

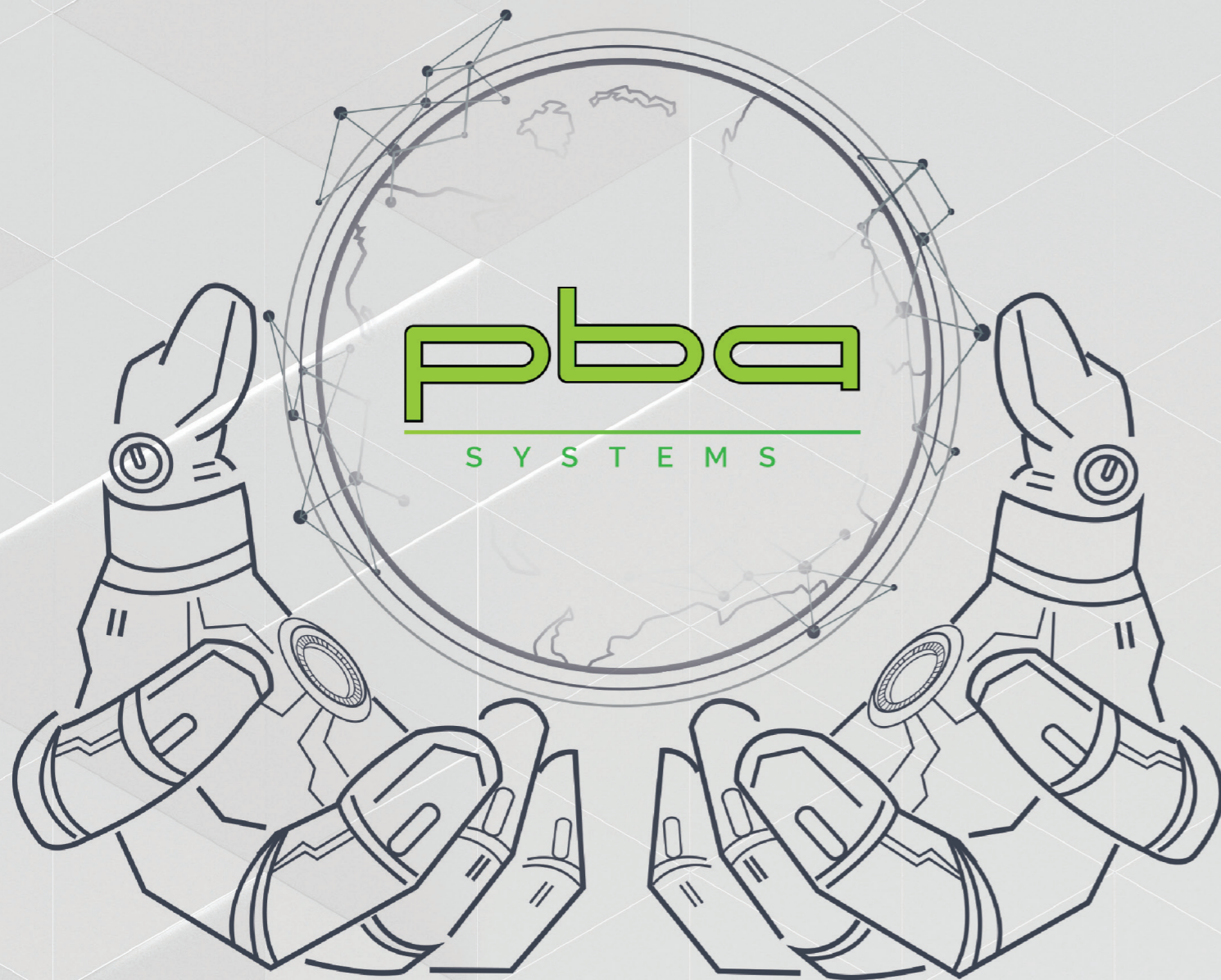
PLA Series Linear Actuator

OMRON

Powering Precision Pick & Place



pba
SYSTEMS



COMPANY OVERVIEW

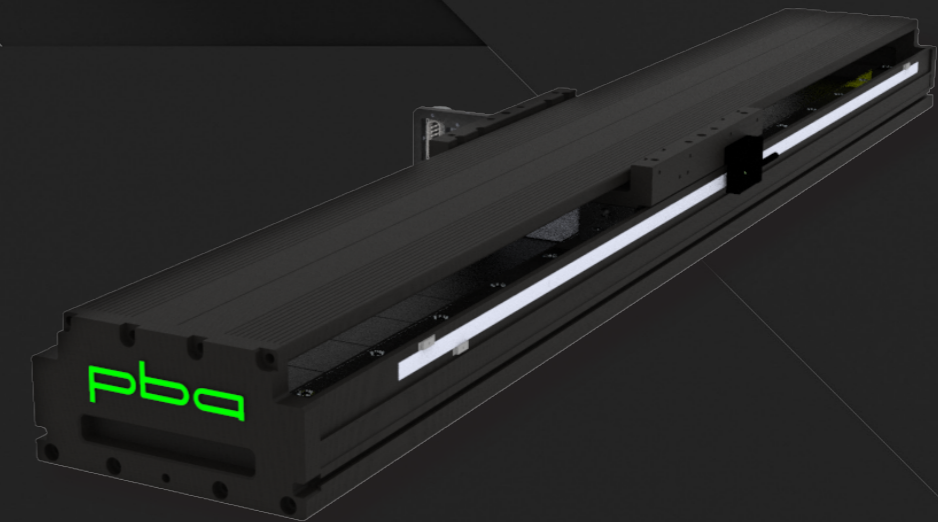
PBA Systems constantly aims for technological breakthroughs and innovations in precision robotics. Our deep knowledge and expertise lie in design and manufacturing of proprietary direct drive motors, stages, motion control and precision systems - delivering solutions for different automation requirements.

A one-stop solution provider, PBA Systems also provides automation/motion control & mechanical components. With more than three decades of track record in the industry, PBA Systems has built a highly skilled team of sales engineers & product specialists in order to provide our customers with the best support. PBA Systems offers mechanical precision components such as bearing solutions, linear systems & other OEM equivalent parts. Our well-established global network enables us to price our products at competitive rates.

PBA Systems is an ISO 9001:2015 certified company (Cert No. 2016-1-0962), and a member of PBA Group of Companies - a Robotics and Automation enabler in Southeast Asia. PBA Group (PBA: Platform for Bots and Automation) focuses on developing our core technology - building robotics products and offering turnkey automation solutions to help businesses scale up with Industry 4.0 (I4.0) technology.

www.pbasystems.com.sg

For enquiries, please email us at sales@pbasystems.com.sg or call us at +65 6576 6766



PLA SERIES PRECISION LINEAR ACTUATOR

HIGH SPEED HIGH PRECISION



The PLA Actuator Series is built with enhanced specifications for high-performance production applications to improve productivity through uncompromised speed and precision.

The key notable features of the PLA Actuator are compact-size, high-speed, high precision, and zero backlash, especially when compared to traditional actuators with ball screws.

Bringing high accuracy and high repeatability to the applications the PLA Series is designed for - ranging from precision pick-and-place to automated optical inspection - the actuator is also a low-maintenance solution which is suitable for clean environment applications.

