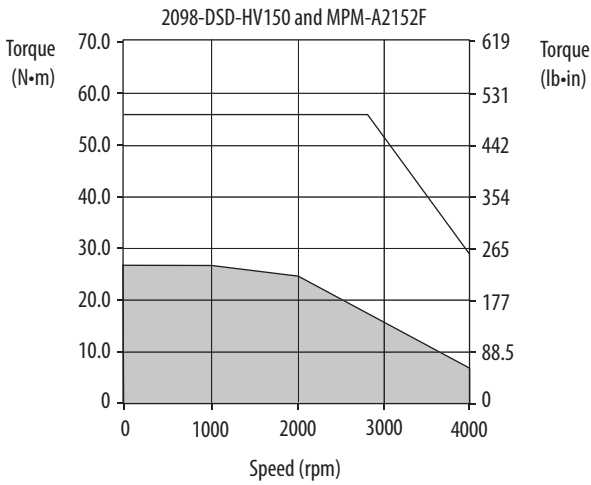
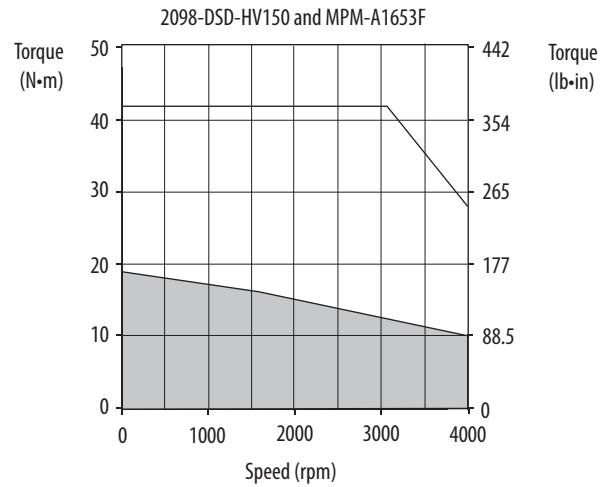
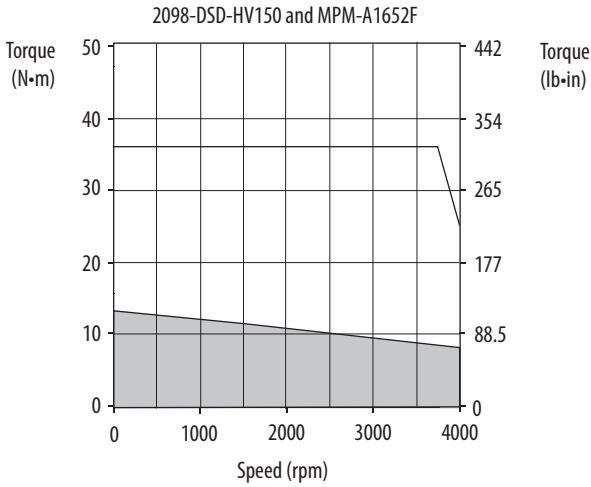
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/MP-Series Medium Inertia Motor Curves



= Intermittent operating region
 = Continuous operating region

Ultra3000 (200V class) Drives/MP-Series Medium Inertia Motor Curves (continued)



= Intermittent operating region
 = Continuous operating region

Ultra3000 (400V class) Drives with MP-Series Medium Inertia Motors

This section provides system combination information for the Ultra3000 (400V class) drives when matched with MP-Series medium-inertia motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPM Motor Cable Combinations

| Motor Cat. No. (400V class) | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| MPM-B1151x, MPM-B1152x, MPM-B1153E, MPM-B1153F | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPM-B1302F, MPM-B1302M, MPM-B1304C, MPM-B1304E | | |
| MPM-B1651C, MPM-B1652C | | |
| MPM-B1153T | 2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex) | |
| MPM-B1302T, MPM-B1304M | | |
| MPM-B1651F, MPM-B1653C | | |
| MPM-B1651M, MPM-B1652E, MPM-B1652F, MPM-B1653E | 2090-CPxM7DF-10AAxx (standard, non-flex) 2090-CPxM7DF-10AFxx (continuous-flex) | |
| MPM-B2152C, MPM-B2153B ⁽²⁾ | | |
| MPM-B1653F | 2090-CPxM7DF-08AAxx (standard, non-flex) 2090-CPxM7DF-08AFxx (continuous-flex) | |
| MPM-B2152F, MPM-B2152M, MPM-B2153E, MPM-B2153F, ⁽²⁾ | | |
| MPM-B2154B, MPM-B2154E, MPM-B2154F ⁽²⁾ | | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

(2) For applications that use these nine motors (catalog numbers MPM-B215x-xJ74AA with the brake option) where the power cable length exceeds 50 m (164 ft), 2090-CPBM7DF-06AAxx (6 AWG) cable is required. Motors without the brake option (catalog numbers MPM-B215x-xJ72AA) can use the cable size as specified in the table regardless of cable length.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Bulletin MPM Motor Performance Specifications with Ultra3000 (400V class) Drives

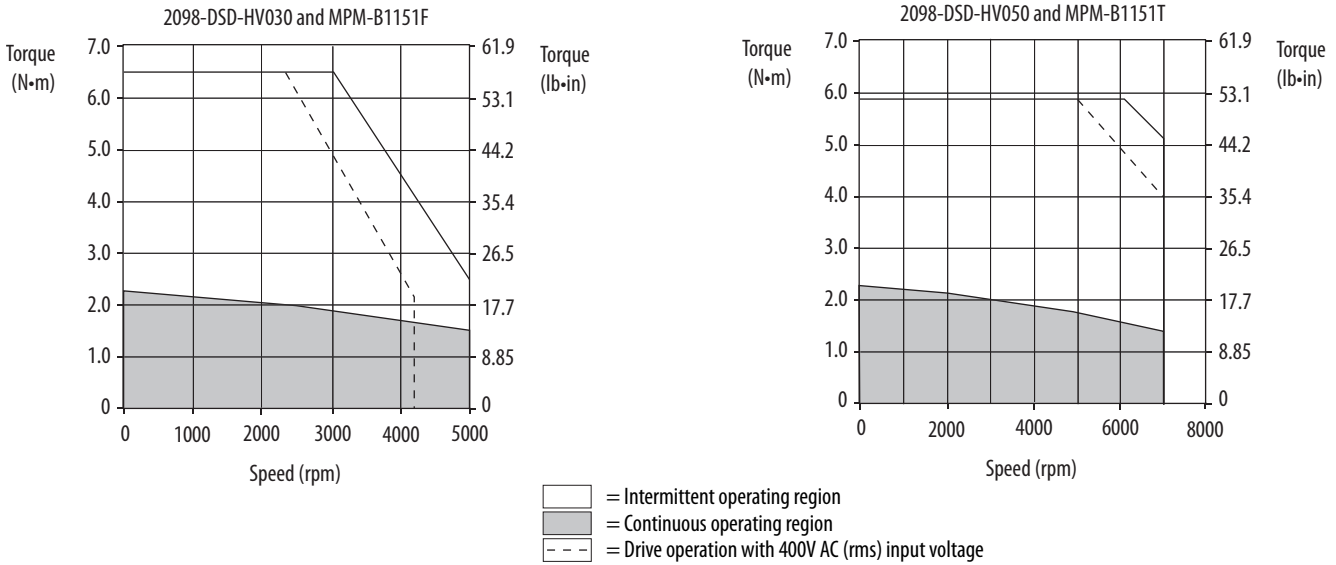
| Rotary Motor | Speed, base rpm | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 400V-class Drives |
|--------------|-----------------|----------------|--|--|----------------------------------|--------------------------------------|-----------------------|-----------------------------|
| MPM-B1151F | 3000 | 5000 | 2.71 | 2.3 (20.3) | 9.9 | 6.6 (58.4) | 0.75 | 2098-DSD-HV030 |
| MPM-B1151T | 6000 | 7000 | 5.62 | 2.3 (20.3) | 14.0 | 4.4 (38.9) | 0.90 | 2098-DSD-HV030 |
| | | | | | 20.5 | 5.8 (51.3) | | 2098-DSD-HV050 |
| MPM-B1152C | 1500 | 3000 | 3.61 | 5.0 (44.2) | 12.4 | 13.5 (119) | 1.20 | 2098-DSD-HV030 |
| MPM-B1152F | 3000 | 5200 | 6.17 | 5.0 (44.2) | 14.0 | 9.6 (84.9) | 1.40 | 2098-DSD-HV030 |
| | | | | | 21.1 | 13.3 (118) | | 2098-DSD-HV050 |
| MPM-B1152T | 6000 | 7000 | 11.02 | 5.0 (44.2) | 22.0 | 8.6 (76.1) | 1.40 | 2098-DSD-HV050 |
| | | | | | 37.8 | 13.5 (119) | | 2098-DSD-HV100 |
| MPM-B1153E | 2250 | 3500 | 6.21 | 6.5 (57.5) | 14.0 | 13.8 (122) | 1.40 | 2098-DSD-HV030 |
| | | | | | 21.6 | 19.7 (174) | | 2098-DSD-HV050 |
| MPM-B1153F | 3000 | 5500 | 9.20 | 6.4 (56.6) | 22.0 | 14.6 (129) | 1.40 | 2098-DSD-HV050 |
| | | | | | 32.0 | 19.7 (174) | | 2098-DSD-HV100 |
| MPM-B1153T | 6000 | 7000 | 15.95 | 6.4 (56.6) | 46.0 | 14.8 (131) | 1.45 | 2098-DSD-HV100 |
| | | | | | 55.4 | 16.5 (146) | | 2098-DSD-HV150 |
| MPM-B1302F | 3000 | 4500 | 8.57 | 6.6 (58.4) | 22.0 | 13.2 (117) | 1.65 | 2098-DSD-HV050 |
| MPM-B1302M | 4500 | 6000 | 12.57 | 6.6 (58.4) | 32.4 | 13.3 (118) | 1.65 | 2098-DSD-HV100 |
| MPM-B1302T | 6000 | 7000 | 16.83 | 6.7 (59.3) | 43.4 | 13.3 (118) | 1.65 | 2098-DSD-HV100 |
| MPM-B1304C | 1500 | 2750 | 7.00 | 10.3 (91.1) | 14.0 | 18.7 (165) | 2.00 | 2098-DSD-HV030 |
| | | | | | 22.0 | 26.8 (237) | | 2098-DSD-HV050 |
| MPM-B1304E | 2250 | 4000 | 10.75 | 10.2 (90.3) | 22.0 | 19.1 (169) | 2.20 | 2098-DSD-HV050 |
| | | | | | 34.2 | 27.1 (240) | | 2098-DSD-HV100 |
| MPM-B1304M | 4500 | 6000 | 19.02 | 10.4 (92.0) | 46.0 | 21.9 (194) | 2.20 | 2098-DSD-HV100 |
| | | | | | 60.6 | 27.1 (240) | | 2098-DSD-HV150 |
| MPM-B1651C | 1500 | 3500 | 10.21 | 11.4 (101) | 22.0 | 19.5 (172) | 2.50 | 2098-DSD-HV050 |
| | | | | | 29.2 | 23.2 (205) | | 2098-DSD-HV100 |
| MPM-B1651F | 3000 | 5000 | 17.75 | 11.4 (101) | 46.0 | 21.8 (193) | 2.50 | 2098-DSD-HV100 |
| | | | | | 50.9 | 23.2 (205) | | 2098-DSD-HV150 |
| MPM-B1651M | 4500 | 5000 | 22.46 | 11.3 (100) | 46.0 | 18.5 (164) | 2.50 | 2098-DSD-HV100 |
| | | | | | 56.8 | 21.4 (189) | | 2098-DSD-HV150 |
| MPM-B1652C | 1500 | 2500 | 11.51 | 16.4 (145) | 22.0 | 30.0 (265) | 3.80 | 2098-DSD-HV050 |
| | | | | | 33.6 | 40.2 (356) | | 2098-DSD-HV100 |
| MPM-B1652E | 2250 | 3500 | 20.94 | 21.1 (187) | 46.0 | 39.1 (346) | 4.30 | 2098-DSD-HV100 |
| | | | | | 60.5 | 48.0 (425) | | 2098-DSD-HV150 |
| MPM-B1652F | 3000 | 4500 | 28.74 | 21.1 (187) | 68.0 | 39.1 (346) | 4.30 | 2098-DSD-HV150 |
| | | | | | 84.1 | 45.0 (398) | | 2098-DSD-HV220 |
| MPM-B1653C | 1500 | 2500 | 20.05 | 26.7 (236) | 46.0 | 56.1 (496) | 4.60 | 2098-DSD-HV100 |
| | | | | | 59.2 | 67.7 (599) | | 2098-DSD-HV150 |

Bulletin MPM Motor Performance Specifications with Ultra3000 (400V class) Drives (continued)

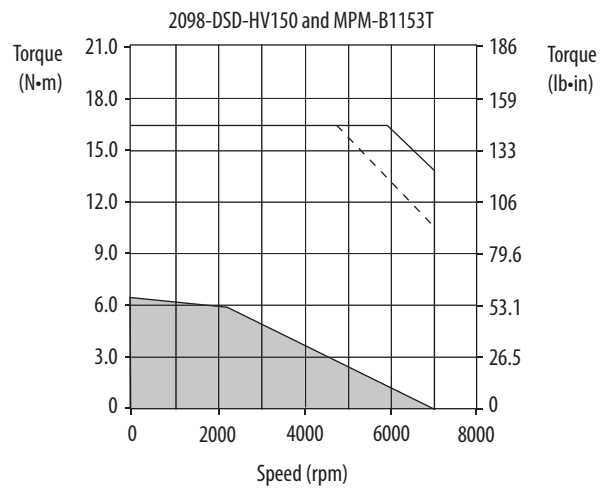
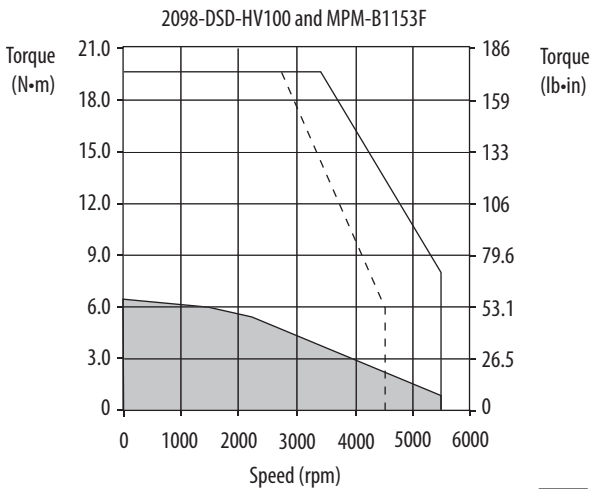
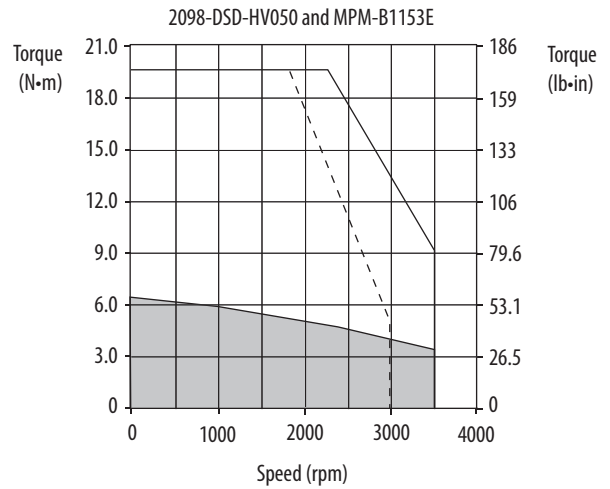
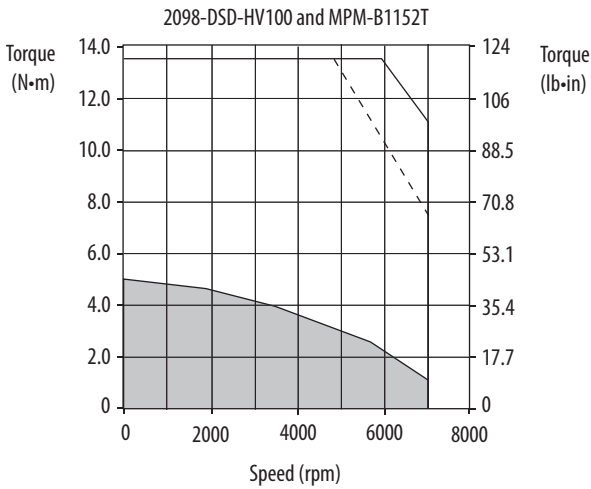
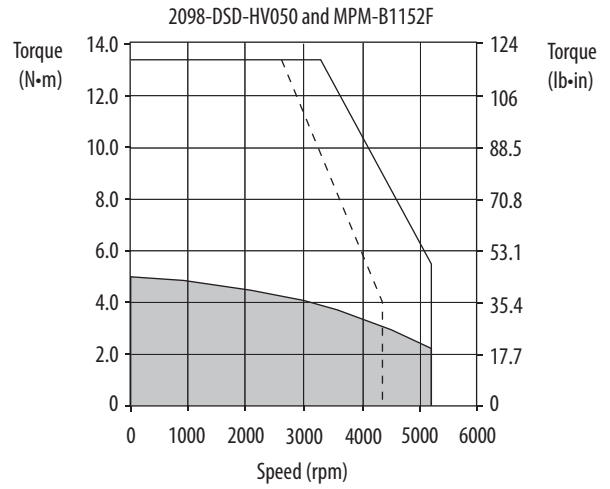
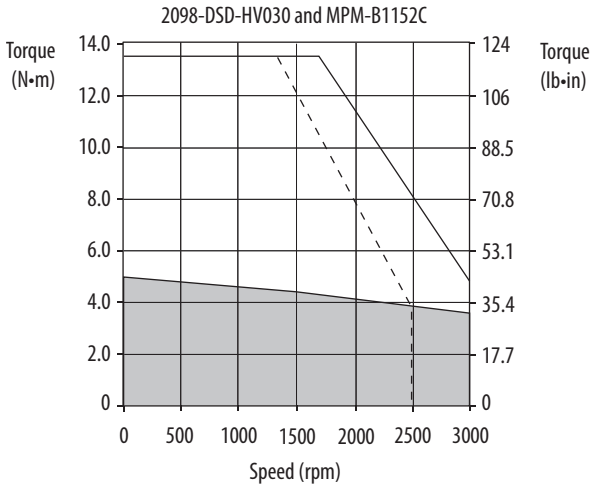
| Rotary Motor | Speed, base rpm | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 400V-class Drives |
|--------------|-----------------|----------------|--|--|----------------------------------|--------------------------------------|-----------------------|-----------------------------|
| MPM-B1653E | 2250 | 3500 | 27.00 | 26.8 (237) | 68.0 | 58.8 (520) | 5.10 | 2098-DSD-HV150 |
| | | | | | 72.9 | 62.0 (549) | | 2098-DSD-HV220 |
| MPM-B1653F | 3000 | 4000 | 34.94 | 31.0 (274) | 94.0 | 56.1 (496) | 5.10 | 2098-DSD-HV220 |
| MPM-B2152C | 1500 | 2500 | 27.40 | 36.7 (325) | 55.4 | 72.2 (639) | 5.60 | 2098-DSD-HV150 |
| MPM-B2152F | 3000 | 4500 | 43.54 | 33.9 (300) | 94.0 | 69.8 (618) | 5.90 | 2098-DSD-HV220 |
| MPM-B2152M | 4500 | 5000 | 44.58 | 34.1 (302) | 94.0 | 52.9 (468) | 5.90 | 2098-DSD-HV220 |
| MPM-B2153B | 1250 | 2000 | 24.06 | 47.1 (417) | 46.0 | 81.5 (721) | 6.80 | 2098-DSD-HV100 |
| | | | | 48.0 (425) | 60.0 | 101.2 (895) | | 2098-DSD-HV150 |
| MPM-B2153E | 2250 | 3000 | 39.63 | 47.9 (424) | 94.0 | 97.1 (859) | 7.20 | 2098-DSD-HV220 |
| MPM-B2153F | 3000 | 3800 | 43.86 | 45.6 (403) | 94.0 | 94.8 (839) | 7.20 | 2098-DSD-HV220 |
| MPM-B2154B | 1250 | 2000 | 35.46 | 62.7 (555) | 94.0 | 149 (1319) | 6.90 | 2098-DSD-HV220 |
| MPM-B2154E | 2250 | 3000 | 43.68 | 55.9 (495) | 94.0 | 108 (956) | 7.50 | 2098-DSD-HV220 |
| MPM-B2154F | 3000 | 3300 | 44.40 | 56.2 (497) | 83.6 | 87.9 (778) | 7.50 | 2098-DSD-HV220 |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (400V class) Drives/MP-Series Medium Inertia Motor Curves

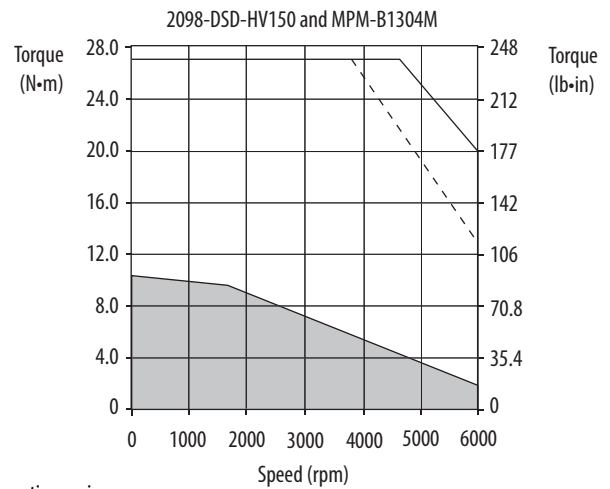
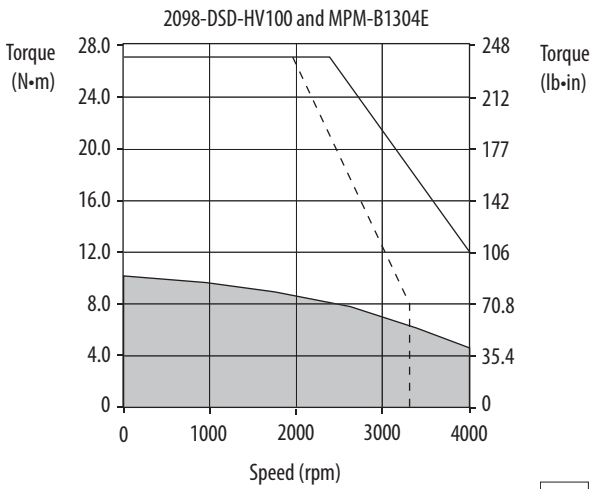
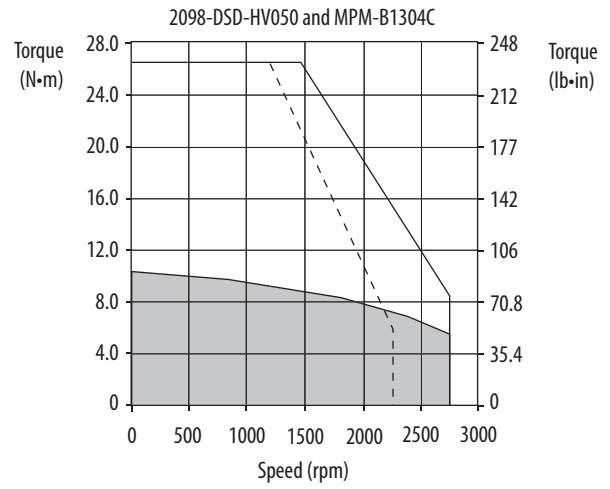
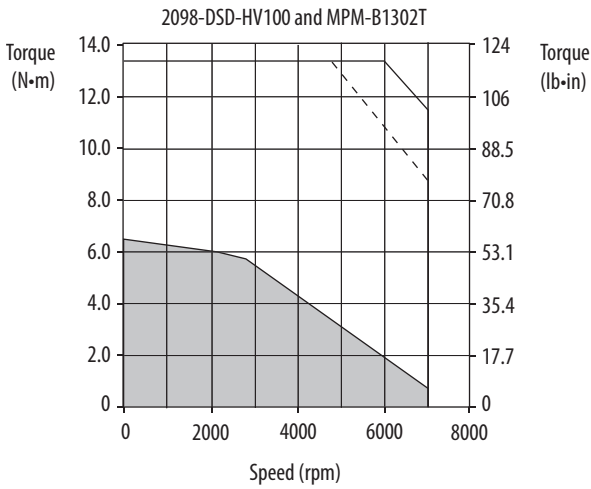
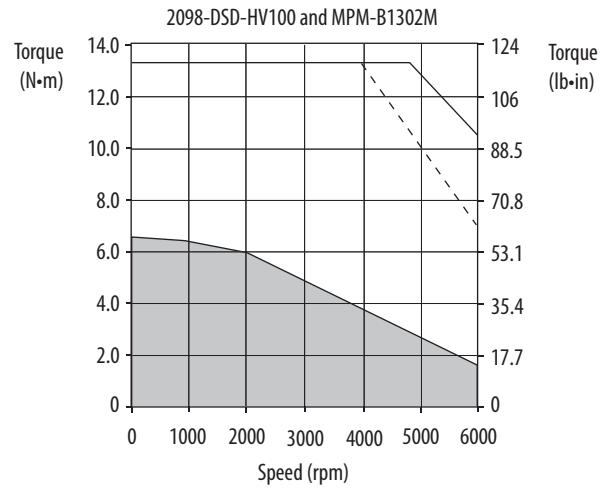
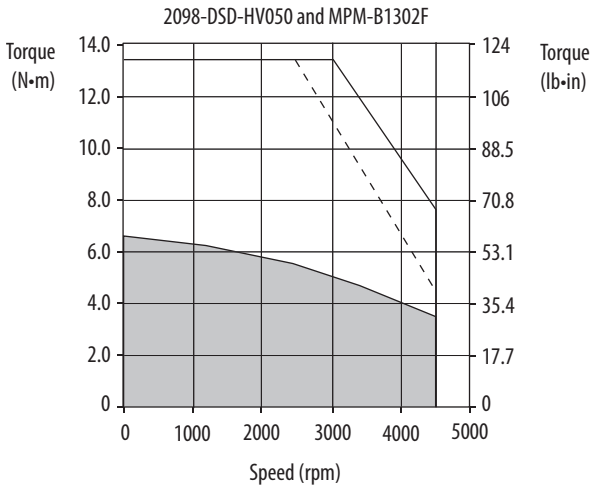


Ultra3000 (400V class) Drives/MP-Series Medium Inertia Motor Curves (continued)



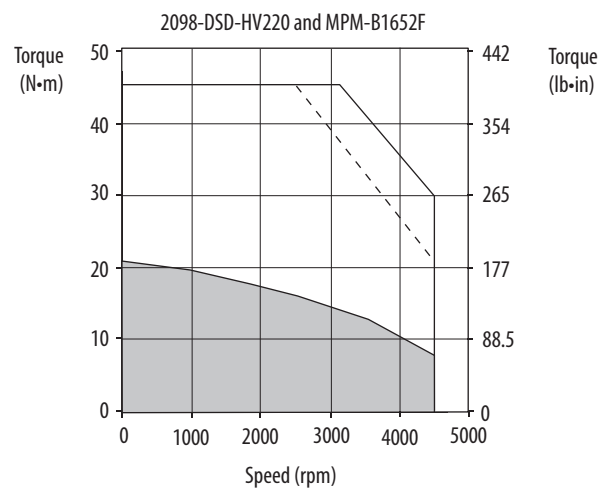
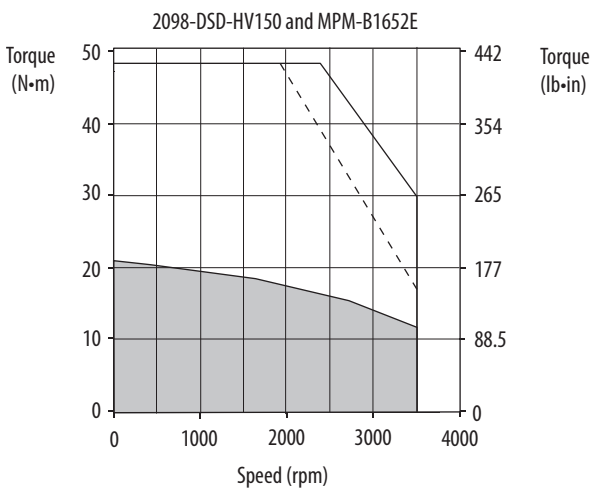
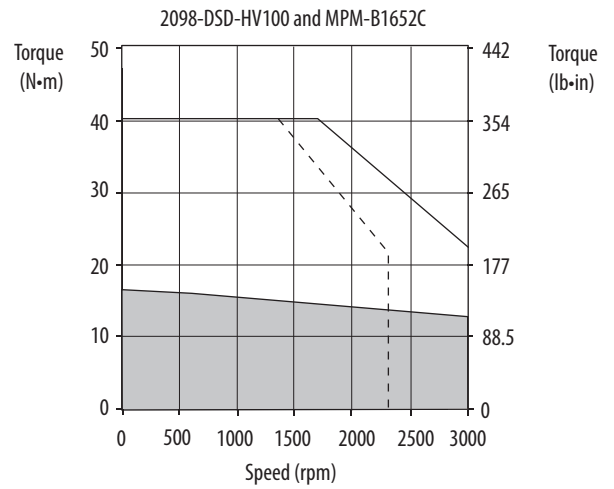
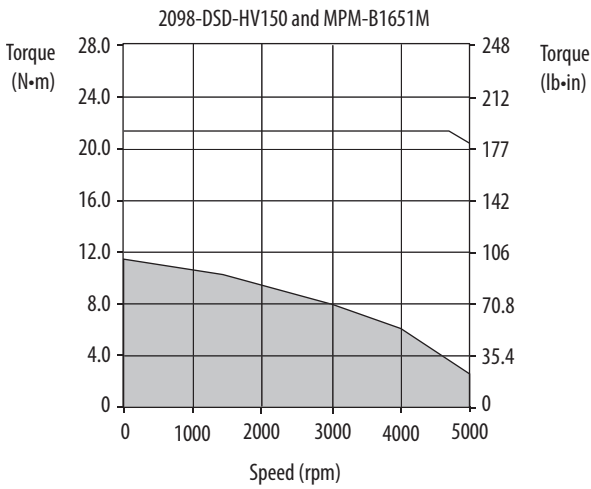
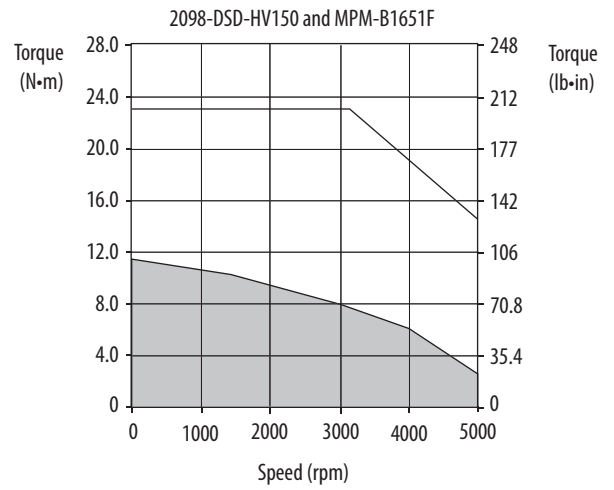
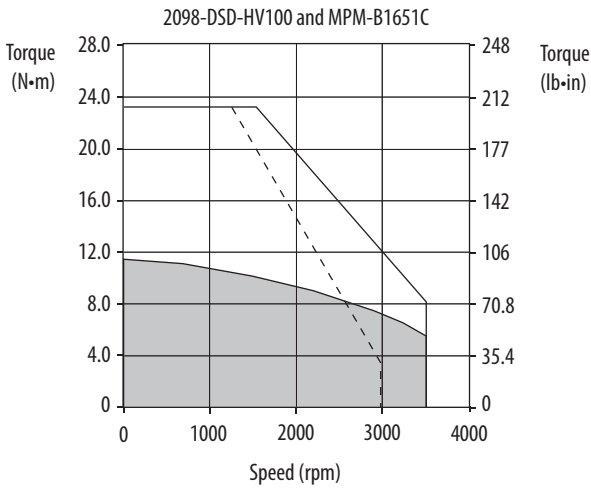
- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Medium Inertia Motor Curves (continued)



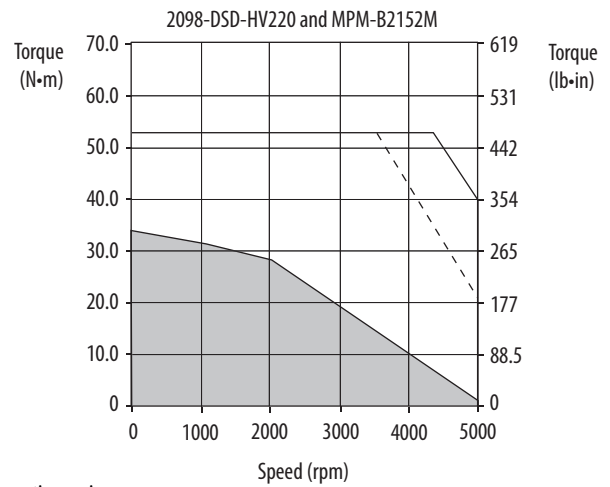
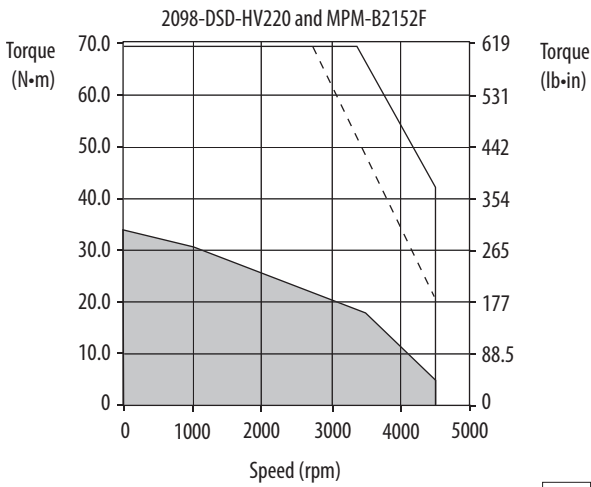
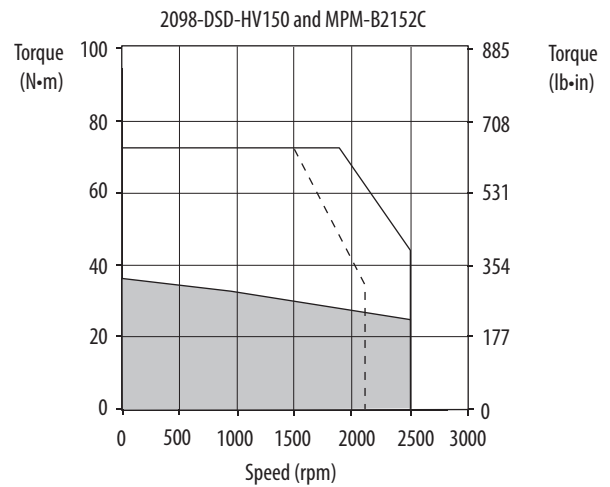
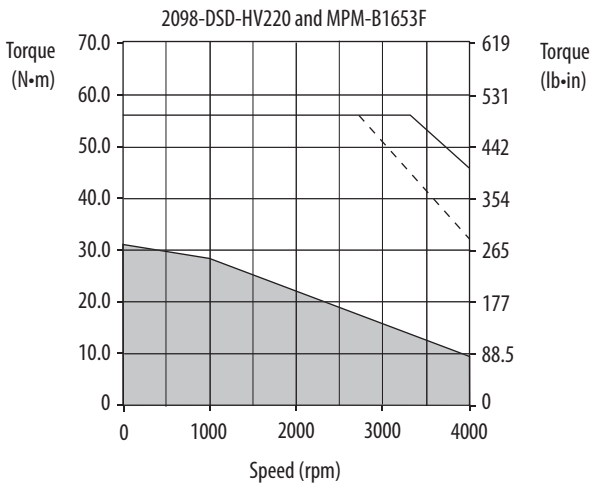
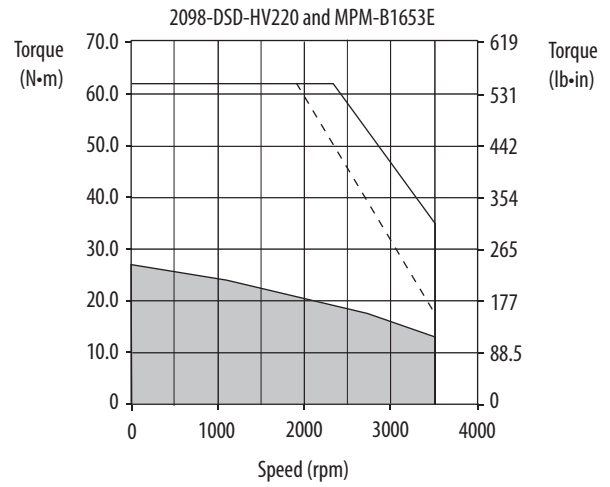
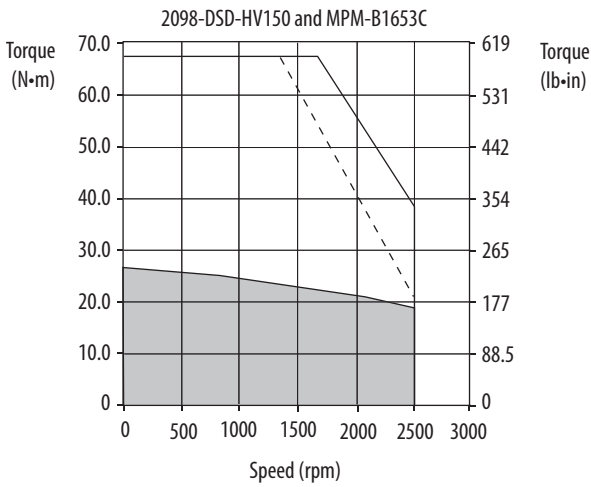
- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Medium Inertia Motor Curves (continued)



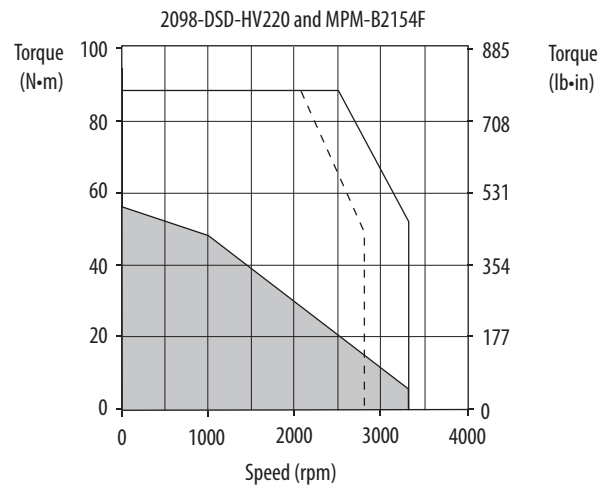
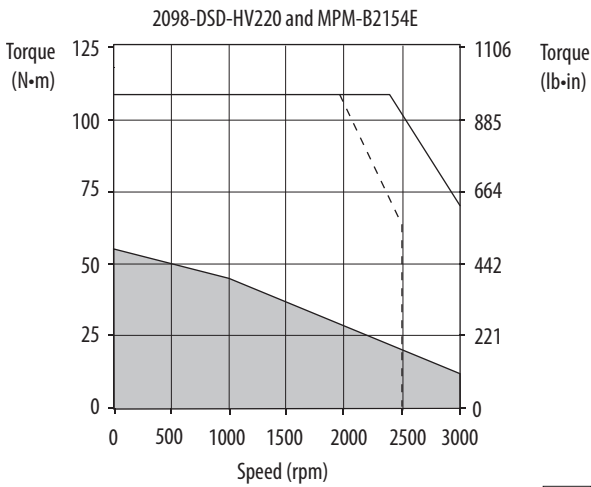
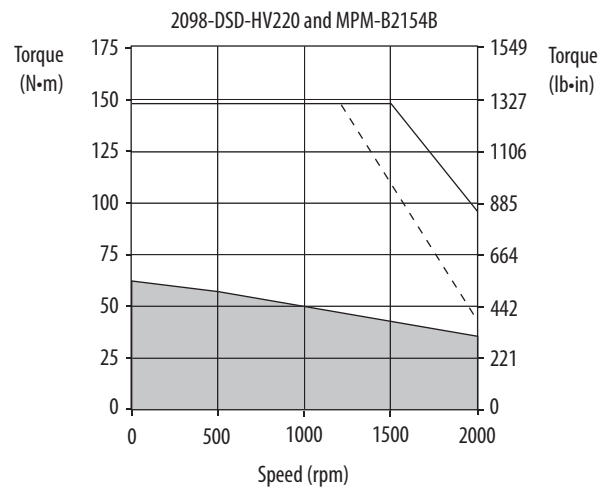
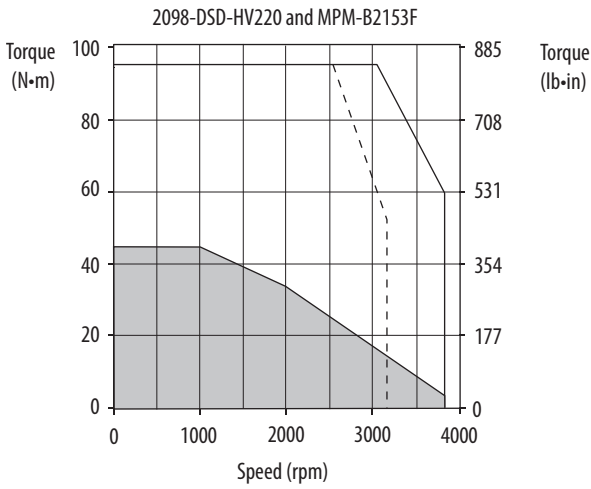
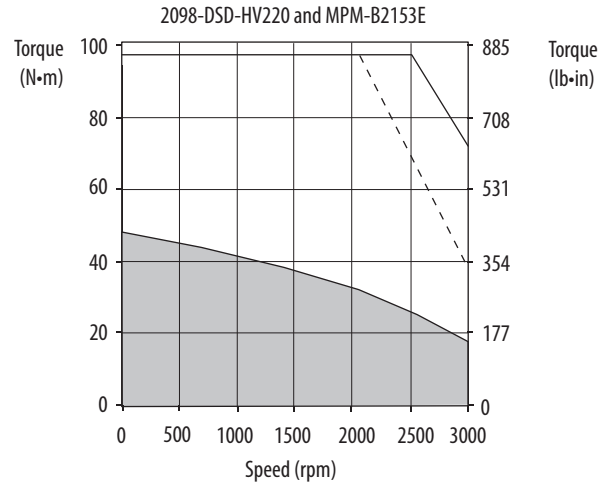
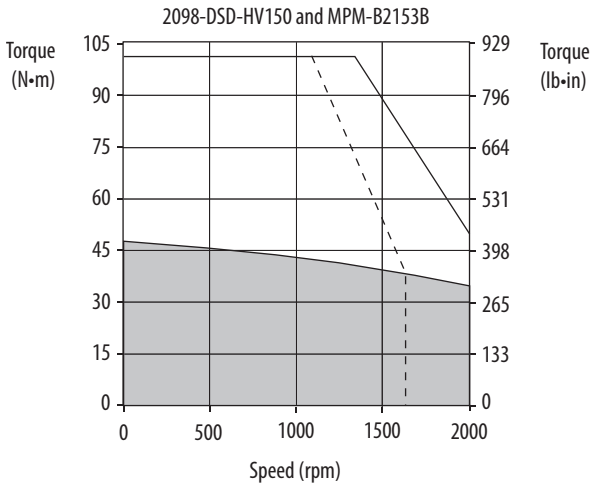
- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Medium Inertia Motor Curves (continued)



- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Medium Inertia Motor Curves (continued)



- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 (200V class) Drives with MP-Series Food Grade Motors

This section provides system combination information for the Ultra3000 (200V class) drives when matched with MP-Series food-grade motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPF Motor Cable Combinations

| Motor Cat. No. (200V class) | Motor Power Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| MPF-A310P, MPF-A320H, MPF-A320P, MPF-A330P | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPF-A430H | | |
| MPF-A430P | 2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex) | |
| MPF-A4530K, MPF-A4540F | | |
| MPF-A540K | 2090-CPxM7DF-08AAxx (standard, non-flex) 2090-CPxM7DF-08AFxx (continuous-flex) | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

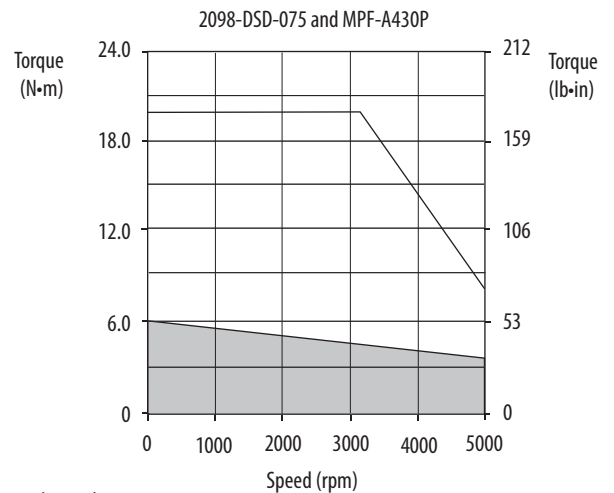
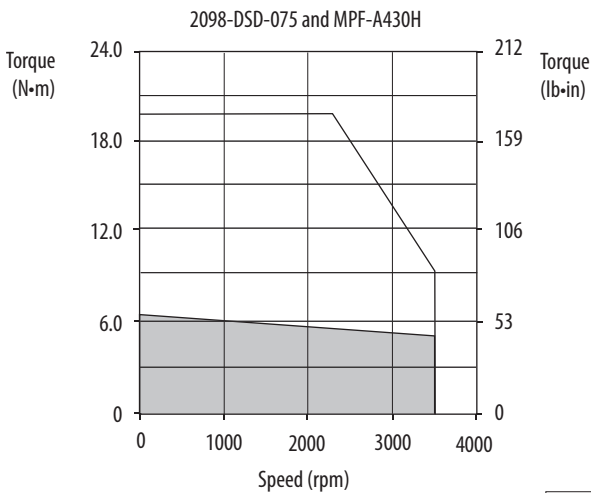
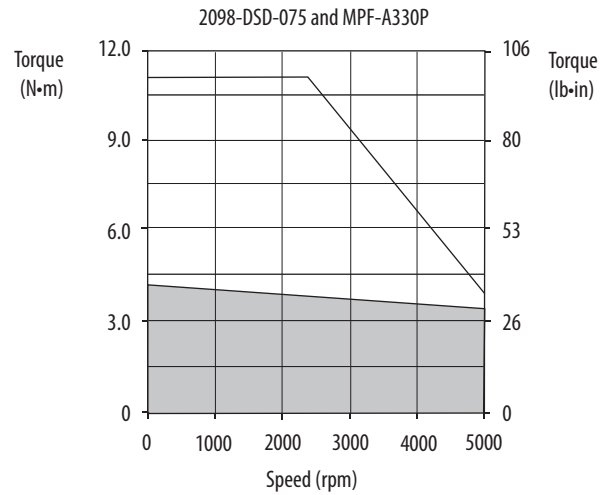
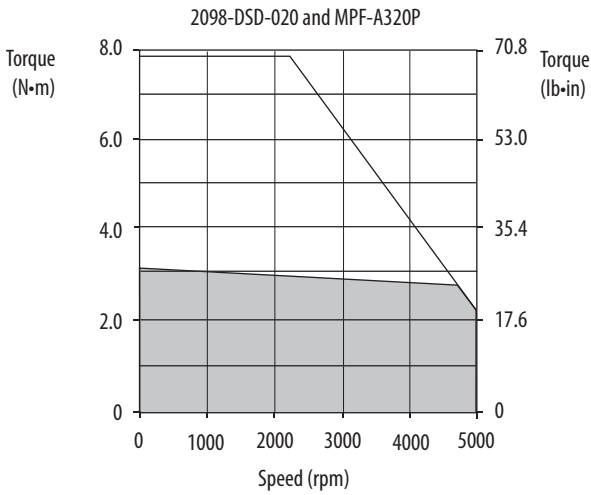
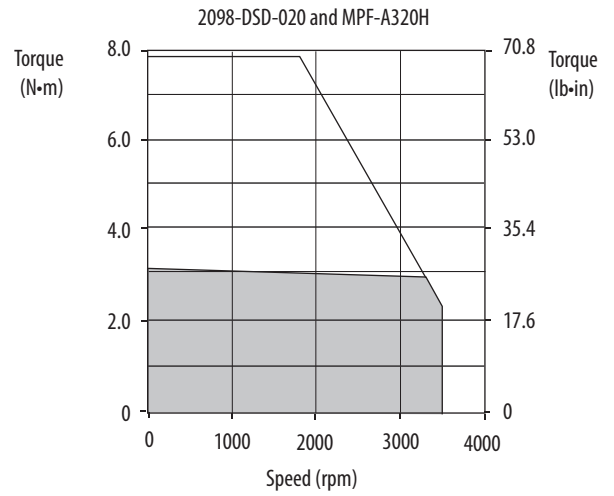
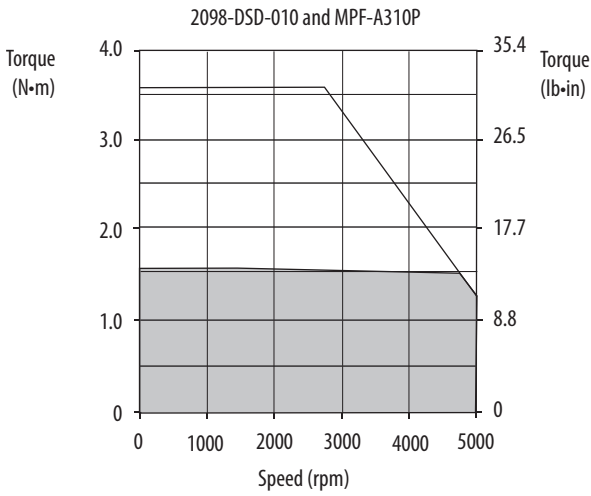
Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Bulletin MPF Motor Performance Specifications with Ultra3000 (200V class) Drives

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N-m (lb-in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N-m (lb-in) | Motor Rated Output kW | Ultra3000 200V-class Drives |
|--------------|----------------|---|---|-------------------------------------|---|--------------------------|-----------------------------|
| MPF-A310P | 5000 | 2.50 | 0.79 (7) | 7.5 | 1.92 (17) | 0.73 | 2098-DSD-005 |
| | | 4.85 | 1.58 (14) | 14 | 3.61 (32) | | 2098-DSD-010 |
| MPF-A320H | 3500 | 5.0 | 2.48 (22) | 15 | 6.44 (57) | 1.0 | 2098-DSD-010 |
| | | 6.1 | 3.05 (27) | 19.3 | 7.91 (70) | | 2098-DSD-020 |
| MPF-A320P | 5000 | 5.0 | 1.69 (15) | 15 | 3.95 (35) | 1.3 | 2098-DSD-010 |
| | | 9.0 | 3.05 (27) | 29.5 | 7.91 (70) | | 2098-DSD-020 |
| MPF-A330P | 5000 | 12.0 | 4.18 (37) | 30 | 9.60 (85) | 1.6 | 2098-DSD-030 |
| | | | | 38 | 11.1 (98) | | 2098-DSD-075 |
| MPF-A430H | 3500 | 12.2 | 6.21 (55) | 30 | 14.7 (130) | 1.8 | 2098-DSD-030 |
| | | | | 45 | 19.8 (175) | | 2098-DSD-075 |
| MPF-A430P | 5000 | 15.0 | 5.42 (48) | 30 | 10.2 (90) | 1.9 | 2098-DSD-030 |
| | | 16.8 | 5.99 (53) | 67 | 19.8 (175) | | 2098-DSD-075 |
| MPF-A4530K | 4000 | 15.0 | 6.21 (55) | 30 | 11.3 (100) | 2.3 | 2098-DSD-030 |
| | | 19.5 | 8.13 (72) | 62 | 20.3 (180) | | 2098-DSD-075 |
| MPF-A4540F | 3000 | 15.0 | 8.25 (73) | 30 | 15.8 (140) | 2.5 | 2098-DSD-030 |
| | | 18.4 | 10.2 (90) | 58 | 27.1 (240) | | 2098-DSD-075 |
| MPF-A540K | 4000 | 41.5 | 19.4 (172) | 120 | 48.6 (430) | 4.1 | 2098-DSD-150 |

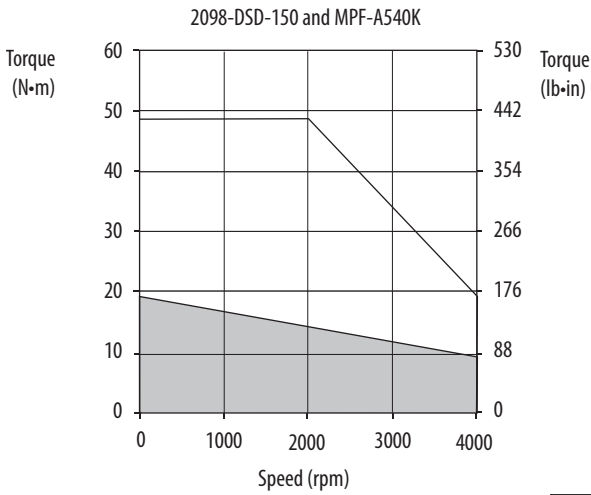
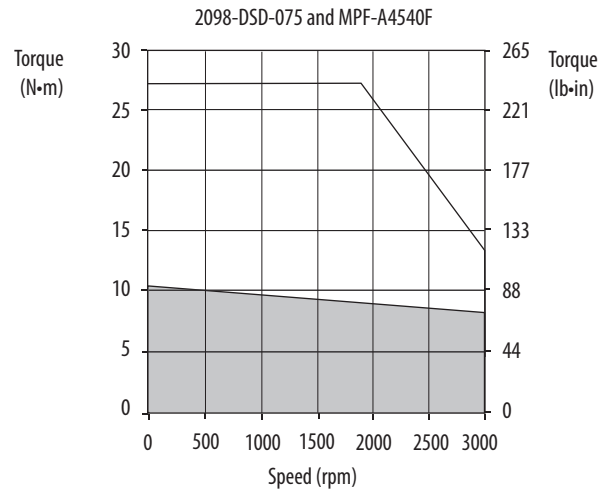
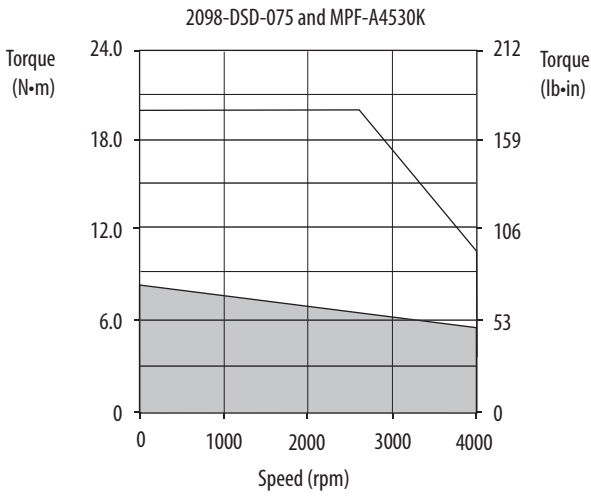
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/MP-Series Food Grade Motor Curves



= Intermittent operating region
 = Continuous operating region

Ultra3000 (200V class) Drives/MP-Series Food Grade Motor Curves (continued)



= Intermittent operating region
 = Continuous operating region

Ultra3000 (400V class) Drives with MP-Series Food Grade Motors

This section provides system combination information for the Ultra3000 (400V class) drives when matched with MP-Series food-grade motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPF Motor Cable Combinations

| Motor Cat. No. (400V class) | Motor Power Cable | Motor Feedback Cable ⁽¹⁾ |
|---------------------------------|---|---|
| MPF-B310P, MPF-B320P, MPF-B330P | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) |
| MPF-B430P | | |
| MPF-B4530K, MPF-B4540F | | |
| MPF-B540K | 2090-CPxM7DF-10AAxx (standard, non-flex) 2090-CPxM7DF-10AFxx (continuous-flex) | Absolute High-resolution Feedback |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

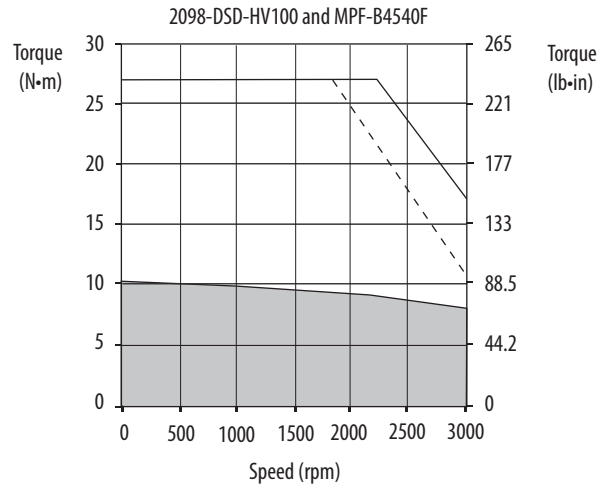
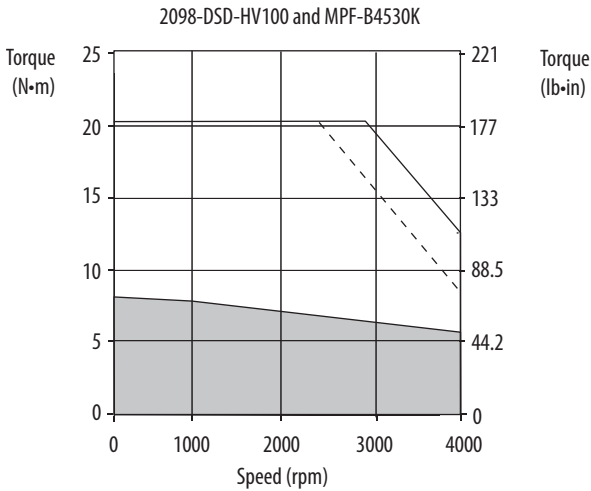
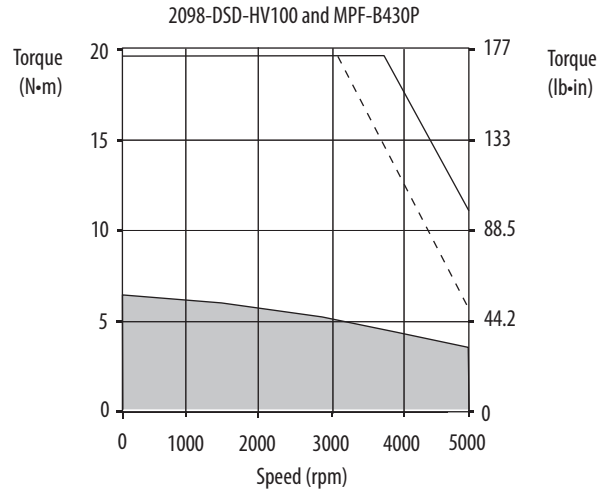
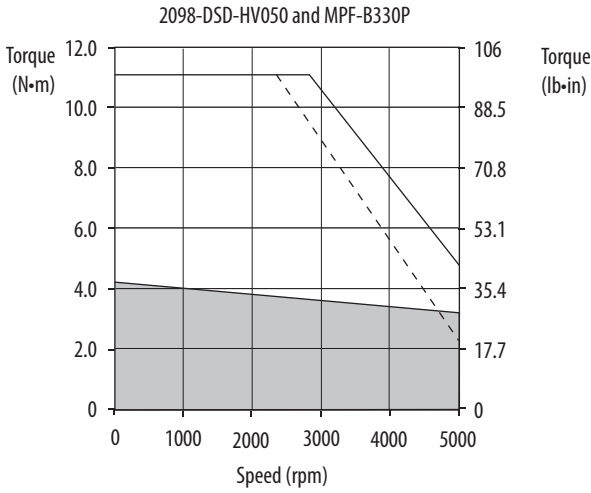
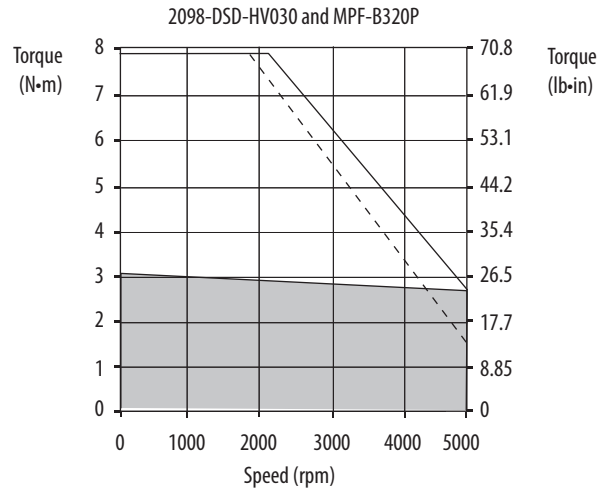
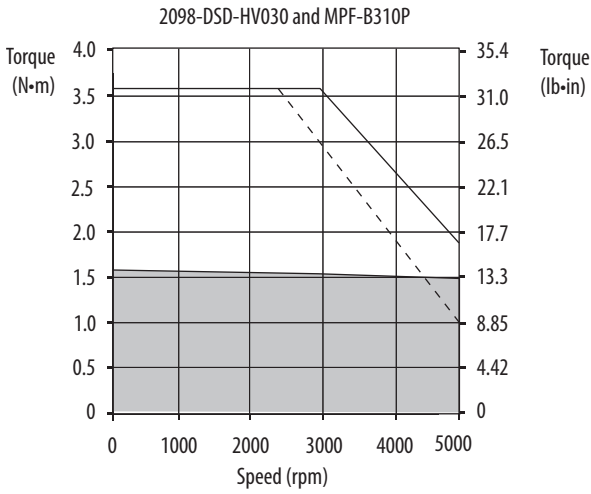
Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Bulletin MPF Motor Performance Specifications with Ultra3000 (400V class) Drives

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A (0-pk) | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A (0-pk) | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 400V-class Drives |
|--------------|----------------|--|--|------------------------------------|--------------------------------------|-----------------------|-----------------------------|
| MPF-B310P | 5000 | 2.30 | 1.58 (14) | 7.1 | 3.61 (32) | 0.77 | 2098-DSD-HV030 |
| MPF-B320P | 5000 | 4.24 | 3.05 (27) | 14.0 | 7.34 (65) | 1.5 | 2098-DSD-HV030 |
| MPF-B330P | 5000 | 5.70 | 4.18 (37) | 14.0 | 8.59 (76) | 1.6 | 2098-DSD-HV030 |
| | | | | 19.0 | 11.1 (98) | | 2098-DSD-HV050 |
| MPF-B430P | 5000 | 9.20 | 6.55 (58) | 22.0 | 12.9 (114) | 2.0 | 2098-DSD-HV050 |
| | | | | 32.0 | 19.8 (175) | | 2098-DSD-HV100 |
| MPF-B4530K | 4000 | 9.90 | 8.25 (73) | 22.0 | 14.5 (128) | 2.4 | 2098-DSD-HV050 |
| | | | | 31.0 | 20.3 (180) | | 2098-DSD-HV100 |
| MPF-B4540F | 3000 | 9.10 | 10.2 (90) | 22.0 | 22.0 (195) | 2.5 | 2098-DSD-HV050 |
| | | | | 29.0 | 27.1 (240) | | 2098-DSD-HV100 |
| MPF-B540K | 4000 | 20.5 | 19.4 (172) | 46.0 | 33.9 (300) | 4.1 | 2098-DSD-HV100 |
| | | | | 60.0 | 45.2 (400) | | 2098-DSD-HV150 |

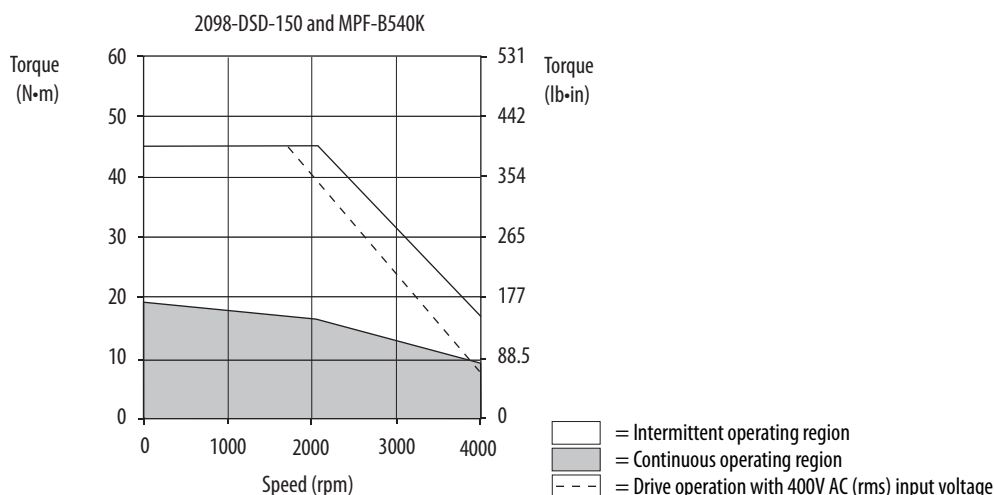
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (400V class) Drives/MP-Series Food Grade Motor Curves



= Intermittent operating region
 = Continuous operating region
 = Drive operation with 400V AC (rms) input voltage

Ultra3000 (400V class) Drives/MP-Series Food Grade Motor Curves (continued)



Ultra3000 (200V class) Drives with MP-Series Stainless Steel Motors

This section provides system combination information for the Ultra3000 (200V class) drives when matched with MP-Series stainless-steel motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPS Motor Cable Combinations

| Motor Cat. No. (200V class) | Motor Power Cable | Motor Feedback Cable ⁽¹⁾ |
|-----------------------------|---|--|
| MPS-A330P | 2090-XXNPMF-16Sxx (standard, non-flex) 2090-CPxM4DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) |
| MPS-A4540F | | 2090-CFBM4DF-CDAFxx (continuous-flex) Absolute High-resolution Feedback |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

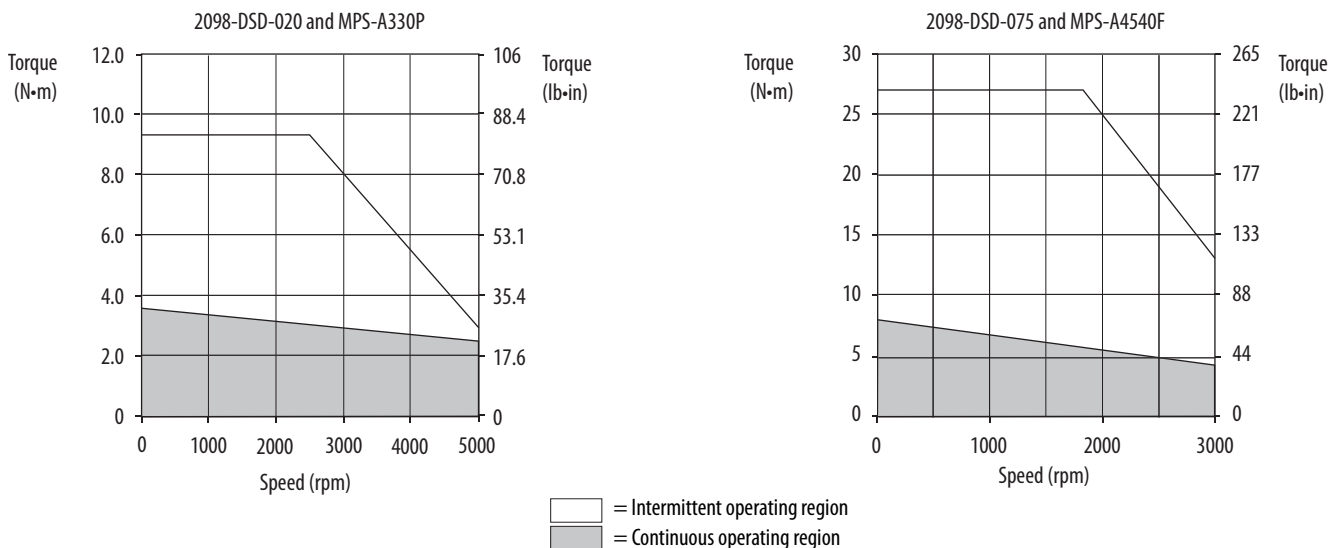
Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Bulletin MPS Motor Performance Specifications with Ultra3000 (200V class) Drives

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 200V-class Drives |
|--------------|----------------|---|---|-------------------------------------|---|--------------------------|-----------------------------|
| MPS-A330P | 5000 | 5.0 | 1.80 (16) | 15.0 | 5.20 (46) | 1.3 | 2098-DSD-010 |
| | | 9.80 | 3.60 (32) | 30.0 | 9.30 (82) | | 2098-DSD-020 |
| MPS-A4540F | 3000 | 14.4 | 8.1 (72) | 30.0 | 15.9 (141) | 1.4 | 2098-DSD-030 |
| | | | | 56.0 | 27.1 (240) | | 2098-DSD-075 |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/MP-Series Stainless Steel Motor Curves



Ultra3000 (400V class) Drives with MP-Series Stainless Steel Motors

This section provides system combination information for the Ultra3000 (400V class) drives when matched with MP-Series stainless-steel motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPS Motor Cable Combinations

| Motor Cat. No. (400V class) | Motor Power Cable | Motor Feedback Cable ⁽¹⁾ |
|-----------------------------|---|---|
| MPS-B330P | 2090-XXNPMF-16Sxx (standard, non-flex) 2090-CPxM4DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM4DF-CDAFxx (continuous-flex) |
| MPS-B4540F | | |
| MPS-B560F | 2090-XXNPMF-14Sxx (standard, non-flex) 2090-CPxM4DF-14AFxx (continuous-flex) | Absolute High-resolution Feedback |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

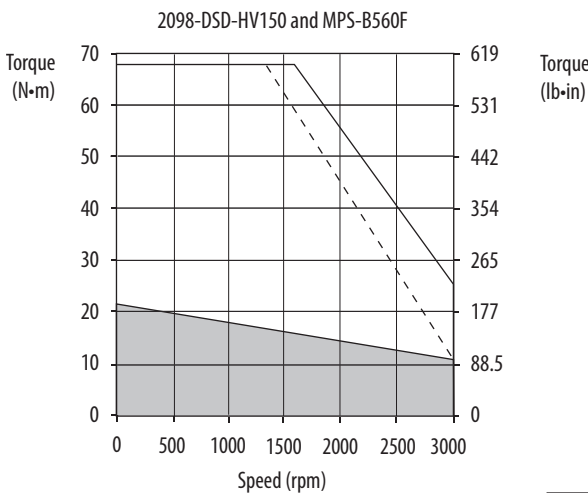
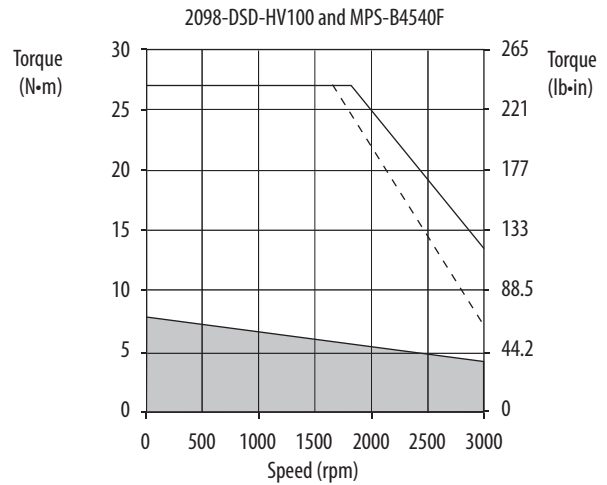
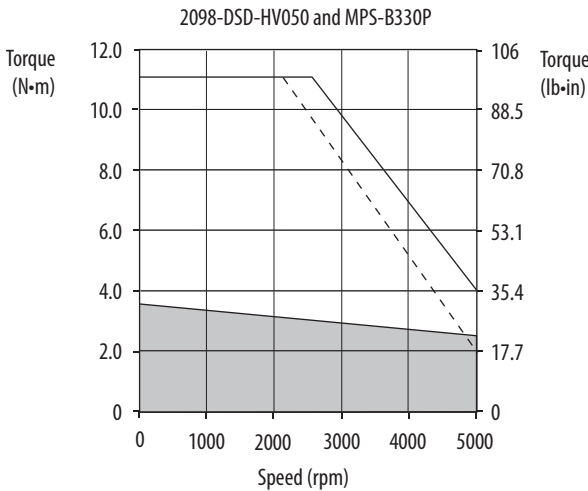
Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Bulletin MPS Motor Performance Specifications with Ultra3000 (400V class) Drives

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Stall Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 400V-class Drives |
|--------------|----------------|---|---|-------------------------------------|---|--------------------------|--------------------------------|
| MPS-B330P | 5000 | 4.90 | 3.6 (32) | 14.0 | 8.80 (78) | 1.3 | 2098-DSD-HV030 |
| | | | | 19.0 | 11.10 (98) | | 2098-DSD-HV050 |
| MPS-B4540F | 3000 | 7.0 | 8.0 (71) | 14.0 | 15.6 (138) | 1.4 | 2098-DSD-HV030 |
| | | 7.1 | 8.1 (72) | 22.0 | 23.5 (208) | | 2098-DSD-HV050 |
| | | | | 26.0 | 27.1 (240) | | 2098-DSD-HV100 |
| MPS-B560F | 3000 | 17.0 | 21.5 (190) | 46.0 | 50.1 (443) | 3.5 | 2098-DSD-HV100 |
| | | | | 68.0 | 67.7 (599) | | 2098-DSD-HV150 |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (400V class) Drives/MP-Series Stainless Steel Motor Curves



- = Intermittent operating region
- = Continuous operating region
- = Drive operation with 400V AC (rms) input voltage

Ultra3000 Drives with TL-Series Low Inertia Motors

This section provides system combination information for the Ultra3000 (200V class) drives when matched with TL-Series™ (Bulletin TLY) low-inertia motors. Compatible TL-Series motors are equipped with incremental encoder feedback. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin TLY Motor Cable Combinations

| Motor Cat. No. (200V class) | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|---------------------------------|---|--|
| TLY-A110T, TLY-A120T, TLY-A130T | 2090-CPWM6DF-16AAxx (standard, non-flex) without brake | 2090-CFBM6DF-CBAAxx or 2090-CFBM6DD-CCAAxx (standard, non-flex) |
| TLY-A220T, TLY-A230T | | |
| TLY-A2530P, TLY-A2540P | 2090-CPBM6DF-16AAxx (standard, non-flex) with brake | Incremental Feedback |
| TLY-A310M | | |

(1) For TLY-Axxxx-H motors with incremental encoder feedback, use 2090-CFBM6DF-CBAAxx flying-lead cables and 2090-UXBB-DM15 connector kit or use 2090-CFBM6DD-CCAAxx (15-pin connector) cable on the drive end. Refer to Required Drive Accessories on [page 4](#).

TL-Series (Bulletin TLY-Axxx) motors are characterized as having 1000 mm (39.4 in.) cable extensions with circular plastic connectors.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Bulletin TLY (non-brake) Performance Specifications with Ultra3000 (200V class) Drives

| Rotary Motor | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 200V-class Drives | |
|--------------|----------------|---|---|-------------------------------------|-----------------------------------|--------------------------|--------------------------------|--------------|
| TLY-A110T | 6000 | 0.55 | 0.096 (0.85) | 1.50 | 0.20 (1.75) | 0.041 | 2098-DSD-005 | |
| TLY-A120T | | 1.03 | 0.181 (1.60) | 2.50 | 0.36 (3.20) | 0.086 | 2098-DSD-005 | |
| TLY-A130T | | 1.85 | 0.325 (2.88) | 4.90 | 0.76 (6.70) | 0.14 | 2098-DSD-005 | |
| TLY-A220T | | 2.50 | 0.576 (5.10) | 7.50 | 1.40 (12.4) | 0.35 | 2098-DSD-005 | |
| | | 3.50 | 0.836 (7.40) | 7.90 | 1.48 (13.1) | | 2098-DSD-010 | |
| TLY-A230T | | 5.00 | 1.17 (10.4) | 15.0 | 2.94 (26.0) | 0.44 | 2098-DSD-010 | |
| | 5.50 | 1.30 (11.5) | 15.5 | 3.05 (27.0) | 2098-DSD-020 | | | |
| TLY-A2530P | 5000 | 5.00 | 1.32 (11.7) | 15.0 | 3.73 (33.0) | 0.69 | 2098-DSD-010 | |
| | | 10.0 | 2.60 (23.0) | 21.0 | 5.20 (46.0) | | 2098-DSD-020 | |
| TLY-A2540P | | 5.00 | 1.49 (13.2) | 15.0 | 4.40 (39.0) | 0.86 | 2098-DSD-010 | |
| | | 10.0 | 2.94 (26.0) | 24.8 | 7.10 (63.0) | | 2098-DSD-020 | |
| TLY-A310M | | 4500 | 10.0 | 3.61 (31.9) | 30.0 | 9.0 (79.6) | 0.95 | 2098-DSD-020 |

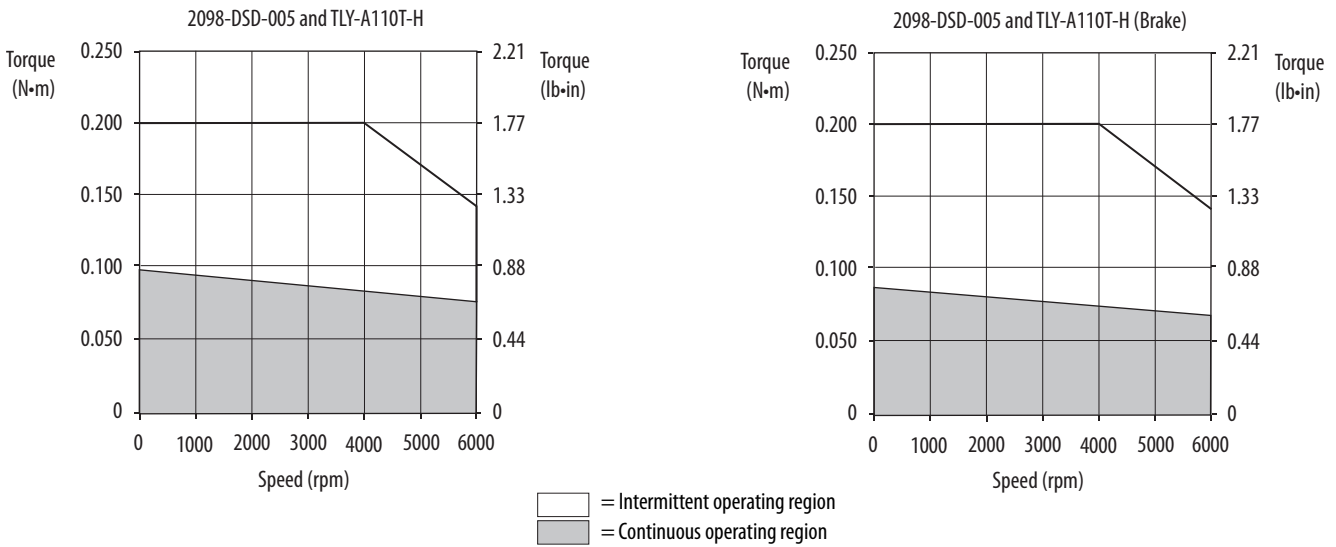
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Bulletin TLY (brake) Performance Specifications with Ultra3000 (200V class) Drives

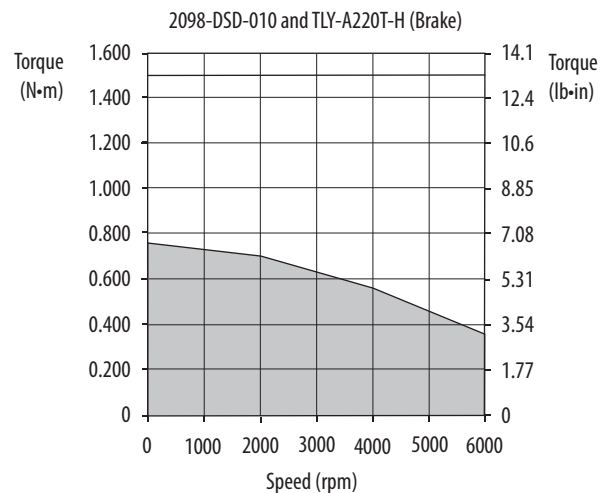
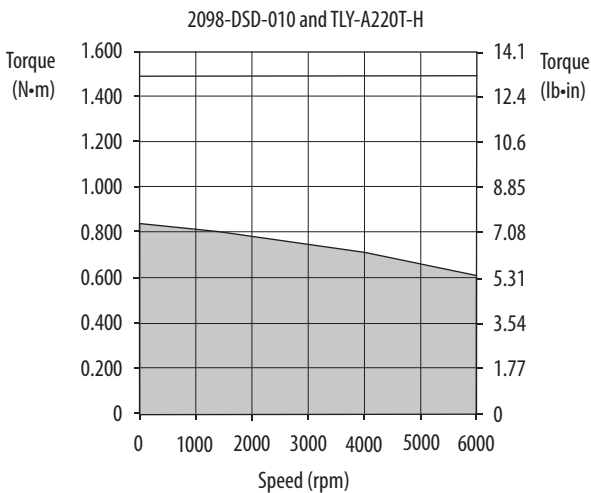
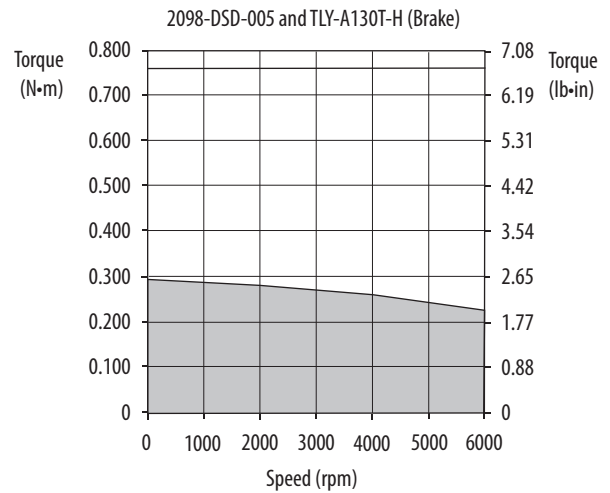
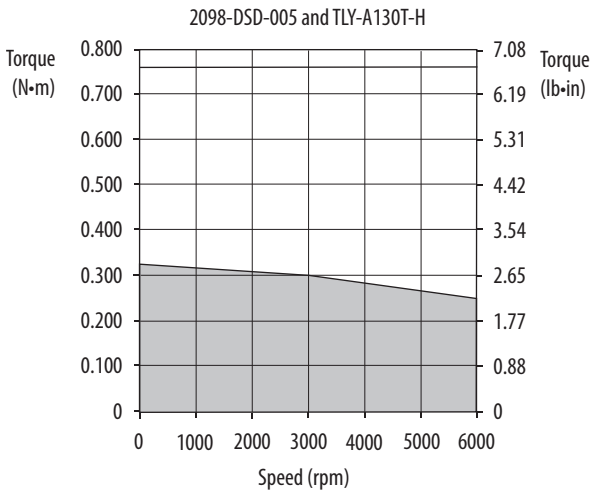
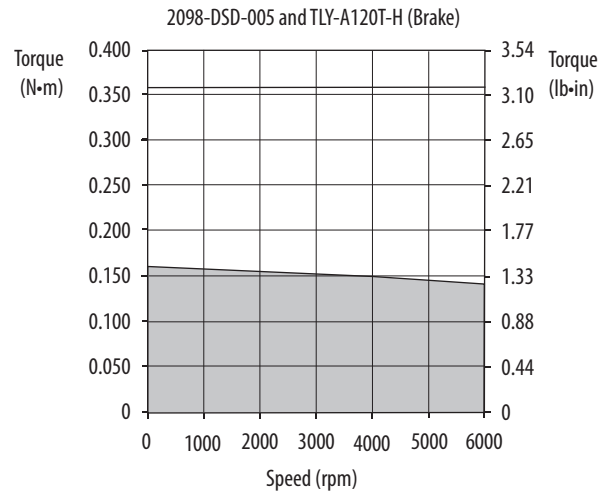
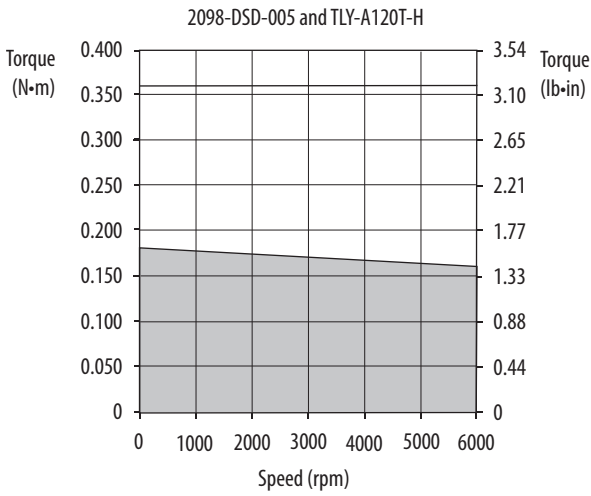
| Rotary Motor | Speed, max rpm | System Continuous Stall Current A 0-pk | System Continuous Stall Torque N·m (lb·in) | System Peak Stall Current A 0-pk | System Peak Torque N·m (lb·in) | Motor Rated Output kW | Ultra3000 200V-class Drives |
|--------------|----------------|---|---|-------------------------------------|-----------------------------------|--------------------------|-----------------------------|
| TLY-A110T | 6000 | 0.50 | 0.086 (0.76) | 1.50 | 0.20 (1.75) | 0.037 | 2098-DSD-005 |
| TLY-A120T | | 0.93 | 0.163 (1.44) | 2.50 | 0.36 (3.20) | 0.077 | 2098-DSD-005 |
| TLY-A130T | | 1.67 | 0.293 (2.59) | 4.90 | 0.76 (6.70) | 0.13 | 2098-DSD-005 |
| TLY-A220T | | 2.50 | 0.576 (5.10) | 7.50 | 1.40 (12.4) | 0.24 | 2098-DSD-005 |
| | | 3.15 | 0.757 (6.70) | 7.90 | 1.48 (13.1) | | 2098-DSD-010 |
| TLY-A230T | | 4.95 | 1.16 (10.3) | 15.0 | 2.94 (26.0) | 0.32 | 2098-DSD-010 |
| | 15.5 | | | 3.05 (27.0) | 2098-DSD-020 | | |
| TLY-A2530P | 5000 | 5.00 | 1.32 (11.7) | 15.0 | 3.73 (33.0) | 0.55 | 2098-DSD-010 |
| | | 10.0 | 2.60 (23.0) | 21.0 | 5.20 (46.0) | | 2098-DSD-020 |
| TLY-A2540P | | 5.0 | 1.49 (13.2) | 15.0 | 4.40 (39.0) | 0.66 | 2098-DSD-010 |
| | | 10.0 | 2.94 (26.0) | 24.8 | 7.10 (63.0) | | 2098-DSD-020 |
| TLY-A310M | 4500 | 10.0 | 3.61 (31.9) | 30.0 | 9.0 (79.6) | 0.90 | 2098-DSD-020 |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/TLY-Axxxx-H (incremental) Motor Curves

