

Overview

The 1394 System

The 1394 is a modular, multi-axis motion control and drive system family. Its unique design allows the 1394 to be used as an integrated motion controller and drive system (GMC) with Turbo or standard IMC™ S Class Compact functionality, an integrated 9/440 CNC system, a 9/Series CNC digital interface drive system, or an analog servo drive system.

All 1394 systems provide direct line connection (transformerless) for 380 and 460V three-phase input power, efficient IGBT power conversion, and slide-and-lock, module-to-module connection systems. Each system module can be configured with up to four axis modules, with each axis module interfacing to a motor. The 1394 provides significant panel space and interconnect savings.

Safety Precautions

The following general precautions apply to the 1394:



ATTENTION: Only those familiar with the 1394 Digital AC Multi-Axis Motion Control System and associated machinery should plan or implement the installation, startup, and subsequent maintenance of the system. Failure to comply can result in personal injury and/or equipment damage.

ATTENTION: This product contains stored energy devices. To avoid hazard of electrical shock, verify that all voltage on the capacitors has been discharged before attempting to service, repair, or remove this unit. You should only attempt the procedures in this manual if you are qualified to do so and familiar with solid-state control equipment and the safety procedures in publication NFPA 70E.

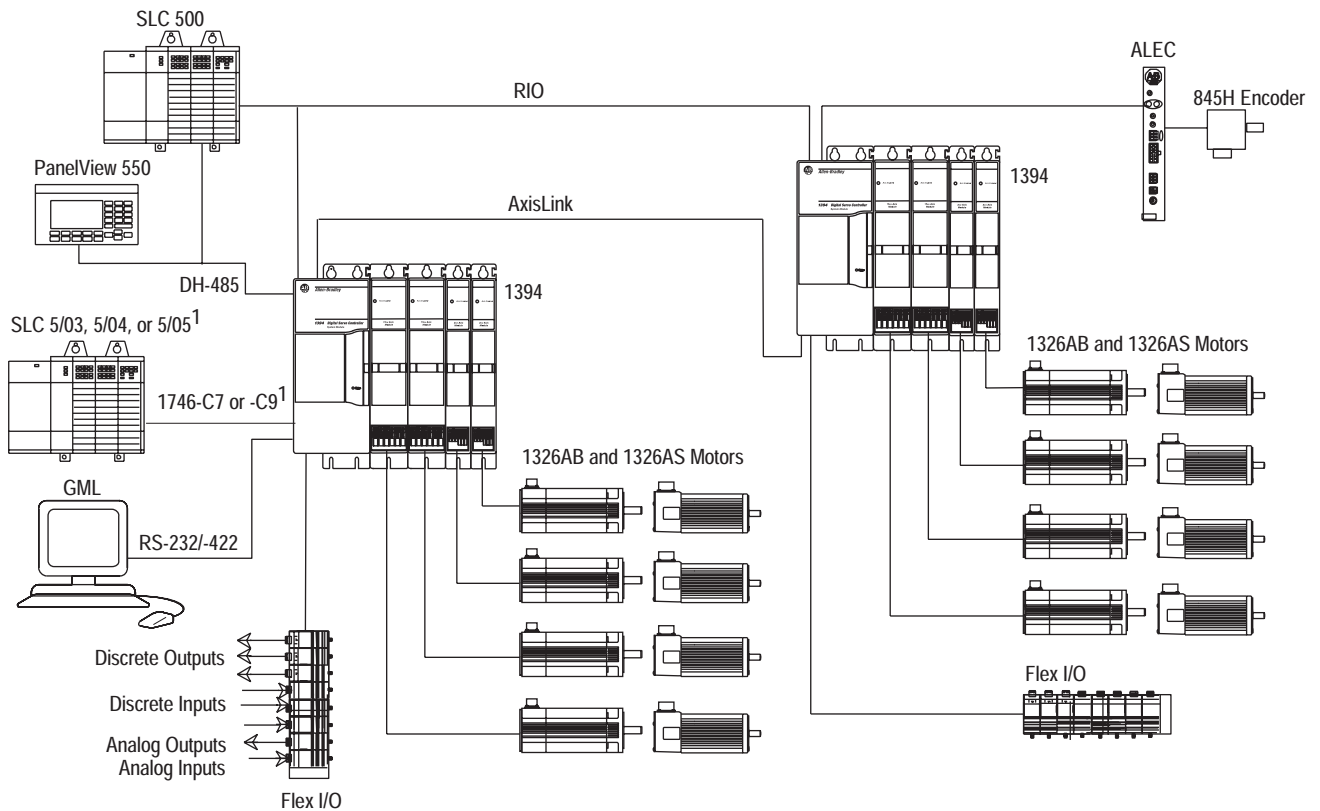
ATTENTION: The system integrator is responsible for local safety and electrical codes.

GMC System

The 1394 GMC System provides all the functionality of the IMC S Class Compact Motion Controller and power conversion within the 1394 system module. Allen-Bradley offers two versions of the 1394 GMC system module, the Standard 1394-SJTxx-C and the Turbo 1394-SJTxx-T. Both versions are completely programmed and commissioned using GML™ (Graphical Motion Control Language), offer Allen-Bradley DH485, RS-232, and RS-422 as standard communications, and have Remote I/O and AxisLink available as communication options.

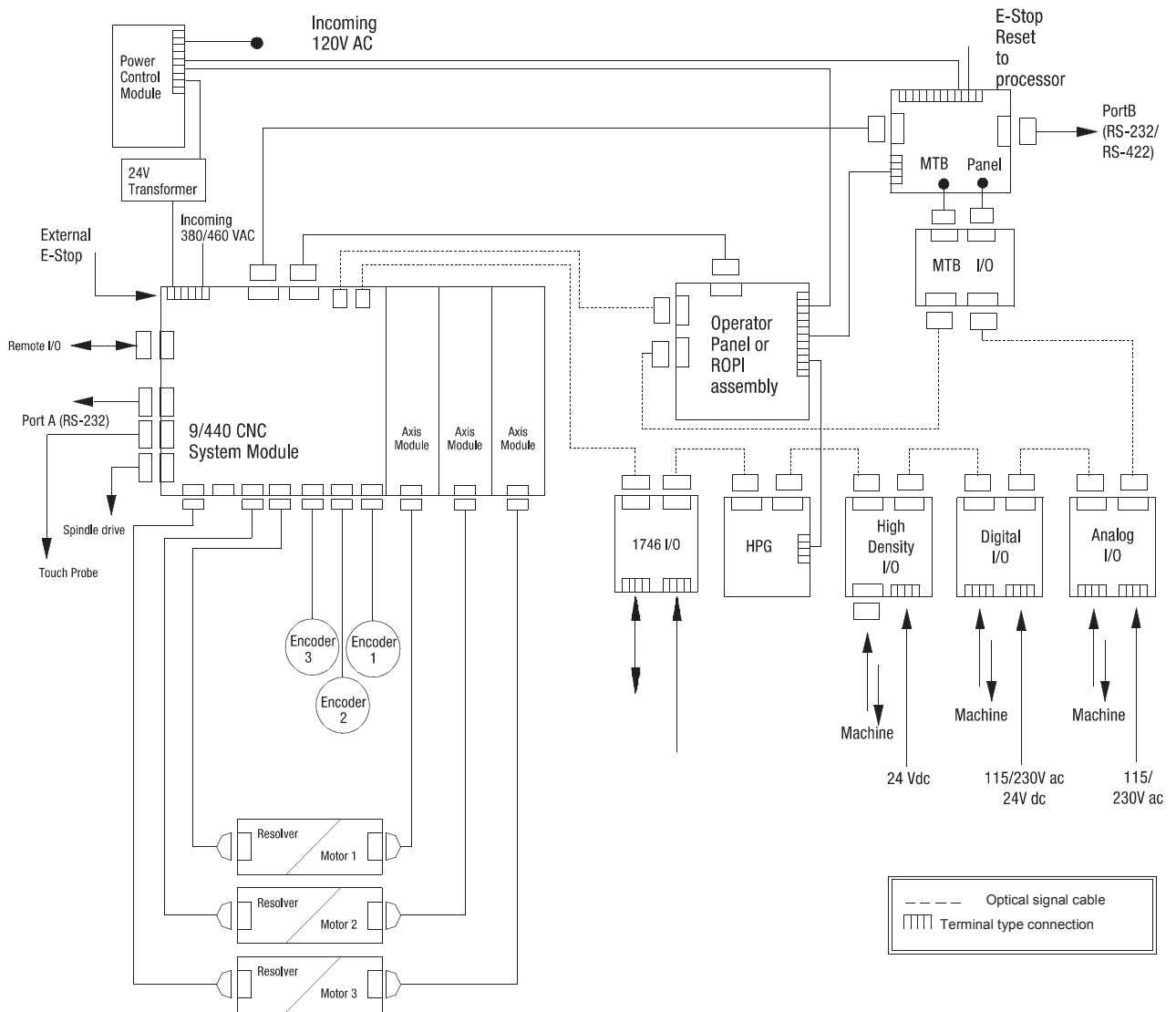
In addition, the Turbo 1394-SJTxx-T provides more GML application program memory and executes the programs faster. The Turbo 1394-SJTxx-T offers 64K of memory with a 32-bit processor while the Standard 1394-SJTxx-C offers 32K of program memory with a 16-bit processor. The Turbo 1394-SJTxx-T also includes a direct, high speed link to the SLC 5/03™, 5/04™, or 5/05™ that simplifies the programming required to transfer data between the Turbo 1394-SJTxx-T and the SLC™.

Figure 1.1
GMC Systems (1394-SJTxx-C, 1394-SJTxx-T)



¹ This interface is only available with the 1394-SJTxx-T system module.

Figure 1.4
9/440 System



What is a 1394 System?

The 1394 system consists of the following components (catalog number appears in parenthesis):

- One System Module (1394-SJTxx)
- One to four Axis Modules (1394-AMxx)
- One to four servo motors (1326Ax-xxx)
- One to four power and feedback cables

Also available are the DC Link Module (1394-DCLM) and Drive Interface Module (1394-DIM).

This module:	Is used in:
1394-DCLM	Addition to the axis module(s)
1394-DIM	Place of an axis module.

Axis modules are connected to system modules using slide-and-lock, module-to-module connections. For information on motors and cables, refer to the *1326AB 460V, Torque Plus Series, AC Servo Motors Product Data* (publication 1326A-2.9), *1326AS Series 460V, Low Inertia, Brushless Servo Motors Product Data* (publication 1326A-2.10), and *1326 Cables for 460V AC Servo Motors Product Data* (publication 1326A-2.11).

In addition to the equipment shown above, you will need to supply the following:

- Three phase input contactor
- Three phase input fusing
- 24V AC or DC logic power for system module and contactor enable (Analog Servo only)/DRIVEOK power (all modules)

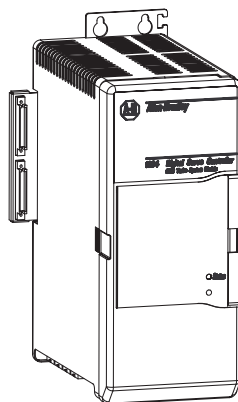
Refer to *Appendix A* for information on these topics.

Note: An external shunt resistor kit (1394-SR10A) is available for 5 and 10 kW systems with regenerative loads that exceed the capacity of the internal 200W shunt resistor provided. Most 5 and 10 kW systems will not require a shunt resistor kit. All 22 kW 1394 based products require an external shunt module (1394-SR9Ax or 1394-SR36Ax). This includes both 1394 and 8520 catalog items.

System Modules

System modules, available with ratings of 5, 10 and 22 kW (at 460V), house the system control PCB and convert 380 to 460VAC, three-phase, 50/60 Hz input power to a 530 - 680V DC link voltage. The 5 and 10 kW system modules have an internal shunt resistor with a 200W continuous rating and a peak rating of 40,000W. The 22 kW system module requires an external shunt module.

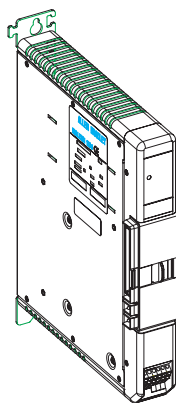
Figure 1.5
1394 System module



Axis Modules

Axis modules, with continuous output currents (RMS) of 3.0, 4.5, 7.5, 23.3 and 35.0A, convert the DC power supplied by the system module to a variable AC voltage. You will require one axis module for every 1326Ax-Bxxx servo motor you plan to run using the 1394. Choose each axis module based on the current requirements of the servo motor.

Figure 1.6
1394 Axis Module

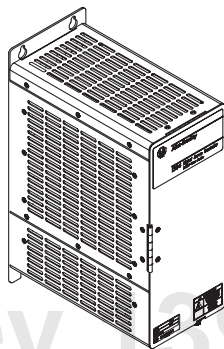


External Shunt Module (used with 22 kW System)

Shunt modules with (rms) power output of 300, 900, 1800 and 3600W continuous, 160,000W peak are available for use with the smart power 22 kW system module. The shunt module dissipates excess regenerative power from the Bulletin 1394 system. You must use one shunt module with each 22 kW smart power system module. Available in two sizes, each package contains an integral fuse and terminal block. The 3600W package is available with a 115/230V AC cooling fan. Choose your shunt module based on the shunt requirements of the 1326Ax-Bxxxx servo motors you plan to run using the 1394.

Note: 5 and 10 kW system modules can use an optional 1400W shunt module kit to dissipate excess regenerative energy (unpackaged components).

Figure 1.7
1394 External Shunt Module

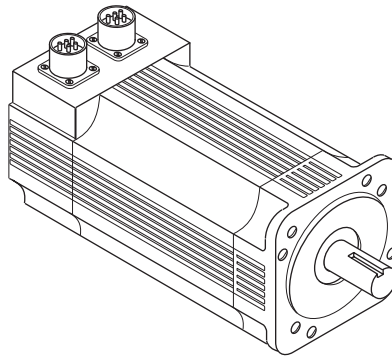


Allen-Bradley 1394-SJT05-A

1326AB Motors

This family of high-performance, medium inertia, ferrite, three-phase servo motors feature a specially designed housing that reduces motor length. They are available with continuous torque ratings of 2.3 to 53.0 N-m (20.7 to 469.0 lb-in.). Refer to the *1326AB 460V, Torque Plus Series, AC Servo Motors Product Data* (publication 1326A-2.9) for more information on features and options. IP65 protection rating is standard when used with the shaft oil seal kit. IP67 protection rating is available (specify -L in the catalog number, refer to *Appendix D*).

Figure 1.8
1326AB Motor

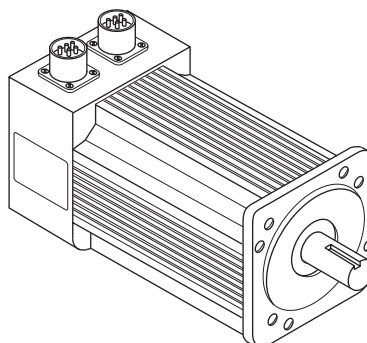


1326AS Motors

This family of high-performance servo motors feature neodymium-iron-boron permanent magnet rotors that provide low inertias, high accelerations and high peak torques. They are available with continuous torque ratings of 0.49 to 49.3 N-m (4.33 to 436 lb-in.). Refer to the *1326AS Series 460V, Low Inertia, Brushless Servo Motors Product Data* (publication 1326A-2.10) for more information on features and options. IP65 protection rating is standard when used with the shaft oil seal.

Important: 1326AS-Bxxx motors cannot be used with the 9/Series and 9/440 controllers.

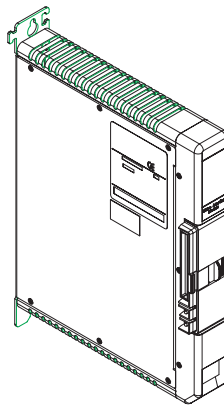
Figure 1.9
1326AS Motor



Drive Interface Module

The Drive Interface Module (DIM) provides four channels of analog output, four drive enable outputs, and four drive fault inputs. The 1394-DIM module allows the 1394-SJTxx-C or 1394-SJTxx-T system module to be used to control any external drive with an analog input and quadrature encoder output. Each 1394-DIM module can support up to four drives, but the maximum number of axes (1394-DIM controlled drives plus 1394-AMxx axis modules) cannot exceed four per system module.

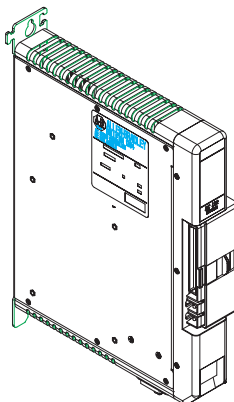
Figure 1.10
Drive Interface Module



DC Link Module

The 1394-DC Link Module (DCLM) provides additional load leveling and energy storage (capacitance) for 1394 systems. This allows additional regenerative energy to be stored during the machine cycle, increasing system capacity, lowering cycle time, and avoiding resistive heat loss. The module can be used alone or two modules can be used to interconnect two 1394 systems using the DC Link cable.

Figure 1.11
DC Link Module



Standard Features of the 1394

The 1394 provides the following standard features:

- UL Listed and CUL Certified
- CE Marked

Control

- Supports Turbo and Standard GMC, CNC Interface, and Analog Servo configurations with a standard array of hardware.
- Digitally-adjusted velocity and current loop compensation, which accommodates a wide range of system inertias.
- Two configurable analog test outputs that can be linked to critical system parameters for troubleshooting (GMC and Analog Servo system modules).
- All systems provide digital fault and diagnostic utilities (including a current monitor, thermal overload detection, and a feedback signal monitor).
- Status LEDs for system and axis modules.
- Status LEDs for motion board, Axislink, and RIO (GMC system only).
- Highly-integrated surface mount circuitry.
- Encoder signal output (A QUAD B) for encoder emulation (Analog Servo system modules only).
- DSP assisted processing.

Power

- IGBT technology for efficient, quiet operation.
- Transient (MOV) voltage, phase loss, and ground fault protected input.
- An integral 200W shunt resistor is available (5 and 10 kW only). An external 1400W shunt kit is available (5 and 10 kW only). Other external shunt kits and modules from 300 to 3600W continuous.
- Current ratings of 3.0, 4.5, and 7.5A continuous, at 50° C (122° F) (inside cabinet) and 23.3 and 35A continuous, at 40° C (104° F) (with heat sinks out the back) with up to 300% motor ratings for high duty-cycle operation producing continuous torque ranges of 0.7 to 53.0 N-m (6 to 469 lb-in.).
- 324-528V AC, three-phase, 50/60 Hz direct line operation.
- No isolation transformer or inductors are required (380/460VAC Hz direct line operation) for most applications.
- Advanced protective features, such as software-based current foldback, which provides overload tolerant operation and soft current limiting.
- All 5 and 10 kW (Series C) and 22 kW system modules include active soft start inrush current limiting for DC link charging.

Note: To determine the series of your module, refer to Figure 0.1 in the *Preface*.

