PWM Servo Motor Drives
Automation1 XC2

Compact and Effective

The Automation1 XC2 pulse-width modulation (PWM) servo motor drive is our smallest panel-mount drive. Packed with standard features–including safe torque off (STO) and a drive array with more than 16.7 MB of memory–it also has expansion options like analog and digital input/output (I/O), multi-axis position synchronized outputs (PSO), a feedback multiplier and more.

You'll achieve excellent motion control performance with the XC2. The servo and current loops are closed at 20 kHz, and digital and analog outputs are set and inputs are collected at 20 kHz.

Automation1

The XC2 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:

- Connects through the HyperWire® fiber-optic bus, which has **20 TIMES THE BANDWIDTH** of 100BASE-T Ethernet buses

- Includes **SAFE TORQUE OFF (STO)** safety circuit

- Generates **100 VDC BUS** motor power & up to **10 AMPS PEAK** output

- Features drive array with **MORE THAN 16.7 MB** of memory

- Collects analog sensor or position data **UP TO 320 kHz** (triggered by axis position)

- Offers many optional features, including Multi-axis Position Synchronized Output (PSO) and I/O expansion board

CATEGORY	SPECIFICATION
Motor Style	Brush, brushless, voice coil, stepper[1]
Control Supply	24 VDC
Motor Supply	15-100 VDC
Bus Voltage[2]	15-100 VDC
PWM Frequency	20 kHz
Peak Output Current (1 sec)[3]	10 A_{pk}
Continuous Output Current [3]	5 A
Position Synchronized Output (PSO)	Standard: One-axis PSO (includes one-axis part-speed PSO)* Optional: Three-axis part-speed PSO* *Requires adding an expansion board to the drive to output PSO pulses via a physical connection
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
Multiplier Options	MX0 option: Primary encoder: 40 million counts per second square-wave input Auxiliary encoder: 40 million counts per second square-wave input MX1 option: Primary encoder: 200 kHz sine-wave input, Encoder multiplier up to x16,3844* Auxiliary encoder: 40 million counts per second square-wave input *Encoders multiplied with this input cannot be echoed out
I/O Expansion Board (-EB1)	PSO output connector with up to 12.5 MHz output rate Auxiliary Encoder Port 1x 16-bit differential, ±10 V analog input 1x 16-bit single-ended, ±10 V analog output 8x optically isolated digital inputs 8x optically isolated digital outputs
Drive Array Memory	16.7 MB (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 0.5 A)

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AUTOMATION1 XC2 CONTROLLER SPECIFICATIONS

CATEGORY	SPECIFICATION
Absolute Encoder	Renishaw Resolute BiSS; EnDat 2.1; EnDat 2.2, and SSI
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%[4]
Minimum Load Inductance	0.1 mH
Operating Temperature	0 to 40 °C
Storage Temperature	-30 to 85 °C
Weight	0.54 kg (1.20 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., 80 VDC supply results in 40 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 A_{pk}.
4. Dependent on total output power: efficiency increases with increasing output power.

Automation1-XC2

Automation1-XC2	Automation1-XC2 - Compact PWM Servo 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	x16384 Multiplier (Primary), No Multiplier (Auxiliary)

PSO[1,2]

-PSO1	One-Axis PSO (includes One-axis Part-Speed PSO) (Default)
-PSO6	Three-Axis Part-Speed PSO

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

2. Encoder feedback-based PSO requires the -MX0 multiplier option.

Automation1-PS2

Automation1 PS2	Automation1-PS2 - Din-Rail Mounted Power Supply for 1 to 4 Compact Servo Drives

Drive Type (Required)

-D1	PS2 for XC2 & XC2e Drives and iXC2e & iXC2 Drive-based Controllers
-D2	PS2 for XL2e Drives and iXL2e Drive-based Controllers

Power Output (Required)

