

# AEROTECH AUTOMATION1

## 1- 2- or 4-Axis PWM Servo Drive with Motion Controller **Automation1 iXA4**

### Unlock the Power of Precision

Take control of your process using the iXA4 PWM Servo Drive with the full Automation1-iSMC Motion Controller. With the iXA4 you'll build more economical, more compact motion systems in less time thanks to its streamlined multi-axis hardware design with embedded controller. Control up to 12 HyperWire axes of motion, run up to nine user tasks on the embedded Automation1 controller, and connect to other automation devices over EtherCAT, EtherNet/IP™, Modbus TCP/IP or a TCP Socket interface.

The iXA4 supports multiple feedback device types and includes on-board memory. The amplifiers control brushless AC, brush DC, voice coil and stepper motor types up to 340 VDC operating voltage and 20 A peak current.

### 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
- ◆ **CONNECT TO THE CONTROLLER** using **EtherNet/IP™** | **EtherCAT®** | Modbus TCP/IP or TCP Socket interface
- ◆ **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**

<b>SPECIFICATION</b>	<b>SINGLE-AXIS (-AX1)</b>	<b>TWO-AXIS (-AX2)</b>	<b>FOUR-AXIS (-AX4)</b>
<b>Motion Controller</b>	Aerotech's <a href="#">Automation1-iSMC</a> 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		
<b>Number of Axes</b>	1	2	4
<b>Motor Style</b>	Brush, brushless, voice coil, stepper <sup>(1)</sup>		
<b>Motor Supply</b>	-AC: Single-phase 0-240 VAC; 50/60 Hz		
	-DC: Not available on -AX1	-DC: 15-100 VDC	
<b>Control Supply</b>	24 VDC		
<b>Bus Voltage<sup>(2)</sup></b>	-AC: 0-340 VDC		
	-DC: Not available on -AX1	-DC: 15-100 VDC	
<b>Peak Output Current (1 sec)<sup>(3)(4)</sup></b>	-10: 10 A <sub>pk</sub> -20: 20 A <sub>pk</sub> , only available on -AC option		
<b>Continuous Output Current<sup>(3)(5)(6)</sup></b>	-10: 5 A <sub>pk</sub> (-AX1 and -AX2 options); 4 A <sub>pk</sub> (-AX4 option); -20: 10 A <sub>pk</sub> (-AX1 option); 5 A <sub>pk</sub> (-AX2 option); 4 A <sub>pk</sub> (-AX4 option), only available on -AC option		
<b>Position Synchronized Output (PSO)</b>	Standard • No PSO support  Optional: • Three-axis Part-Speed PSO (includes one-axis PSO)		
<b>25-Pin Motor Feedback Connector</b>	<ul style="list-style-type: none"> <li>- High-speed differential inputs (encoder sin, cos and marker)</li> <li>- CW and CCW limits</li> <li>- Hall effect sensor inputs (A, B and C)</li> <li>- Analog motor temperature input (accepts digital)</li> <li>- Brake output</li> <li>- 1x 16-bit differential ±10 V analog input</li> </ul>		
<b>Multiplier Options</b>	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
<b>I/O Expansion Board (-EB1)</b>	<ul style="list-style-type: none"> <li>- 16x digital inputs, optically isolated</li> <li>- 16x digital outputs, optically isolated</li> <li>- 2x analog inputs, 16-bit, differential, ±10 V</li> <li>- 2x analog outputs, 16-bit, single-ended, ±10 V</li> <li>- Auxiliary encoder: 40 million counts-per-second square-wave input</li> </ul>		
<b>I/O Expansion Board (-EB2)</b>	<ul style="list-style-type: none"> <li>- 32x digital inputs, optically isolated</li> <li>- 32x digital outputs, optically isolated</li> <li>- 3x analog inputs, 16-bit, differential, ±10 V</li> <li>- 6x analog outputs, 16-bit, single-ended, ±10 V</li> <li>- Auxiliary encoder: 40 million counts-per-second square-wave input, 10 MHz maximum</li> </ul>		
<b>Drive Array Memory</b>	16.8 MB (4,194,304 32-bit elements)		67.1 MB (16,777,216 32-bit elements)
<b>High Speed Data Capture</b>	Yes (50 ns latency)		
<b>Safe Torque Off (STO)</b>	Yes, SIL3/PLe/Cat 4		
<b>HyperWire Connections</b>	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)
<b>Automatic Brake Control</b>	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
<b>Absolute Encoder</b>	BiSS C Unidirectional; EnDat 2.1; EnDat 2.2; SSI		
<b>Current Loop Update Rate</b>	20 kHz		
<b>Servo Loop Update Rate</b>	10 kHz		
<b>Operating Temperature</b>	0 to 40 °C		
<b>Storage Temperature</b>	-30 to 85 °C		
<b>Weight</b>	1 kg (2.2 lb)		1.5 kg (3.3 lb)
<b>Compliance</b>	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 ORDERING OPTIONS