Integration

- Hinged system module front cover for easy access to control and power wiring.
- System and axis modules that can be quickly removed and easily interchanged for troubleshooting and diagnostics.
- Standard widths of 50 mm (AM03/04/07) and 75 mm (AM50/75/50-IH/75-IH) are available.
- Mass termination plugs and reliable, contact-type, terminal blocks are used for easy installation and service.
- Plug interconnects for auxiliary, encoder input (GMC), encoder output and motor resolver input (all).
- Slide-and-lock, module-to-module connection, which eliminates bus bars and wiring harnesses.
- Advanced communications and I/O capabilities help integrate the 1394 to standard plant floor networks.

Allen-Bradley 1394-SJT05-A

Specifications

Chapter Objectives

Appendix A contains specifications and dimensions for the 1394 system and dimensions and operating characteristics for the 1326AB/AS series servo motors. This appendix covers:

- System specifications
- Environmental specifications
- Power dissipation
- Communication specifications
- Dimensions
- Servo motor performance data

System Specifications

General 1394 specifications are provided below. Specifications are for reference only and are subject to change without notice.

Certification

The 1394 is certified for the following when the product or package is marked:

- UL listed (File E59272)
- CUL listed
- CE marked for all applicable directives

System Modules

The table below lists the specifications for system modules.

The:	For the 1394-SJT05 and 1394-SJT05-T ¹ is:	For the 1394-SJT10 and 1394-SJT10-T ¹ is:	For the 1394-SJT22 and 1394-SJT22-T ¹ is:
Rated AC input voltage	324-528V AC, 50/60 Hz Three phase	324-528V AC, 50/60 Hz Three phase	324-528V AC, 50/60 Hz Three phase
AC input current	6.5A	13.0A	28.6A
Peak inrush current ³ (Series A and B ²)	975A	1300A	697A < 1μs
Peak inrush current (Series C)	697A < 1μs	697A < 1μs	N/A
Line loss ride through	20 ms	20 ms	20 ms
Nominal bus output voltage	530/680V DC	530/680V DC	530/680V DC
Continuous power output	4/5 kW	8/10 kW	17/22 kW
Peak power output	28 kW	28 kW	136 kW
Efficiency	99%	99%	98%
Number of Electronic Cam Profile Points	13,000 Master/slave	13,000 Master/slave	13,000 Master/slave
Weight (Series A and B)	11 kg (24.25 lb)	11 kg (24.25 lb)	12.7 kg (28.0 lb)
Weight (Series C)	10.68 kg (23.5 lb)	10.68 kg (23.5 lb)	N/A
Continuous current output	7.36A	14.73A	33.8A
Peak current output	15.0A	29.46A	200A
Capacitance (Series A and B)	220 μF	330 μF	660 μF
Capacitance (Series C)	220 μF	345 μF	N/A
Inductance	1000 μH	750 μH	500 μH
Internal shunt resistor	200W continuous, 40,000W peak (two second maximum on time)		No internal Shunt Resistor

¹ The Standard and Turbo system modules are identical except that the Turbo 1394-SJTxx-T offers 64K of memory with a 32-bit processor while the Standard 1394-SJTxx-C offers 32K of program memory with a 16-bit processor.

² To determine the series of your module, refer to Figure 0.1 in the *Preface*.

³ Peak inrush current for 5 and 10 kW systems (Series A and B) =
$$\frac{(\text{line voltage} \times 1.1 \times \sqrt{2})}{\sqrt{\left(\frac{L_{\text{system}}}{C_{\text{system}} + C_{\text{axes}}}\right)}}$$
 Where: L = Inductance
C = Capacitance

Allen-Bradley 1394-SJT05-A

Axis Modules

The table below lists the specifications for the axis modules.

The:	For the 1394-AM03 is:	For the 1394-AM04 is:	For the 1394-AM07 is:	For the 1394-AM50 and -AM50-IH is:	For the 1394-AM75 and -AM75-IH is:
Speed Regulation ¹	0 to 0.05% of base speed with 100% torque disturbance	0 to 0.05% of base speed with 100% torque disturbance	0 to 0.05% of base speed with 100% torque disturbance	0 to 0.05% of base speed with 100% torque disturbance	0 to 0.05% of base speed with 100% torque disturbance
Static Gain (rms A/mV) ¹	1.28	2.6	4.9	22.8	22.8
Peak Current Limit Adjust	200%	200%	200%	143%	143%
Modulation Frequency	5 kHz ±10%	5 kHz ±10%	5 kHz ±10%	5 kHz ±10%	5 kHz ±10%
Drift	0.03 rpm/degree C	0.03 rpm/degree C	0.03 rpm/degree C	0.03 rpm/degree C	0.03 rpm/degree C
Nominal Input Voltage	530/680V DC	530/680V DC	530/680V DC	530/680V DC	530/680V DC
Continuous Current (rms)	3.0A	4.5A	7.5A	23.3A	35.0A
Peak Current (rms - 1 second)	6.0A	9.0A	15.0A	33.2A	50.0A
Continuous Power Out 380/480V nominal	1.6/2 kW	2.4/3 kW	4/5 kW	11.34/15.6 kW	17.8/23.8 kW
Efficiency	98%	98%	98%	98%	98%
Weight	5 kg (11.02 lb)	5 kg (11.02 lb)	5 kg (11.02 lb)	7 kg (15.44 lb) (-AM50) 6.73 kg (14.8 lb) (-AM50-IH)	7 kg (15.44 lb) (-AM75) 6.73 kg (14.8 lb) (-AM75-IH)
Capacitance	110 µF	110 µF	220 µF	465 µF	660 µF

¹ When used with the controller in the 1394-SJT.xx system module.

Contact Ratings

The table below lists the contact ratings of the drive relay outputs.

The contact rating for the:	Is:
Drive OK (DROK)	115V AC/24V DC, 1A inductive
Contact Enable Relay	115V AC/24V DC, 1A inductive
Thermal switch	115V AC/24V DC, 1A inductive

DC Link Module

The table below lists the specifications for the DC Link Module.

The:	For the 1394-DCLM is:
Firmware version	5.0 or higher with 1394-SJTxx-A systems 3.7 or higher with 1394-SJTxx-C/CRL/T/TRL systems
Software	GML Commander, version 4.02 or higher
Input voltage	530/680V DC, single phase
Current	Continuous (rms) 32A Peak (rms - 1 second) 200A
Capacitance	990 μ F
Energy storage	7.36 joules based on a nominal 50V bus delta
Cables available (part numbers)	1394-CPDC-0015 and 1394-CPDC-0030
Cable lengths available	1.5 m (4.92 ft) or 3 m (9.84 ft)
Operating temperature	0° to 50° C (32° to 122° F)
Relative humidity	5-95%, non-condensing
Weight	4.8 kg (10.5 lbs)

Drive Interface Module

The table below lists the specifications for the Drive Interface Module.

The:	For the 1394-DIM is:
Firmware version	5.0 or higher with 1394-SJTxx-A systems 3.7 or higher with 1394-SJTxx-C/CRL/T/TRL systems
Software	GML Commander, version 4.01 or higher
Input voltage	24V, 50 kHz provided by the 1394-SJT-xx system module
Analog output information (Px-1,2)	
Voltage	0 to \pm 10V analog
Signal isolation	1500V rms
Resolution	12 bits, 4.88 mV
Impedance	220 ohms
Offset	\pm 80 mV maximum, compensated to 0 through software setup
Drive OK	15V DC @ 5 mA supplied by the DIM
Drive enable output	30V DC @ 1 A
Operating temperature	0° to 50° C (32° to 122° F)
Relative humidity	5-95%
Weight	3 kg (6.6 lb)

Filters

The table below shows the requirements for filters that you can use.

The:	For the SP-74102-006-01 is:	For the SP-74102-006-02 is:	For the SP-74102-006-03 is:
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Voltage	460V AC	460V AC	460V AC
Current	23A @ 50° C (73.4° F)	30A @ 50° C (86° F)	75A @ 50° C (122° F)
Operating Temperature	-25° to 85° C (-13° to 185° F)	-25° to 85° C (-13° to 185° F)	-25° to 85° C (-13° to 185° F)
Vibration	10-200 Hz @ 1.8 g	10-200 Hz @ 1.8 g	10-200 Hz @ 1.8 g
Humidity	90%	90%	90%
Weight	1.6 kg (4.16 lb)	2.7 kg (7.02 lb)	5.2 kg (13.52 lb)
Power Loss	20W	38W	57W
Roxburgh Catalog No.	MIF323-GS	MIF330-GS	MIF375-GS

User-Supplied Contactor (M1)

The table below shows the requirements for the contactor that you must supply.

The contactor:		For the 1394-SJT05 and -SJT10 (Series A and B) is:	For the 1394-SJT05 and -SJT10 (Series C) is:	For the 1394-SJT22 is:
Rating		600V AC, 43A ¹	600V AC, 23A	600V AC, 37A
Recommended types:	AC Coil Operation	Allen-Bradley 100-C43x10 ^{2,3}	Allen-Bradley 100-C23x10 ^{2,3}	Allen-Bradley 100-C37x10 ^{2,3}
	DC Coil Operation	Allen-Bradley 100-C43Zx10 ²	Allen-Bradley 100-C23Zx10 ²	Allen-Bradley 100-C37Zx10 ²

¹ Consider using a 60A contactor when the total capacitance of the axis modules is greater than 880 µF.

² x indicates coil voltage.

³ A surge suppressor is required.

User-Supplied Line Input Fusing

The table below shows the requirements for the input fusing that you must supply.

The Recommended type of fuse for:		Is:	Rating
1394-SJT05 systems	Series A and B	Bussmann FRS-R-20A or equivalent	600V AC, 20A
	Series C	Bussmann KTK-R-20 or equivalent	600V AC, 20A
		Bussmann LPJ-SP 20 or equivalent	600V AC, 20A
1394-SJT10 systems	Series A and B	Bussmann FRS-R-30A or equivalent	600V AC, 30A
	Series C	Bussmann KTK-R-30 or equivalent	600V AC, 30A
		Bussmann LPJ-SP 30 or equivalent	600V AC, 30A
1394-SJT22 systems		Bussmann FRS-R-35 or equivalent	600V AC, 35A
		Bussmann LPS-RK-SP 40 or equivalent	600V AC, 40A
		Bussmann LPJ-SP 45 or equivalent	600V AC, 45A

User-Supplied 24V Logic Input Power

The table below shows the requirements for the 24V logic input power that you must supply.

24V logic input voltage	Frequency	Current		Recommended Fuse
		If you have:	The current draw for user-supplied power supply must not exceed:	
19-28V AC RMS, single phase or 18.75-31.25V DC	50/60 Hz	1 axis	3.5A	Bussmann MDA-15 or equivalent
		2 axis	4.4A	
		3 axis	5.2A	
		4 axis	6.0A	

¹ The power supply should be rated for 15A or greater inrush current upon power up.

Input Transformer for 24V Control Power

You can use any general purpose transformer with the following ratings.

The requirements for:	For a 480V system is:	For a 380V system is:
Input volt-amperes	200 to 259 VA	200 to 259 VA
Input voltage	480V RMS	380V RMS
Output voltage	24V RMS	24V RMS
Load regulation	2 to 5%	2 to 5%

If the input volt-amperes is more than 350 VA, adjust the load regulation to make the transformer leakage the same as or greater than the 250 VA transformer with 2% regulation.

User-Supplied 5V Auxiliary Encoder Power Supply

The table below shows the requirements for the 5V encoder that you can supply. If you use an encoder that requires more than 5V, you still need a 5V power supply for the 1394 encoder board electronics at a rating of 0.325A (applies to -C and -T systems only).

The:	For 5V logic input power must be:
Rating	5V DC +/- 5%
Current	0.325A plus the requirement of each encoder used. For example, if you use one encoder with a 0.2A requirement, the supply required is 0.525A (0.325A + 0.2A = 0.525A)

Circuit Breakers

While circuit breakers offer some convenience, there are limitations for their use. Circuit breakers do not handle high current inrush as well as fuses. The 1394 system needs to be protected by a device having a short circuit interrupt current rating of the service capacity provided or a maximum of 100,000A.

If an upstream circuit protection device is rated for the overload current and short circuit rating, a supplementary circuit protection device (such as the 1492) can be used as the only 1394 branch circuit protection device. The upstream fully rated device let-through must be less than or equal to the 10 kA interrupt rating of the 1492.

The wiring interconnection in Figure A.1 and Figure A.2 provide examples of the needed protection and follows UL and NEC codes. Full compliance is dependent on final wiring design and installation.

Figure A.1
Circuit Protection under NEC 1999 110-10 (preferred fully rated devices)

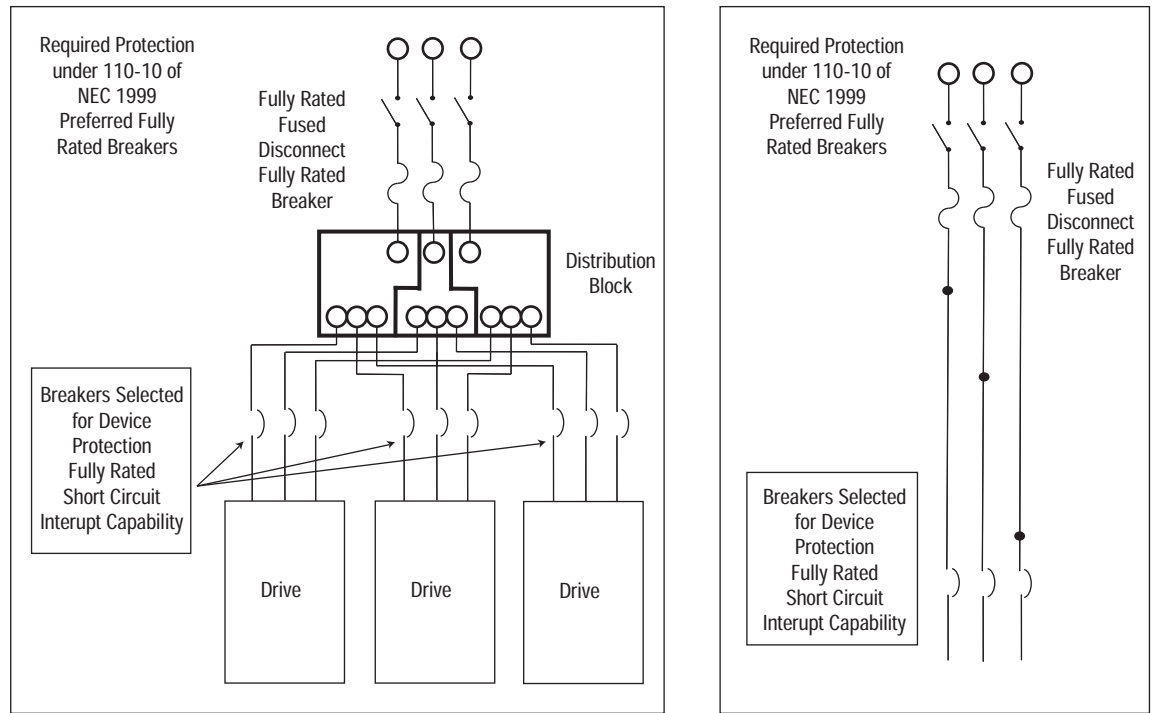
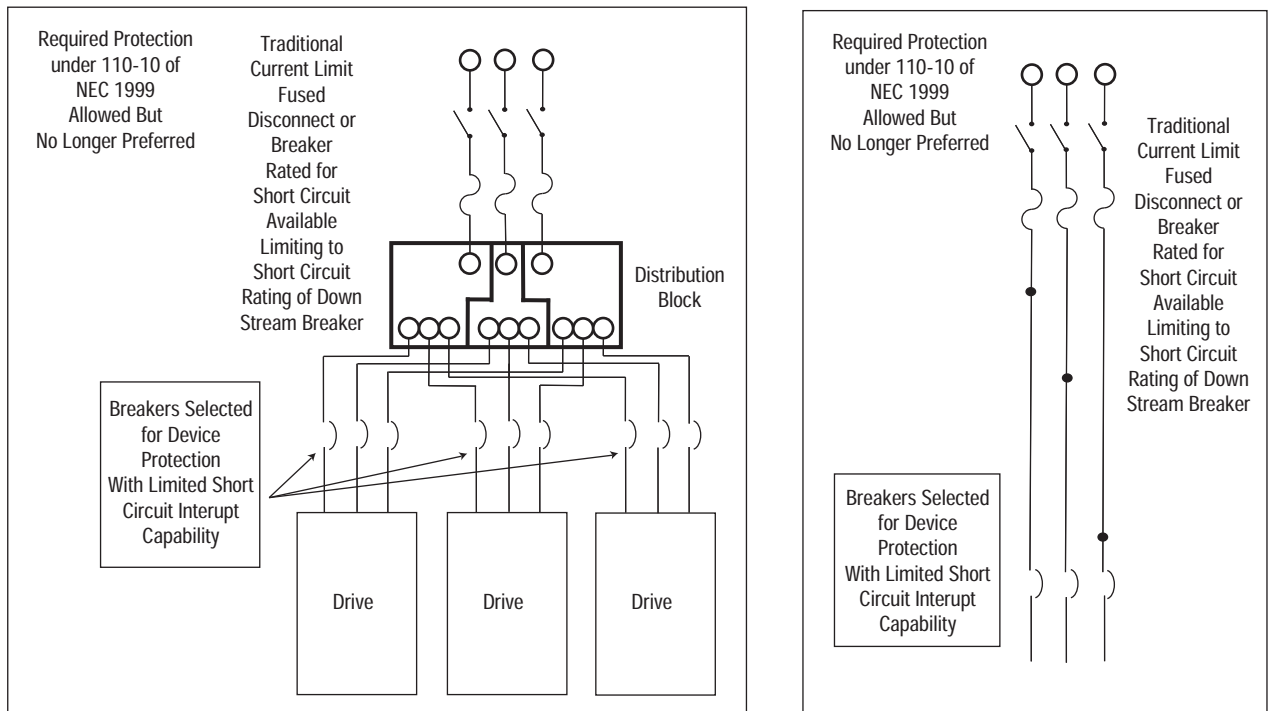


Figure A.2
Circuit Protection under NEC 1999 110-10 (allowed but no longer preferred)



To avoid nuisance tripping, refer to the following table and select the appropriate combination of system module, secondary circuit protection device, and axis modules.

Use System Module:	With Secondary Circuit Protection Device:	And Axis Module Combination:
1394-SJT05-x	1492-CB3-H300	Any combination of AM03 and AM04 up to 4 axis modules. Any combination of AM03, AM04, and AM07 where no more than two AM07s are being used. Use of other combinations of axis modules with this system module may result in nuisance tripping on power up due to a higher inrush current.
	A 1492 device is not recommended for this option.	Other combinations of AM07, AM50, and AM75s. Some local electrical codes require that the circuit breaker rating not exceed 400% of the full load device current. The inrush current draw of the 1394 in some combinations exceeds the 30A breaker and will result in nuisance tripping.
1394-SJT10-x	1492-CB3-H500	All
1394-SJT22-x	1492-CB3-H600	All

External Shunt Resistor Kit for 5 and 10 kW Systems

The table below shows the ratings for the external (optional) shunt resistor.

