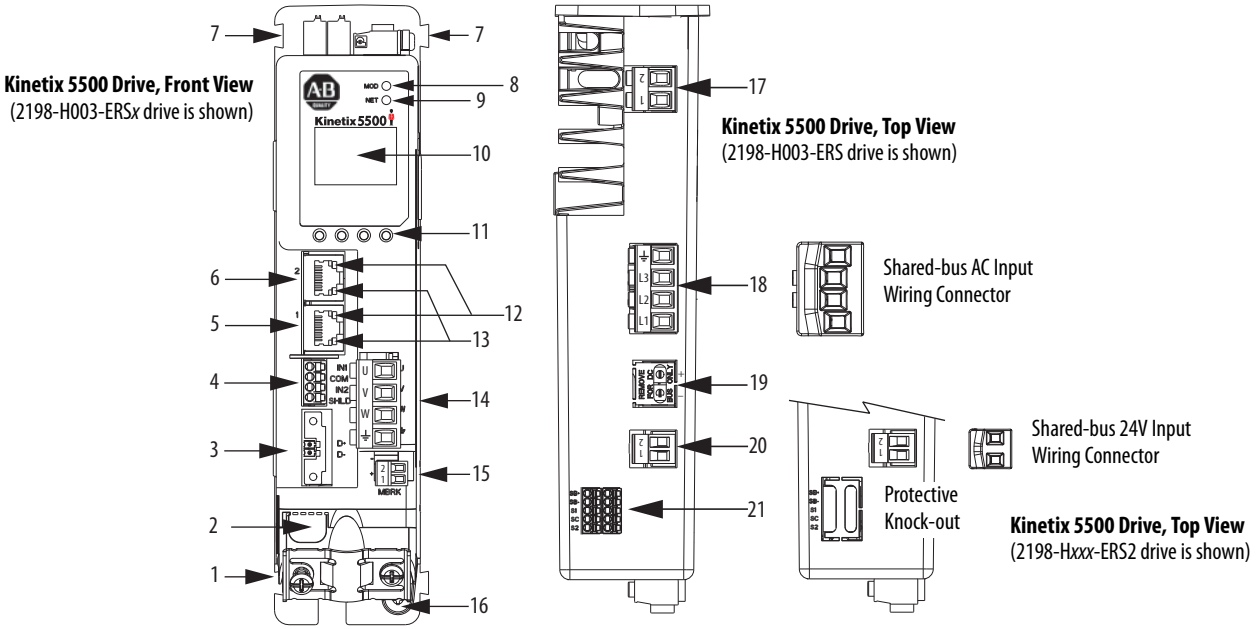
Kinetix 5500 Servo Drives

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 the ControlLogix, GuardLogix, and CompactLogix controllers by using the Studio 5000 Logix Designer® application and supporting integrated motion and safety on the EtherNet/IP network. 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 Drive Features and Indicators



Item	Description
1	Motor cable shield clamp
2	Converter kit mounting hole (1) (under cover)
3	Motor feedback (MF) connector
4	Digital inputs (IOD) connector
5	Ethernet (PORT1) RJ45 connector
6	Ethernet (PORT2) RJ45 connector
7	Zero-stack mounting tab/cutout

Item	Description
8	Module status indicator
9	Network status indicator
10	LCD display
11	Navigation pushbuttons
12	Link speed status indicators
13	Link/Activity status indicators
14	Motor power (MP) connector

Item	Description
15	Motor brake (BC) connector
16	Ground terminal
17	Shunt resistor (RC) connector
18	AC mains input power (IPD) connector
19	DC bus (DC) connector (under cover) (2)
20	24V control input power (CP) connector
21	Safe Torque Off (STO) connector (3) (does not apply to 2198-Hxxx-ERS2 drives)

(1) Protective knock-out covers the 2198-H2DCK Hiperface-to-DSL feedback converter kit mounting hole. Remove knock-out for use with the converter kit.
(2) DC-bus connector ships with protective knock-out cover that can be removed for use in shared-bus configurations.
(3) Protective knock-out cover is removed on 2198-Hxxx-ERS (hardwired STO) drives.

Technical Specifications - Kinetix 5500 Servo Drives

Kinetix 5500 Input Power Specifications

Attribute		2198-H003-ERS 2198-H003-ERS2	2198-H008-ERS 2198-H008-ERS2	2198-H015-ERS 2198-H015-ERS2	2198-H025-ERS 2198-H025-ERS2	2198-H040-ERS 2198-H040-ERS2	2198-H070-ERS 2198-H070-ERS2
AC input voltage		195…264V rms, single-phase (240V nom) 195…264V rms, three-phase (240V nom) 324…528V rms, three-phase (480V nom)			195…264V rms, three-phase (240V nom) 324…528V rms, three-phase (480V nom)		
AC input frequency		47…63 Hz					
Main AC input current (1) Nom (rms) three-phase Nom (rms) single-phase		 1.0 A 0.7 A	 2.60 A 1.70 A	 5.20 A 3.40 A	 8.30 A N/A	 13.4 A N/A	 23.7 A N/A
Max inrush (0-pk)		15.0 A			30.0 A		60.0 A
Peak AC input current Nom (rms) three-phase Nom (rms) single-phase		 3.0 A 2.1 A	 7.8 A 5.1 A	 15.6 A 10.2 A	 24.9 A N/A	 40.2 A N/A	 71.1 A N/A
Line loss ride through		20 ms					
Control power DC input voltage		24V DC ±10%					
Control power DC input current (1) (2) (non-brake motors)		 0.4 A_{DC}		 0.8 A_{DC}			 1.3 A_{DC}
Nominal bus output voltage		276…747V DC					
Continuous output current to bus Three-phase Single-phase		 1.0 A_{DC} 0.67 A_{DC}	 2.40 A_{DC} 1.60 A_{DC}	 4.90 A_{DC} 3.27 A_{DC}	 7.80 A_{DC} N/A	 12.7 A_{DC} N/A	 22.50 A_{DC} N/A
Peak output current to bus (3) Three-phase Single-phase		 3.0 A_{DC} 2.0 A_{DC}	 7.2 A_{DC} 4.8 A_{DC}	 14.7 A_{DC} 9.8 A_{DC}	 23.4 A_{DC} N/A	 38.1 A_{DC} N/A	 67.5 A_{DC} N/A
Continuous output power to bus 195…264V rms, single-phase 195…264V rms, three-phase 324…528V rms, three-phase		 0.2 kW 0.3 kW 0.6 kW	 0.5 kW 0.8 kW 1.6 kW	 1.0 kW 1.6 kW 3.2 kW	 N/A 2.5 kW 5.2 kW	 N/A 4.0 kW 8.4 kW	 N/A 7.2 kW 14.9 kW
Peak output power to bus 195…264V rms, single-phase 195…264V rms, three-phase 324…528V rms, three-phase		 0.6 kW 1.0 kW 1.9 kW	 1.6 kW 2.4 kW 4.9 kW	 3.2 kW 4.9 kW 9.7 kW	 N/A 7.8 kW 15.6 kW	 N/A 12.7 kW 25.3 kW	 N/A 22.4 kW 44.8 kW
DC input voltage (common bus follower)		276…747V DC					
DC input current (common bus follower)		1.0 A_{DC}	2.4 A_{DC}	4.9 A_{DC}	7.8 A_{DC}	12.7 A_{DC}	22.5 A_{DC}
Bus overvoltage	240V, nom AC input	440V DC					
	480V, nom AC input	810V DC					
Bus undervoltage	240V, nom AC input	138V DC					
	480V, nom AC input	275V DC					
Efficiency		97%					
Capacitive energy absorption		11.54 J		19.58 J	39.15 J	58.73 J	104.87 J
Short-circuit current rating		200,000 A (rms) symmetrical					

(1) All drives are limited to 1 power cycle per minute.

(2) For current values when motors include a holding brake and additional information, refer to Control Power Current Specifications on page 39.

(3) Peak output current duration equals 1.0 second.

Kinetix 5500 Output Power Specifications

Attribute	2198-H003-ERS 2198-H003-ERS2	2198-H008-ERS 2198-H008-ERS2	2198-H015-ERS 2198-H015-ERS2	2198-H025-ERS 2198-H025-ERS2	2198-H040-ERS 2198-H040-ERS2	2198-H070-ERS 2198-H070-ERS2
Bandwidth [1] Velocity loop, max Current loop	 300 Hz 1000 Hz					
PWM frequency	8 kHz	4 kHz				
Continuous output current (rms)	1.0 A	2.5 A	5.0 A	8.0 A	13.0 A	23.0 A
Continuous output current (0-pk)	1.4 A	3.5 A	7.1 A	11.3 A	18.4 A	32.5 A
Peak output current (rms) [2]	2.5 A	6.25 A	12.5 A	20.0 A	32.5 A	57.5 A
Peak output current (0-pk) [2]	3.5 A	8.8 A	17.7 A	28.3 A	45.9A	81.3A
Continuous power out (nom) 195…264V rms, single-phase 195…264V rms, three-phase 324…528V rms, three-phase	 0.2 kW 0.3 kW 0.6 kW	 0.5 kW 0.8 kW 1.6 kW	 1.0 kW 1.5 KW 3.2 kW	 N/A 2.4 kW 5.1 kW	 N/A 4.0 kW 8.3 kW	 N/A 7.0 kW 14.6 kW
Internal shunt resistance	100 Ω		60 Ω			40 Ω
Internal shunt power	30 W		50 W			75 W
Shunt on	775V plus 30V x bus regulator capacity/utilization [3]					
Shunt off	765V plus 30V x bus regulator capacity/utilization [3]					

(1) Bandwidth values vary based on tuning parameters and mechanical components.

