

AEROTECH AUTOMATION1

PWM Servo Drive with Motion Controller **Automation1 iXC6e**

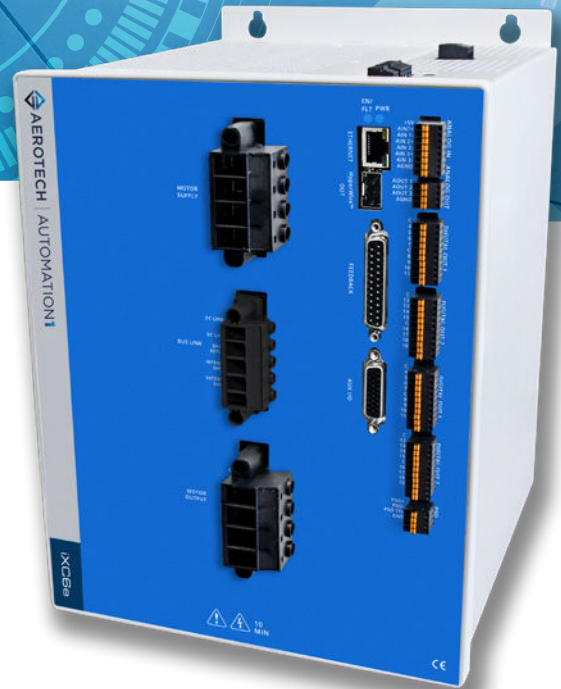
High-Powered Motion. High-Powered Control

Our Automation1-iXC6e single-axis PWM servo motor drive with integrated motion controller is two solutions in one: it's capable of complete machine control and also provides superior positioning and velocity control to high-powered linear or rotary servo motors — up to 100 amps peak at 680 VDC bus voltage. The iXC6e offers all the benefits of our iXC4e drive but with more power to move the largest payloads, so you'll accelerate large, brushless servo motors faster and reach higher top speeds without sacrificing smooth motion. Plus, the iXC6e can run the full Automation1-iSMC motion controller and connect to other Automation1 drive hardware over the HyperWire motion bus—making it the powerful center of your motion control architecture.

Automation1

The iXC6e 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:

- ◆ Unlocks the full motion control power of our Automation1-iSMC intelligent software-based motion controller
- ◆ Features **COMPLETE CONFIGURATION & PERFORMANCE CAPABILITY** of the XC6e PWM servo drive
- ◆ Provides **UP TO 100 AMPS** peak output
- ◆ Offers **240 VAC & 480 VAC** voltage options
- ◆ Eliminates the PC from your control scheme
- ◆ Allows for **UP TO 12 AXES OF CONTROL** when more Automation1 drives are connected over the HyperWire fiber-optic bus
- ◆ Includes **SAFE TORQUE OFF (STO)** safety circuit

