



## 1394 Axis Modules

(Catalog No. 1394x-AMxx and 1394C-AMxx-IH)

### Introduction

1394 axis modules convert the 530/680V (nominal) DC Link voltage from the 1394 system module into a sinusoidal AC output using IGBT-based power switching circuitry. These axis modules must be used with a 1394x-SJTxx or 8520-xSxx (9/440 CNC) system module and each system module can have up to four axis modules. You will require one axis module for every 1326AB-Bxxxx or 1326AS-Bxxxx (460V) servo motor you plan to run using the 1394. Refer to the *1394 Digital AC Multi-Axis Motion Control System User Manual* (publication 1394-5.0) for installation and user information.

### Specifications

The table below shows the specifications for the 1394 axis modules.

The:	For the 1394x-AM03 is:	For the 1394x-AM04 is:	For the 1394x-AM07 is:	For the 1394x-AM50 and 1394C-AM50-IH is:	For the 1394x-AM75 and 1394C-AM75-IH is:
Speed Regulation <sup>1</sup>	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) <sup>1</sup>	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) 6.9 kg (15.2 lb) (-AM50-IH)	7 kg (15.44 lb) (-AM75) 6.9 kg (15.2 lb) (-AM75-IH)
Capacitance	110 µF	110 µF	220 µF	465 µF	660 µF

<sup>1</sup> When used with the controller in the 1394x-SJTxx system module.

**Important:** If you are using a 1394x-AM50, you must have the following firmware versions.

System Type:	Firmware Version:
1394x-SJTxx-A	4.01 or later
1394x-SJTxx-C, or -C-RL	3.4 or later
1394C-SJTxx-L, or -L-RL	3.9 or later
1394x-SJTxx-T, or -T-RL	3.4 or later
9/260 and 9/290 (1394-SJTxx-E) <sup>1</sup>	11.01 firmware (or later) and 9.03 ODS (or later)
8520-xSxx	11.02 firmware (or later) and 9.03 ODS (or later)

<sup>1</sup> The 1394x-AM50 cannot be used with the 9/230 Digital (1394-SJTxx-E) system.

**Important:** If you are using a 1394x-AM75, you must have the following firmware versions.

System Type:	Firmware Version:
1394x-SJTxx-A	2.02 or later
1394x-SJTxx-C, or C-RL	3.3A or later
1394C-SJTxx-L, or -L-RL	3.9 or later
1394x-SJTxx-T, or -T-RL	3.3A or later
1394-SJTxx-E)	10.01 firmware (or later) and 9.02 ODS (or later)
8520-xSxx	10.01 firmware (or later) and 9.02 ODS (or later)

Dimensions

This section contains dimensions for the 1394 axis modules.