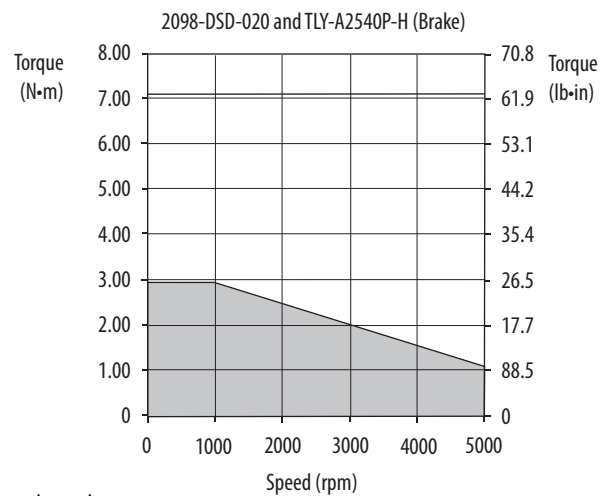
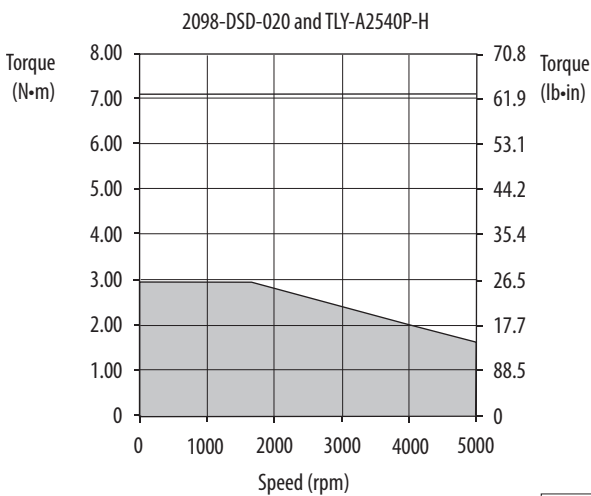
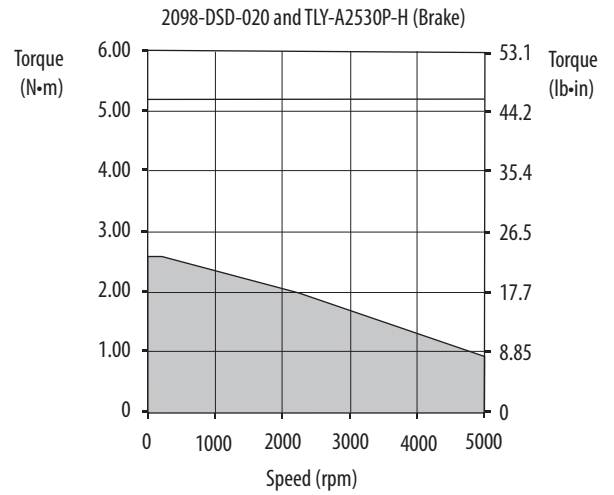
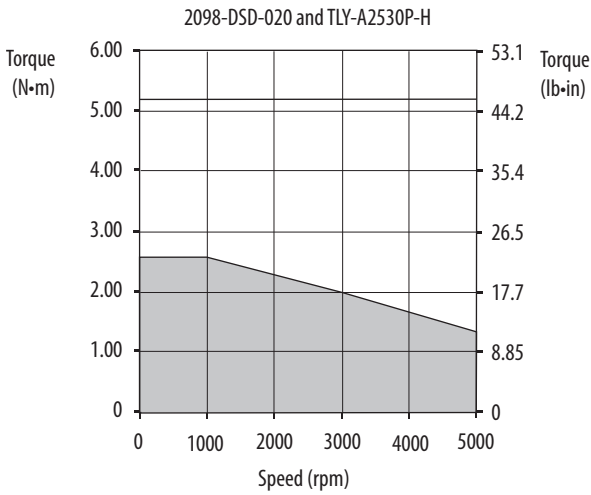
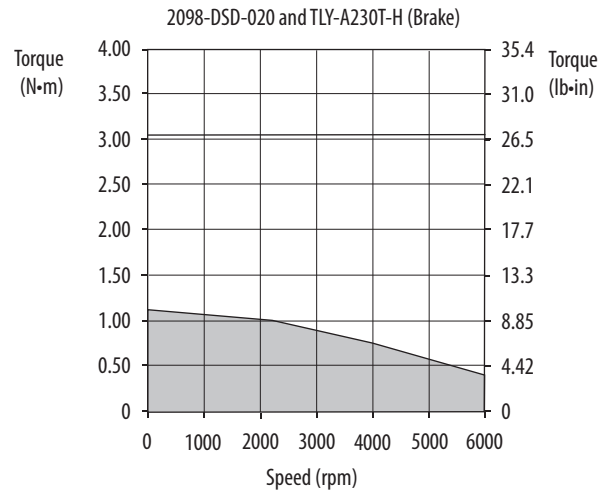
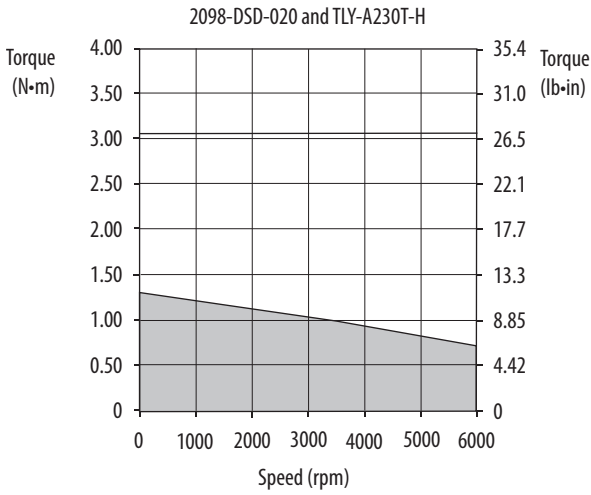


Ultra3000 (200V class) Drives/TLY-Axxxx-H (incremental) Motor Curves (continued)



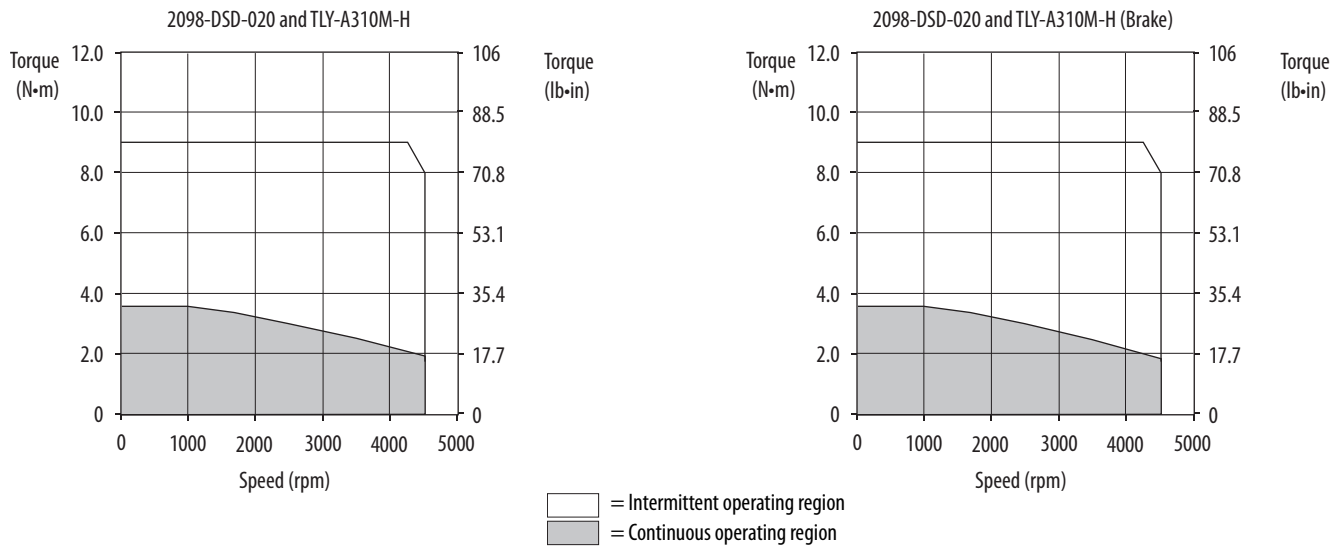
= Intermittent operating region
 = Continuous operating region

Ultra3000 (200V class) Drives/TLY-Axxxx-H (incremental) Motor Curves (continued)



= Intermittent operating region
 = Continuous operating region

Ultra3000 (200V class) Drives/TLY-Axxxx-H (incremental) Motor Curves (continued)



Ultra3000 (200V class) Drives with MP-Series Integrated Linear Stages

This section provides system combination information for the Ultra3000 (200V class) drives when matched with MP-Series (200V class) integrated direct-drive or ballscrew linear stages. Included are power/brake and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Stage Cable Combinations

| Linear Stage | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| MPAS-Axxxx1-V05SxA, MPAS-Axxxx2-V20SxA | 2090-XXNPMF-16Sxx (standard, non-flex) 2090-CPxM4DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM4DF-CDAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPAS-A6xxxB-ALMx2C, MPAS-A8xxxE-ALMx2C, MPAS-A9xxxK-ALMx2C | | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM4DF-CDAFxx (continuous-flex) Incremental Feedback |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Linear Stage Performance Specifications with Ultra3000 (200V class) Drives

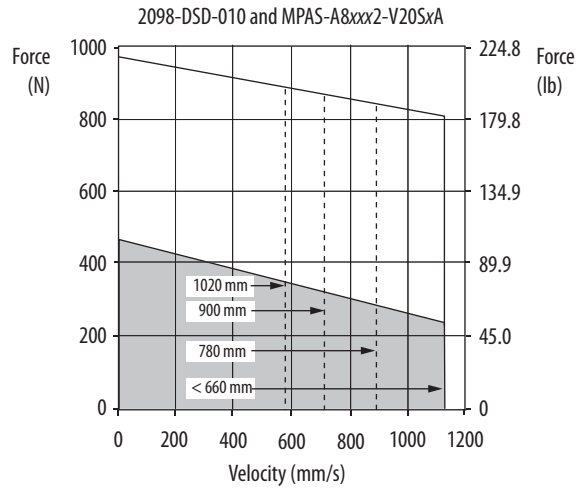
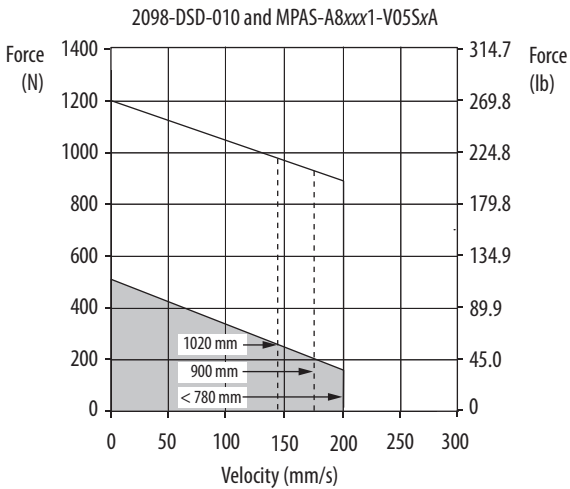
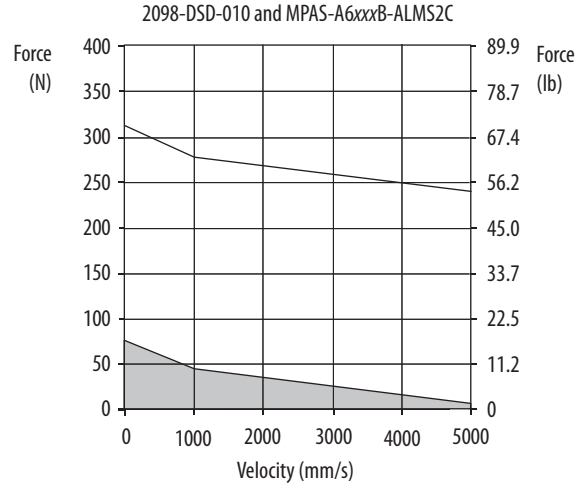
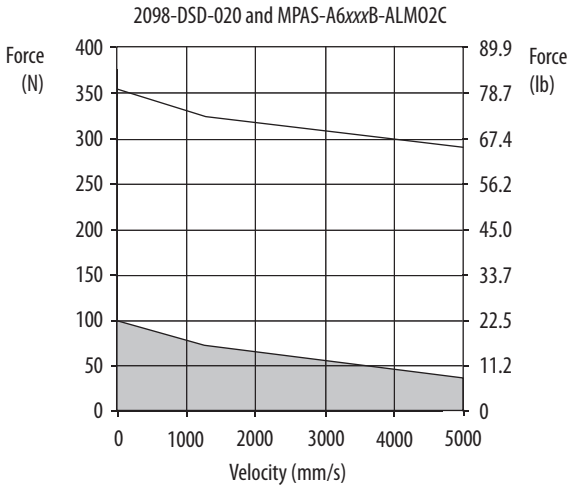
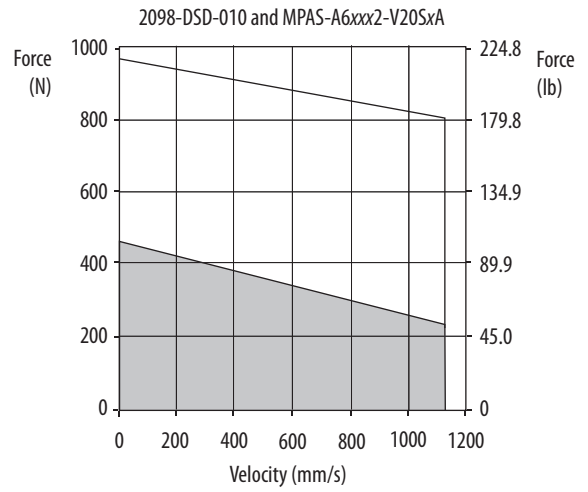
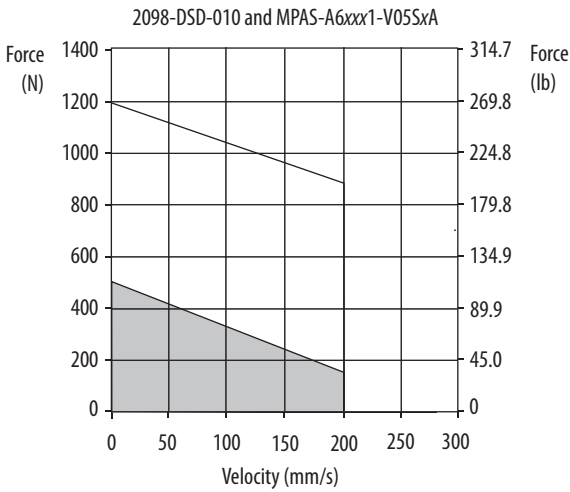
| Linear Stage | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Stage Rated Output kW | Ultra3000 200V-class Drives |
|--------------------|----------------------------|---|--|---|--------------------------------------|------------------------------------|-----------------------------------|
| MPAS-Axxxx1-V05SxA | 200 (7.9) ⁽¹⁾ | 2.50 | 422 (94.9) | 6.10 | 1212 (272) | 0.37 | 2098-DSD-005 |
| | | 3.09 | 521 (117) | | | | 2098-DSD-010 |
| MPAS-Axxxx2-V20SxA | 1124 (44.3) ⁽²⁾ | 2.50 | 254 (57.1) | 7.50 | 798 (179) | 0.62 | 2098-DSD-005 |
| | | 4.54 | 462 (104) | 9.10 | 968 (218) | | 2098-DSD-010 |
| MPAS-A6xxxB-ALM02C | 5000 (200) | 5.0 | 97.8 (22.0) | 15.0 | 340 (76.4) | 0.32 | 2098-DSD-010 |
| | | 5.3 | 105 (23.6) | 15.8 | 359 (80.7) | | 2098-DSD-020 |
| MPAS-A6xxxB-ALMS2C | | 2.5 | 29.6 (6.65) | 7.5 | 150 (33.7) | 0.29 | 2098-DSD-005 |
| | | 4.7 | 83.0 (18.7) | 14.2 | 312 (70.1) | | 2098-DSD-010 |
| MPAS-A8xxxE-ALM02C | | 5.0 | 129 (29.0) | 15.0 | 366 (82.3) | 0.53 | 2098-DSD-010 |
| | | 7.0 | 189 (42.5) | 18.5 | 456 (103) | | 2098-DSD-020 |
| MPAS-A8xxxE-ALMS2C | | 5.0 | 120 (27.0) | 15.0 | 356 (80.0) | 0.48 | 2098-DSD-010 |
| | | 6.3 | 159 (35.7) | 16.7 | 399 (89.7) | | 2098-DSD-020 |
| MPAS-A9xxxK-ALM02C | | 5.0 | 207 (46.5) | 15.0 | 553 (124) | 0.77 | 2098-DSD-010 |
| | | 6.7 | 285 (64.1) | 18.3 | 680 (153) | | 2098-DSD-020 |
| MPAS-A9xxxK-ALMS2C | | 5.0 | 195 (43.8) | 15.0 | 545 (123) | 0.69 | 2098-DSD-010 |
| | | 6.1 | 245 (55.1) | 16.5 | 601 (135) | | 2098-DSD-020 |

(1) For 900 mm stroke length, maximum speed is 176 mm/s (6.9 in/s). For 1020 mm stroke length, maximum speed is 143 mm/s (5.6 in/s).

(2) For 780 mm stroke length, maximum speed is 889 mm/s (35.0 in/s). For 900 mm stroke length, maximum speed is 715 mm/s (28.2 in/s). For 1020 mm stroke length, maximum speed is 582 mm/s (22.9 in/s).

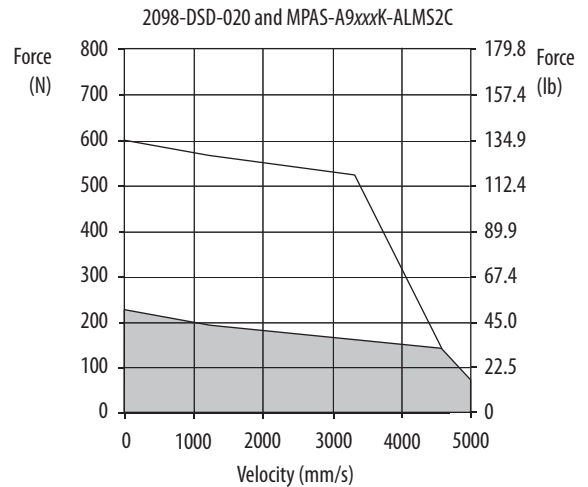
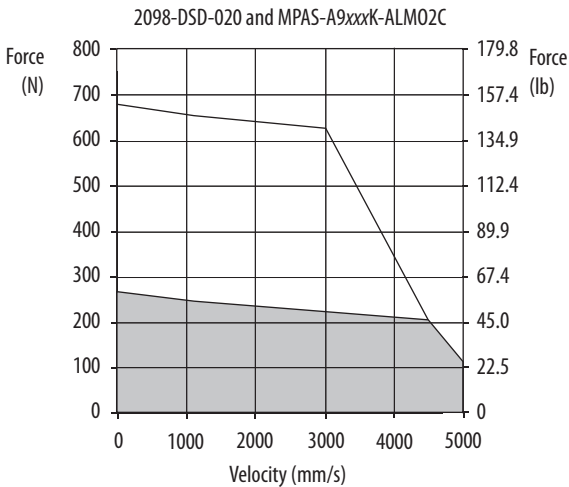
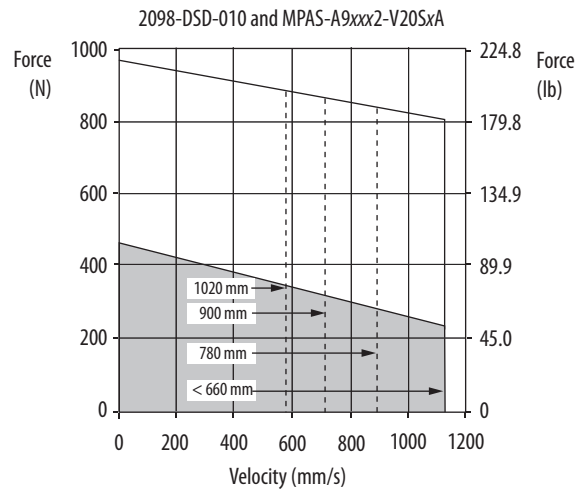
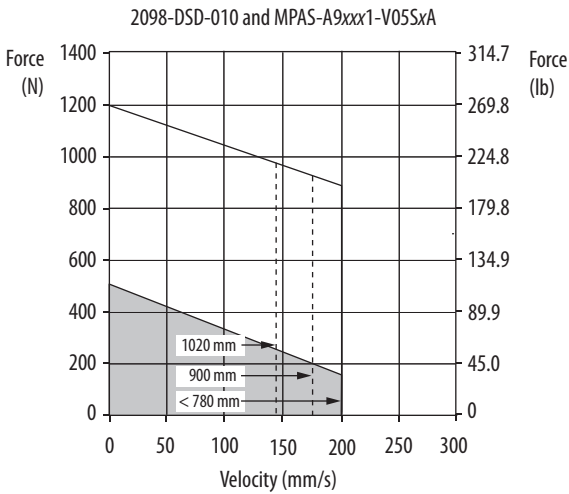
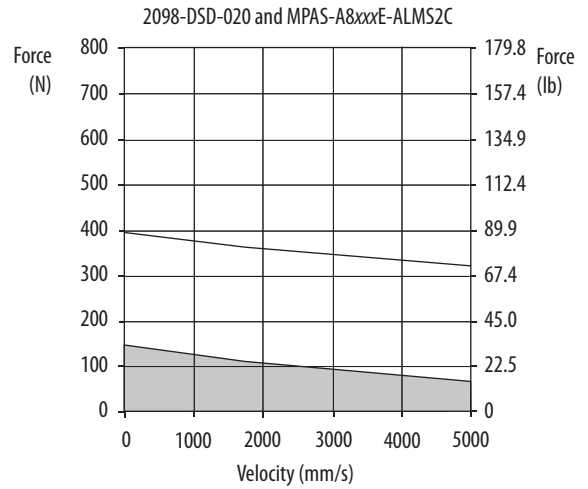
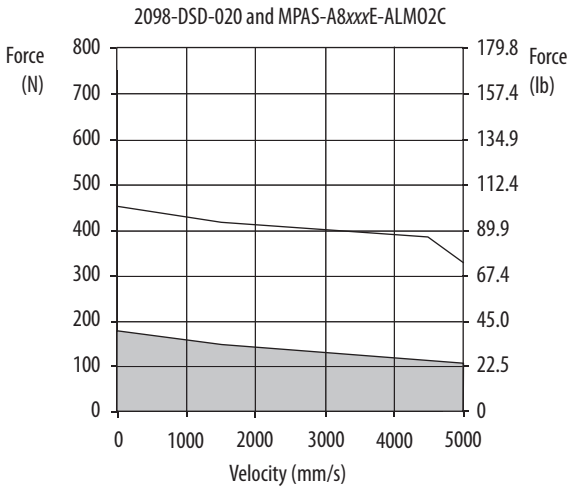
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/MP-Series Integrated Linear Stage Curves



- = Intermittent operating region
- = Continuous operating region
- = System operation for specified stroke length

Ultra3000 (200V class) Drives/MP-Series Integrated Linear Stage Curves (continued)



- = Intermittent operating region
- = Continuous operating region
- = System operation for specified stroke length

Ultra3000 (400V class) Drives with MP-Series Integrated Linear Stages

This section provides system combination information for the Ultra3000 (400V class) drives when matched with MP-Series (400V class) integrated direct-drive or ballscrew linear stages. Included are motor power and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Stage Cable Combinations

| Linear Stage | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|---|---|--|
| MPAS-Bxxxx1-V05SxA, MPAS-Bxxxx2-V20SxA | 2090-XXNPMF-16Sxx (standard, non-flex) 2090-CPxM4DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM4DF-CDAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPAS-B8xxxF-ALMx2C, MPAS-B9xxxL-ALMx2C | | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM4DF-CDAFxx (continuous-flex) Incremental Feedback |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-ID004](#), for standard cable lengths.

Linear Stage Performance Specifications with Ultra3000 (400V class) Drives

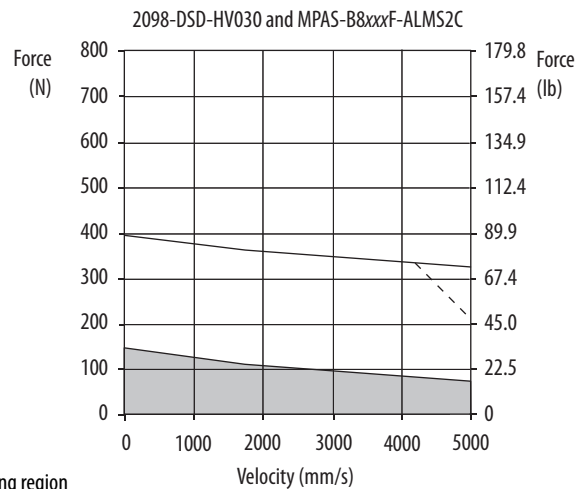
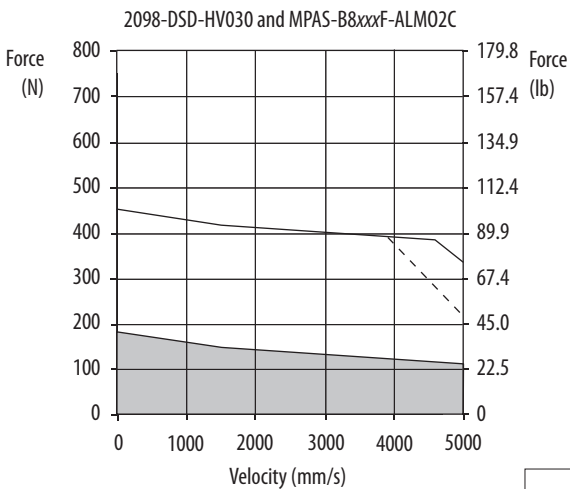
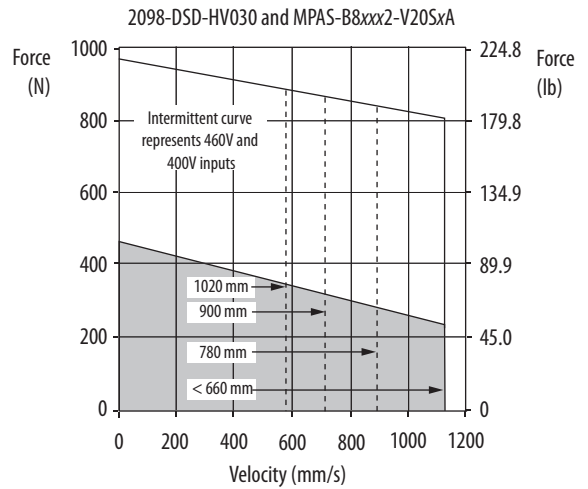
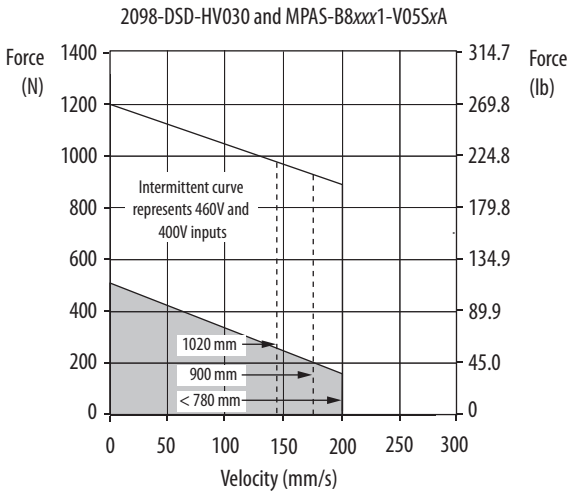
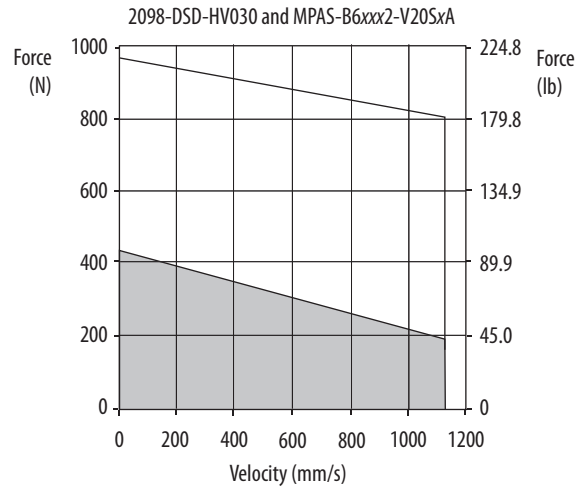
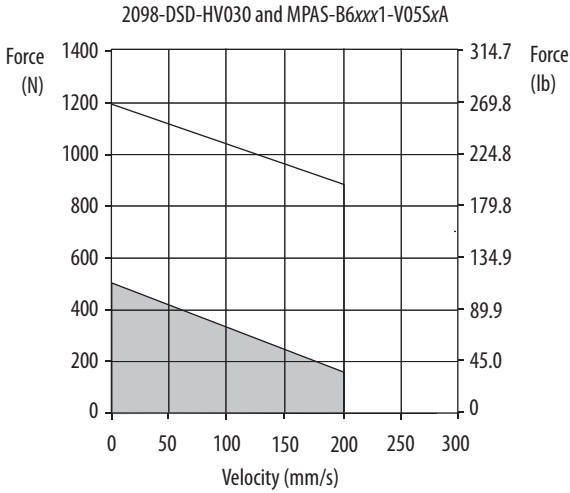
| Linear Stage | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Stage Rated Output kW | Ultra3000 400V-class Drives |
|--------------------|----------------------------|---|--|---|--------------------------------------|------------------------------------|--------------------------------|
| MPAS-Bxxxx1-V05SxA | 200 (7.9) ⁽¹⁾ | 1.75 | 521 (117) | 3.50 | 1212 (272) | 0.138 | 2098-DSD-HV030 |
| MPAS-Bxxxx2-V20SxA | 1124 (44.3) ⁽²⁾ | 3.30 | 462 (104) | 6.60 | 968 (218) | 0.52 | 2098-DSD-HV030 |
| MPAS-B8xxxF-ALM02C | 5000 (200) | 3.50 | 189 (42.5) | 9.30 | 456 (103) | 0.527 | 2098-DSD-HV030 |
| MPAS-B8xxxF-ALMS2C | 5000 (200) | 3.15 | 159 (35.7) | 8.37 | 399 (89.7) | 0.475 | 2098-DSD-HV030 |
| MPAS-B9xxxL-ALM02C | 5000 (200) | 3.40 | 285 (64.1) | 9.10 | 680 (153) | 0.768 | 2098-DSD-HV030 |
| MPAS-B9xxxL-ALMS2C | 5000 (200) | 3.03 | 245 (55.1) | 8.19 | 601 (135) | 0.69 | 2098-DSD-HV030 |

(1) For 900 mm stroke length, maximum speed is 176 mm/s (6.9 in/s). For 1020 mm stroke length, maximum speed is 143 mm/s (5.6 in/s).

(2) For 780 mm stroke length, maximum speed is 889 mm/s (35.0 in/s). For 900 mm stroke length, maximum speed is 715 mm/s (28.2 in/s). For 1020 mm stroke length, maximum speed is 582 mm/s (22.9 in/s).

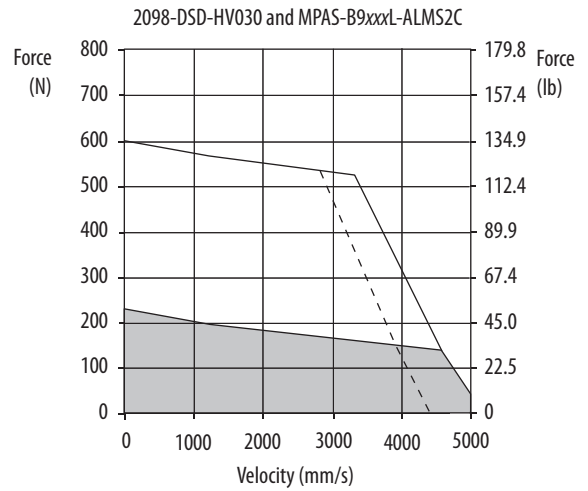
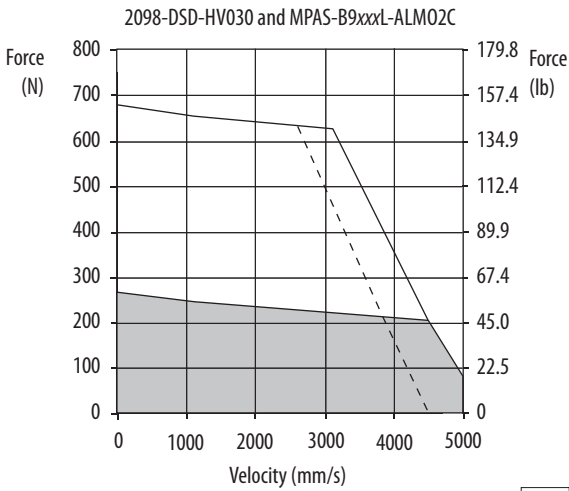
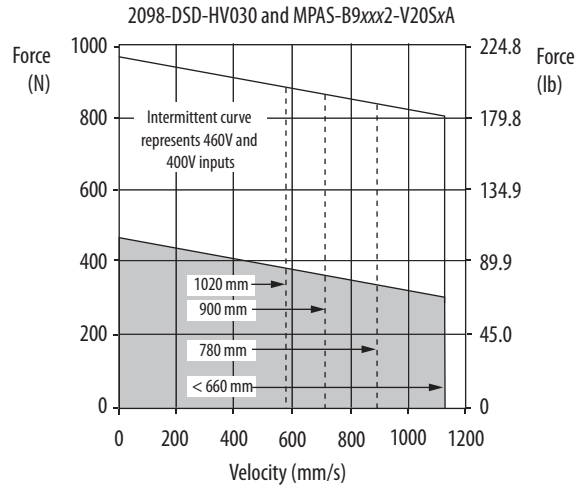
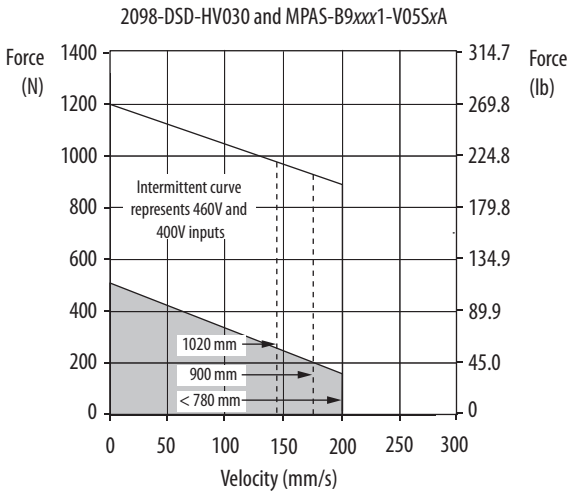
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (400V class) Drives/MP-Series Integrated Linear Stage Curves



- = Intermittent operating region
- = Continuous operating region
- = System operation with 400V AC (rms) input voltage
- = System operation for specified stroke length

Ultra3000 (400V class) Drives/MP-Series Integrated Linear Stage Curves (continued)



- = Intermittent operating region
- = Continuous operating region
- = System operation with 400V AC (rms) input voltage
- = System operation for specified stroke length

Ultra3000 Drives with MP-Series Electric Cylinders

This section provides system combination information for the Ultra3000 drives when matched with MP-Series electric cylinders. Included are power/brake and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Electric Cylinder Cable Combinations

| Electric Cylinders | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| MPAR-A/B1xxxB MPAR-A/B1xxxE MPAR-A/B2xxxC MPAR-A/B2xxxF | 2090-XXNPMF-16Sxx (standard, non-flex) 2090-CPxM4DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM4DF-CDAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPAR-A/B3xxxE MPAR-A/B3xxxH | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) Absolute High-resolution Feedback |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Electric Cylinder Performance Specifications with Ultra3000 Drives

Performance Specifications with Ultra3000 (200V class) Drives

| Electric Cylinder | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Rated Output kW | Ultra3000 200V-class Drives |
|-------------------|---------------------------|---|--|---|--------------------------------------|--------------------|--------------------------------|
| MPAR-A1xxxB | 150 | 1.15 | 240 (53.9) | 1.35 | 300 (67.4) | 0.036 | 2098-DSD-005 |
| MPAR-A1xxxE | 500 | 2.16 | 280 (62.9) | 2.48 | 350 (78.7) | 0.140 | |
| MPAR-A2xxxC | 250 | 2.42 | 420 (94.4) | 2.72 | 525 (118) | 0.105 | 2098-DSD-010 |
| MPAR-A2xxxF | 640 | 4.54 | 640 (144) | 5.41 | 800 (180) | 0.410 | |
| MPAR-A3xxxE | 500 | 10.33 | 2000 (450) | 12.34 | 2500 (562) | 1.00 | 2098-DSD-030 ⁽¹⁾ |
| MPAR-A3xxxH | 1000 | 12.20 | 1300 (292) | 16.40 | 1625 (365) | 1.30 | 2098-DSD-030 |

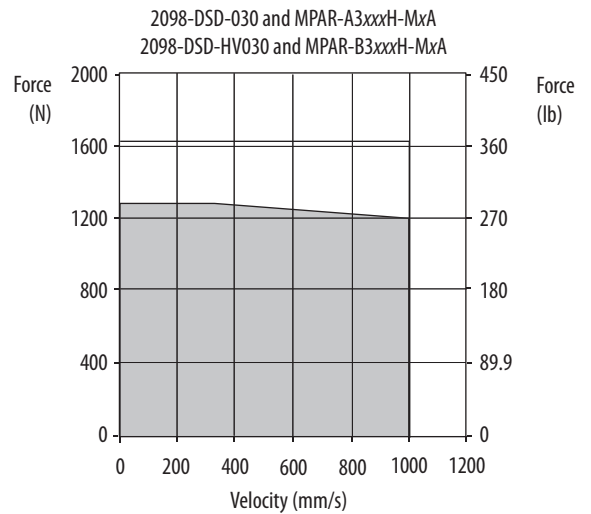
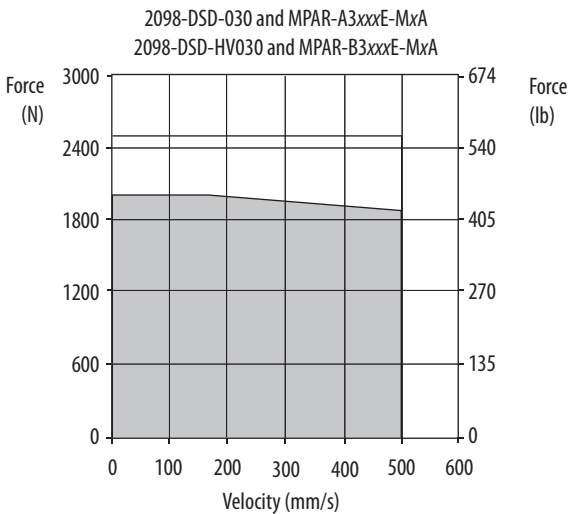
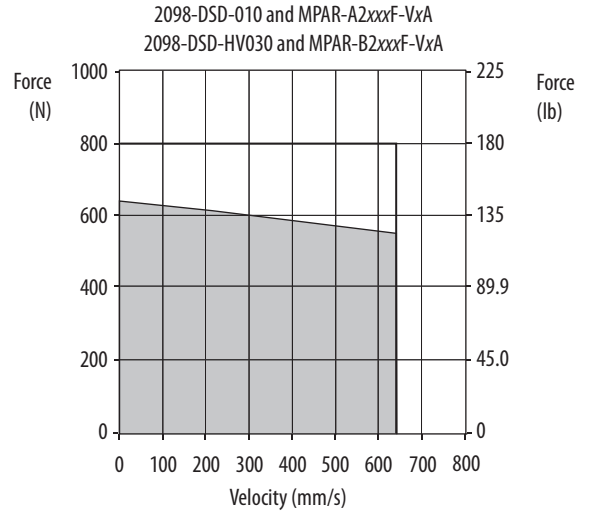
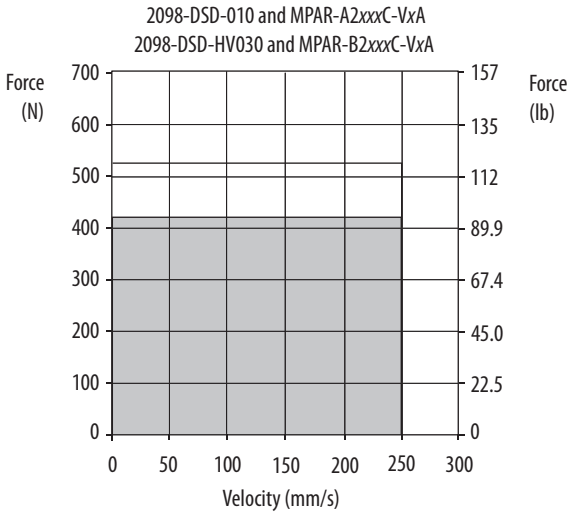
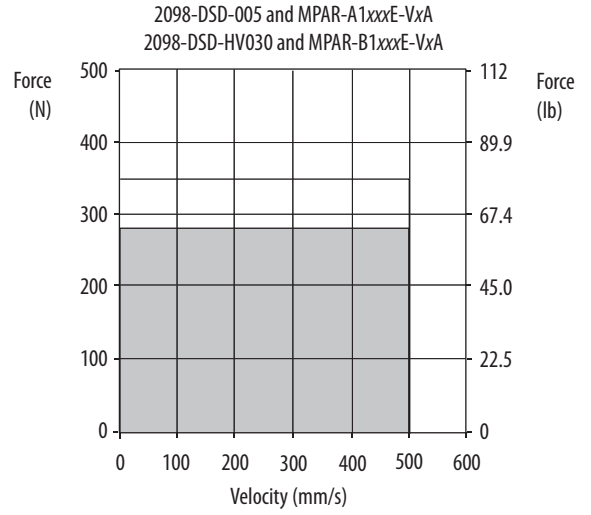
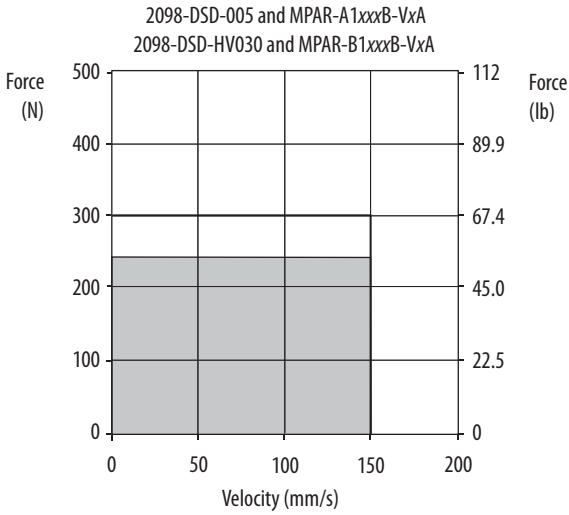
(1) Use of catalog number 2098-DSD020x-xx is acceptable for applications with actuators and continuous force derated by 5%.

