1- 2- or 4-Axis PWM Servo Drive with Motion Controller

Automation1 iXA4

Unlock the Power of Precision

Take full control of your industrial and research systems with the iXA4 PWM Servo Drive with HyperWire® Motion Controller—the most user-friendly and complete Automation1 solution for motion system control. Build more cost-effective and compact motion systems faster using this streamlined multi-axis hardware design with embedded controller.

The iXA4 brings Automation1's precision to multiple axes of motion, reduces machine footprint and eliminates the need for an industrial PC. Control 12 HyperWire axes of motion and run up to nine user tasks on the embedded Automation1 controller. As a drive, the iXA4 supports multiple feedback device types and includes on-board memory for high-speed data capture and process control.

Automation1

The iXA4 is a part of the user-friendly Automation1 motion control platform, which includes the following:

- **Development Software**
- **Controls**
- **Motor Drives**
- **Fiber-Optic HyperWire® Communication Bus**

KEY FEATURES:

- Full iSMC motion **CONTROLLER & DRIVE IN ONE** package
- Available in **1-, 2- & 4-AXIS** configurations
- **COST-EFFECTIVE**, high-performance design
- **AC & DC** motor supply options
- Compact design **MINIMIZES PANEL SPACE** for multi-axis systems
- **SAFE TORQUE OFF** standard; **POSITION SYNCHRONIZED OUTPUT (PSO)** options available

AUTOMATION1 iXA4 GENERAL SPECIFICATIONS

SPECIFICATION	SINGLE-AXIS (-AX1)	TWO-AXIS (-AX2)	FOUR-AXIS (-AX4)
Motion Controller	Aerotech's Automation1-iSMC Intelligent Software-Based Motion Controller iXA4 support: Version 2.7 and above: -AC, -AX1, -AX2, -EB); Version 2.8.1 and above: -DC, -AX4, -EB1, -EB2		
Number of Axes	1	2	4
Motor Style	Brush, brushless, voice coil, stepper(1)		
Motor Supply	-AC: Single-phase 0-240 VAC; 50/60 Hz		
	-DC: Not available on -AX1	-DC: 15-100 VDC	
Control Supply	24 VDC		
Bus Voltage(2)	-AC: 0-340 VDC		
	-DC: Not available on -AX1	-DC: 15-100 VDC	
Peak Output Current (1 sec)(3)(4)	-10: 10 A_{pk} -20: 20 A_{pk} , only available on -AC option		
Continuous Output Current(3)(5)(6)	-10: 5 A_{pk} (-AX1 and -AX2 options); 4 A_{pk} (-AX4 option); -20: 10 A_{pk} (-AX1 option); 5 A_{pk} (-AX2 option); 4 A_{pk} (-AX4 option), only available on -AC option		
Position Synchronized Output (PSO)	Standard • No PSO support Optional: • Three-axis Part-Speed PSO (includes one-axis PSO)		
25-Pin Motor Feedback Connector	- High-speed differential inputs (encoder sin, cos and marker) - CW and CCW limits - Hall effect sensor inputs (A, B and C) - Analog motor temperature input (accepts digital) - Brake output - 1x 16-bit differential ±10 V analog input		
Multiplier Options	MX0 Option: Primary encoder (axis 1): 40 million counts per second square-wave input	MX0 Option: Primary encoder (axes 1 and 2): 40 million counts per second square-wave input MX1 Option: Primary encoder (axes 1 and 2): 450 kHz sine-wave input, encoder multiplier up to 16,384	
I/O Expansion Board (-EB1)	- 16x digital inputs, optically isolated - 16x digital outputs, optically isolated - 2x analog inputs, 16-bit, differential, ±10 V - 2x analog outputs, 16-bit, single-ended, ±10 V - Auxiliary encoder: 40 million counts-per-second square-wave input		
I/O Expansion Board (-EB2)	- 32x digital inputs, optically isolated - 32x digital outputs, optically isolated - 3x analog inputs, 16-bit, differential, ±10 V - 6x analog outputs, 16-bit, single-ended, ±10 V - Auxiliary encoder: 40 million counts-per-second square-wave input, 10 MHz maximum		
Drive Array Memory	16.8 MB (4,194,304 32-bit elements)		67.1 MB (16,777,216 32-bit elements)
High Speed Data Capture	Yes (50 ns latency)		
Safe Torque Off (STO)	Yes, SIL3/PLe/Cat 4		
HyperWire Connections	1x HyperWire small form-factor pluggable (SFP) ports		