Catalog Number	Ratings	Shipping Weight	Resistance
1394-SR10A	1400W continuous, 40,000W peak (two second maximum on time)	4.99 kg (11 lb)	16 Ohms

Important: Replace the fuse only with a Brush (Bussmann) 700V 40A fuse (FWP40A14F), which is used in place of a Brush (Bussmann) 700V 20A fuse (P/N XL70F20).

1394 Shunt Module for the 22 kW System

The table below shows the ratings for the 1394 shunt module for the 22 kW system module.

Catalog Number	Series Letter	Ratings	Shipping Weight	Resistance	Agency Certifications
1394-SR9A	B	300W continuous, 160,000 W peak, module (no fan)	3.63 kg (8 lb)	4 Ohms	For all applicable directives: <ul style="list-style-type: none"> • UL Listed (file #E59272) • CUL Listed • CE marked
1394-SR9AF	B	900W continuous, 160,000 W peak, module (no fan)	3.63 kg (8 lb)		
1394-SR36A	B	1800W Continuous, 160,000 W peak, module (no fan)	8.6 kg (19.0 lb)		
1394-SR36AF	B	3600W continuous, 160,000 W peak, fan-cooled module	9.0 kg (20.0 lb)		

Allen-Bradley 1394-SJT05-A

Refer to the following table for fuse replacement information.

If your 1394-SR9A, -SR9AF, -SR36A, and -SR36AF shunt module:	You need a:
Has the UL mark	Bussmann 600V DC 50A fuse (FWP50A14F) or equivalent.
Does not have the UL mark	Bussmann 600V DC 40A fuse (170N2013) or equivalent.

Environmental Specifications

Mount the 1394 in an enclosure that is clean and dry [IP55 protection rating minimum (IEC publication 529)]. For enclosures ventilated with ambient air, be sure to have appropriate filtering to protect against contamination. Keep the ambient air temperature between 0° and 50° C (32° and 122° F) and the humidity between 5% and 95%, non-condensing.

The 1394 can operate at elevations to 1000 meters (3300 ft) without derating, however, the continuous current rating must be derated by 3% for each additional 300 m (1000 ft) up to 3000 m (10,000 ft). Consult with your local Allen-Bradley Sales Representative prior to operating at over 3000 m (10,000 ft).

Refer to the table below for 1394 shock and vibration specifications.

Mode	Maximum Shock	Maximum Vibration
Operating	15g	1g
Non-operating	30g	2.5g

Power Dissipation

The power dissipation characteristics of the 1394 system and axis modules are provided below (use for 480V or 380V input).

Important: Use the power dissipation figures shown below to calculate cumulative system heat dissipation to ensure that the ambient temperature inside the enclosure does not exceed 50° C (122° F). To calculate total power dissipation, add the dissipation of the system module to the dissipation of the axis module(s).

System Modules

The power dissipation (in watts) of the system module types is shown below.

% of Rated Power Output	Power Dissipation (in watts)		
	1394-SJT05-x	1394-SJT10-x	1394-SJT22-x
20	66	70	100
40	70	77	150
60	73	84	200
80	77	81	250
100	80	98	300

Axis Modules

The power dissipation (in watts) of the axis modules is shown below:

% of Rated Power Output	Power Dissipation (in watts)								
	Total					Inside Cabinet		Outside Cabinet	
	AM03	AM04	AM07	AM50 ¹ and AM50-IH ²	AM75 ¹ and AM75-IH ²	AM50 ¹	AM75 ¹	AM50 ¹	AM75 ¹
20	24	27	33	56	85	18	18	38	67
40	30	36	48	95	145	18	18	77	127
60	36	45	63	139	212	18	18	138	194
80	42	54	78	183	279	18	18	165	261
100	48	63	93	227	346	18	18	209	324

¹ The AM50/75 are designed to mount with the rear heat sink extended outside the customer-supplied enclosure. If the modules are mounted entirely inside the customer supplied enclosure, the full power dissipation is inside the cabinet.

² The AM50/75-IH are designed to mount entirely inside the customer-supplied enclosure.

Allen-Bradley 1394-SJT05-A

DC Link Module

The power dissipation for the 1394-DCLM is shown below.

The:	For the 1394-DCLM is:
Power dissipation	4.225 W maximum

Drive Interface Module

The power dissipation for the 1394-DIM is shown below.

The:	For the 1394-DIM is:
Power dissipation	30 W maximum

Internal Shunt Resistor for the 5 and 10 kW System (standard)

When the shunt resistor inside 1394-SJT05 and 1394-SJT10 system module is active, some additional power will be dissipated at the system module. Its maximum dissipation is 200W. Most applications will use less than 10% of this capacity.

The:	Is:
Rating of the internal shunt resistor	200W continuous, 40,000W peak (two second maximum on time)
Resistance of the internal shunt resistor	16 ohms

Communication Specifications

The communication specifications are listed in the tables starting below.

Encoder Input Specifications

The table below lists the encoder input specifications for the system module (1394-SJTxx-C-xx, -T-xx).

The:	Is:
Number of encoder inputs	4 (axis 0, 1, 2, and 3)
Type of encoder input	Incremental AB quadrature; optically isolated, differential with marker channel
Encoder interface IC	AM26LS32 or equivalent
Compatible encoder types	Differential, TTL-level (5V DC) line driver outputs, with or without marker
Decode modes	4 times quadrature, step/direction, count up/count down
Maximum encoder frequency	4,000,000 counts per second (4 MHz). This is equivalent to a channel frequency of 1 MHz in 4x quadrature decode mode.
Input impedance	7 kohms minimum (each input)
Encoder power	5V DC @ 1A, user supplied

Dedicated Discrete I/O Specifications

The table below lists the dedicated discrete I/O specifications for the system module (1394-SJTxx-C-xx, -T-xx).

The:	Is:
Number of dedicated discrete inputs	16 (4 each for axis 0, 1, 2, and 3)
Dedicated discrete input functions	Home limit switch, positive overtravel limit switch, negative overtravel limit switch, position registration, and thermal fault.
Input type	Optically isolated
Operating voltage	24V DC, 28V DC maximum or 5V DC nominal; 10V DC maximum for position registration inputs
Input On current	12 mA per input (nominal); 2.5 mA for position registration inputs
Input impedance	2 kohms (resistive) per input; 8.8 kohms (resistive) for 24 V position registration inputs.
Input response time	5 ms maximum; 1 μ s maximum for position registration inputs

Serial I/O Specifications

The table below lists the dedicated serial I/O specifications for the system module (1394-SJTxx-C-xx, -T-xx).

The:	Is:
Number of serial channels	2 (serial port A and serial port B)
Channel type	Optically isolated RS-232 or RS-422; each channel individually configured via internal switch
Information code	ASCII
Baud rate	User-selectable up to 128 kbaud (rs-422); 115.2 kbaud (RS-232)
Number of start bits	One
Number of stop bits	One
Word length	8 bits (7 data bits plus 1 parity bit)
Parity	Space parity transmitted; receive parity ignored (may be mark, space, even, or odd)
Duplex	Full or half (user-selectable)
Data synchronization	XON (control-q)/XOFF (control-s)
Front panel connectors	IBM-PC/AT compatible 9-pin D-type female
RS-422 termination	User-selectable 220 ohm resistor via internal switch

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DH-485 Specifications

The table below lists the DH-485 specifications for the system module (1394-SJTxx-C-xx, -T-xx).

The:	Is:
Number of DH-485 channels	One; replaces serial port B when used
Channel type	Optically isolated half-duplex RS-485
Baud rate	9,600 or 19.2 kbaud (user-selectable)
Front panel connectors	Two RJ-45 jacks (+24 V is not provided)
RS-485	User-selectable 220 ohms resistor via internal switch
Node address	User-selectable between 0 and 31 inclusive
Node type	Token-passing master
Accessible data type	<ul style="list-style-type: none"> • One binary file (B3) for up to 16,384 bits • One integer file (N7) for up to 1,024 16-bit values • One floating point file (F8) for up to 512 32-bit values • One ASCII string file (A) for up to 2,048 characters • Nine user-configured files; each can be individually configured as any of the above types or as a BCD file for floating point simulation

Flex I/O Specifications

The table below lists the Flex I/O specifications for the system module (1394-SJTxx-C-xx, -T-xx).

The:	Is:
Maximum number of Flex I/O modules	8
Compatible modules	<ul style="list-style-type: none"> • 1794-IB16; 16 24V DC discrete inputs • 1794-IA8; 8 115V AC discrete inputs • 1794-IE8; 8 current/voltage analog inputs • 1794-OB16; 16 24V DC discrete outputs • 1794-OA8; 8 115V AC discrete outputs • 1794-OE4; 4 current/voltage analog outputs • 1794-IE4XOE2; 4 current/voltage analog inputs and 2 current/voltage analog outputs • 1794-IB10XOB6; discrete combination module • 1794-OW8 relay output module • 1794-IF4I isolated analog input module
Interface	Direct; no 1794-ASB or other adapter required

GMC System Specifications

The table below lists the specifications for the GMC system module (1394-SJTxx-C-xx, -T-xx).

The:	Is:
Servo loop sample and update rate	250 Hz to 2 kHz for 4 axes
Maximum feedback frequency	4 MHz (4,000,000 feedback counts per second)
Absolute position range	± 1,000,000 feedback counts for linear axes; infinite number for rotary axes
Absolute position resolution	15 position unit digits or 32 feedback count bits, whichever is less
Speed range	0.00001 feedback counts per servo update to 4,000,000 feedback counts per second
Speed resolution	15 position unit digits or 15 feedback count bits, whichever is less
Acceleration/deceleration range	0.00001 feedback counts per servo update to 4,000,000 feedback counts per second
Acceleration/deceleration resolution	15 position unit digits or 15 feedback count bits, whichever is less
Electronic gearing gear ratio range	0.00001:1 to 9.99999:1 (slave counts:master counts)
Electronic gearing gear ratio resolution	8 position unit digits or 32 feedback count bits
Servo gain resolution	32-bit floating point
Servo output limit range	0 to 100%
Servo gain units	P = proportional gain (counts per millisecond/error count) I = integral gain (counts per millisecond/error count) V = velocity gain (millivolts/counts per millisecond) F = feedforward gain (counts per millisecond/ counts per millisecond)

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Remote I/O Adapter Specifications

The table below lists the remote I/O adapter specifications for the system module (1394-SJTxx-C-RL and -T-RL).

The:	Is:			
Baud rate	57.6 k, 115.2 k, or 230.4 k (user-selectable)			
Rack address	User-selectable between 0 and 31 decimal			
Rack width	User-selectable in quarter-rack increments (1/4, 1/2, 3/4, or full)			
Transfer type	I/O Group			
Block	0 2 4 6	0 2 4	0 2	0
Discrete	1 3 5 7	1 3 5	1 3	1
Discrete		2 4 6	2 4	2
Discrete		3 5 7	3 5	3
Discrete			4 6	4
Discrete			5 7	5
Discrete				6
Discrete				7
Starting I/O group	0 2 4 6	0 2 4	0 2	0
Rack width	1/4	1/2	3/4	full
Number of discrete I/O bits	<ul style="list-style-type: none"> • 12 dedicated inputs • 12 dedicated outputs • 1/4 rack width with 4 inputs and 4 outputs • 1/2 rack width with 36 inputs and 36 outputs • 3/4 rack width with 68 inputs and 68 outputs • Full rack width with 100 inputs and 100 outputs 			
Maximum block transfer length	64 words (128 bytes)			
Block transfer data types	<ul style="list-style-type: none"> • User variable values • Axis data parameter value • Axis data bit state • Master cam position point values • Master cam time point values • Slave cam position point values • Axis or system variable value 			
Block transfer data formats	<ul style="list-style-type: none"> • 32-bit (double-word) 2s compliment integer • 16-bit (single-word) 2s compliment integer • 32-bit (8-digit) signed BCD • 32-bit IEEE floating point • Word-swapped 32-bit (double-word) 2s compliment integer • Word-swapped 32-bit (8-digit) signed BCD • Word-swapped 32-bit IEEE floating-point 			

AxisLink Specifications

The table below lists the AxisLink specifications for the system module (1394-SJTxx-C-xx, -T-xx).

The:	Is:	
Baud rate	Standard and extended node configuration	One megabit per second
	Extended length configuration	500 kbits per second
Cable type	Standard and extended node configuration	Allen-Bradley 1770-CD RIO cable (Belden 9463 or equivalent)
	Extended length configuration	Belden 9182, Carol C8014, or equivalent
Cable length	Standard and extended node configuration	25 m (82 ft) maximum. 1 m (3 ft) minimum between controllers.
	Extended length configuration	125 m (410 ft) maximum. 1 m (3 ft) minimum between controllers.
Number of motion controllers	Standard and extended length configurations	8 maximum for a total of 32 possible axes
	Extended node configuration	16 maximum for a total of 64 possible axes
Addressing	Standard and extended length configurations	User-selectable address via rotary selector switch on front panel
	Extended node configuration	User-selectable address via GML
Number of virtual master axis	Standard configuration	4 maximum; 1 per motion controller. Any axis on any motion controller can be a virtual master axis to any other motion controller. Each motion controller can define a total of 2 separate axes on any other motion controllers as virtual master axes, but only one can be active any time. A total of 4 different axes can be active as virtual master axes at any time.
	Extended length and extended node configurations	2 maximum; 1 per motion controller. Any axis on any motion controller can be a virtual master axis to any other motion controller. Each motion controller can define a total of 2 separate axes on any other motion controllers as virtual master axes, but only one can be active any time. A total of two different axes can be active as virtual master axes at any time.
Type of virtual master axes	All configurations	Command and actual. Each virtual master axis may be defined to report its command or actual position.
Slave axes	Standard and extended length configuration	31 maximum total per virtual master axis (3 local + 4 x 7 other motion controllers = 31).
	Extended node configuration	63 maximum total per virtual master axis (3 local + 4 x 15 other motion controllers = 63).
Number of discrete I/O	All configurations	112 inputs maximum and 16 user-defined outputs per motion controller. Any motion controller can read 16 discrete outputs of any other motion controller, giving a maximum of $7 \times 16 = 112$ discrete inputs per motion controller. For extended node configuration, discrete I/O can still only be obtained from a maximum of 7 other controllers (112 inputs maximum), not from all 15 other controllers available in a 16 node maximum extended node configuration.
Discrete I/O response	All configurations	≤ 1 millisecond

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Dimensions

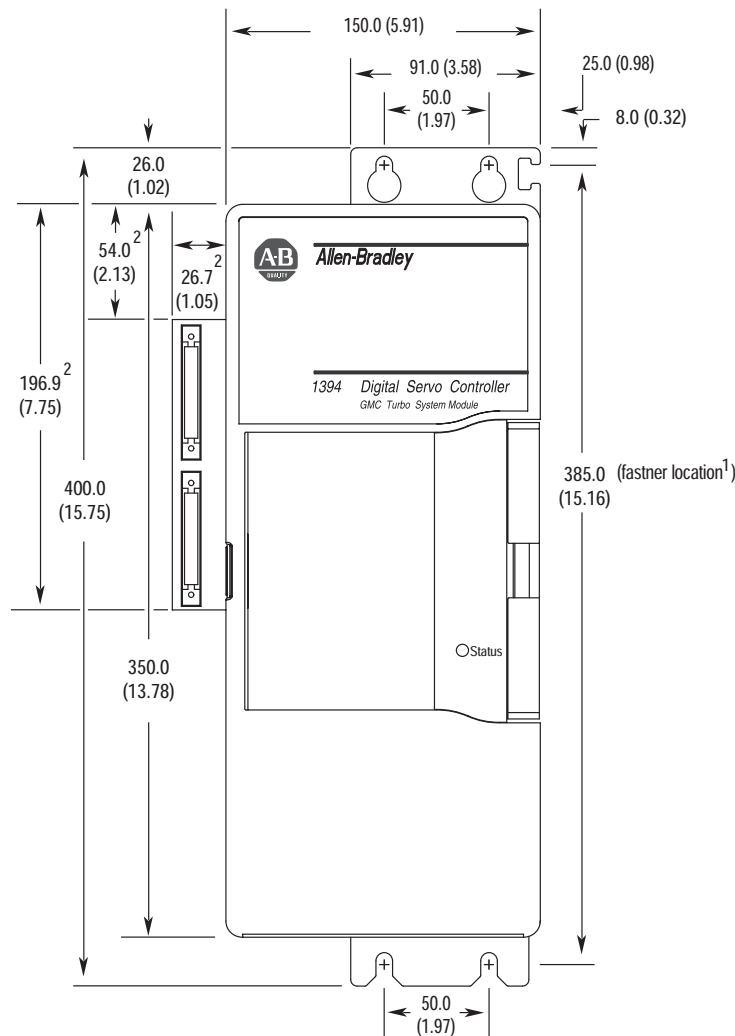
Within this section, you will find dimensions for:

- The 1394 system module
- Axis modules (including 1394-DIM and 1394-DCLM)
- Filters
- External shunt modules
- Motors

1394 System Module Dimensions

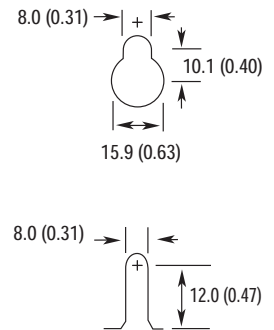
Figure A.3

1394-SJT05, 1394-SJT10 and 1394-SJT22 System Module



Dimensions are in millimeters and (inches)
Depth = 280 (11.02)

Mounting Hole Detail



All Slots Accept M6 or 1/4-20 Mtg. Screws

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

² Dimensions apply to 1394-SJTxx-T (Turbo) system module only.



ATTENTION: If you are mounting a 1394-SJT-T system module, you will need an additional 101.6 mm (4 in.) of clearance to the left of the system module to allow for connecting the SLC interface cable (1746-C7 or -C9).