Performance Specifications with Ultra3000 (400V class) Drives

| Electric Cylinder | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Rated Output kW | Ultra3000 400V-class Drives |
|-------------------|---------------------------|---|--|---|--------------------------------------|--------------------|--------------------------------|
| MPAR-B1xxxB | 150 | 1.15 | 240 (53.9) | 1.35 | 300 (67.4) | 0.036 | 2098-DSD-HV030 |
| MPAR-B1xxxE | 500 | 1.49 | 280 (62.9) | 1.71 | 350 (78.7) | 0.140 | |
| MPAR-B2xxxC | 250 | 1.67 | 420 (94.4) | 1.90 | 525 (118) | 0.105 | |
| MPAR-B2xxxF | 640 | 3.29 | 640 (144) | 3.93 | 800 (180) | 0.410 | |
| MPAR-B3xxxE | 500 | 5.16 | 2000 (450) | 6.17 | 2500 (562) | 1.00 | |
| MPAR-B3xxxH | 1000 | 6.13 | 1300 (292) | 6.79 | 1625 (365) | 1.30 | |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 Drives/MP-Series Electric Cylinder Curves



= Intermittent operating region
 = Continuous operating region

Ultra3000 Drives with MP-Series Heavy Duty Electric Cylinders

This section provides system combination information for the Ultra3000 drives when matched with MP-Series heavy-duty electric cylinders. Included are power/brake and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Electric Cylinder Cable Combinations

| Electric Cylinder | Motor Power/Brake Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| MPAI-A/B3xxxC, MPAI-A/B3xxxE MPAI-A/B3xxxR, MPAI-A/B3xxxS | 2090-CPWM7DF-16AAxx (standard, non-flex) 2090-CPWM7DF-16AFxx (continuous-flex) | 2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex) Absolute High-resolution Feedback |
| MPAI-A/B4xxxC, MPAI-A/B4xxxE MPAI-A/B4xxxR, MPAI-A/B4xxxS | | |
| MPAI-B5xxxC, MPAI-B5xxxE | | |
| MPAI-A5xxxC, MPAI-A5xxxE | 2090-CPWM7DF-14AAxx (standard, non-flex) 2090-CPWM7DF-14AFxx (continuous-flex) | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) with flying-lead cables on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

Electric Cylinder Performance Specifications with Ultra3000 (200V class) Drives

Performance Specifications with Ball Screw Electric Cylinders

| Electric Cylinder | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Rated Output kW | Ultra3000 200V-class Drives |
|-------------------|---------------------------|---|---|----------------|---|--------------------------------------|--------------------|--------------------------------|
| | | | 25 °C (77 °F) | 40 °C (104 °F) | | | | |
| MPAI-A3076CM1 | 305 (12) | 2.68 | 1624 (365) | 1290 (290) | 8.90 | 4448 (1000) | 0.27 | 2098-DSD-010 |
| MPAI-A3076EM1 | 610 (24) | | 814 (183) | 645 (145) | | 2570 (578) | | |
| MPAI-A3150CM3 | 279 (11) | 5.61 | 4003 (900) | 3176 (714) | 8.40 | 4448 (1000) | 0.39 | 2098-DSD-020 |
| MPAI-A3300CM3 | 188 (7.3) | | | | | | | |
| MPAI-A3150EM3 | 559 (22) | | 2002 (450) | 1588 (357) | 14.14 | 4003 (900) | | |
| MPAI-A3300EM3 | 376 (15) | | | | | | | |
| MPAI-A4150CM3 | 279 (11) | 10.89 | 7784 (1750) | 6179 (1389) | 17.07 | 8896 (2000) | 0.43 | 2098-DSD-030 |
| MPAI-A4300CM3 | 245 (9.5) | | | | | | | |
| MPAI-A4150EM3 | 559 (22) | | 3892 (875) | 3092 (695) | 27.44 | 7784 (1750) | | |
| MPAI-A4300EM3 | 491 (19) | | | | | | | |
| MPAI-A4450EM3 | 491 (19) | | | | | | | |
| MPAI-A5xxxCM3 | 200 (7.8) | 13.25 | 13,123 (2950) | 10,415 (2341) | 16.70 | 13,345 (3000) | 0.55 | 2098-DSD-075 |
| MPAI-A5xxxEM3 | 400 (15.6) | | 6562 (1475) | 5208 (1171) | 33.40 | 13,122 (2950) | | |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Performance Specifications with Roller Screw Electric Cylinders

| Electric Cylinder | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Rated Output kW | Ultra3000 200V-class Drives |
|-------------------|---------------------------|--|---|----------------|---|--------------------------------------|--------------------|--------------------------------|
| | | | 25 °C (77 °F) | 40 °C (104 °F) | | | | |
| MPAI-A3076RM1 | 305 (12) | 2.87 | 1557 (350) | 1237 (278) | 8.90 | 4862 (1093) | 0.27 | 2098-DSD-010 |
| MPAI-A3076SM1 | 610 (24) | | 778 (175) | 618 (139) | | 2431 (547) | | |
| MPAI-A3150RM3 | 279 (11) | 5.61 | 3781 (850) | 3003 (675) | 14.14 | 7562 (1700) | 0.39 | 2098-DSD-020 |
| MPAI-A3300RM3 | | | | | | | | |
| MPAI-A3450RM3 | 176 (6.9) | | | | | | | |
| MPAI-A3150SM3 | 559 (22) | | 1891 (425) | 1499 (337) | | 3781 (850) | | |
| MPAI-A3300SM3 | | | | | | | | |
| MPAI-A3450SM3 | 353 (14) | | | | | | | |
| MPAI-A4150RM3 | 279 (11) | 10.89 | 7340 (1650) | 5827 (1310) | 27.44 | 14,679 (3300) | 0.43 | 2098-DSD-030 |
| MPAI-A4300RM3 | | | | | | | | |
| MPAI-A4450RM3 | 196 (7.6) | | | | | | | |
| MPAI-A4150SM3 | 559 (22) | | 3670 (825) | 2914 (655) | | 7340 (1650) | | |
| MPAI-A4300SM3 | | | | | | | | |
| MPAI-A4450SM3 | 393 (15) | | | | | | | |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Electric Cylinder Performance Specifications with Ultra3000 (400V class) Drives

Performance Specifications with Ball Screw Electric Cylinders

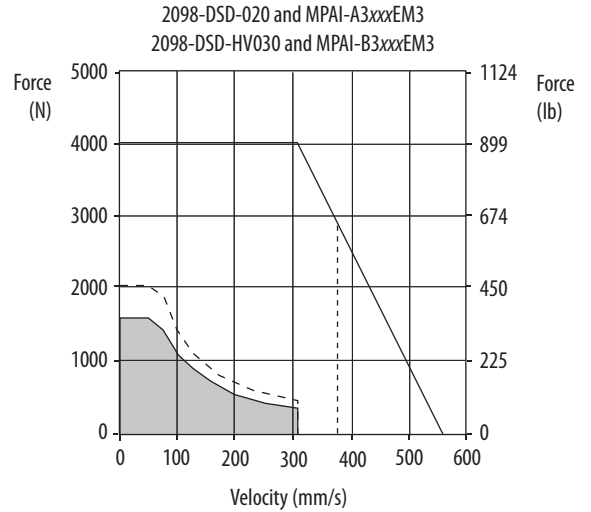
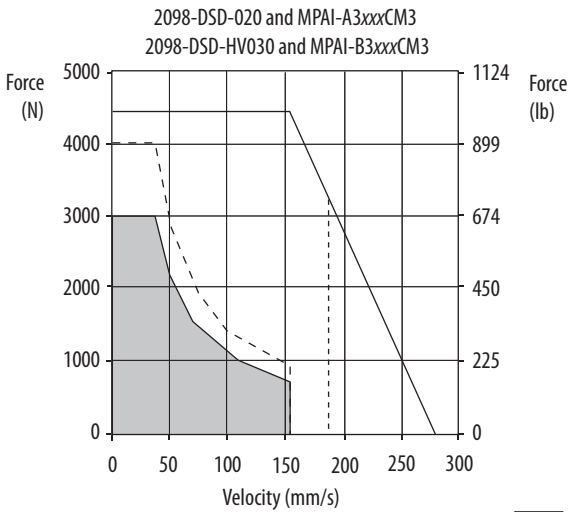
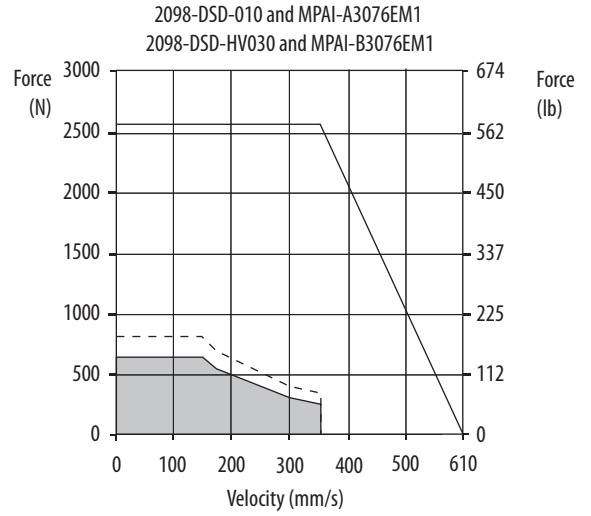
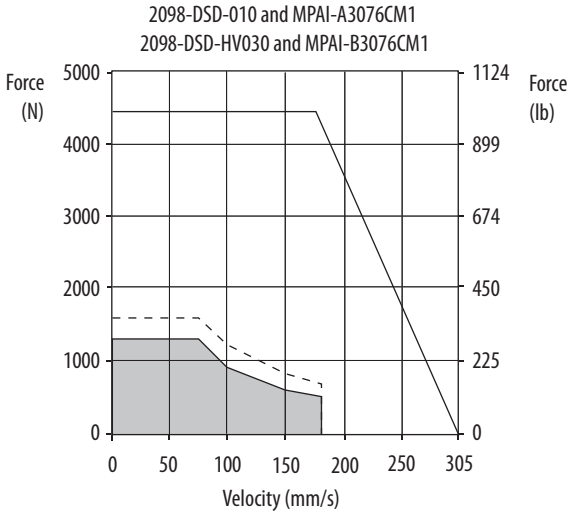
| Electric Cylinder | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Rated Output kW | Ultra3000 400V-class Drives |
|-------------------|---------------------------|---|---|----------------|---|--------------------------------------|--------------------|--------------------------------|
| | | | 25 °C (77 °F) | 40 °C (104 °F) | | | | |
| MPAI-B3076CM1 | 305 (12) | 1.35 | 1624 (365) | 1290 (290) | 4.57 | 4448 (1000) | 0.27 | 2098-DSD-HV030 |
| MPAI-B3076EM1 | 610 (24) | | 814 (183) | 645 (145) | | 2570 (578) | | |
| MPAI-B3150CM3 | 279 (11) | 2.81 | 4003 (900) | 3176 (714) | 4.30 | 4448 (1000) | 0.39 | 2098-DSD-HV030 |
| MPAI-B3300CM3 | | | | | | | | |
| MPAI-B3450CM3 | 188 (7.3) | | | | | | | |
| MPAI-B3150EM3 | 559 (22) | | 2002 (450) | 1588 (357) | 7.07 | 4003 (900) | | |
| MPAI-B3300EM3 | | | | | | | | |
| MPAI-B3450EM3 | | | 376 (15) | | | | | |
| MPAI-B4150CM3 | 279 (11) | 5.61 | 7784 (1750) | 6179 (1389) | 8.68 | 8896 (2000) | 0.43 | 2098-DSD-HV030 |
| MPAI-B4300CM3 | | | | | | | | |
| MPAI-B4450CM3 | 245 (9.5) | | | | | | | |
| MPAI-B4150EM3 | 559 (22) | | 3892 (875) | 3092 (695) | 14.14 | 7784 (1750) | | |
| MPAI-B4300EM3 | | | | | | | | |
| MPAI-B4450EM3 | | | 491 (19) | | | | | |
| MPAI-B5xxxCM3 | 200 (7.8) | 6.62 | 13,123 (2950) | 10,415 (2341) | 8.48 | 13,345 (3000) | 0.55 | 2098-DSD-HV050 |
| MPAI-B5xxxEM3 | 400 (15.6) | | 6562 (1475) | 5208 (1171) | | 16.70 | | |

Performance Specifications with Roller Screw Electric Cylinders

| Electric Cylinder | Speed, max mm/s (in/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Rated Output kW | Ultra3000 400V-class Drives |
|-------------------|---------------------------|---|---|----------------|---|--------------------------------------|--------------------|--------------------------------|
| | | | 25 °C (77 °F) | 40 °C (104 °F) | | | | |
| MPAI-B3076RM1 | 305 (12) | 1.45 | 1557 (350) | 1237 (278) | 4.57 | 4862 (1093) | 0.27 | 2098-DSD-HV030 |
| MPAI-B3076SM1 | 610 (24) | | 778 (175) | 618 (139) | | 2431 (547) | | |
| MPAI-B3150RM3 | 279 (11) | 2.81 | 3781 (850) | 3003 (675) | 7.07 | 7562 (1700) | 0.39 | 2098-DSD-HV030 |
| MPAI-B3300RM3 | | | | | | | | |
| MPAI-B3450RM3 | 176 (6.9) | | | | | | | |
| MPAI-B3150SM3 | 559 (22) | | 1891 (425) | 1499 (337) | 3781 (850) | | | |
| MPAI-B3300SM3 | | | | | | | | |
| MPAI-B3450SM3 | | | 353 (14) | | | | | |
| MPAI-B4150RM3 | 279 (11) | 5.61 | 7340 (1650) | 5827 (1310) | 14.14 | 14,679 (3300) | 0.43 | 2098-DSD-HV030 |
| MPAI-B4300RM3 | | | | | | | | |
| MPAI-B4450RM3 | 196 (7.6) | | | | | | | |
| MPAI-B4150SM3 | 559 (22) | | 3670 (825) | 2914 (655) | 7340 (1650) | | | |
| MPAI-B4300SM3 | | | | | | | | |
| MPAI-B4450SM3 | | | 393 (15) | | | | | |

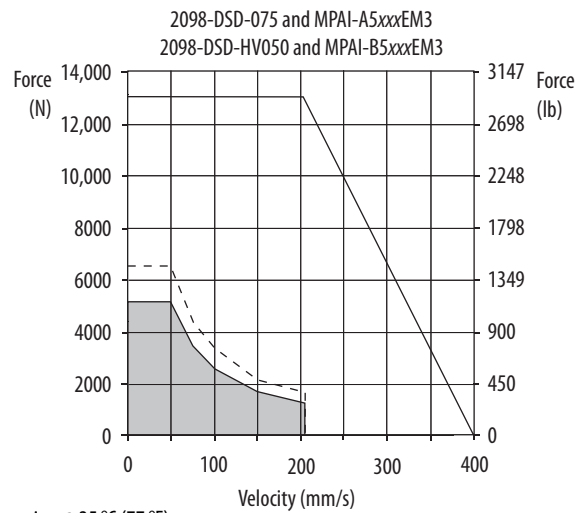
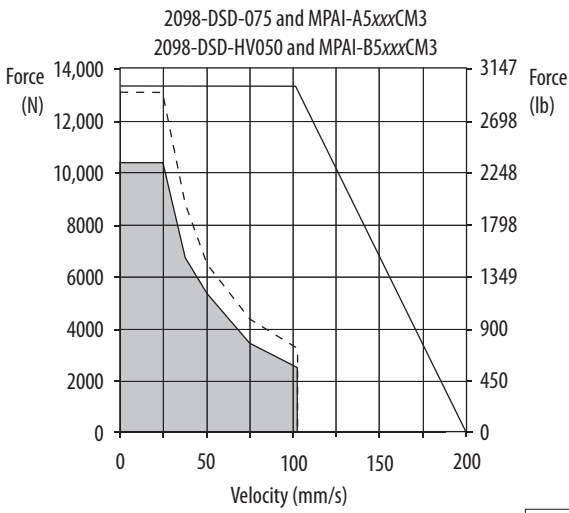
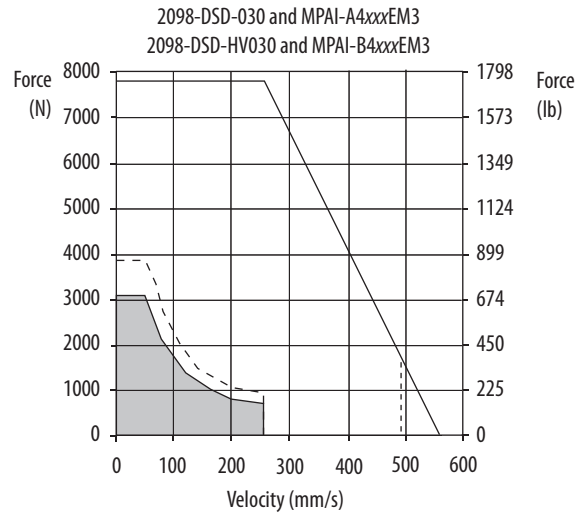
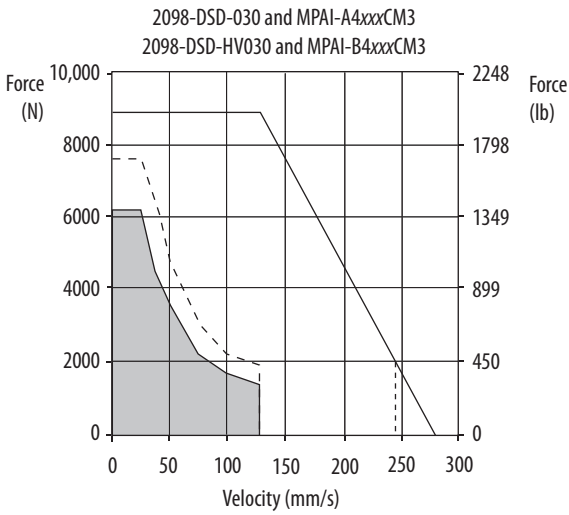
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 Drives/MP-Series Heavy Duty (ball screw) Electric Cylinder Curves



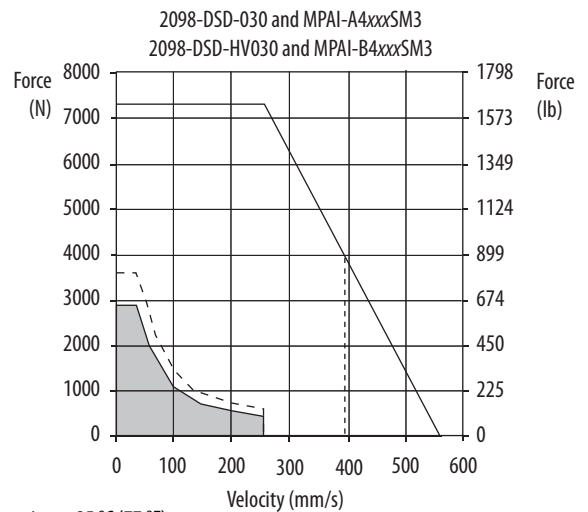
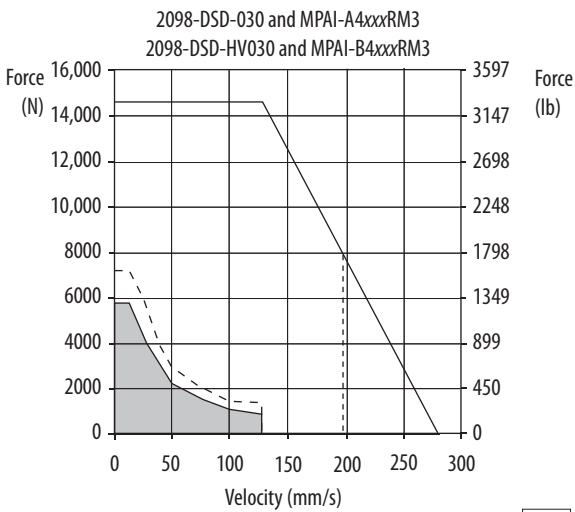
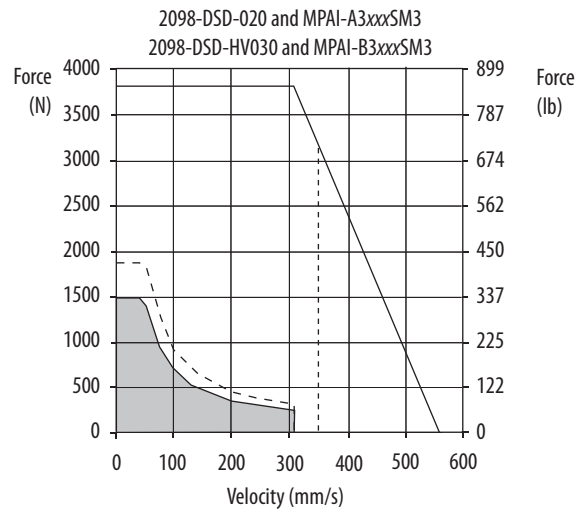
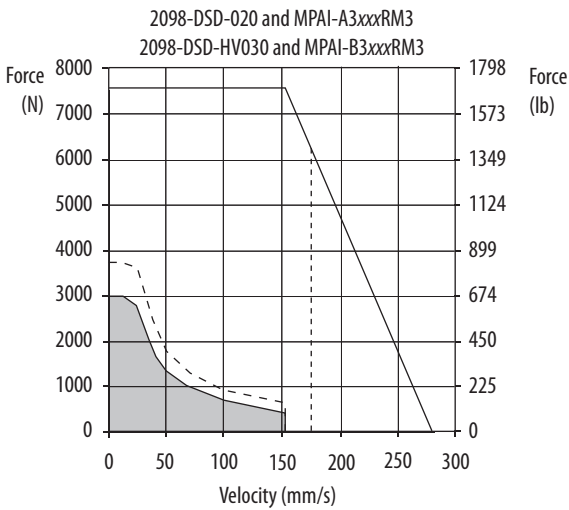
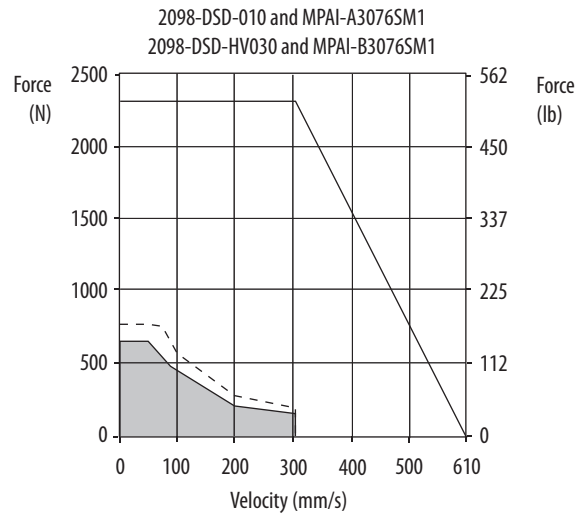
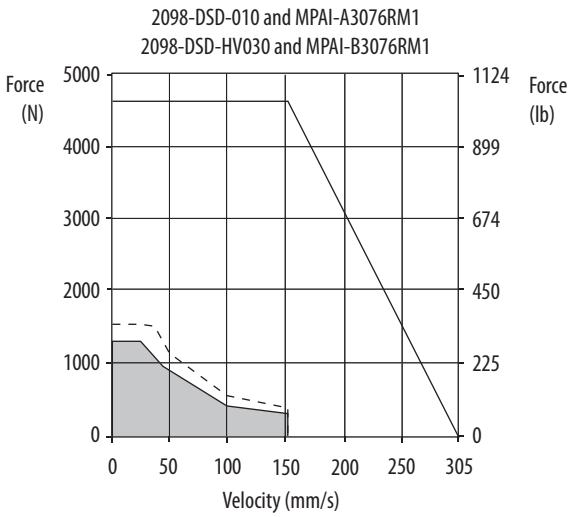
- = Continuous operating region @ 25 °C (77 °F)
- = Continuous operating region @ 40 °C (104 °F)
- - - = Intermittent operating region, 450 mm (18 in.) stroke length only
- = Intermittent operating region, 076...300 mm (3...12 in.) stroke lengths

Ultra3000 Drives/MP-Series Heavy Duty (ball screw) Electric Cylinder Curves (continued)



- = Continuous operating region @ 25 °C (77 °F)
- = Continuous operating region @ 40 °C (104 °F)
- = Intermittent operating region, 450 mm (18 in.) stroke length only
- = Intermittent operating region, 076...300 mm (3...12 in.) stroke lengths

Ultra3000 Drives/MP-Series Heavy Duty (roller screw) Electric Cylinder Curves



- = Continuous operating region @ 25 °C (77 °F)
- █ = Continuous operating region @ 40 °C (104 °F)
- - - = Intermittent operating region, 450 mm (18 in.) stroke length only
- = Intermittent operating region, 076...300 mm (3...12 in.) stroke lengths

Ultra3000 (200V class) Drives with LDC-Series Linear Motors

This section provides system combination information for the Ultra3000 (200V class) drives when matched with LDC-Series™ iron-core linear motors. Included are power and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Motor Cable Combinations

| Linear Motor | Motor Power Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| LDC-C030100-DHT, LDC-C030200-DHT, LDC-C030200-EHT | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex) Sin/Cos or TTL Encoder Feedback |
| LDC-C050100-DHT, LDC-C050200-DHT, LDC-C050200-EHT, LDC-C050300-DHT, LDC-C050300-EHT | | |
| LDC-C075200-DHT, LDC-C075200-EHT, LDC-C075300-DHT, LDC-C075300-EHT, LDC-C075400-DHT, LDC-C075400-EHT | | |
| LDC-C100300-DHT, LDC-C100300-EHT, LDC-C100400-DHT, LDC-C100400-EHT, LDC-C100600-DHT | | |
| LDC-C150400-DHT, LDC-C150600-DHT | | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

LDC-Series Performance Specifications with Ultra3000 (200V class) Drives

| Linear Motor | Speed, max m/s (ft/s) | System Continuous Stall Current ⁽¹⁾ Amps 0-pk | System Continuous Stall Force ⁽¹⁾ N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Motor Rated Output kW | Ultra3000 200V-class Drives |
|-----------------|--------------------------|--|---|---|--------------------------------------|------------------------------------|--------------------------------|
| LDC-C030100-DHT | 10.0 (32.8) | 4.1...6.1 | 74...111 (17...25) | 12.1 | 188 (42) | 0.37...0.55 | 2098-DSD-010 |
| LDC-C030200-DHT | | 8.1...12.2 | 148...222 (33...50) | 24.3 | 375 (84) | 0.74...1.11 | 2098-DSD-020 |
| LDC-C030200-EHT | | 4.1...6.1 | | 12.1 | | | 2098-DSD-010 |
| LDC-C050100-DHT | 10.0 (32.8) | 3.9...5.9 | 119...179 (27...40) | 11.7 | 302 (68) | 0.59...0.89 | 2098-DSD-010 |
| LDC-C050200-DHT | | 7.9...11.8 | 240...359 (54...81) | 23.3 | 600 (135) | 1.20...1.79 | 2098-DSD-020 |
| LDC-C050200-EHT | | 3.9...5.9 | | 11.6 | | | 2098-DSD-010 |
| LDC-C050300-DHT | | 11.8...17.7 | 363...544 (82...122) | 35.9 | 941 (212) | 1.81...2.72 | 2098-DSD-075 |
| LDC-C050300-EHT | | 3.9...5.9 | | 12.0 | | | 2098-DSD-010 |

(1) Values represent the range between no cooling (low value) and water cooling (high value).

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

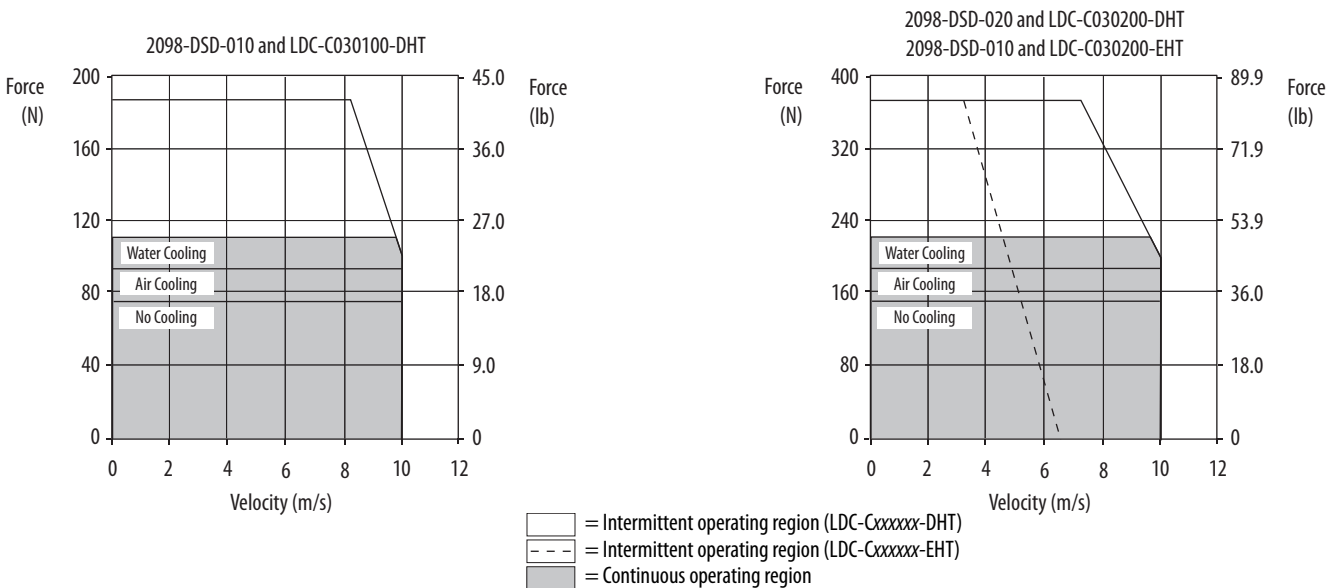
LDC-Series Performance Specifications with Ultra3000 (200V class) Drives (continued)

| Linear Motor | Speed, max m/s (ft/s) | System Continuous Stall Current ⁽¹⁾ Amps 0-pk | System Continuous Stall Force ⁽¹⁾ N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Motor Rated Output kW | Ultra3000 200V-class Drives |
|-----------------|--------------------------|--|---|---|--------------------------------------|------------------------------------|--------------------------------|
| LDC-C075200-DHT | 10.0 (32.8) | 7.7...11.5 | 348...523 (78...117) | 22.9 | 882 (198) | 1.74...2.61 | 2098-DSD-020 |
| LDC-C075200-EHT | | 3.8...5.7 | | 11.5 | | | 2098-DSD-010 |
| LDC-C075300-DHT | | 11.5...17.2 | 523...784 (117...176) | 35.6 | 1368 (308) | 2.61...3.92 | 2098-DSD-075 |
| LDC-C075300-EHT | | 3.8...5.7 | | 11.9 | | | 2098-DSD-010 |
| LDC-C075400-DHT | | 15.3...23.0 | 697...1045 (157...235) | 47.4 | 1824 (410) | 3.48...5.22 | 2098-DSD-075 |
| LDC-C075400-EHT | | 7.7...11.5 | | 23.7 | | | 2098-DSD-020 |
| LDC-C100300-DHT | 10.0 (32.8) | 11.1...16.7 | 674...1012 (152...227) | 34.3 | 1767 (397) | 3.37...5.06 | 2098-DSD-075 |
| LDC-C100300-EHT | | 3.7...5.6 | | 11.4 | | | 2098-DSD-010 |
| LDC-C100400-DHT | | 14.8...22.2 | 899...1349 (202...303) | 45.7 | 2356 (530) | 4.49...6.74 | 2098-DSD-075 |
| LDC-C100400-EHT | | 7.4...11.1 | | 22.8 | | | 2098-DSD-020 |
| LDC-C100600-DHT | | 22.2...33.3 | 1349...2023 (303...455) | 68.5 | 3534 (794) | 6.74...10.11 | 2098-DSD-075 |
| LDC-C150400-DHT | | 10.0 (32.8) | 14.1...21.1 | 1281...1922 (288...432) | 45.2 | 3498 (786) | 6.40...9.61 |
| LDC-C150600-DHT | 21.1...31.7 | | 1922...2882 (432...648) | 67.8 | 5246 (1179) | 9.61...14.41 | 2098-DSD-075 |

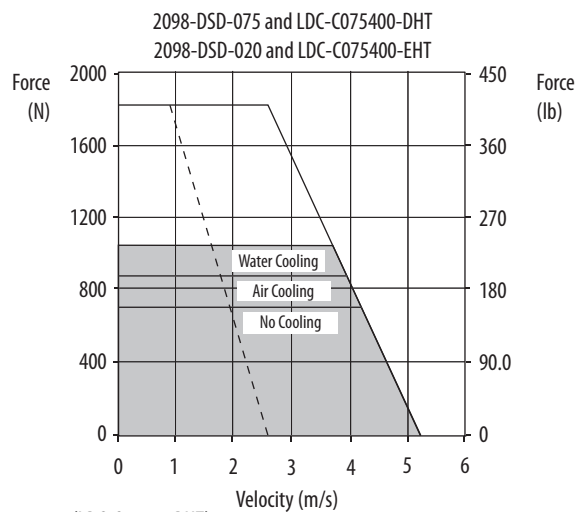
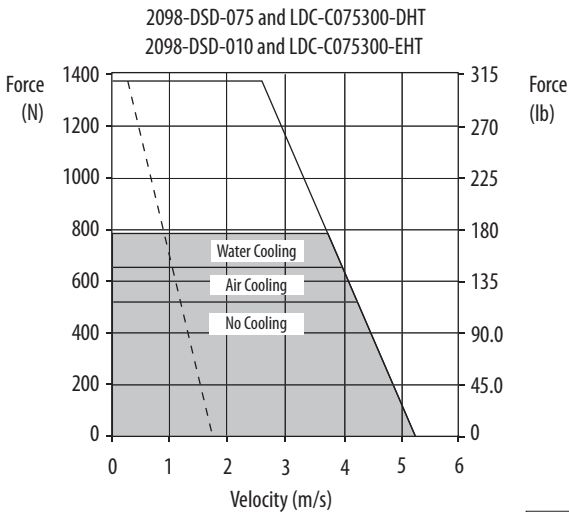
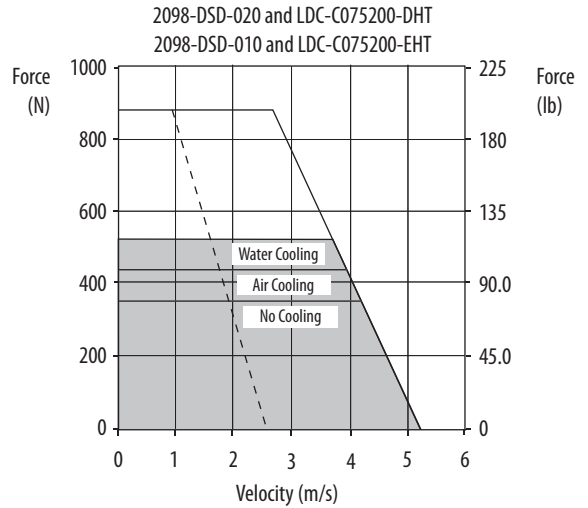
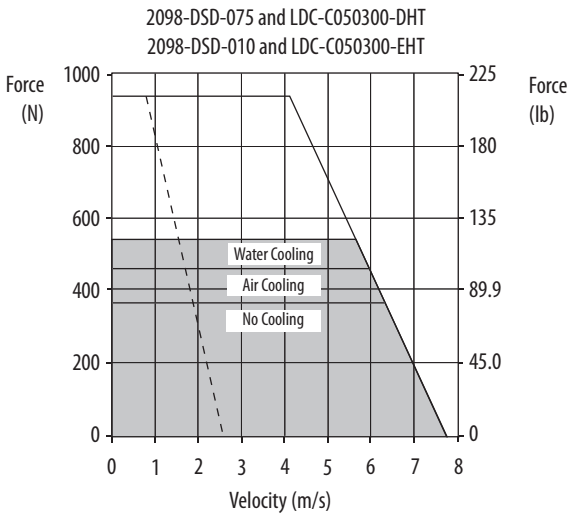
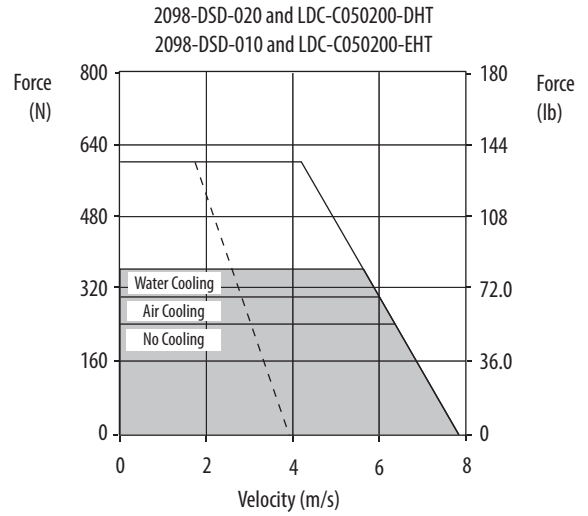
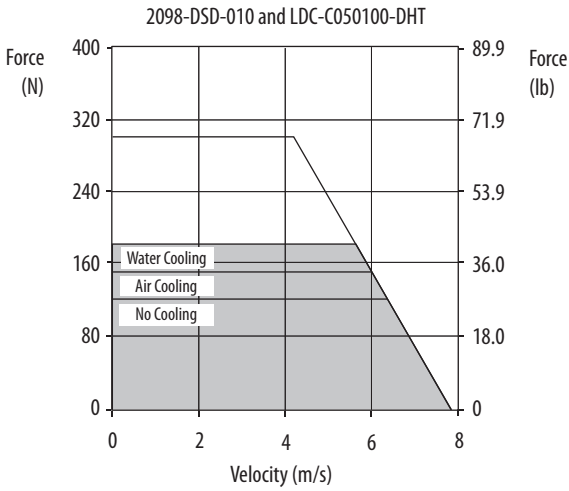
(1) Values represent the range between no cooling (low value) and water cooling (high value).