Figure 1  
1394x-AM03, -AM04, and -AM07 Front View

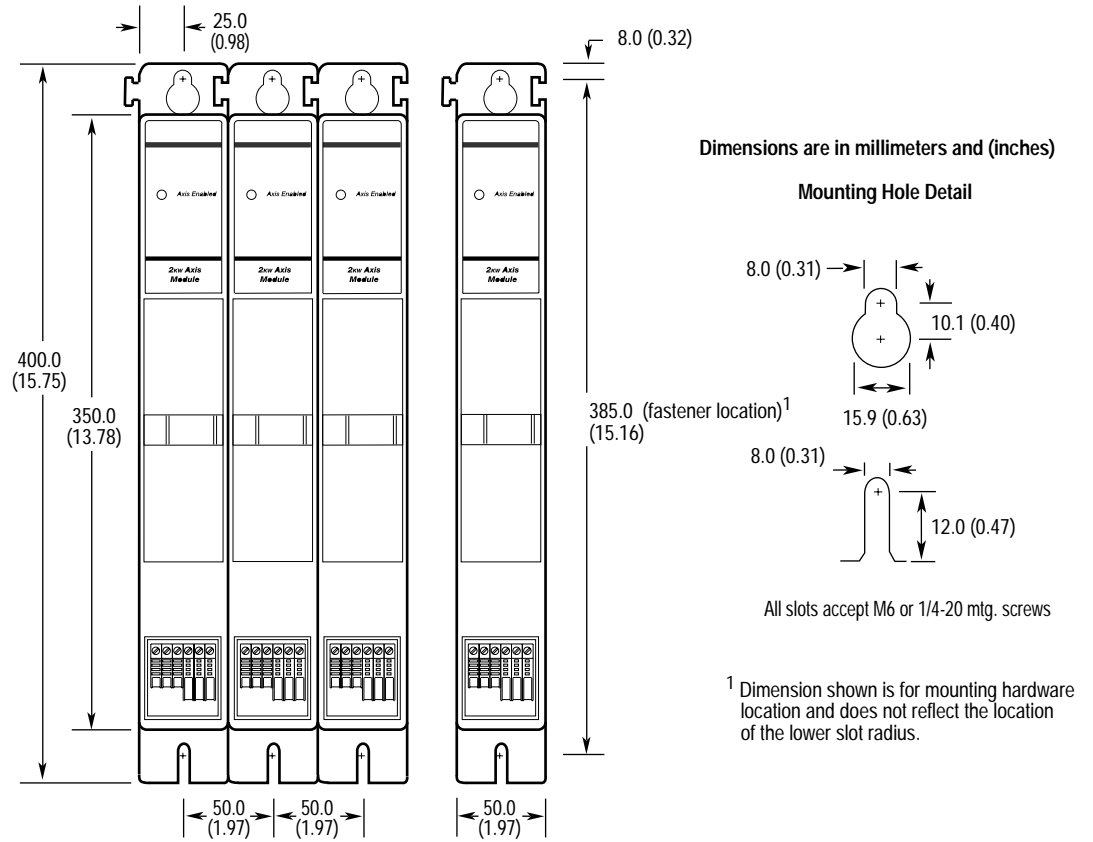
