What's Inside

Rockwell Automation offers additional products and options that are not covered in this selection guide. For additional product information, see the documentation links provided on the front cover, the selection suite summary on page 3, and the links in Additional Resources on page 19, and throughout this selection guide.

Kinetix motion control products not included in this selection guide, but supported with product specifications, selection examples, and system performance curves include the following:

- Kinetix 2000 Multi-axis Servo Drives
- Kinetix 7000 High Power Servo Drives
- Ultra™ 3000 Digital Servo Drives

For assistance and validation in making final product selections, consider using the Integrated Architecture™ Builder tool that is available at http://www.rockwellautomation.com/en/e-tools/configuration.html.

Additional product options are available through Encompass™, our third-party product referencing program. For more information about the Encompass program, see http://www.rockwellautomation.com/encompass.

Servo Drives

Servo drives meet CE compliance and are UL Listed to U.S. and Canadian safety standards. Refer to http://www.ab.com for more information.

Integrated Motion on the EtherNet/IP Network Servo Drives

Drive Features	Kinetix 5500	Kinetix 6500	Kinetix 350
Main characteristics	• High performance in a smaller footprint and optimized power density • Single motor cable that includes power, feedback, and brake conductors with SpeedTec connector • Digital feedback device provides real-time motor performance information to the control circuitry • Capability to run servo and induction motors	• Multi-axis • Common bus • Modular design	• Single-axis, integrated motion, optimized for low axis count • Supports complete motion command set • 120V input models drive 240V motors at full speed (catalog numbers 2097-V31PR*x*) • 240V, single-phase input modules include integrated AC line filter (catalog numbers 2097-V32PR*x*) • Memory module for Automatic Device Replacement (ADR)
	• Integrated motion on the EtherNet/IP network • Integrated safety on the EtherNet/IP network	Integrated motion on the EtherNet/IP network	
	• Safe torque-off control (STO), TÜV certified • 2198-H*xxx*-ERS: Hardwired STO, PLd, Cat 3; SIL CL2 • 2198-H*xxx*-ERS2: Integrated STO, PLe, Cat 3; SIL CL3	• Safe speed monitoring • Safe torque-off control • TÜV certified PLe, Category 4; SIL CL3	• Safe torque-off control • TÜV certified PLd, Category 3; SIL CL2
Drive configuration	• Single-axis operation for low-cost simplicity • Multi-axis bus-sharing configurations	1…8 Axes on Bulletin 2094 power rail	Single-axis
Input voltage	195…264V AC, single-phase 195…264V AC, three-phase 324…528V AC, three-phase	324…528V AC, three-phase (400V-class)	• 120/240V AC, single-phase • 240V AC, three-phase • 480V AC, three-phase
Common-bus follower input voltage	276…747V DC	458…747V DC (400V-class)	N/A
Continuous output power (inverter)	0.2…1.0 kW (195…264V, single-phase input) 0.3…7.2 kW (195…264V, three-phase input) 0.6…14.6 kW (324…528V, three-phase input)	1.8…22 kW (400V-class)	0.4…1.7 kW (single-phase input) 0.5…3.0 kW (single-phase or three-phase input) 1.0…3.0 kW (three-phase input)
Continuous output current (inverter)	1.0…23.0 A rms	2.8…34.6 A rms (400V-class)	2.0…12.0 A rms
Drive digital inputs	• Home/Registration1 (dual function) • High speed registration (1)	• Enable, home, overTravel ± • High speed registration (2/axis)	• Enable, home, overTravel ± • High speed registration (1)
Drive digital outputs	Motor brake relay output (with suppression)		
Programming	Logix Designer application	RSLogix 5000 software	
	Version 21.00.00 or later	Version 18.00.00 or later	Version 20.00 or later
	Ladder logic, structured text, and sequential function charts		
Logix5000 module compatibility	• 1756-EN2T, 1756-EN2TR, 1756-EN3TR EtherNet/IP modules with ControlLogix or GuardLogix controllers • CompactLogix 5370 controllers		
I/O control	EtherNet/IP		
Feedback	• High-resolution absolute, multi-turn and single-turn encoder feedback • Hiperface encoder support with 2198-H2DCK converter kit	• High-resolution absolute multi-turn and single-turn encoder • Incremental encoder • EnDat 2.1 and 2.2 encoders	• High-resolution absolute multi-turn and single-turn encoder • Incremental encoder
	Feedback-only axis with Bulletin 842E-CM encoders	Feedback-only auxiliary axis	Auxiliary axis for master gearing mode
Rotary motors compatibility	• Kinetix VP (Bulletin VPL/VPF/VPS) • MP-Series (Bulletin MPL/MPM/MPF/MPS) (1)	• MP-Series (Bulletin MPL/MPM/MPF/MPS) • MP-Series RDD-Series Direct Drive (Bulletin RDB)	• MP-Series (Bulletin MPL/MPM/MPF/MPS) • TL-Series (Bulletin TLY)
Linear motors compatibility	N/A	LDC-Series Iron Core	N/A
Linear actuator compatibility	• LDAT-S*xxxxxx-xDx* Integrated Linear Thrusters (1) • MP-Series Electric Cylinders (Bulletin MPAR/MPAI) (1) • MP-Series Linear Stages (1) (Bulletin MPAS and MPMA ballscrew only)	• MP-Series Linear Stages (Bulletin MPAS/MPMA) • LDAT-S*xxxxxx-xBx* Integrated Linear Thrusters • MP-Series Electric Cylinders (Bulletin MPAR/MPAI)	• MP-Series Electric Cylinders (Bulletin MPAR/MPAI) • TL-Series Electric Cylinders (Bulletin TLAR) • MP-Series Linear Stages (Bulletin MPAS and MPMA ballscrew only)
Accessory compatibility	• 2198 capacitor module • 2198 AC (EMC) line filters • 2198 shared-bus connector kits • 2097 shunt resistors	• 2094 Line Interface Modules (LIM) • 2090 Resistive Brake Modules (RBM) • 1394 external passive shunts	• 2097 I/O terminal expansion block • 2097 memory module programmer • 2097 AC (EMC) line filters • 2097 shunt resistors