### Automation1-iXA4

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

#### Axes

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<b>-AX1</b>	Single-axis servo motor drive
<b>-AX2</b>	Two-axis servo motor drive
<b>-AX4</b>	Four-axis servo motor drive

Note:

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

#### Motor Supply Voltage

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<b>-AC</b>	240 VAC rated motor supply
<b>-DC</b>	100 VDC rated motor supply

Note:

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

#### Current

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

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<b>-MX0</b>	No encoder multiplier (default)
<b>-MX1</b>	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

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<b>-IE0</b>	Does not include industrial Ethernet ports
<b>-IE1</b>	Includes industrial Ethernet ports

Note:

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

#### Expansion Board

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

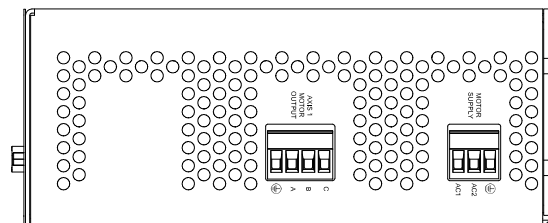
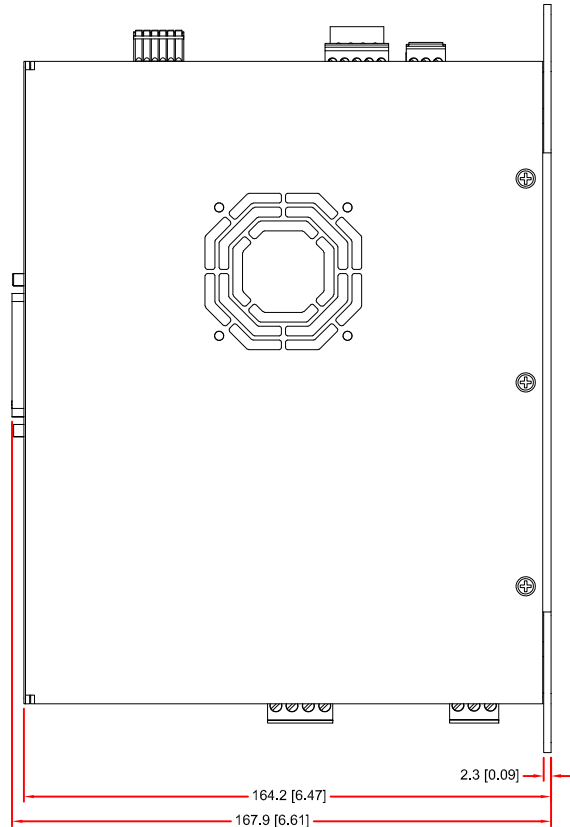
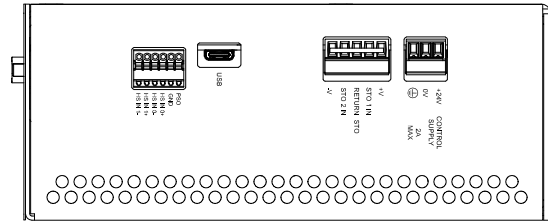
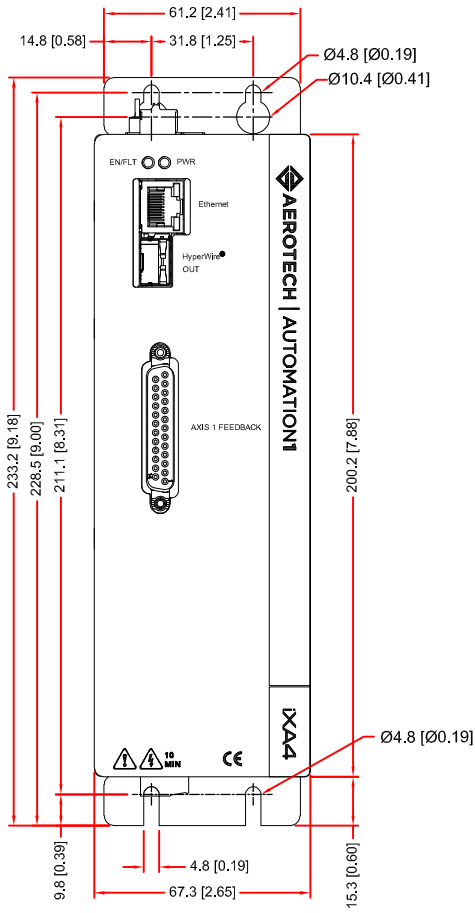
#### PSO (Position Synchronized Output)

