

SERVOMOTOR DRIVES **AUTOMATION1 XC2**



Aerotech's XC2 next-generation panel mount controller with high-speed optical HyperWire communication bus.

The XC2 PWM digital drive is a small form-factor, high-performance single-axis motor drive designed for motion control applications. All versions are compatible with the Automation 3200 motion platform utilizing the HyperWire® motion bus.

The XC2 can control brushless DC, brush DC, voice coil, or stepper motor types at up to 100 VDC operating voltage and 10 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 XC2 include safe torque off (STO), a data array consisting of over 4 million 32-bit elements, 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 XC2 accepts square-wave encoder feedback at rates of up to 40 million counts-per-second. Sine-wave encoders can be multiplied by up to 16,384, producing high-resolution position

feedback, with the optional encoder multiplier feature.

Quickly mount, wire, and power XC2 drives by using the Automation1 PS2 power supply. This DIN rail mounted supply is configurable with 24, 48 and 96 VDC options and can be used to power up to four (4) XC2 drives.

Each single-axis XC2 PWM digital drive has an optional I/O expansion board; greatly increasing the number of I/O points. This I/O board also includes a dedicated PSO output.

— PRODUCT HIGHLIGHTS —

HyperWire® fiber-optic interface

10 A peak output current

Drive brush, brushless, voice coil, or stepper motors

Safe torque off (STO) safety circuit

Includes single-axis Position Synchronized Output (PSO)

I/O expansion board

High resolution digital current, velocity, and position loops

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

Automation1 XC2 Specifications

Specifications	10
Motor Style	Brush, brushless, voice coil, stepper ¹
Motor Supply/Bus Voltage ²	15-100 VDC
Control Supply	24 VDC
Peak Output Current (1 sec) ³	10 A _{pk}
Continuous Output Current ³	5 A _{pk}
Digital Inputs	0 (available with -EB1 I/O expansion board, see below)
Digital Outputs	0 (available with -EB1 I/O expansion board, see below)
Analog Inputs	0 (available with -EB1 I/O expansion board, see below)
Analog Outputs	0 (available with -EB1 I/O expansion board, see below)
Position Synchronized Output (PSO)	One-axis PSO and one-axis Part-Speed PSO (available with -EB1 I/O expansion board, see below)
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) Brake output
Multiplier Options	MX0; no encoder multiplier includes: <ul style="list-style-type: none"> • Primary encoder 40 million counts-per-second square-wave input • Auxiliary encoder 40 million counts-per-second square-wave input MX1; MX1 encoder multiplier includes: <ul style="list-style-type: none"> • Primary Encoder 200 kHz sine-wave input, Encoder multiplier up to x16,384⁴ • Auxiliary Encoder 40 million samples-per-second square wave input.
I/O Expansion Board (-EB1)	1x PSO connection point 8x digital inputs, optically isolated 8x digital outputs, optically isolated 1x analog inputs, 16-bit, differential, ±10 V 1x analog outputs, 16-bit, single-ended, ±10 V
Available Power Supply	Automation1 PS2
Drive Array Memory	4,194,304 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	20 kHz
Power Amplifier Bandwidth	2500 Hz maximum (software selectable)
Power Amplifier Efficiency	85-95% ⁵
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, EU 2015/863 RoHS 3 directive

1 For stepper motors only, one-half of bus voltage is applied across the motor (e.g., 100 VDC supply results in 50 VDC across stepper motor)