(1) Requires the 2198-H2DCK Hiperface-to-DSL feedback converter kit. LDAT-Series and MP-Series (200V-class) motors and actuators require the 2198-H2DCK (series B or later) converter kit.

Kinetix 5500 Servo Drives

The Kinetix 5500 servo drives and Kinetix VP servo motors provide a cost-effective motion solution that delivers high performance and scalability with motor windings matched to drive ratings for optimized system sizing.

Enhancing the current midrange architecture portfolio, this motion system is designed to connect and operate with ControlLogix 1756-L7*x* controllers and CompactLogix 5370 controllers by using the Studio 5000 environment and supporting the Integrated Motion on the EtherNet/IP network.

Kinetix 5500 2198-H*xxx*-ERS2 (integrated safety) drives use GuardLogix 1756-L7*x*S safety controllers for connectivity to the distributed POINT Guard I/O™ EtherNet/IP adapter that supports SIL CL3 safety control.

With the benefits of this motion system, you can now run motion applications on a single control platform by using a single network – simplifying the design, operation, and maintenance of equipment.

Kinetix 5500 Servo Drive Features

- High performance in a smaller footprint and optimized power density
- Single motor cable that includes power, feedback, and brake conductors with SpeedTec connector
- Single-axis operation for low-cost simplicity
- Flexible power connectivity in multi-axis bus-sharing configurations
  - Shared AC
  - Shared DC
  - Shared AC/DC and hybrid configurations
- Integrated motion and integrated safety on the EtherNet/IP network
- TÜV certified safe torque-off (STO) control
  - 2198-H*xxx*-ERS: Hardwired safety, PLd, Category 3 according to EN ISO 13849 and SIL CL2 according to IEC 61508, EN 61800-5-2, and EN 62061
  - 2198-H*xxx*-ERS2: Integrated safety, PLe, Category 3 according to EN ISO 13849 and SIL CL3 according to IEC 61508, EN 61800-5-2, and EN 62061
- Versatile AC input voltage range:
  - 195…264V rms, single-phase
  - 195…264V rms, three-phase
  - 324…528V rms, three-phase
- Kinetix VP motor winding options that match the drive ratings for optimized system sizing
  - 0.2…14.6 kW continuous output power
  - 1.4…32.5 A 0-pk, continuous output current (inverter)
- Bulletin 2198 capacitor module and Bulletin 2097 shunt resistor for energy absorption management
- Digital (DSL) feedback device provides real-time motor performance information to the control circuitry
  - High-resolution absolute, multi-turn and single-turn encoder feedback
- Capability to run servo and induction motors