(2) Peak current duration (T_{PKmax}) equals 1.0 second.

(3) The shunt on and shunt off voltages increase during periods of shunting activity to promote sharing of shunt power in multi-axis configurations. Shunt utilization is equivalent to the BusRegulatorCapacity tag in the Logix Designer application.

Control Power Current Specifications

Kinetix 5500 servo drives and the Bulletin 2198 capacitor module have different 24V DC power consumption. Factors to consider when calculating the combined current demand from your 24V DC power supply include the following:

- Catalog number for each drive in the system
- Whether servo motors include the holding brake option
- Whether the system includes Bulletin 2198 capacitor modules (1 to 4 modules are possible)

Control Power Current Specifications

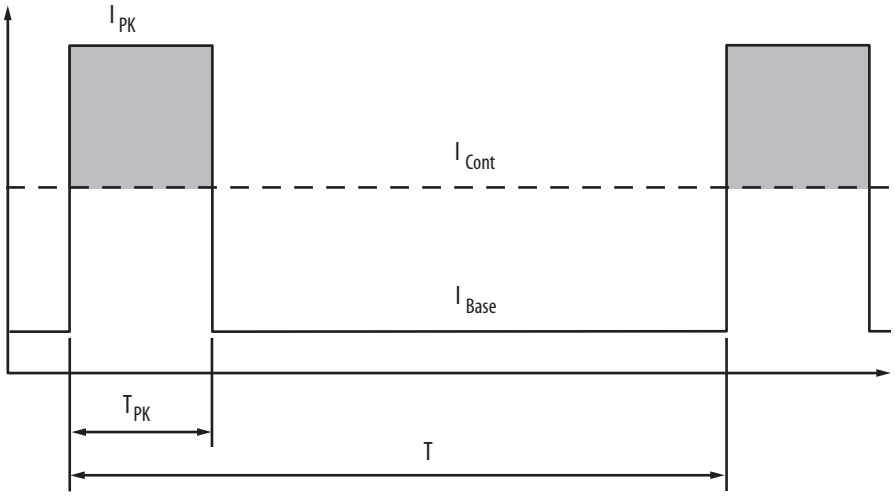
Cat. No.	24V Current (non-brake motor) A_{DC}	24V Current (2 A brake motor) A_{DC}	24V Inrush Current [1] A
2198-H003-ERS*x*	0.4	2.4	2.0
2198-H008-ERS*x*			
2198-H015-ERS*x*	0.8	2.8	3.0
2198-H025-ERS*x*			
2198-H040-ERS*x*			
2198-H070-ERS*x*	1.3	3.3	
2198-CAPMOD-1300	0.3	N/A	2.0

(1) Inrush current duration is less than 30 ms.

Peak Current Specifications

Load Duty-cycle Profile Example

$$D = \frac{T_{PK}}{T} \times 100\%$$

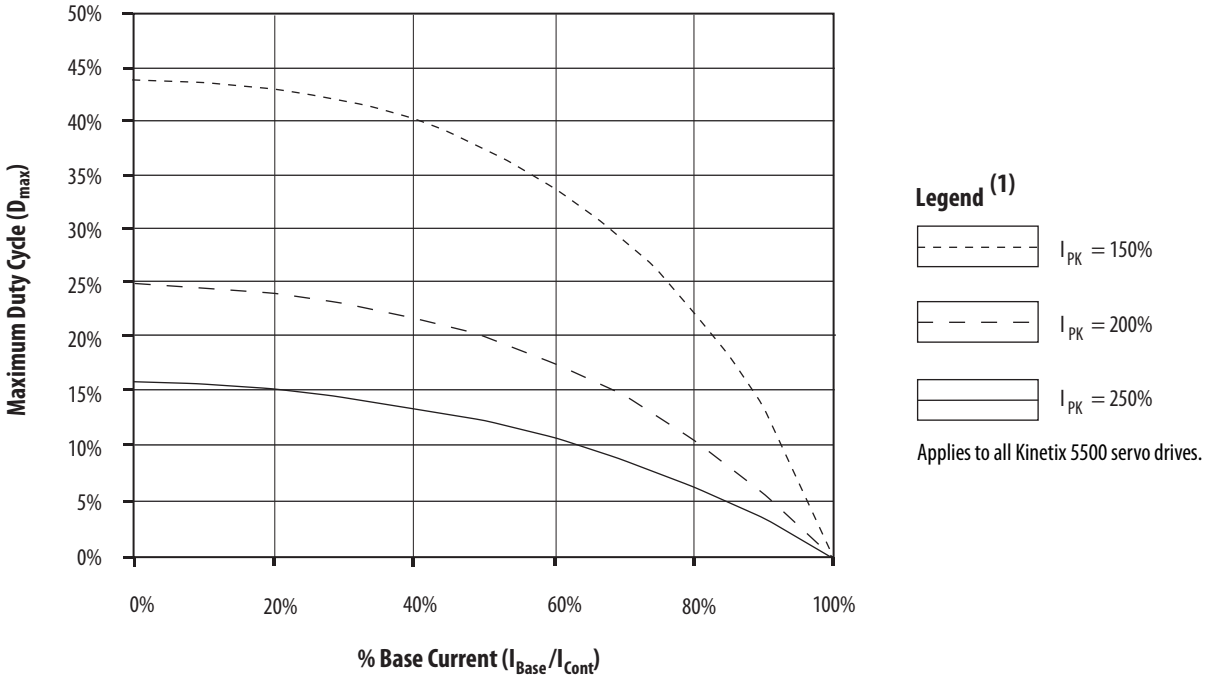


Peak Duty Cycle Definition of Terms

Term	Definition (1)
Continuous Current Rating (I_{Cont})	The maximum value of current that can be output continuously.
Peak Current Rating (I_{PKmax})	The maximum value of peak current that the drive can output. This rating is valid only for overload times less than T_{PKmax}.
Duty Cycle (D)	The ratio of time at peak to the Application Period is defined as: $D = \frac{T_{PK}}{T} \times 100\%$
Time at Peak (T_{PK})	The time at peak current (I_{PK}) for a given loading profile. Must be less than or equal to T_{PKmax}.
Peak Current (I_{PK})	The level of peak current for a given loading profile. I_{PK} must be less than or equal to the Peak Current Rating (T_{PKMAX}) of the drive.
Base Current (I_{Base})	The level of current between the pulses of peak current for a given loading profile. I_{Base} must be less than or equal to the continuous current rating (I_{Cont}) of the drive.
Loading Profile	The loading profile is composed of I_{PK}, I_{Base}, T_{PK}, and D (or T) values and completely specify the operation of the drive in an overload situation. These values are collectively defined as the Loading Profile of the drive.
Application Period (T)	The sum of the times at I_{PK} (T_{PK}) and I_{Base}.

(1) All current values are specified as RMS.

Peak Inverter Overload (T_{PK} < 1.0 s)



(1) Base current (I_{Base}) and peak current (I_{PK}) are a percentage of the continuous drive current rating (I_{Cont}).

Circuit Breaker/Fuse Specifications

The Kinetix 5500 drives use internal solid-state motor short-circuit protection and, when protected by suitable branch circuit protection, are rated for use on a circuit capable of delivering up to 200,000 A (fuses) and 65,000 A (circuit breakers).

