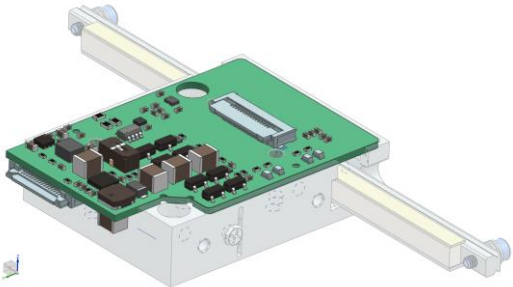


XLA-5 integrated controller

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 (µm)	feedback type	controller
XLA	-45	-OPEN	magnetic limit switches	-INTG
	...	-10	integrated optical encoder	
	-105	-1		
	...	-0.25		
	-185	-0.10		

* see XLA-5 specsheet for rod length options

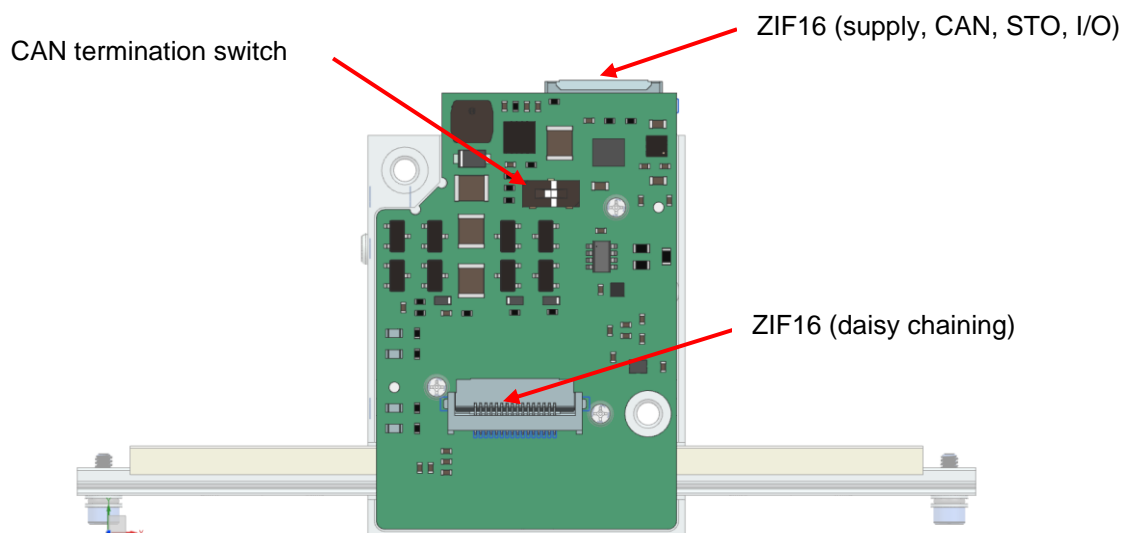
Example: **XLA-5-45-10-INTG**

- 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

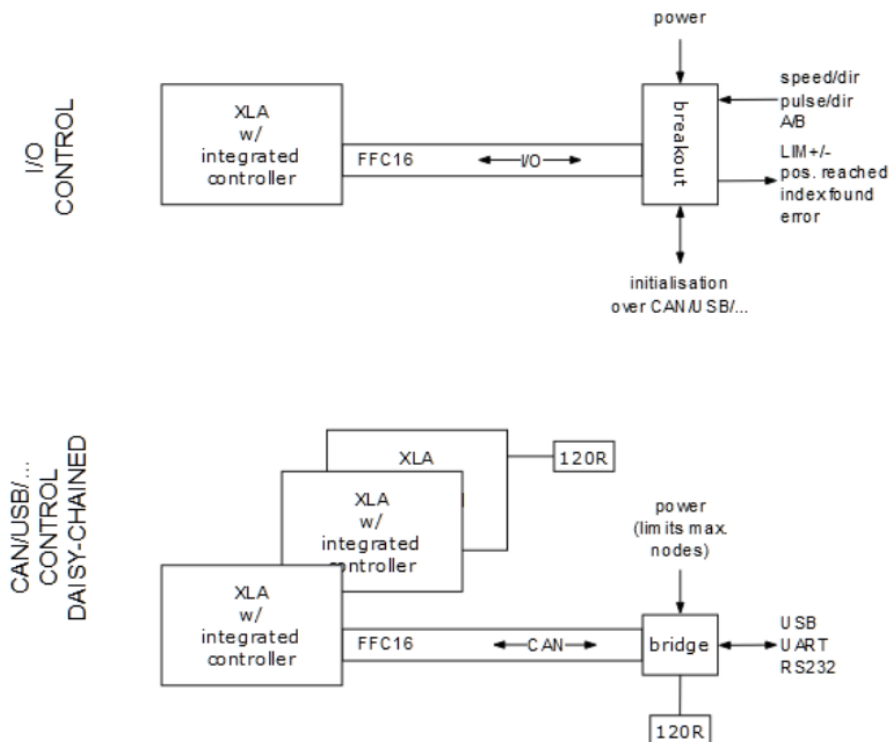
* all I/Os are CMOS- and TTL-compliant and up to 5 V tolerant, unless specified otherwise

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

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

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