To compare drive features across drive families, refer to Servo Drives beginning on page 28.

Kinetix 5500 Servo Drive Components

Kinetix 5500 servo drive systems consist of these required components:

- One 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 servo drive
- One Kinetix VP servo motor, induction motor, LDAT-Series linear thruster, or MP-Series rotary motor or linear actuator
  - MP-Series (400V-class) motors and actuators require 2198-H2DCK converter kits
  - LDAT-Series linear thrusters and MP-Series (200V-class) motors/actuators require 2198-H2DCK (series B or later) converter kits
- One 2090-CS*x*M1DF-*xx*AA*xx* (standard, non-flex) or (2090-CS*x*M1DF-*xx*AF*xx* (continuous-flex) cable for motor power, feedback, and brake connections
- One 1606-XL*xxx* 24V power supply for control and motor brake power
- 1585J-M8CBJM-*x* (shielded) Ethernet cable

Kinetix 5500 servo drive systems can also include any of these optional components:

- One 2198-CAPMOD-1300 capacitor module
- One 2198-DB*xx*-F AC line filter
- One 2097-R*x* shunt resistor
- Bulletin 2198 shared-bus connection system

For detailed Kinetix 5500 drive system requirements, refer to the Kinetix 5500 Drive Systems Design Guide, publication GMC-RM009.

Kinetix 5500 Servo Drive Selection

Drive Cat. No. (hardwired STO)	Drive Cat. No. (integrated STO)	Frame Size	Input Voltage	Continuous Output Power kW	Continuous Output Current A 0-pk
2198-H003-ERS	2198-H003-ERS2	1	195…264V rms, single-phase 195…264V rms, three-phase 324…528V rms, three-phase	0.2 kW 0.3 kW 0.6 kW	1.4
2198-H008-ERS	2198-H008-ERS2			0.5 kW 0.8 kW 1.6 kW	3.5
2198-H015-ERS	2198-H015-ERS2	2		1.0 kW 1.5 KW 3.2 kW	7.1
2198-H025-ERS	2198-H025-ERS2		195…264V rms, three-phase 324…528V rms, three-phase	2.4 kW 5.1 kW	11.3
2198-H040-ERS	2198-H040-ERS2			4.0 kW 8.3 kW	18.4
2198-H070-ERS	2198-H070-ERS2	3		7.0 kW 14.6 kW	32.5

