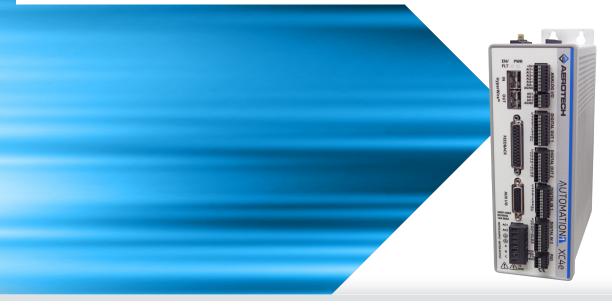
### SERVOMOTOR DRIVES AUTOMATION1-XC4e



Aerotech's XC4e next-generation panel-mount controller with high-speed optical HyperWire® communication bus.

The XC4e PWM digital drive is Aerotech's highest performance single-axis motor drive for motion control applications. All versions are compatible with the Automation 3200 motion platform utilizing the HyperWire<sup>®</sup> motion bus.

The XC4e PWM amplifiers control brushless DC, brush DC, voice coil, or stepper motor types at up to 340 VDC operating voltage and 30 A peak current capability. The current loop and servo-loop are closed digitally to assure the highest level of positioning accuracy and rate stability. This allows loop closure rates of up to 20 kHz and allows digital and analog I/O processing, data collection, process control, and encoder multiplication tasks in real time.

Standard features for the XC4e include safe torque off (STO), a data array consisting of over 16 million 32-bit elements, digital and analog I/O (see table), one-axis Position Synchronized Output (PSO), dedicated home and end-of-travel limit inputs, and an enhanced current sense device. Encoder support includes square-wave, sine-wave, and absolute encoders.

The standard XC4e accepts square-wave encoder feedback at rates of up to 40 million counts-per-second. Sine-wave encoders

can be multiplied by up to 65,536, producing Aerotech's highestresolution position feedback, with the optional encoder multiplier feature. Dual-multiplied encoder feedback is supported.

Each single-axis XC4e PWM digital drive can be ordered with the MX2 high-performance single encoder multiplier or the MX3 highperformance dual-loop encoder multiplier, enabling higher levels of position and velocity control.

Also available are a wide variety of extensions of the base PSO functionality. Track up to three encoders in real time with threeaxis PSO or extend PSO's functionality to kinematic arrangements through the use of Aerotech's Part-Speed PSO feature.

Each drive has an optional I/O expansion board to greatly increase the number of I/O points. This I/O board includes a dedicated PSO output and a PSO synchronization input, often used to synchronize process control with an external modelocked frequency input.

#### · PRODUCT HIGHLIGHTS -

HyperWire<sup>®</sup> fiber-optic interface

Up to 30 A peak output current

Drive brush, brushless, voice coil, or stepper motors

Safe torque off (STO) safety circuit

Optional two-axis or three-axis position synchronized Output (PSO)

Optional two-axis or three-axis Part-Speed PSO

I/O expansion board

NRTL safety certification and CE approval; follows the 2011/65/EU RoHS 2 Directive

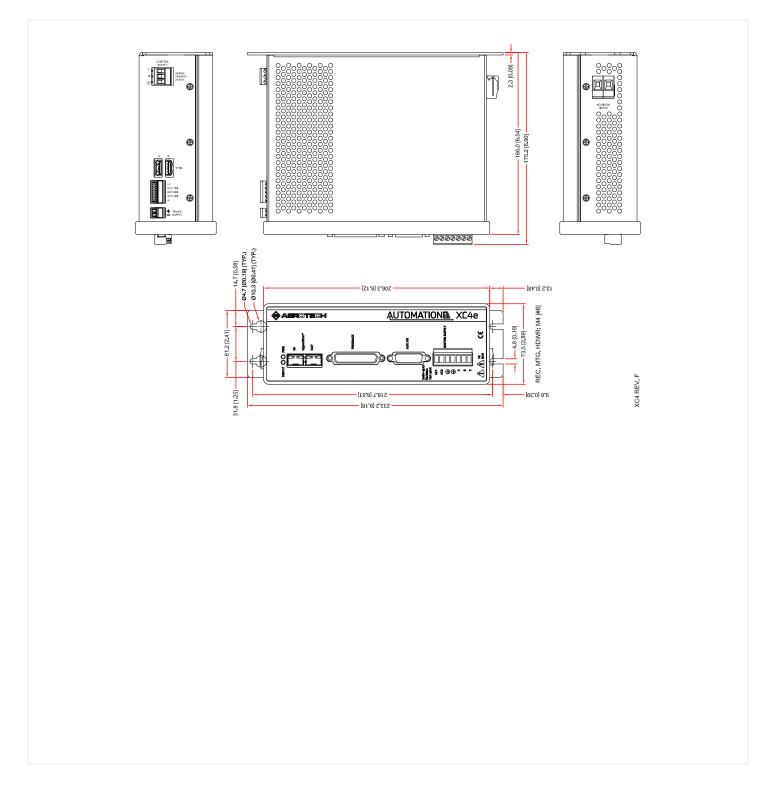
Supports amplified sine-wave encoders up to 2 MHz