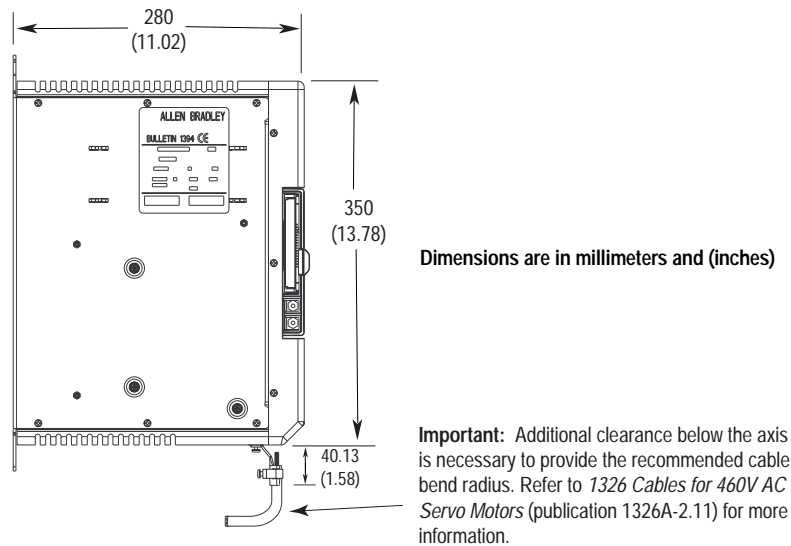
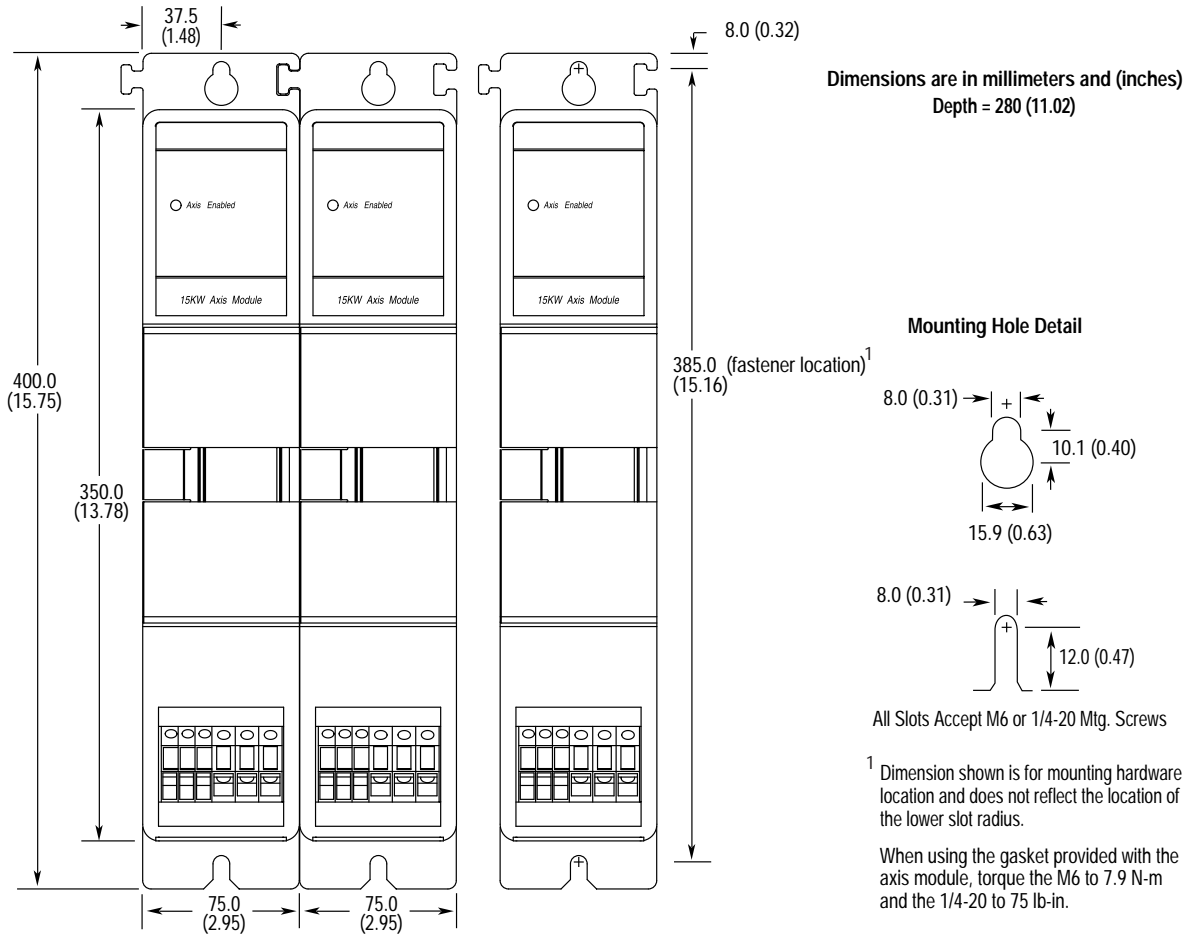


