

AEROTECH AUTOMATION1

Enhanced Linear Servo Drive with Motion Controller **Automation1 iXL5e**

Powerful Linear Drive & A Full Motion Controller

The iXL5e is your one-stop shop for high-powered, high-performance precision motion control applications. Linear amplifiers enable low noise and high precision motor control. A powerful motion control device, the iXL5e runs the [Automation1-iSMC](#) motion controller, connects to other Automation1 drives over HyperWire and connects to other automation devices over EtherCAT, Modbus TCP/IP or a TCP Socket interface. Multi-axis PSO synchronizes your process tool control with your motion trajectory.

The iXL5e is an ideal choice for applications such as eddy current inspection, sensor testing and high-precision position and velocity tracking.

Automation1

The iXL5e 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
- ◆ Provides **SUB-NANOMETER POSITIONING** capability
- ◆ Features **COMPLETE CONFIGURATION & PERFORMANCE** capability of the XL5e enhanced linear servo drive
- ◆ **CONNECT TO THE CONTROLLER** using EtherCAT, Modbus or a Socket interface
- ◆ 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)** functional safety
- ◆ **EXPANDS YOUR I/O** when an expansion board is added to the iXC4e or other connected drives

AUTOMATION1 iXL5e GENERAL SPECIFICATIONS

CATEGORY	SPECIFICATION
Motion Controller⁽¹⁾	Aerotech's Automation1-iSMC Intelligent Software-Based Motion Controller (version 2.2 and above)
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	1x 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
Operating Temperature	0 to 50 °C
Storage Temperature	-30 to 85 °C
Weight	11.31 kg (24.93 lb)
Compliance	CE approved, NRTL safety certification, EU 2015/863 RoHS 3 directive

AUTOMATION1 iXL5e LINEAR AMPLIFIER SPECIFICATIONS

CATEGORY		XL5E-10-VB4	XL5E-20-VB4	XL5E-10-VB5	XL5E-10-VB6
Nominal Motor Bus Voltage		±40 V	±40 V	±60 V	±80 V
Peak Output Current		10 A _{pk}	20 A _{pk}	10 A _{pk}	10 A _{pk}
Continuous Output Current @ 25°C ⁽²⁾⁽³⁾		5 A _{pk} / 5 A _{pk}	5 A _{pk} / 9 A _{pk}	3.2 A _{pk} / 6 A _{pk}	2.5 A _{pk} / 4.5 A _{pk}
Continuous Output Current @ 35°C ⁽²⁾⁽³⁾		4 A _{pk} / 5 A _{pk}	4 A _{pk} / 8 A _{pk}	2 A _{pk} / 5.5 A _{pk}	2 A _{pk} / 4 A _{pk}
Maximum Continuous Total Power Dissipation ⁽³⁾⁽⁴⁾⁽⁵⁾		340 W / 585 W			
Peak Amplifier Power Dissipation per Phase ⁽⁶⁾		1200 W			
Effective Heatsink Thermal Resistance ⁽²⁾		.15°C/W / .085°C/W			
Maximum Transistor Temperature		75°C			
Time to Reach Maximum Temperature at Maximum Continuous Power		10 minutes			
Motor Supply	Input Frequency	50-60 Hz			
	Inrush Current	34 Apk @ 120 V / 68 Apk @ 240 V			
	AC Line Voltage	AC input (switch selectable): 100 VAC (90 - 112 VAC) 120 VAC (103 - 127 VAC) 200 VAC (180 - 224 VAC) 240 VAC (207 - 254 VAC)			
	Input Current (Maximum, Continuous)	7 Arms @ 120 V / 3.5 Arms @ 240 V			
Control Supply	Input Frequency	50-60 Hz			
	Inrush Current	16 Apk			
	Input Current (Maximum, Continuous)	0.25 Arms			
Current Loop Bandwidth		2500 Hz (software selectable)			
Minimum Load Resistance		0 Ω			
Minimum Load Inductance		0 H			
Modes of Operation		Brushless, brush, voice coil			
Protection Features		Peak current limit, over temperature, RMS current limit, dynamic power limit (SOA)			
Encoder Supply		5V @ 500 mA			

1. See the [Automation1-iSMC](#) controller page for more information.
2. AC or DC motor type with a 0 Ω winding resistance assumed.
3. The first value is for a stationary AC or DC motor. The second value is for a moving AC motor.
4. De-rate at temperatures above 25°C ambient.
5. Amplifier power dissipation is calculated as (V_{bus} – V_{out}) · I_{out} for each phase. A 40B configuration that drives 1 A into 0 Ω results in 40 W of power dissipation in the amplifier.
6. The XL5e amplifier has peak power-limiting circuitry to protect itself from damage. The power limiting bit in the drive status word indicates if this has occurred.

AUTOMATION1 iXL5e ORDERING OPTIONS

Automation1-iXL5e

Automation1-iXL5e Automation1-XL5e High-Performance Linear Servo Motor Drive with Motion Controller

Peak Current

-10	10 A peak, 5 A cont. current (default)
-20	20 A peak current

Bus Voltage

-VB4	+/- 40 VDC (585 W Power Supply)
-VB5	+/- 60 VDC (585 W Power Supply)
-VB6	+/- 80 VDC (585 W Power Supply)

Input Line Voltage

-VL1	120 VAC Input Line Voltage
-VL2	240 VAC Input Line Voltage
-VL3	100 VAC Input Line Voltage
-VL4	200 VAC Input Line Voltage