chart continued on next page

AUTOMATION1 iXA4 GENERAL SPECIFICATIONS

SPECIFICATION	SINGLE-AXIS (-AX1)	TWO-AXIS (-AX2)	FOUR-AXIS (-AX4)
Automatic Brake Control	Standard (24 V at 1.0 A), axis 1	Standard (24 V at 1.0 A), axes 1 and 2	Standard (24 V at 1.0 A), axes 1, 2, 3 and 4
Absolute Encoder	BiSS C Unidirectional; EnDat 2.1; EnDat 2.2; SSI		
Current Loop Update Rate	20 kHz		
Servo Loop Update Rate	10 kHz		
Operating Temperature	0 to 40 °C		
Storage Temperature	-30 to 85 °C		
Weight	1 kg (2.2 lb)		1.5 kg (3.3 lb)
Compliance	CE approved, NRTL safety certification, EU 2015/863 RoHS 3 directive		

1. For stepper motors only, one-half of bus voltage is applied across the motor (e.g 80 VDC supply results in 40 VDC across stepper motor).
2. Output voltage depends on input voltage.
3. Peak value of the sine wave; rms current for AC motors is 0.707 Apk.
4. This specification is for all axes together. The drive can achieve the peak output current for each axis with all axes running.
5. This specification is per axis.
6. Maximum achievable continuous output current depends on the thermal conditions of the drive.

Automation1-iXA4

Automation1-iXA4	1- 2- or 4- Axis HyperWire multi-axis PWM servo drive with HyperWire motion controller

Axes

-AX1	Single-axis servo motor drive
-AX2	Two-axis servo motor drive
-AX4	Four-axis servo motor drive

Note:

1. The -AX1 option is only available with the -AC Motor supply voltage option.

Motor Supply Voltage

-AC	240 VAC rated motor supply
-DC	100 VDC rated motor supply

Note:

1. The -DC option is only available with the two-axis (-AX2) and four-axis (-AX4) options.

Current

-10	10 A peak, 5 A cont. current (-AX1, -AX2); 10 A peak, 4 A cont. current (-AX4)
-20	20 A peak, 10 A cont. current (-AX1); 20 A peak, 5 A cont. current (-AX2); 20 A peak, 4 A cont. current (-AX4)

Notes:

1. The -20 Peak Current option is only available with the -AC Motor supply voltage option.

2. When configured with -AX2 or AX4, each axis pair (1 & 2 and 3 & 4) is configured with the same current ratings.

Multiplier

-MX0	No encoder multiplier (default)
-MX1	16,384 encoder multiplier

Note:

1. MX1 multiplier is only available when configured with the -AX2 or -AX4, and applies to each pair of axes (1 & 2 and 3 & 4).

Industrial Ethernet

-IE0	Does not include industrial Ethernet ports
-IE1	Includes industrial Ethernet ports

Note:

1. When configured with the -AX2 or -AX4, industrial ethernet port option -IE1 must be selected.

Expansion Board

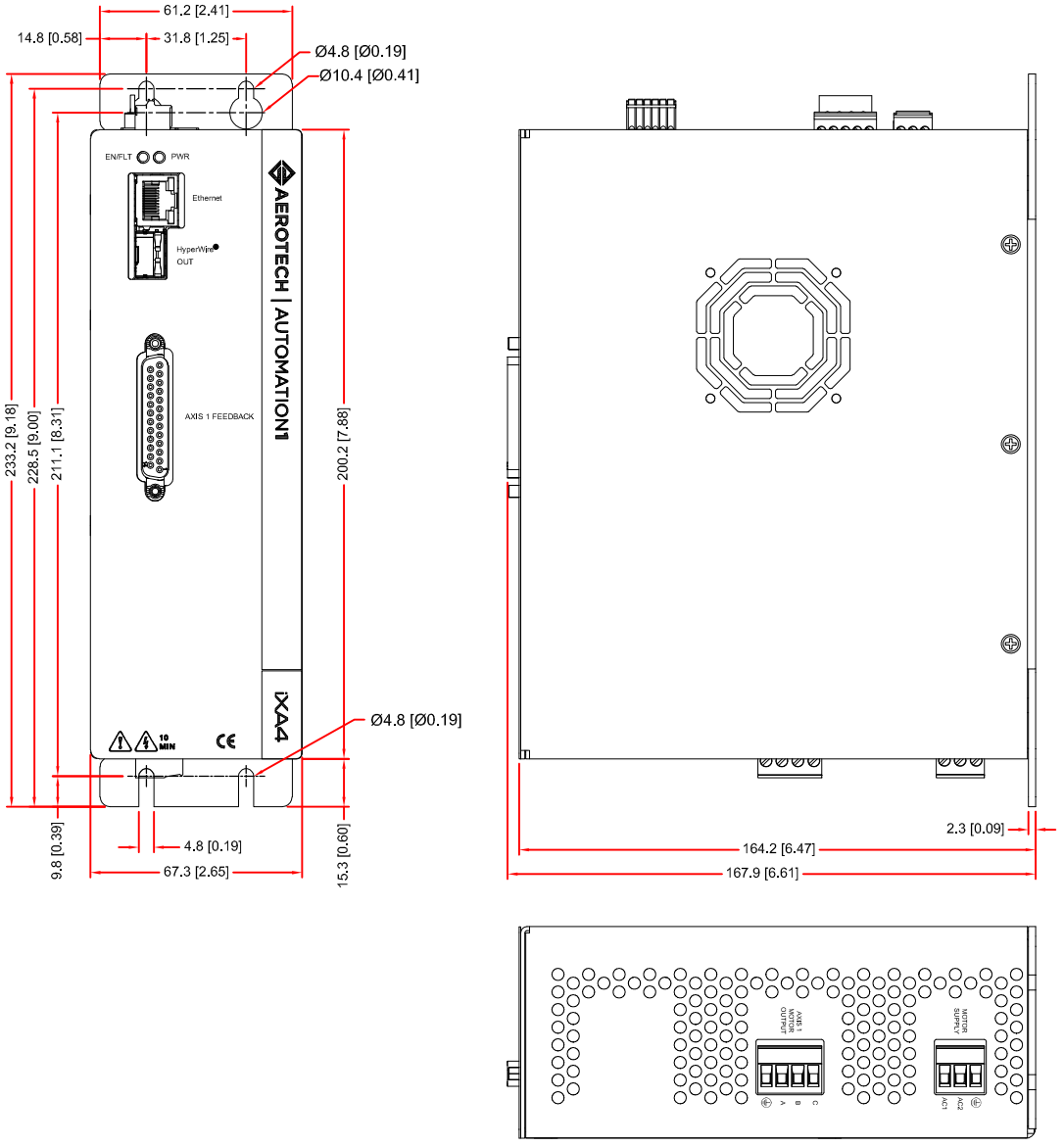
-EB0	No expansion board
-EB1	Standard density I/O expansion board
-EB2	High density I/O expansion board

PSO (Position Synchronized Output)