Axis Module Dimensions

Figure A.4
1394-AM03, AM04, AM07, -DIM, and -DCLM Front View

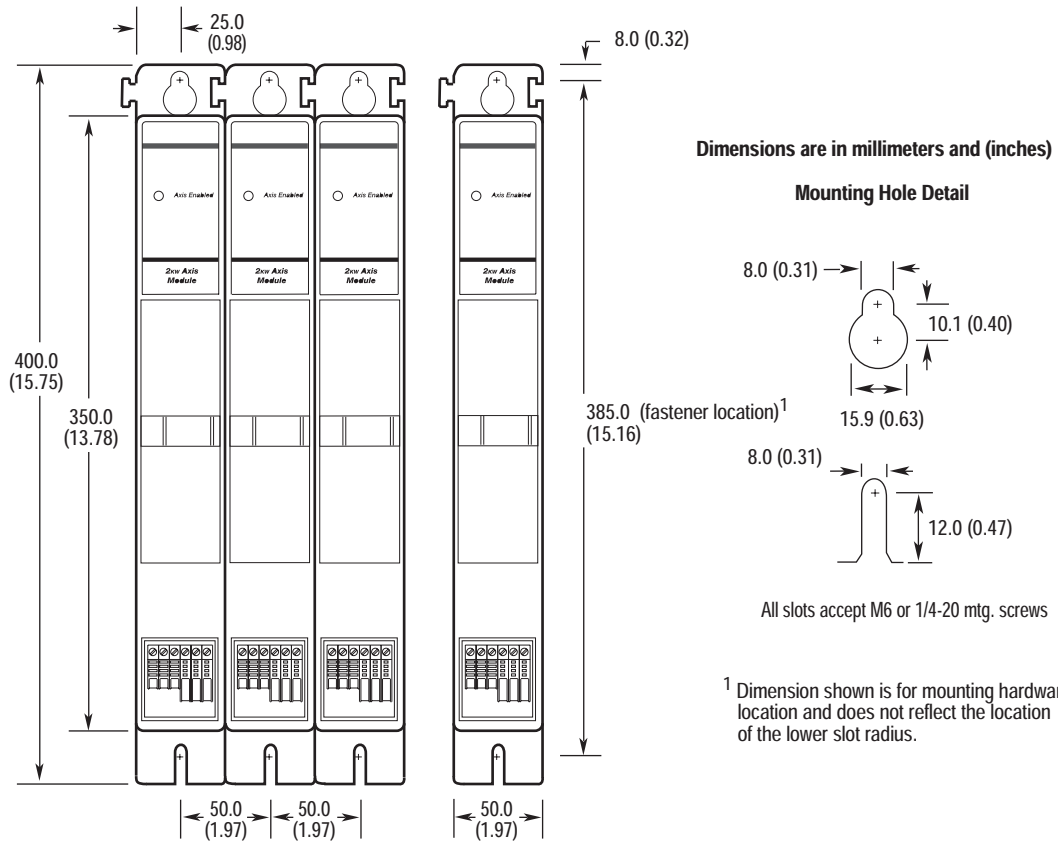
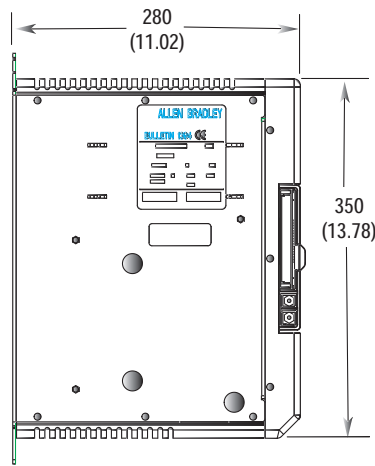


Figure A.5
1394-AM03, AM04, AM07, -DIM, and -DCLM Side View



Dimensions are in millimeters and (inches)

Allen-Bradley 1394-SJT05-A

Figure A.6
1394-AM50, -AM50-IH, -AM75, and -AM75-IH Axis Module Front View

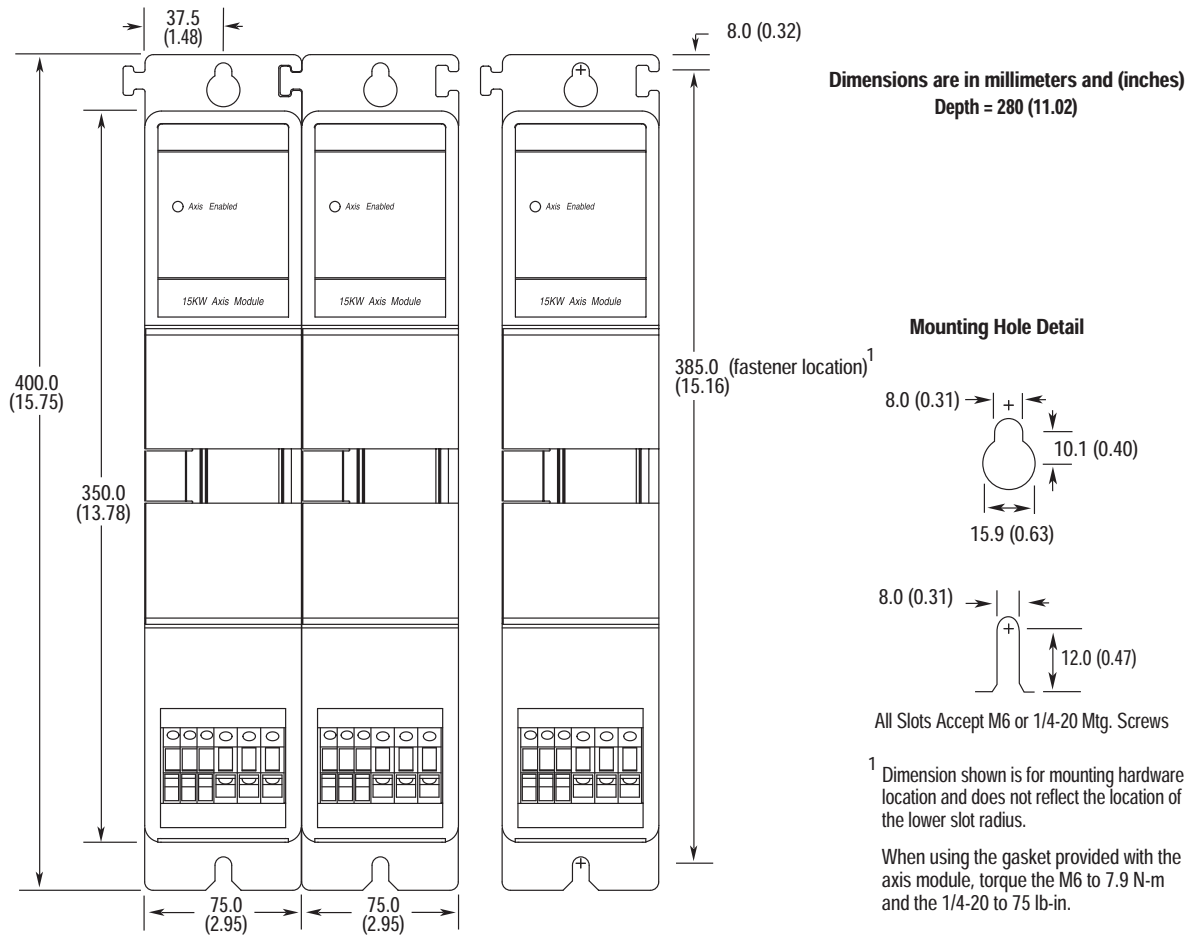


Figure A.7
1394-AM50 and AM75 Axis Module Side View

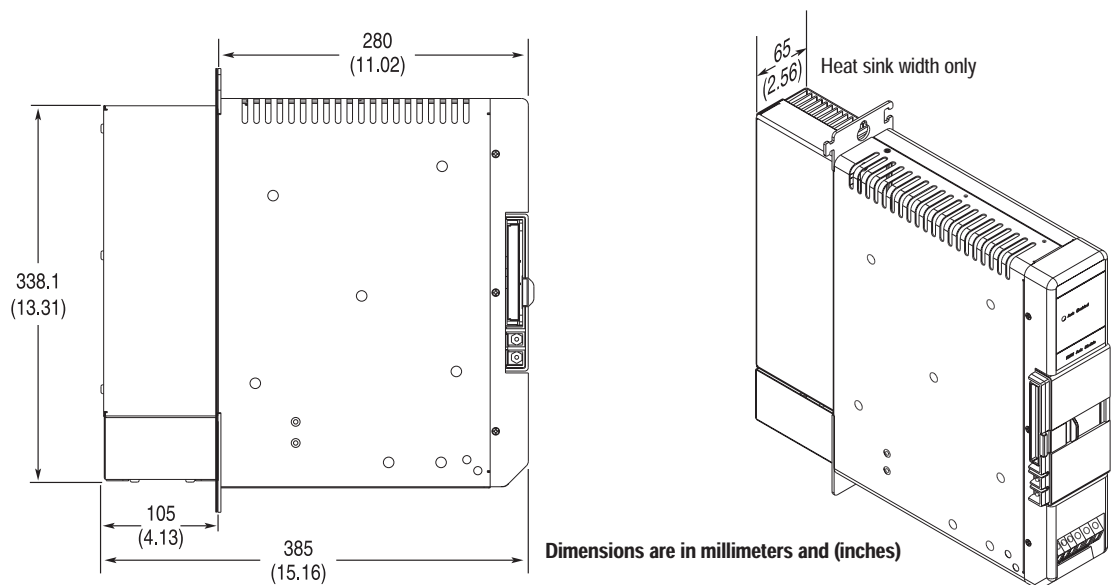
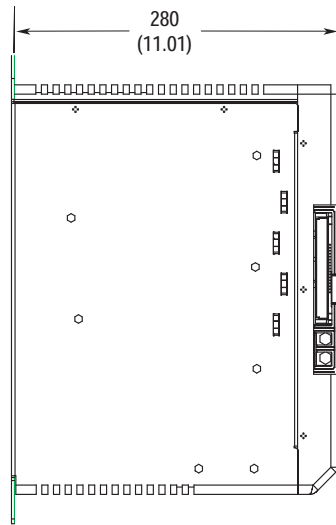


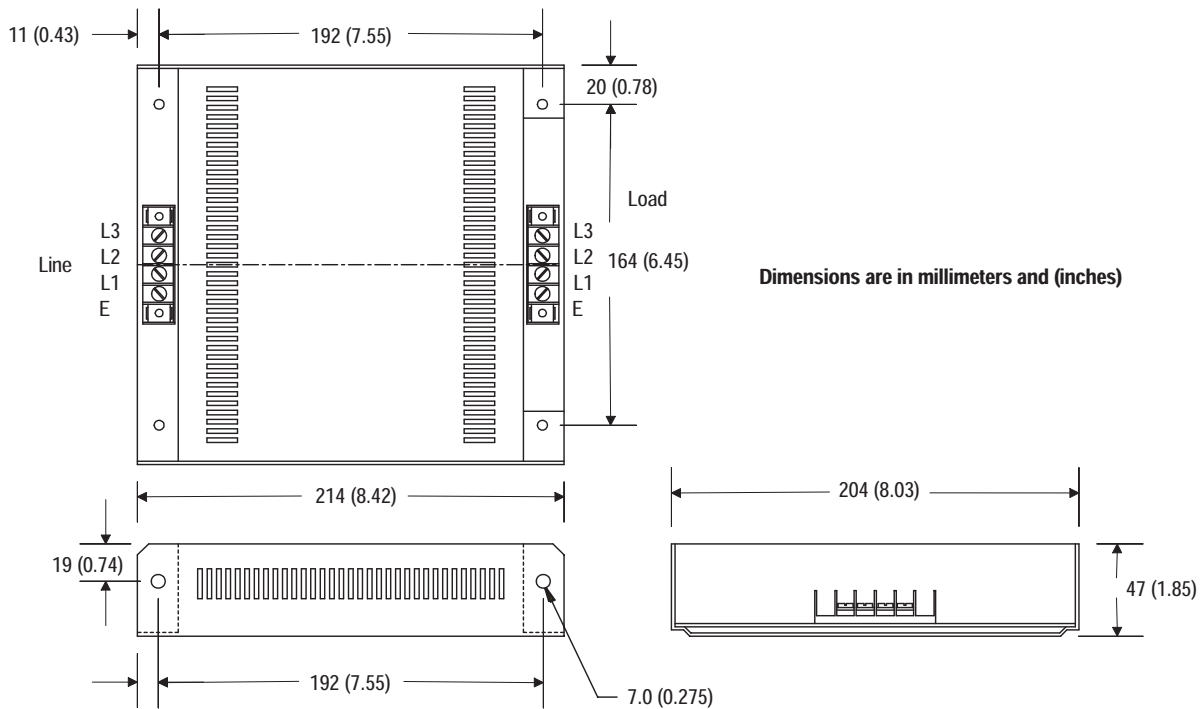
Figure A.8
1394-AM50-IH and -AM75-IH Axis Module Side View



Dimensions are in millimeters and (inches)

Filter Dimensions

Figure A.9
SP-74102-006-01 Filter Dimensions



Dimensions are in millimeters and (inches)

Allen-Bradley 1394-SJT05-A

Figure A.10
SP-74102-006-02 Filter Dimensions

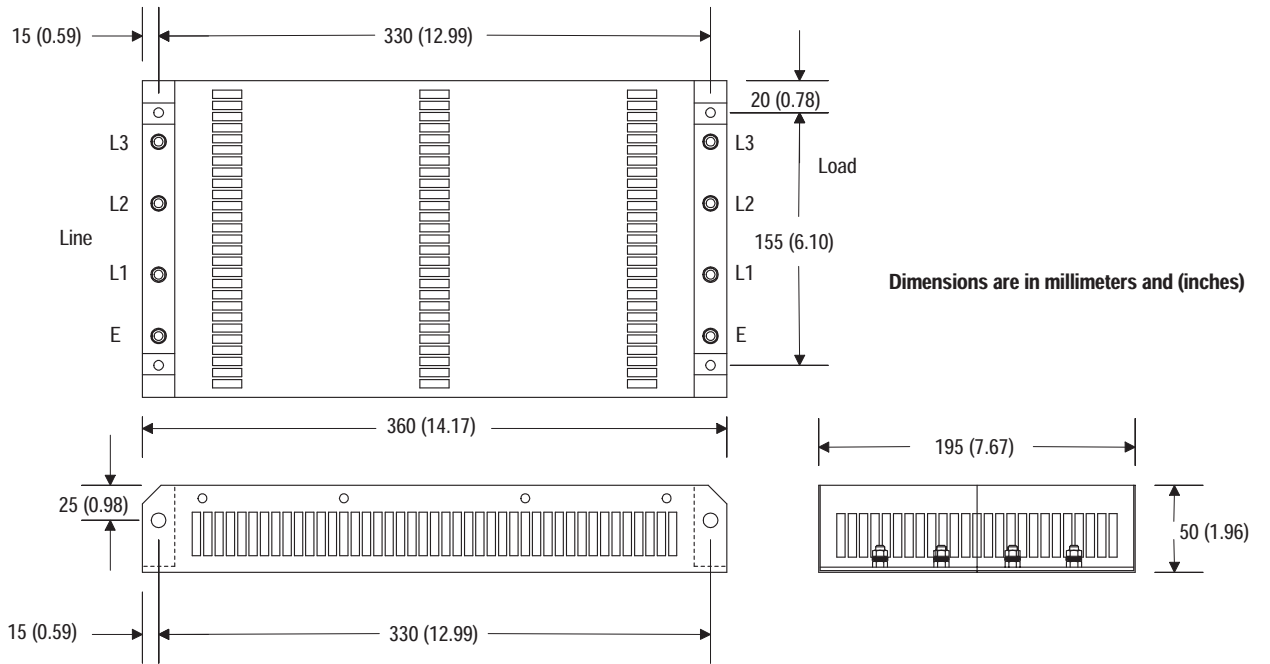
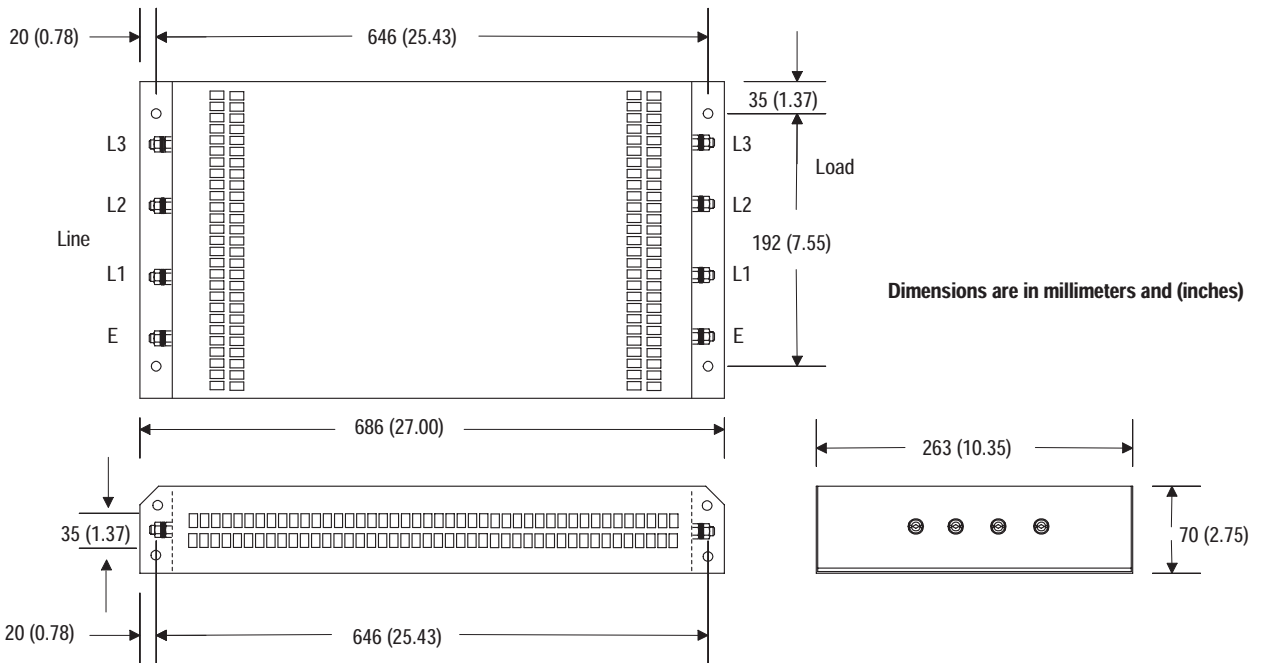


Figure A.11
SP-74102-006-03 Filter Dimensions



External Shunt Dimensions



ATTENTION: To avoid the hazard of shock or burn and ignition of flammable material, provide appropriate guarding. The external shunt resistors and module enclosures can reach temperatures up to 350° C (662° F). Install per local codes.

