Kinetix 6200 and Kinetix 6500 Modular Multi-axis Servo Drives



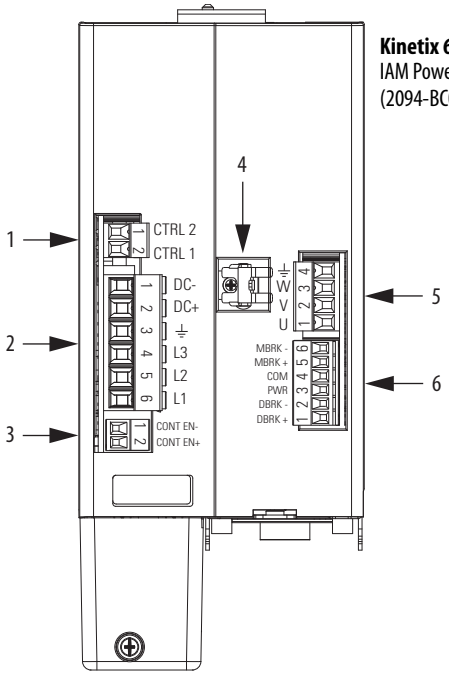
These modular Safe Speed Monitor servo drives help increase productivity and protect personnel with embedded safety features. Modular design and control provides ease of maintenance and greater flexibility as the drive easily transitions from Safe Torque Off to Safe Speed Monitor.

The Kinetix 6500 servo drives provide Integrated Motion on the EtherNet/IP network by using CIP Motion™ and CIP Sync™ technology from ODVA, all built on the Common Industrial Protocol (CIP™).

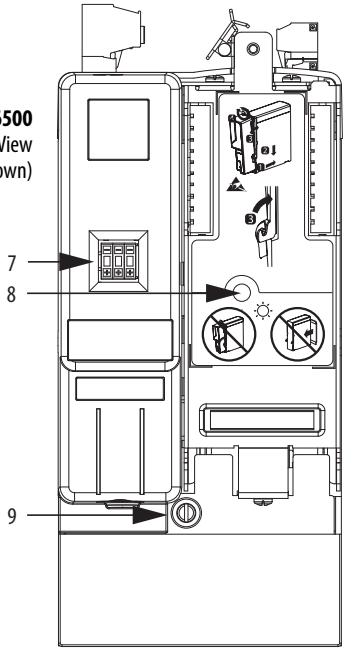
The Kinetix 6200 servo drives provide Integrated Motion capability through the sercos interface and compatibility with Kinetix 6000 drives, letting you migrate to the enhanced features exactly when and where you need them.

Kinetix 6200 and Kinetix 6500 Drive Features and Indicators

2094-AC*xx*-M*xx*-M and 2094-BC*xx*-M*xx*-M IAM Power Module Features and Indicators



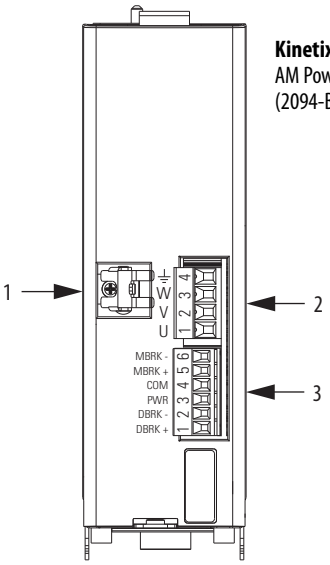
Kinetix 6200 or Kinetix 6500
IAM Power Module, Top View
(2094-BC01-MP5-M module is shown)



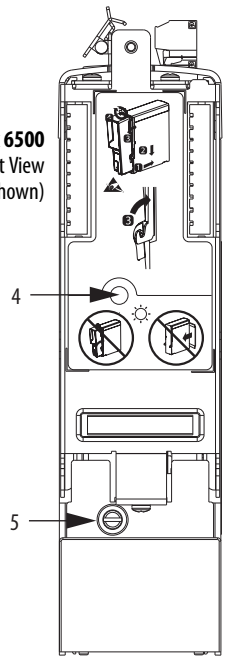
Kinetix 6200 or Kinetix 6500
IAM Power Module, Front View
(2094-BC01-MP5-M module is shown)

Item	Description
1	Control power (CPD) connector
2	DC bus/AC input power (IPD) connector
3	Contactor Enable (CED) connector
4	Motor cable shield clamp
5	Motor power (MP) connector
6	Motor/resistive brake (BC) connector
7	Node address switch
8	Power-applied indicator
9	Mounting screw

2094-AM*xx*-M and 2094-BM*xx*-M AM Power Module Features and Indicators



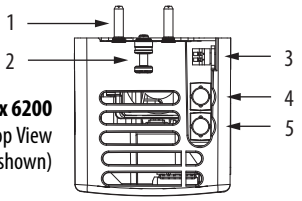
Kinetix 6200 or Kinetix 6500
AM Power Module, Top View
(2094-BMP5-M module is shown)



Kinetix 6200 or Kinetix 6500
AM Power Module, Front View
(2094-BMP5-M module is shown)

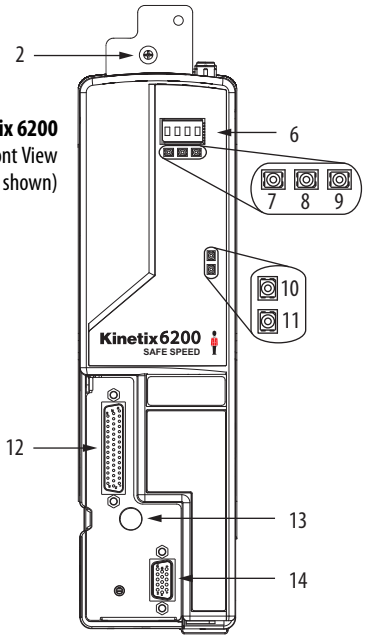
Item	Description
1	Motor cable shield clamp
2	Motor power (MP) connector
3	Motor/resistive brake (BC) connector
4	Power-applied indicator
5	Mounting screw