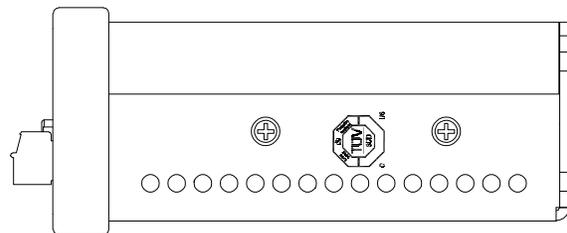
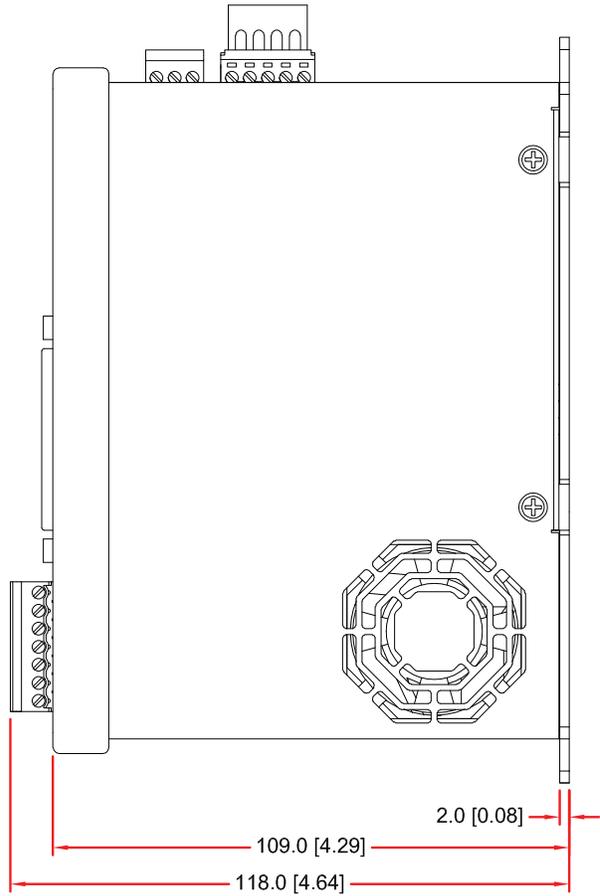
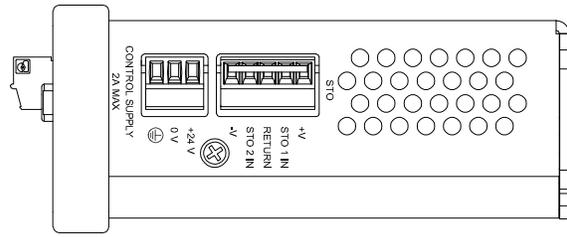
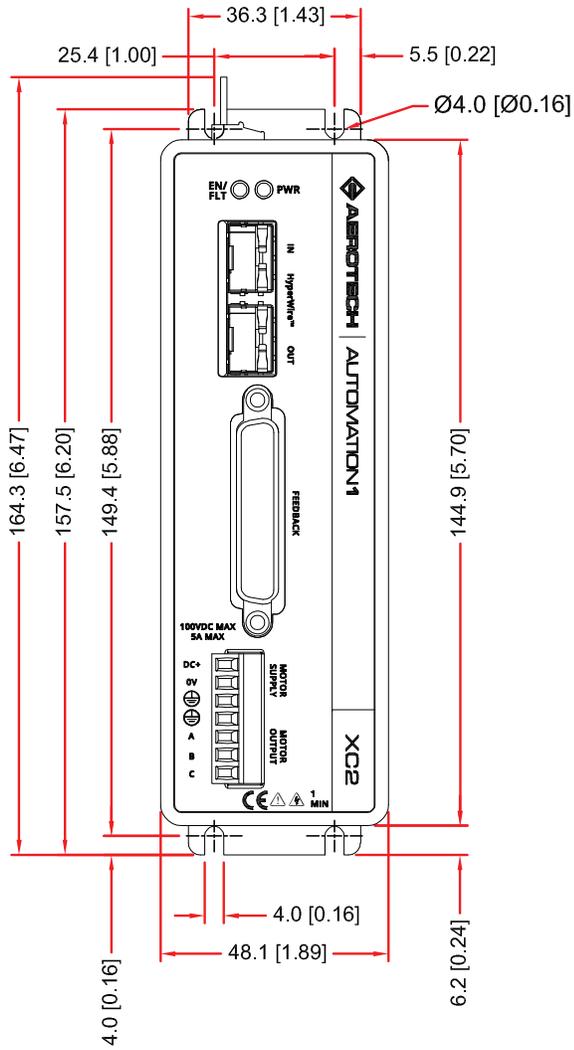
2 Output voltage dependent upon input voltage.

3 Peak value of the sine wave; rms current for AC motors is $0.707 \cdot A_{pk}$.

4 Multiplied encoder cannot be echoed out.

5 Dependent on total output power: efficiency increases with increasing output power.

Automation1 XC2 Dimensions



Automation1 XC2 **Ordering Information**

Automation1-XC2

Automation1-XC2 XC2 PWM digital drive

Peak Current

-10 10 A peak, 5 A cont. current (default)

Expansion Board

-EB0 No expansion board (default)

-EB1 IO expansion board

Multiplier

-MX0 No encoder multiplier (default)

-MX1 200 kHz x16384 multiplier (primary), no multiplier (auxiliary)

PSO

-PSO1 One-Axis PSO (default; includes One-Axis Part-Speed PSO)

Note: PSO functionality is included in the base XC2. The -EB1 board is required to use PSO logic to generate an output signal.

Automation1 PS2

Automation1 PS2 Automation1 PS2 Power Supply for XC2e, XC2, and future XL2e Digital Drives

Drive Type (Required)

-D1 PS2 for XC2e and XC2 Drives

Power Output (Required)

-P1 240 Watts at 24 VDC

-P2 240 Watts at 48 VDC

-P3 480 watts at 48 VDC

-P4 480 watts at 96 VDC

Number of Axes (Required)

-AX01 1 Axis of Wiring

-AX02 2 Axes of Wiring

-AX03 3 Axes of Wiring

-AX04 4 Axes of Wiring