Allen-Bradley

Kinetix 2000 Multi-axis Servo Drive

Catalog Numbers
2093-AC05-MP1, 2093-AC05-MP2, 2093-AC05-MP5

2093-AM01, 2093-AM02

2093-AMP1, 2093-AMP2, 2093-AMP5

2093-PRS1, 2093-PRS2, 2093-PRS3, 2093-PRS4, 2093-PRS5, 2093-PRS7, 2093-PRS8S

2093-ASP06

2093-PRF

User Manual

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dissipation data from other equipment inside the enclosure (such as ControlLogix controller). Once the total amount of heat dissipation (in Watts) is known, the minimum enclosure size can be calculated.

Kinetix 2000 System Heat Dissipation Example

Enclosure Component	Description		Loading [1]	Heat Dissipation [1] Watts
2093-AC09-M02	Integrated axis module (IAM), 230V, three-phase	3 kW (converter section)	20%	7.0
		1 A (inverter section)	40%	33.6
2093-AM02	Axis module (AM), 230V, 9 A		60%	67.3
2093-AM02	Axis module (AM), 230V, 9 A		60%	67.3
2093-AM01	Axis module (AM),230V, 6 A		40%	46.7
2093-AM01	Axis module (AM), 230V, 6 A		40%	46.7
2093-AM01	Axis module (AM), 230V, 6 A		20%	46.7
2093-AL09	Line interface module (LIM), 230V, 6 kW, 6 A; 24V dc 3 A		100%	72.0
2093-PR6	Power rail, 230V, 6 axis		N/A	0.0
Total Kinetix 2000 system Wattage				387.3

[1] To determine heat dissipation specifications for the Kinetix 2000 components, refer to Power Dissipation Specifications on page 160.

ControlLogix System Heat Dissipation Example

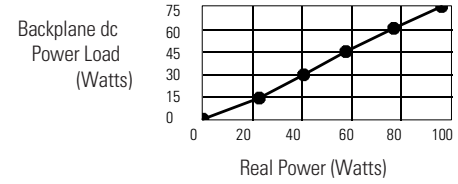
Enclosure Component	Description	Backplane Power Load [1] Watts	Heat Dissipation [1] Watts
1756-M08SE	8-axis SERCOS interface module	3.2	0
1756-L55M12	5555 ControlLogix processor	4.5	0
1756-IB16D	16 -point input module	0.84	5.8
1756-OB16D	16 -point output module	4.64	3.3
1756-ENBT	Ethernet communications module	4.0	0
Backplane total		17.18 [2]	N/A
1756-PB72	24V dc ControlLogix power supply	N/A	25 [2]
1756-A7	7-slot mounting chassis	N/A	N/A
Total ControlLogix system Wattage			34.1

[1] For ControlLogix module specifications, refer to the ControlLogix Selection Guide, publication 1756-SG001.

[2] Real power heat dissipation is determined by applying the backplane power load (17.18 W) to the graph below.

ControlLogix Real Power

1756-P B72
1756-P B75

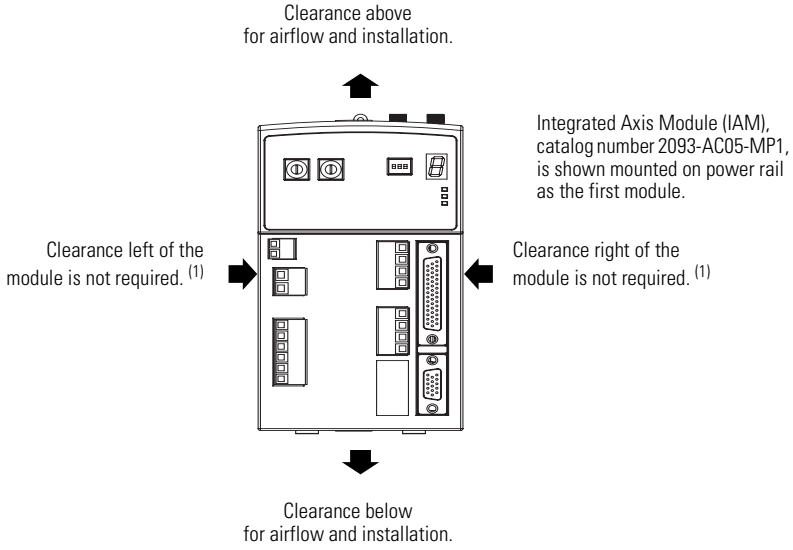


Minimum Clearance Requirements

This section provides information to assist you in sizing your cabinet and positioning your Kinetix 2000 system components.

IMPORTANT Mount the module in an upright position. Do not mount the module on its side.

Minimum Clearance Requirements



(1) The power rail, catalog number 2093-PRS*xx*, does not extend left of the first module or right of the last module.

Minimum Clearance Dimensions

Cat. No.	Clearance Above, Min	Clearance Below, Min	Cabinet Depth Clearance, Min (1)	
2093-AC05-MP1, 2093-AC05-MP2, 2093-AC05-MP5. 2093-AMP1, 2093-AMP2, 2093-AMP5, 2093-AM01, 2093-AM02	50.8 mm (2.0 in.)	50.8 mm (2.0 in.)	200 mm (7.9 in.)	If 15-pin connector kit, catalog number 2090-K2CK-D15M, is attached.
			235 mm (9.25 in.)	44-pin connector kit options include: • 2090-U3BK-D44xx connector kit (containing a 2090-U3BK-D44 terminal block and 2090-U3BK-D44xx cable) • 2090-U3BK-D44 terminal block and custom-built cable. • 2090-U3BK-D44 terminal block and flying lead cable.
2093-ASP06	305 mm (12.0 in.)	50.8 mm (2.0 in.)	200 mm (7.9 in.)	
2093-PRF	None	None	None	

(1) Additional clearance required to accommodate cable bend restrictions.