Control Module Features and Indicators (sercos)



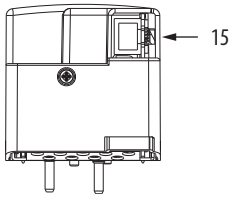
Kinetix 6200
Control Module, Top View
(2094-SE02F-M00-S1 module is shown)

Item	Description
1	Guide pins (2x)
2	Captive screw
3	Sercos communication rate and optical power switches
4	Sercos transmit (Tx) connector
5	Sercos receive (Rx) connector



Kinetix 6200
Control Module, Front View
(2094-SE02F-M00-S1 module is shown)

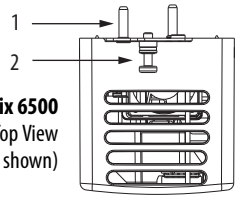
Item	Description
6	Four-character status display
7	PORT 1 status Indicator
8	Drive status indicator
9	Comm status indicator
10	DC bus status indicator
11	Safety lock status indicator (2094-SE02F-M00-S1 modules only)
12	I/O, safety, and aux feedback (IOD) connector
13	Power module mounting screw access hole
14	Motor feedback (MF) connector



Kinetix 6200
Control Module, Bottom View
(2094-SE02F-M00-S1 module is shown)

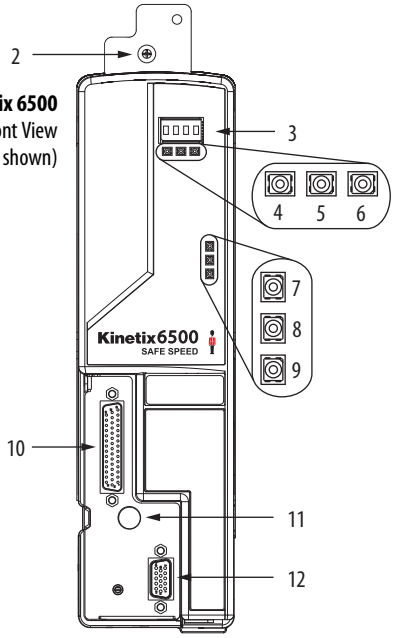
Item	Description
15	Ethernet (PORT1) connector

Control Module Features and Indicators (EtherNet/IP network)



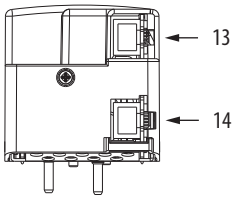
Kinetix 6500
Control Module, Top View
(2094-EN02D-M01-S1 is shown)

Item	Description
1	Guide pins (2x)
2	Captive screw



Kinetix 6500
Control Module, Front View
(2094-EN02D-M01-S1 is shown)

Item	Description
3	Four-character status display
4	PORT 1 status indicator
5	PORT 2 status indicator
6	Module status indicator
7	Network status indicator
8	DC bus status indicator
9	Safety lock status indicator (2094-EN02D-M01-S1 modules only)
10	I/O, safety, and aux feedback (IOD) connector
11	Power module mounting screw access hole
12	Motor feedback (MF) connector



Kinetix 6500
Control Module, Bottom View
(2094-EN02D-M01-S1 is shown)

Item	Description
13	Ethernet (PORT1) connector
14	Ethernet (PORT2) connector

Technical Specifications - Kinetix 6200 and Kinetix 6500 Control Modules

Control modules couple with IAM and AM power modules to provide drive status indicators and an interface to I/O, communication, functional safety, and feedback.

Features

Feature	Safe Torque Off		Safe Speed Monitor	
	2094-EN02D-M01-S0	2094-SE02F-M00-S0	2094-EN02D-M01-S1	2094-SE02F-M00-S1
Ethernet ports	2	1	2	1
Sercos ports	–	Rx/Tx	–	Rx/Tx
DC-bus status indicator	X	X	X	X
Network status indicator	X	–	X	–
Module status indicator	X	–	X	–
Drive status indicator	–	X	–	X
Comm status indicator	–	X	–	X
Safety lock status indicator	–	–	X	X
PORT 1 status indicator	X	X	X	X
PORT 2 status indicator	X	–	X	–
IOD connector for I/O, safety, and auxiliary feedback	X	X	X	X
MF connector for motor feedback	X	X	X	X

Weight Specifications

Kinetix 6200 Control Module	Cat. No.	Weight, approx kg (lb)
Sercos interface	2094-SE02F-M00-S0	0.68 (1.5)
	2094-SE02F-M00-S1	

Kinetix 6500 Control Module	Cat. No.	Weight, approx kg (lb)
EtherNet/IP network	2094-EN02D-M01-S0	0.68 (1.5)
	2094-EN02D-M01-S1	