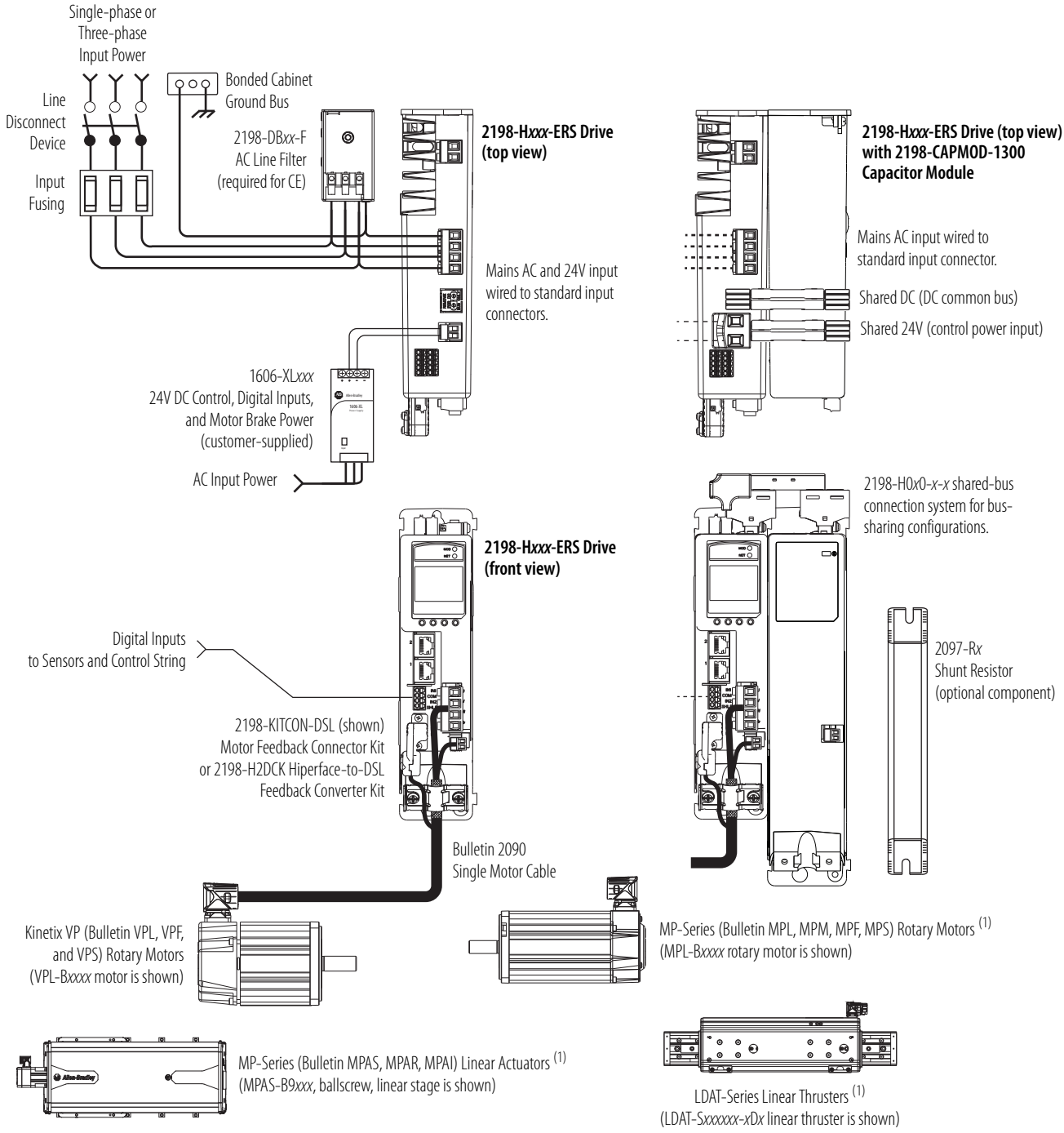
For Kinetix 5500 drive module specifications not included in this publication, refer to the Kinetix Servo Drives Technical Data, publication GMC-TD003.

Typical Hardware Configurations

These typical hardware configurations illustrate the use of servo drives, motors, and motion accessories available for Kinetix 5500 drive systems.

Standalone Configurations

In these examples, a single standalone drive is shown with and without the Bulletin 2198 capacitor module.



(1) Requires the 2198-H2DCK Hiperface-to-DSL feedback converter kit. LDAT-Series linear thrusters and MP-Series (200V-class) motors and actuators require the 2198-H2DCK (series B or later) converter kit.

Safe Torque-off Configurations

Kinetix 5500 servo drives are available with safe torque-off over hardwired connections or integrated over the EtherNet/IP network. These examples illustrate the safe torque-off configuration options.

Hardwired Safety Configuration

The 2198-H*xxx*-ERS drives use the safe torque-off (STO) connector for cascading hardwired safety connections from drive-to-drive.

Safe Torque-off (hardwired) Configuration