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*	12	25	37	50	62
2198-H008-ERS*x*					
2198-H015-ERS*x*	40	80	120	160	200
2198-H025-ERS*x*					
2198-H040-ERS*x*					
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 GMC-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 (2) (cat. no. 2090-CS*x*M1DF-*xx*AA*xx*) m (ft)	**Continuous-flex Cables (cat. no. 2090-CSBM1DF-*xx*AF*xx*)** m (ft)	**Motor Power/brake Cables (cat. no. 2090-CP*x*M7DF-*xx*A*xxx*) Feedback Cables (cat. no. 2090-CFBM7DF-CEA*xxx*)** 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) Can be used to replace Bulletin 2090 motor power/brake cables in 2198-H2DCK converter kit applications to increase the maximum length up to 50 m (164 ft).

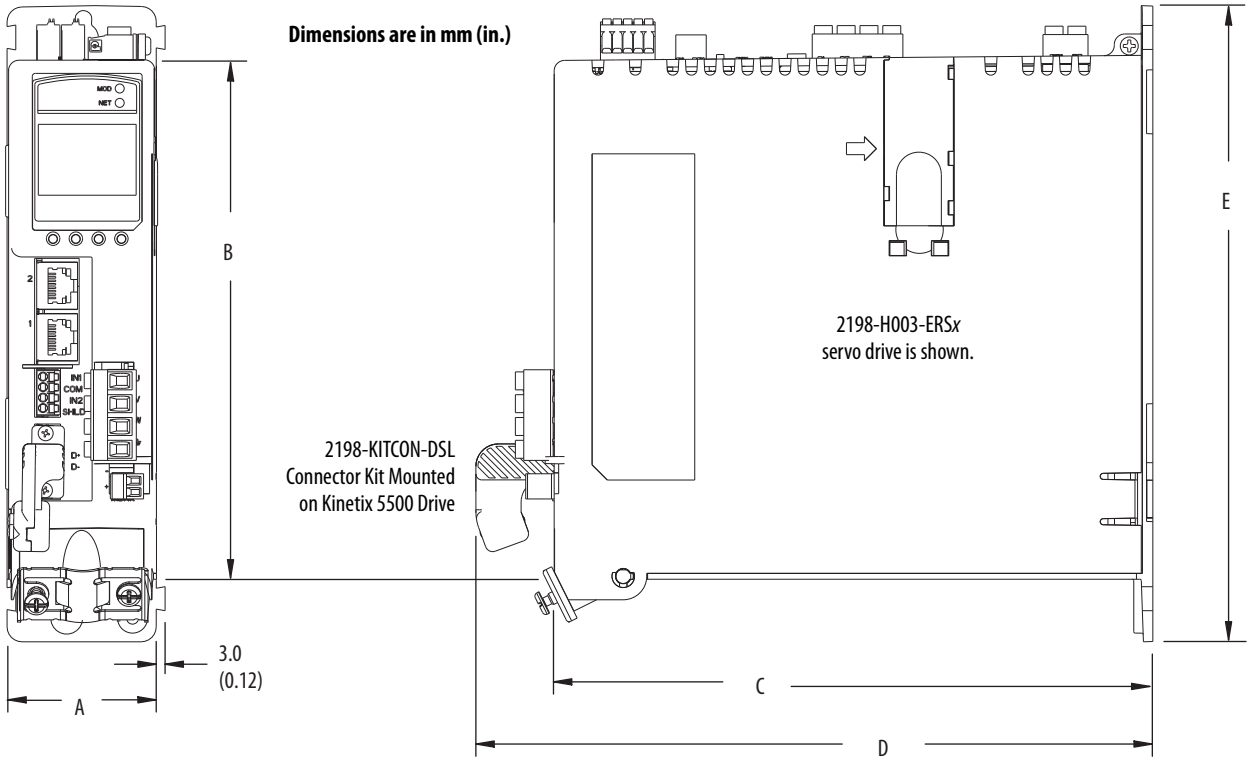
Combined cable length for all axes on the same DC bus must not exceed 250 m (820 ft).