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<b>-PSO0</b>	No PSO firing (default)
<b>-PSO6</b>	Three-axis Part-Speed PSO

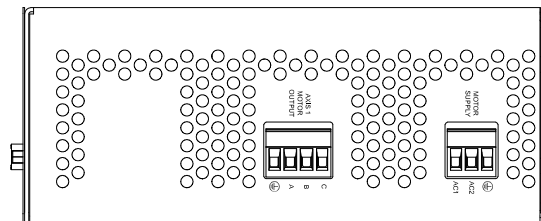
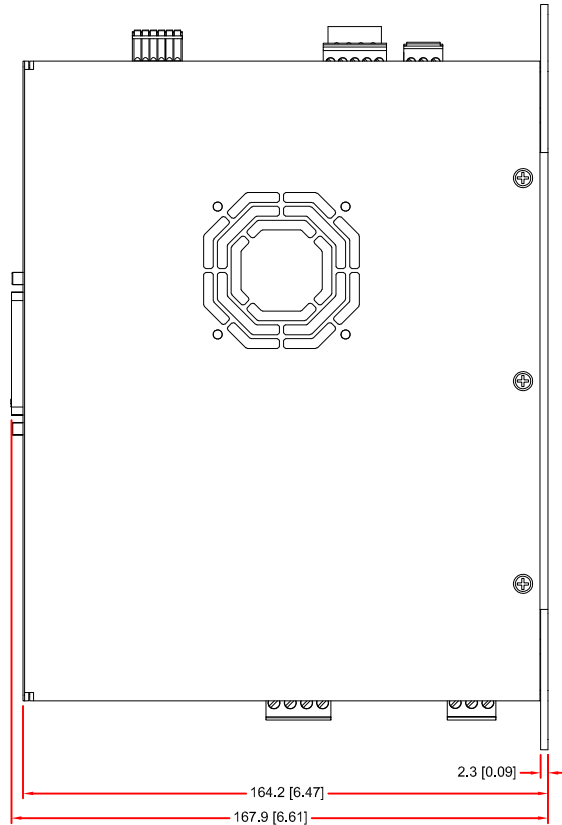
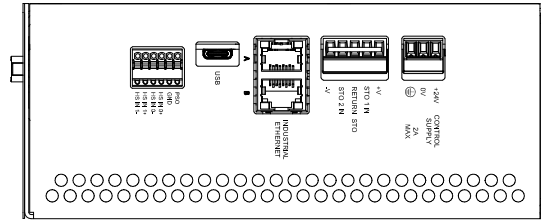
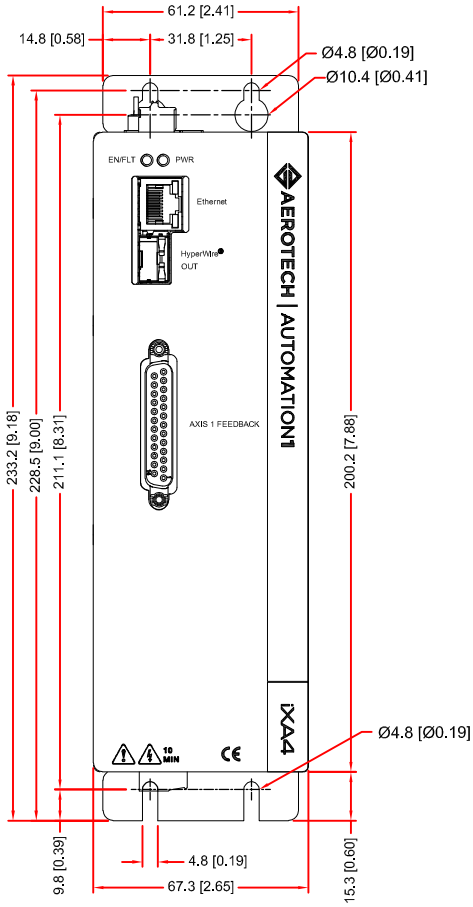
# AUTOMATION1 iXA4 DIMENSIONS