This precision-driven linear solution offers a modular actuator inclusive of precision linear encoders and linear guideways. These modules offer optimal acceleration/velocity possibilities and rigidity that allows for faster settling, accuracy and highly repeatable positioning. The PLA actuator is configurable as open frame systems for basic applications as well as partially enclosed.

The PLA Series Linear Actuators come with a selection of either the DXF Ironless or the PIX Ironcore Linear Motors, two of our proprietary direct drive products, depending on each application and its required features.

Cogging is a result of the iron core motor design. It is caused by the interaction between the edges of the permanent magnet and the motor. Permanent magnets in conventional iron core motors produce an attraction force to all magnetic materials. The effect of this attraction is that the iron core motor then has "set" positions relative to the magnets, and the motor has to adjust its thrust force to overcome these positions. This results in a motion which is not as smooth when compared to that of an ironless linear motor, as well as velocity ripple.

PIX B Series Ironcore Linear Motors

PIX Ironcore motors offer an affordable high-force solution to demanding linear applications with a unique anti-cogging design, removing an issue that is associated with traditional ironcore linear motors. They are designed for optimal dissipation of heat and thus capable of extremely high forces. PBA's PIX B Series ironcore linear motor is designed with proprietary, unique anti-cogging features, which results in low velocity ripple and higher stability.

For applications requiring:

- Higher force
- Smooth motion with anti-cogging features
- Zero backlash
- Cleanroom environment

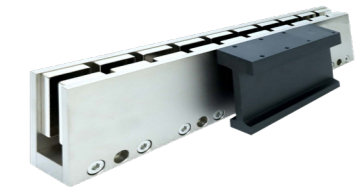


DX F Series Ironless Linear Motors

DX F Ironless linear motors feature an ironless patented overlapping winding formers which provides an excellent force density vs coil size ratio, resulting in high-force and acceleration generation for a smoother motion and high stability.