Technical Specifications - Kinetix 6200 and Kinetix 6500 Power Modules

IAM Module (converter, 400V-class) Power Specifications

Attribute	2094-BC01-MP5-M	2094-BC01-M01-M	2094-BC02-M02-M	2094-BC04-M03-M	2094-BC07-M05-M
AC input voltage	324…528V rms three-phase (360…480V nom)				
AC input frequency	47…63 Hz				
Main AC input current Nom (rms) Max inrush (0-pk) (1)	10.0 A 11.0 A		24.0 A 22.0 A	44.0 A 31.1 A	71.0 A 62.2 A
DC input voltage (common bus follower)	458…747V DC				
DC input current (common-bus follower)	9.0 A		22.6 A	41.5 A	67.7 A
Control power AC input voltage	95…264V rms single-phase (110…240V rms nom)				
Control power AC input current Nom (@ 220/230V AC) rms Nom (@ 110/115V AC) rms Max inrush (0-pk)	6 A 6 A 98 A (3)				
Control power cycling, max	2 cycles per minute with a 90% on-time, 10% off-time duty cycle				
Nominal bus output voltage	650V DC				
Line loss ride through	20 ms				
Continuous output current to bus (A_{DC})	9.0 A		22.6 A	41.5 A	67.7 A
Peak output current to bus (A_{DC}) (2)	22.6 A		56.4 A	103.8 A	203.2 A
Bus overvoltage	825V DC				
Bus undervoltage	275V DC (when enabled) 425V DC (at the completion of pre-charge)				
Internal shunt Continuous power Peak power	50 W 5.6 kW			200 W 22.5 W	
Internal shunt resistor	115 Ω			27.75 Ω	
Shunt on	805V DC				
Shunt off	765V DC				
Continuous power output to bus	6 kW		15 kW	27.6 kW	45 kW
Peak power output at 480V (2)	15 kW		37.5 kW	69 kW	135 kW
Efficiency	97%				
Converter inductance	500 µH			125 µH	75 µH
Converter capacitance	110 µF		220 µF	940 µF	1410 µF
Short-circuit current rating	200,000 A (rms) symmetrical				

(1) All IAM power modules are limited to 2 contactor cycles per minute (with up to 4 axes), or 1 contactor cycle per minute (with 5…8 axes). The cycle capability also depends on the converter power rating and the total system capacitance. To calculate cycle capability, refer to the Kinetix 6200 and Kinetix 6500 Modular Multi-axis Servo Drives User Manual, publication 2094-UM002.

(2) Converter peak output duration equals 400 ms with a duty cycle of 16%.

(3) For eight axis systems with 230V AC control input voltage and 50 °C (122°F) ambient temperature the maximum inrush duration is less than 1/2 line cycle. To calculate the maximum inrush duration for other configurations, refer to the Kinetix 6200 and Kinetix 6500 Modular Multi-axis Servo Drives User Manual, publication 2094-UM002.

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

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 Current loop	500 Hz 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 Peak power	50 W 5.6 kW			200 W 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.

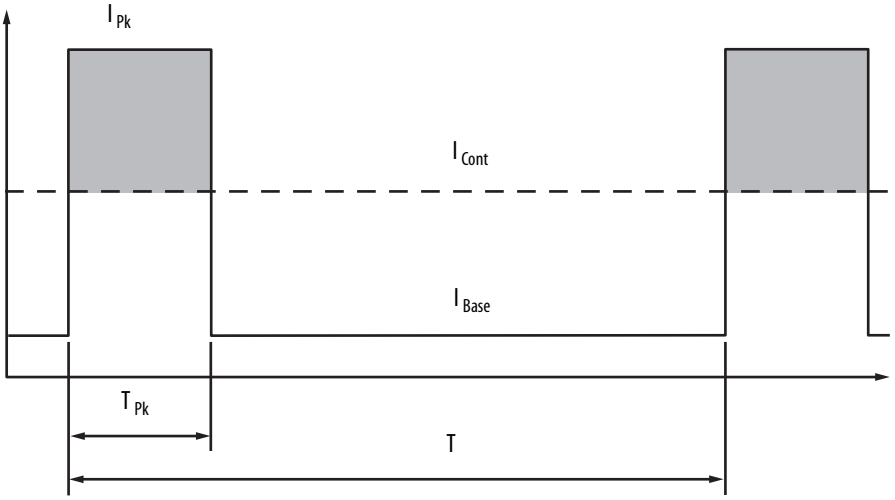
(2) Bandwidth values vary based on tuning parameters and mechanical components.

(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 64 for duty cycle capability.

Peak Current Specifications

Load Duty-cycle Profile Example

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

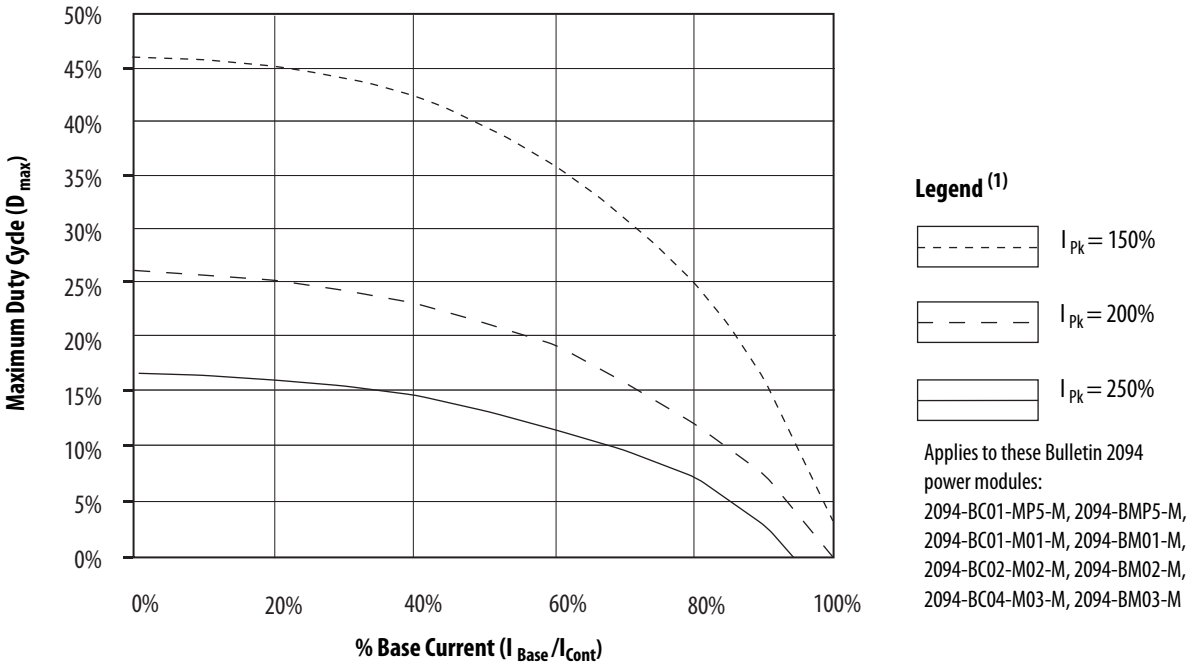


Peak Duty-cycle Definition of Terms

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 for only overload times less than T_{PKmax}.
Duty Cycle (D)	The ratio of time at peak to the Application Period and 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}.