AUTOMATION1 iXC6e CONTROLLER SPECIFICATIONS

Specification	Description		
Motion Controller⁽¹⁾	Aerotech's Automation1-iSMC Intelligent Software-Based Motion Controller (version 2.1 and above)		
Maximum Axes of Control⁽¹⁾	Up to 12 axes		
I/O Points⁽¹⁾	See "general specifications" below. Note: Controller can control I/O from connected devices.		
Programming Language⁽¹⁾	AeroScript, RS-274 G-code		
APIs⁽¹⁾	<ul style="list-style-type: none"> • .NET (cross-platform Linux support) • C (cross-platform Linux support) • Python (cross-platform Linux support) • EPICS (cross-platform Linux support) see EPICS.anl.gov 		
Programming Tasks⁽¹⁾	4 user tasks (standard) / 9 user tasks (optional) 1 reserved task		
Position Modes	Absolute, incremental, dynamic trajectory correction		
Motion Types⁽¹⁾	<ul style="list-style-type: none"> • Linear motion • Clockwise & counterclockwise • Jogging • Homing • Rapid • Freerun • Many more 		
Acceleration Profiles	<ul style="list-style-type: none"> • Linear (time & rate based) • Sine (time & rate based) • S-curve (time & rate based) 		
Velocity Profiling⁽¹⁾	Yes		
Safe Zones⁽¹⁾	Yes		
Advanced Features⁽¹⁾	<table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top; width: 50%;"> <ul style="list-style-type: none"> • Corner rounding • Tool normalcy control • Cutter compensation • Programmable fixture offsets⁽²⁾ • Rotation, mirroring & translation transformations • Part profile scaling • Polar & cylindrical transformations⁽²⁾ </td> <td style="vertical-align: top; width: 50%;"> <ul style="list-style-type: none"> • Orthogonality correction • Electronic gearing • EasyTune® & classical tuning • Backlash compensation • Spindle motion • High-speed registration • Multi-dimensional error mapping </td> </tr> </table>	<ul style="list-style-type: none"> • Corner rounding • Tool normalcy control • Cutter compensation • Programmable fixture offsets⁽²⁾ • Rotation, mirroring & translation transformations • Part profile scaling • Polar & cylindrical transformations⁽²⁾ 	<ul style="list-style-type: none"> • Orthogonality correction • Electronic gearing • EasyTune® & classical tuning • Backlash compensation • Spindle motion • High-speed registration • Multi-dimensional error mapping
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Access Control	No		
Controller File System	Yes (5 GB)		
Supported HyperWire Drives	<table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top; width: 50%;"> <ul style="list-style-type: none"> • Automation1-XC6e⁽³⁾⁽⁴⁾ • Automation1-XC4e⁽³⁾⁽⁴⁾ • Automation1-XC2e⁽³⁾⁽⁴⁾ • Automation1-XC4⁽³⁾⁽⁴⁾ • Automation1-XC2⁽³⁾⁽⁴⁾ </td> <td style="vertical-align: top; width: 50%;"> <ul style="list-style-type: none"> • Automation1-XR3⁽³⁾ • Automation1-XL5e⁽³⁾⁽⁴⁾ • Automation1-XL2e⁽³⁾⁽⁴⁾ • Automation1-SI4⁽³⁾ • Automation1-XI4⁽³⁾ </td> </tr> </table>	<ul style="list-style-type: none"> • Automation1-XC6e⁽³⁾⁽⁴⁾ • Automation1-XC4e⁽³⁾⁽⁴⁾ • Automation1-XC2e⁽³⁾⁽⁴⁾ • Automation1-XC4⁽³⁾⁽⁴⁾ • Automation1-XC2⁽³⁾⁽⁴⁾ 	<ul style="list-style-type: none"> • Automation1-XR3⁽³⁾ • Automation1-XL5e⁽³⁾⁽⁴⁾ • Automation1-XL2e⁽³⁾⁽⁴⁾ • Automation1-SI4⁽³⁾ • Automation1-XI4⁽³⁾
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Industrial Ethernet Communication	EtherCAT (Optional)		
Communication/Configuration Connection	<ul style="list-style-type: none"> • Ethernet • USB 		

Note:

1. See the [Automation1-iSMC](#) controller page for more information.
2. May require advanced programming.
3. Contains I/O on base drive.
4. Drive I/O expansion board option available.

AUTOMATION1 iXC6e GENERAL SPECIFICATIONS

Category	Specification						
Motor Style	Brush, brushless, voice coil, stepper ⁽¹⁾						
Control Supply	100-240 VAC; 50/60 Hz						
Motor Supply	240 VAC (three-phase), 50/60 Hz			480 VAC (three-phase), 50/60 Hz			
Bus Voltage ⁽²⁾	0-340 VDC			340-680 VDC			
PWM Frequency	20 kHz ⁽³⁾						
Peak Output Current (1 sec) ⁽⁴⁾⁽⁵⁾	50 A _{pk}	100 A _{pk}	10 A _{pk}	20 A _{pk}	30 A _{pk}	50 A _{pk}	100 A _{pk}
Continuous Output Current ⁽⁴⁾⁽⁵⁾	25 A _{pk}	50 A _{pk}	5 A _{pk}	10 A _{pk}	15 A _{pk}	25 A _{pk}	30 A _{pk} @ 20 KHz 50 A _{pk} @ 10 KHz
Position Synchronized Output (PSO)	Standard: One-axis PSO (includes One-axis part-speed PSO) Optional: Two-axis PSO (includes two-axis part-speed PSO) Three-axis PSO (includes three-axis part-speed PSO) Two-axis part-speed PSO only Three-axis part-speed PSO only						
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						
26-Pin Auxiliary Feedback Connector	High-speed differential inputs (encoder sin, cos and marker)* 4x optically isolated digital inputs 4x optically isolated digital outputs 1x 16-bit differential ±10 V analog input 1x 16-bit single-ended ±10 V analog output 2x optically isolated high-speed inputs *This channel is bidirectional and can be used to echo out encoder signals.						
Multiplier Options	MX0 option: Primary encoder: 40 million counts per second square-wave input Auxiliary encoder: 40 million counts per second square-wave input MX2 option: Primary encoder: 2 MHz/450 kHz (bandwidth selectable) sine-wave input, encoder multiplier up to 65,536 Auxiliary encoder: 40 million counts per second square-wave input MX3 option: Primary encoder: 2 MHz/450 kHz (bandwidth selectable) sine-wave input, encoder multiplier up to 65,536 Auxiliary encoder: 450 kHz sine-wave input, encoder multiplier up to x16,384* *Encoders multiplied with this input cannot be echoed out.						
I/O Expansion Board (-EB1)	1x additional PSO connection point 16x digital inputs, optically isolated 16x digital outputs, optically isolated 3x analog inputs, 16-bit, differential, ±10 V 3x analog outputs, 16-bit, single-ended, ±10 V						
Drive Array Memory	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	2x HyperWire small form-factor pluggable (SFP) ports						
Automatic Brake Control	Standard; 24 V at 1 A						
Absolute Encoder	BiSS C Unidirectional; EnDat 2.1; EnDat 2.2						
Current Loop Update Rate	20 kHz						
Servo Loop Update Rate	20 kHz						
Power Amplifier Bandwidth	Selectable through software (85-95% efficiency)						