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/LDC-Series Linear Motor Curves

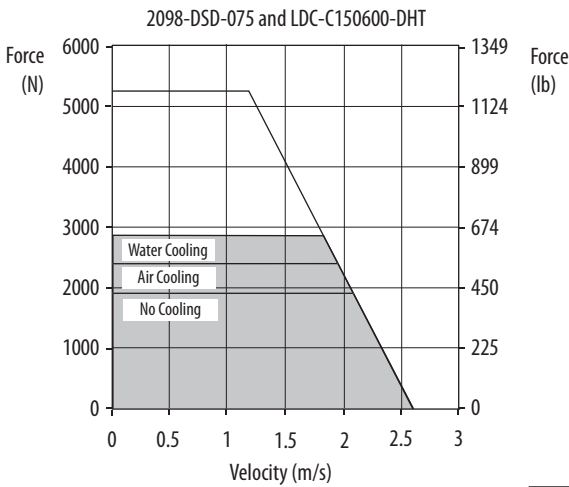
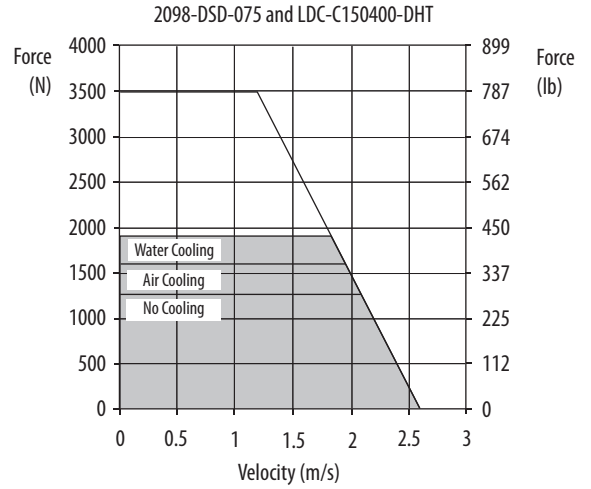
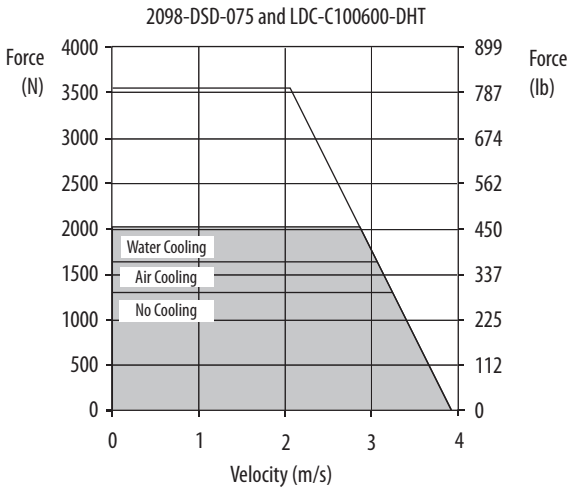
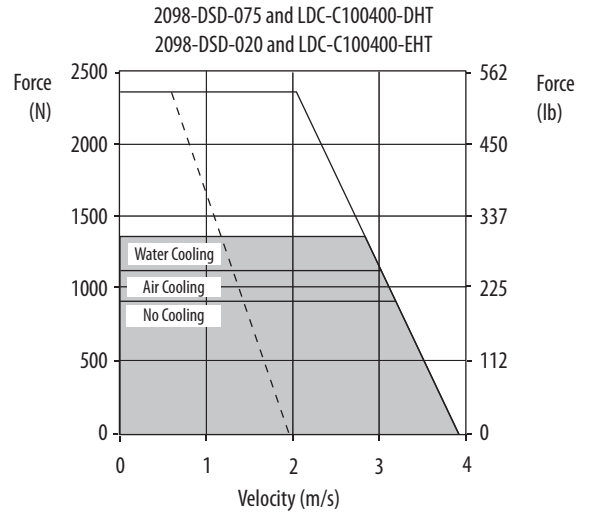
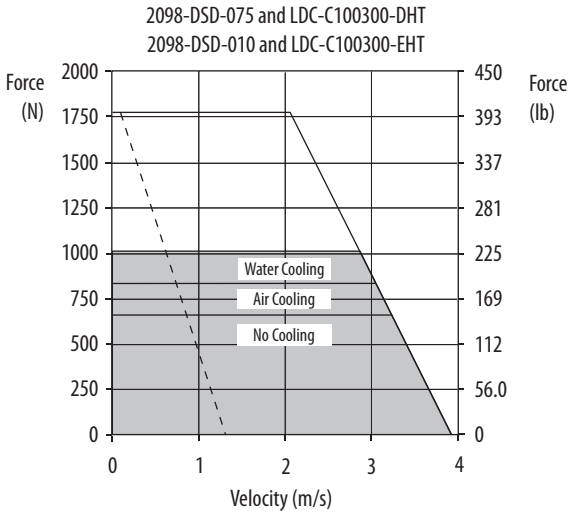


Ultra3000 (200V class) Drives/LDC-Series Linear Motor Curves (continued)



- = Intermittent operating region (LDC-Cxxxxx-DHT)
- = Intermittent operating region (LDC-Cxxxxx-EHT)
- = Continuous operating region

Ultra3000 (200V class) Drives/LDC-Series Linear Motor Curves (continued)



- = Intermittent operating region (LDC-Cxxxxx-DHT)
- = Intermittent operating region (LDC-Cxxxxx-EHT)
- = Continuous operating region

Ultra3000 (400V class) Drives with LDC-Series Linear Motors

This section provides system combination information for the Ultra3000 (400V class) drives when matched with LDC-Series iron-core linear motors. Included are power and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Motor Cable Combinations

| Linear Motor | Motor Power Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| LDC-C030100-DHT, LDC-C030200-DHT, LDC-C030200-EHT | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex) Sin/Cos or TTL Encoder Feedback |
| LDC-C050100-DHT, LDC-C050200-DHT, LDC-C050200-EHT, LDC-C050300-DHT, LDC-C050300-EHT | | |
| LDC-C075200-DHT, LDC-C075200-EHT, LDC-C075300-DHT, LDC-C075300-EHT, LDC-C075400-DHT, LDC-C075400-EHT | | |
| LDC-C100300-DHT, LDC-C100300-EHT, LDC-C100400-DHT, LDC-C100400-EHT, LDC-C100600-DHT | | |
| LDC-C150400-DHT, LDC-C150600-DHT | | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#), for standard cable lengths.

LDC-Series Performance Specifications with Ultra3000 (400V class) Drives

| Linear Motor | Speed, max m/s (ft/s) | System Continuous Stall Current ⁽¹⁾ Amps 0-pk | System Continuous Stall Force ⁽¹⁾ N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Motor Rated Output kW | Ultra3000 400V-class Drives |
|-----------------|--------------------------|--|---|---|--------------------------------------|------------------------------------|--------------------------------|
| LDC-C030100-DHT | 10.0 (32.8) | 4.1...6.1 | 74...111 (17...25) | 12.1 | 188 (42) | 0.37...0.55 | 2098-DSD-HV030 |
| LDC-C030200-DHT | | 8.1...12.2 | 148...222 (33...50) | 24.3 | 375 (84) | 0.74...1.11 | 2098-DSD-HV100 |
| LDC-C030200-EHT | | 4.1...6.1 | | 12.1 | | | 2098-DSD-HV030 |
| LDC-C050100-DHT | 10.0 (32.8) | 3.9...5.9 | 119...179 (27...40) | 11.7 | 302 (68) | 0.59...0.89 | 2098-DSD-HV030 |
| LDC-C050200-DHT | | 7.9...11.8 | 240...359 (54...81) | 23.3 | 600 (135) | 1.20...1.79 | 2098-DSD-HV100 |
| LDC-C050200-EHT | | 3.9...5.9 | | 11.6 | | | 2098-DSD-HV030 |
| LDC-C050300-DHT | | 11.8...17.7 | 363...544 (82...122) | 35.9 | 941 (212) | 1.81...2.72 | 2098-DSD-HV100 |
| LDC-C050300-EHT | | 3.9...5.9 | | 12.0 | | | 2098-DSD-HV030 |

(1) Values represent the range between no cooling (low value) and water cooling (high value).

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

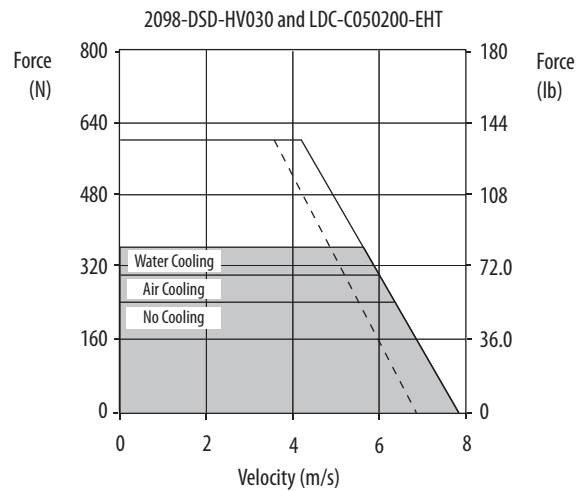
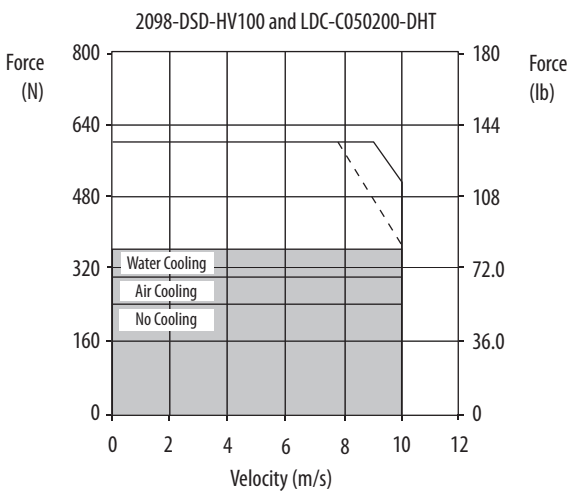
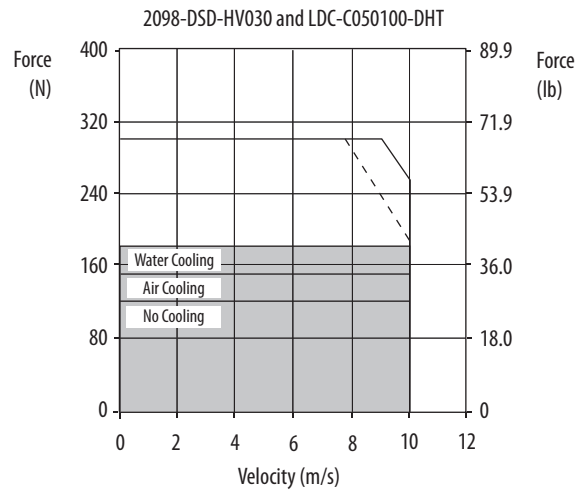
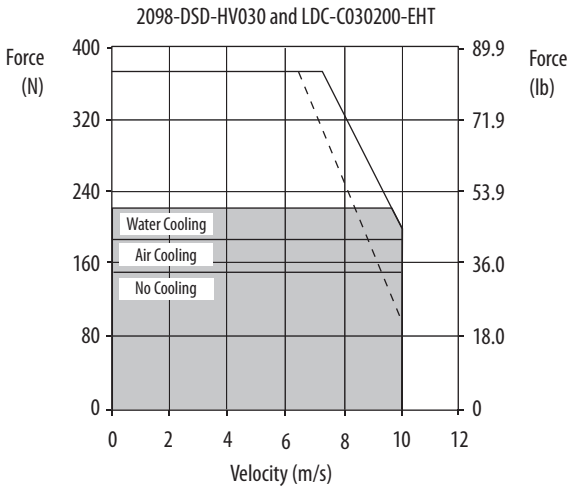
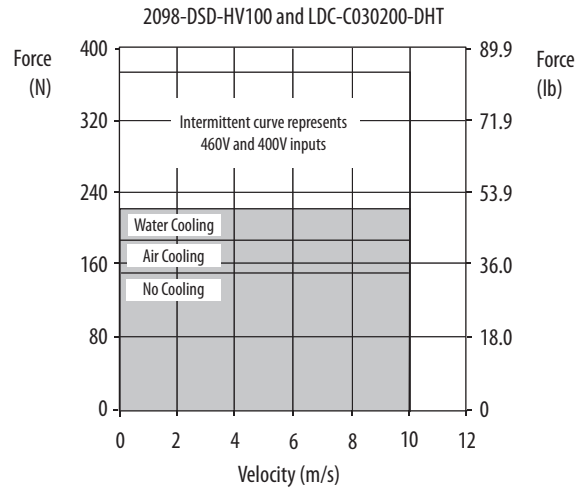
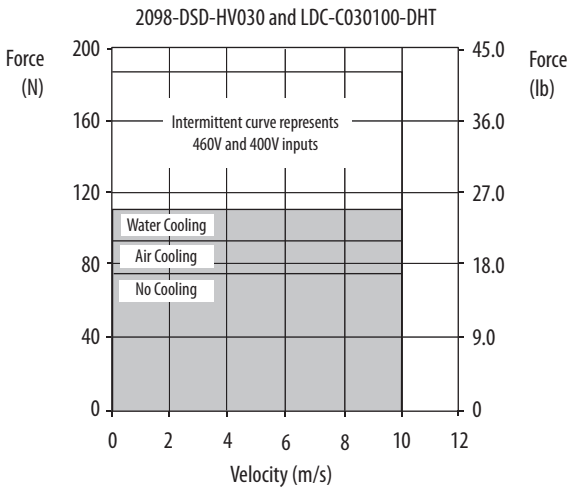
LDC-Series Performance Specifications with Ultra3000 (400V class) Drives (continued)

| Linear Motor | Speed, max m/s (ft/s) | System Continuous Stall Current ⁽¹⁾ Amps 0-pk | System Continuous Stall Force ⁽¹⁾ N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Motor Rated Output kW | Ultra3000 400V-class Drives |
|-----------------|--------------------------|--|---|---|--------------------------------------|------------------------------------|--------------------------------|
| LDC-C075200-DHT | 10.0 (32.8) | 7.7...11.5 | 348...523 (78...117) | 22.9 | 882 (198) | 1.74...2.61 | 2098-DSD-HV100 |
| LDC-C075200-EHT | | 3.8...5.7 | | 11.5 | | | 2098-DSD-HV030 |
| LDC-C075300-DHT | | 11.5...17.2 | 523...784 (117...176) | 35.6 | 1368 (308) | 2.61...3.92 | 2098-DSD-HV100 |
| LDC-C075300-EHT | | 3.8...5.7 | | 11.9 | | | 2098-DSD-HV030 |
| LDC-C075400-DHT | | 15.3...23.0 | 697...1045 (157...235) | 47.4 | 1824 (410) | 3.48...5.22 | 2098-DSD-HV150 |
| LDC-C075400-EHT | | 7.7...11.5 | | 23.7 | | | 2098-DSD-HV100 |
| LDC-C100300-DHT | 10.0 (32.8) | 11.1...16.7 | 674...1012 (152...227) | 34.3 | 1767 (397) | 3.37...5.06 | 2098-DSD-HV100 |
| LDC-C100300-EHT | | 3.7...5.6 | | 11.4 | | | 2098-DSD-HV030 |
| LDC-C100400-DHT | | 14.8...22.2 | 899...1349 (202...303) | 45.7 | 2356 (530) | 4.49...6.74 | 2098-DSD-HV150 |
| LDC-C100400-EHT | | 7.4...11.1 | | 22.8 | | | 2098-DSD-HV100 |
| LDC-C100600-DHT | | 22.2...33.3 | 1349...2023 (303...455) | 68.5 | 3534 (794) | 6.74...10.11 | 2098-DSD-HV220 |
| LDC-C100600-EHT | | 11.1...16.7 | | 34.3 | | | 2098-DSD-HV100 |
| LDC-C150400-DHT | 10.0 (32.8) | 14.1...21.1 | 1281...1922 (288...432) | 45.2 | 3498 (786) | 6.40...9.61 | 2098-DSD-HV150 |
| LDC-C150400-EHT | | 7.0...10.6 | | 22.6 | | | 2098-DSD-HV100 |
| LDC-C150600-DHT | | 21.1...31.7 | 1922...2882 (432...648) | 67.8 | 5246 (1179) | 9.61...14.41 | 2098-DSD-HV220 |
| LDC-C150600-EHT | | 10.6...15.8 | | 33.9 | | | 2098-DSD-HV100 |

(1) Values represent the range between no cooling (low value) and water cooling (high value).

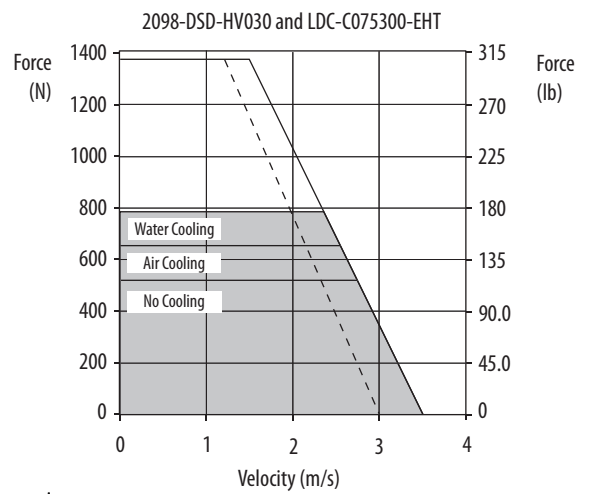
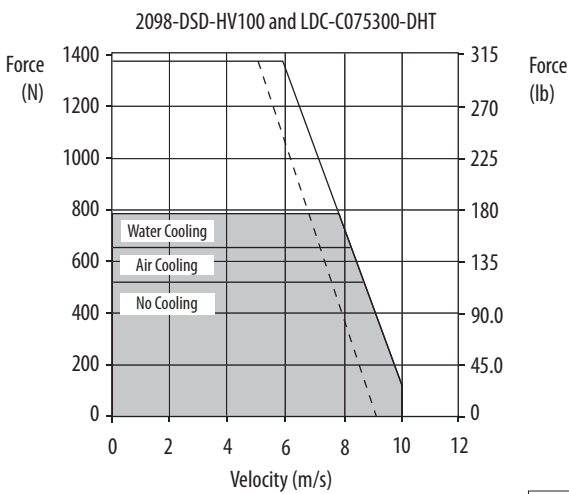
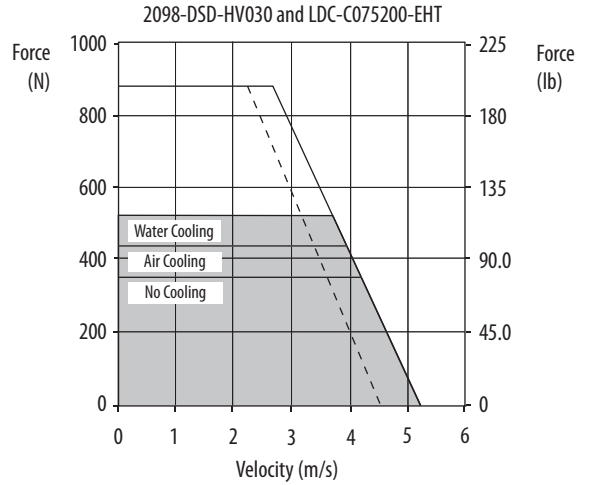
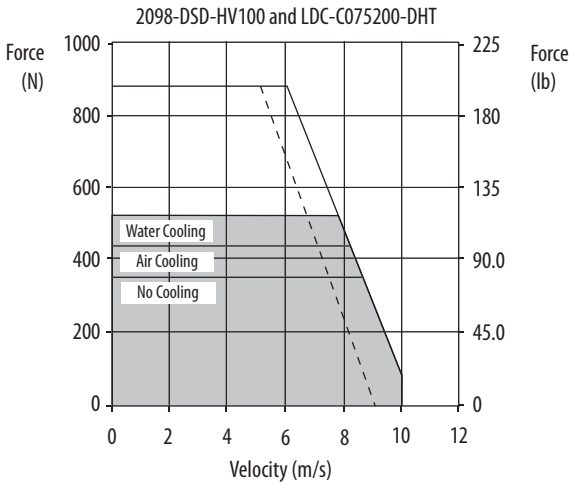
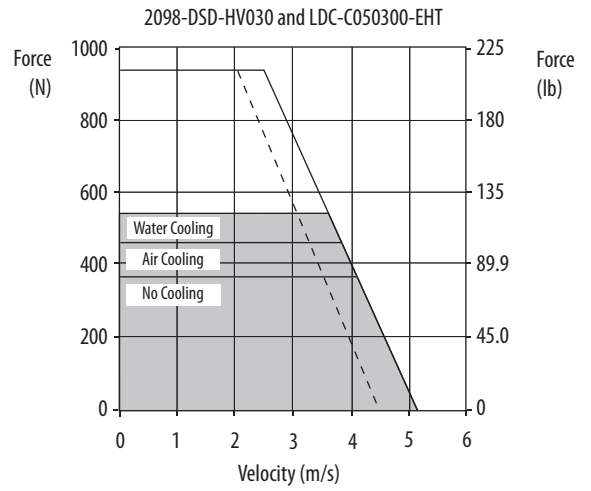
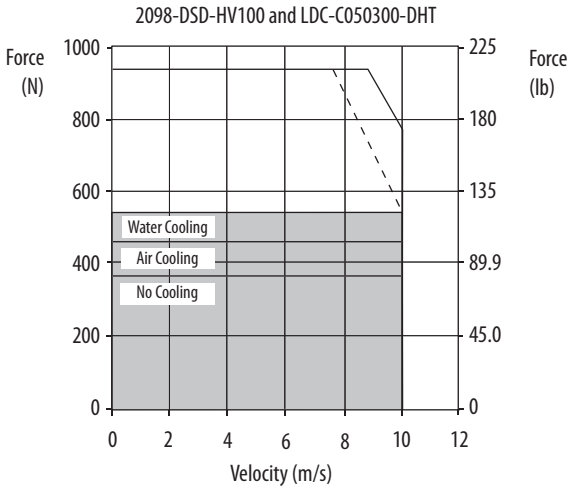
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (400V class) Drives/LDC-Series Linear Motor Curves



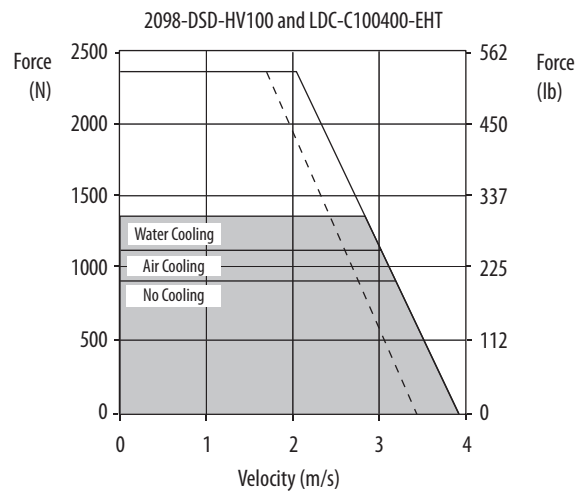
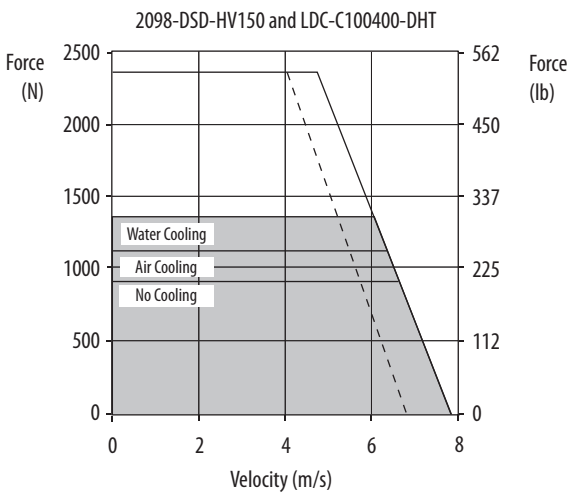
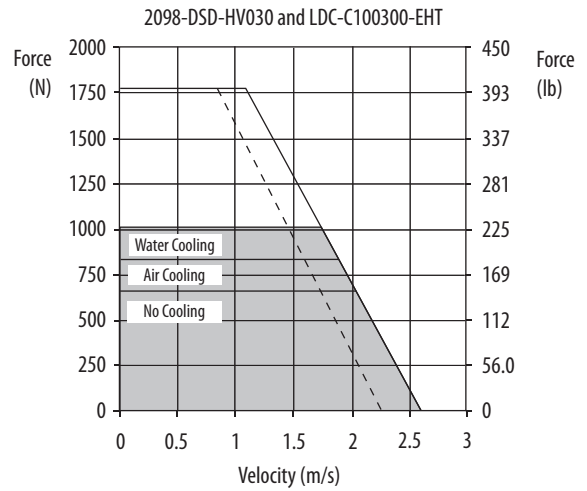
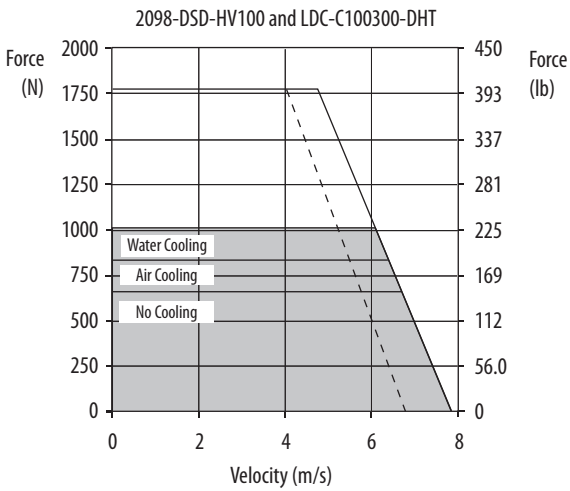
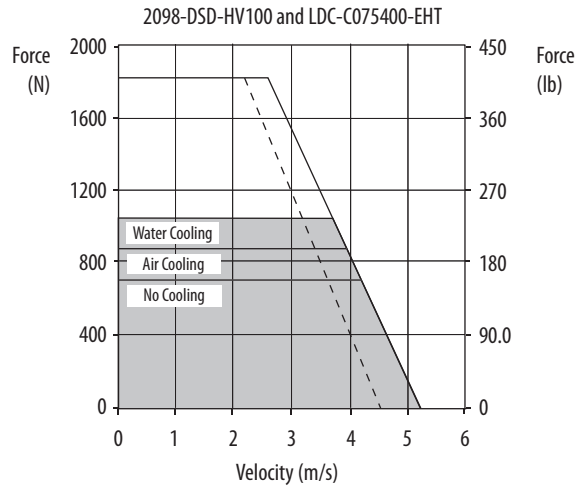
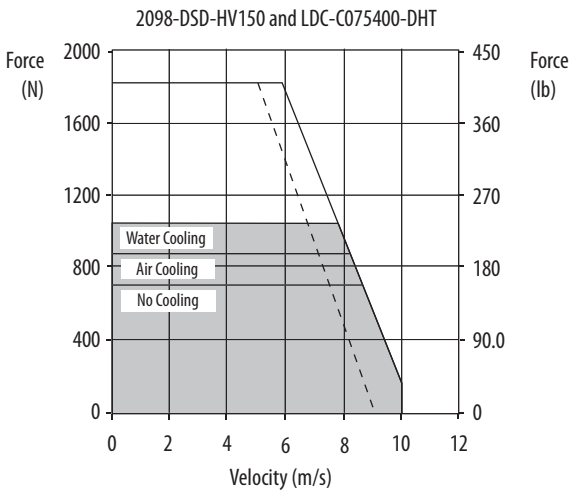
- = Intermittent operating region
- - - = Intermittent operating region with 400V AC (rms) input voltage
- = Continuous operating region

Ultra3000 (400V class) Drives/LDC-Series Linear Motor Curves (continued)



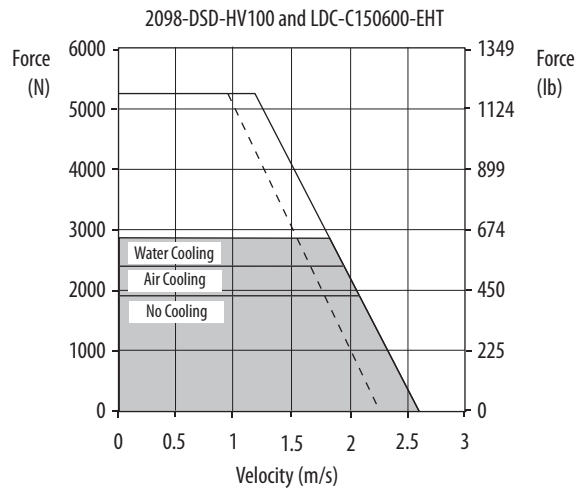
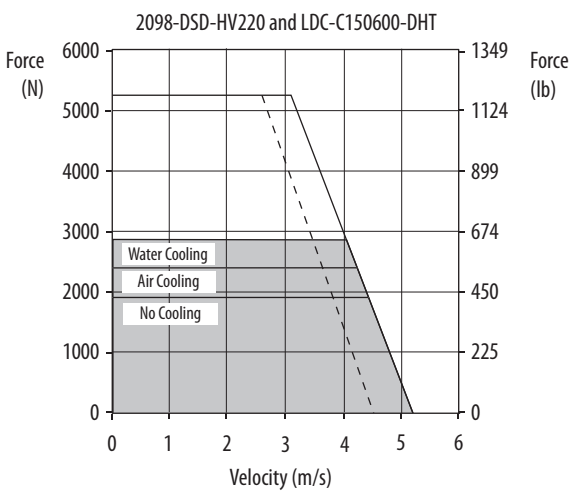
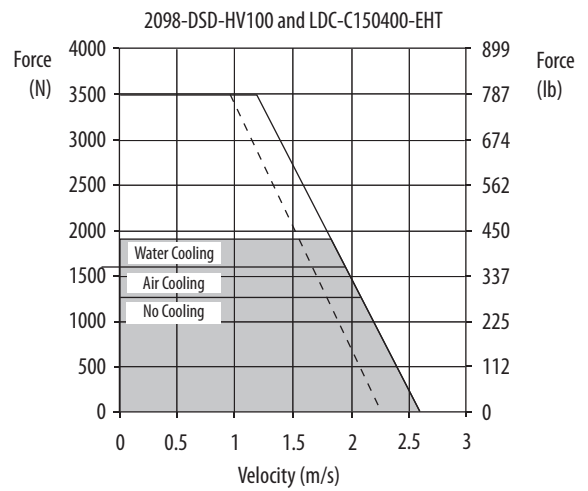
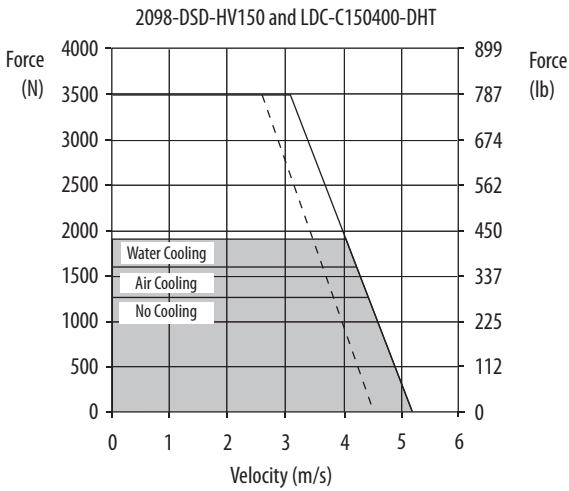
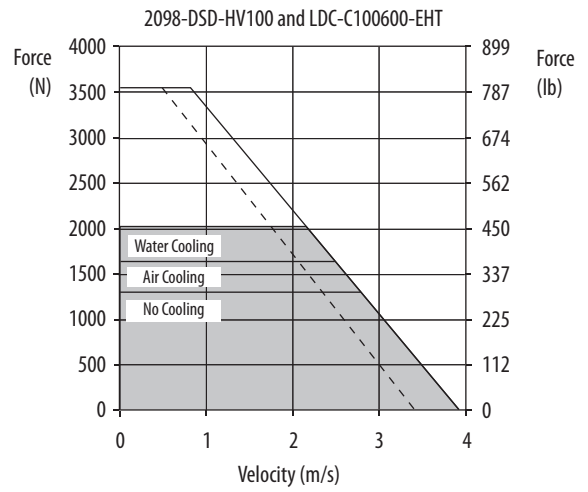
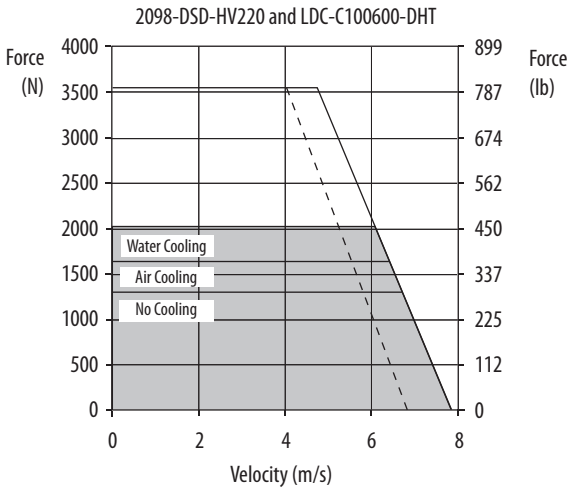
- = Intermittent operating region
- = Intermittent operating region with 400V AC (rms) input voltage
- = Continuous operating region

Ultra3000 (400V class) Drives/LDC-Series Linear Motor Curves (continued)



- = Intermittent operating region
- = Intermittent operating region with 400V AC (rms) input voltage
- = Continuous operating region

Ultra3000 (400V class) Drives/LDC-Series Linear Motor Curves (continued)



- = Intermittent operating region
- = Intermittent operating region with 400V AC (rms) input voltage
- = Continuous operating region

Ultra3000 (200V class) Drives with LDL-Series Linear Motors

This section provides system combination information for the Ultra3000 (200V class) drives when matched with LDL-Series™ ironless linear motors. Included are power and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Motor Cable Combinations

| Linear Motors | Motor Power Cable | Motor Feedback Cable ⁽¹⁾ |
|--|---|--|
| LDL-N030120-DHT, LDL-N030240-DHT, LDL-N030240-EHT | 2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex) | 2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex) Sin/Cos or TTL Encoder Feedback |
| LDL-N050120-DHT, LDL-N050240-DHT, LDL-N050240-EHT, LDL-N050360-DHT, LDL-N050360-EHT, LDL-N050480-DHT, LDL-N050480-EHT | | |
| LDL-N075480-DHT, LDL-N075480-EHT | | |
| LDL-T030120-DHT, LDL-T030240-DHT, LDL-T030240-EHT | | |
| LDL-T050120-DHT, LDL-T050240-DHT, LDL-T050240-EHT, LDL-T050360-DHT, LDL-T050480-DHT, LDL-T050480-EHT | | |
| LDL-T075480-EHT, LDL-T075480-EHT | | |

(1) Use drive-mounted breakout board (catalog number 2090-UXBB-DM15) on the drive end. Refer to Required Drive Accessories on [page 4](#).

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 7](#).

Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on [page 6](#).

Cable length xx is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication [GMC-TD004](#), for standard cable lengths.