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 11 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)

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
Altitude	1000 m (3281 ft)	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)	

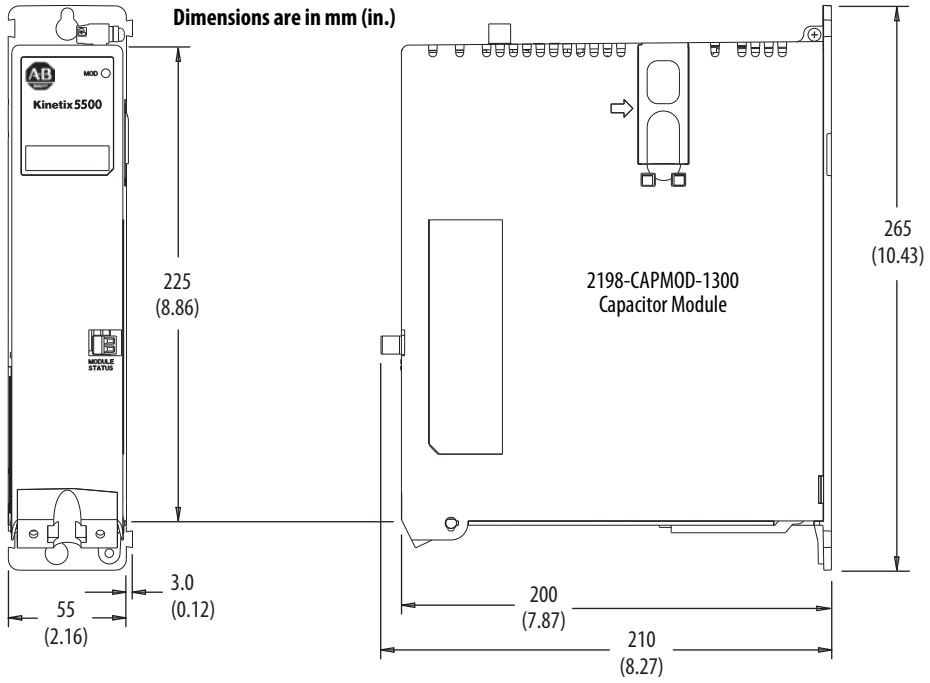
(1) When the 2198-H2DCK converter kit is used with the existing motor feedback cable (catalog number 2090-CFBM7DF) and single motor cable (catalog number 2090-CSBM1DF) for power and brake connections, derating the operational ambient temperature is not required.

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 EN 61800-3:2004: 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 EN 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 EN ISO 13849; up to SIL CL2 according to IEC 61508, EN 61800-5-2, and EN 62061. • 2198-H*xxx*-ERS2 (integrated safety) drive ratings: up to Performance Level (PL) e, Category 3 according to EN ISO 13849; up to SIL CL3 according to IEC 61508, EN 61800-5-2, and EN 62061.
C-Tick	Australian Radio Communications Act, compliant with: • Radio Communications Act: 1992 • Radio Communications (Electromagnetic Compatibility) Standard: 1998 • Radio Communications (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 http://www.ab.com for Declarations of Conformity Certificates.
(2) UL has not evaluated the safe-off, safe torque-off, or safe speed-monitoring options in these products.

Capacitor Module Dimensions



Capacitor Module Specifications

Capacitor Module Cat. No.	Voltage Range V DC	Capacitance µF	Energy Storage J	Continuous [1] Current A, 0-pk	Peak Current [2] A, 0-pk	Weight kg (lb)
2198-CAPMOD-1300	275…747	1360	446 (460V AC input) 132 (230V AC input)	26.0	36.0	2.3 (5.0)

(1) Charging or discharging.
(2) Charging or discharging at 42% duty cycle.

Shunt Resistor

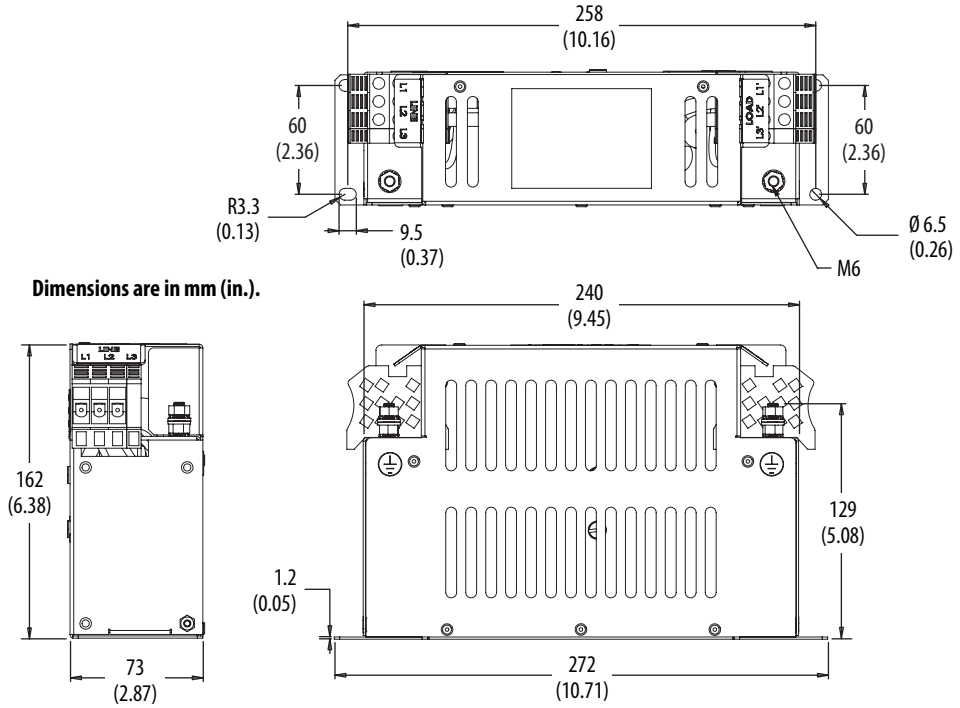
The Bulletin 2097 passive shunts are compatible with Kinetix 5500 servo drives. The shunt resistor wires directly to the drive. Refer to Shunt Resistor on page 70, for dimensions and additional specifications.