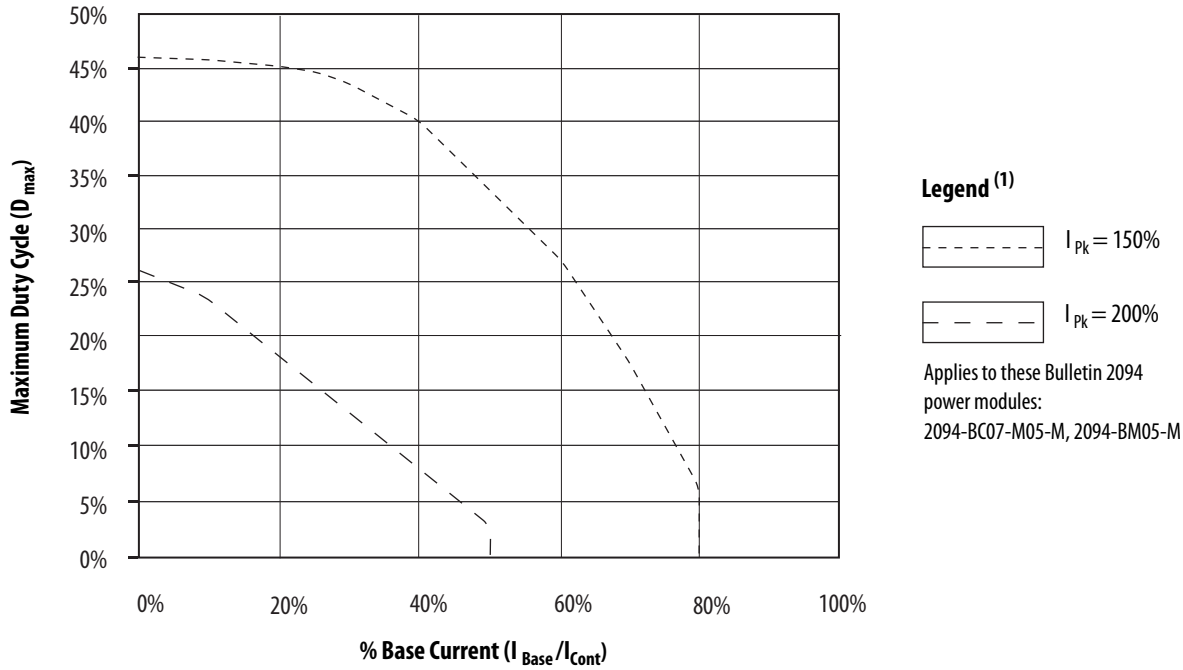
(1) All current values are specified as RMS.

Peak Inverter Mode (T_{PK} < 2.0 s)



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

Peak Inverter Overload (T_{PK} < 2.0 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 2094-BC*xx*-M*xx*-M and 2094-BM*xx*-M drive modules 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.

Control and DC-bus Circuit-protection Specifications

IAM Power Module Cat. No.	Control Input Power		DC-bus Power	
	Bussmann Fuse [1]	Allen-Bradley Circuit Breaker [2] (non-UL)	Bussmann Fuse	Mersen Fuse [3]
2094-BC01-MP5-M	FNQ-R-10 (10 A) or FNQ-R-7.5 (7.5 A)	1492-SPM2D060 or 1492-SPM1D150	FWJ-20A14F	DCT20-2
2094-BC01-M01-M				
2094-BC02-M02-M			FWJ-40A	A70QS40-4
2094-BC04-M03-M			FWJ-70A	A70QS70-4
2094-BC07-M05-M			FWJ-125A	A70QS125-4

(1) Use FNQ-R-7.5 circuit breaker for higher single -cycle inrush current capability. This is recommended when the continuous control-power current exceeds 3.0 A.
(2) Use 1492-SPM1D150 circuit breaker for higher single -cycle inrush current capability. This is recommended when the continuous control-power current exceeds 3.0 A.
(3) Mersen fuses were formerly known as Ferraz Shawmut.

Input Power Circuit Protection (LIM)

The 2094-BL02 line interface modules (LIM) contains supplementary protection devices and, when protected by suitable branch circuit protection, is rated for use on a circuit capable of delivering up to 5000 A. When this module is used, protection on the line side of the LIM module is required. Fuses must be class J or CC only.

The 2094-BL*xx*S and 2094-XL75S-C*x* LIM modules contain branch circuit rated devices suitable for use on a circuit capable of delivering up to 65,000 A (400V-class).

Refer to the Line Interface Module Installation Instructions, publication 2094-IN005, for power specifications and more information on using the LIM module.

Input Power Circuit Protection (without LIM)

The fuses and Allen-Bradley circuit breakers listed on page 66 are recommended for use with 2094-BC*xx*-M*xx*-M IAM power modules when the line interface module (LIM) is not used.

IMPORTANT LIM modules (catalog numbers 2094-BL*xx*S and 2094-XL75S-C*x*) can provide branch circuit protection to the IAM power module. Follow all applicable NEC and local codes.