Figure A.12
1394-SR10A Shunt Resistor Kit

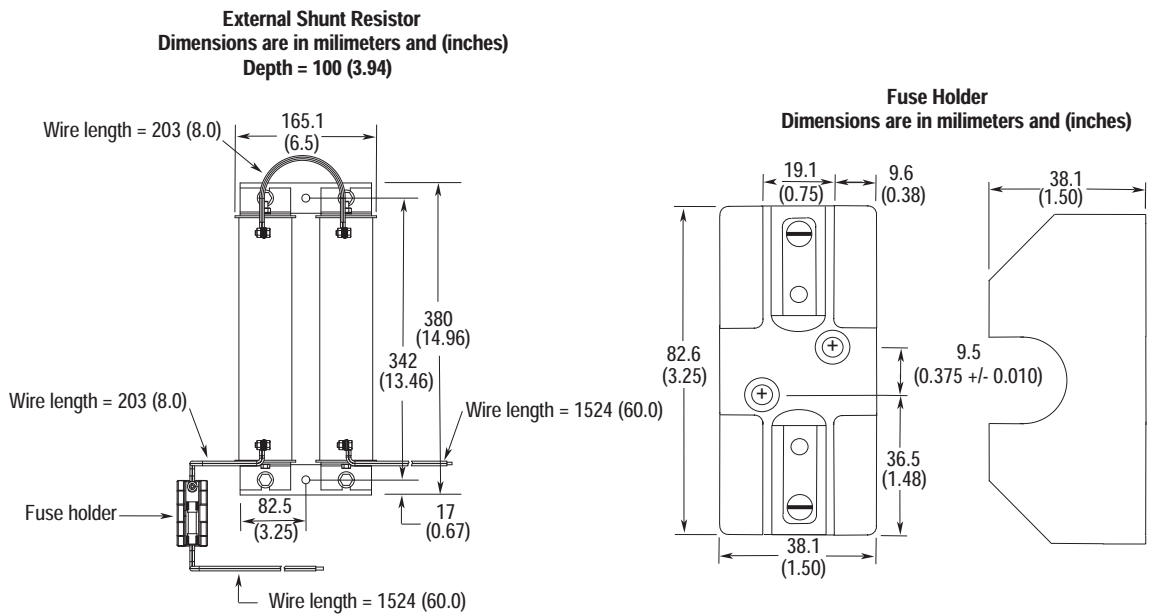
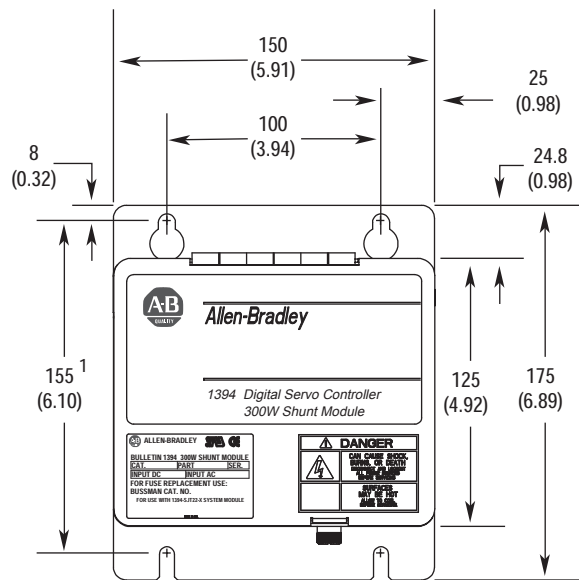
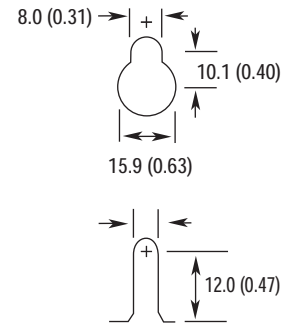


Figure A.13
1394-SR-9A and -9AF Front View Dimensions



Dimensions are in millimeters and (inches)
Depth = 280 (11.02)

Mounting Hole Detail



All Slots Accept M6 or 1/4-20 Mtg. Screws

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

Figure A.14
1394-SR-9A and -9AF Side View Dimensions

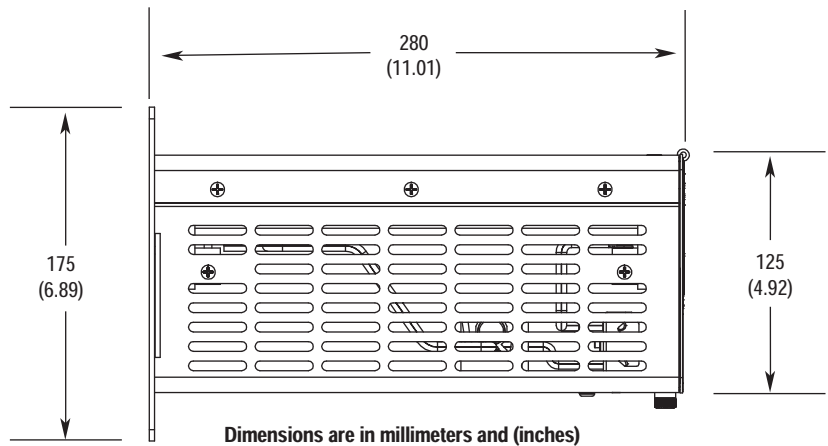


Figure A.15
1394-SR-36A and -36AF Front View Dimensions

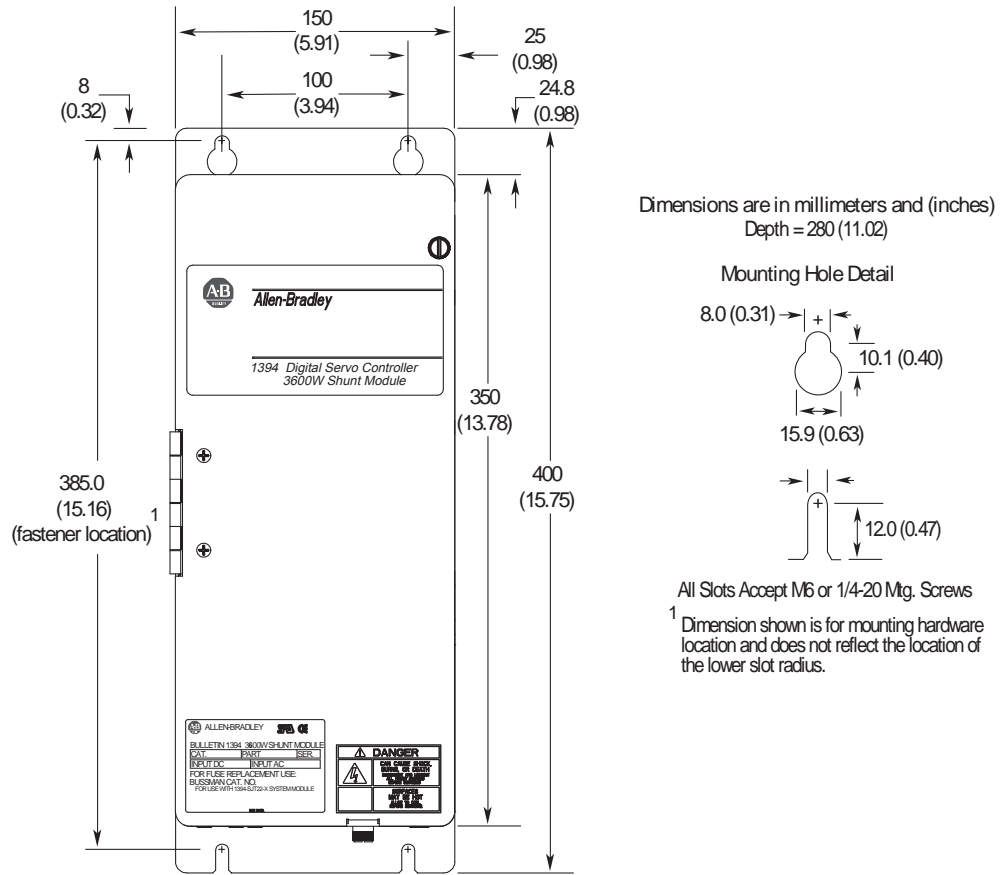
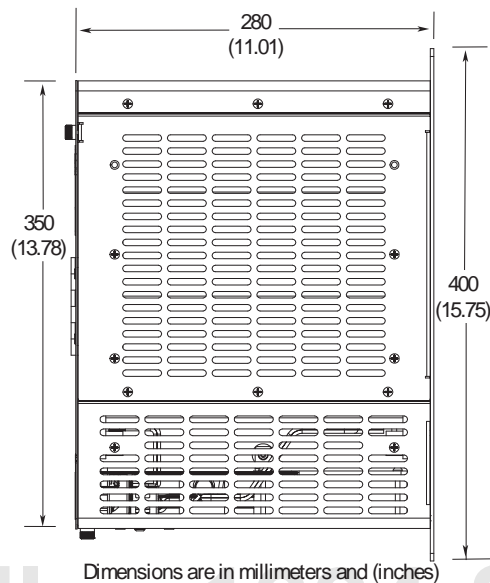


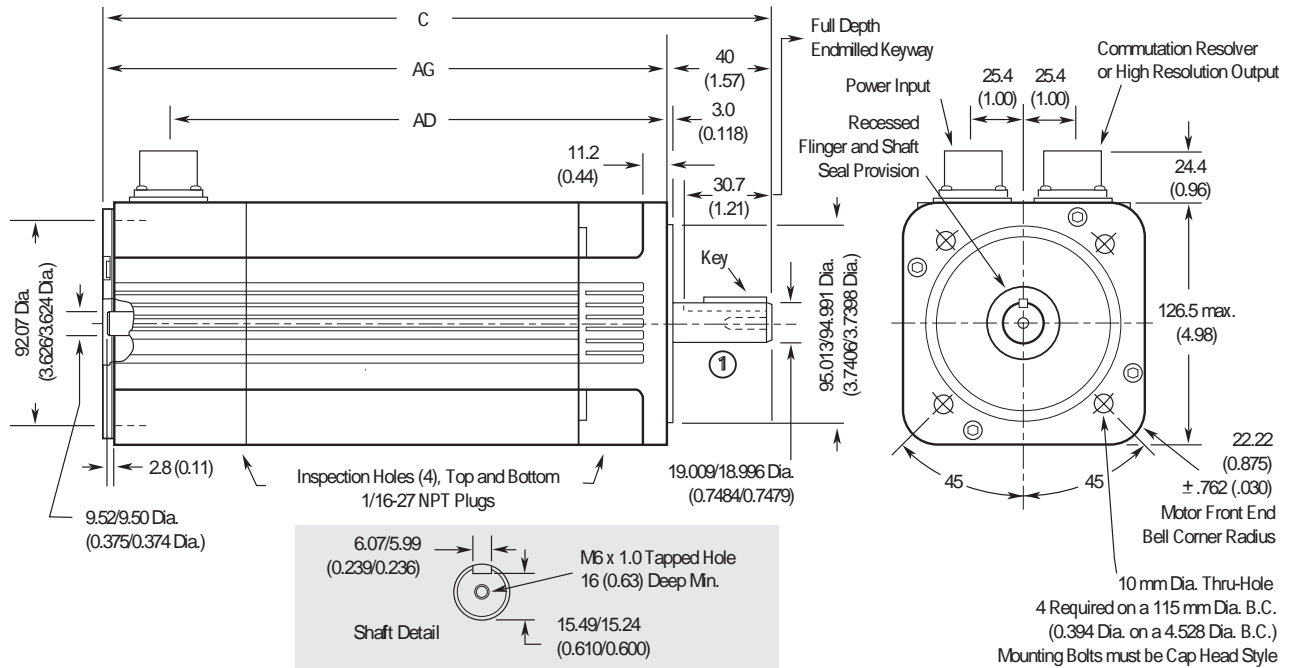
Figure A.16
1394-SR-36A and -36AF Side View Dimensions



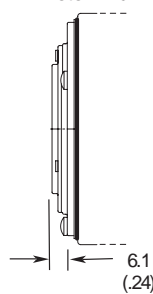
Allen-Bradley 1394-SJT05-A

Motor Dimensions

Figure A.17
1326AB-B4 Torque Plus Series (Resolver and High Resolution Feedback)



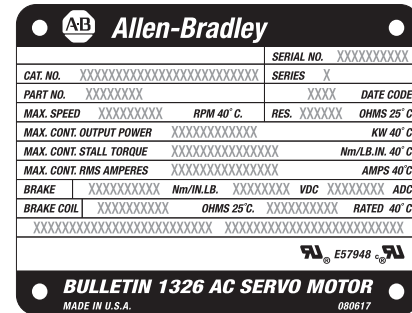
High-Resolution Motor End



① Shaft and Pilot Tolerances

- Maximum Shaft Runout 0.04 (0.0016) T.I.R
- Shaft Endplay 0.127 (0.005)
- Maximum Pilot Eccentricity 0.08 (0.0032) T.I.R
- Maximum Face Runout 0.08 (0.0032) T.I.R

Name Plate Detail



Flange Mount in millimeters and (inches)

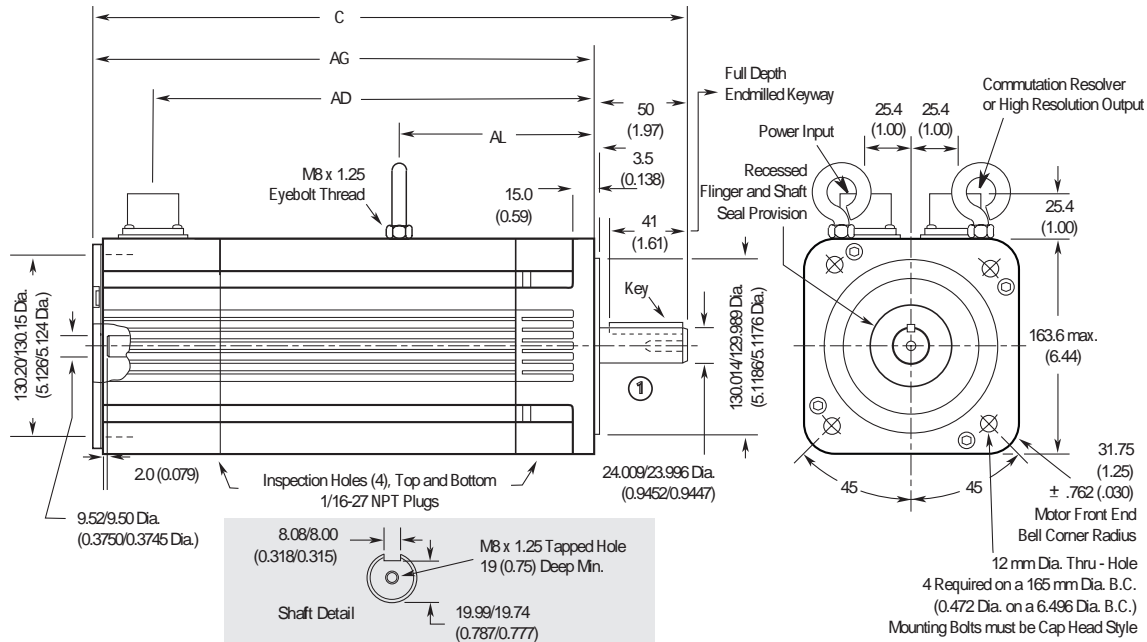
Feedback	Catalog number	Description ^{1,2}	AD	AG	C	Key	End milled keyway (full depth)
Resolver	1326AB-B410x-21	without brake	201.7 (7.94)	235.7 (9.28)	275.6 (10.85)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.7 (1.21)
	1326AB-B420x-21	without brake	258.8 (10.19)	292.9 (11.53)	333.0 (13.11)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.7 (1.21)
	1326AB-B430x-21	without brake	328.7 (12.94)	362.7 (14.28)	402.8 (15.86)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.7 (1.21)
High-Resolution	1326AB-B410x-21M/S	without brake	201.7 (7.94)	241.8 (9.52)	281.7 (11.09)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.7 (1.21)
	1326AB-B420x-21M/S	without brake	258.8 (10.19)	299.0 (11.77)	338.8 (13.34)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.7 (1.21)
	1326AB-B430x-21M/S	without brake	328.7 (12.94)	368.8 (14.52)	408.7 (16.09)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.7 (1.21)

¹ If ordering a 1326AB-B4xxx-21-K4 with optional 24V DC, 8.1 N-m (72 lb-in.) brake, add 45 mm (1.75 in.) to AD, AG and C.

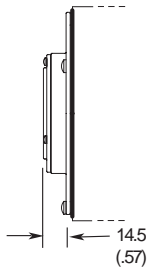
² If ordering a 1326AB-B4xxx-21-xK4L with optional 24V DC, 8.1 N-m (72 lb-in.) brake (IP67 rated), add 45 mm (1.75 in.) to AD, AG and C.

Dimensions are per NEMA Standards MG 7-2.4.1.3 and IEC 72-1. Shaft tolerance per DIN 42955, "N" tolerance.

Figure A.18
1326AB-B5 Torque Plus Series (Resolver and High Resolution Feedback)

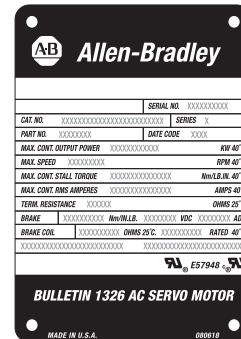


High-Resolution Motor End



① Shaft and Pilot Tolerances

- Maximum Shaft Runout 0.05 (0.002) T.I.R
- Shaft Endplay 0.127 (0.005)
- Maximum Pilot Eccentricity 0.10 (0.004) T.I.R
- Maximum Face Runout 0.10 (0.004) T.I.R



Flange Mount in millimeters and (inches)

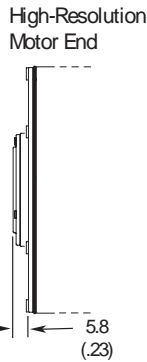
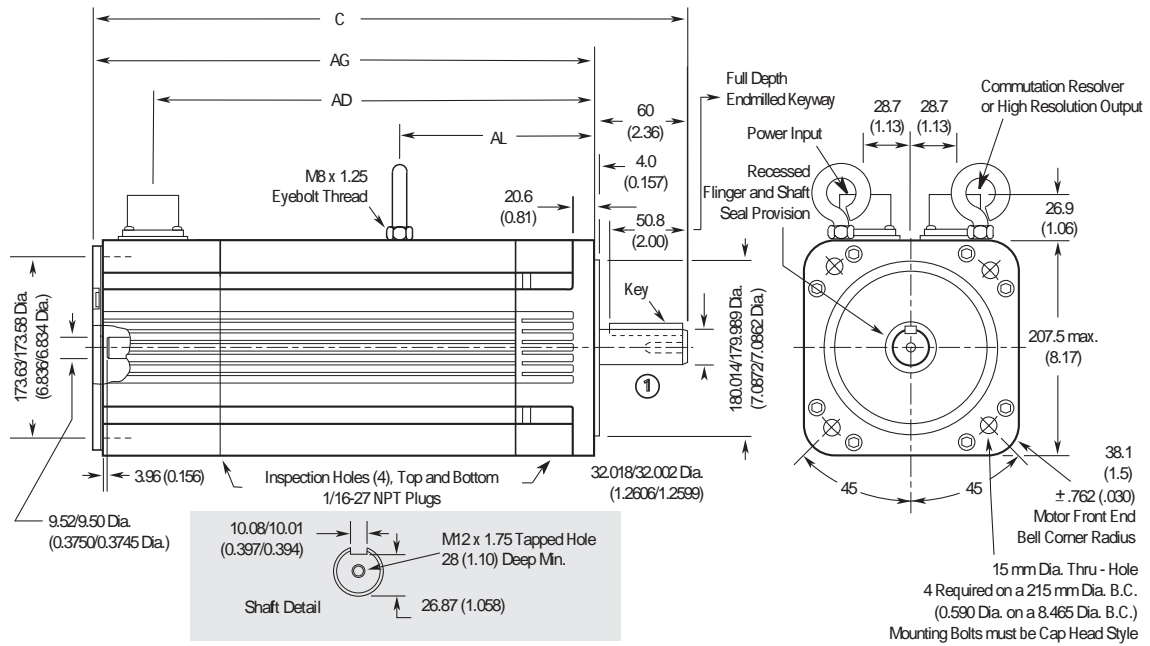
Feedback	Catalog number	Description ^{1,2}	AL	AD	AG	C	Key	End milled keyway (full depth)
Resolver	1326AB-B515x-21	without brake	N/A	244.1 (9.61)	276.6 (10.89)	326.6 (12.86)	8 x 7 x 40 (0.315x0.276x1.57)	41.0 (1.61)
	1326AB-B520x-21	without brake	N/A	282.2 (11.11)	314.7 (12.39)	364.7 (14.36)	8 x 7 x 40 (0.315x0.276x1.57)	41.0 (1.61)
	1326AB-B530x-21	without brake	187 (7.362) ^{1,2}	364.7 (14.36)	397.3 (15.64)	447.3 (17.61)	8 x 7 x 40 (0.315x0.276x1.57)	41.0 (1.61)
High-Resolution	1326AB-B515x-21M/S	without brake	N/A	244.1 (9.61)	291.1 (11.46)	341.1 (13.43)	8 x 7 x 40 (0.315x0.276x1.57)	41.0 (1.61)
	1326AB-B520x-21M/S	without brake	N/A	282.2 (11.11)	329.2 (12.96)	379.2 (14.93)	8 x 7 x 40 (0.315x0.276x1.57)	41.0 (1.61)
	1326AB-B530x-21M/S	without brake	187 (7.362) ^{1,2}	364.7 (14.36)	411.7 (16.21)	461.8 (18.18)	8 x 7 x 40 (0.315x0.276x1.57)	41.0 (1.61)

¹ If ordering a 1326AB-B5xxx-21-K5 with optional 24V DC, 13.6 N-m (120 lb-in.) brake, add 76.2 mm (3.0 in.) to AD, AG and C (38.1 mm (1.5 in.) to AL).