Refer to the Kinetix 2000 Power Rail Installation Instructions, publication 2093-IN004, when installing your power rail.

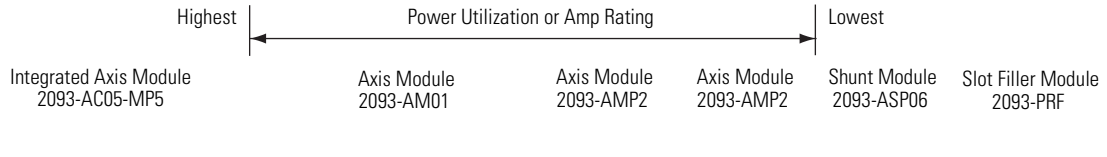
ATTENTION

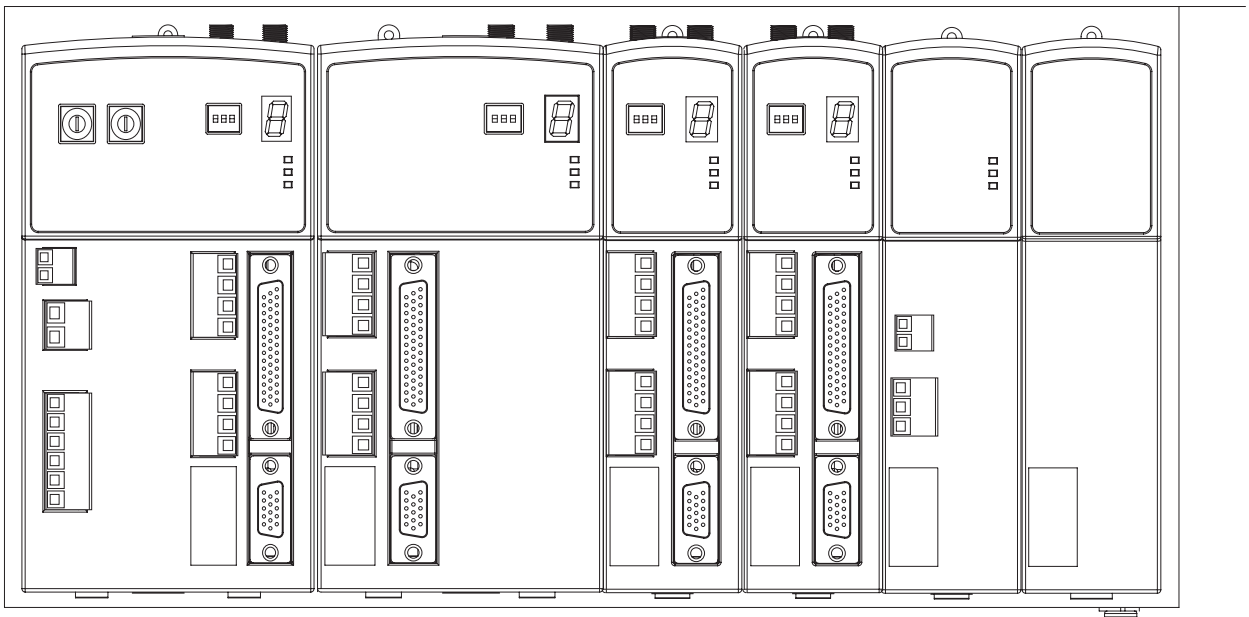
To avoid damage to the power rail during installation, do not remove the protective boots until the module for each slot is ready for mounting.

Determining Mounting Order

Mount IAM, AM, and SM modules in the order (left to right) shown in the figure. A slot filler (SF) must occupy any unoccupied slots. Mount axis modules according to power utilization (highest to lowest) from left to right starting with the highest power utilization. If power utilization is unknown, position axis modules (highest to lowest) from left to right based on Amp rating.

Module Mounting Order





Seven-axis Power Rail Module 2093-PRS7

Power Dissipation Specifications

Use the following table to size an enclosure and calculate required ventilation for your Kinetix 2000 system.

Kinetix 2000 Modules		Usage as a Percentage of Rated Power Output (Watts)				
		20%	40%	60%	80%	100%
Converter (IAM) [1]						
2093-AC05-MP1	Three-phase	7.0	10.5	14.0	17.4	20.9
2093-AC05-MP2						
2093-AC09-MP5						
2093-AC05-MP1	Single-phase	5.8	8.0	10.3	12.6	14.8
2093-AC05-MP2						
2093-AC09-MP5						
Inverter (IAM and AM) [1]						
2093-AC05-MP1 and 2093-AMP1		31.6	33.6	35.6	37.6	39.6
2093-AC05-MP2 and 2093-AMP2		33.0	36.4	39.8	43.3	46.8
2093-AC05-MP5 and 2093-AMP5		36.2	42.9	49.8	56.8	63.9
2093-AM01		38. 3	46.7	55. 3	64. 1	73. 1
2093-AM02		44. 3	55.6	67. 3	79.2	91.4
Shunt module (SM)						
2093-ASP06		35.8	45.8	55.8	65.8	75.8
Power Rail						
2093-PRS*xx*		0	0	0	0	0
Connector Kit						
2093-K2CK-D15M		0	0	0	0	0

[1] Internal shunt power is not included in the calculations and must be added based on utilization.