Input Power UL Circuit-protection Specifications

Kinetix 6200 and Kinetix 6500 Drives		UL Applications			
IAM Power Module Cat. No.	Drive Voltage (three-phase) nom	Bussmann Fuses Cat. No.	Miniature CB Cat. No.	Motor Protection CB, Self-protected CMC Cat. No.	Molded Case CB Cat. No.
2094-BC01-MP5-M	360…480V	KTK-R-20 (20 A) Class CC	1489-M3D300	140M-F8E-C32	NA
2094-BC01-M01-M	360…480V	KTK-R-20 (20 A) Class CC		140M-F8E-C32	
2094-BC02-M02-M	360…480V	KTK-R-30 (30 A) Class CC	1489-M3D400	140M-F8E-C45	
2094-BC04-M03-M	360…480V	LPJ-45SP (45 A) Class J	N/A	NA	140G-G6C3-C50
2094-BC07-M05-M	360…480V	LPJ-80SP (80 A) Class J			140G-G6C3-C90

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

Kinetix 6200 and Kinetix 6500 Drives		IEC (non-UL) Applications			
IAM Power Module Cat. No.	**Drive Voltage (three-phase) nom**	**Miniature CB Cat. No.**		**Motor Protection CB Cat. No.**	**Molded Case CB Cat. No.**
2094-BC01-MP5-M	360…480V	1492-SPM3D300	1489-M3D300	140M-F8E-C32	NA
2094-BC01-M01-M	360…480V			140M-F8E-C32	
2094-BC02-M02-M	360…480V	1492-SPM3D400	1489-M3D400	140M-F8E-C45	
2094-BC04-M03-M	360…480V	N/A	N/A	NA	140G-G6C3-C50
2094-BC07-M05-M	360…480V				140G-G6C3-C90

Contactor Ratings

This table provides the recommended contactor ratings for IAM power modules installed without a LIM module.

IAM Power Module Cat. No.	Contactor Cat. No.
2094-BC01-MP5-M 2094-BC01-M01-M	100-C23*x*10 (AC coil) 100-C23*xx*10 (DC coil)
2094-BC02-M02-M	100-C37*x*10 (AC coil) 100-C37*xx*10 (DC coil)
2094-BC04-M03-M	100-C60*x*10 (AC coil) 100-C60*xx*10 (DC coil)
2094-BC07-M05-M	100-C85*x*10 (AC coil) 100-C85*xx*10 (DC coil)

Input Transformer for Control Power

Attribute	Value	Cat. No. (1)
Input volt-amperes	750VA	1497B-A10-*xx-x*-N
	1000VA	1497B-A11-*xx-x*-N
	1500VA	1497B-A12-*xx-x*-N
Input voltage	460V AC	
Output voltage	120…240V AC	

(1) Variables (*xx-x*) determine the input voltage and wiring configuration.

Power Dissipation Specifications

Use this table to size an enclosure and calculate required ventilation for your Kinetix 6200 and Kinetix 6500 drive system.

Bulletin 2094 Drive Modules [1]	Usage as % of Rated Power Output (watts)				
	20%	40%	60%	80%	100%
IAM (converter) module [2]					
2094-BC01-MP5-M	18	21	25	29	34
2094-BC01-M01-M					33
2094-BC02-M02-M	36	44	54	64	75
2094-BC04-M03-M	50	67	87	110	135
2094-BC07-M05-M	71	101	137	179	226
IAM (inverter) module or AM module [2]					
2094-BC01-MP5-M or 2094-BMP5-M	46	54	61	69	77
2094-BC01-M01-M or 2094-BM01-M	57	73	90	108	126
2094-BC02-M02-M or 2094-BM02-M	53	72	93	116	142
2094-BC04-M03-M or 2094-BM03-M	94	130	169	211	255
2094-BC07-M05-M or 2094-BM05-M	121	183	252	326	407
Shunt module - 2094-BSP2	68	121	174	227	280

(1) Power dissipation for the Bulletin 2094 control modules, catalog numbers 2094-SE02F-M00-S*x* and 2094-EN02D-M01-S*x*, is included in the IAM and AM power module specifications.

(2) Internal shunt power is not included in the calculations and must be added based on utilization.

Power dissipation specifications are based on these calculations. This is an example:
2094-BC02-M02-M with 4.52 A_{dc} (=20%) converter DC current and 10.3 A_{rms} (=100%) inverter output current.
Converter loss (36 W) + Inverter loss (142 W) = 178 W total power dissipation.

Weight Specifications

Bulletin 2094 Drive Modules	Cat. No.	Weight, approx kg (lb)
IAM (400V-class)	2094-BC01-MP5-M	5.67 (12.5)
	2094-BC01-M01-M	5.67 (12.5)
	2094-BC02-M02-M	5.90 (13.0)
	2094-BC04-M03-M	9.53 (21.0)
	2094-BC07-M05-M	9.98 (22.0)
Power rails (Slim)	2094-PRS1	1.05 (2.3)
	2094-PRS2	1.59 (3.5)
	2094-PRS3	2.14 (4.7)
	2094-PRS4	2.67 (5.9)
	2094-PRS5	3.11 (6.8)
	2094-PRS6	3.55 (7.8)
	2094-PRS7	3.99 (8.8)
	2094-PRS8	4.43 (9.7)

Bulletin 2094 Drive Modules	Cat. No.	Weight, approx kg (lb)
AM (400V-class)	2094-BMP5-M	3.18 (7.0)
	2094-BM01-M	3.18 (7.0)
	2094-BM02-M	3.40 (7.5)
	2094-BM03-M	5.44 (12.0)
	2094-BM05-M	5.90 (13.0)
Shunt module	2094-BSP2	3.10 (6.8)
Slot-filler module	2094-PRF	0.45 (1.0)

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 KNX-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