LDL-Series Performance Specifications with Ultra3000 (200V class) Drives

| Linear Motor | Speed, max m/s (ft/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Motor Rated Output kW | Ultra3000 200V-class Drives |
|-----------------|--------------------------|---|--|---|--------------------------------------|------------------------------------|--------------------------------|
| LDL-N030120-DHT | 10.0 (32.8) | 3.0 | 63 (14) | 9.9 | 209 (47) | 0.31 | 2098-DSD-010 |
| LDL-N030240-DHT | | 6.0 | 126 (28) | 19.9 | 417 (94) | 0.63 | 2098-DSD-020 |
| LDL-N030240-EHT | | 3.0 | | 9.9 | | | 2098-DSD-010 |
| LDL-T030120-DHT | | 3.0 | 72 (16) | 9.9 | 239 (54) | 0.36 | 2098-DSD-010 |
| LDL-T030240-DHT | | 6.0 | 144 (32) | 19.9 | 479 (108) | 0.72 | 2098-DSD-020 |
| LDL-T030240-EHT | | 3.0 | | 9.9 | | | 2098-DSD-010 |

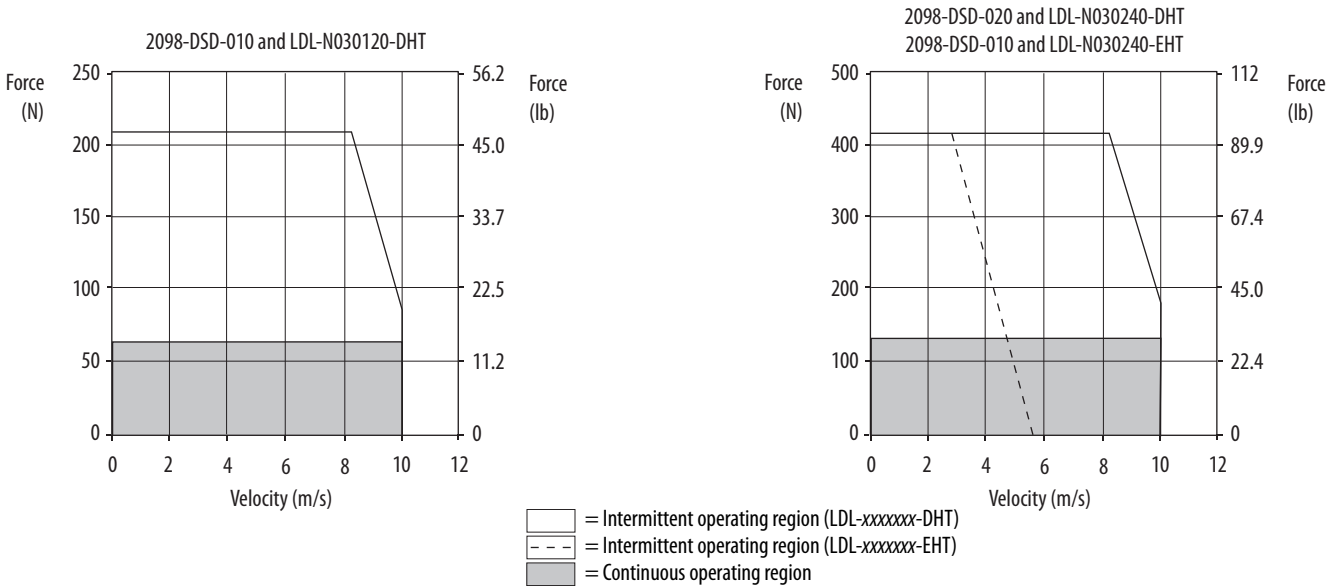
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

LDL-Series Performance Specifications with Ultra3000 (200V class) Drives (continued)

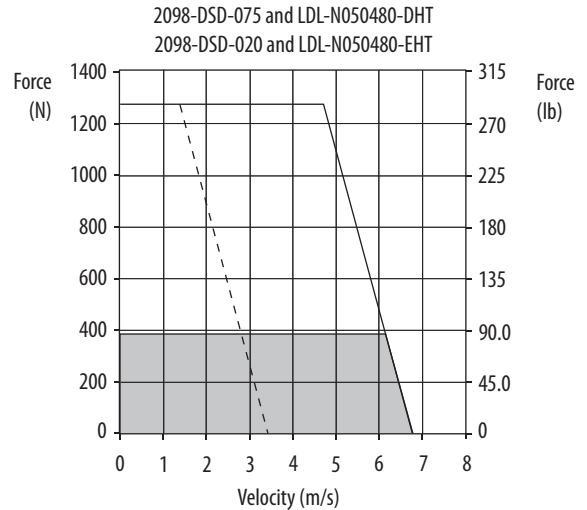
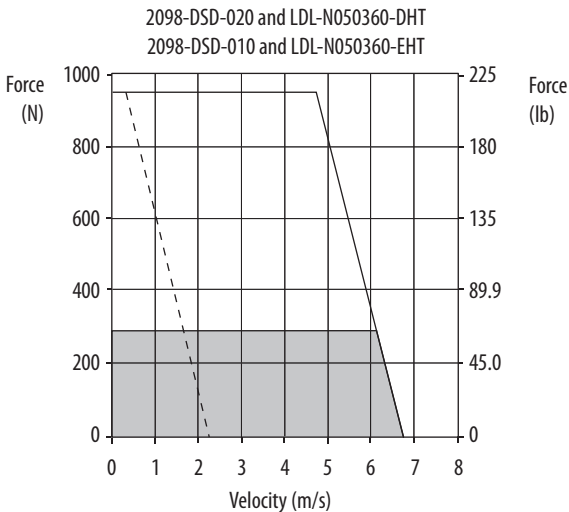
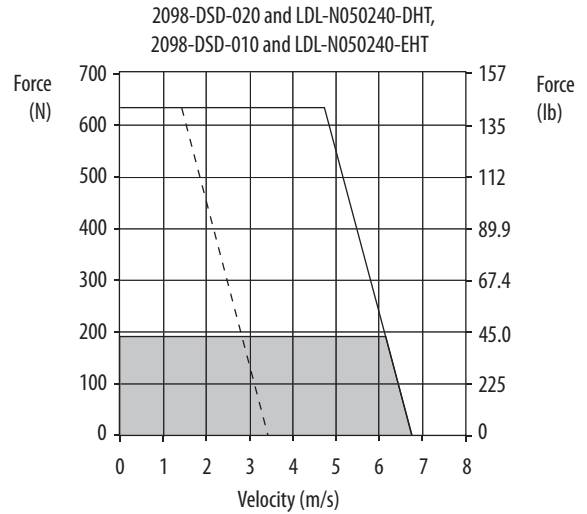
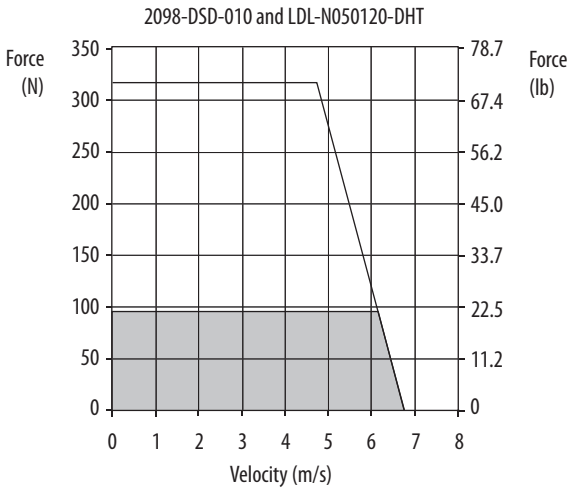
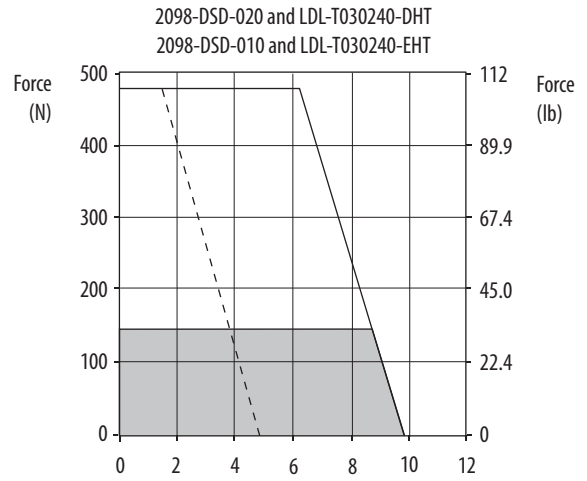
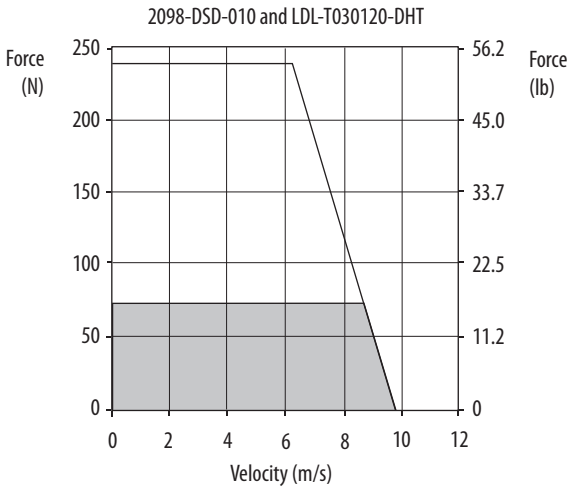
| Linear Motor | Speed, max m/s (ft/s) | System Continuous Stall Current Amps 0-pk | System Continuous Stall Force N (lb) | System Peak Stall Current Amps 0-pk | System Peak Stall Force N (lb) | Linear Motor Rated Output kW | Ultra3000 200V-class Drives | |
|-----------------|--------------------------|---|--|---|--------------------------------------|------------------------------------|--------------------------------|--------------|
| LDL-N050120-DHT | 10.0 (32.8) | 2.7 | 96 (22) | 9.1 | 317 (71) | 0.48 | 2098-DSD-010 | |
| LDL-N050240-DHT | | 5.5 | 191 (43) | 18.1 | 635 (143) | 0.95 | 2098-DSD-020 | |
| LDL-N050240-EHT | | 2.7 | | 9.1 | | | 2098-DSD-010 | |
| LDL-N050360-DHT | | 8.2 | 287 (65) | 27.2 | 952 (214) | 1.43 | 2098-DSD-020 | |
| LDL-N050360-EHT | | 2.7 | | 9.1 | | | 2098-DSD-010 | |
| LDL-N050480-DHT | | 10.9 | 383 (86) | 36.3 | 1269 (285) | 1.91 | 2098-DSD-075 | |
| LDL-N050480-EHT | | 5.5 | | 18.1 | | | 2098-DSD-020 | |
| LDL-T050120-DHT | | 2.7 | 110 (25) | 9.1 | 364 (82) | 0.55 | 2098-DSD-010 | |
| LDL-T050240-DHT | | 5.5 | 220 (49) | 18.1 | 728 (164) | 1.10 | 2098-DSD-020 | |
| LDL-T050240-EHT | | 2.7 | | 9.1 | | | 2098-DSD-010 | |
| LDL-T050360-DHT | | 8.2 | 329 (74) | 27.2 | 1093 (246) | 1.64 | 2098-DSD-020 | |
| LDL-T050480-DHT | | 10.9 | 439 (99) | 36.3 | 1457 (327) | 2.19 | 2098-DSD-075 | |
| LDL-T050480-EHT | | 5.5 | | 18.1 | | | 2098-DSD-020 | |
| LDL-N075480-DHT | | 10.0 (32.8) | 9.9 | 519 (117) | 32.8 | 1723 (387) | 2.59 | 2098-DSD-075 |
| LDL-N075480-EHT | | | 4.9 | | 16.4 | | | 2098-DSD-020 |
| LDL-T075480-DHT | | | 9.9 | 596 (134) | 32.8 | 1977 (444) | 2.98 | 2098-DSD-075 |
| LDL-T075480-EHT | 4.9 | | 16.4 | | 2098-DSD-020 | | | |

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Ultra3000 (200V class) Drives/LDL-Series Linear Motor Curves

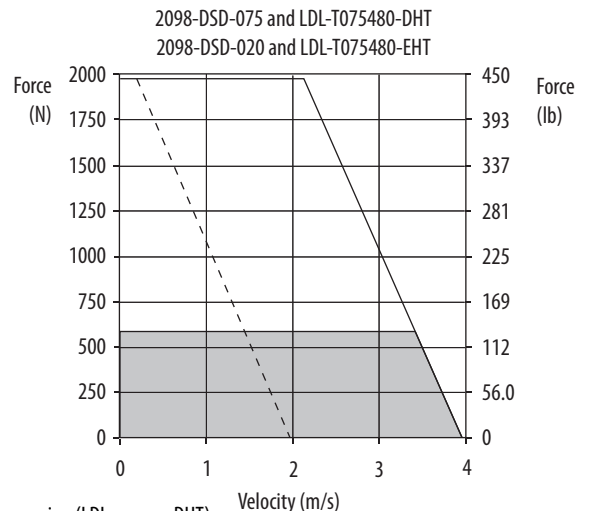
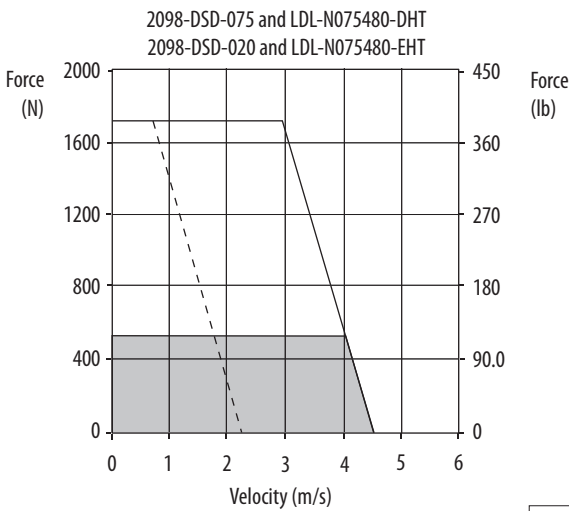
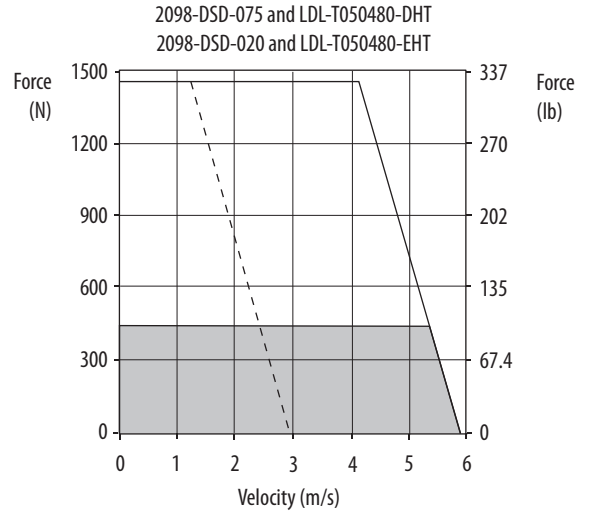
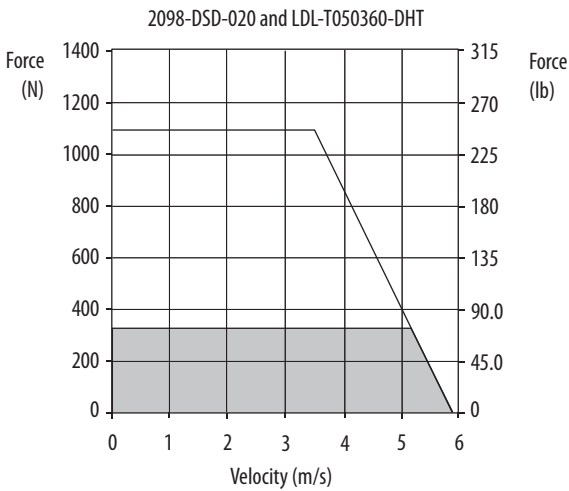
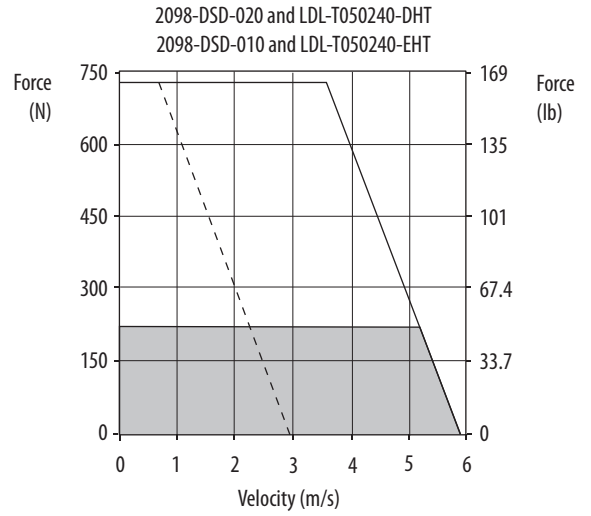
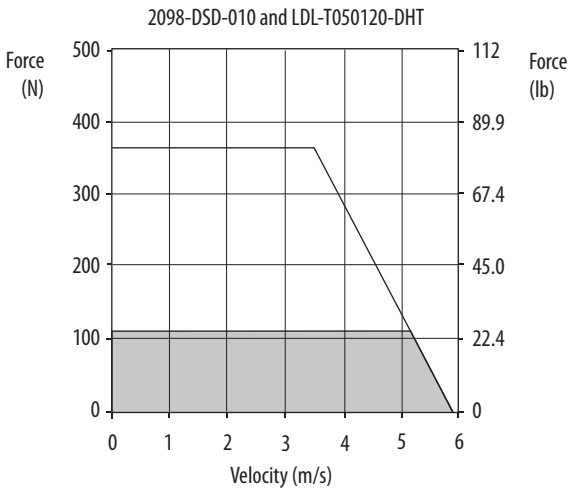


Ultra3000 (200V class) Drives/LDL-Series Linear Motor Curves (continued)



- = Intermittent operating region (LDL-xxxxxx-DHT)
- = Intermittent operating region (LDL-xxxxxx-EHT)
- = Continuous operating region

Ultra3000 (200V class) Drives/LDL-Series Linear Motor Curves (continued)



- = Intermittent operating region (LDL-xxxxxx-DHT)
- = Intermittent operating region (LDL-xxxxxx-EHT)
- = Continuous operating region

Ultra3000 Digital Servo Drive Specifications

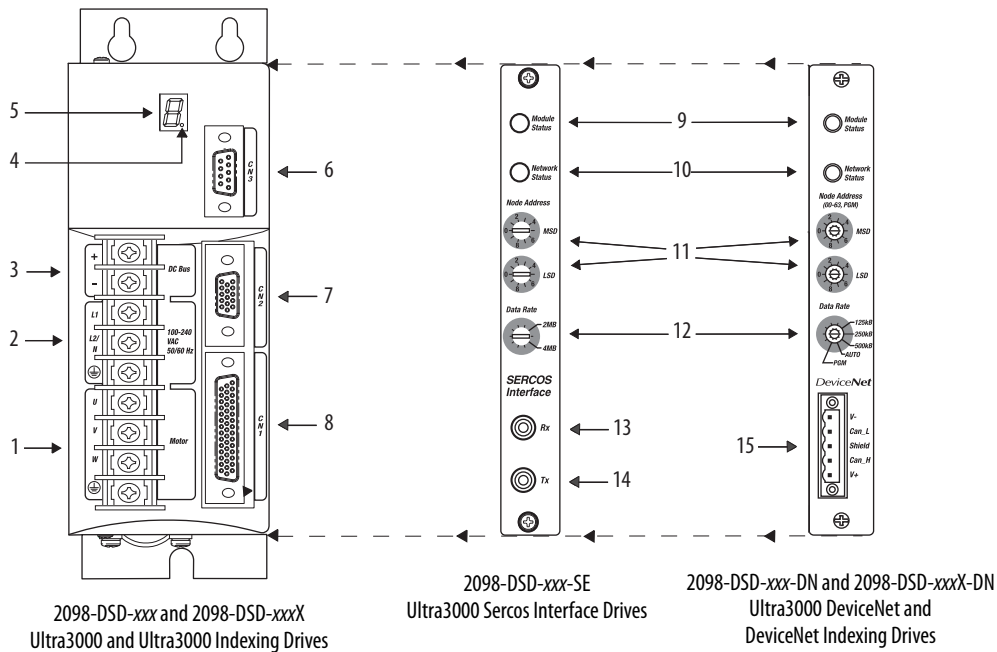


The Ultra™ 3000, Ultra3000X, Ultra3000-SE, Ultra3000-DN, and Ultra3000X-DN drives make up a family of flexible, high-performance digital servo drives for a variety of motion control applications and architectures. The wide range of power platforms, connectivity options and functions make the Ultra3000 digital servo drive family an attractive solution for a variety of machine control architectures including Logix 5000 controllers, SLC™ controllers, and third-party machine and motion control systems. In addition, the Ultra3000X indexing, Ultra3000-SE, Ultra3000-DN, Ultra3000X-DN drives are positioning drives designed for applications requiring either simple or complex motion profiles.

The Ultra3000 servo drives (catalog numbers 2098-DSD-xxx-SE and 2098-DSD-HVxxx-SE) provide Integrated Motion capability through the Sercos interface and are part of the Kinetix Integrated Motion solution.

Ultra3000 Servo Drive Features and Indicators

2098-DSD-005, 2098-DSD-010, 2098-DSD-020 Ultra3000 (200V-class) Drives

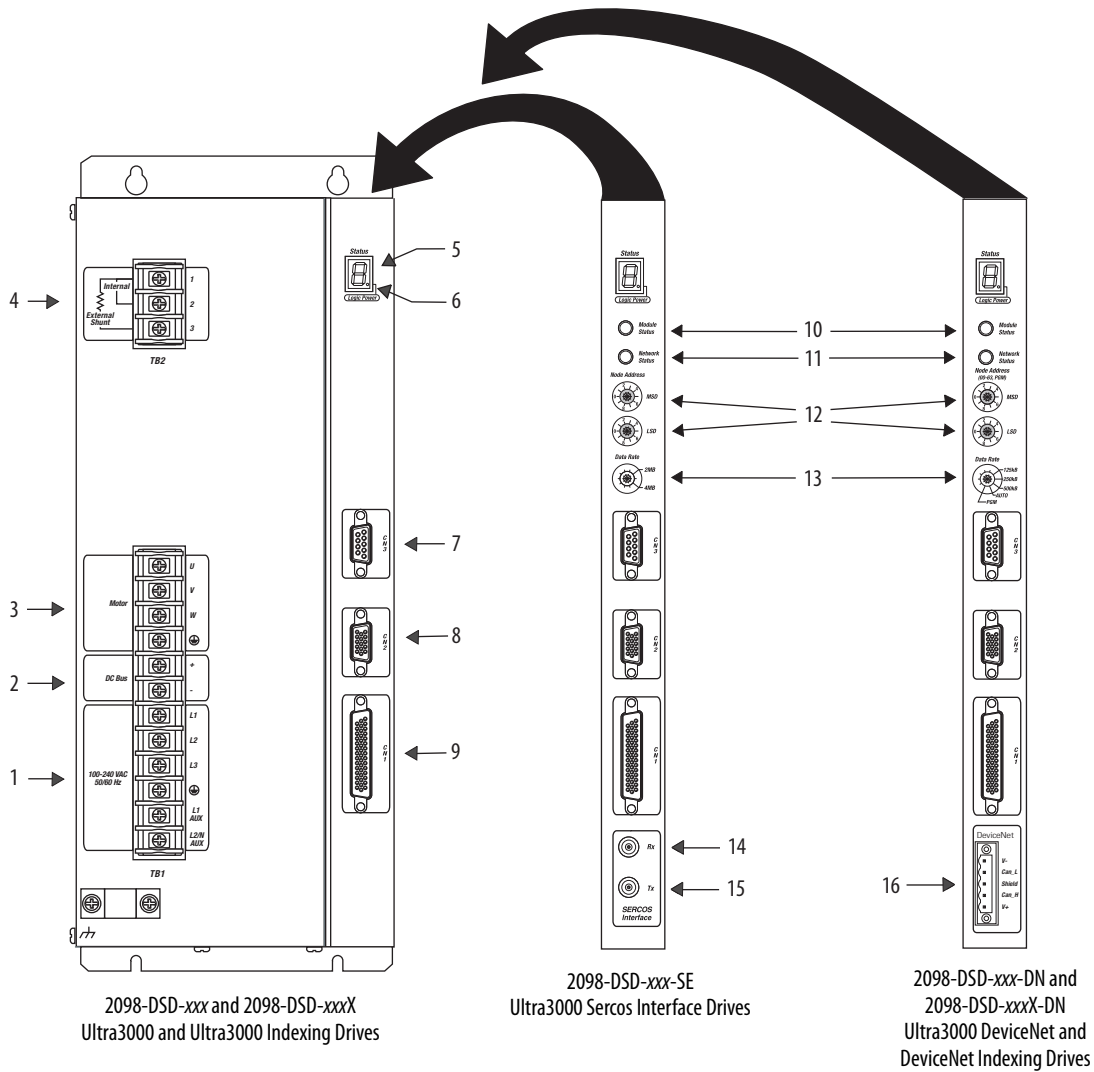


| Item | Description |
|------|--|
| 1 | Motor power connections |
| 2 | AC input power connections |
| 3 | DC bus connections for active shunt resistor kit |
| 4 | Logic power |
| 5 | Seven-segment fault status indicator |

| Item | Description |
|------|-------------------------------------|
| 6 | CN3 9-pin serial port connector |
| 7 | CN2 15-pin motor feedback connector |
| 8 | CN1 44-pin user I/O connector |
| 9 | Module status indicator |
| 10 | Network status indicator |

| Item | Description |
|------|--------------------------------|
| 11 | Sercos node address switches |
| 12 | Data rate switch |
| 13 | Sercos receive (Rx) connector |
| 14 | Sercos transmit (Tx) connector |
| 15 | DeviceNet interface connector |

2098-DSD-030, 2098-DSD-075, and 2098-DSD-150 Ultra3000 (200V-class) Drives

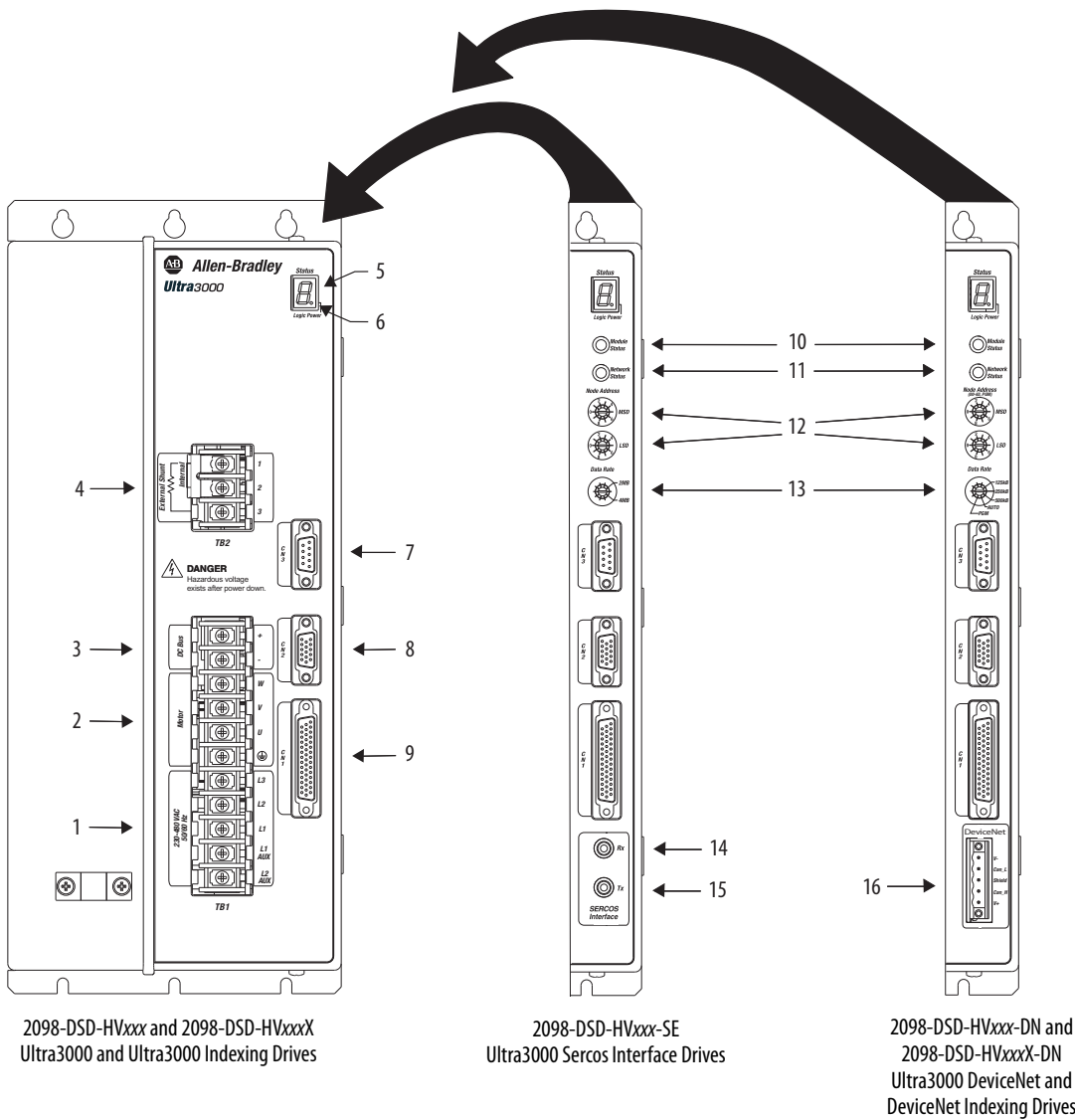


| Item | Description |
|------|--|
| 1 | AC input power connections ⁽¹⁾ |
| 2 | DC bus connections for active shunt resistor kit |
| 3 | Motor power connections |
| 4 | Passive shunt resistor connections |
| 5 | Seven-segment fault status indicator |
| 6 | Logic power |
| 7 | CN3 9-pin serial port connector |
| 8 | CN2 15-pin motor feedback connector |

(1) The 2098-DSD-030x-xx drives do not have an L3 power terminal.

| Item | Description |
|------|--------------------------------|
| 9 | CN1 44-pin user I/O connector |
| 10 | Module status indicator |
| 11 | Network status indicator |
| 12 | Sercos node address switches |
| 13 | Data rate switch |
| 14 | Sercos receive (Rx) connector |
| 15 | Sercos transmit (Tx) connector |
| 16 | DeviceNet interface connector |

2098-DSD-HV030, 2098-DSD-HV050, 2098-DSD-HV100, 2098-DSD-HV150, and 2098-DSD-HV220 Ultra3000 (400V-class) Drives



| Item | Description |
|------|--|
| 1 | AC input power connections |
| 2 | DC bus connections for active shunt resistor kit |
| 3 | Motor power connections |
| 4 | Passive shunt resistor connections |
| 5 | Seven-segment fault status indicator |
| 6 | Logic power |
| 7 | CN3 9-pin serial port connector |
| 8 | CN2 15-pin motor feedback connector |

| Item | Description |
|------|--------------------------------|
| 9 | CN1 44-pin user I/O connector |
| 10 | Module status indicator |
| 11 | Network status indicator |
| 12 | Sercos node address switches |
| 13 | Data rate switch |
| 14 | Sercos receive (Rx) connector |
| 15 | Sercos transmit (Tx) connector |
| 16 | DeviceNet interface connector |

Ultra3000 Servo Drive Communication Interface

| Drive Type | Drive Cat. No. | Command Interface |
|--|---|-----------------------------------|
| Sercos interface drive | 2098-DSD-xxx-SE and 2098-DSD-HVxxx-SE | Fiber-optic Sercos ring |
| Analog drive | 2098-DSD-xxx and 2098-DSD-HVxxx | Analog command interface |
| Digital drive with DeviceNet interface | 2098-DSD-xxx-DN and 2098-DSD-HVxxx-DN | DeviceNet communication interface |
| Indexing drive | 2098-DSD-xxxX and 2098-DSD-HVxxxX | Standalone control |
| Indexing DeviceNet interface drives | 2098-DSD-xxxX-DN and 2098-DSD-HVxxxX-DN | |

Technical Specifications - Ultra3000 Digital Servo Drives

Specifications apply to these Ultra3000 drive models:

- SE indicates the 2098-DSD-xxx-SE Sercos interface drive
- DN indicates the 2098-DSD-xxx-DN DeviceNet interface drive
- X indicates the 2098-DSD-xxxX indexing drive
- X-DN indicates the 2098-DSD-xxxX-DN indexing DeviceNet interface drive

Ultra3000 (200V-class) Drives Power Specifications

| Attribute | 2098-DSD-005 | 2098-DSD-010 | 2098-DSD-020 |
|--|---|---|--|
| AC input voltage ⁽¹⁾ | 100...240V rms, single-phase | | |
| AC input frequency | 47...63 Hz | | |
| AC input current ^{(2) (3)} Nom (rms) 230V AC (0-pk) max inrush ⁽⁴⁾ | 5 A 100 A - Series A or B 20 A - Series C | 9 A 100 A - Series A or B 20 A - Series C | 18 A 100 A - Series A or B 20 A - Series C |
| Continuous output current (rms) | 1.8 A | 3.5 A | 7.1 A |
| Continuous output current (0-pk) | 2.5 A | 5.0 A | 10 A |
| Peak output current (rms) | 5.3 A | 10.6 A | 21.2 A |
| Peak output current (0-pk) | 7.5 A | 15 A | 30 A |
| Bus capacitance | 1410 µF | 1880 µF | 1880 µF |
| Internal shunt resistance | N/A | N/A | N/A |
| Shunt on | N/A | N/A | N/A |
| Shunt off | N/A | N/A | N/A |
| Bus overvoltage | 400V DC | 400V DC | 400V DC |
| Energy absorption capability 115V AC input 230V AC input | 93 J 38 J | 125 J 51 J | |
| Continuous power output 115V AC input 230V AC input | 0.25 kW 0.5 kW | 0.5 kW 1.0 kW | 1.0 kW 2.0 kW |

(1) Specification is for nominal voltage. The absolute limits are $\pm 10\%$, or 88...265V rms.

(2) The 2098-DSD-005x-xx, 2098-DSD-010x-xx, and 2098-DSD-020x-xx (200V-class) drives are limited to:
Series A or B - one contactor cycle every two minutes.

Series C - one contactor cycle every 10 s for up to two minutes, not to exceed 12 cycles in five minutes.

(3) Power initialization requires a short period of inrush current. Dual element time delay (slow blow) fuses are recommended (refer to [Circuit Breaker/Fuse Specifications](#) on [page 82](#)).

(4) In-rush current limiting circuitry is enabled within 3 s after removal of AC line power.

Ultra3000 (200V-class) Drives Power Specifications

| Attribute | 2098-DSD-030 | 2098-DSD-075 | 2098-DSD-150 |
|--|------------------------------|-----------------------------|---------------------|
| AC input voltage ⁽¹⁾ | 100...240V rms, single-phase | 100...240V rms, three-phase | |
| AC input frequency | 47...63 Hz | | |
| Main AC input current ^{(2) (3)} | | | |
| Nom (rms) | 28 A | 30 A | 46 A |
| 230V AC (0-pk) max inrush | 50 A | 50 A | 68 A |
| Auxiliary AC input current | | | |
| 115V AC (rms) nom | 1.0 A | 1.0 A | 1.0 A |
| 230V AC (rms) nom | 0.5 A | 0.5 A | 0.5 A |
| 115V AC (0-pk) max inrush ⁽⁴⁾ | 47 A | 47 A | 47 A |
| 230V AC (0-pk) max inrush ⁽⁴⁾ | 95 A | 95 A | 95 A |
| Continuous output current (rms) | 10.6 A | 24.7 A | 45.9 A |
| Continuous output current (0-pk) | 15 A | 35 A | 65 A |
| Peak output current (rms) | 21.2 A | 53 A | 106 A |
| Peak output current (0-pk) | 30 A | 75 A | 150 A |
| Bus capacitance | 2820 μ F | 4290 μ F | 7520 μ F |
| Internal shunt resistance | 35 Ω | 16.5 Ω | 9.1 Ω |
| Shunt on | 420V DC | 420V DC | 420V DC |
| Shunt off | 402V DC | 402V DC | 402V DC |
| Bus overvoltage | 452V DC | 452V DC | 452V DC |
| Internal shunt | | | |
| Continuous power | 50 W | 50 W | 180 W |
| Peak power | 4.5 kW | 10 kW | 18 kW |
| External shunt | | | |
| Resistance | 30 Ω (-0/+5%) | 16.5 Ω (-0/+5%) | 9 Ω (-0/+5%) |
| Continuous power | 2.4 kW | 4 kW | 8 kW |
| Peak power | 6 kW | 10 kW | 19 kW |
| Energy absorption capability | | | |
| 115V AC input | 251 J | 381 J | 669 J |
| 230V AC input | 139 J | 211 J | 370 J |
| Continuous power output | | | |
| 115V AC input | 1.5 kW | N/A | N/A |
| 230V AC input | 3 kW | 7.5 kW | 15 kW |

(1) Specification is for nominal voltage. The absolute limits are $\pm 10\%$, or 88...265V rms.

(2) The 2098-DSD-030x-xx, 2098-DSD-075x-xx, and 2098-DSD-150x-xx (200V-class) drives are limited to one contactor cycles per two minutes.

(3) Power initialization requires a short period of inrush current. Dual element time delay (slow blow) fuses are recommended (refer to [Circuit Breaker/Fuse Specifications](#) on [page 82](#)).

(4) 400 μ s half wave sine.

Ultra3000 (400V-class) Drives Power Specifications

| Attribute | 2098-DSD-HV030 | 2098-DSD-HV050 | 2098-DSD-HV100 | 2098-DSD-HV150 | 2098-DSD-HV220 |
|---|--|------------------|-------------------------------|---------------------------------|-------------------------------|
| AC input voltage ^{(1) (2)} | 230...480V rms, three-phase | | | | |
| AC input Frequency | 47...63 Hz | | | | |
| Main AC input current ^{(3) (4)} 460V AC (rms) nom 460V AC (rms) max inrush | 4 A 6 A | 7 A 6 A | 14 A 6 A | 20 A 6 A | 28 A 6 A |
| Auxiliary AC input current 230V AC (rms) nom 360V AC (rms) nom 480V AC (rms) nom 230V AC (0-pk) max inrush ⁽⁵⁾ 480V AC (0-pk) max inrush ⁽⁵⁾ | 0.55 A 0.35 A 0.25 A 47 A 68 A | | | | |
| Continuous output current (rms) | 5.0 A | 7.8 A | 16.3 A | 24.0 A | 33.2 A |
| Continuous output current (0-pk) | 7.0 A | 11 A | 23 A | 34 A | 47 A |
| Peak output current (rms) | 9.9 A | 15.6 A | 32.5 A | 48.1 A | 66.5 A |
| Peak output current (0-pk) | 14 A | 22 A | 46 A | 68 A | 94 A |
| Bus capacitance | 470 μ F | | 705 μ F | 940 μ F | 1880 μ F |
| Internal shunt resistance | 120 Ω | | 40 Ω | 25 Ω | 20 Ω |
| Shunt on 230V AC input 480V AC input | 400V DC 800V DC | | | | |
| Shunt off 230V AC input 480V AC input | 375V DC 750V DC | | | | |
| Bus overvoltage 230V AC input 480V AC input | 410V DC 810V DC | | | | |
| Internal shunt Continuous power Peak power | 100 W 5.3 kW | | 200 W 16 kW | 200 W 25.6 kW | 400 W 32 kW |
| External shunt Resistance (-0/+5%) Continuous power Peak power | 120 Ω 3 kW 5.3 kW | | 40 Ω 10 kW 16 kW | 25 Ω 15 kW 25.6 kW | 20 Ω 22 kW 32 kW |
| Energy absorption capability 230V AC input with 230V motor 230V AC input with 460V motor 480V AC input | 15 J 129 J 55 J | | 22 J 194 J 82 J | 29 J 259 J 109 J | 59 J 517 J 219 J |
| Continuous power output 230V AC input 480V AC input | 1.5 kW 3.0 kW | 2.5 kW 5.0 kW | 5.0 kW 10 kW | 7.5 kW 15 kW | 11 kW 22 kW |

(1) Specification is for nominal voltage. The absolute limits are $\pm 10\%$, or 207...264V rms and 324...528V rms.

(2) The 2098-DSD-HVxxx-xx drives can be powered with 230V rms and used with motors designed for 230V operation. In such cases, the voltage levels used for shunting and DC bus overvoltage limits are adjusted to be compatible with the voltage limit of the motor.

The 2098-DSD-HVxxx-xx drives can be powered with 480V rms and used with motors designed for 480V operation. In such cases, the voltage levels used for shunting and DC bus overvoltage limits are adjusted to be compatible with the voltage limit of the motor.

(3) The 2098-DSD-HVxxx-xx (400V-class) drives are limited to three contactor cycles per minute.

(4) Power initialization requires a short period of inrush current (processor controlled via soft start circuitry). Dual element time delay (slow blow) fuses are recommended.

(5) 400 μ s half wave sine.

Circuit Breaker/Fuse Specifications

These fuses and Allen-Bradley circuit breakers are recommended for use with 2098-DSD-xxx and 2098-DSD-HVxxx servo drives.

Input Power Circuit-protection Specifications

| Ultra3000 Servo Drives | | | UL Applications | | IEC (non-UL) Applications | |
|------------------------|--------------------|-----------------------|-----------------|----------|--|------------------------------|
| Drive Cat. No. | Drive Voltage, nom | Phase | Bussmann Fuses | | Motor Protection CB, Self-protected CMC Cat. No. | Motor Protection CB Cat. No. |
| | | | Class J | Class CC | | |
| 2098-DSD-005 | 230V AC | Single-phase | LPJ-6SP | FNQ-R-6 | N/A | N/A |
| 2098-DSD-010 | | Single-phase | LPJ-10SP | FNQ-R-10 | | |
| 2098-DSD-020 | | Single-phase | LPJ-20SP | FNQ-R-20 | | |
| 2098-DSD-030 | | Single-phase | LPJ-30SP | FNQ-R-30 | | |
| 2098-DSD-075 | | Three-phase | LPJ-30SP | FNQ-R-30 | | |
| 2098-DSD-150 | | Three-phase | LPJ-60SP | N/A | | |
| 2098-DSD-xxx | | Auxiliary input power | LPJ-10SP | FNQ-R-10 | | |
| 2098-DSD-HV030 | 460V AC | Three-phase | LPJ-5SP | KTK-R-5 | 140M-F8E-C16 | 140M-F8E-C16 |
| 2098-DSD-HV050 | | Three-phase | LPJ-8SP | KTK-R-8 | 140M-F8E-C20 | 140M-F8E-C20 |
| 2098-DSD-HV100 | | Three-phase | LPJ-17-1/2SP | KTK-R-20 | 140M-F8E-C32 | 140M-F8E-C32 |
| 2098-DSD-HV150 | | Three-phase | LPJ-30SP | KTK-R-30 | 140M-F8E-C45 | 140M-F8E-C45 |
| 2098-DSD-HV220 | | Three-phase | LPJ-35SP | N/A | N/A | N/A |
| 2098-DSD-HVxxx | | Auxiliary input power | LPJ-10SP | FNQ-R-10 | | |

Contactor Ratings

| Drive Cat. No. | Drive Voltage, nom | Contactor Cat. No. |
|----------------|--------------------|---|
| 2098-DSD-HV030 | 460V | 100-C23x10 (AC coil) 100-C23Zx10 (DC coil) |
| 2098-DSD-HV050 | | 100-C30x10 (AC coil) 100-C30Zx10 (DC coil) |
| 2098-DSD-HV100 | | 100-C37x10 (AC coil) 100-C37Zx10 (DC coil) |
| 2098-DSD-HV150 | | 100-C43x10 (AC coil) 100-C43Zx10 (DC coil) |
| 2098-DSD-HV220 | | 100-C60x10 (AC coil) 100-C60Zx10 (DC coil) |

Power Dissipation Specifications

| Drive Cat. No. | Loss, max W |
|----------------|-------------------------|
| 2098-DSD-005 | 48 |
| 2098-DSD-010 | 48 |
| 2098-DSD-020 | 50 |
| 2098-DSD-030 | 150 + dissipative shunt |
| 2098-DSD-075 | 300 + dissipative shunt |
| 2098-DSD-150 | 500 + dissipative shunt |

| Drive Cat. No. | Loss, max W |
|----------------|-------------------------|
| 2098-DSD-HV030 | 175 + dissipative shunt |
| 2098-DSD-HV050 | 175 + dissipative shunt |
| 2098-DSD-HV100 | 350 + dissipative shunt |
| 2098-DSD-HV150 | 350 + dissipative shunt |
| 2098-DSD-HV220 | 600 + dissipative shunt |

Weight Specifications

| Drive Cat. No. | Weight, approx kg (lb) | |
|----------------|---------------------------|-----------|
| 2098-DSD-005 | 1.80 kg | (4.1 lb) |
| 2098-DSD-010 | 2.10 kg | (4.6 lb) |
| 2098-DSD-020 | 2.10 kg | (4.6 lb) |
| 2098-DSD-030 | 6.20 kg | (13.6 lb) |
| 2098-DSD-075 | 9.30 kg | (20.6 lb) |
| 2098-DSD-150 | 14.1 kg | (31.0 lb) |

| Drive Cat. No. | Weight, approx kg (lb) | |
|----------------|---------------------------|-----------|
| 2098-DSD-HV030 | 8.55 kg | (18.8 lb) |
| 2098-DSD-HV050 | 8.55 kg | (18.8 lb) |
| 2098-DSD-HV100 | 10.44 kg | (22.9 lb) |
| 2098-DSD-HV150 | 10.44 kg | (22.9 lb) |
| 2098-DSD-HV220 | 14.1 kg | (31.0 lb) |

Communication Specifications

| Attribute | Value |
|--------------------------------|---|
| Sercos (option) | |
| Communication rates | 4 and 8 Mbps |
| Node addresses | 01...99 |
| DeviceNet (option) | |
| Power consumption from network | 60 mA |
| Data rates | 125, 250, and 500 kps, and auto-baud |
| Node addresses | 00...63 |
| Messaging capabilities | Explicit, polled I/O, change of state, and cyclic messaging |
| Serial | |
| Ports | One RS-232/RS-422/RS-485 |
| Communication rates | 1200, 2400, 4800, 9600, 19,200, and 38,400 bps |

Inputs/Outputs Specifications

| Attribute | Value |
|------------------------------------|---|
| Digital inputs | 8 optically isolated, 12...24V, active high, current sinking |
| Digital outputs | 4 optically isolated, 12...24V, active high, current sourcing |
| Relay output | One normally open relay, 30V DC, max, 1 A, max |
| I/O response | 100 μ s |
| Digital I/O firmware scan period | 1 ms |
| Analog inputs COMMAND ILIMIT | 14-bit A/D, ± 10 V 10-bit A/D, 0 to 10V |
| Analog output | ± 10 V, 8 bits, 2 mA max |

Auxiliary Feedback Specifications

| Attribute | Value |
|-------------------------|---|
| Input modes | A quad B, Step/Direction, CW/CCW |
| Maximum input frequency | 2.5 MHz |
| Input types | Differential, single-ended, open collector ⁽¹⁾ |

(1) Differential input types are recommended.

Connector Specifications

| Connector | Description | Specification |
|-------------|--|--|
| CN1 | User input/output | 44-pin high-density female D-sub connector |
| CN2 | Motor feedback connector | 15-pin high-density female D-sub connector |
| CN3 | Serial port connector | 9-pin female D-sub connector |
| TB1 and TB2 | Main and auxiliary AC, DC bus, motor power, and shunt connectors | Screw terminal block |

Maximum Feedback Cable Lengths

Although motor feedback cables are available in standard lengths up to 90 m (295.3 ft), the drive/motor/feedback combination can limit the maximum cable length, as shown in the tables below. These tables assume the use of recommended cables as shown in the Kinetix Motion Accessories Technical Data, publication [KNX-TD004](#).