Figure 2  
1394x-AM03, -AM04, and -AM07 Side View

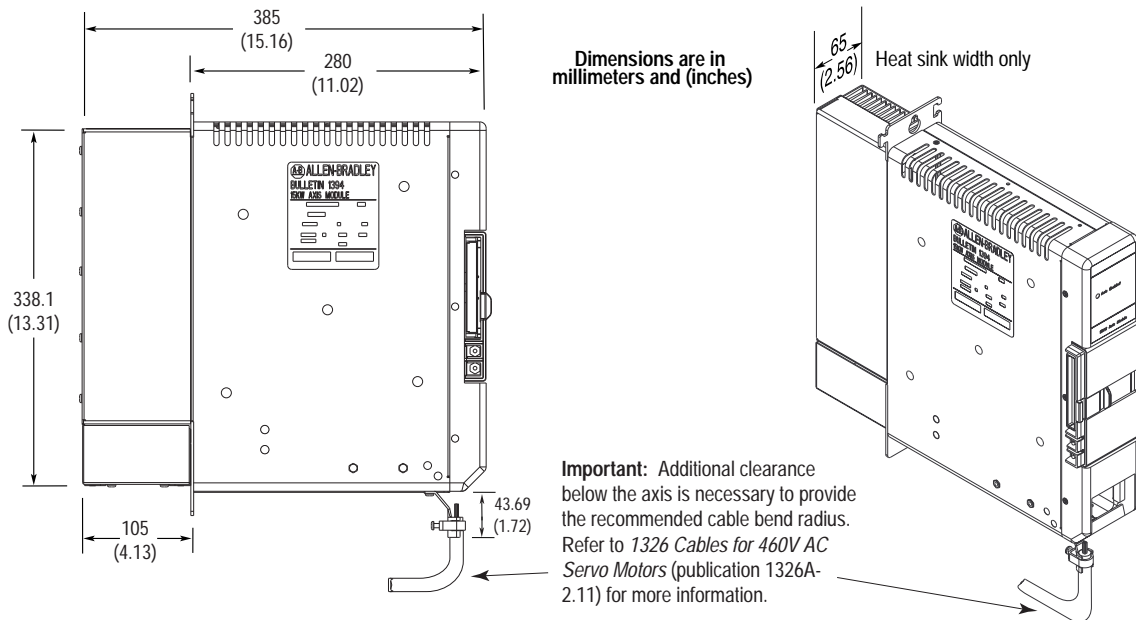


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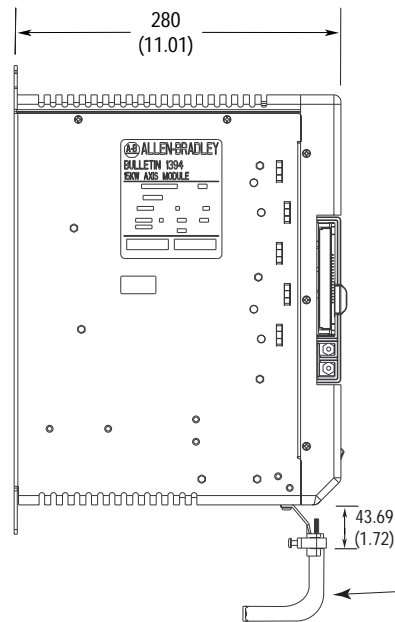
**Figure 3**  
1394x-AM50, -AM50-IH, -AM75, and -AM75-IH Front View



**Figure 4**  
1394x-AM50 and -AM75 Side View (external heatsink)



**Figure 5**  
**1394<sub>x</sub>-AM50-IH and -AM75-IH Side View (internal heatsink)**



Dimensions are in millimeters and (inches)

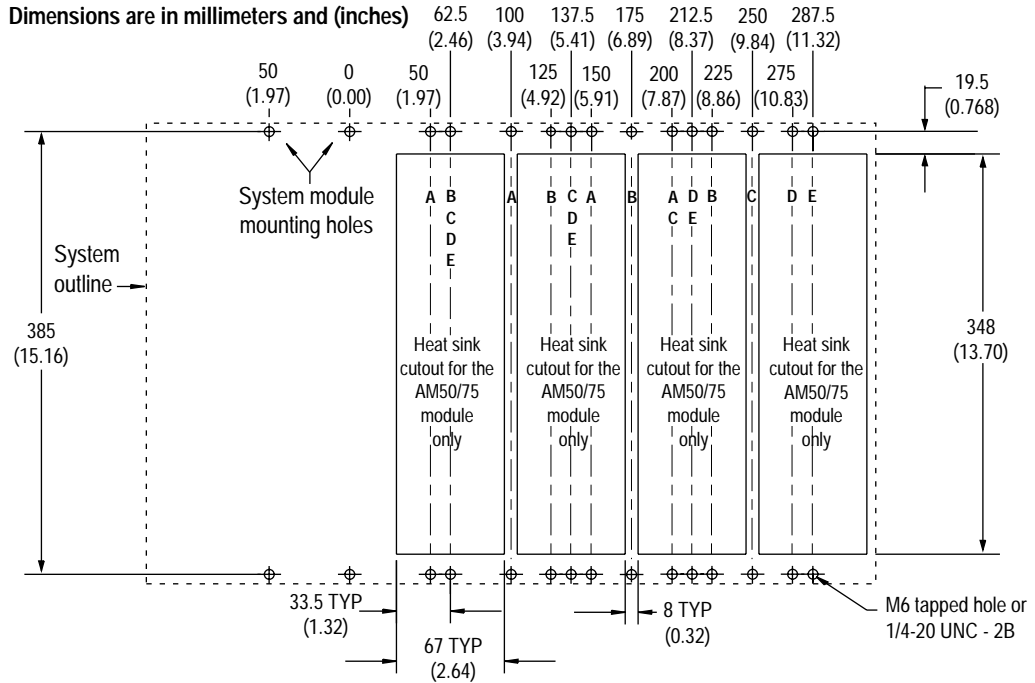
**Important:** Additional clearance below the axis is necessary to provide the recommended cable bend radius. Refer to *1326 Cables for 460V AC Servo Motors* (publication 1326A-2.11) for more information.

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## Axis Module Mounting Combinations

The figure below shows the panel layout for different axis module combinations.

**Figure 6**  
1394 Axis Module Mounting Combinations



Axis Module Combination	Type of Axis Module	Number of Axes	Cutout Needed?
A	1394x-AM50, or -AM75, and 1394C-AM50-IH, or -AM75-IH	0	no
	1394x-AM03, -AM04, or -AM07	up to 4	no
B	1394x-AM50, or -AM75, and 1394C-AM50-IH, or -AM75-IH	1	yes (1394x-AM50 or -AM75) no (1394C-AM50-IH or -AM75-IH)
	1394x-AM03, AM04, or AM07	up to 3	no
C	1394x-AM50, or -AM75, and 1394C-AM50-IH, or -AM75-IH	2	yes (1394x-AM50 or -AM75) no (1394C-AM50-IH or -AM75-IH)
	1394x-AM03, AM04, or AM07	up to 2	no
D	1394x-AM50, or -AM75, and 1394C-AM50-IH, or -AM75-IH	3	yes (1394x-AM50 or -AM75) no (1394C-AM50-IH or -AM75-IH)
	1394x-AM03, AM04, or AM07	up to 1	no
E	1394x-AM50, or -AM75, and 1394C-AM50-IH, or -AM75-IH	4	yes (1394x-AM50 or -AM75) no (1394C-AM50-IH or -AM75-IH)