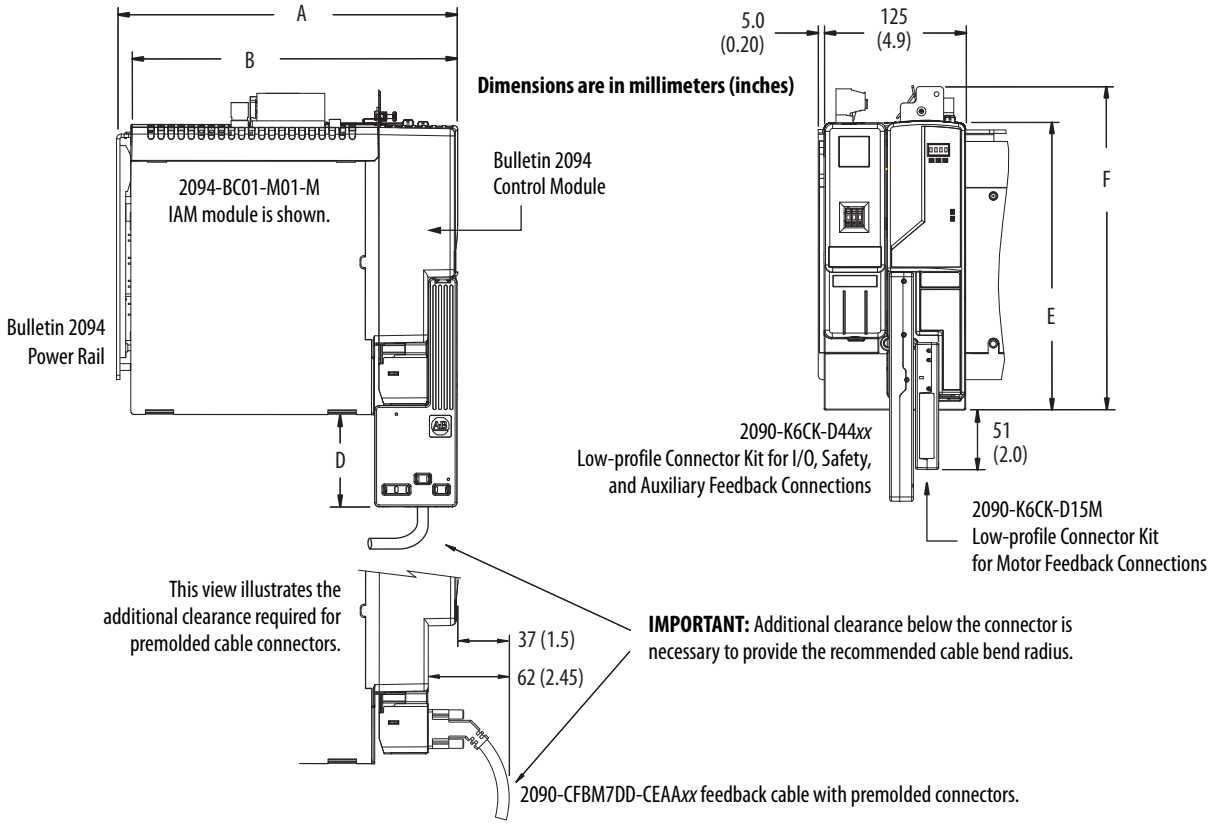
Motor Cat. No.	Absolute High-resolution (5V) Encoder m (ft)	Incremental/TTL (5V) Encoder m (ft)
LDC-Series	30 (98.4)	30 (98.4)

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.