## AUTOMATION1-iXA4 SINGLE-AXIS WITH -IE0 OPTION



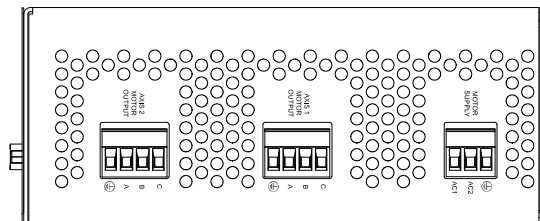
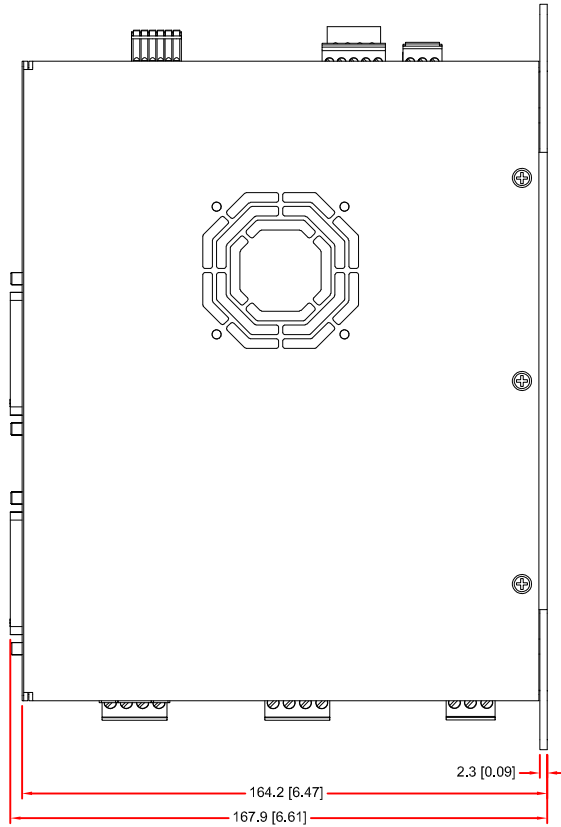
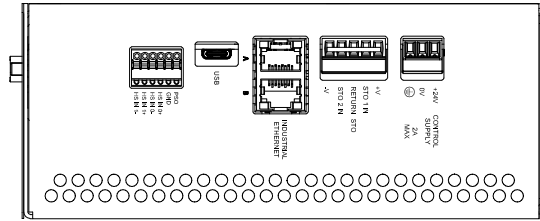
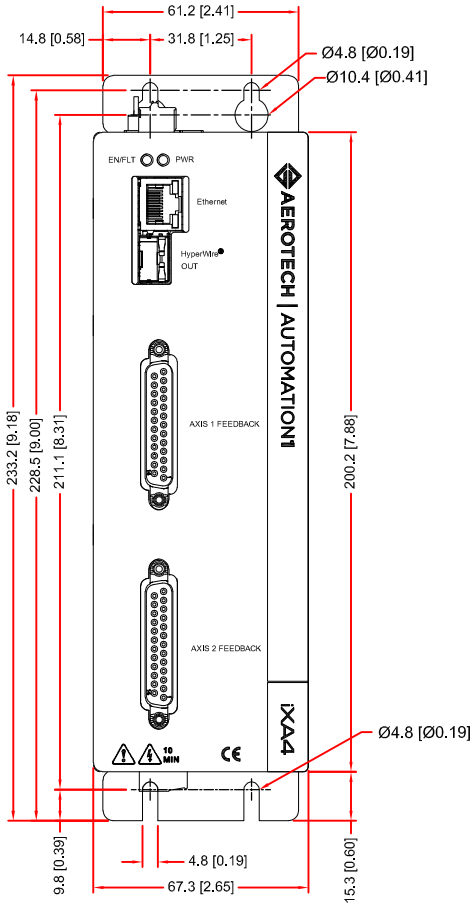
# AUTOMATION1 iXA4 DIMENSIONS

## 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