Standalone Drive Systems

Kinetix 5500 Drives			UL Applications		IEC (non-UL) Applications	
Drive Cat. No.	**Drive Voltage, nom**	**Phase**	**Bussmann Fuses Cat. No.**	**Molded Case CB Cat. No.**	**DIN gG Fuses** Amps (max)	**Molded Case CB Cat. No.**
2198-H003-ERS*x*	240V	Single-phase	KTK-R-2	140U-D6D2-B10	2	140U-D6D2-B10
	240/480V	Three-phase	KTK-R-3	140U-D6D3-B20	4	140U-D6D3-B20
2198-H008-ERS*x*	240V	Single-phase	KTK-R-5	140U-D6D2-B20	6	140U-D6D2-B20
	240/480V	Three-phase	KTK-R-7	140U-D6D3-B60	6	140U-D6D3-B60
2198-H015-ERS*x*	240V	Single-phase	KTK-R-10	140U-D6D2-B80	10	140U-D6D2-B80
	240/480V	Three-phase	KTK-R-15	140U-D6D3-C12	16	140U-D6D3-C12
2198-H025-ERS*x*	240/480V	Three-phase	KTK-R-20	140U-D6D3-C20	20	140U-D6D3-C20
2198-H040-ERS*x*	240/480V	Three-phase	KTK-R-25	140U-D6D3-C25	25	140U-D6D3-C25
2198-H070-ERS*x*	240/480V	Three-phase	LPJ-35SP	140G-G6C3-C40	35	140G-G6C3-C40

Shared DC (common-bus) Drive Systems

Kinetix 5500 Drives Cat. No.	Drive Voltage, (three-phase) nom	UL Applications		IEC (non-UL) Applications	
		Bussmann Fuses Cat. No.	Molded Case CB Cat. No.	DIN gG Fuses Amps (max)	Molded Case CB Cat. No.
2198-H003-ERS*x*	240/480V	KTK-R-10	140U-D6D3-C15	10	140U-D6D3-C15
2198-H008-ERS*x*	240/480V	KTK-R-10	140U-D6D3-C15	10	140U-D6D3-C15
2198-H015-ERS*x*	240/480V	KTK-R-15	140U-D6D3-C15	16	140U-D6D3-C15
2198-H025-ERS*x*	240/480V	KTK-R-20	140U-D6D3-C20	20	140U-D6D3-C20
2198-H040-ERS*x*	240/480V	KTK-R-25	140U-D6D3-C25	25	140U-D6D3-C25
2198-H070-ERS*x*	240/480V	LPJ-35SP	140G-G6C3-C40	35	140G-G6C3-C40

Shared AC Drive Systems

Input Power UL Circuit-protection Specifications

Kinetix 5500 Drives Cat. No.	Drive Voltage, (three-phase) nom	Bussmann Fuses Cat. No.				Molded Case CB Cat. No.			
		2 Axes	3 Axes	4 Axes	5 Axes	2 Axes	3 Axes	4 Axes	5 Axes
2198-H003-ERS*x*	240/480V	KTK-R-15				140U-D6D3-C15			
2198-H008-ERS*x*	240/480V	KTK-R-15				140U-D6D3-C15			
2198-H015-ERS*x*	240/480V	KTK-R-20	KTK-R-25	N/A		140U-D6D3-C15	140U-D6D3-C20	N/A	
2198-H025-ERS*x*	240/480V	KTK-R-30		N/A		140U-D6D3-C25	140U-D6D3-C30	N/A	
2198-H040-ERS*x*	240/480V	LPJ-35SP	LPJ-45SP	N/A		140G-G6C3-C40	140G-G6C3-C50	N/A	
2198-H070-ERS*x*	240/480V	LPJ-60SP	N/A			140G-G6C3-C60	N/A		

Input Power IEC (non-UL) Circuit-protection Specifications

Kinetix 5500 Drives Cat. No.	Drive Voltage, (three-phase) nom	DIN gG Fuses Amps (max)				Molded Case CB Cat. No.			
		2 Axes	3 Axes	4 Axes	5 Axes	2 Axes	3 Axes	4 Axes	5 Axes
2198-H003-ERS*x*	240/480V	16				140U-D6D3-C15			
2198-H008-ERS*x*	240/480V	16				140U-D6D3-C15			
2198-H015-ERS*x*	240/480V	20	25	N/A		140U-D6D3-C15	140U-D6D3-C20	N/A	
2198-H025-ERS*x*	240/480V	32		N/A		140U-D6D3-C25	140U-D6D3-C30	N/A	
2198-H040-ERS*x*	240/480V	35	50			140G-G6C3-C40	140G-G6C3-C50	N/A	
2198-H070-ERS*x*	240/480V	63	N/A			140G-G6C3-C60	N/A		

Shared AC/DC and Hybrid Systems

Input Power UL Circuit-protection Specifications

Kinetix 5500 Drives Cat. No.	Drive Voltage, (three-phase) nom	Bussmann Fuse Cat. No.							Molded Case CB Cat. No.						
		2 Axes	3 Axes	4 Axes	5 Axes	6 Axes	7 Axes	8 Axes	2 Axes	3 Axes	4 Axes	5 Axes	6 Axes	7 Axes	8 Axes
2198-H003-ERS*x*	240/480V	KTK-R-10					KTK-R-15		140U-D6D3-C15						
2198-H008-ERS*x*	240/480V	KTK-R-15				KTK-R-20			140U-D6D3-C15					140U-D6D3-C20	
2198-H015-ERS*x*	240/480V	KTK-R-20			N/A				140U-D6D3-C15	140U-D6D3-C20		N/A			
2198-H025-ERS*x*	240/480V	KTK-R-30			N/A				140U-D6D3-C20	140U-D6D3-C30		N/A			
2198-H040-ERS*x*	240/480V	KTK-R-30	LPJ-45SP	LPJ-50SP	N/A				140U-D6D3-C30	140G-G6C3-C50		N/A			
2198-H070-ERS*x*	240/480V	LPJ-50SP	N/A						140G-G6C3-C50	N/A					

Input Power IEC (non-UL) Circuit-protection Specifications

Kinetix 5500 Drives Cat. No.	Drive Voltage, (three-phase) nom	DIN gG Fuses Amps (max)							Molded Case CB Cat. No.						
		2 Axes	3 Axes	4 Axes	5 Axes	6 Axes	7 Axes	8 Axes	2 Axes	3 Axes	4 Axes	5 Axes	6 Axes	7 Axes	8 Axes
2198-H003-ERS*x*	240/480V	10					16		140U-D6D3-C15						
2198-H008-ERS*x*	240/480V	16				20			140U-D6D3-C15					140U-D6D3-C20	
2198-H015-ERS*x*	240/480V	20			N/A				140U-D6D3-C15	140U-D6D3-C20		N/A			
2198-H025-ERS*x*	240/480V	32			N/A				140U-D6D3-C20	140U-D6D3-C30		N/A			
2198-H040-ERS*x*	240/480V	32	50		N/A				140U-D6D3-C30	140G-G6C3-C50		N/A			
2198-H070-ERS*x*	240/480V	50	N/A						140G-G6C3-C50	N/A					

Power Dissipation Specifications

Use this table to size an enclosure and calculate required ventilation for your Kinetix 5500 drive system.

Kinetix 5500 Drive Cat. No.	Usage as % of Rated Power Output (watts)				
	20%	40%	60%	80%	100%
2198-H003-ERS*x* 2198-H008-ERS*x*	12	25	37	50	62
2198-H015-ERS*x* 2198-H025-ERS*x* 2198-H040-ERS*x*	40	80	120	160	200
2198-H070-ERS*x*	64	128	192	256	320

Weight Specifications

Kinetix 5500 Drive Cat. No.	Weight, approx kg (lb)
2198-H003-ERS*x*	1.4 (3.0)
2198-H008-ERS*x*	
2198-H015-ERS*x*	2.3 (5.0)
2198-H025-ERS*x*	
2198-H040-ERS*x*	
2198-H070-ERS*x*	4.1 (9.0)

Maximum Motor Cable Lengths

Maximum cable length varies, depending on the Allen-Bradley motor or actuator used in the application. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for cable specifications.

Kinetix 5500 Servo Drive Cat. No.	Kinetix VP Servo Motors		Other Compatible Rotary Motors and Linear Actuators (1)
	Standard (non-flex) Cables (cat. no. 2090-CS*x*M1DF-*xx*AA*xx*) m (ft)	**Continuous-flex Cables (cat. no. 2090-CSBM1DF-*xx*AF*xx*)** m (ft)	**Bulletin 2090 Motor/Actuator Cables (2) Cat. No. 2090-C*xx*M7DF** m (ft)
2198-H003-ERS*x* 2198-H008-ERS*x*	50 (164)	30 (98.4)	20 (65.6)
2198-H015-ERS*x* 2198-H025-ERS*x* 2198-H040-ERS*x*	50 (164)		
2198-H070-ERS*x*	50 (164)		

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

(2) The 20 m (65.6 ft) limitation is attributed to the 2090-CP*x*M7DF power/brake cable. In 2198-H2DCK converter kit applications, you can replace the 2090-CP*x*M7DF power/brake cable with a 2090-CSBM1DF single motor cable (and reuse the 2090-CFBM7DF feedback cable) to increase the maximum cable length to 50 m (164 ft). Applies to only 18 and 14 AWG single cables. 2090-CS*x*M1DF-10A*xxx* (10 AWG) cables and any other 2090-CS*x*M1DF cables with M40 or M58 connectors do not support this 50 m (164 ft) option.