Expansion Board

-EB0	No Expansion Board (Default)
-EB1	IO Expansion Board

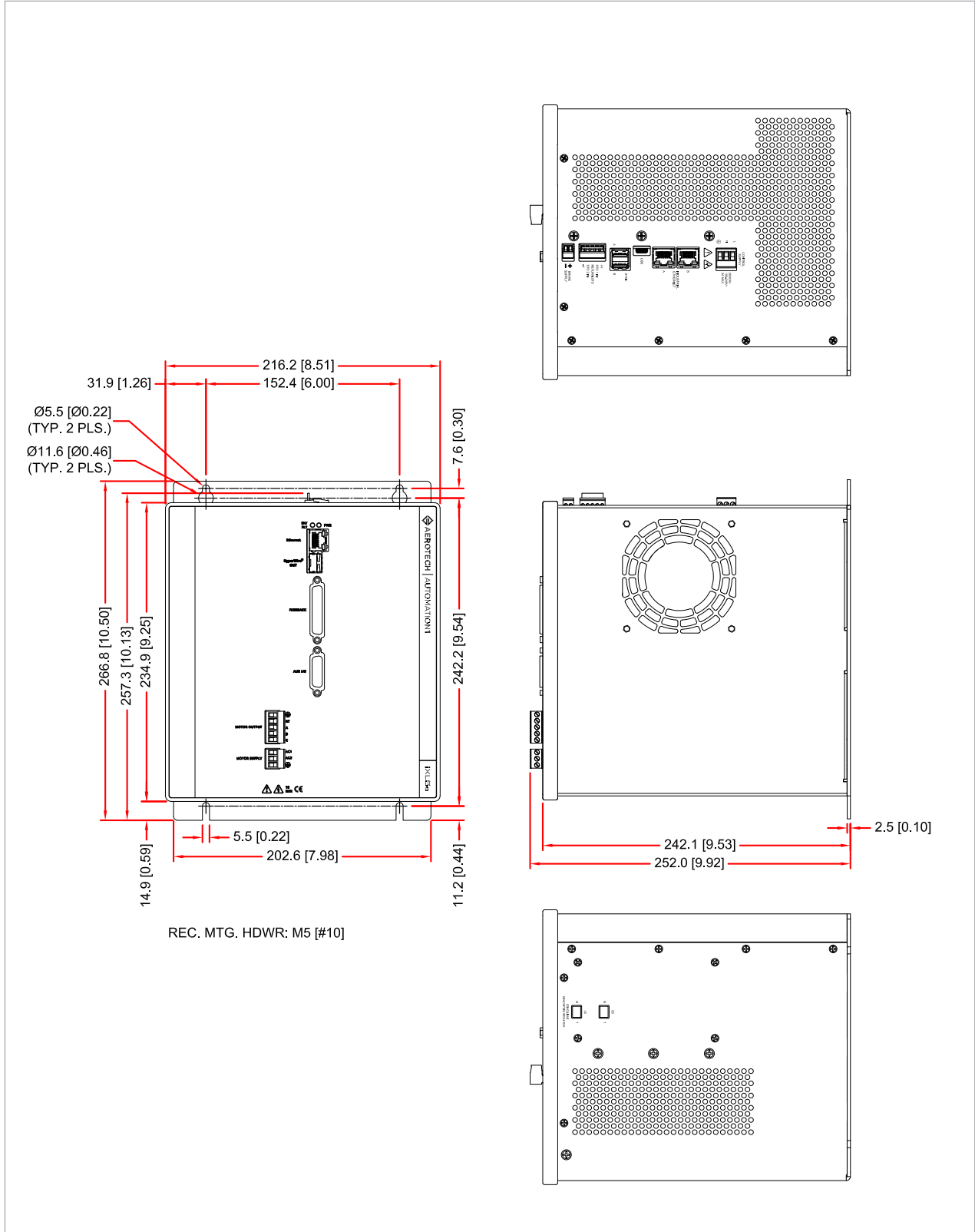
Multiplier

-MX0	No Encoder Multiplier (Default)
-MX2	2 MHz / 450 kHz x65536 Multiplier (Primary), No Multiplier (Auxiliary)
-MX3	2 MHz / 450 kHz x65536 Multiplier (Primary), 450 kHz x16384

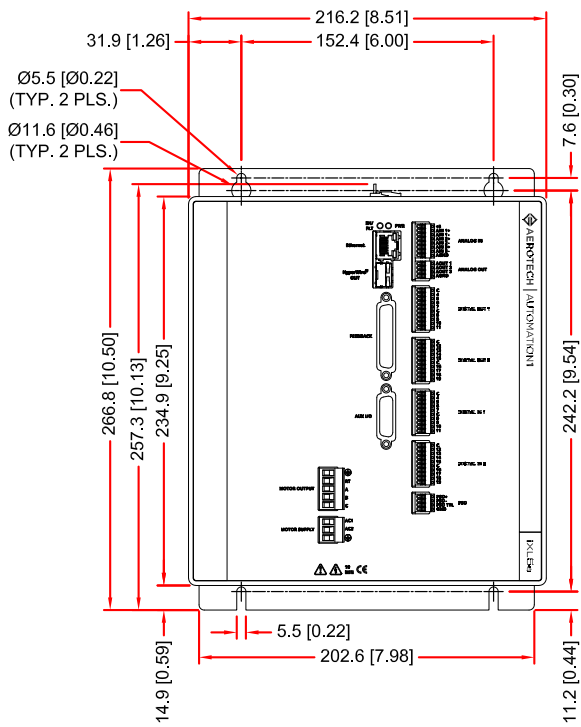
Multiplier (Auxiliary)

-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 iXL5e DIMENSIONS
 AUTOMATION1 iXL5e, -EB0 OPTION



AUTOMATION1 iXL5e DIMENSIONS
 AUTOMATION1 iXL5e, -EB1 OPTION



REC. MTG. HDWR: M5 [#10]