-PSO0	No PSO firing (default)
-PSO6	Three-axis Part-Speed PSO

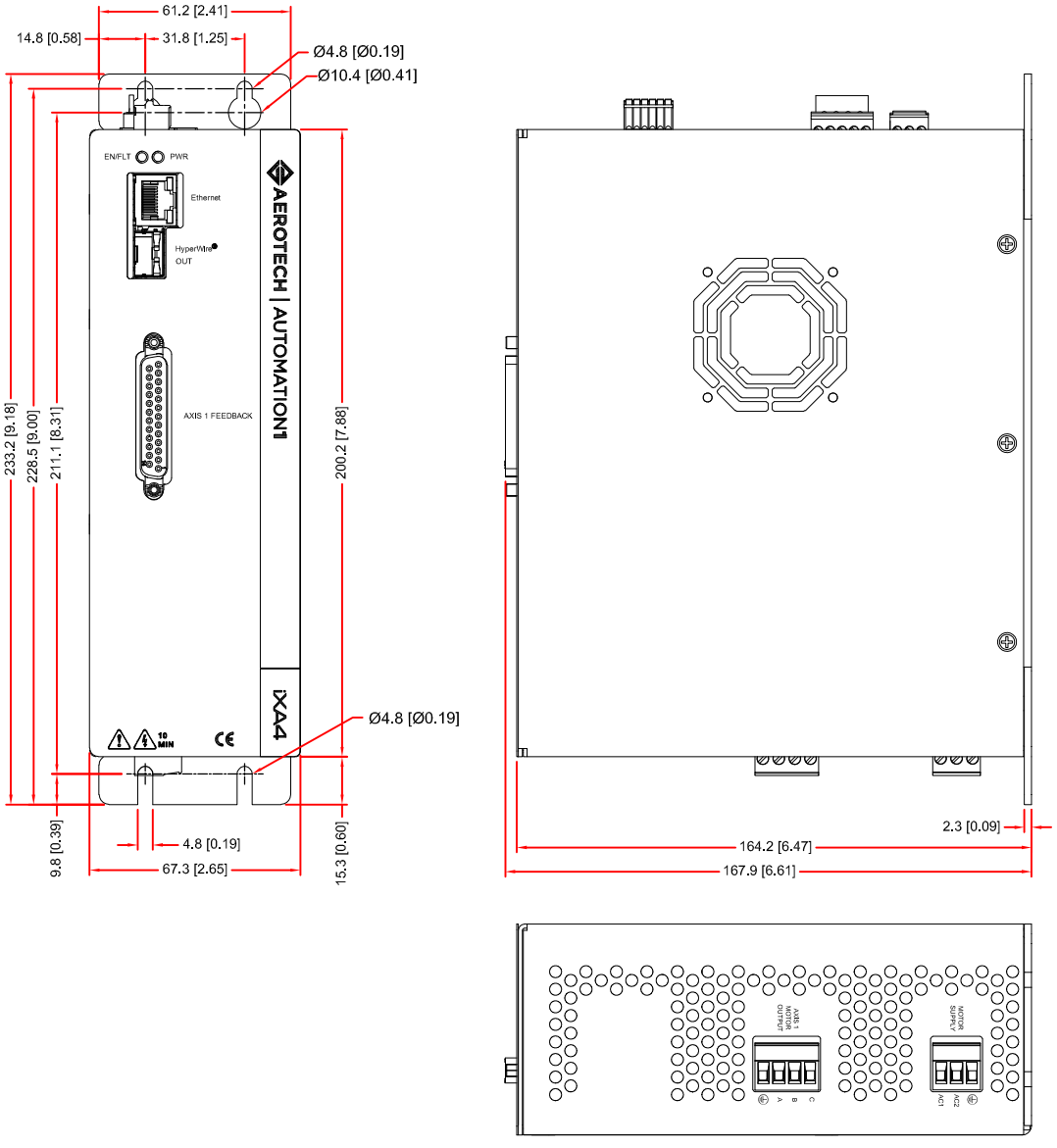
AUTOMATION1 iXA4 DIMENSIONS

AUTOMATION1-iXA4 SINGLE-AXIS WITH -IE0 OPTION



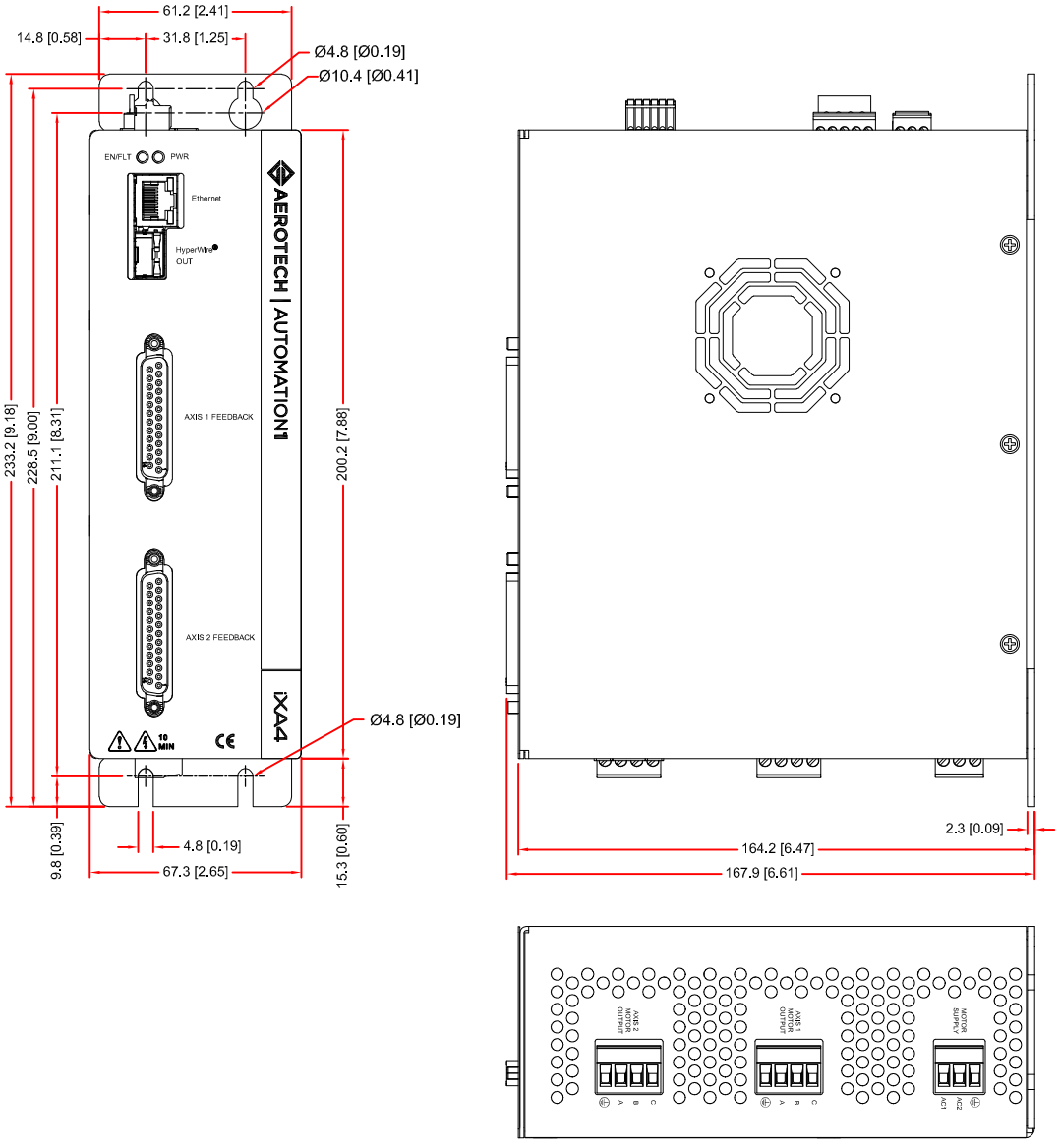
AUTOMATION1 iXA4 DIMENSIONS

AUTOMATION1-iXA4 SINGLE-AXIS WITH -IE1 OPTION



AUTOMATION1 iXA4 DIMENSIONS

AUTOMATION1-iXA4 TWO-AXIS WITH -IE1 OPTION



AUTOMATION1 iXA4 DIMENSIONS

AUTOMATION1-iXA4 FOUR-AXIS WITH -IE1 OPTION