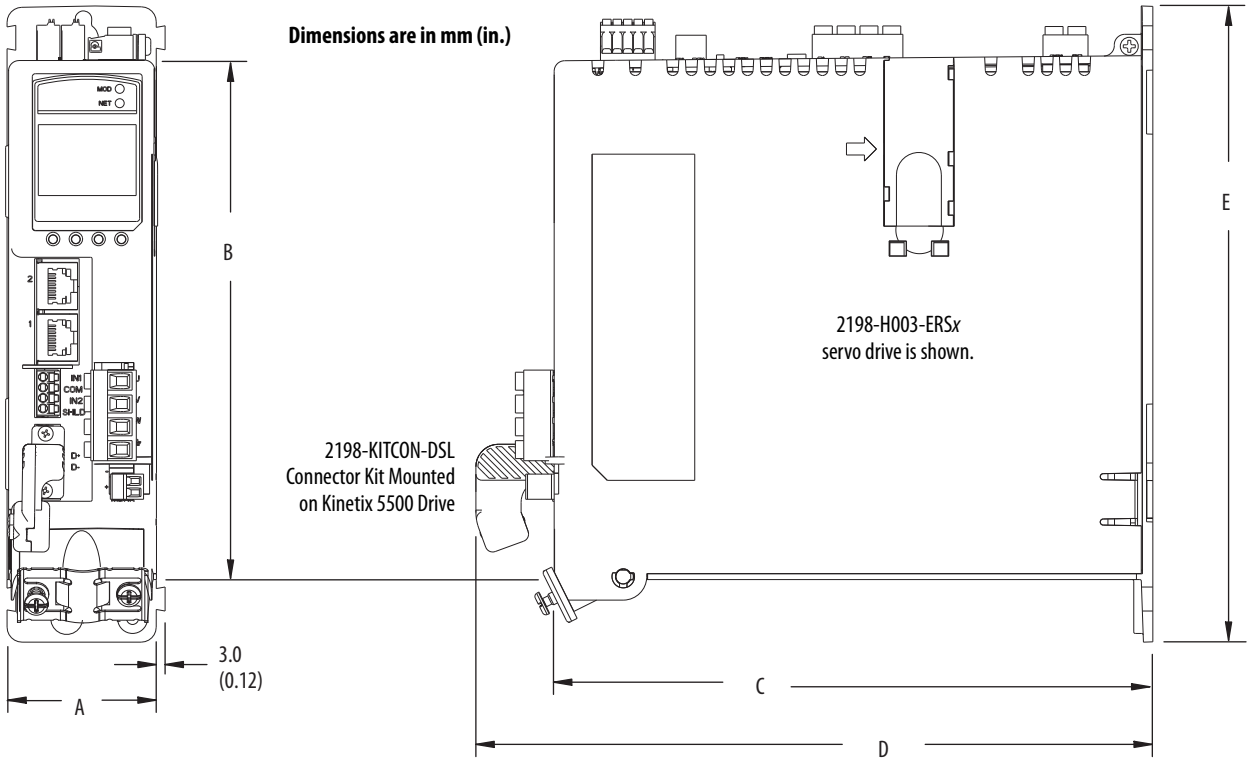
Combined power cable lengths for all axes on the same DC bus must not exceed 250 m (820 ft).

IMPORTANT System performance was tested at these cable lengths. These limitations also apply when meeting CE requirements.

Dimensions - Kinetix 5500 Servo Drives

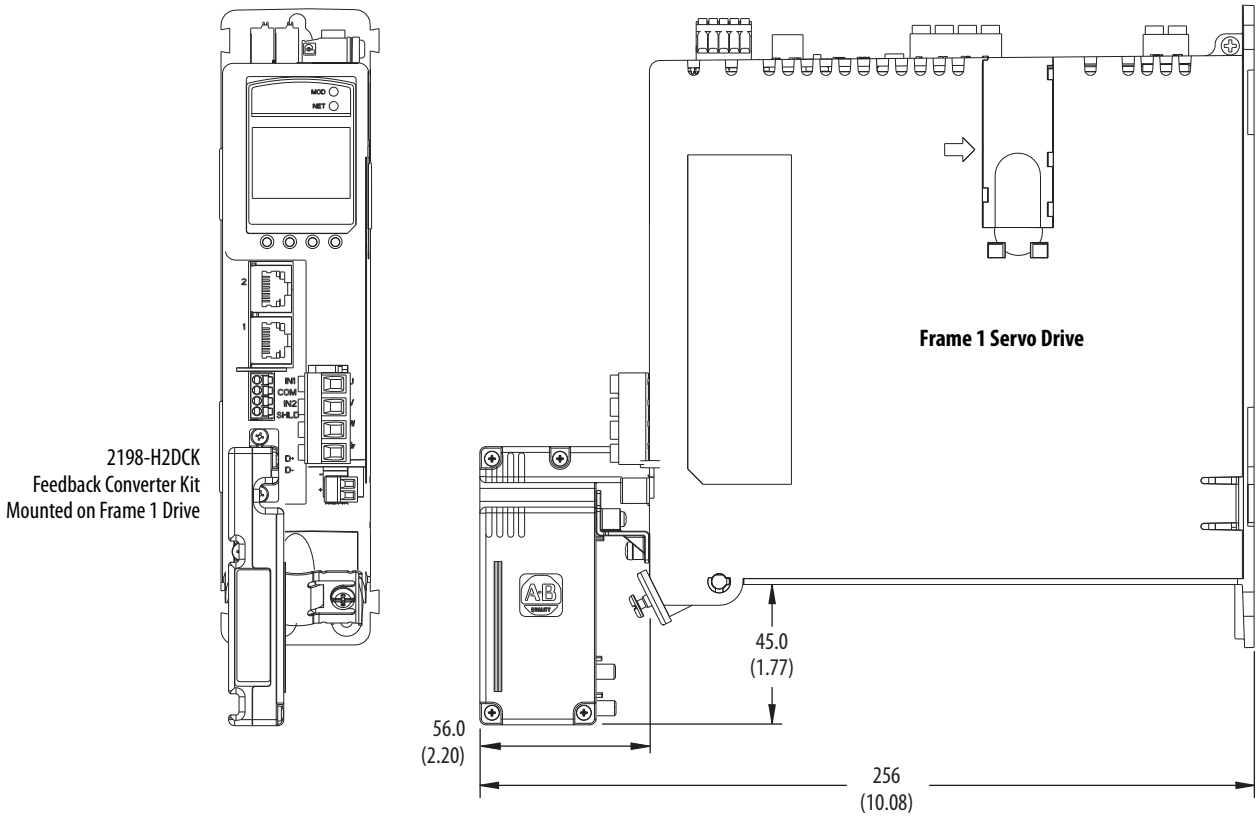
Kinetix 5500 servo drives include the 2198-KITCON-DSL feedback connector kit for use with Kinetix VP motors. The 2198-H2DCK feedback converter kit, for Hiperface-to-DSL conversion, is used with LDAT-Series linear thrusters and MP-Series rotary motors and linear actuators. Refer to page 46 for dimensions when using the converter kit.

Kinetix 5500 Drives with 2198-KITCON-DSL Connector Kit

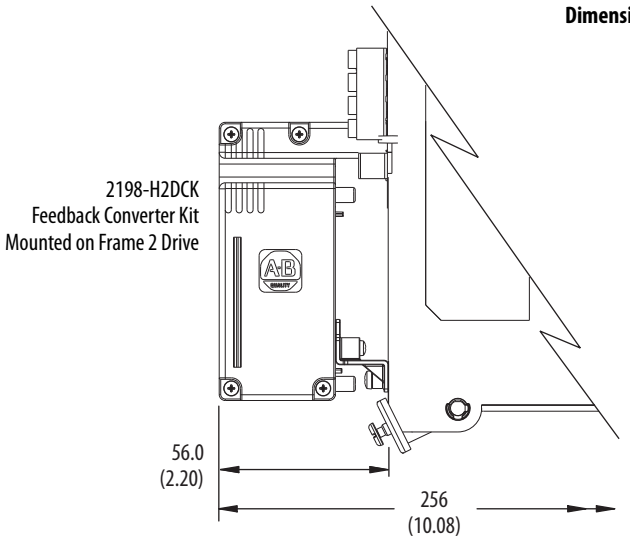


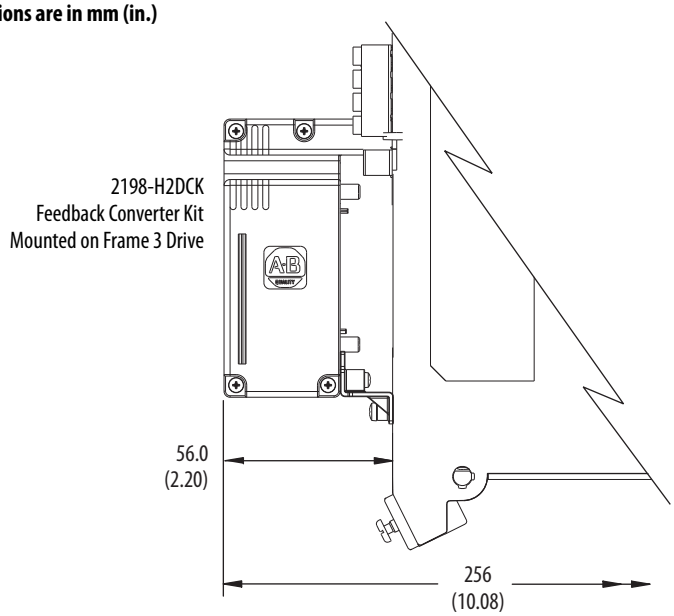
Kinetix 5500 Drive Cat. No.	Frame Size	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2198-H003-ERS*x*	Frame 1	50 (1.97)	170 (6.69)	200 (7.87)	226 (8.90)	215 (8.46)
2198-H008-ERS*x*						
2198-H015-ERS*x*	Frame 2	55 (2.16)	225 (8.86)			265 (10.43)
2198-H025-ERS*x*						
2198-H040-ERS*x*						
2198-H070-ERS*x*	Frame 3	85.2 (3.35)	250 (9.84)			294 (11.57)

Kinetix 5500 Drives with 2198-H2DCK Converter Kit



Dimensions are in mm (in.)