#### Automation1-XC4e Specifications

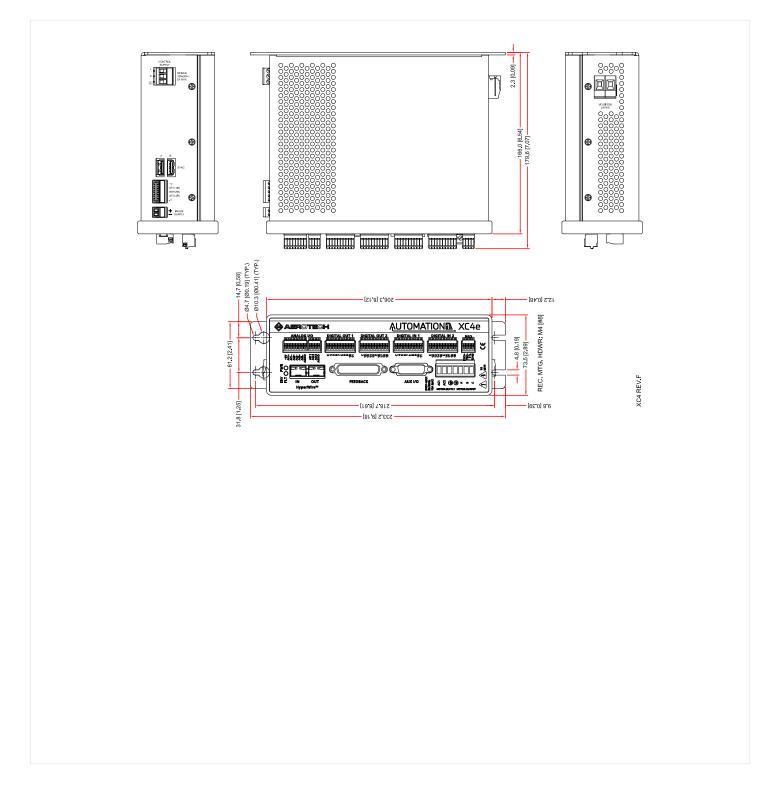
Specifications	10	20	30
Motor Style	Brush, brushless, voice coil, stepper <sup>1</sup>		
Motor Supply	Single-phase 0-240 VAC; 50/60 Hz		
Control Supply	100-240 VAC; 50/60 Hz		
Bus Voltage <sup>2</sup>	0-340 VDC		
Peak Output Current (1 sec) <sup>33</sup>	10 A <sub>pk</sub> 20 A <sub>pk</sub> 30 A <sub>pk</sub>		
Continuous Output Current <sup>3</sup>	5 A <sub>pk</sub>	· · · · · · · · · · · · · · · · · · ·	A <sub>pk</sub>
Digital Inputs	4x optically isolated (additional available with -EB1 I/O expansion board, see below)		
Digital Outputs	4x optically isolated (additional available with -EB1 I/O expansion board, see below)		
High-Speed Inputs	2x optically isolated		
Analog Inputs	1x 16-bit differential ±10 V (additional available with -EB1 I/O expansion board, see below)		
Analog Outputs	1x 16-bit single-ended; ±10 V (additional available with -EB1 I/O expansion board, see below)		
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)* Contains the digital inputs and digital outputs listed above Contains the high-speed inputs listed above Contains the analog inputs and analog outputs listed above *This channel is bidirectional, and can be used to echo out encoder signal		
Multiplier Options	MX0; no encoder multiplier includes: Primary encoder 40 million counts-per-second square-wave input Auxiliary encoder 40 million counts-per-second square-wave input MX2; MX2 encoder multiplier includes: Primary encoder 2 MHz sine-wave input, encoder multiplier up to x65,536 Auxiliary encoder 40 million counts-per-second square wave input. MX3; MX3 encoder multiplier includes: Primary encoder 2 MHz sine-wave input, encoder multiplier up to x65,536 Auxiliary encoder 40 million counts-per-second square wave input.		
I/O Expansion Board (-EB1)	1x additional PSO connection point 1x PSO synchronization Input 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	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	Renishaw Resolute BiSS; EnDat 2.1; and EnDat 2.2		
Current Loop Update Rate	20 kHz		
Servo Loop Update Rate	8 kHz		
Power Amplifier Bandwidth	Selectable through software (85-95% efficiency)		
Minimum Load Inductance	0.1 mH		
Operating Temperature	0 to 40°C		
Storage Temperature	-30 to 85°C		
Weight	2.36 kg (5.20 lb.)		
Compliance	CE approved,	NRTL safety certification, 2011/65/EU R	oHS 2 directive

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).
Output voltage dependent upon input voltage.
Peak value of the sine wave; rms current for AC motors is 0.707 \* Apk.

# Automation1-XC4e **Dimensions**



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# Automation1-XC4e Ordering Information

XC4e	
XC4e	XC4e PWM digital drive
Peak Current	
-10 -20 -30	10 A peak, 5 A cont. current (default) 20 A peak, 10 A cont. current 30 A peak, 10 A cont. current
<b>Expansion Board</b>	
-EB0 -EB1	No expansion board (default) IO expansion board
Multiplier	
-MX0 -MX2 -MX3	No encoder multiplier (default) 2 MHz x65536 multiplier (primary), no multiplier (auxiliary) 2 MHz x65536 multiplier (primary), 450 kHz x16384 multiplier (auxiliary)
PSO	
-PSO1 -PSO2 -PSO3 -PSO5 -PSO6	One-Axis PSO (default) Two-Axis PSO Three-Axis PSO Two-Axis Part-Speed PSO Three-Axis Part-Speed PSO
External Shunt	
-SX0 -SX1	No 2-pin connector for external shunt (default) 2-pin connector for external shunt