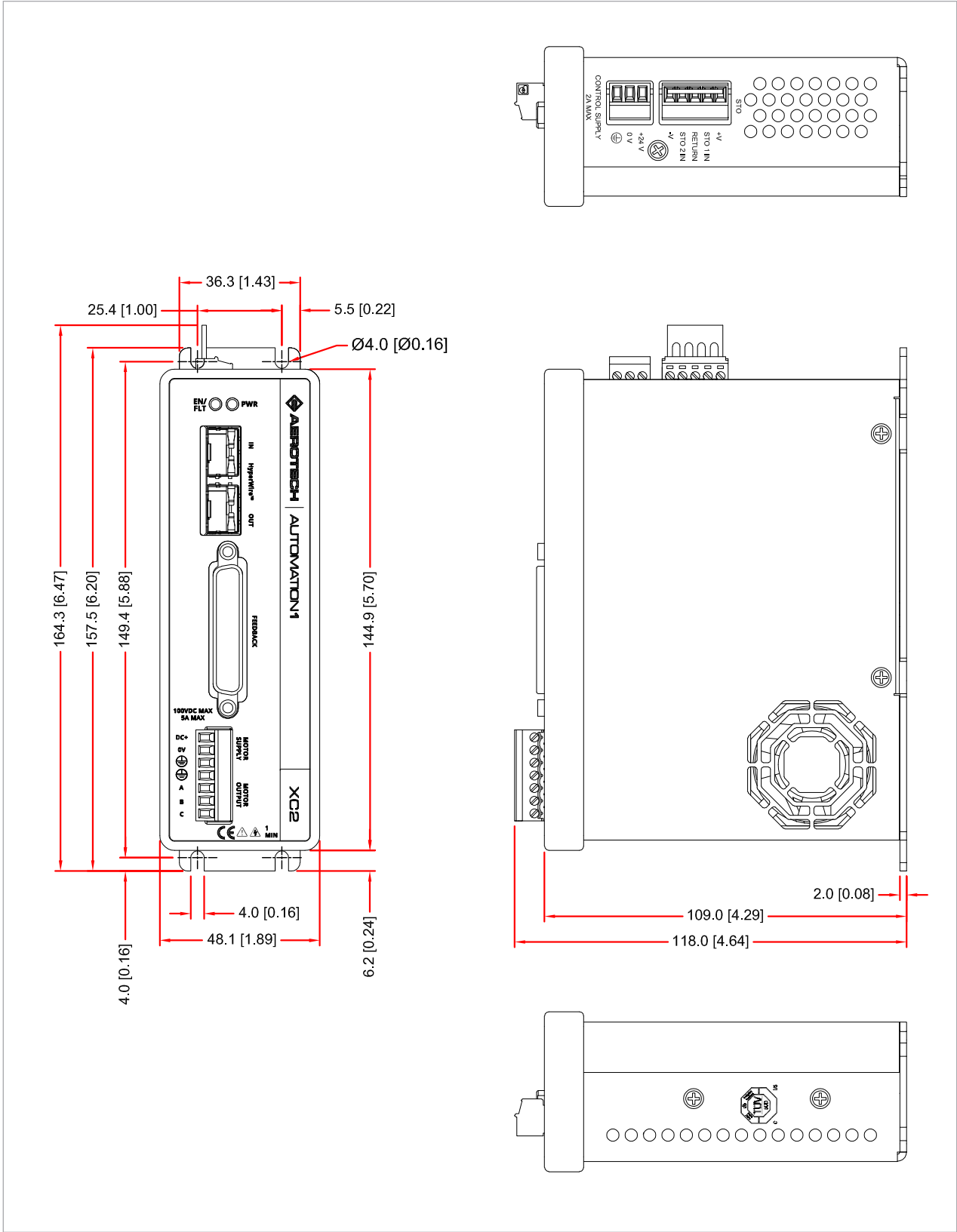|	
-P1	240 Watts at 24 VDC
-P2	240 Watts at 48 VDC
-P3	480 watts at 48 VDC
-P4	480 watts at 96 VDC
-P5	240 Watts at +/-12 VDC (10A)
-P6	240 Watts at +/-24 VDC (5A)
-P7	480 Watts at +/-48 VDC (5A)

Number of Axes (Required)

-AX01	1 Axis of Wiring
-AX02	2 Axes of Wiring
-AX03	3 Axes of Wiring
-AX04	4 Axes of Wiring

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36.3 [1.43]
25.4 [1.00]
5.5 [0.22]
Ø4.0 [Ø0.16]

CONTROL SUPPLY
2A MAX
0 V
+24 V
STO
+V
STO 1 IN
RETURN
STO 2 IN
+V

EN/ FLT
PWR

IN
HyperWire
OUT

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FEEDBACK

100VDC MAX
5A MAX

DC+
0V

A
B
C

MOTOR SUPPLY
MOTOR OUTPUT

XC2

1 MIN

164.3 [6.47]
157.5 [6.20]
149.4 [5.88]
144.9 [5.70]

4.0 [0.16]
48.1 [1.89]
4.0 [0.16]
6.2 [0.24]

2.0 [0.08]
109.0 [4.29]
118.0 [4.64]