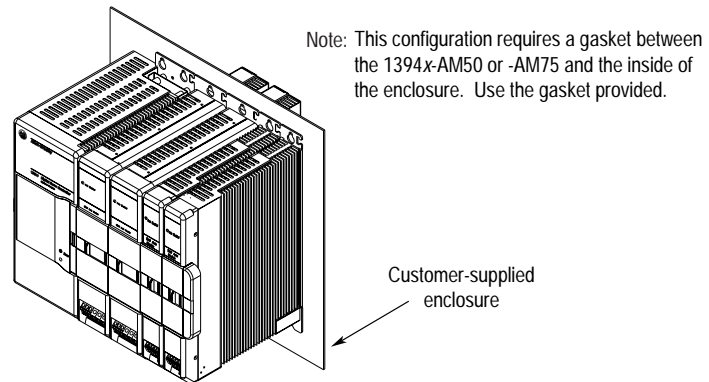
Note: When mounting axis module combinations, you must mount the 1394x-AM50, -AM75, -AM50-IH, and -AM75-IH closest to the system module and ahead of the 1394x-AM03, -AM04, and -AM07 axis modules.

## Mounting Concepts

### Mounting 1394x-AM50 and -AM75 Axis Modules

The figure below shows an example of the typical mounting of a 1394 system with 1394x-AM50 and -AM75 axis modules. The 1394x-AM50 and -AM75 have heatsinks that mount through the back of the electrical cabinet.

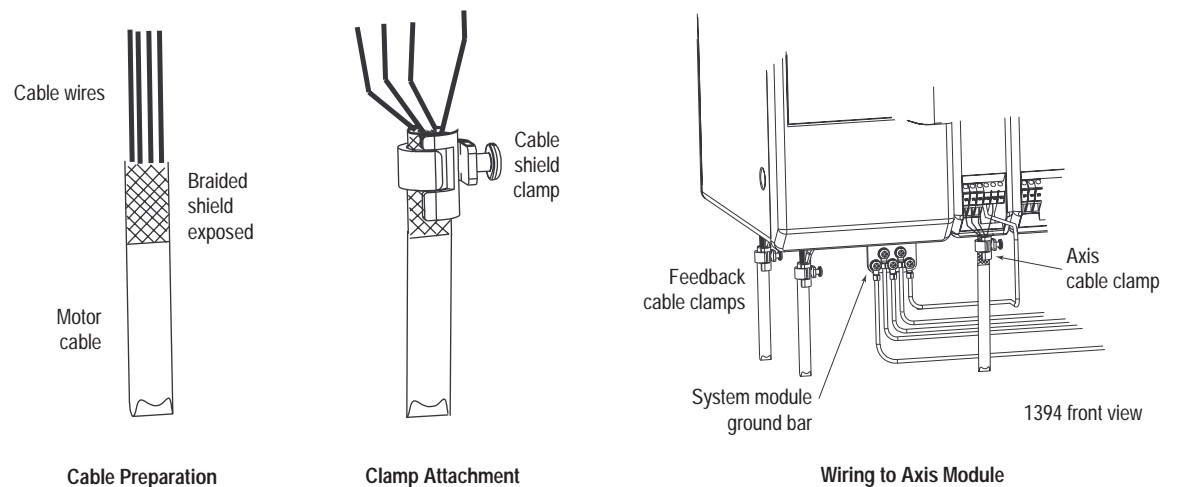
**Figure 7**  
Mounting the 1394 with heatsinks through the back of the cabinet



### Mounting Series C Axis Modules

To improve the bond between the motor cable shield and the axis module PE ground, a cable shield clamp is included with the Series C axis modules, as shown in the figure below.

**Figure 8**  
Series C Axis Module Cable Clamp



Note: Refer to the chapter *Wiring System, Axis, and Shunt Modules, and Motors (for all systems)* in the *1394 Digital, AC, Multi-Axis Motion Control System User Manual* (publication 1394-5.0) for detailed wiring information.

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For more information refer to our web site: [www.ab.com/motion](http://www.ab.com/motion)

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