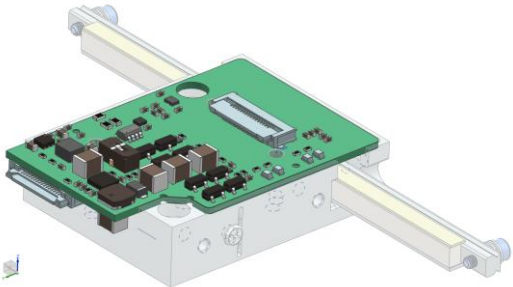


# XLA-5 integrated controller

## Compact controller for linear actuators



The integrated controller for our XLA-5 linear actuator provides advanced motion control possibilities in a very compact package. It enables the advantages of our micro linear actuators such as high-speed and accurate positioning without the need for an external controller. Interfacing of power and communication is combined in one ZIF-connector, with the option of daisy chaining between devices. Communication via the industry-standard CANopen protocol guarantees robust and predictable real-time behaviour. Other communication protocols such as USB, UART, RS232... are supported through an interface module. Basic motion tasks can also be controlled via I/O.

### Key features

compatible actuator	XLA-5
axis	1 axis (I/O control) up to 4 axes daisy-chainable (CAN)
power supply	12-48 V
feedback	magnetic switches integrated optical encoder
operation modes	open-loop with magnetic limit switches closed-loop with encoder feedback (velocity, position and trajectory control)
size (in actuator body)	42.0 x 30 x 11.7 mm
connector	2x ZIF (16 core, 0.5 mm pitch, with retention feature)
communication protocols	CANopen USB, UART, RS232* I/O control

\* with CAN interface module

### Model code structure

actuator type	rod length* (mm)	encoder resolution	feedback type	controller
XLA	-45	-OPEN	magnetic limit switches	-INTG
	...	-10MU (10 µm)	integrated optical encoder	
	-105	-1MU (1 µm)		
	...	-250NAN (250 nm)		
	-185	-100NAN (100 nm)		

\* see XLA-5 specsheet for rod length options

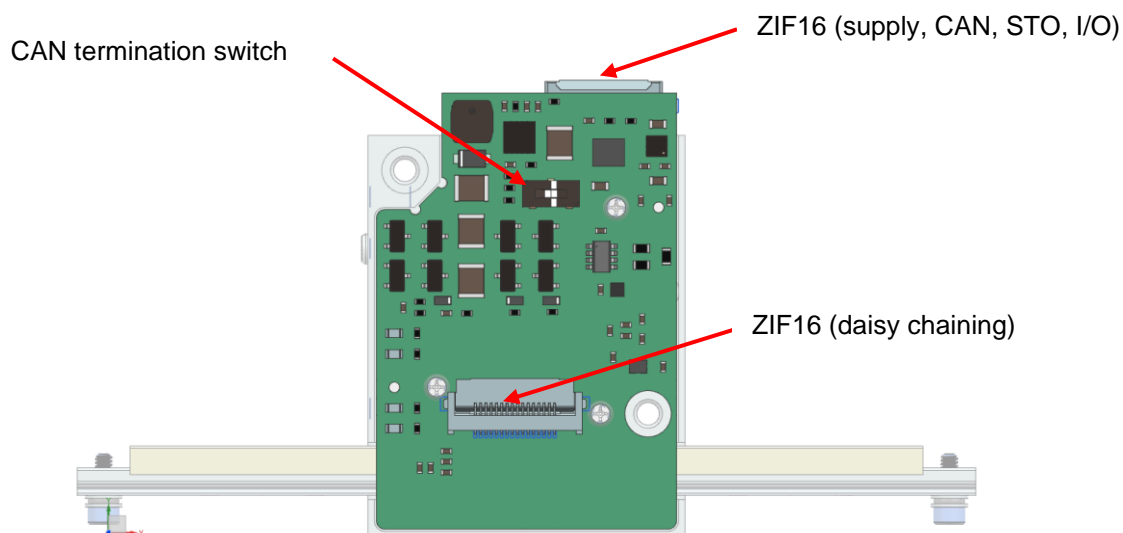
Example: **XLA-5-45-10MU-INTG**

- L XLA-5 series linear actuator
- L Rod length of 45 mm
- L Encoder feedback with a resolution of 10 µm
- L Controlled integrated into actuator

## Environmental compatibility

temperature range	-30°C to +70°C
humidity range	20% to 90% RH (non-condensing)
heat dissipation	< 6 W
internal operation voltage	< 60 V