Maximum Cable Lengths for Compatible Rotary Motors

| Motor Cat. No. | Absolute High-resolution (5V) Encoder m (ft) | Absolute High-resolution (9V) Encoder m (ft) | Incremental/TTL (5V) Encoder m (ft) |
|--|---|---|--|
| MPL-A15xxx...MPL-A2xxx-E/V | 90 (295.3) | | |
| MPL-A3xxx...MPL-A5xxx-S/M ⁽¹⁾ | 90 (295.3) | | |
| MPL-B15xxx...MPL-B2xxx-E/V | | 90 (295.3) | |
| MPL-B3xxx...MPL-B9xxx-S/M | | 90 (295.3) | |
| MPL-A/B15xxx...MPL-A/B45xxx-H | | | 45 (147.6) |
| MPM-Axxxx-S/M | 30 (98.4) | | |
| MPM-Bxxxx-S/M | | 90 (295.3) | |
| MPF-Axxx-S/M ⁽¹⁾ | 90 (295.3) | | |
| MPF-Bxxx-S/M | | 90 (295.3) | |
| MPS-Axxx-S/M | 90 (295.3) | | |
| MPS-Bxxx-S/M | | 90 (295.3) | |
| TLY-Axxx-H | | | 30 (98.4) |

(1) MPL-A5xxx and MPF-A5xxx motor encoders are rated for 9V, the remaining Bulletin MPL and MPF (200V-class) motor encoders are rated for 5V.

Maximum Cable Lengths for Compatible Linear Actuators

| Actuator Cat. No. | Absolute High-resolution (5V) Encoder m (ft) | Absolute High-resolution (9V) Encoder m (ft) | Incremental/TTL (5V) Encoder m (ft) |
|--|---|---|--|
| MPMA-Axxxx or MPAS-Axxxx-V (ballscrew) | 90 (295.3) | | |
| MPMA-Axxxx or MPAS-Axxxx-A (direct drive) | | | 30 (98.4) |
| MPMA-Bxxxx or MPAS-Bxxxx-V (ballscrew) | | 90 (295.3) | |
| MPMA-Bxxxx or MPAS-Bxxxx-A (direct drive) | | | 30 (98.4) |
| MPAR-Axxxx-V/M | 30 (98.4) | | |
| MPAR-Bxxxx-V/M | | 90 (295.3) | |
| MPAI-AxxxxM3 | 30 (98.4) | | |
| MPAI-BxxxxM3 | | 90 (295.3) | |
| LDAT-Sxxxx-xBx | | | 30 (98.4) |

Maximum Cable Lengths for Compatible Linear Motors

| Motor Cat. No. | Absolute High-resolution (5V) Encoder m (ft) | Incremental/TTL (5V) Encoder m (ft) |
|--------------------------|---|--|
| LDC-Series or LDL-Series | 30 (98.4) | 30 (98.4) |

Environmental Specifications - Ultra3000 Digital Servo Drives

| Attribute | Value |
|--|--|
| Temperature, ambient Operating Storage | 0...55 °C (32...131 °F) -40...+70 °C (-40...+158 °F) |
| Relative humidity | 5...95% noncondensing |
| Altitude | 1500 m (4921.5 ft) - Derate 3% per 300 m (984.3 ft) above 1500 m (4921.5 ft) |
| Vibration | 5...2000 Hz @ 2.5 g peak, 0.0006 mm (0.015 in.) max displacement |
| Shock | 15 g, 11 ms half-sine |

Certifications - Ultra3000 Digital Servo Drives

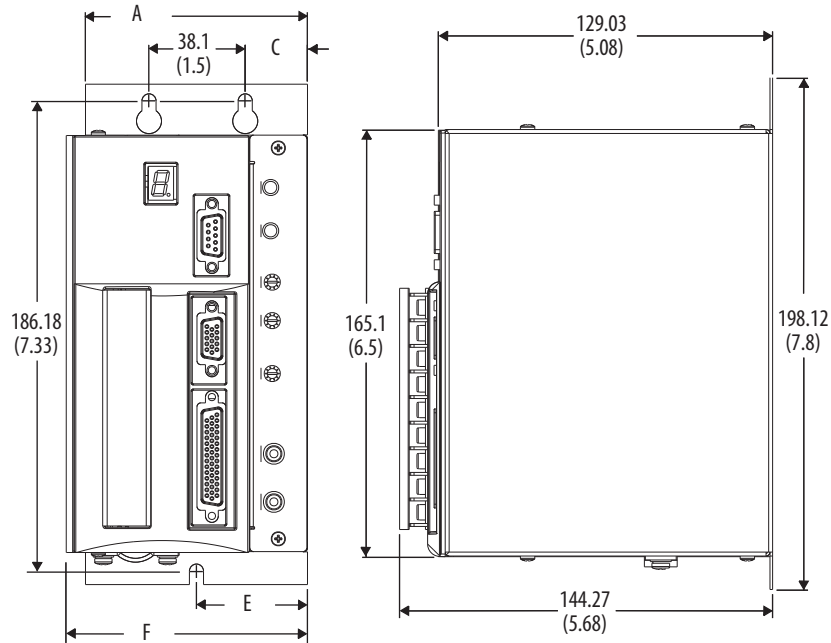
| Agency Certification ⁽¹⁾ | Standards |
|-------------------------------------|---|
| c-UL-us | UL Listed to U.S. and Canadian safety standards (UL 508C File E59272). Solid-state motor overload protection provides dynamic fold-back of motor current when 110% of the motor rating is reached with a peak current limit based on the peak rating of the motor as investigated by UL to comply with UL 508C (UL File E59272, volume 1, section 22). |
| KC | Korean Registration of Broadcasting and Communications Equipment, compliant with: <ul style="list-style-type: none"> • Article 58-2 of Radio Waves Act, Clause 3 • Registration number: KCC-REM-RAA-2098-DSD |

(1) When product is marked, refer to <https://www.rockwellautomation.com/global/certification/overview.page> for Declarations of Conformity Certificates.

Dimensions - Ultra3000 Digital Servo Drives

In this figure, -xxx is replaced by -005, -010, or -020 to represent the Ultra3000 500 W, 1 kW, and 2 kW drives respectively.

2098-DSD-xxx, 2098-DSD-xxxX, 2098-DSD-xxx-SE, 2098-DSD-xxx-DN, 2098-DSD-xxxX-DN Dimensions

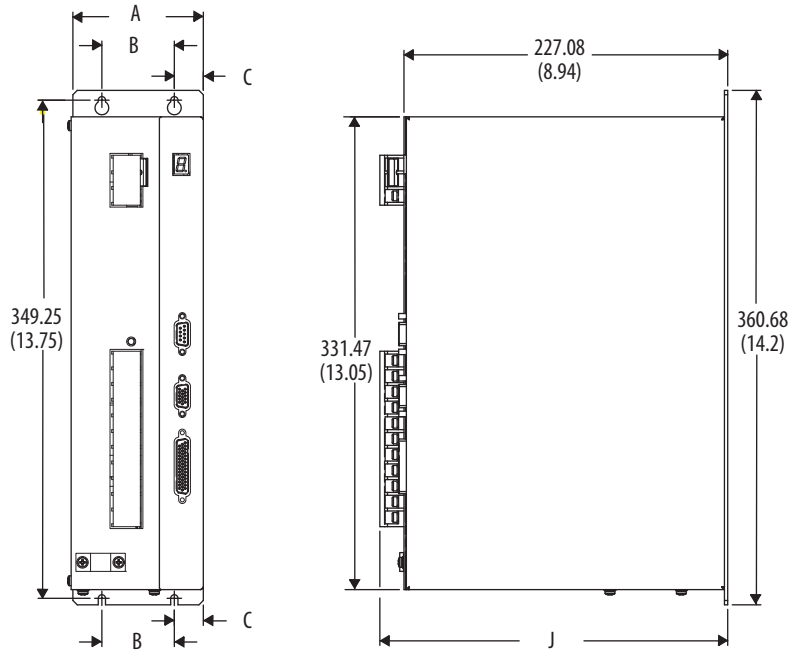


Dimensions are in mm (in.)
Unit shown is the 2098-DSD-005-SE.

| Ultra3000 Drive Cat. No. | A mm (in.) | C mm (in.) | E mm (in.) | F mm (in.) |
|---|-----------------|-----------------|-----------------|------------------|
| 2098-DSD-005, 2098-DSD-005X | 65.02 (2.56) | 13.26 (0.52) | 32.77 (1.29) | 72.64 (2.86) |
| 2098-DSD-010, 2098-DSD-010X, 2098-DSD-020, 2098-DSD-020X | | | | 98.1 (3.89) |
| 2098-DSD-005-SE, 2098-DSD-005-DN, 2098-DSD-005X-DN | 87.88 (3.46) | 24.64 (0.97) | 43.94 (1.73) | 95.5 (3.76) |
| 2098-DSD-010-SE, 2098-DSD-010-DN, 2098-DSD-010X-DN, 2098-DSD-020-SE, 2098-DSD-020-DN, 2098-DSD-020X-DN | | | | 121.54 (4.79) |

In this figure, -xxx is replaced by -030, -075, or -150 to represent the Ultra3000 3, 7.5, and 15 kW drives respectively.

2098-DSD-xxx, 2098-DSD-xxxX, 2098-DSD-xxx-SE, 2098-DSD-xxx-DN, 2098-DSD-xxxX-DN Dimensions



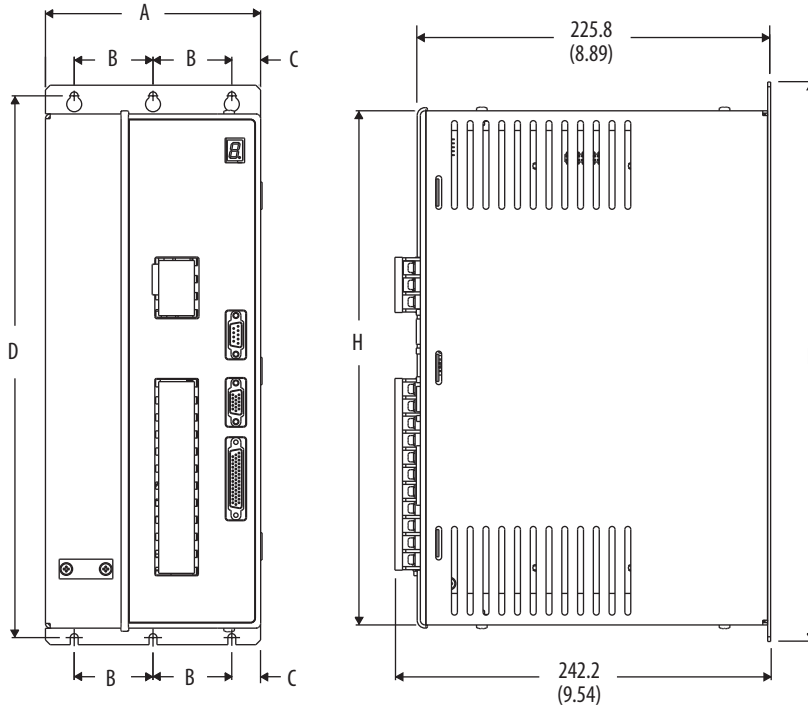
Dimensions are in mm (in.)

Unit shown is the 2098-DSD-030.

| Ultra3000 Drive Cat. No. | A mm (in.) | B mm (in.) | C mm (in.) | J mm (in.) |
|---|------------------|----------------|-----------------|------------------|
| 2098-DSD-030, 2098-DSD-030X, 2098-DSD-030-SE, 2098-DSD-030-DN, 2098-DSD-030X-DN | 91.44 (3.6) | 50.8 (2.0) | 20.32 (0.8) | 243.84 (9.6) |
| 2098-DSD-075, 2098-DSD-075X, 2098-DSD-075-SE, 2098-DSD-075-DN, 2098-DSD-075X-DN | 138.68 (5.41) | 88.9 (3.5) | 24.89 (0.96) | 247.14 (9.73) |
| 2098-DSD-150, 2098-DSD-150X, 2098-DSD-150-SE, 2098-DSD-150-DN, 2098-DSD-150X-DN | 188.97 (7.44) | 139.7 (5.5) | 24.6 (0.97) | 241.05 (9.49) |

In this figure, xxx is replaced by 030, 050, 100, 150, or 220 to represent the Ultra3000 3, 5, 10, 15, and 22 kW drives respectively.

2098-DSD-HVxxx, 2098-DSD-HVxxxX, 2098-DSD-HVxxx-SE, 2098-DSD-HVxxx-DN, 2098-DSD-HVxxxX-DN Dimensions



Dimensions are in mm (in.)

Unit shown is the 2098-DSD-HV030.

| Ultra3000 Drives ⁽¹⁾ Cat. No. | A mm (in.) | C mm (in.) | B mm (in.) | D mm (in.) | H mm (in.) | I mm (in.) |
|---|-----------------|----------------|---------------|------------------|------------------|------------------|
| 2098-DSD-HV030x, 2098-DSD-HV030-xx, 2098-DSD-HV050x, 2098-DSD-HV050-xx | 138.7 (5.46) | 18.5 (0.73) | 50.8 (2.0) | 349.3 (13.75) | 331.5 (13.05) | 360.7 (14.2) |
| 2098-DSD-HV100x, 2098-DSD-HV100-xx, 2098-DSD-HV150x, 2098-DSD-HV150-xx | 151.6 (5.97) | 25 (0.99) | | | | |
| 2098-DSD-HV220x, 2098-DSD-HV220-xx | 203.2 (8.0) | 25.4 (1.0) | 76.2 (3.0) | 380.4 (14.98) | 362.6 (14.26) | 391.8 (15.43) |

(1) The x represents the indexing (X) option. The -xx represents the Sercos interface (SE) or DeviceNet interface (DN) option. Sercos interface is not available with the DeviceNet interface option.

Motor Overload Protection

Allen-Bradley servo drives use solid-state motor overload protection that operates in accordance with UL requirements. Motor overload protection is provided by algorithms (thermal memory) that predict actual motor temperature based on operating conditions as long as control power is continuously applied.

In addition to thermal memory protection, these drives provide an input for an external temperature sensor/thermistor device, embedded in the motor, to support the UL requirement for motor overload protection.

These servo drives meet the following UL requirements for solid-state overload protection.

| Motor Overload Protection Trip Point | Value |
|--------------------------------------|---------------|
| Ultimately | 100% overload |
| Within 8 minutes | 200% overload |
| Within 20 seconds | 600% overload |



ATTENTION: To avoid damage to your motor due to overheating caused by excessive, successive motor overload trips, follow the wiring diagram provided in the user manual for your motor and drive combination.

Refer to your servo drive user manual for the interconnect diagram that illustrates the wiring between your motor and drive.

Ultra3000 Digital Servo Drive Accessories

The following Ultra3000 drive accessories were moved from the Kinetix Motion Accessories Specifications Technical Data, publication [KNX-TD004](#).

Technical Specifications - Interface Cables

Applications and Standard Lengths

| Cat. No. | Descriptions | | Standard Cable Lengths m (ft) |
|--------------------------------|---|--------|----------------------------------|
| 2090-UXPC-D09xx | Ultra3000 serial interface cable to computer | | 01 = 1.0 (3.2) |
| 2090-U3CC-D44xx ⁽¹⁾ | Single-axis flying-lead cable, Ultra3000 drive to 1756-M02AE module | | 03 = 3.0 (9.8) |
| 2090-U3AE-D44xx ⁽¹⁾ | Two-axis pre-wired cable, Ultra3000 drive to 1756-M02AE module | | 09 = 9.0 (29.5) |
| 2090-UXNRB-10F1P3 | Resistive Brake Module (RBM) to Ultra3000 drives | 10 AWG | 15 = 15 (49.2) |
| 2090-UXNRB-8F1P4 | | 8 AWG | 1.3 (4.3) |
| 2090-UXNRB-6F1P5 | | 6 AWG | 1.4 (4.6) |
| | | | 1.5 (5.0) |

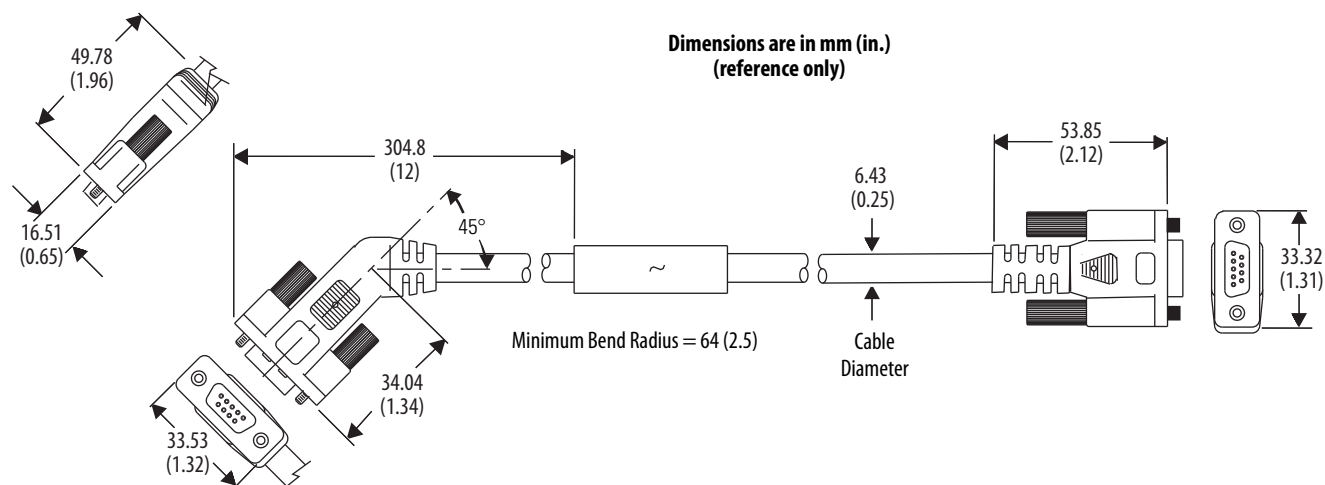
(1) This cable does not carry the unbuffered motor encoder signals (CN1 pins 10-15). Contact your Rockwell Automation sales representative if these signals are required for your application.

Interface Cable Specifications

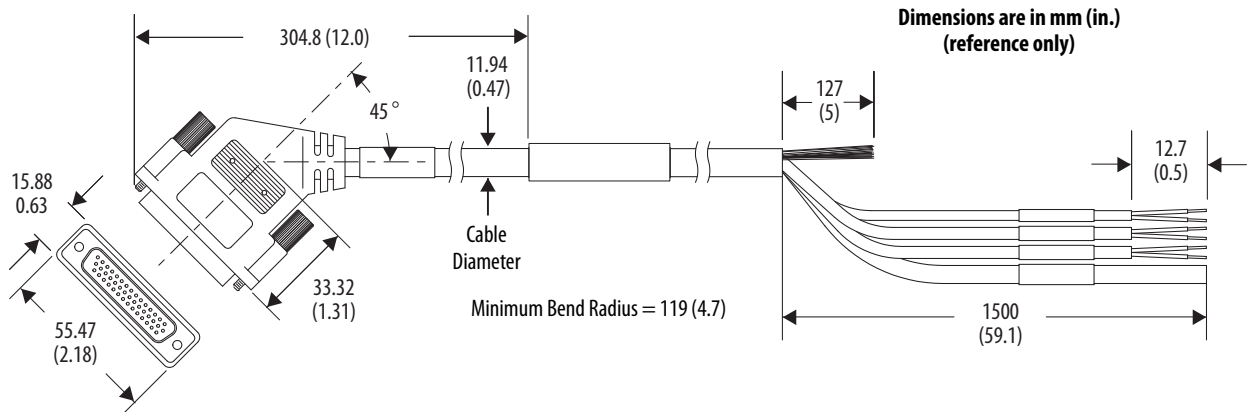
| Interface Cable Cat. No. | Description | Specifications | | |
|-----------------------------|--|---------------------|--|-----------------|
| | | Ratings | Shield | Jacket Material |
| 2090-UXPC-D09xx | Ultra3000 serial interface to computer | 90 °C (194 °F), 30V | Aluminum Polyester 100% coverage Braid shield coverage, 85% min | TPE |
| 2090-U3CC-D44xx | Single-axis flying lead Ultra3000 drive to 1756-M02AE module | 80 °C (176 °F), 30V | | |
| 2090-U3AE-D44xx | Two-axis pre-wired Ultra3000 drive to 1756-M02AE module | | | |

Dimensions - Interface Cables

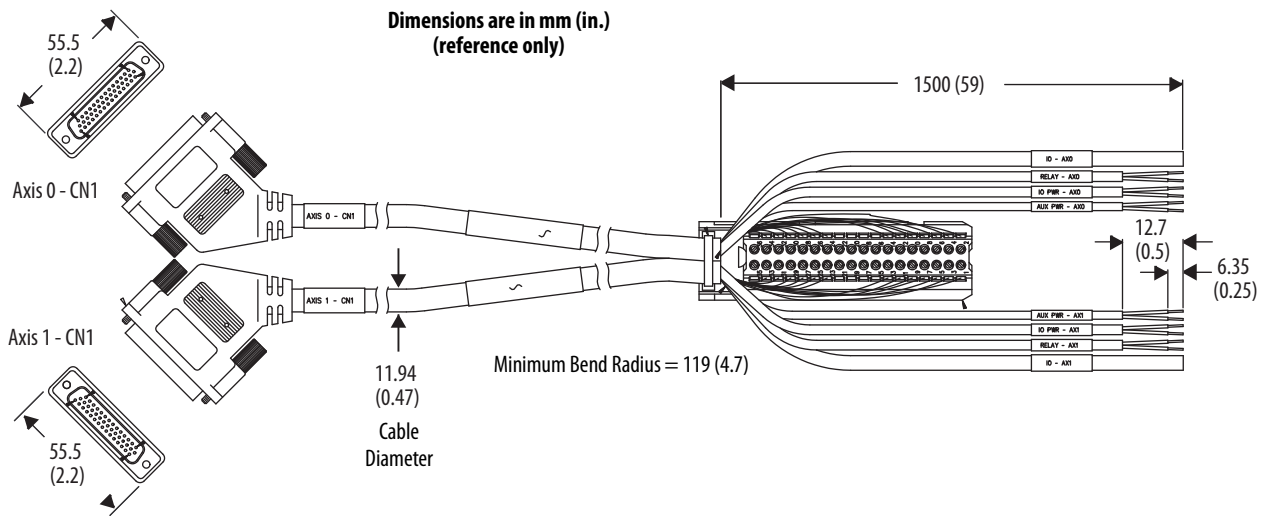
Serial Interface Cable Dimensions (catalog number 2090-UXPC-D09xx)



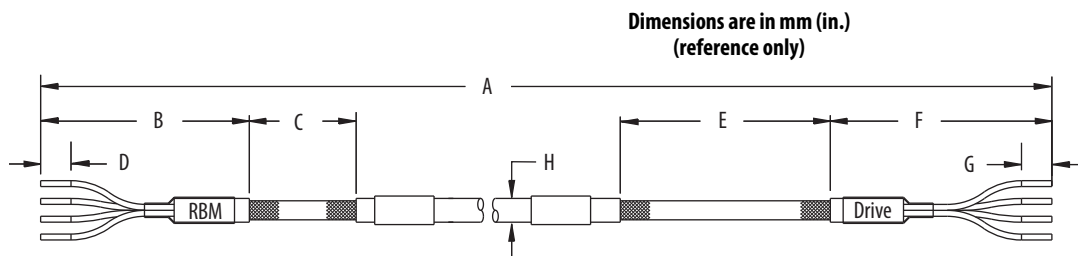
Control Interface Cable Dimensions (catalog number 2090-U3CC-D44xx)



ControlLogix 1756-M02AE Card Encoder Cable Dimensions (catalog number 2090-U3AE-D44xx)



RBM Module Interface Cable Dimensions



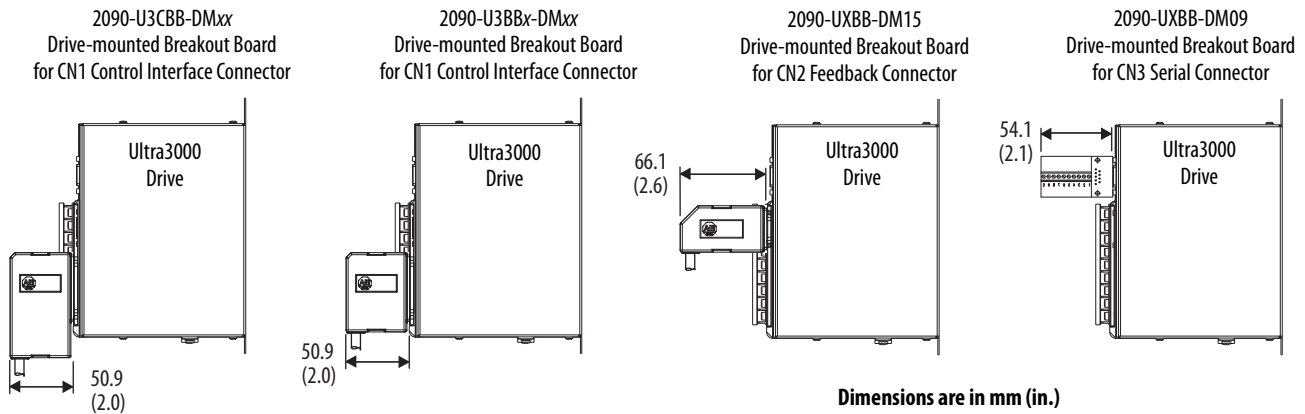
| RBM Module Cable Cat. No. | A mm (in.) | B mm (in.) | C mm (in.) | D mm (in.) | E mm (in.) | F mm (in.) | G mm (in.) | H mm (in.) |
|---------------------------|-------------|------------|------------|------------|------------|------------|------------|------------|
| 2090-UXNRB-10F1P3 | 1320 (52.0) | 115 (4.5) | 50 (1.9) | 16 (0.6) | 120 (4.7) | 105 (4.1) | 16 (0.6) | 16 (0.63) |
| 2090-UXNRB-8F1P4 | 1395 (54.9) | | | | | 117 (4.6) | | 19 (0.75) |
| 2090-UXNRB-6F1P5 | 1527 (60.1) | | | | | 129 (5.1) | | 23 (0.90) |

Drive-mounted Breakout Board Kits

Use these examples to identify the best solution for wiring your flying-lead control interface, motor feedback, and serial cables to Ultra3000 drives.

In this example, the Ultra3000 drives are shown with drive-mounted breakout board kits (catalog number 2090-Uxxx-DMxx). Drive-mounted breakout board kits are available for the control interface (CN1), motor feedback (CN2), and serial interface (CN3) connectors. Refer to Drive-mounted Breakout Board Components on [page 94](#) for more information.

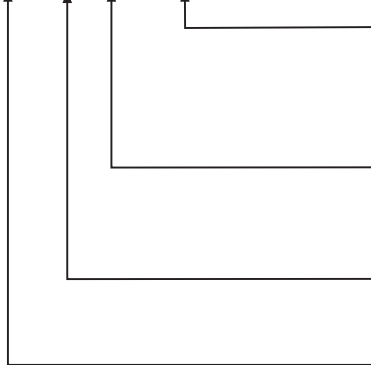
Ultra3000 Drive-mounted Breakout Board Examples



Catalog Numbers - Drive-mounted Breakout Boards

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering charts below to understand the configuration of your component. For questions regarding product availability, contact your Allen-Bradley distributor.

2090 - xx xxx - DMxx



Connector Type

- DM44 = 44-pin, male, D-sub, 44 connections
- DM12 = 44-pin, male, D-sub, 12 connections
- DM15 = 15-pin, male, D-sub
- DM09 = 9-pin, male, D-sub

Kit Type

- BB = Breakout board
- BB2 = Breakout board (applies to catalog number 2090-U3BB2-DM44 only)
- CBB = Breakout board with 24...5V auxiliary power converter

Drive

- UX = Ultra3000 drives
- U3 = Ultra3000 drives

Bulletin Number

Drive-mounted Breakout Board Components

Drive-mounted breakout boards are designed for use with Ultra3000 drives. Use this table to identify the drive-mounted breakout board for your serial, I/O, or feedback connector.

IMPORTANT The 2090-XXNFMF-Sxx and 2090-CFBMxDF-xxAxxx flying-lead feedback cables require connector kits to complete feedback connections to the drive.

Drive-mounted Breakout Boards

| Cat. No. | Description |
|------------------------------------|---|
| 2090-U3BB-DM12 ⁽¹⁾ | 12-pin, drive-mounted breakout board for Ultra3000 CN1 connector recommended for use with Sercos interface applications. |
| 2090-U3BB2-DM44 ^{(1) (2)} | 44-pin, drive-mounted breakout board for Ultra3000 CN1 control interface connector. |
| 2090-U3CBB-DM12 ⁽³⁾ | 12-pin, drive-mounted breakout board for Ultra3000 CN1 connector recommended for use with Sercos interface applications with 24...5V auxiliary power converter. |
| 2090-U3CBB-DM44 ⁽³⁾ | 44-pin, drive-mounted breakout board for Ultra3000 CN1 connector with 24V to 5V auxiliary power converter. |
| 2090-UXBB-DM15 ⁽⁴⁾ | 15-pin, drive-mounted breakout board for Ultra3000 CN2 feedback connector. |
| 2090-UXBB-DM09 | 9-pin, drive-mounted breakout board for Ultra3000 CN3 serial interface. |

(1) For specifications, refer to the CN1 Control Interface Breakout Boards Installation Instructions, publication [2090-IN007](#).

(2) This breakout board accepts 1.5 to 0.14 mm² (16 to 26 AWG) wire. For applications that require a 44-pin drive-mounted breakout board that accepts 4 to 0.34 mm² (12 to 22 AWG) wire, contact your local Rockwell Automation sales representative.

(3) Only for use with the Ultra3000 (2098-DSD-005x-xx, 2098-DSD-010x-xx, 2098-DSD-020x-xx) drives. Requires an external +24V DC power supply. For specifications, refer to the CN1 Control Interface Breakout Boards with Integral 24V to 5V Auxiliary Power Converter Installation Instructions, publication [2090-IN008](#).

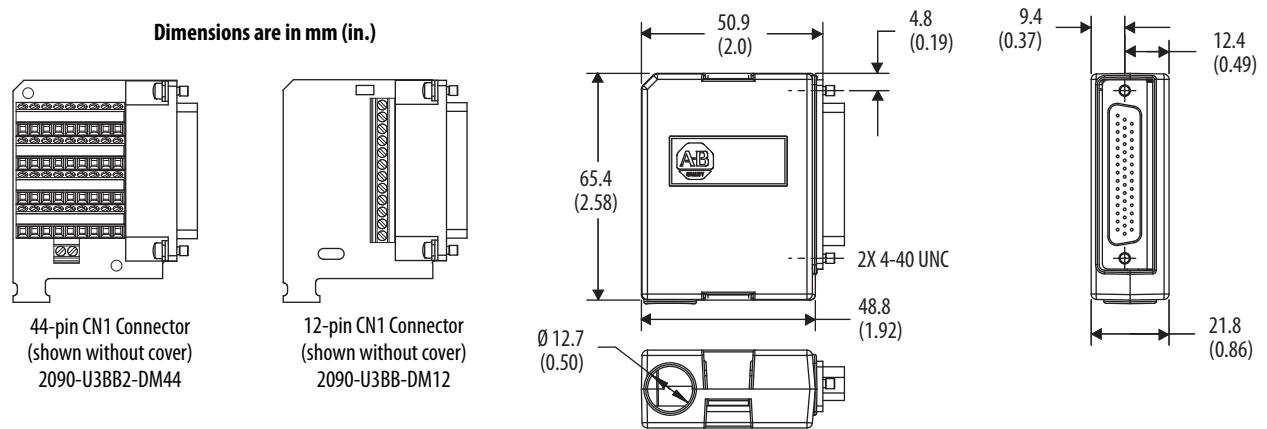
(4) For specifications, refer to the CN2 Motor Feedback Breakout Board Installation Instructions, publication [2090-IN006](#).

Dimensions - Drive-mounted Breakout Boards

These (CN1) breakout boards apply to Ultra3000 drives (catalog numbers 2098-DSD-005, 2098-DSD-010, and 2098-DSD-020) in applications where 5V DC control power (if required) is user-supplied. The 12-pin board is intended for use with Sercos drives, but can be used in non-Sercos applications with minimal I/O requirements.

IMPORTANT The 2090-U3BB-DMxx is required when wiring to the Ultra3000 (2098-DSD-030-SE/DN, 2098-DSD-075-SE/DN, 2098-DSD-150-SE/DN, or 2098-DSD-HVxxx-SE/DN) Sercos/DeviceNet interface drives due to space restrictions when connecting the Sercos or DeviceNet interface cables.

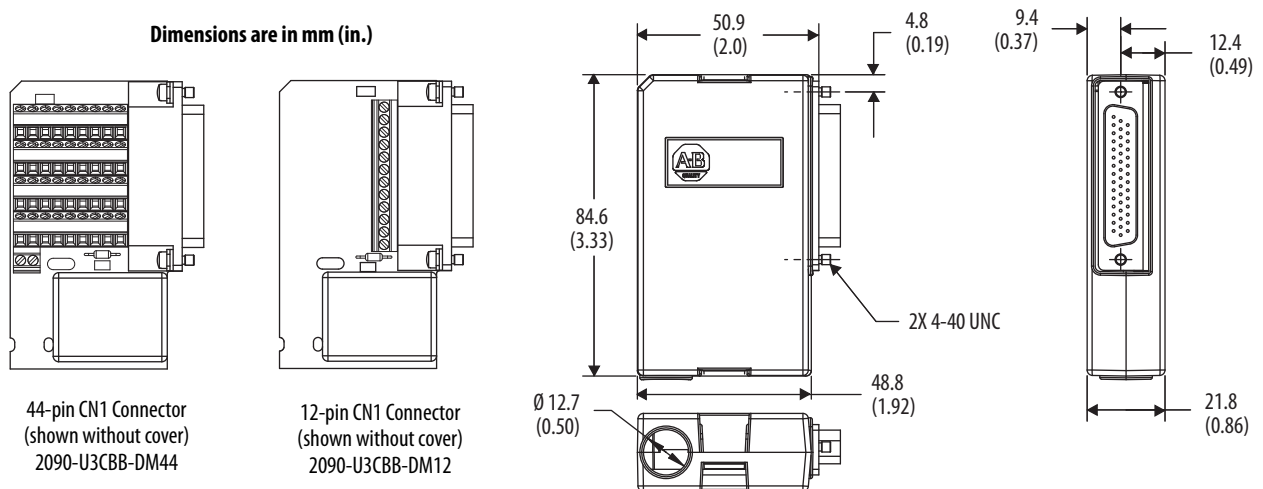
Drive-mounted Breakout Board Dimensions (catalog numbers 2090-U3BB-DM12 and 2090-U3BB2-DM44)



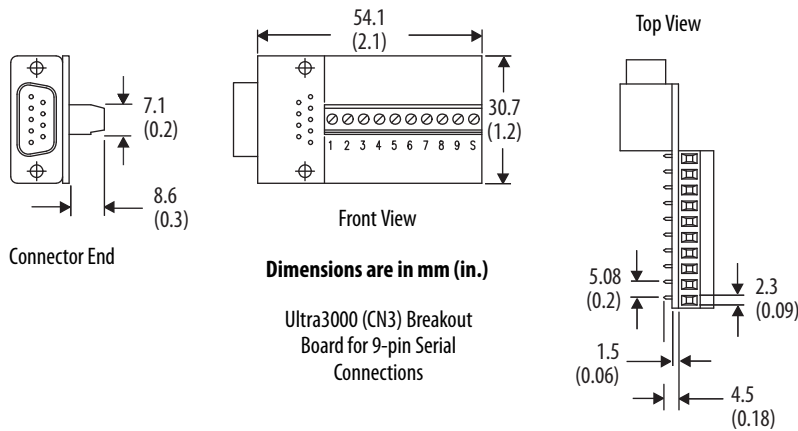
These (CN1) breakout boards apply to Ultra3000 drives (catalog numbers 2098-DSD-005, 2098-DSD-010, and 2098-DSD-020) in applications where a 24...5V DC converter for control power is required. The 12-pin board is intended for use with Sercos drives, but can be used in non-Sercos applications with minimal I/O requirements.

IMPORTANT Do not use the 2090-U3CBB-DMxx when wiring to the Ultra3000 (2098-DSD-030-SE/DN, 2098-DSD-075-SE/DN, 2098-DSD-150-SE/DN, or 2098-DSD-HVxxx-SE/DN) drives.

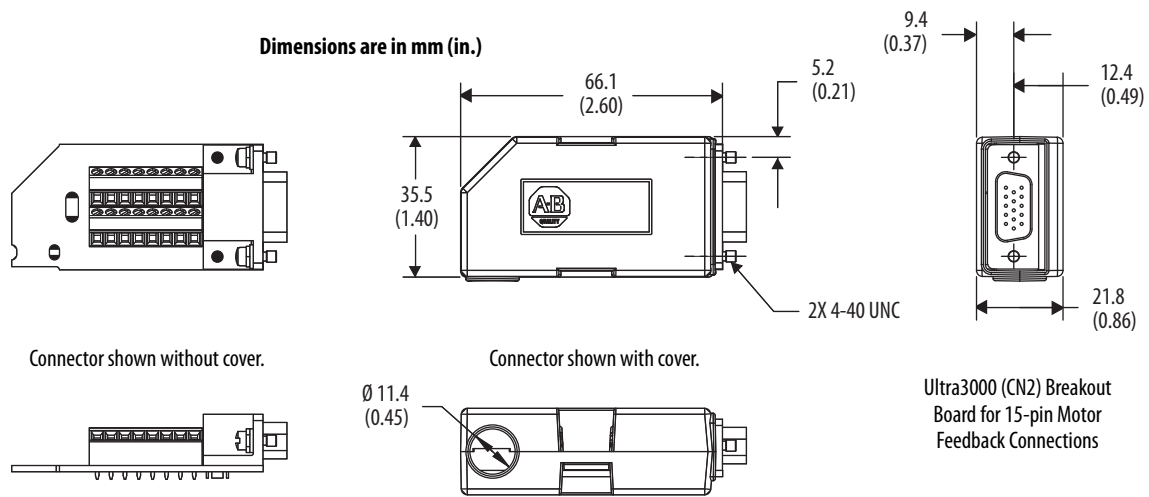
Drive-mounted Breakout Board Dimensions (catalog numbers 2090-U3CBB-DM12 and 2090-U3CBB-DM44)



Drive-mounted Breakout Board Dimensions (catalog number 2090-UXBB-DM09)



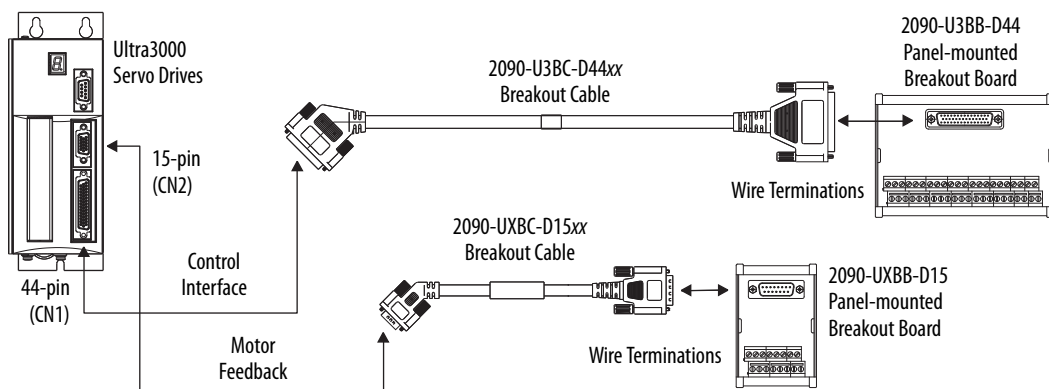
Drive-mounted Breakout Board Dimensions (catalog number 2090-UXBB-DM15)



Panel-mounted Breakout Board Kits

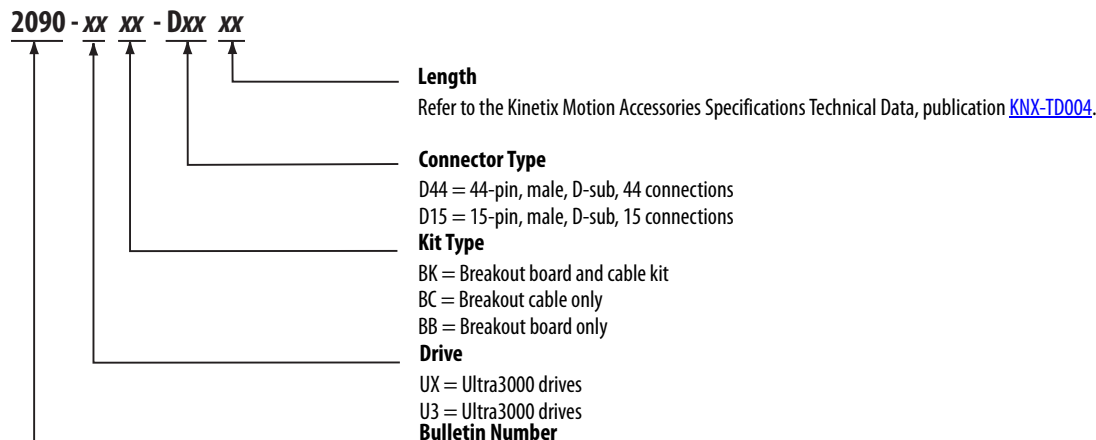
Panel-mounted breakout board kits for motor feedback (catalog number 2090-UXBK-D15xx) and control interface (catalog number 2090-U3BK-D44xx) are designed for use with Ultra3000 servo drives. Refer to Panel-mounted Breakout Board Components on [page 97](#) for more information.

Panel-mounted Breakout Board Examples



Catalog Numbers - Panel-mounted Breakout Boards

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering chart below to understand the configuration of your component. For questions regarding product availability, contact your Allen-Bradley distributor.



Panel-mounted Breakout Board Components

Breakout boards, cables, and kits (designed for DIN rail mounting on the panel) and for use with Kinetix drives as specified in the description are shown below. These breakout board components can be ordered separately, or as a kit containing both terminal block and cable.