Shunt Resistor Power Specifications

Shunt Module Cat. No.	Resistance Ω	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.

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



AC Line Filter Specifications

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	480V AC (1) three-phase 50/60 Hz	7.5	5.2	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	9.3	5.2	1.63 (3.59)		2198-H025-ERS*x* 2198-H040-ERS*x*
2198-DB42-F		42	11.1	4.0	2.70 (5.95)		2198-H070-ERS*x*

(1) Tolerance for this value is +10%.

Control Power Current Requirements

Modules on Power Rail	110/115V AC Input		220/230V AC Input	
	Input Current A	**Input VA** VA	**Input Current** A	**Input VA** VA
IAM module only	0.56	67	0.36	85
IAM and 1 AM module	0.99	119	0.64	153
IAM and 2 AM module	1.43	172	0.92	220
IAM and 3 AM module	1.87	224	1.20	287
IAM and 4 AM module	2.31	277	1.48	354
IAM and 5 AM module	2.74	329	1.75	421
IAM and 6 AM module	3.18	382	2.03	488
IAM and 7 AM module	3.62	434	2.31	555
IDM power interface (1) module (IPIM)	For specifications and an example for calculating the IPIM module current requirements, refer to the Kinetix 6000M Integrated Drive-Motor User Manual, publication 2094-UM003.			

(1) For Kinetix 6000M systems, calculate the sum of the control power current requirements for each IPIM module on the power rail and add that value with the appropriate value from the table for the number of axes on the power rail.

AM Module (inverter, 400V-class) Power Specifications

Attribute (1)	**2094-BMP5-M** (2094-BC01-MP5-M)	**2094-BM01-M** (2094-BC01-M01-M)	**2094-BM02-M** (2094-BC02-M02-M)	**2094-BM03-M** (2094-BC04-M03-M)	**2094-BM05-M** (2094-BC07-M05-M)
Bandwidth (2)					
Velocity loop	500 Hz				
Current loop	1300 Hz				
PWM frequency	8 kHz		4 kHz		
Nominal input voltage	650V DC				
Continuous current (rms) (3)	2.8 A	6.1 A	10.3 A	21.2 A	34.6 A
Continuous current (sine) 0-pk (3)	4.0 A	8.6 A	14.6 A	30.0 A	48.9 A
Peak current (rms) (3)	7.0 A	15.3 A	25.8 A	53.0 A	69.2 A
Peak current (0-pk) (3)	9.9 A	21.6 A	36.4 A	75.0 A	97.9 A
Continuous power out (nom)	1.8 kW	3.9 kW	6.6 kW	13.5 kW	22.0 kW
Internal shunt					
Continuous power	50 W			200 W	
Peak power	5.6 kW			22.5 kW	
Internal shunt resistor	115 Ω			28.75 Ω	
Shunt on	805V DC				
Shunt off	765V DC				
Efficiency	98%				
Capacitance	75 µF	150 µF	270 µF	840 µF	1175 µF
Capacitive energy absorption	10 J	19 J	35 J	108 J	152 J
Short-circuit current rating	200,000 A (rms) symmetrical				

(1) These specifications apply to the axis module specified in the column heading by catalog number and the same axis module (inverter section) that resides within an IAM power module.
(2) Bandwidth values vary based on tuning parameters and mechanical components.
(3) Continuous and peak current ratings are for high-speed operation. For constant velocity operation at an electrical output frequency below 5 Hz (75 rpm for 8-pole motors), the output current rating is reduced. See Motion Analyzer software to correctly size your drive. Refer to Peak Current Specifications on page 29 for duty cycle capability.