Refer to Hiperface-to-DSL Feedback Converter Kit on page 55 for motor/actuator compatibility and product dimensions.

Environmental Specifications - Kinetix 5500 Servo Drives

Attribute	Operational Range	Storage Range (nonoperating)
Ambient temperature (with 2198-KITCON-DSL connector kit)	0…50 °C (32…122 °F)	-40…+70 °C (-40…+158 °F)
Ambient temperature (with 2198-H2DCK converter kit and the existing 2090-CPBM7DF motor power/brake cable and 2090-CFBM7DF motor feedback cable) (1)	0…40 °C (32…104 °F)	
Relative humidity	5…95% noncondensing	5…95% noncondensing
Protection class (IEC 60529)	IP20	
Degree of pollution (IEC 61800-5-1)	2	
Altitude	• 1000 m (3281 ft) derate 15% per 1000 m above 1000 m • 2000 m (6562 ft) max, with corner-grounded input power • 3000 m (9843 ft) max, with non corner-grounded input power	3000 m (9843 ft) during transport
Vibration	5…55 Hz @ 0.35 mm (0.014 in.) double amplitude, continuous displacement; 55…500 Hz @ 2.0 g peak constant acceleration	
Shock	15 g, 11 ms half-sine pulse (3 pulses in each direction of 3 mutually perpendicular directions)	

(1) When the 2198-H2DCK converter kit is used with the existing motor feedback cable (catalog number 2090-CFBM7DF) and single motor cable (catalog number 2090-CSBM1DF) for power and brake connections, derating the operational ambient temperature is not required.

Certifications - Kinetix 5500 Servo Drives

Agency Certification (1)	Standards
c-UL-us (2)	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).
CE	European Union 2004/108/EC EMC Directive compliant with IEC 61800-3:2004 + A1:2012: Adjustable Speed Electrical Power Drive Systems - Part 3; EMC Product Standard including specific test methods.
	European Union 2006/95/EC Low Voltage Directive compliant with IEC 61800-5-1:2007 - Adjustable speed electrical power drive systems.
Functional Safety	TÜV certified for functional safety when used as described in the Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. • 2198-H*xxx*-ERS (hardwired safety) drive ratings: up to Performance Level (PL) d, Category 3 according to ISO 13849; up to SIL CL2 according to IEC 61508, IEC 61800-5-2, and IEC 62061. • 2198-H*xxx*-ERS2 (integrated safety) drive ratings: up to Performance Level (PL) e, Category 3 according to ISO 13849; up to SIL CL3 according to IEC 61508, IEC 61800-5-2, and IEC 62061.
C-Tick	Australian Radiocommunications Act, compliant with: • Radiocommunications Act: 1992 • Radiocommunications (Electromagnetic Compatibility) Standard: 1998 • Radiocommunications (Compliance Labelling - Incidental Emissions) Notice: 1998 • AS/NZS CISPR 11: 2002 (Group 1, Class A)
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: • Article 58-2 of Radio Waves Act, Clause 3 • Registration number: KCC-REM-RAA-2198
ODVA	EtherNet/IP conformance tested.
OSHA	Maximum audible noise from the servo drive system complies with OSHA standard 3074, Hearing Conservation (<85 dBA).

(1) When product is marked, refer to publication 2198-CT002 for the Kinetix 5500 servo drives EU Declaration of Conformity certificate.
(2) UL has not evaluated the Safe Torque Off or the Safe Speed Monitor options in these products.

Accessories - Kinetix 5500 Servo Drives

Kinetix 5500 drive accessories include the Bulletin 2198 capacitor module, shunt resistors, the encoder output module, AC line filters, and the shared-bus connection system. Kinetix 5500 servo drives are also compatible with Bulletin 2097 external shunt resistors.

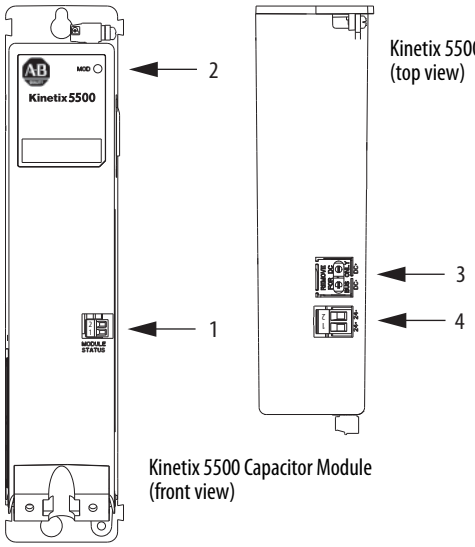
Capacitor Module

The Kinetix 5500 capacitor module provides 1360 µF capacitance for applications where the Kinetix 5500 internal shunt module capacity is exceeded. The capacitor module can be used alone or in combination with a Bulletin 2097 external shunt module for applications with excessive regenerative energy.

The Bulletin 2198-CAPMOD-1300 capacitor module is an option for Bulletin 2198 servo drive configurations with 200V or 400V-class operation. This section contains features, specifications, and product dimensions.

IMPORTANT	Use the 2198-CAPMOD-1300 capacitor module in Kinetix 5500 drive configurations where DC bus power is shared through the shared-bus connection system. You cannot use the capacitor module in configurations where only AC input power is shared.

Capacitor Module Features and Indicators



Item	Description
1	Module status (MS) connector
2	Module status indicator
3	DC bus (DC) connector (under cover) (1) (2)
4	24V control input power (CP) connector (2)

(1) DC bus connector ships with protective knock-out cover that can be removed for use in shared-bus configurations.

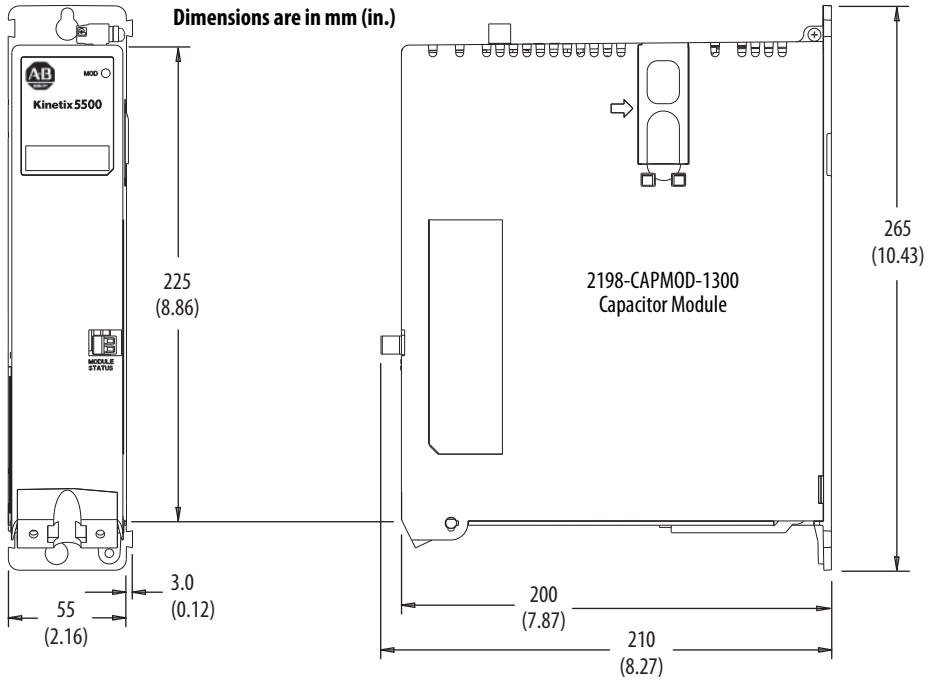
(2) The shared-bus kit for the capacitor module, catalog number 2198-KITCON-CAP1300, is included. Replacement kits are also available, refer to Power-sharing Bus-bars and Connector Sets on page 56.