Dimensions - Kinetix 6200 and Kinetix 6500 Modular Servo Drives

2094-BC01-MP5-M, 2094-BC01-M01-M, and 2094-BC02-M02-M IAM Modules

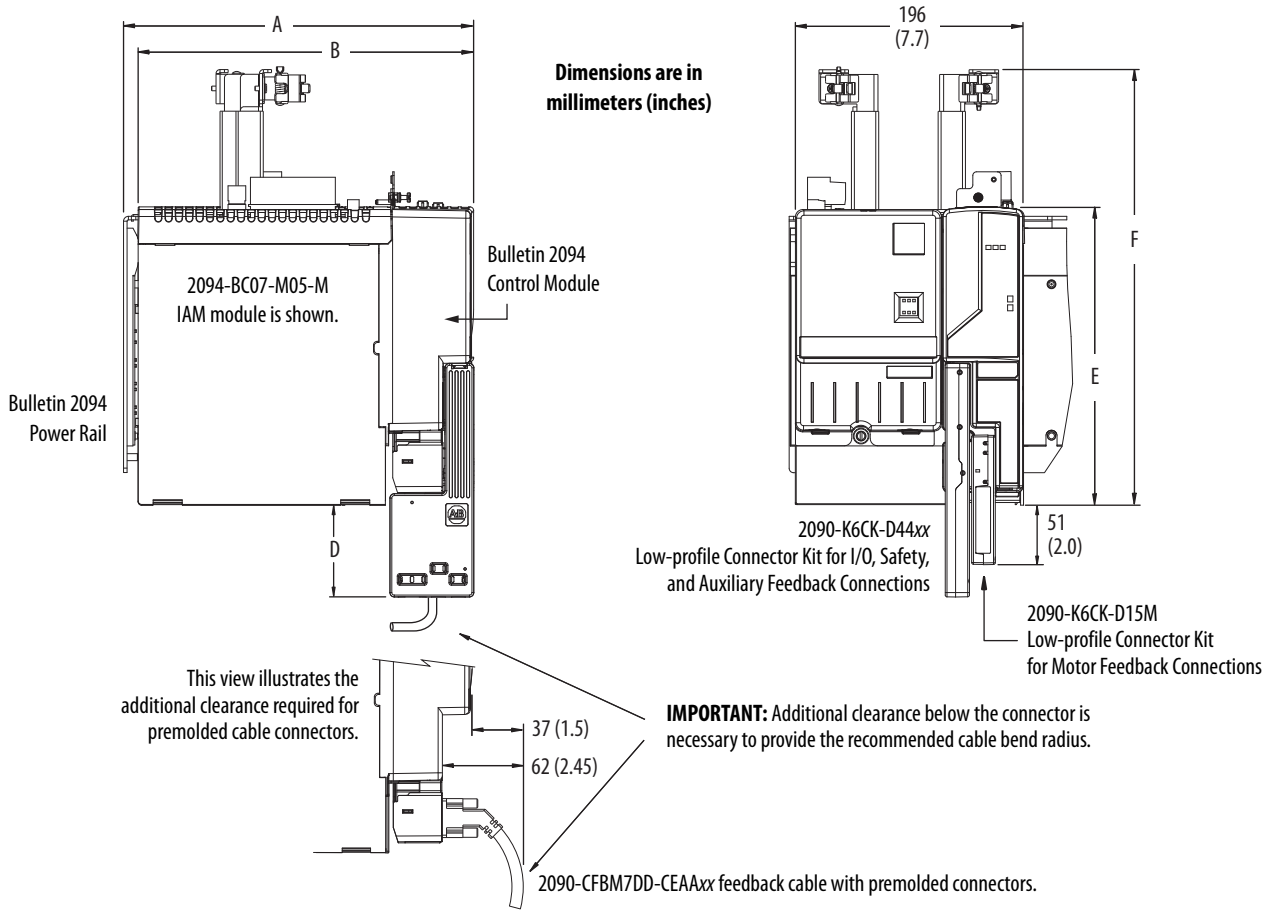


The IAM power module is shown mounted to the power rail with the control module attached.

IAM Power Module Dimensions

IAM Power Module Cat. No.	A mm (in.)	B mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)
2094-BC01-MP5-M	302 (11.9)	290 (11.4)	80.0 (3.2)	260 (10.25)	285 (11.2)
2094-BC01-M01-M					
2094-BC02-M02-M					

2094-BC04-M03-M and 2094-BC07-M05-M IAM Modules

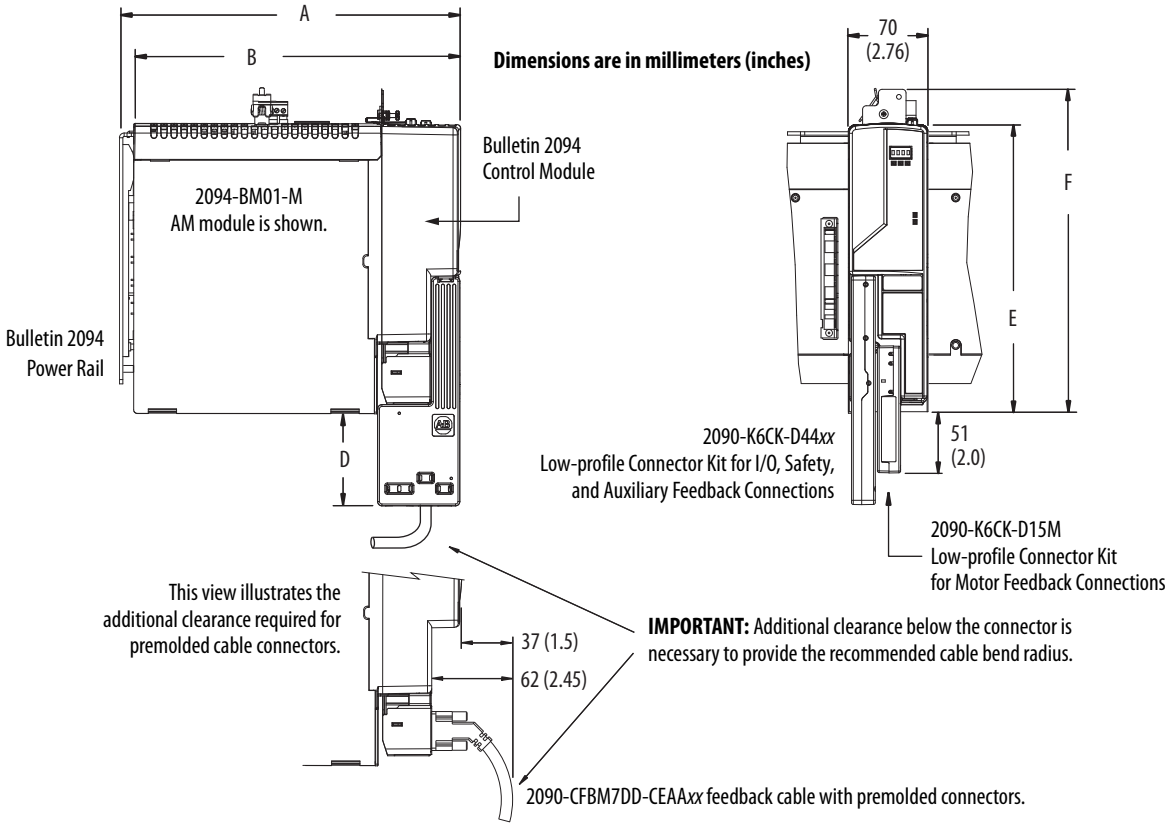


The IAM power module is shown mounted to the power rail with the control module attached.

IAM Power Module Dimensions

IAM Power Module Cat. No.	A mm (in.)	B mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)
2094-BC04-M03-M	302 (11.9)	290 (11.4)	80 (3.1)	260 (10.25)	375 (14.7)
2094-BC07-M05-M					