² If ordering a 1326AB-B5xxx-21-xK5L with optional 24V DC, 13.6 N-m (120 lb-in.) brake (IP67 rated), add 76.2 mm (3.0 in.) to AD, AG and C (38.1 mm (1.5 in.) to AL). Dimensions are per NEMA Standards MG 7-2.4.1.3 and IEC 72-1. Shaft tolerance per DIN 42955, "N" tolerance.

Allen-Bradley 1394-SJT05-A

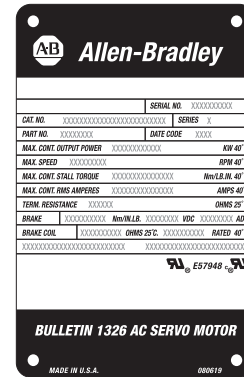
Figure A.19
1326AB-B7 Torque Plus Series (Resolver and High Resolution Feedback)



① Shaft and Pilot Tolerances

- Maximum Shaft Runout 0.05 (0.002) T.I.R
- Shaft Endplay 0.127 (0.005)
- Maximum Pilot Eccentricity 0.10 (0.004) T.I.R
- Maximum Face Runout 0.10 (0.004) T.I.R

Name Plate Detail



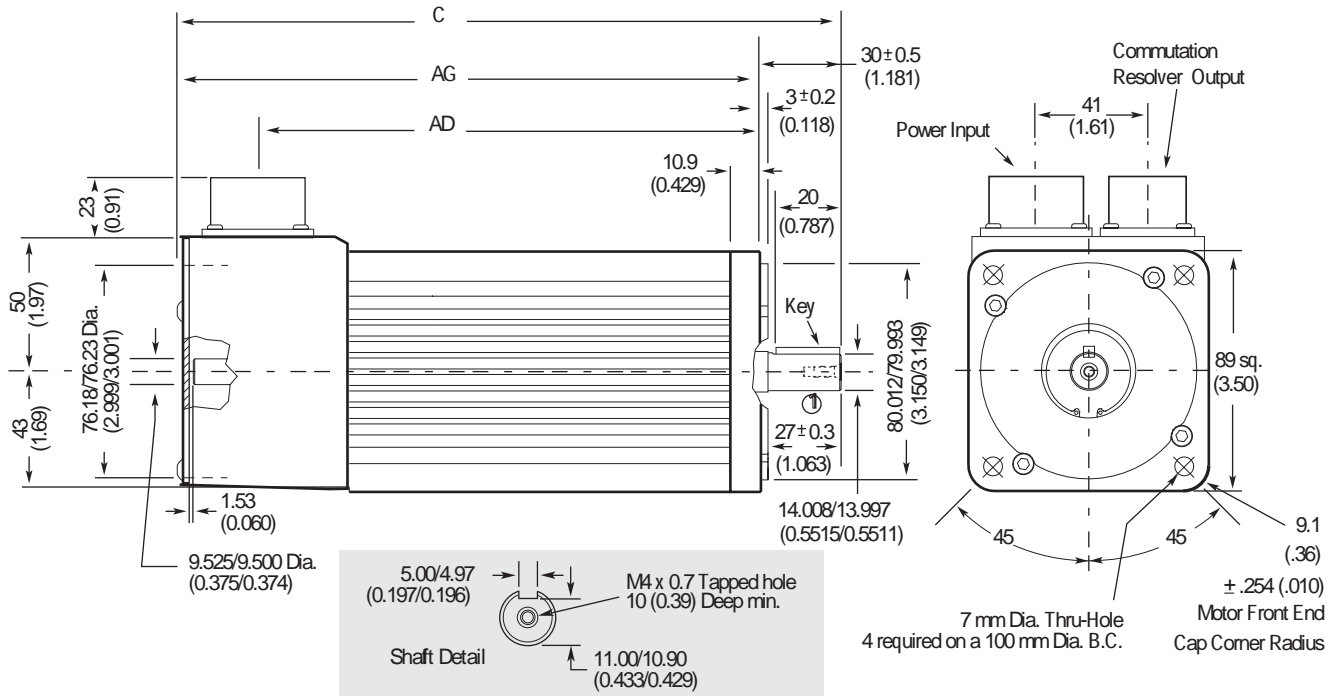
Flange Mount in millimeters and (inches)

Feedback	Catalog number	Description ^{1,2}	AL	AD	AG	C	Key	End milled keyway (full depth)
Resolver	1326AB-B720x-21	without brake	164.3 (6.468) ^{1,2}	324.6 (12.78)	366.0 (14.41)	426.0 (16.77)	10 x 8 x 50 (0.39 x 0.31 x 1.97)	50.8 (2.00)
	1326AB-B730x-21	without brake	208.7 (8.218) ^{1,2}	413.5 (16.28)	454.9 (17.91)	514.9 (20.27)	10 x 8 x 50 (0.39 x 0.31 x 1.97)	50.8 (2.00)
	1326AB-B740x-21	without brake	253.2 (9.968) ^{1,2}	502.4 (19.78)	543.8 (21.41)	603.8 (23.77)	10 x 8 x 50 (0.39 x 0.31 x 1.97)	50.8 (2.00)
High-Resolution	1326AB-B720x-21M/S	without brake	164.3 (6.468) ^{1,2}	324.6 (12.78)	371.9 (14.64)	431.8 (17.00)	10 x 8 x 50 (0.39 x 0.31 x 1.97)	50.8 (2.00)
	1326AB-B730x-21M/S	without brake	208.7 (8.218) ^{1,2}	413.5 (16.28)	460.8 (18.14)	520.7 (20.50)	10 x 8 x 50 (0.39 x 0.31 x 1.97)	50.8 (2.00)
	1326AB-B740x-21M/S	without brake	253.2 (9.968) ^{1,2}	502.4 (19.78)	549.7 (21.64)	609.6 (24.00)	10 x 8 x 50 (0.39 x 0.31 x 1.97)	50.8 (2.00)

¹ If ordering a 1326AB-B7xxx-21-K7 with an optional 24V DC, 45.1 N-m (400 lb-in.) brake, add 76.2 mm (3.0 in.) to AD, AG and C (38.1 mm (1.5) to AL).

² If ordering a 1326AB-B7xxx-21-xK7L with an optional 24V DC, 45.1 N-m (400 lb-in.) brake (IP67 rated), add 76.2 mm (3.0 in.) to AD, AG and C (38.1 mm (1.5) to AL). Dimensions are per NEMA Standards MG 7-2.4.1.3 and IEC 72-1. Shaft tolerance per DIN 42955, "N" tolerance.

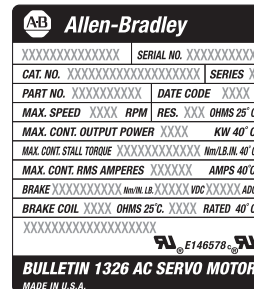
Figure A.20
1326AS-B3 Series Servo Motor



① Shaft and Pilot Tolerances

Shaft Runout	0.025 (0.001) T.I.R
Shaft Endplay	0.025 (0.001)
Pilot Eccentricity	0.08 (0.0032) T.I.R
Maximum Face Runout	0.08 (0.0032) T.I.R

Motor Name Plate



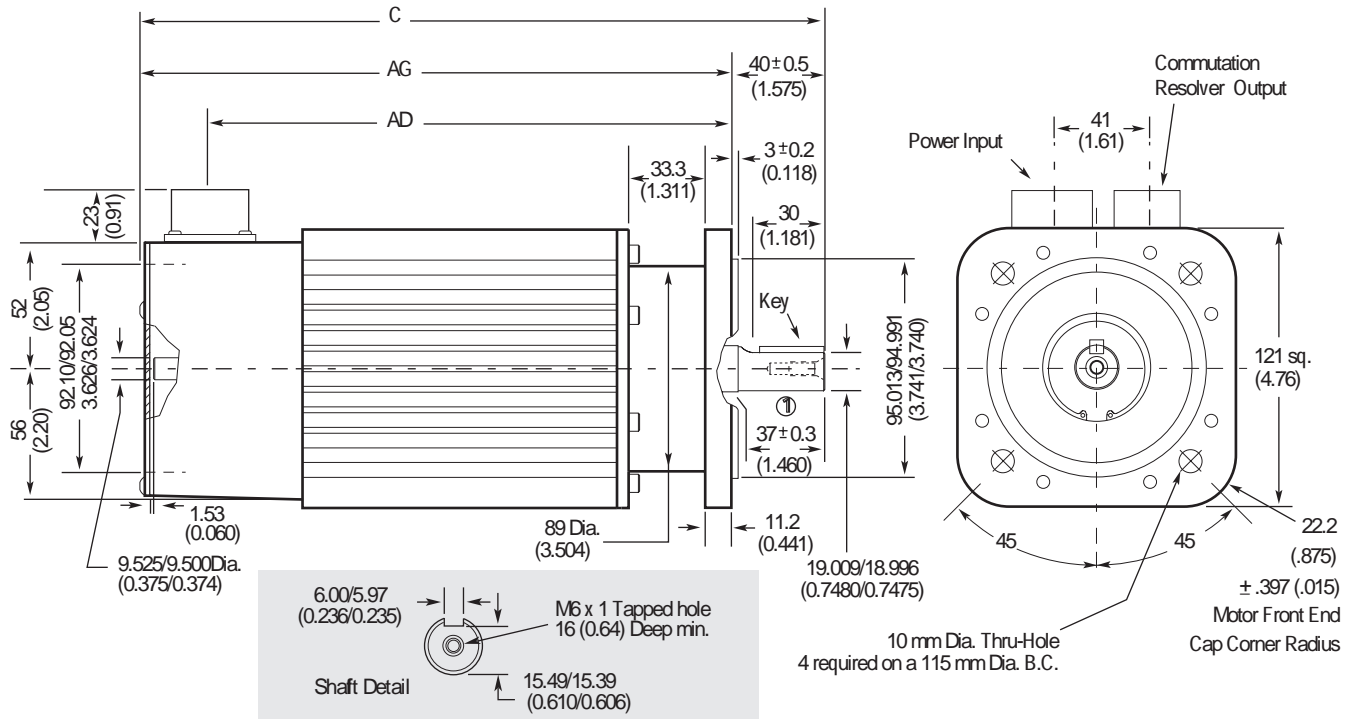
Flange Mount in millimeters and (inches)

Catalog number	Description ¹	AD	AG	C	Key	End milled keyway (full depth)
1326AS-B310x-21	without brake	135 (5.32)	165 (6.50)	195 (7.68)	5 x 5 x 20 (0.197 x 0.197 x 0.79)	20 (0.79)
1326AS-B330x-21	without brake	186 (7.32)	216 (8.50)	246 (9.68)	5 x 5 x 20 (0.197 x 0.197 x 0.79)	20 (0.79)

¹ If you are ordering a 1326AS-B3xxx-21-K3 with an optional 24V DC 2.26 N-m (20 lb-in.) brake, add 39 mm (1.54 in.) to AD, AG and C. Dimensions are per NEMA Standards MG 7-2.4.1.3 and IEC 72-1. Shaft and pilot tolerances are per DIN 42955, N tolerance.

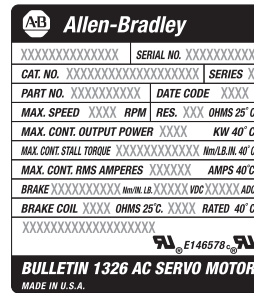
Allen-Bradley 1394-SJT05-A

Figure A.21
1326AS-B4 Series Servo Motor



- Ⓞ Shaft and Pilot Tolerances
- Shaft Runout 0.04 (0.0016) T.I.R
 - Shaft Endplay 0.025 (0.001)
 - Pilot Eccentricity 0.08 (0.0032) T.I.R
 - Maximum Face Runout 0.08 (0.0032) T.I.R

Motor Name Plate

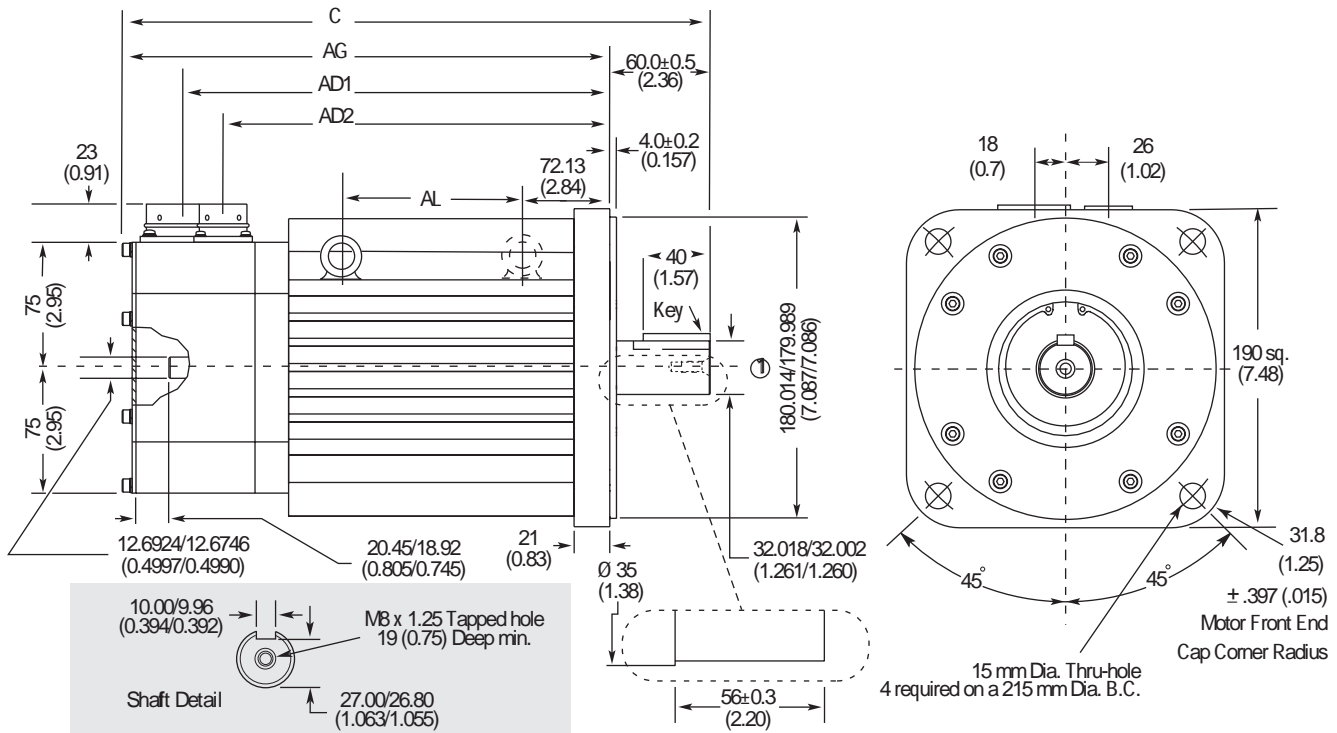


Flange Mount in millimeters and (inches)

Catalog number	Description ¹	AD	AG	C	Key	End milled keyway (full depth)
1326AS-B420x-21	without brake	208 (8.19)	238 (9.38)	278 (10.95)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.0 (1.18)
1326AS-B440x-21	without brake	259 (10.19)	289 (11.38)	329 (12.95)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.0 (1.18)
1326AS-B460x-21	without brake	310 (12.19)	340 (13.38)	380 (14.95)	6 x 6 x 30 (0.236 x 0.236 x 1.18)	30.0 (1.18)

¹ If you are ordering a 1326AS-B4xxx-21-K4 with an optional 24V DC 10.2 N-m (90 lb-in.) brake, add 46 mm (1.81 in.) to AD, AG and C. Dimensions are per NEMA Standards MG 7-2.4.1.3 and IEC 72-1. Shaft and pilot tolerances are per DIN 42955, N tolerance.