Capacitor Module Support

Kinetix 5500 Drive Cat. No.	Frame Size	Standalone Single Phase Operation	Three-phase Operation			
			Standalone	Shared DC	Shared AC/DC	Shared AC/DC Hybrid
		Number of capacitor modules connected, max				
2198-H003-ERS*x* (1)	1	0	0			
2198-H008-ERS*x* (1)			1		2	
2198-H015-ERS*x* (1)	2				4	
2198-H025-ERS*x*		N/A	3			
2198-H040-ERS*x*						
2198-H070-ERS*x*	3		4			

(1) Catalog number 2198-H003-ERS and any drive in standalone single-phase operation is not compatible with the Kinetix 5500 capacitor module.

Capacitor Module Dimensions



Capacitor Module Specifications

Capacitor Module Cat. No.	Voltage Range V DC	Capacitance µF	Energy Storage J	Continuous Current A, 0-pk	Weight kg (lb)
2198-CAPMOD-1300	275…747	1360	446 (460V AC input) 132 (230V AC input)	26.0	2.3 (5.0)

Shunt Resistor

The Bulletin 2097 passive shunts are compatible with Kinetix 5500 servo drives. The shunt resistor wires directly to the drive. Refer to Shunt Resistor on page 107, for dimensions and additional specifications.

Shunt Resistor Power Specifications

Shunt Module Cat. No.	Resistance W	Continuous Power W	Peak Power kW	Peak Current A	D_Application, max (1) %	Weight kg (lb)	Kinetix 5500 Drive Cat. No.
2097-R6	75	150	7.9	10.3	1.90	0.3 (0.7)	2198-H040-ERS*x* 2198-H070-ERS*x*
2097-R7	150	80	4.0	5.1	2.02	0.2 (0.4)	2198-H003-ERS*x* 2198-H008-ERS*x* 2198-H015-ERS*x* 2198-H025-ERS*x*

(1) D_Application is the application duty cycle in percent. For the intermittent regeneration applications, use D_Application = t/T, where t is the duration when regeneration is needed and T is the time interval between two regenerations. Both t and T must use the same time units, for example, seconds.

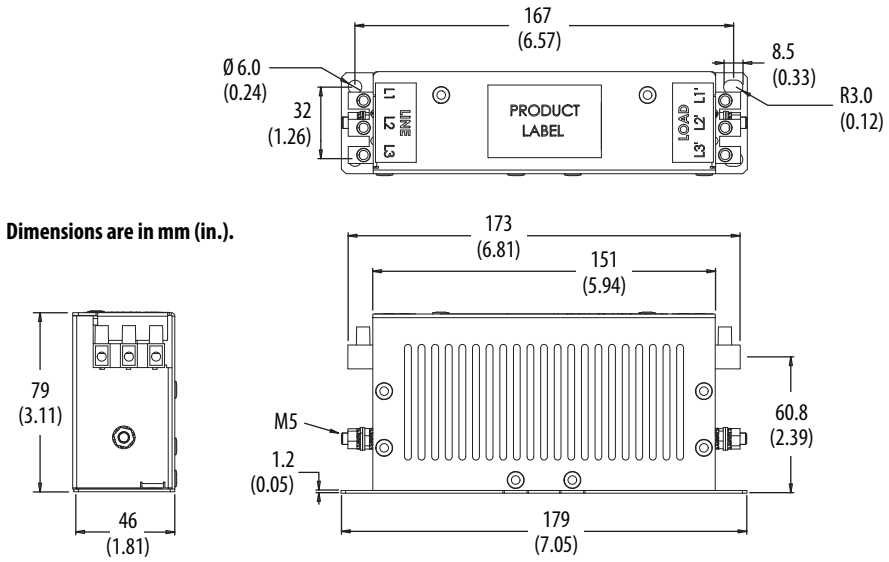
Encoder Output Module

The Allen-Bradley encoder output module (catalog number 2198-ABQE) is a DIN-rail mounted EtherNet/IP network-based standalone module capable of outputting encoder pulses to a customer-supplied peripheral device (cameras, for example, used in line-scan vision systems). The encoder output module supports real and virtual axes for systems using the integrated motion on EtherNet/IP network. For more information, refer to Encoder Output Module on page 26.

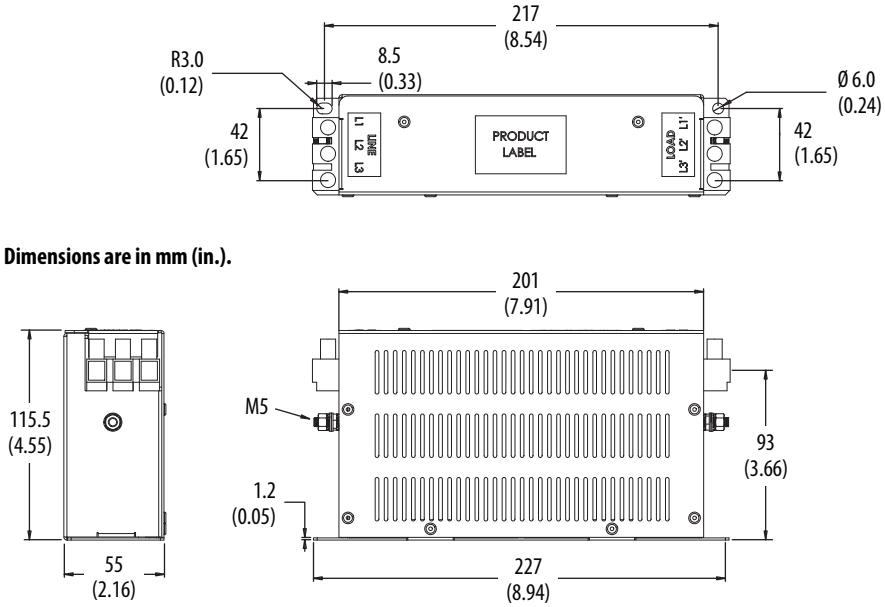
Kinetix 5500 AC Line Filters

The Kinetix 5500 drives were tested by using recommended line filters. Use of these filters is also needed to meet CE requirements. These Bulletin 2198 AC line filters apply to Kinetix 5500 drives used in single-phase and three-phase operation.

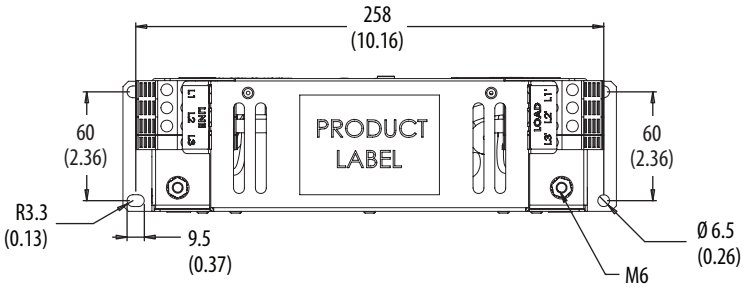
AC Line Filter Dimensions (catalog number 2198-DB08-F)



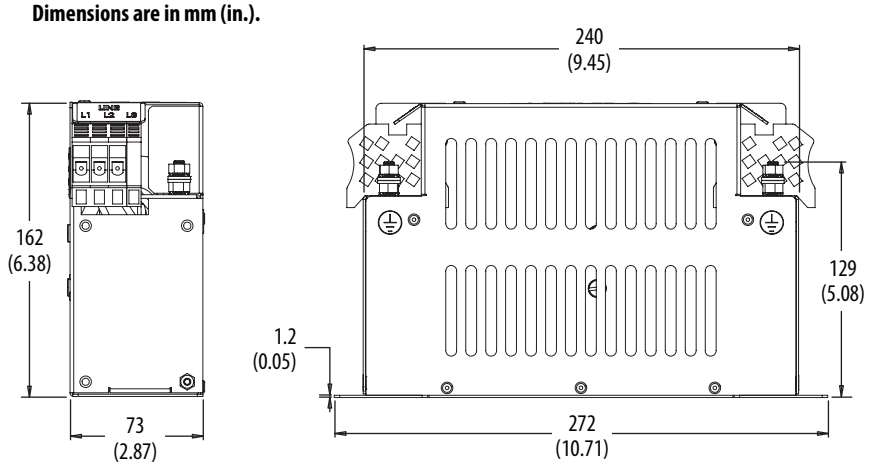
AC Line Filter Dimensions (catalog number 2198-DB20-F)



AC Line Filter Dimensions (catalog number 2198-DB42-F)



Dimensions are in mm (in.).