chart continued on next page

AUTOMATION1 iXC6e GENERAL SPECIFICATIONS

Category	Specification
Minimum Load Inductance	0.1 mH
Operating Temperature	0 to 40 °C
Storage Temperature	-30 to 85 °C
Weight	6.30 kg (13.89 lb)
Compliance	CE approved EU 2015/863 RoHS 3 directive, Pending NRTL safety certification

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 dependent upon input voltage.
3. The specifications on this table are for 20kHz operation unless noted. All versions of this drive can be changed to 10kHz if motor heating caused by the environment or the operation of the drive becomes an issue.
4. Peak value of the sine wave; rms current for AC motors is $0.707 A_{pk}$.
5. Rated at 25°C ambient temperature.

AUTOMATION1 iXC6e ORDERING OPTIONS

Automation1 iXC6e

Automation1-iXC6e Automation1-iXC6e - Enhanced, High-Powered PWM Servo Drive with Motion Controller

Peak Current

- 10 10 A peak, 5 A cont. current (480V input only)
- 20 20 A peak, 10 A cont. current (480V input only)
- 30 30 A peak, 15 A cont. current (480V input only)
- 50 50 A peak, 25 A cont. current
- 100 100 A peak, 50 A cont. current

Rated Motor Supply Voltage

- 240V1 240 VAC Rated Motor Supply Voltage (50/100 Amp Versions)
- 480V1 480 VAC Rated Motor Supply Voltage (50/100 Amp Versions)
- 480V2 480 VAC Rated Motor Supply Voltage (10/20/30 Amp Versions)

Expansion Board

- EB0 No expansion board (default)
- EB1 IO expansion board

Multiplier

- MX0 No encoder multiplier (default)
- MX2 2 MHz x65536 multiplier (primary), no multiplier (auxiliary)
- MX3 2 MHz x65536 multiplier (primary), 450 kHz x16384 multiplier (auxiliary)

PSO

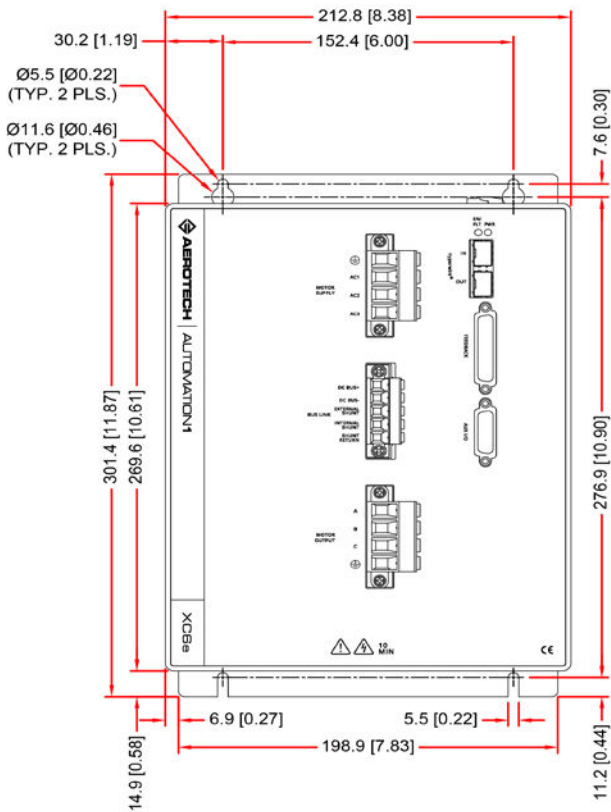
- PSO1 One-Axis PSO (includes One-axis Part-Speed PSO) (Default)
- PSO2 Two-Axis PSO (includes Two-Axis Part-Speed PSO)
- PSO3 Three-Axis PSO (includes Three-Axis Part-Speed PSO)
- PSO5 Two-Axis Part-Speed PSO
- PSO6 Three-Axis Part-Speed PSO