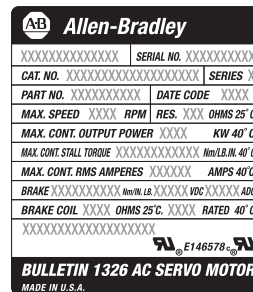
Figure A.22
1326AS-B6 Series Servo Motor



① Shaft and Pilot Tolerances

Shaft Runout	0.05 (0.002) T.I.R
Shaft Endplay	0.025 (0.001)
Pilot Eccentricity	0.10 (0.004) T.I.R
Maximum Face Runout	0.10 (0.004) T.I.R

Motor Name Plate



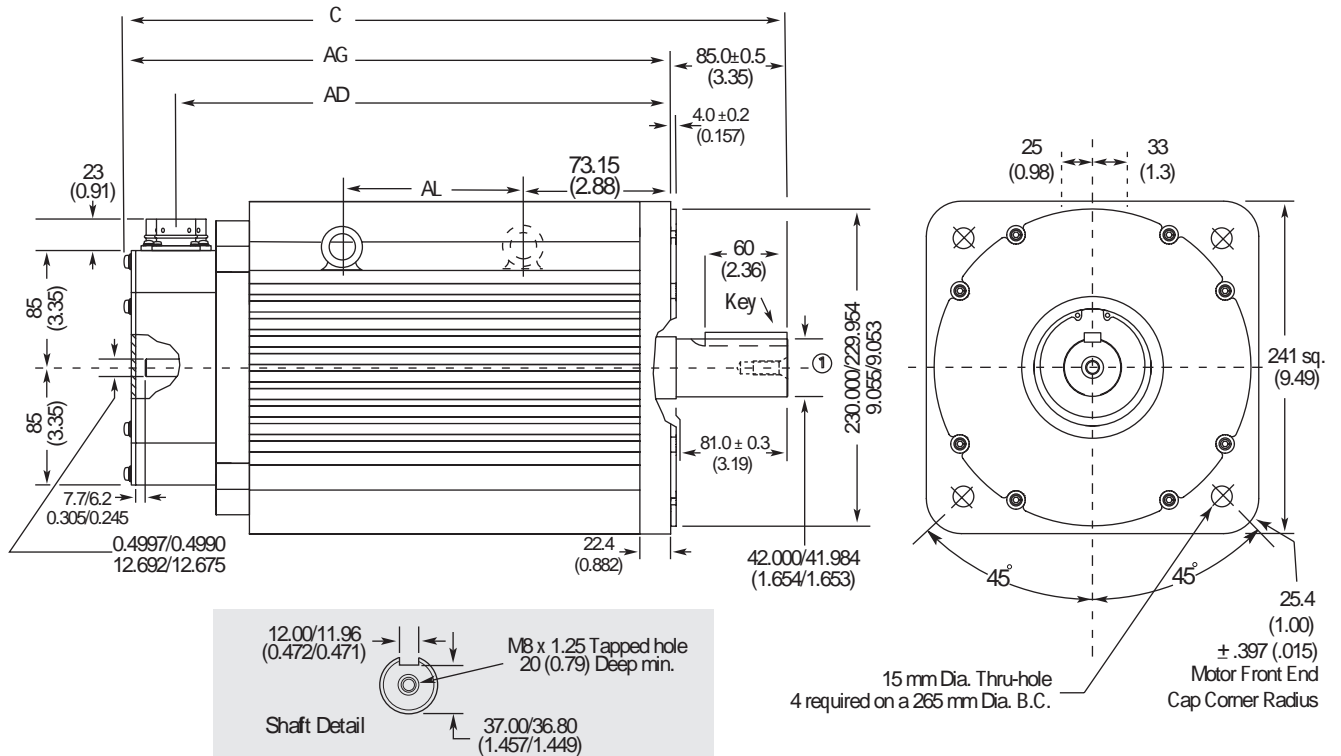
Flange Mount in millimeters and (inches)

Catalog number	Description ¹	AL	AD1	AD2	AG	C	Key	End milled keyway (full depth)
1326AS-B630x-21	without brake	69 (2.71)	255 (10.03)	231 (9.09)	291 (11.45)	351 (13.81)	10 x 8 x 40 (0.394 x 0.315 x 1.57)	40 (1.57)
1326AS-B660x-21	without brake	145 (5.71)	331 (13.03)	307 (12.09)	367 (14.45)	427 (16.81)	10 x 8 x 40 (0.394 x 0.315 x 1.57)	40 (1.57)
1326AS-B690x-21	without brake	221 (8.71)	407 (16.03)	383 (15.09)	443 (17.45)	503 (19.81)	10 x 8 x 40 (0.394 x 0.315 x 1.57)	40 (1.57)

¹ If you are ordering a 1326AS-B6xxx-21-K6 with an optional 24V DC 36.7 N-m (325 lb-in.) brake, add 54 mm (2.13 in.) to AL, AD1, AD2, AG and C.
Dimensions are per NEMA Standards MG 7-2.4.1.3 and IEC 72-1. Shaft and pilot tolerances are per DIN 42955, N tolerance. The eye bolt diameter is 30.48 mm (1.20 in) O.D. x 19.05 mm (0.75 in) I.D.

Allen-Bradley 1394-SJT05-A

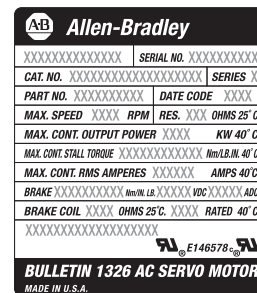
Figure A.23
1326AS-B8 Series Servo Motor



Ⓞ Shaft and Pilot Tolerances

Shaft Runout	0.05 (0.002) T.I.R
Shaft Endplay	0.025 (0.001)
Pilot Eccentricity	0.10 (0.004) T.I.R
Maximum Face Runout	0.10 (0.004) T.I.R

Motor Name Plate



Flange Mount in millimeters and (inches)

Catalog number	Description ¹	AL	AD	AG	C	Key	End milled keyway (full depth)
1326AS-B840x-21	without brake	131 (5.15)	308 (12.13)	346 (13.63)	431 (16.97)	12 x 8 x 60 (0.472 x 0.315 x 2.36)	60 (2.36)
1326AS-B860x-21	without brake	235 (9.25)	359 (14.13)	397 (15.63)	482 (18.97)	12 x 8 x 60 (0.472 x 0.315 x 2.36)	60 (2.36)

¹ If you are ordering a 1326AS-B8xxx-21-K8 with an optional 24V DC 50.9 N-m (450lb-in.) brake, add 103 mm (4.05 in.) to AD, AG and C. Add 51 mm (2.0 in) to AL. Dimensions are per NEMA Standards MG 7-2.4.1.3 and IEC 72-1. Shaft and pilot tolerances are per DIN 42955, N tolerance. The eye bolt diameter is 38.1 mm (1.50 in) O.D. x 22.35 mm (0.88 in) I.D.

Servo Motor Performance Data

This section contains performance data for 1326AB and 1326AS motors and 1394 axis module combinations.

1326AB Performance Data

Motor Catalog Number ¹	Rated Speed rpm		Motor Rated Torque N-m (lb-in.)	Motor Rated Output kW	Rotor Inertia kg-m ² (lb-in.-s ²)	System Continuous Torque N-m (lb-in.)	System Peak Stall Torque N-m (lb-in.)	System Continuous Stall Current Amperes	System Peak Stall Current Amperes	1394 Axis Module	
	460V	380V									
1326AB-B410G	5000	4000	2.7 (24)	1.0	0.0005 (0.004)	2.7 (24)	6.6 (58) ³	2.45	6.0	AM03	
							8.1 (72)		7.32	AM04	
										AM07	
1326AB-B410J	7250	6000	2.7 (24)	1.4	0.0005 (0.004)	2.3 (21) ²	4.7 (42) ³	3.0	6.0	AM03	
						2.7 (24)	7.0 (62) ³		3.48	9.0	AM04
							8.1 (72)			10.4	AM07
1326AB-B420E	3000	2500	5.0 (44)	1.1	0.0008 (0.007)	5.0 (44)	10.6 (94) ³	2.84	6.0	AM03	
							14.9 (132)		8.0	AM04	
										AM07	
1326AB-B420H	6000	5000	5.1 (45)	2.2	0.0008 (0.007)	2.8 (25) ²	5.6 (50) ³	3.0	6.0	AM03	
						4.2 (37) ²	8.4 (74) ³		4.5	9.0	AM04
						5.1 (45)	14.0 (124) ³		5.46	15.0	AM07
1326AB-B430E	3000	2500	6.6 (58)	1.4	0.001 (0.01)	5.1 (45) ²	10.1 (89) ³	3.0	6.0	AM03	
						6.6 (58)	15.2 (135) ³		3.9	9.0	AM04
							19.7 (174)			11.6	AM07
1326AB-B430G	5000	4000	6.4 (57)	2.3	0.001 (0.01)	5.2 (46) ²	10.3 (92) ³	4.5	9.0	AM04	
						6.4 (57)	17.2 (153) ³		5.6	15.0	AM07
1326AB-B515E	3000	2500	10.4 (92)	2.3	0.004 (0.03)	7.7 (68) ²	15.4 (136) ³	4.5	9.0	AM04	
						10.4 (92)	25.6 (226) ³		6.1	15.0	AM07
							31.2 (276)			18.3	AM50/AM50-IH AM75/AM75-IH
1326AB-B515G	5000	4000	10.4 (92)	2.9	0.004 (0.03)	7.9 (70) ²	15.8 (140) ³	7.5	15	AM07	
						10.4 (92)	31.2 (276)		9.5	28.5	AM50/AM50-IH AM75/AM75-IH
1326AB-B520E	3000	2500	13.0 (115)	2.9	0.005 (0.04)	8.8 (78) ²	17.7 (157) ³	4.5	9.0	AM04	
						13.0 (115)	29.4 (260) ³		6.7	15.0	AM07
							39.0 (345)			20.1	AM50/AM50-IH AM75/AM75-IH
1326AB-B520F	3500	3000	13.1 (116)	2.9	0.005 (0.04)	11.2 (99) ²	22.4 (198) ³	7.5	15.0	AM07	
						13.1 (116)	39.3 (348)		8.8	26.4	AM50/AM50-IH AM75/AM75-IH
1326AB-B530E	3000	2500	18.0 (160)	4.2	0.007 (0.06)	14.2 (126) ²	28.4 (251) ³	7.5	15.0	AM07	
						18.0 (160)	54.2 (480)		9.5	28.5	AM50/AM50-IH AM75/AM75-IH
1326AB-B720E	3500	3000	30.9 (273)	6.8	0.017 (0.15)	30.9 (273)	58.5 (518) ³	17.5	33.2	AM50/AM50-IH	
							88.1 (780) ³		50.0	AM75/AM75-IH	
1326AB-B720F	5000	4100	31.8 (281.7)	11.7	0.017 (0.15)	31.8 (281.7)	38 (336) ³	27.5	33.2	AM50/AM50-IH	
							56 (495) ³		50	AM75/AM75-IH	
1326AB-B730E	3350	2800	39.0 (345)	9.6	0.025 (0.23)	39.0 (345)	56.8 (502) ³	22.8	33.2	AM50/AM50-IH	
							85.4 (756) ³		50.0	AM75/AM75-IH	
1326AB-B740C	2200	1800	53.0 (469)	8.7	0.034 (0.30)	53.0 (469)	84.2 (745) ³	20.9	33.2	AM50/AM50-IH	
							126.8 (1122) ³		50.0	AM75/AM75-IH	
1326AB-B740E	3400	2800	50.0 (450)	12.7	0.034 (0.30)	50.0 (450)	52.7 (466) ³	32.0	33.2	AM50/AM50-IH	
							79.4 (702) ³		50.0	AM75/AM75-IH	

¹ All ratings are for 40° C (104° F) motor ambient, 110° C (212° F) case, 50° C (122° F) amplifier ambient and 40° C (104° F) external heatsink ambient (AM50 and AM75). For extended ratings at lower ambients contact Allen-Bradley.

² Limited by axis module continuous current.

³ Limited by axis module peak current.

1326AS Performance Data

Motor Catalog Number ¹	Rated Speed rpm		Motor Rated Torque N-m (lb-in.)	Motor Rated Output kW	Rotor Inertia kg-m ² (lb-in.-s ²)	System Continuous Torque N-m (lb-in.)	System Peak Stall Torque N-m (lb-in.)	System Continuous Stall Current Amperes	System Peak Stall Current Amperes	1394 Axis Module
	460V	380V								
1326AS-B310H	6200	5120	0.7 (6.1)	0.3	0.000045 (0.0004)	0.7 (6.1)	2.1 (18)	0.8	2.4	AM03
1326AS-B330H	6500	5370	2.0 (18.0)	0.9	0.00009 (0.0008)	2.1 (18)	5.6 (50)	2.1	6.0	AM03
1326AS-B420G	5250	4340	3.2 (28.0)	1.2	0.0003 (0.0027)	3.2 (28)	7.3 (65) ³ 9.6 (84)	2.6	6.0 ³	AM03
									7.8	AM04
										AM07
1326AS-B440G	5250	4340	6.4 (56.0)	2.0	0.0005 (0.0046)	5.3 (47) ²	10.5 (93) ³	4.5 ²	9.0 ³	AM04
						6.4 (56)	17.6 (156)	5.4	15.0	AM07
							19.0 (168)		16.2	AM50/AM50-IH
1326AS-B460F	4300	3550	9.0 (80.0)	2.8	0.00075 (0.0066)	6.6 (58) ²	13.1 (116) ³	4.5 ²	9.0 ³	AM04
						9.0 (80)	21.9 (194)	6.2	15.0	AM07
							27.1 (240)		18.6	AM50/AM50-IH
1326AS-B630F	4500	3720	10.7 (95.0)	2.4	0.0014 (0.012)	10.3 (91) ²	20.6 (182) ³	7.5 ²	15.0 ³	AM07
						10.7 (95)	25.4 (225)	7.8	18.5	AM50/AM50-IH
1326AS-B660E	3000	2480	21.5 (190)	3.4	0.0025 (0.022)	13.7 (121) ²	27.3 (242) ³	7.5 ²	15.0 ³	AM07
						21.5 (190)	54.2 (480)	11.8	29.8	AM50/AM50-IH
							54.2 (480)		29.8	AM75/AM75-IH
1326AS-B690E	3000	2480	36.4 (322)	5.0	0.0036 (0.032)	36.4 (322)	63.6 (563) ³	19.0	33.2 ³	AM50/AM50-IH
							79.1 (700)		41.3	AM75/AM75-IH
1326AS-B840E	3000	2480	37.6 (333)	4.7	0.0063 (0.056)	37.6 (333)	59.0 (522) ³	21.2	33.2 ³	AM50/AM50-IH
							70.0 (620)		39.5	AM75/AM75-IH
1326AS-B860C	2000	1650	49.3 (436)	6.0	0.0094 (0.083)	49.3 (436)	93.0 (823) ³	17.6	33.2 ³	AM50/AM50-IH
							124.0 (1100)		44.4	AM75/AM75-IH

¹ All ratings are for 40° C (104° F) motor ambient, 110° C (212° F) case, 50° C (122° F) amplifier ambient and 40° C (104° F) external heatsink ambient (AM50 and AM75). For extended ratings at lower ambients contact Allen-Bradley.

² Limited by axis module continuous current.

³ Limited by axis module peak current.

Catalog Numbers

Understanding Catalog Numbers

Catalog numbers consist of various components that make up a 1394 system. Each character of the catalog number identifies a specific version or option for that component. The first four numbers represent the family of products (for example, 1394). The remaining characters represent a specific version or option of that module or family.

Determining Catalog Numbers

To help you to understand, we will provide an example of how to determine a catalog number for a 1394 system module.

The beginning portion of the catalog number for all 1394 system modules is 1394-SJT (S for system module, J for 380/460V AC, 50/60 Hz, and T for three-phase). In addition, you have the following options for which you must make a selection:

The options must appear in the order shown.

1394-SJT kw rating-option-RL option

For example, if you were to use the table in the following *1394 System Modules* section to select the 5 kW rating with the integrated motion controller with an RIO and Axis Link, the catalog number would be:

1394-SJT05-C-RL

When you combine all of the numbers, you create the catalog number for the system module that you require.

Allen-Bradley 1394-SJT05-A

System Modules

1394 System Module

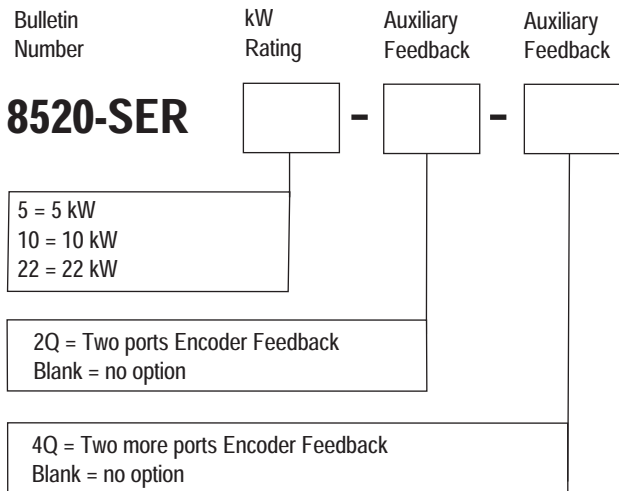
Bulletin Number	Type	Input Voltage	Input Phase	kW Rating	Factory Installed Options
1394	—				—
<p>S = System module</p> <p>J = 380/460V AC, 50/60 Hz</p> <p>T = Three-phase</p> <p>05 = 5 kW 10 = 10 kW 22 = 22 kW</p> <p>A = With +/-10V DC analog input (no HIM) C = With IMC S Class integrated motion controller T = With IMC S Class Turbo integrated motion controller E = With 9/Series interface</p> <p>RL = With RIO and AxisLink (can only be ordered with the -C or -T options)</p>					

9/440 System Module

Bulletin Number	Number of Axes	System Type	kW Rating	Compliance
8520	—			
<p>1 = 1 axis 3 = 3 axes 4 = 4 axes</p> <p>S = 9/440</p> <p>5 = 5 kW 10 = 10 kW 22 = 22 kW</p> <p>Blank = no option A = CE compliant G1 = GDST and CE compliant</p>				

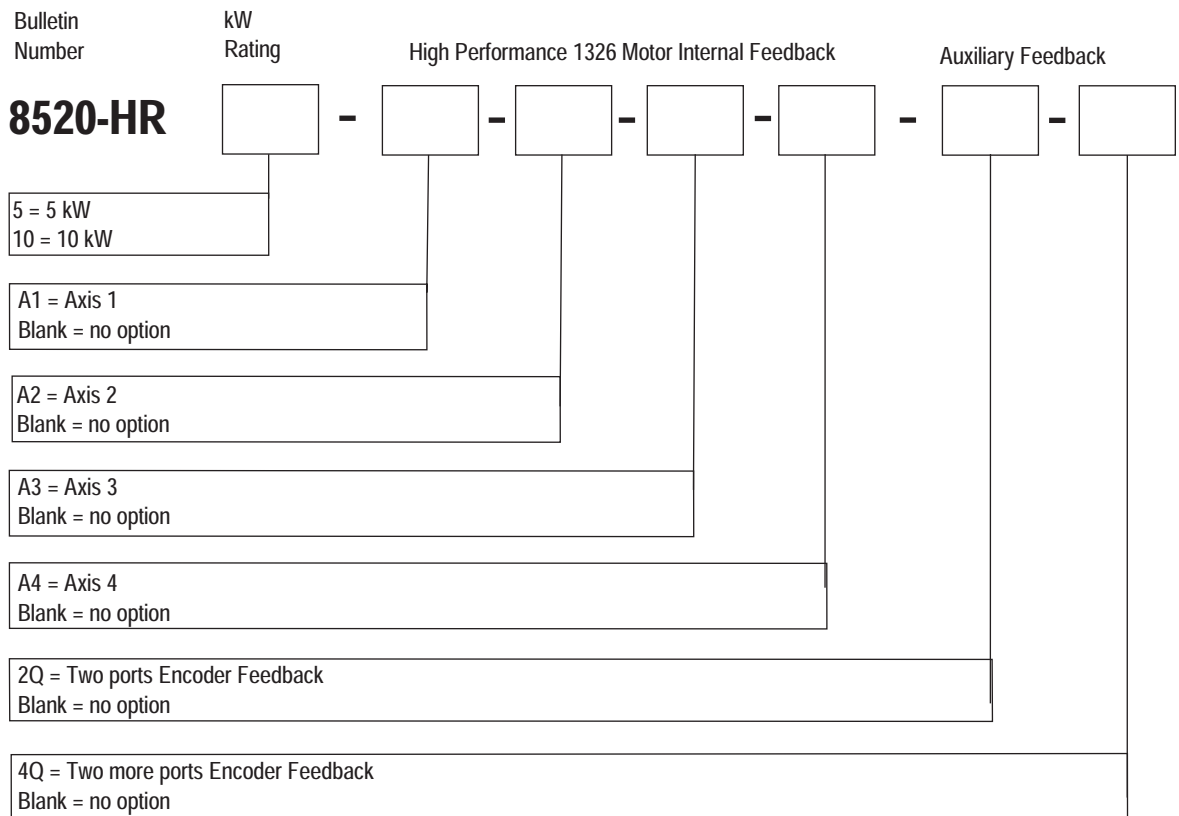
Note: Refer to *9/Series Integration and Maintenance Manual* (publication 8520-6.2) for more information.