AC Line Filter Specifications

AC Line Filter Cat. No.	Voltage Rating	Current Rating A @ 50 °C (122 °F)	Power Loss W	Leakage Current mA	Weight, approx kg (lb)	Operating Temperature	Kinetix 5500 Drive Cat. No.
2198-DB08-F (1)	380…480V AC three-phase 50/60 Hz	7.5	3.6	2.5	0.77 (1.70)	0…50 °C (32…122 °F)	2198-H003-ERS*x* 2198-H008-ERS*x* 2198-H015-ERS*x*
2198-DB20-F		20	5.1	5.2	1.63 (3.59)		2198-H025-ERS*x* 2198-H040-ERS*x*
2198-DB42-F		42	14.7	4.0	2.70 (5.95)		2198-H070-ERS*x*

(1) Applies to installations with single-phase or three-phase input power.

Shared-bus Connection System

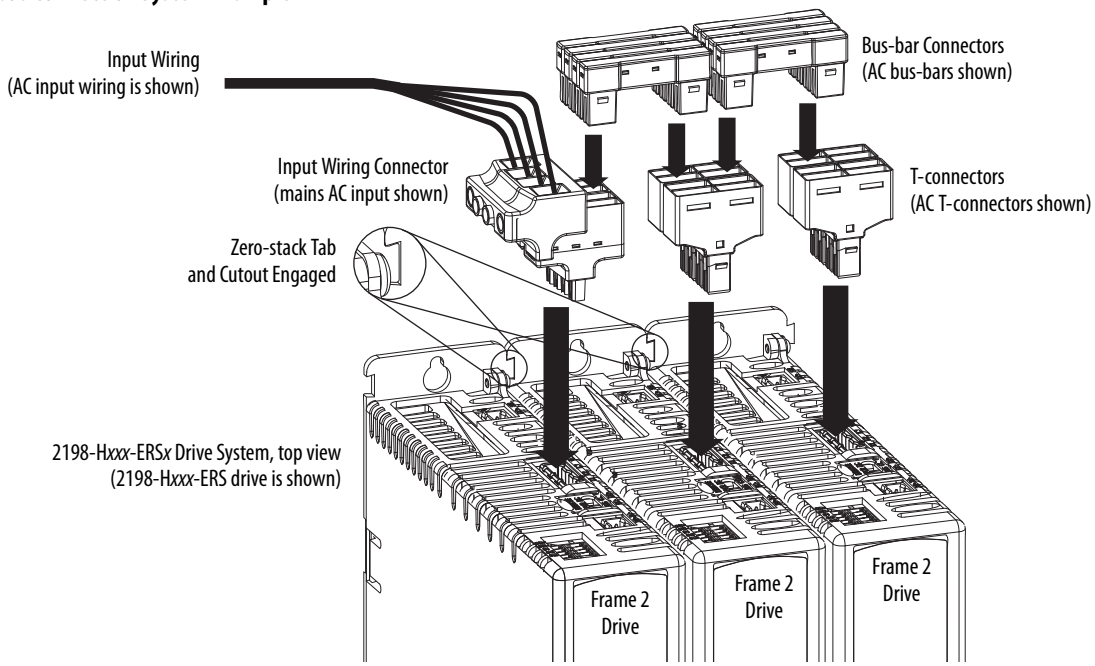
The shared-bus connection system is used to extend the mains AC input, 24V control input, and the DC-bus power from drive-to-drive in shared-bus multi-axis configurations.

IMPORTANT When the shared-bus connection system is used, the zero-stack tab and cutout must be engaged between adjacent drives.

The connection system is composed of three components:

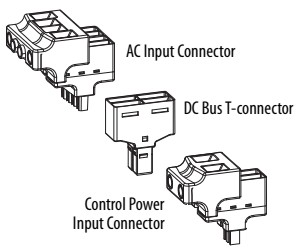
- Input wiring connectors that plug into the leftmost drive and receive input wiring for mains AC and 24V DC.
- AC bus, DC bus, and 24V DC T-connectors that plug into the drives downstream from the first where AC, DC, and/or 24V control power is shared. DC bus T-connectors also plug into the first drive where DC-bus power is shared.
- Bus bars that connect between drives to extend the mains AC bus, DC bus, and 24V DC control power from drive-to-drive.

Shared-bus Connection System Example



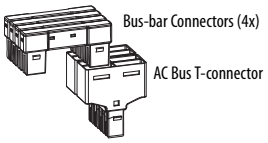
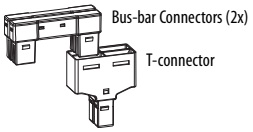
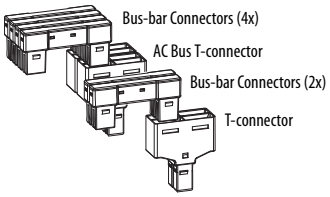
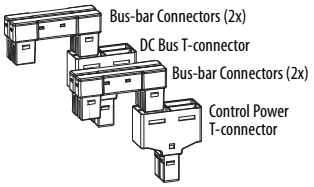
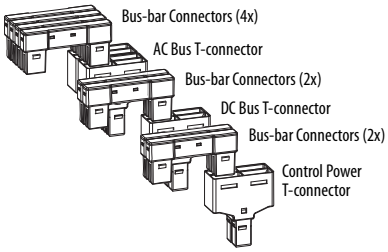
For each shared-bus servo drive system, you'll need one connector kit catalog number for each drive. Use these tables to determine which connector kits you'll need for your system.

Input Power Connector Kit Catalog Numbers

Frame Size	Kit Cat. No.	Description	Contents	Illustration
1 and 2	2198-H040-ADP-IN	Kinetix 5500 Frame 1 and 2 connectors for the first drive in a multi-axis system.	• AC input connector for frame 1 and 2 drives • DC bus T-connector • Control power input connector	
3	2198-H070-ADP-IN	Kinetix 5500 Frame 3 connectors for the first drive in a multi-axis system.	• AC input connector for frame 3 drive • DC bus T-connector • Control power input connector	

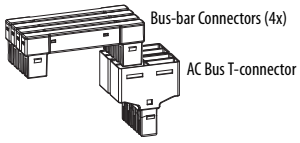
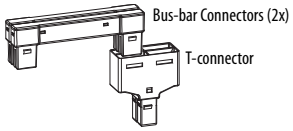
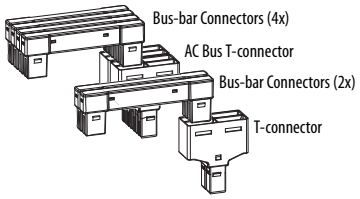
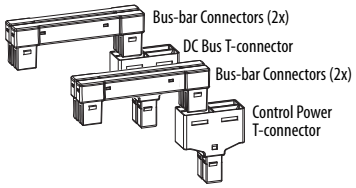
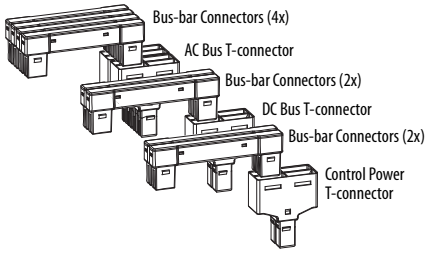
Use these connector kits when the first drive is frame 1, 2, or 3 and the follower drive is frame 1 or 2.

Frame 1 or 2 Follower Drive Connector Kit Catalog Numbers

Kit Cat. No.	Description	Contents	Illustration
2198-H040-A-T	T-connector and bus-bars for the AC bus on Frame 1 or 2 follower drives	• AC bus T-connector • Bus-bar connectors, 55 mm, quantity 4	
2198-H040-D-T	T-connector and bus-bars for the DC bus on Frame 1 or 2 follower drives	• DC bus T-connector • Bus-bar connectors, 55 mm, quantity 2	
2198-H040-P-T	T-connector and bus-bars for control power on Frame 1 or 2 follower drives	• Control power T-connector • Bus-bar connectors, 55 mm, quantity 2	
2198-H040-AD-T	T-connectors and bus-bars for the AC and DC bus on Frame 1 or 2 follower drives	• AC bus T-connector • DC bus T-connector • Bus-bar connectors, 55 mm, quantity 6	
2198-H040-AP-T	T-connectors and bus-bars for the AC bus and control power on Frame 1 or 2 follower drives	• AC bus T-connector • Control power T-connector • Bus-bar connectors, 55 mm, quantity 6	
2198-H040-DP-T	T-connectors and bus-bars for the DC bus and control power on Frame 1 or 2 follower drives	• DC bus T-connector • Control power T-connector • Bus-bar connectors, 55 mm, quantity 4	
2198-H040-ADP-T	T-connectors and bus-bars for the AC bus, DC bus, and control power on Frame 1 or 2 follower drives	• AC bus T-connector • DC bus T-connector • Control power T-connector • Bus-bar connectors, 55 mm, quantity 8	

Use these connector kits when the first drive is frame 3 and the follower drive is also frame 3.