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 feedback cable length. These tables assume the use of recommended cables as shown in the Kinetix Motion Accessories Technical Data, publication GMC-TD004.

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-B15*xxx*… MPL-B2*xxx*-E/V		90 (295.3)	
MPL-B3*xxx*… MPL-B5*xxx*-S/M		90 (295.3)	
MPL-B15*xxx*… MPL-B45*xxx*-H			30 (98.4)
MPM-B*xxxxx*-S/M		90 (295.3)	
MPF-B*xxxx*-S/M		90 (295.3)	
MPS-B*xxxx*-S/M		90 (295.3)	
RDB-B215*xx*-7/3	30 (98.4)		
RDB-B290*xx*-7/3 or RDB-B410*xx*-7/3	90 (295.3)		

Cable Lengths for Compatible Linear Actuators

Actuator Cat. No.	Absolute High-resolution (9V) Encoder m (ft)	Incremental/TTL (5V) Encoder m (ft)
MPMA-B*xxxxx* or MPAS-B*xxxxx*-V (ballscrew)	90 (295.3)	
MPMA-B*xxxxx* or MPAS-B*xxxxx*-A (direct drive)		30 (98.4)
MPAR-B*xxxxx*-V/M	90 (295.3)	
MPAI-B*xxxxx*M3	90 (295.3)	
LDAT-S*xxxxxx*-*x*B*x*		30 (98.4)

Cable Lengths for Compatible Linear Motors

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

Maximum Power Cable Length

Although motor power cables are available in standard lengths up to 90 m (295.3 ft) and the Kinetix 6000 power rail is available in sizes up to eight axes, to meet CE requirements and improve system performance the combined motor power length for all axes on the same DC bus must not exceed 240 m (787 ft) for 400V-class systems.

IMPORTANT The peak current ratings of the Kinetix 6000 AM modules (series A, B, and C) are configured at the factory as 150% of continuous current. You can program 2094-BMP5-S, 2094-BM01-S, 2094-BM02-S, and 2094-BM03-S series-B and C drives and their equivalent IAM (inverter) modules, up to 250% of continuous inverter current. You can program the 2094-BM05-S (AM module) and the 2094-BC07-M05-S (inverter) module up to 200% of continuous inverter current.

AM Module (inverter, 400V-class) Power Specifications (series A, B, and C)

Attribute	2094-BMP5-S (2094-BC01-MP5-S)	2094-BM01-S (2094-BC01-M01-S)	2094-BM02-S (2094-BC02-M02-S)	2094-BM03-S (2094-BC04-M03-S)	2094-BM05-S (2094-BC07-M05-S)
Bandwidth (1)					
Velocity loop	500 Hz				
Current loop	1300 Hz				
PWM frequency	8 kHz		4 kHz		
Nominal input voltage	650V DC				
Continuous current (rms) (2)	2.8 A	6.1 A	10.3 A	21.2 A	34.6 A
Continuous current (sine) 0-pk (3)	4.0 A	8.6 A	14.6 A	30.0 A	48.9 A
Peak current (rms) (3)					
Series A drives	4.2 A	9.2 A	15.5 A	31.8 A	51.9 A
Series B and C drives (3)	7.0 A	15.3 A	25.8 A	53.0 A	69.2 A
Peak current (0-pk) (3)					
Series A drives	5.9 A	12.9 A	21.8 A	45.0 A	73.4 A
Series B and C drives (3)	9.9 A	21.6 A	36.4 A	75.0 A	97.9 A
Continuous power out, nom	1.8 kW	3.9 kW	6.6 kW	13.5 kW	22.0 kW
Internal shunt					
Continuous power	50 W			200 W	
Peak power	5.6 kW			22.5 kW	
Internal shunt resistor	115 Ω			28.75 Ω	
Shunt on	805V DC				
Shunt off	755V DC				
Efficiency	98%				
Capacitance	75 µF	150 µF	270 µF	840 µF	1175 µF
Capacitive energy absorption	10 J	19 J	35 J	108 J	152 J
Short-circuit current rating	200,000 A (rms) symmetrical				

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

(2) Continuous and peak current ratings are for high-speed operation. For constant velocity operation at an electrical output frequency below 5 Hz (75 rpm for 8-pole motors), the output current rating is reduced. See Motion Analyzer software to correctly size your drive.

(3) Applies to series-B and C drives when configured for Peak-enhanced mode. For more information on drive performance in the Peak-enhanced mode, refer to Peak Enhancement Specifications on page 45.