## Layout



## Interfaces

**ZIF16 (supply, CAN, STO, I/O)**  
**Molex 505110-1692**

pin	function	voltage range	protected
1	GND	-	ESD
2	VIN	12-55 V	up to 60 V
3	VIN	12-55 V	up to 60 V
4	STO	0-24 V	yes, up to 60 V
5	CANL	3.3/5 V	yes, by transceiver
6	CANH	3.3/5 V	yes, by transceiver
7	AI1/PWM	*	ESD
8	DI1	*	ESD
9	DI2	*	ESD
10	DI3	*	ESD
11	DI4	*	ESD
12	DO1	*	ESD
13	DO2	*	ESD
14	DO3	*	ESD
15	DO4	*	ESD
16	GND	-	ESD

\* all I/Os are CMOS- and TTL-compliant and up to 5 V tolerant, unless specified otherwise

**ZIF16 (daisy chaining)  
Molex 505110-1692**

pin	function	voltage range	protected
1	GND	-	ESD
2	reserved	-	-
3	reserved	-	-
4	reserved	-	-
5	reserved	-	-
6	PWM4	*	ESD
7	PWM3	*	ESD
8	PWM2	*	ESD
9	PWM1	*	ESD
10	reserved	-	-
11	CANH	3.3/5 V	yes, by tranceiver
12	CANL	3.3/5 V	yes, by tranceiver
13	STO	0-24 V	yes, up to 60 V
14	VIN	12-55 V	up to 60 V
15	VIN	12-55 V	up to 60 V
16	GND	-	ESD

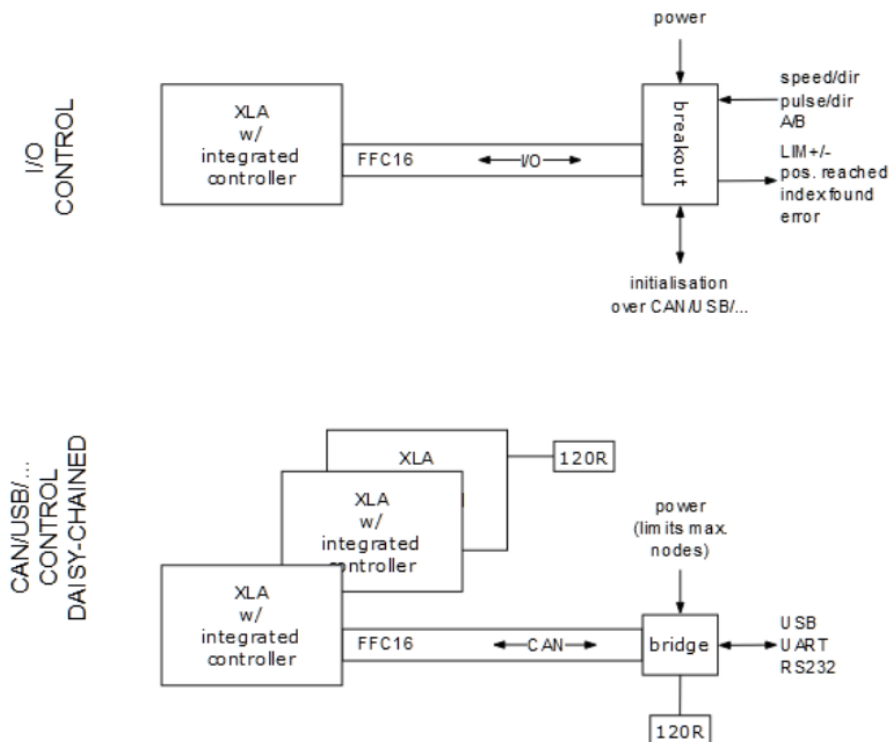
\* all I/Os are CMOS- and TTL-compliant and up to 5 V tolerant, unless specified otherwise

**Communication protocol**

Direct communication mode via CANopen is required for initialisation purposes and is also used to control the actuator by sending motion commands or by executing user programs on a master/host. Another communication method for controlling the actuator is through I/O control.

Communication is implemented according to the CiA 402 device profile for drives and motion control.

By using CAN interface modules, other communication protocols are also supported (USB, UART, RS232...).



## Modes of operation

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The following modes of operation are supported by the integrated controller of the actuator:

- **Open-loop** mode: the actuator force and speed can be modulated. There is no encoder-based feedback control. Magnetic limit switches detect if the rod is end-of-stroke.
- **Velocity** mode: the actuator speed can be controlled. The encoder signals are used for velocity feedback control.
- **Position** mode: the actuator position can be controlled. The encoder signals are used for position feedback control. Acceleration and deceleration profiles can be defined.
- **Trajectory** mode: under development.

## Software

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An easy-to-use GUI program can be used for initialisation purposes and simple control. For advanced motion tasks, libraries and demo programs are available for:

- LabVIEW
- MATLAB
- C++ and Python