Frame 3 Follower Drive Connector Kit Catalog Numbers

Kit Cat. No.	Description	Contents	Illustration
2198-H070-A-T	T-connector and bus-bars for the AC bus on Frame 3 follower drives	• AC bus T-connector • Bus-bar connectors, 85 mm, quantity 4	
2198-H070-D-T	T-connector and bus-bars for the DC bus on Frame 3 follower drives	• DC bus T-connector • Bus-bar connectors, 85 mm, quantity 2	
2198-H070-P-T	T-connector and bus-bars for control power on Frame 3 follower drives	• Control power T-connector • Bus-bar connectors, 85 mm, quantity 2	
2198-H070-AD-T	T-connectors and bus-bars for the AC and DC bus on Frame 3 follower drives	• AC bus T-connector • DC bus T-connector • Bus-bar connectors, 85 mm, quantity 6	
2198-H070-AP-T	T-connectors and bus-bars for the AC bus and control power on Frame 3 follower drives	• AC bus T-connector • Control power T-connector • Bus-bar connectors, 85 mm, quantity 6	
2198-H070-DP-T	T-connectors and bus-bars for the DC bus and control power on Frame 3 follower drives	• DC bus T-connector • Control power T-connector • Bus-bar connectors, 85 mm, quantity 4	
2198-H070-ADP-T	T-connectors and bus-bars for the AC bus, DC bus, and control power on Frame 3 follower drives	• AC bus T-connector • DC bus T-connector • Control power T-connector • Bus-bar connectors, 85 mm, quantity 8	

Hiperface-to-DSL Feedback Converter Kit

The 2198-H2DCK Hiperface-to-DSL feedback kit (series B or later) converts 15-pin Hiperface encoder feedback signals to 2-pin DSL feedback signals. The following feedback types are accepted:

- Hiperface high-resolution absolute multi-turn and single-turn encoders
- Feedback-only axes (absolute single-turn/multi-turn Hiperface)

Use the converter kit for new installations with Kinetix 5500 servo drives and existing compatible motor/actuator installations when upgrading with Kinetix 5500 servo drives.

Compatible Allen-Bradley Motors and Actuators

Rotary Motors	Linear Actuators	2090-Series Feedback Cables (3)
MP-Series low-inertia motors (Bulletin MPL)	LDAT-Series integrated linear thrusters (1)	2090-CFBM7DF-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* (continuous-flex) 2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)
MP-Series medium-inertia motors (Bulletin MPM)	MP-Series integrated linear stages (Bulletin MPAS) (2)	
MP-Series food-grade motors (Bulletin MPF)	MP-Series multi-axis linear stages (Bulletin MPMA) (2)	
MP-Series stainless-steel motors (Bulletin MPS)	MP-Series electric cylinders (Bulletin MPAR)	
	MP-Series heavy-duty electric cylinders (Bulletin MPAI)	

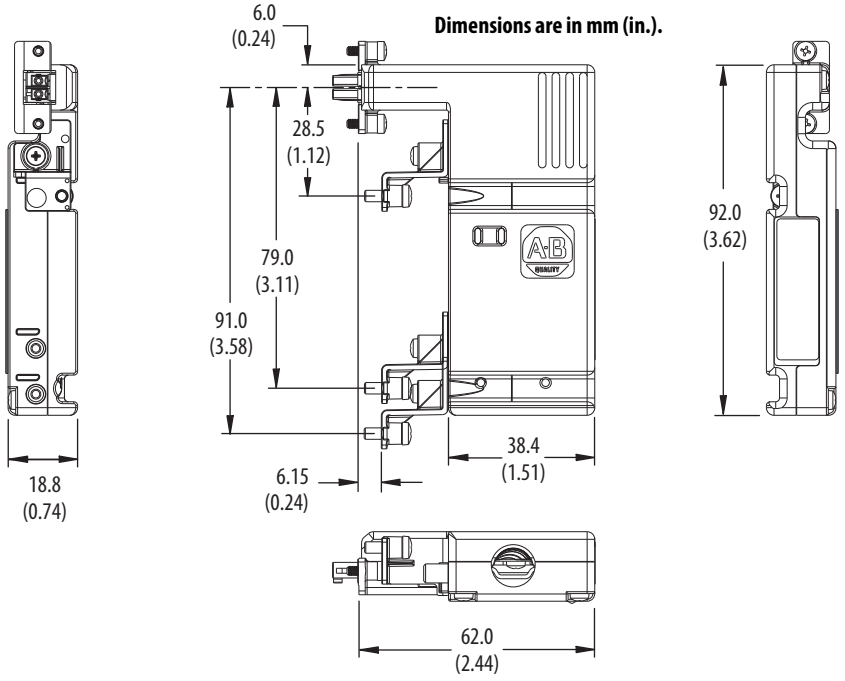
(1) LDAT-Series linear thrusters with absolute high-resolution encoders are compatible. Linear stages with incremental encoders are not compatible.
(2) Bulletin MPAS and MPMA (ballscrew) linear stages are compatible. Direct-drive linear stages are not compatible.
(3) These are typical feedback cables. Refer to the Kinetix 5500 Servo Drives Design Guide, publication KNX-RM009, for the cables required for specific drive and motor/actuator combination.

IMPORTANT

The 2198-H2DCK feedback converter kit is required for converting Hiperface feedback signals from the motor encoder to DSL feedback signals that are accepted by the Kinetix 5500 drive.

Compatible Allen-Bradley rotary motors and linear actuators must have high-resolution absolute encoders. Cable length restrictions also exist, refer to Maximum Motor Cable Lengths on page 44 for more information.

Converter Kit Dimensions



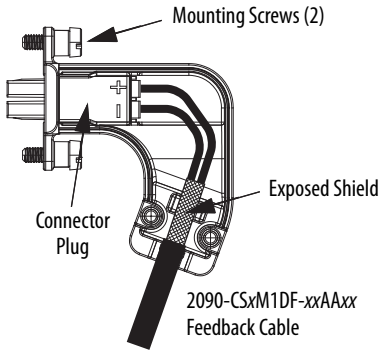
Replacement Parts and Connector Kits - Kinetix 5500 Servo Drives

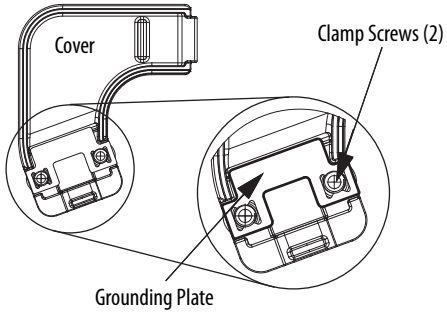
Replacement parts and kits available for Kinetix 5500 servo drives include the DSL feedback connector kit, power-sharing
bus-bars, safety and digital input connectors, and power connector sets.

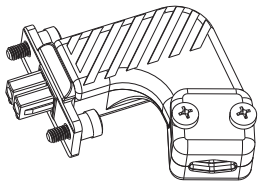
DSL Feedback Connector Kit

The Bulletin 2198-KITCON-DSL feedback connector kit is required for making feedback connections from Kinetix VP motors to Kinetix 5500 servo drives and is included with each drive. Motor power, brake, and the 2-wire feedback connections are made by using a single Bulletin 2090-CS*x*M1DF-*xx*A*xxx* cable. Refer to the Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004, for motor cable information.

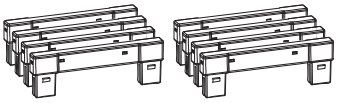
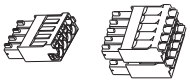
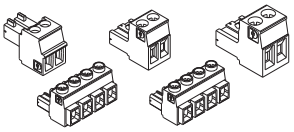
DSL Feedback Connector Kit Features







Power-sharing Bus-bars and Connector Sets

Replacement Kit Cat. No.	Description	Contents	Illustration
2198-BARCON-85DCAC100	Replacement bus-bars for shared-bus connection system: • First drive is Frame 3 • Adjacent drive is Frame 3	Bus-bar connectors, 85 mm, quantity 8	
2198-BARCON-55DCAC100	Replacement bus-bars for shared-bus connection system: • First drive is Frame 1, 2, or 3 • Adjacent drive is Frame 1 or 2	Bus-bar connectors, 55 mm, quantity 8	
2198-KITCON-IOSP	Replacement IOD and STO connectors with spring clamp	• One (4-pin) digital inputs (IOD) connector • One (5-pin) Safe Torque Off (STO) connector (two 5-pin connectors joined together)	
2198-KITCON-IOSC	Replacement IOD and STO connectors with screw clamp		
2198-KITCON-PWR70	Replacement IDP, RC, CP, MP, and BC connectors for Frame 3 servo drives	• One AC input power (IPD) connector • One shunt (RC) connector • One control power (CP) connector • One motor power (MP) connector • One motor brake (BC) connector	
2198-KITCON-PWR40	Replacement IDP, RC, CP, MP, and BC connectors for Frame 1 or 2 servo drives		
2198-KITCON-CAP1300	T-connectors and bus-bars for the DC bus and control power input on the Bulletin 2198 capacitor module	• DC bus T-connector • Control power T-connector • Bus-bar connectors, 55 mm, quantity 4