2094-BMP5-M, 2094-BM01-M, and 2094-BM02-M AM Modules

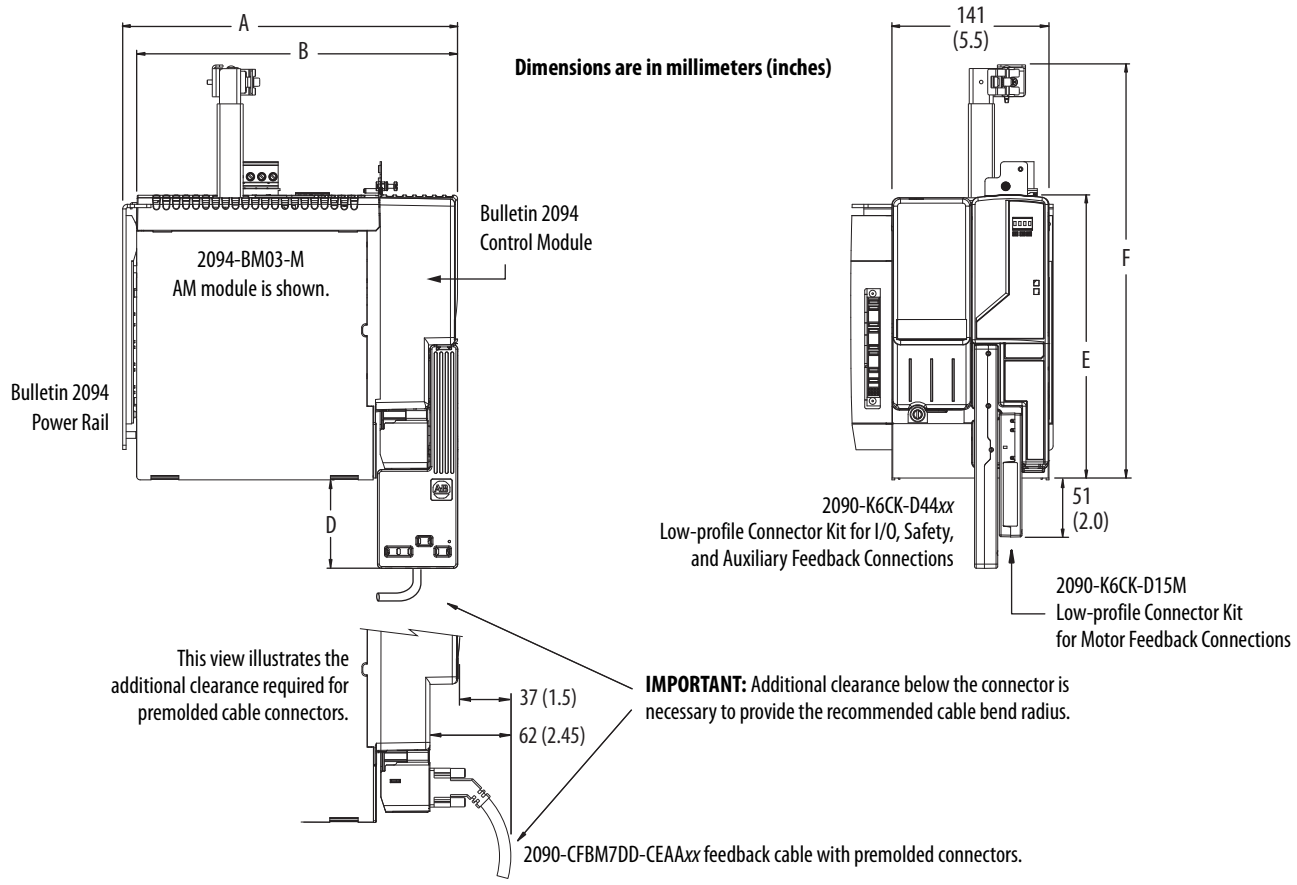


The AM power module is shown mounted to the power rail with the control module attached.

AM Power Module Dimensions

AM Power Module Cat. No.	A mm (in.)	B mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)
2094-BMP5-M	302 (11.9)	290 (11.4)	80.0 (3.2)	260 (10.25)	285 (11.2)
2094-BM01-M					
2094-BM02-M					

2094-BM03-M and 2094-BM05-M AM Modules



The AM power module is shown mounted to the power rail with the control module attached.

AM Power Module Dimensions

AM Power Module Cat. No.	A mm (in.)	B mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)
2094-BM03-M	302 (11.9)	290 (11.4)	80 (3.1)	260 (10.25)	375 (14.7)
2094-BM05-M					

Environmental Specifications - Kinetix 6200 and Kinetix 6500 Modular Servo Drives

Attribute	Operational Range	Storage Range (nonoperating)
Temperature, ambient	0…50 °C (32…122 °F)	-40…+70 °C (-40…+158 °F)
Relative humidity	5…95% noncondensing	5…95% noncondensing
Altitude	1000 m (3281 ft) 3000 m (9843 ft) with derating	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 (10 sweeps in each of 3 mutually perpendicular directions)	
Shock	15 g, 11 ms half-sine pulse (3 pulses in each direction of 3 mutually perpendicular directions)	

Certifications - Kinetix 6200 and Kinetix 6500 Modular 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 requirements and specific test methods.
	European Union 2006/95/EC Low Voltage Directive compliant with: • IEC 61800-5-1:2007 - Adjustable speed electrical power drive systems. • IEC 50178:1997 - Electronic Equipment for use in Power Installations.
Functional Safety	TÜV certified for functional safety: up to Performance Level (PL) e, Category 4 according to ISO 13849; up to SIL CL3 according to IEC 61508, IEC 61800-5-2, and IEC 62061 when used as described in the Kinetix 6200 and Kinetix 6500 Safe Speed Monitor Safety Reference Manual, publication 2094-RM001, and the Kinetix 6200 and Kinetix 6500 Safe Torque Off Safety Reference Manual, publication 2094-RM002.
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 2, 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-2094
ODVA	EtherNet/IP conformance tested.

(1) When product is marked, refer to publication 2094-CT002 for the Kinetix 6200 and Kinetix 6500 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 6200 and Kinetix 6500 Modular Servo Drives

Kinetix 6200 and Kinetix 6500 drive accessories include the Bulletin 2094 power rail, shunt module, slot filler module, encoder output module, mounting brackets, feedback connector kits, AC line filters, and other drive accessories common to Bulletin 2094 drives. For product specifications, including motor and interface cables, refer to the Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

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 (Kinetix 6500 drives). For more information, refer to Encoder Output Module on page 26.