Panel-mounted Breakout Board Kits

| Cat. No. | Description | Cable Compatibility |
|-----------------|---|---|
| 2090-UXBK-D15xx | DIN rail terminal block (catalog number 2090-UxBB-Dxx) and cable (catalog number 2090-UxBC-Dxxxx) for motor feedback connector (15-pin, male, D-sub). Use with any Ultra3000 drives (CN2 connector) for motor feedback connections. | 2090-XXNFMF-Sxx 2090-CFBM4DF-CDAFxx 2090-CFBM7DF-CEAAxx 2090-CFBM7DF-CEAFxx 2090-CFBM6DF-CBAAXx |
| 2090-U3BK-D44xx | Terminal block and cable for control interface connector (44-pin, male, D-sub). Use with Ultra3000 drives (CN1 connector). | Customer Supplied |

Panel-mounted Breakout Boards

| Cat. No. | Description |
|---------------|---|
| 2090-UXBB-D15 | 15-pin terminal block with D-sub connector. Use with any Ultra3000 drives (CN2 connector) for motor feedback connections. |
| 2090-U3BB-D44 | 44-pin terminal block with D-sub connector. Use with Ultra3000 drives (CN1 connector) for control interface connections. |

IMPORTANT The flying-lead compatible cables listed above require either 2090-UXBB-DM15 (drive-mounted) or 2090-UXBB-D15 (panel-mounted) breakout board connector kits to complete feedback and I/O connections to the drive.

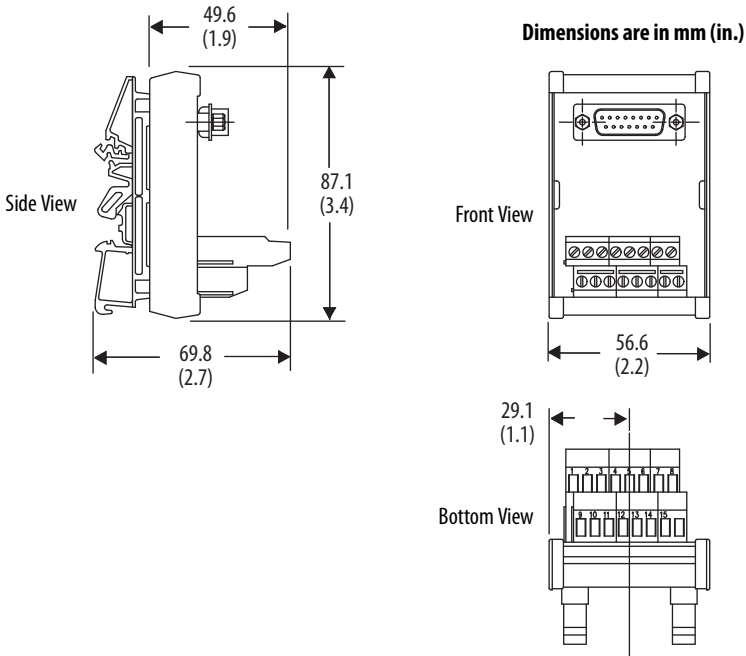
Panel-mounted Breakout Cables

| Cat. No. | Description |
|--------------------------------|--|
| 2090-UXBC-D15xx | 15-pin cable with D-sub connector. Use with any Ultra3000 drives (CN2 connector) for motor feedback connections. |
| 2090-U3BC-D44xx ⁽¹⁾ | 44-pin cable with D-sub connector. Use with Ultra3000 drives (CN1 connector) for control interface connections. |

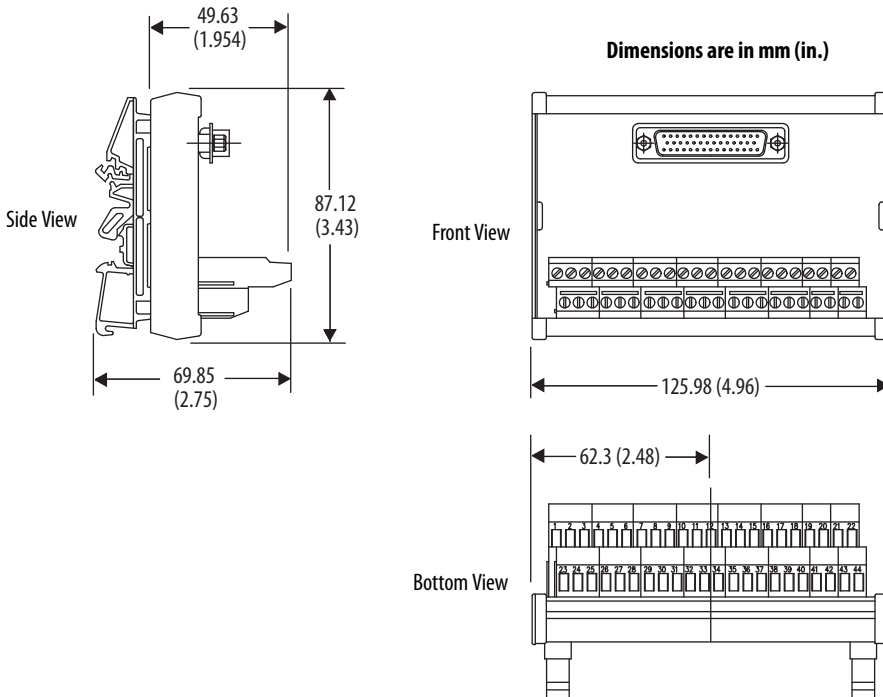
(1) This cable does not carry the unbuffered motor encoder signals (CN1 pins 10...15). Contact your Rockwell Automation sales representative if these signals are required for your application.

Dimensions - Panel-mounted Breakout Components

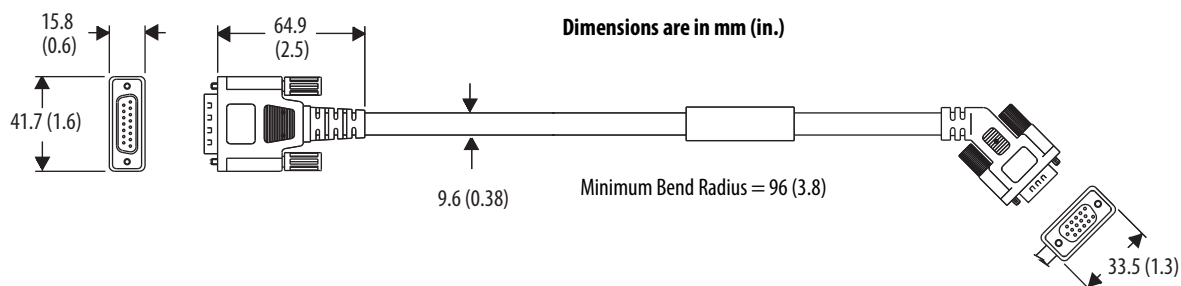
Panel-mounted Breakout Board Dimensions (catalog number 2090-UXBB-D15)



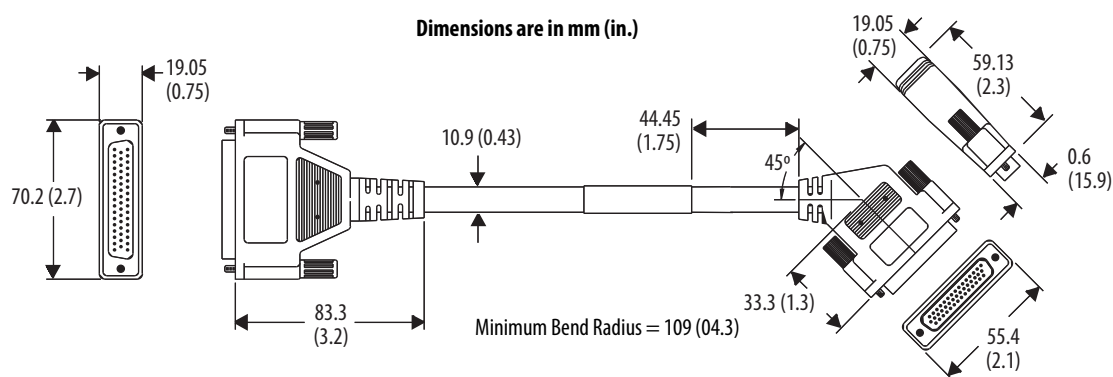
Panel-mounted Breakout Board Dimensions (catalog number 2090-U3BB-D44)



Panel-mounted Breakout Cable Dimensions (catalog number 2090-UXBC-D15xx)



Panel-mounted Breakout Cable Dimensions (catalog number 2090-U3BC-D44xx)



Panel-mounted Breakout Cable Specifications

| Breakout Cable | Description | Specifications | | | Standard Cable Lengths m (ft) |
|-----------------|--|--------------------|--|-----------------|---|
| | | Temperature Rating | Shield Coverage | Jacket Material | |
| 2090-UXBC-D15xx | 15-pin, high density D-shell for Ultra3000 CN2 feedback connector | 90 °C (194 °F) | 100% Aluminum Foil (with 85% braid overshield) | TPE | 1 (3.2) 3 (9.8) 9 (29.5) 15 (49.2) |
| 2090-U3BC-D44xx | 44-pin, high density D-shell for Ultra3000 CN1 control interface connector | | | | |

Drive-end Connector Kits

| Drive Family | Kit Cat. No. | Description |
|--------------|---------------|---|
| Ultra3000 | 2090-UXCK-D09 | Mating Connector Kit (9-pin standard density D-shell) CN3 |
| Ultra3000 | 2090-UXCK-D15 | Mating Connector Kit (15-pin high density D-shell) CN2 |
| Ultra3000 | 2090-U3CK-D44 | Mating Connector Kit (44-pin high density D-shell) CN1 |

Technical Specifications - AC Line Filters

| AC Line Filter Cat. No. | Specifications ^{(1) (2)} | | | | | | | Dimensions | |
|----------------------------|-----------------------------------|--------|----------------------------------|-----------------|--------------------------|------------------------------|-------------------------------|--------------------------|--------------------------|
| | Voltage | Phase | Current A @ 50 °C (122 °F) | Power Loss W | Leakage Current mA | Weight, approx kg (lb) | Operating Temperature | | |
| 2090-UXLF-106 | 250V AC 50/60 Hz | Single | 6 | 3.5 | 2.26 | 0.3 (0.66) | -25...85 °C (-13...185 °F) | page 101 | |
| 2090-UXLF-110 | | | 10 | 2.7 | 45 | 0.95 (2.0) | | | |
| 2090-UXLF-123 | | | 23 | 10 | 90 | 1.6 (3.5) | | | |
| 2090-UXLF-132 | | | 32 | 20 | 90 | | | | |
| 2090-UXLF-136 | | | 36 | – | 200 | 1.75 (3.9) | | | page 102 |
| 2090-UXLF-336 | | | 520V AC 50/60 Hz | Three | 36 | – | | | 138 |
| 2090-UXLF-350 | 50 | 25 | | | 138 | | | | |
| 2090-UXLF-HV323 | 23 | 20 | | | 80 | 1.6 (3.5) | page 101 | | |
| 2090-UXLF-HV330 | 30 | 51 | | | 24 | 1.8 (4.0) | page 103 | | |
| 2090-UXLF-HV350 | 500V AC 50/60 Hz | 50 | | | 25 | 35 | 4.8 (10.6) | page 104 | |
| | | | | | | | | | |

(1) For all filters, 90% relative humidity.

(2) For all filters, 10...200 Hz @ 1.8 g vibration.

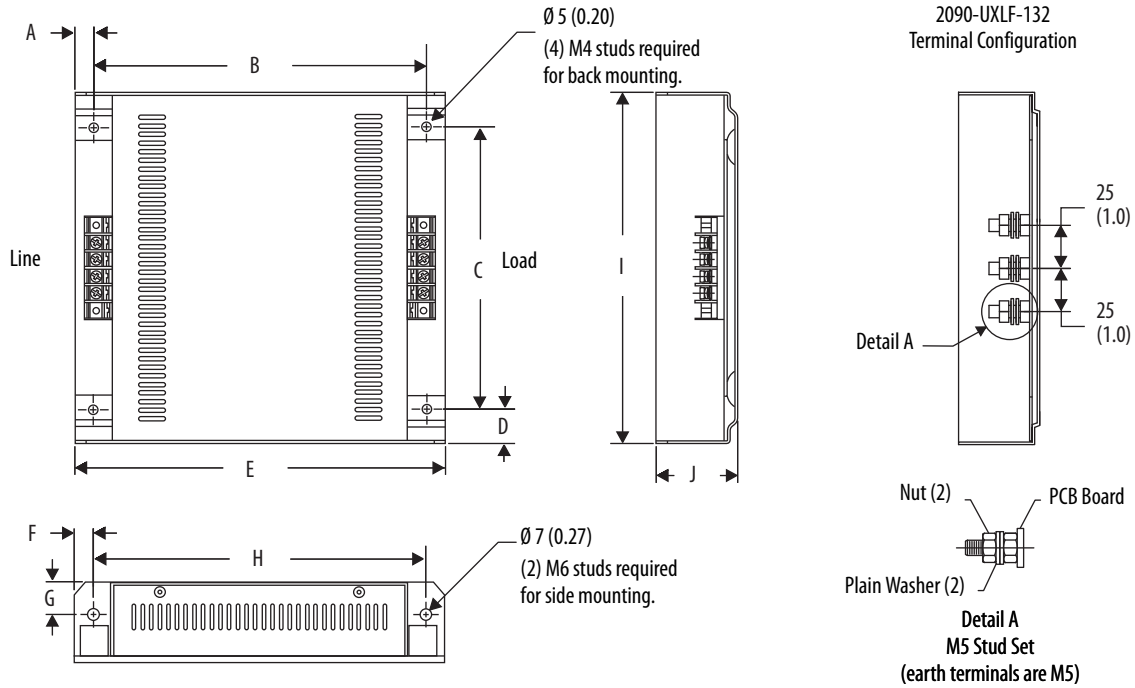
AC Line Filter Catalog Numbers

| Drive Family | Drive Cat. No. | AC Line Filter Cat. No. | Motor Cables > 30 m |
|--------------|---|----------------------------|---------------------|
| Ultra3000 | 2098-DSD-005 | 2090-UXLF-106 | 2090-UXLF-110 |
| | 2098-DSD-010 | 2090-UXLF-110 | 2090-UXLF-110 |
| | 2098-DSD-020 | 2090-UXLF-123 | 2090-UXLF-123 |
| | 2098-DSD-030 | 2090-UXLF-136 | 2090-UXLF-132 |
| | 2098-DSD-075 | 2090-UXLF-336 | 2090-UXLF-HV330 |
| | 2098-DSD-150 | 2090-UXLF-350 | 2090-UXLF-HV350 |
| | 2098-DSD-HV030, 2098-DSD-HV050, 2098-DSD-HV100, 2098-DSD-HV150 | 2090-UXLF-HV323 | 2090-UXLF-HV323 |
| | 2098-DSD-HV220 | 2090-UXLF-HV330 | 2090-UXLF-HV330 |

Dimensions - AC Line Filters

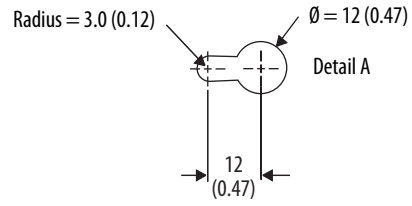
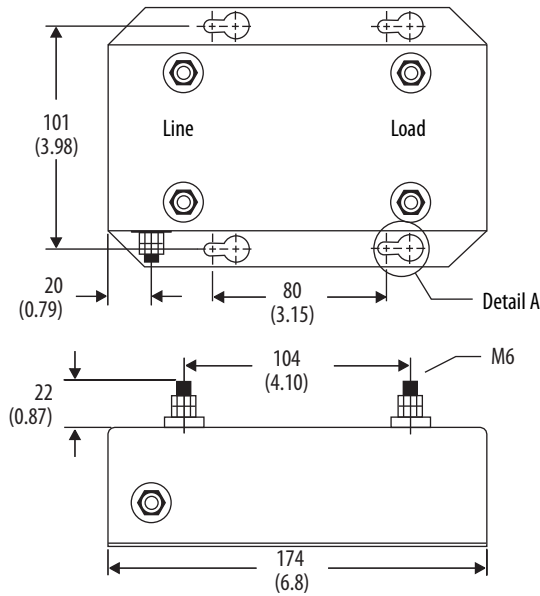
AC Line Filter Dimensions

Dimensions are in mm (in.)

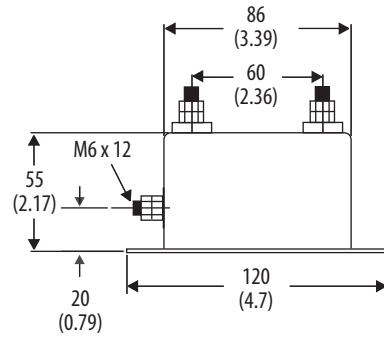


| Cat. No. | A mm (in.) | B mm (in.) | C mm (in.) | D mm (in.) | E mm (in.) | F mm (in.) | G mm (in.) | H mm (in.) | I mm (in.) | J mm (in.) |
|-----------------|----------------|-----------------|-----------------|----------------|-----------------|----------------|----------------|-----------------|-----------------|----------------|
| 2090-UXLF-106 | 9.0 (0.35) | 152.0 (5.99) | 55.0 (2.17) | 18.0 (0.71) | 170.0 (6.69) | 9.0 (0.35) | 10.0 (0.39) | 152.0 (5.99) | 92.0 (3.62) | 25.0 (0.98) |
| 2090-UXLF-110 | | | 104.0 (4.0) | | | | 16.0 (0.63) | | 145.0 (5.71) | 40.0 (1.58) |
| 2090-UXLF-123 | 11.0 (0.43) | 192.0 (7.56) | 164.0 (6.46) | 20.0 (0.79) | 214.0 (8.42) | 11.0 (0.43) | 19.0 (0.75) | 192.0 (7.56) | 204 (8.04) | 47.0 (1.85) |
| 2090-UXLF-132 | | | | | | | | | | |
| 2090-UXLF-HV323 | | | | | | | | | | |

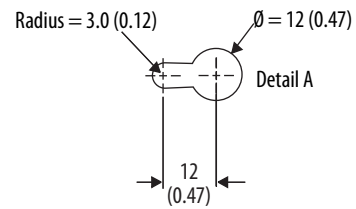
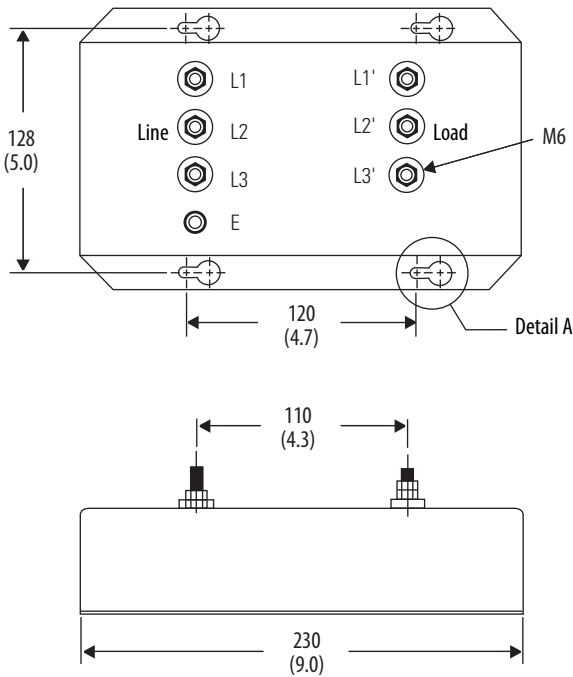
AC Line Filter Dimensions
(catalog number 2090-UXLF-136)



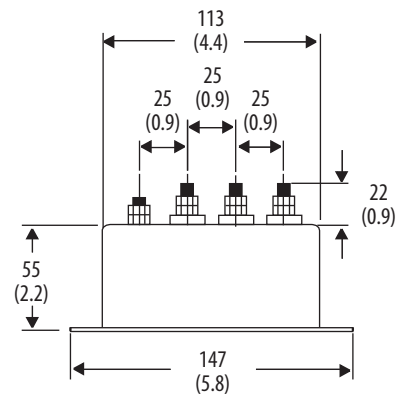
Dimensions are in mm (in.)



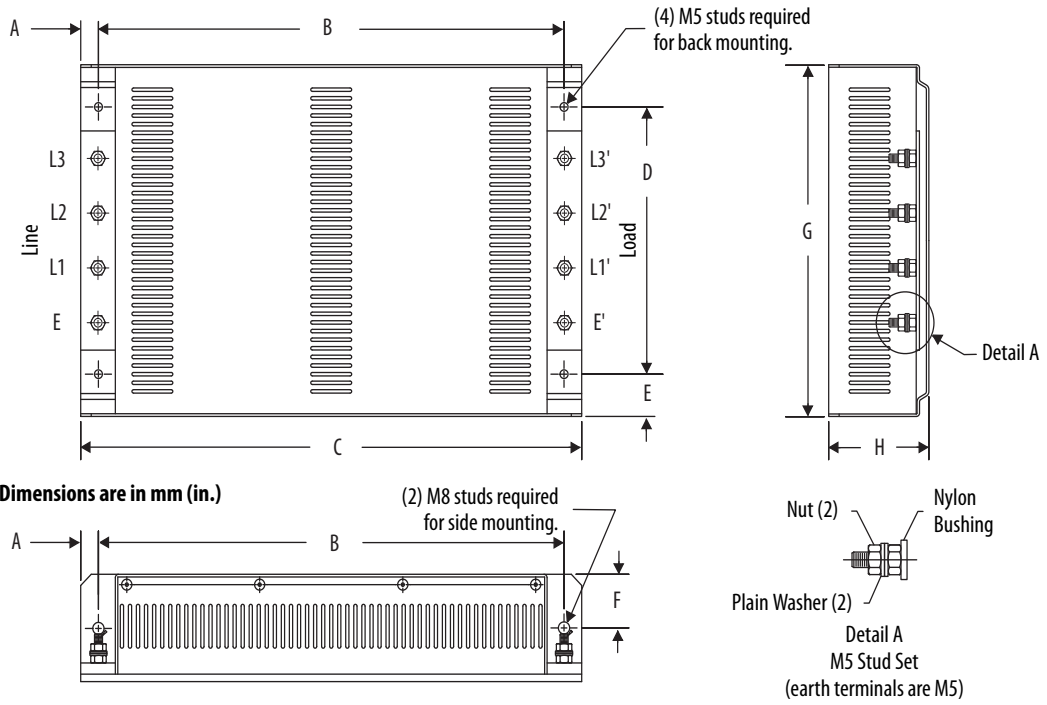
AC Line Filter Dimensions
(catalog numbers 2090-UXLF-336 and 2090-UXLF-350)



Dimensions are in mm (in.)



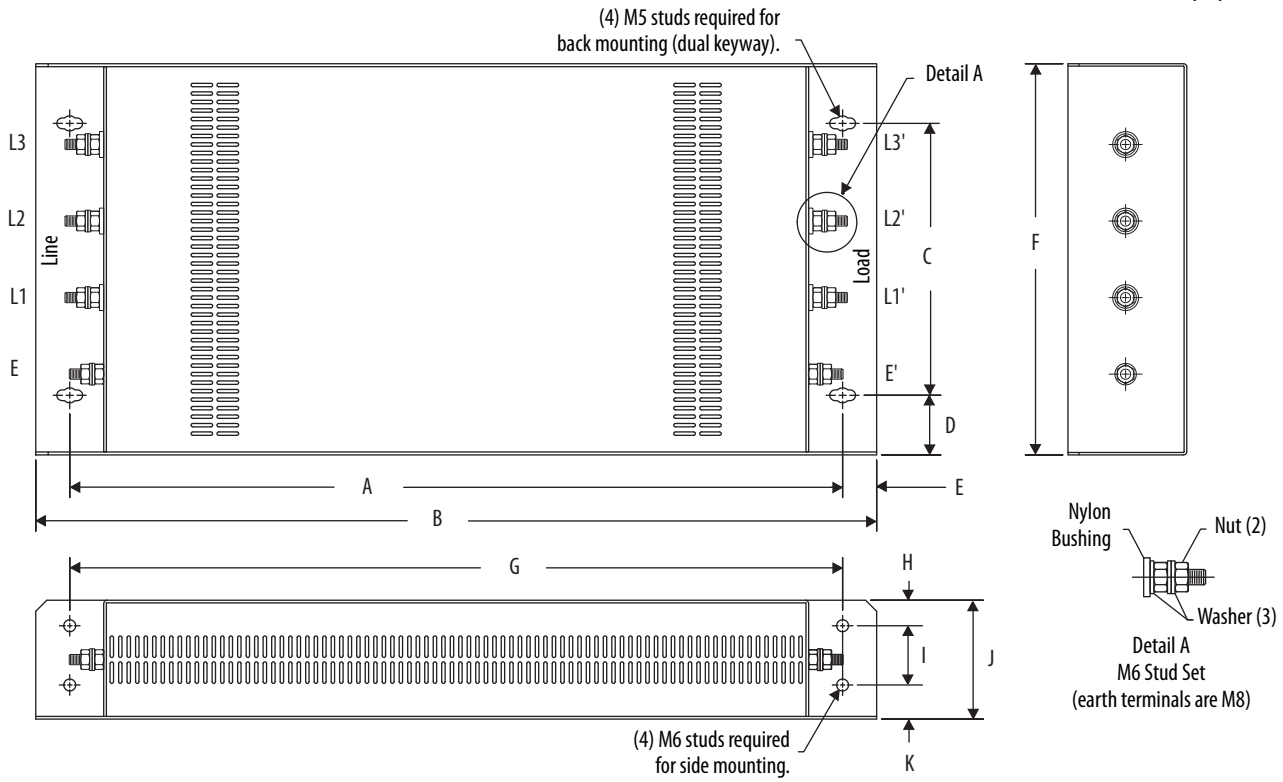
AC Line Filters Dimensions



| Cat. No. | A mm (in.) | B mm (in.) | C mm (in.) | D mm (in.) | E mm (in.) | F mm (in.) | G mm (in.) | H mm (in.) |
|-----------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|
| 2090-UXLF-HV330 | 11.0 (0.4) | 338 (13.3) | 360 (14.2) | 145 (5.7) | 29.5 (1.1) | 16.0 (0.63) | 204 (8.0) | 40.0 (1.6) |

AC Line Filter Dimensions

Dimensions are in mm (in.)



| Cat. No. | A mm (in.) | B mm (in.) | C mm (in.) | D mm (in.) | E mm (in.) | F mm (in.) | G mm (in.) | H mm (in.) | I mm (in.) | J mm (in.) | K mm (in.) |
|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 2090-UXLF-HV350 | 578 (22.7) | 618 (24.3) | 160 (6.3) | 35 (1.4) | 20 (0.8) | 230 (9.0) | 578 (22.7) | 15 (0.6) | 35 (1.4) | 70 (2.7) | 20 (0.8) |

Technical Specifications - Bulletin 2090 Passive Shunt Modules

Select one of these passive shunt modules when your Ultra3000 drive application exceeds the capacity of the internal shunt resistor.

| Ultra3000 ⁽¹⁾ Drive Cat. No. | Shunt Module Cat. No. | Shunt Type | Voltage Class | Resistance Ω | Peak Power kW | Peak Current A | Continuous Power W | Shipping Weight kg (lb) | Fuse Replacement |
|--|--------------------------|---------------|------------------|-----------------|------------------|-------------------|--------------------------|-------------------------------|----------------------------|
| 2098-DSD-005, 2098-DSD-010, 2098-DSD-020 | 2090-UCSR-A300 | Active | 200V | 36 | 4.0 | 10.5 | 300 | 1.51 (3.3) | — |
| 2098-DSD-030 | 9101-1183 | Passive | | 30 | 5.9 | 14.0 | 200 | — | CCMR-4-½ ⁽²⁾ |
| 2098-DSD-075, 2098-DSD-150 | 2090-UCSR-P900 | | | 18 | 10.0 | 23.3 | 900 | 4.08 (9.0) | FWP-10A14F ⁽³⁾ |
| 2098-DSD-HV030, 2098-DSD-HV050 | 2090-SR120-09 | | 120 | 5.3 | 6.7 | 3.63 (8.0) | | FWP-2.5A14F ⁽³⁾ | |
| 2098-DSD-HV100 | 2090-SR040-09 | | 400V | 40 | 16.0 | 20.0 | 1800 | 3.63 (8.0) | FWP-5A14F ⁽³⁾ |
| | 2090-SR040-18 | | | 40 | | 20.0 | | 8.6 (19.0) | FWP-6.3A14F ⁽³⁾ |

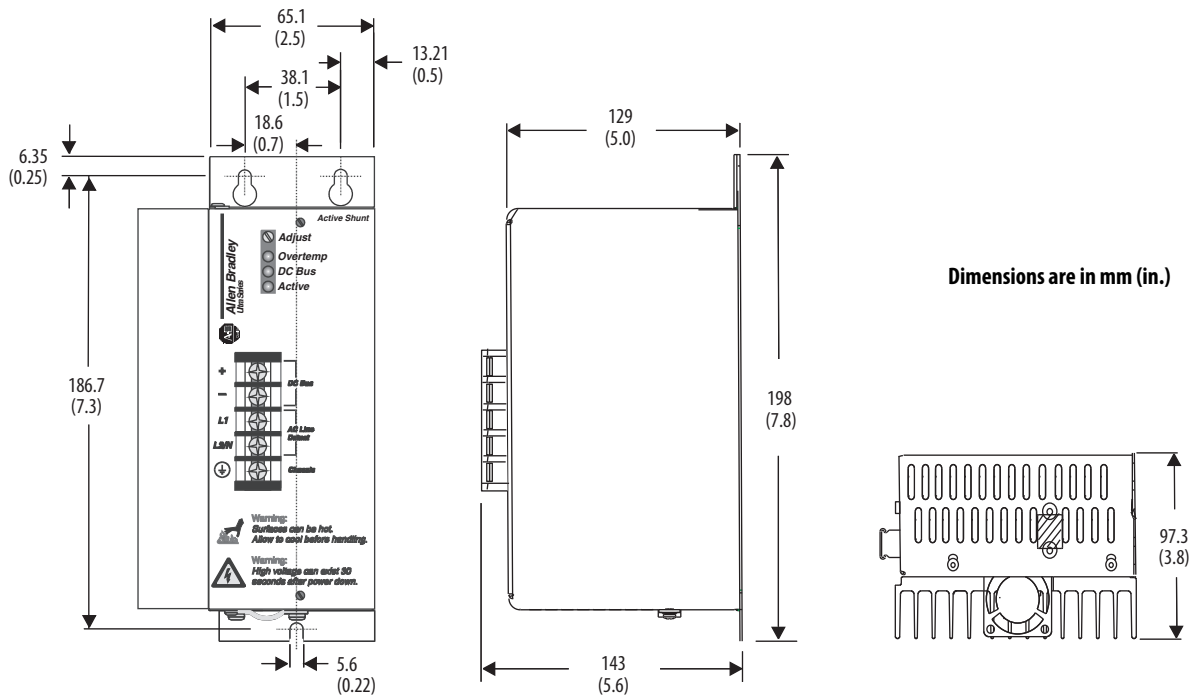
(1) Refer to Rockwell Automation Encompass partners for 2098-DSD-HV150 and 2098-DSD-HV220 passive shunt solutions.

(2) Littelfuse part number.

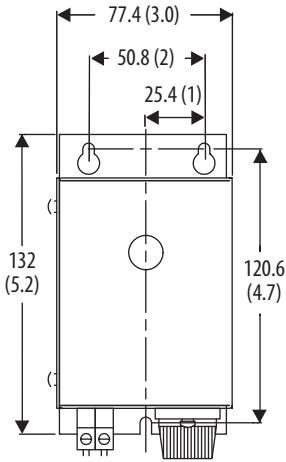
(3) Bussmann part number.

Dimensions - Shunt Resistor Kits

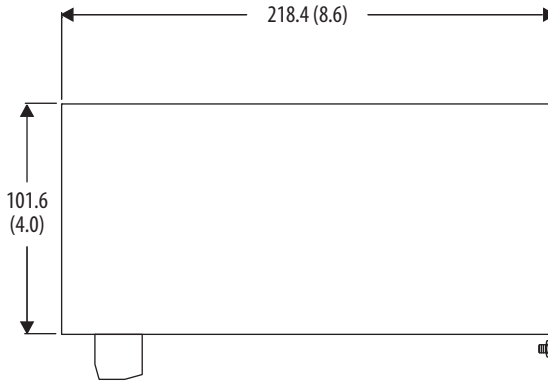
Catalog Number 2090-UCSR-A300



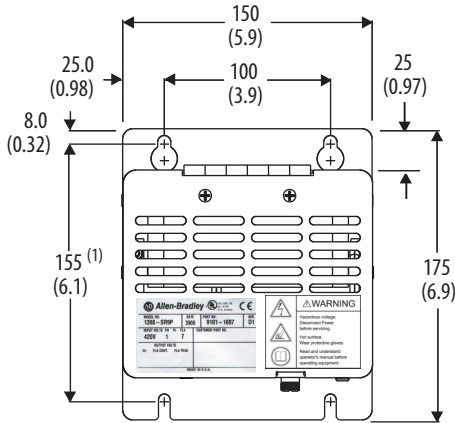
Catalog Number 9101-1183



Dimensions are in mm (in.)

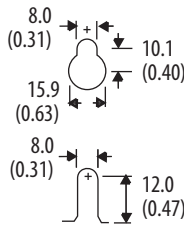


Catalog Number 2090-UCSR-P900



Front View

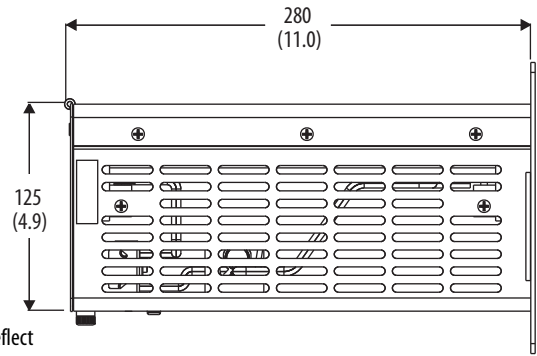
Mounting Hole Detail



All slots accept M6 or 1/4-20 mounting screws.

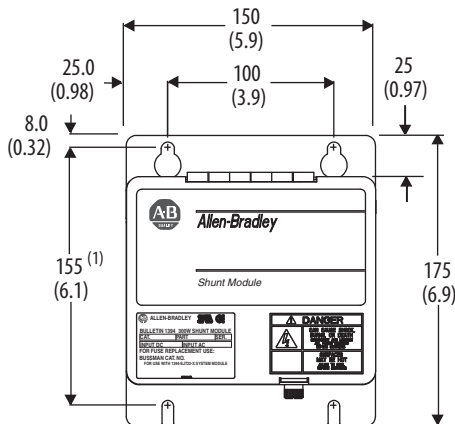
(1) Dimension shown is for mounting hardware location and does not reflect the location of the lower slot radius.

Dimensions are in mm (in.)



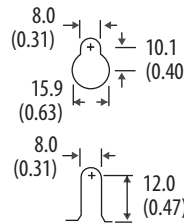
Side View

Catalog Numbers 2090-SR120-09 and 2090-SR040-09



Front View

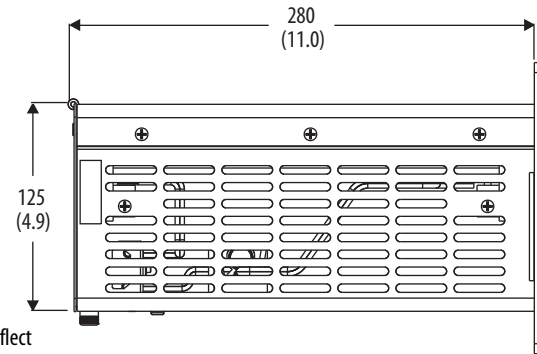
Mounting Hole Detail



All slots accept M6 or 1/4-20 mounting screws.

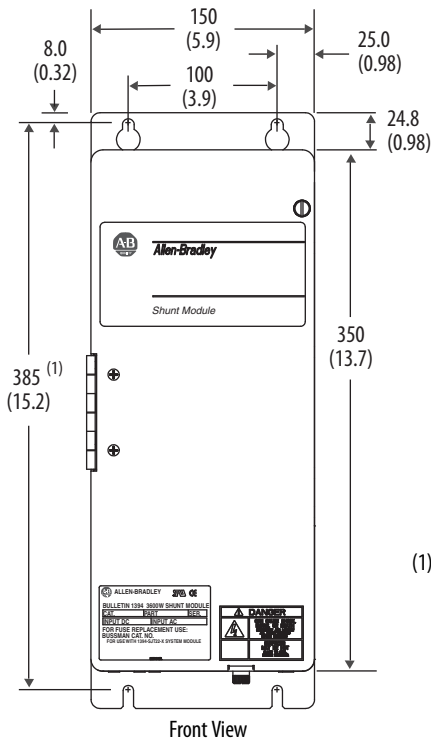
(1) Dimension shown is for mounting hardware location and does not reflect the location of the lower slot radius.

Dimensions are in mm (in.)

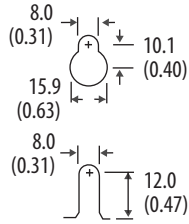


Side View

Catalog Number 2090-SR040-18

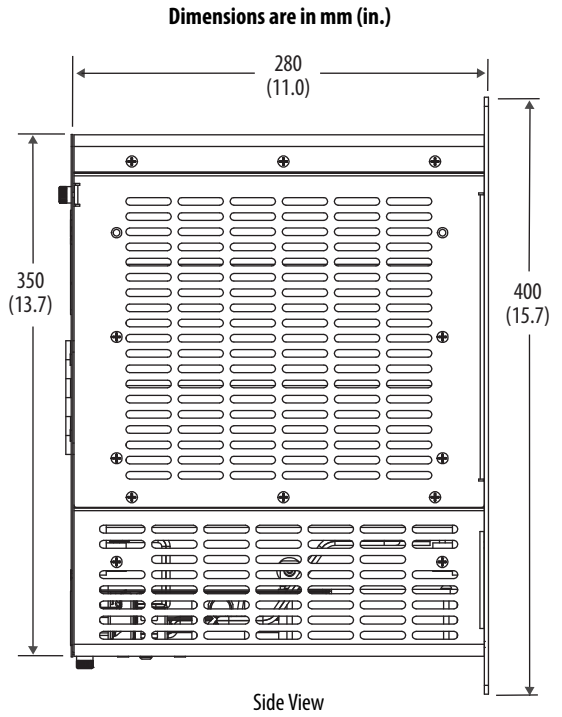


Mounting Hole Detail



All slots accept M6 or 1/4-20 mounting screws.

(1) Dimension shown is for mounting hardware location and does not reflect the location of the lower slot radius.



Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource | Description |
|--|--|
| Kinetix Rotary Motion Specifications, publication KNX-TD001 | Provides product specifications for Kinetix VP, MP-Series, Kinetix 6000M (Bulletin MDF), TL-Series, RDD-Series™, and HPK-Series™ rotary motors. |
| Kinetix Linear Motion Specifications, publication KNX-TD002 | Provides product specifications for Bulletin MPAS and MPMA linear stages, Bulletin MPAI and MPAI electric cylinders, and LDC-Series and LDL-Series linear motors. |
| Kinetix Servo Drives Specifications, publication KNX-TD003 | Provides product specifications for Kinetix Integrated Motion over the EtherNet/IP network, Integrated Motion over Sercos interface, EtherNet/IP networking, and component servo drive families. |
| Kinetix Motion Accessories Specifications, publication KNX-TD004 | Provides product specifications for Bulletin 2090 motor and interface cables, low-profile connector kits, drive power components, and other servo drive accessory items. |
| Kinetix Motion Control Selection Guide, publication KNX-SG001 | Overview of Kinetix servo drives, motors, actuators, and motion accessories designed to help make initial decisions for the motion control products best suited for your system requirements. |
| Kinetix 5500 Drive Systems Design Guide, publication KNX-RM010 | Provides system design guide to determine and select the required (drive specific) drive module, power accessory, connector kit, motor cable, and interface cable catalog numbers for your drive and motor/actuator motion control system. Included are system performance specifications and torque/speed curves (rotary motion) and force/velocity curves (linear motion) for your motion application. |
| Kinetix 5500 Drive Systems Design Guide, publication KNX-RM009 | |
| Kinetix 6000 and Kinetix 6200/6500 Drive Systems Design Guide, publication KNX-RM003 | |
| Kinetix 300/350 Drive Systems Design Guide, publication KNX-RM004 | |
| Kinetix 3 Drive Systems Design Guide, publication GMC-RM005 | |
| Kinetix 2000 Drive Systems Design Guide, publication GMC-RM006 | |
| Kinetix 7000 Drive Systems Design Guide, publication GMC-RM007 | |
| System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001 | |
| ControlLogix Selection Guide, publication 1756-SG001 | Information to determine which ControlLogix controller fits your application and the product specifications to help design a ControlLogix system and select the appropriate components. |
| CompactLogix Selection Guide, publication 1769-SG001 | Information to determine which CompactLogix™ controller fits your application and the product specifications to help design a CompactLogix system and select the appropriate components. |
| Industrial Ethernet Media Brochure, publication 1585-BR001 | Information to determine which Bulletin 1585 Ethernet cable fits your application and the product specifications to help select the appropriate components. |
| Motion Analyzer System Sizing and Selection Tool website https://motionanalyzer.rockwellautomation.com/ | Comprehensive motion application sizing tool used for analysis, optimization, selection, and validation of your Kinetix Motion Control system. |
| Rockwell Automation® Configuration and Selection Tools, website http://ab.rockwellautomation.com | Online product selection and system configuration tools, including AutoCad (DXF) drawings. |

You can view or download publications at <http://www.rockwellautomation.com/global/literature-library/overview.page>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Notes:

Rockwell Automation Support

Use the following resources to access support information.

| | | |
|---|---|--|
| Technical Support Center | Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates. | www.rockwellautomation.com/knowledgebase |
| Local Technical Support Phone Numbers | Locate the phone number for your country. | www.rockwellautomation.com/global/support/get-support-now.page |
| Direct Dial Codes | Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer. | www.rockwellautomation.com/global/support/direct-dial.page |
| Literature Library | Installation Instructions, Manuals, Brochures, and Technical Data. | www.rockwellautomation.com/literature |
| Product Compatibility and Download Center (PCDC) | Get help determining how products interact, check features and capabilities, and find associated firmware. | www.rockwellautomation.com/global/support/pcdc.page |

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