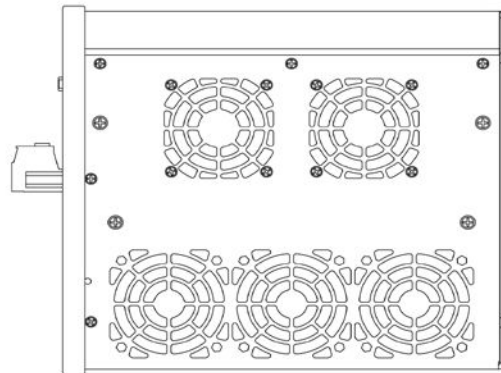
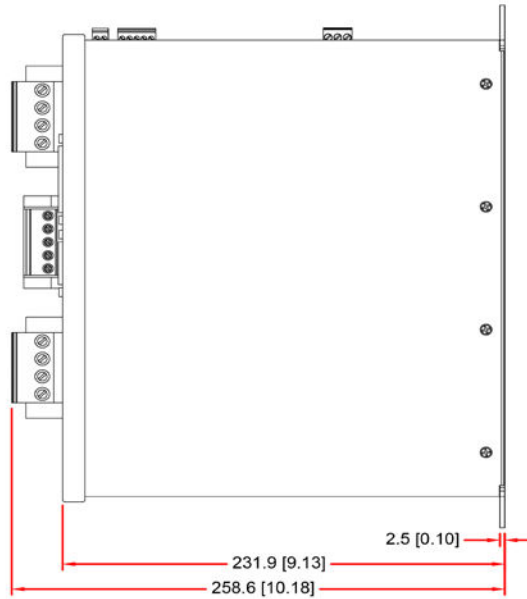
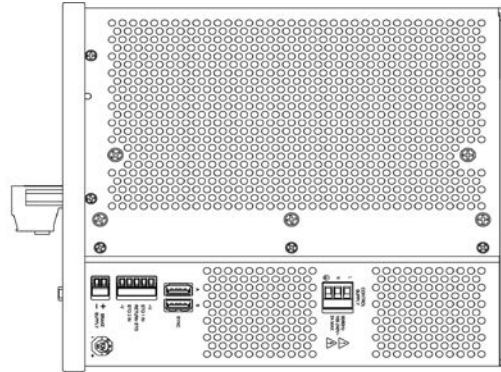
AUTOMATION1 iXC6e DIMENSIONS

AUTOMATION1-iXC6e with -EBO (No Expansion Board) option

Estimated Dimensions, Official Copy is Pending



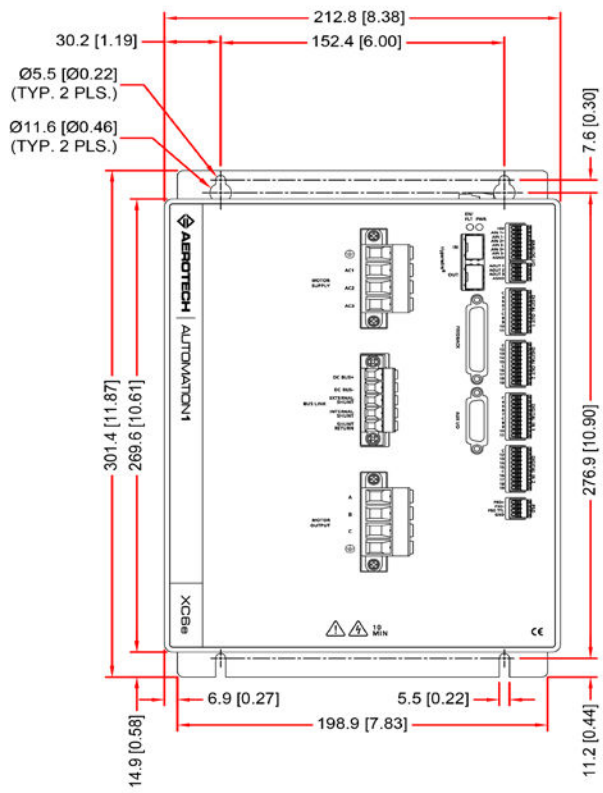
REC. MTG. HDWR: M5 [#10]



AUTOMATION1 iXC6e DIMENSIONS

AUTOMATION1-iXC6e with -EB1 (Expansion Board) option

Estimated Dimensions, Official Copy is Pending



REC. MTG. HDWR: M5 [#10]