CNC Serial Drive System Module



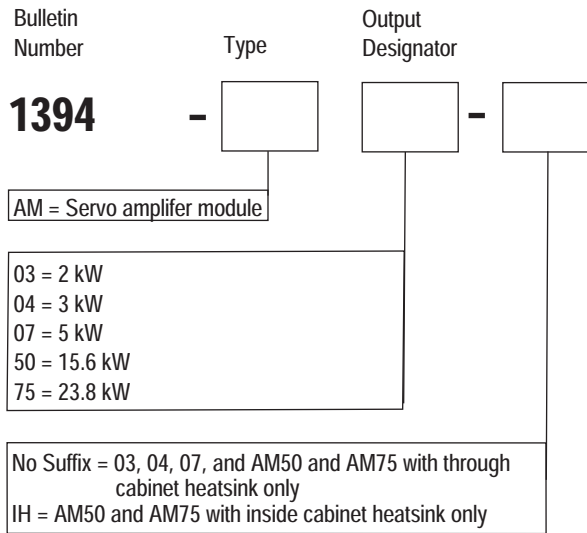
Note: Refer to *9/Series Integration and Maintenance Manual* (publication 8520-6.2) for more information.

9/440 High Resolution/Absolute CNC System Module

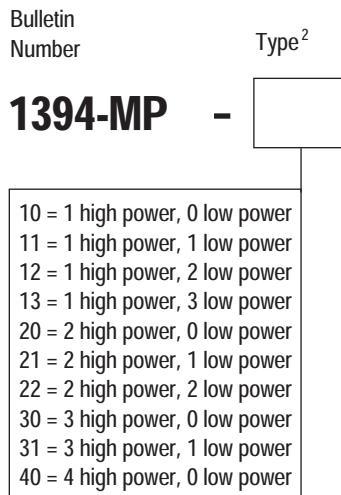


Note: Refer to *9/Series Integration and Maintenance Manual* (publication 8520-6.2) for more information.

Axis Modules



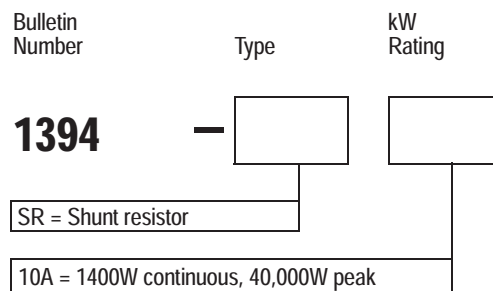
Standoff Mounting Brackets¹



¹ The following U-shaped standoff brackets are used to mount 1394-AM50 and 1394-AM75 axis modules entirely inside an electrical cabinet. Brackets are not required when using 1394-AM50-IH or 1394-AM75-IH axis modules.

² High power axis modules are either a 1394-AM50 or -AM75 (75 mm wide). Low power axis modules are 1394-AM03, -AM04, or -AM07 and 50 mm wide.

External Shunt Resistor Kit (5 and 10 kW system modules)



Shunt Modules (22 kW system modules)

Bulletin Number	Type	Style/Rating
1394	—	
<p>SR = Shunt resistor</p>		
<p>9A = 300W continuous 160,000W peak, no fan 9AF = 900W continuous, 160,000W peak, no fan 36A = 1600W continuous, 160,000W peak, no fan 36AF = 3600W continuous, 160,000W peak, fan cooled module</p>		

System Module Cables

Control Interface Cables

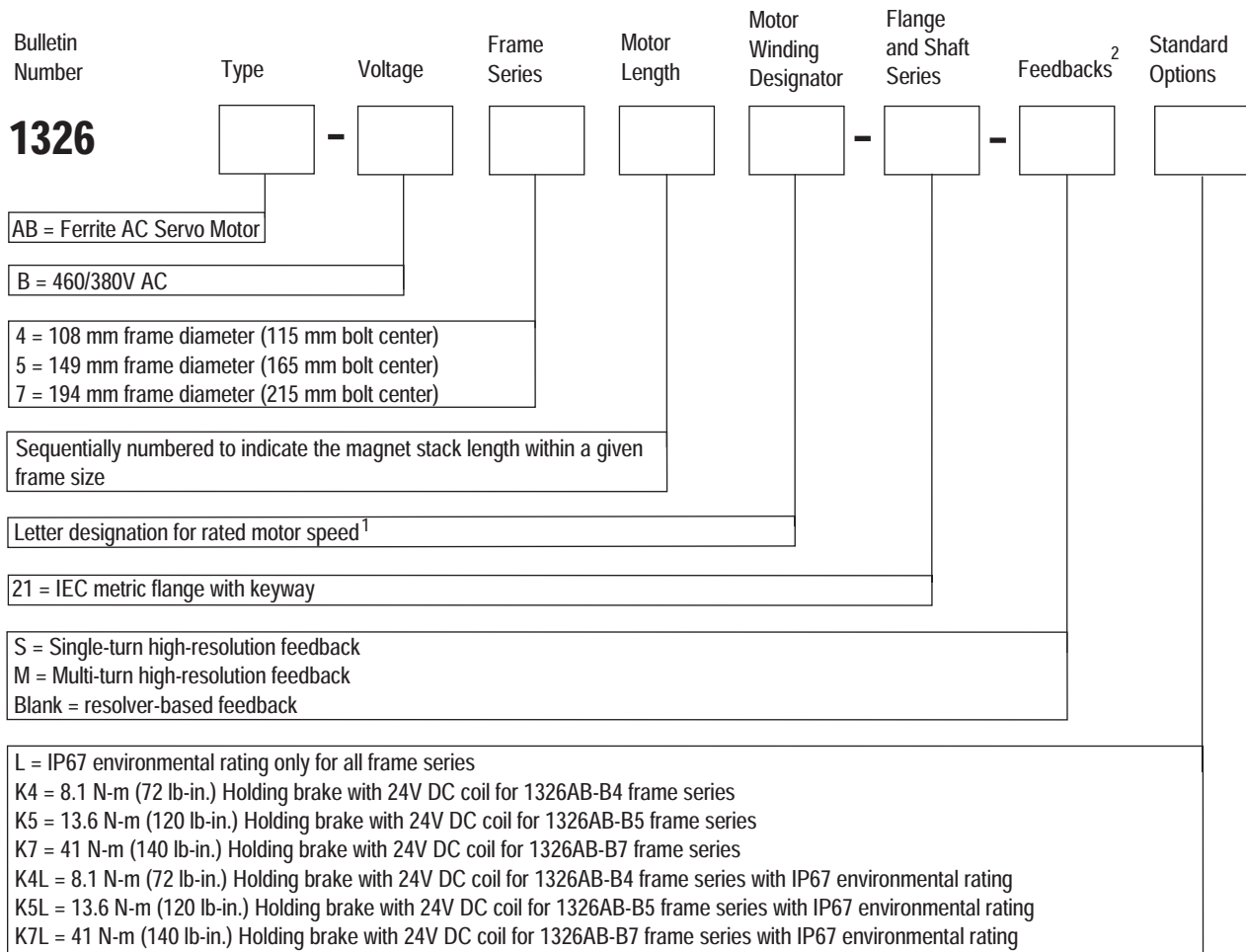
Bulletin Number	Type
1394	—
<p>SA15 = 5.9 m (15 ft) cable for the 1394 Servo AQB interconnect to the motion controller. GE15 = 5.9 m (15 ft) cable (drive-end connector on one end and flying leads on the other) from an external encoder to the 1394 GMC system module. You will also require 1326-CEU or equivalent cable to terminate to this cable. GR04 = 1.2 m (4 ft) cable from the REC (Resolver to Incremental Encoder Converter) to the 1394 GMC System Module.</p>	

Two-Axis Prewired Cable

Bulletin Number	Type	1394 Interface to	Cable Style and Length
1394	—		
<p>CC = Cable with ControlLogix M02AE Connector</p>			
<p>AE = Analog/Encoder ControlLogix Servo Module</p>			
<p>01 = M02AE pre-wired connector to 1394-SJTxx-A flying lead, 2 axes, 1 m (3.28 ft) 03 = M02AE pre-wired connector to 1394-SJTxx-A flying lead, 2 axes, 3 m (9.84 ft) 08 = M02AE pre-wired connector to 1394-SJTxx-A flying lead, 2 axes, 8 m (26.24 ft) 15 = M02AE pre-wired connector to 1394-SJTxx-A flying lead, 2 axes, 15 m (49.2 ft)</p>			

Allen-Bradley 1394-SJT05-A

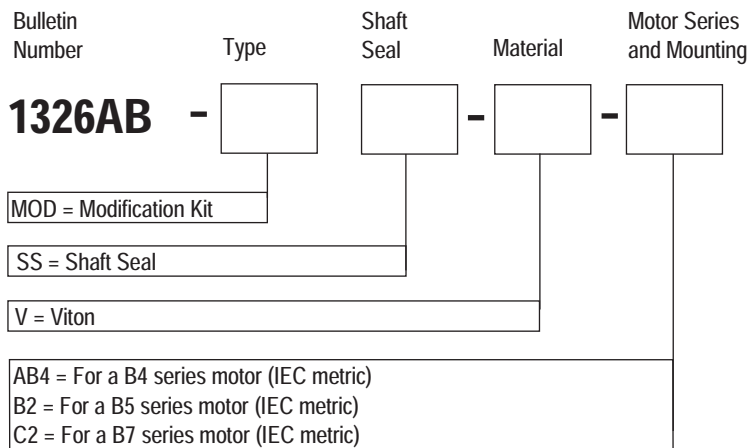
1326AB Servo Motors



¹ Refer to the *Servo Motor Performance Data* section in *Appendix A* for the rated speeds of all 1326AB 460/380V Torque Plus Series motors.

² High resolution encoder option is only available with IP67 environmental rating.

1326 Shaft Oil Seal Kit for 1326AB Motors¹



¹ This kit is not required for IP67 motors. The shaft seal is factory installed.

Motor Junction Box Kit for 1326AB Motors^{1,2}

Bulletin Number	Type	Description
1326AB	-	-
MOD = Modification Kit		
RJAB1 = Kit for all B4 and B5 series motors RJC1 = Kit for all B7 series motors		

¹ The motor comes standard with IP65 plug style connectors mounted radially to the motor. This kit allows the connectors to be brought out axially to the motor without further wiring. Kit includes a motor junction box and mounting hardware.

² Do not use this kit with the high resolution encoder option. Instead, use the right angle connector cable option.

Feedback Mounting Adapter Kit for 1326AB Motors^{1,2}

Bulletin Number	Type	Mounting Adapter Kit
1326AB	-	-
MOD = Modification Kit		
M40 = Allen-Bradley 845H Encoder for the B4 series motor M50 = Allen-Bradley 845H Encoder for the B5 series motor M60 = Allen-Bradley 845H Encoder for the B7 series motor M42 = Allen-Bradley 842A-31 Encoder for the B4 series motor M52 = Allen-Bradley 842A-31 Encoder for the B5 series motor M72 = Allen-Bradley 842A-31 Encoder for the B5 series motor		

¹ All kits contain a feedback mounting adapter, mounting hardware, and a coupling. The kit does not contain a feedback device.

² Do not use this kit with the high resolution encoder feedback option.

1326AS Servo Motors


Bulletin Number	Type	Voltage	Frame Series	Motor Length	Motor Winding Designator	Flange and Shaft Series	Standard Options
1326	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
AS = Rare Earth AC Servomotor							
B = 460V AC							
3 = 75 mm (Approximate stator size) 4 = 100 mm (Approximate stator size) 6 = 150 mm (Approximate stator size) 8 = 200 mm (Approximate stator size)							
Sequentially numbered to indicate the magnet stack length within a given frame size							
Letter designation for rated motor speed ¹							
21 = IEC metric flange with keyway							
K3 = 2.26 N·m (20 lb-in.) Holding brake with 24V DC coil for 1326AS-B3 frame series K4 = 10.2 N·m (90 lb-in.) Holding brake with 24V DC coil for 1326AS-B4 frame series K6 = 36.7 N·m (325 lb-in.) Holding brake with 24V DC coil for 1326AS-B6 frame series K8 = 50.9 N·m (450 lb-in.) Holding brake with 24V DC coil for 1326AS-B8 frame series xxxxx = Special design options (factory assigned)							

¹ Refer to the *Servomotor Performance Data* section in *Appendix A* for the rated speeds of the entire 1326AS Series family of motors.

1326 Shaft Oil Seal Kit for 1326AS Motors

Bulletin Number	Series
0041	<input type="text"/>
5065 = Nitrile shaft seal for 1326AS-3xx motors	
5066 = Nitrile shaft seal for 1326AS-4xx motors	
5067 = Nitrile shaft seal for 1326AS-6xx motors	
5053-005 = Nitrile shaft seal for 1326AS-8xx motors	



Motor Junction Box Kit¹ for 1326AS Motors

Bulletin Number	Type
1326AS	— 

RJ34 = Right angle junction box for B3 and B4 series motors.

¹ The motor comes standard with IP65 plug style connectors mounted radially to the motor. This kit allows the connectors to be brought out axially to the motor without further wiring. Kit includes a motor junction box and mounting hardware.

Feedback Mounting Adapter Kit for 1326AS Motors¹

Bulletin Number	Type	Mounting Adapter Kit
1326AS	— 	— 

MOD = Modification Kit

M32 = Allen-Bradley 842A-31 Encoder for the B3 series motor
 M42 = Allen-Bradley 842A-31 Encoder for the B4 series motor
 M62 = Allen-Bradley 842A-31 Encoder for the B6 series motor
 M82 = Allen-Bradley 842A-31 Encoder for the B8 series motor

¹ All kits contain a feedback mounting adapter, mounting hardware, and a coupling. The kit does not contain a feedback device.

Power and Feedback Cables

Motor Power Cables

Bulletin Number	Type	Function	Motor Size Used On	Flex Cable Option	Connector Accessory	IP Rating	Cable Length
1326	-				-		
<p>C = Connector and cable assembly</p>							
<p>P = Power connection</p>							
<p>B1 = 1326AB-B4xxxx, -B5xxxx or 1326AS-B3xxxx, -B4xxxx C1 = 1326AB-B7xxxx, or 1326AS-B6xxxx, -B8xxxx</p>							
<p>T = Flex-rated cable for high-flex applications Blank = No option, standard cable</p>							
<p>Blank = Single-standard connector D = Double-ended, standard connector E = Bulkhead connector EE = Double-ended, bulkhead connector RA = Right-angle connector RB = Right-angle connector</p>							
<p>Blank = IP65 L = IP67, harsh environment</p>							
<p>005 = 5m (16.4 ft) 015 = 15m (49.2 ft) 030 = 30m (98.4 ft) 060 = 60m (196.8 ft) 084 = 84m (275.5 ft) 090 = 90m (295.2 ft)</p>							

Motor Feedback Cables

Bulletin Number	Type	Function	Motor Size Used On	Flex Cable Option	Connector Accessory	IP Rating	Cable Length
1326	-				-		
C = Connector and cable assembly							
C = Resolver feedback EC = High-resolution ¹							
U = Commutation and encoder cable for all series motors							
T = Flex-rated cable for high-flex applications Blank = No option, standard cable							
Blank = Single-standard connector D = Double-ended, standard connector E = Bulkhead connector EE = Double-ended, bulkhead connector RA = Right-angle connector RB = Right-angle connector							
Blank = IP65 L = IP67, harsh environment							
005 = 5m (16.4 ft) 015 = 15m (49.2 ft) 030 = 30m (98.4 ft) 060 = 60m (196.8 ft) 084 = 84m (275.5 ft) 090 = 90m (295.2 ft)							

¹For use with 1326AB-Bxxxx-Mx or -Sx motors only.

Encoder Feedback Cables for 1326AB Motors

Bulletin Number	Type	Function	Motor Size Used On	Flex Cable Option
1326	-			
C = Connector and cable assembly				
E = 845H Encoder				
U = Commutation and encoder cable for all series motors				
15 = 15 ft 30 = 30 ft 50 = 50 ft ¹ 100 = 100 ft ¹				

¹Recommended for use with 12V encoders only.

Miscellaneous Accessories

The following additional accessories are also available:

Accessory:	A-B Catalog Number:	Manufacturer's Number:
Terminal operating tool	1394-194	N/A
Terminal operating tool, steel	1394-194S	N/A
Brake and thermal axis connector kit	1394-199	N/A
1394-CCFK resolver feedback connector kit, (includes the connector, pins, and extraction tool to connect to 1326-CCU-xxx motor feedback cables)	1394-CCFK	N/A
Mating half for the 10-position resolver connector plug shell	N/A	AMP 770580-1
Connector pins for resolver connector	N/A	AMP 770988-3
Crimp tool for Encoder/AQB	N/A	AMP 90758-1
Crimp-tool for resolver	N/A	AMP 90759-1
Extraction tool	N/A	AMP 455822-2
Mating half for the AQuadB 12-position auxiliary encoder connector plug shells	N/A	AMP 770581-1
Connector pins for AQuadB and encoder connector	N/A	AMP 770986-3
23A Roxburgh filter	SP-74102-006-01	Roxburgh MIF323-GS
30A Roxburgh filter	SP-74102-006-02	Roxburgh MIF330-GS
75A Roxburgh filter	SP-74102-006-03	Roxburgh MIF375-GS
Terminator	SP-74102-015-01	N/A
1394 User manual	1394-5.0	N/A
Brake and thermal connector operating tool	N/A	Wago 231-304
Auxiliary encoder connector kit	8520-M12F	N/A
Fan replacement kit for 1394-AM50/AM75 axis modules	SP-74102-271-01	N/A
Kit, fuse, for 1394-SR10A (5 and 10 kW system modules)	1394-SR10A-FUSE-A	Bussmann FWP-40A14F
Kit, fuse, for 1394-SR9A (Series B)	1394-SR9A-FUSE-B	Bussmann FWP-50A14F
Kit, fuse, for 1394-SR9AF (Series B)	1394-SR9AF-FUSE-B	
Kit, fuse, for 1394-SR36A (Series B)	1394-SR36A-FUSE-B	
Kit, fuse, for 1394-SR36AF (Series B)	1394-SR36AF-FUSE-B	

Note: To determine the series of your module, refer to Figure 0.1 in the *Preface*.