For applications requiring:

- High precision
- High dynamic response
- Low velocity ripple
- Compact-size



For applications requiring:

- Compact module that ready for plug and play
- Constant performance even for long travel stroke
- Cost effective solution
- High accuracy and Repeatability
- Low maintenance
- Suitable for cleanroom environment applications

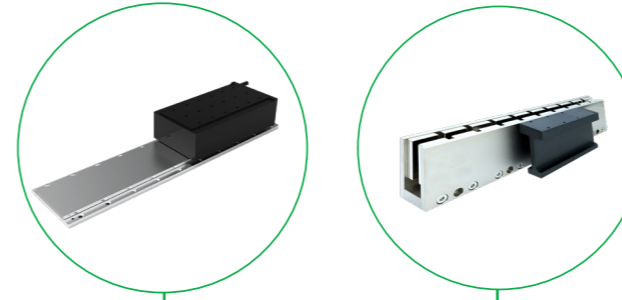
OVERVIEW

APPLICATIONS

- Laser-cutting process
- AOI Inspection
- Multiple end effector on same axis
- High-speed Pick-and-Place

FEATURES

- High Speed
- High Precision
- Anti-Cogging Design
- Long stroke
- Zero Backlash



Carriage Options

Multiple carriages available for customisation upon customers request.



Frame Body

Designed with cover and minimal opening for clean environment friendly

Linear Guide

Specially designed, to serve your low-velocity ripple and low-vibration

Class 1,000/
10,000

Encoder

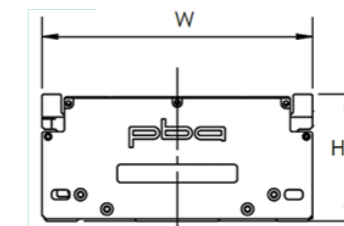
Encoder Options

We have various types of encoders to choose from - optical incremental digital encoders, optical incremental analog encoders and optical absolute encoders

Volume

Compact Size

Provides a compact size with the smallest dimension of 140mm*74mm (W*H)



Easy setup and adjustment

Setup to Maintenance with user friendly Sysmac Studio

Ideal for High accuracy applications

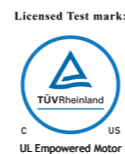
Improved vibration control function

High-precision positioning with various linear scales

Maximum speed at 0.01 μm of scale resolution for serial communications: 4 m/s*

Conforms to the Latest International Standards

Safety Motion Control with built-in STO



One of the most compact and high-force actuators in the market

OMRON G5 Servomotor

High Speed and High Precision with International Safety Standards



High-speed communication via EtherCAT100Mbps communications with bus topology connectivity



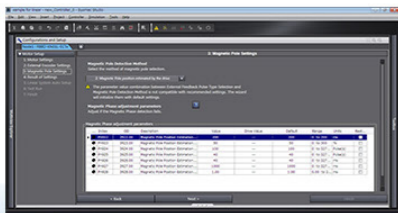
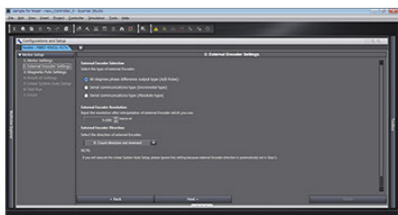
Side by side installation to save space.



*Drivers with 750W or less capacity only
There are usage limitations including ambient temperature and load rate.
Refer to G5 Series User's manual (Cat.No. I571/I572) for detailed information.

Automatic setup

System Studio for Drive allows automatic setup for motor parameters by selecting the motor. With motor setup wizard, it helps set the scale direction, magnetic pole, or current gain automatically.



<System Studio>-Setting screen image

Conforms to global standards and certifications.



Safe Torque Off (STO) safety function

The G5 was the first to acquire international standard IEC 61800-5-2 (STO) for motion control in the industry within Japan. It also conforms to the European Directives ISO 13849-1(PLC,d) * and EN 61508 (SIL2). Safety control circuits can be constructed with the Servo Drive, delivering both safety and productivity.



Special STO Terminal

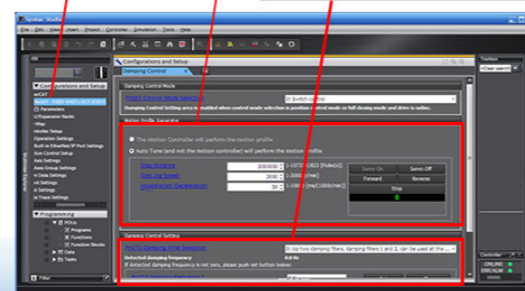
Automatic damping control setting

Settings for damping control for the axis at the tip of the machine in a short time

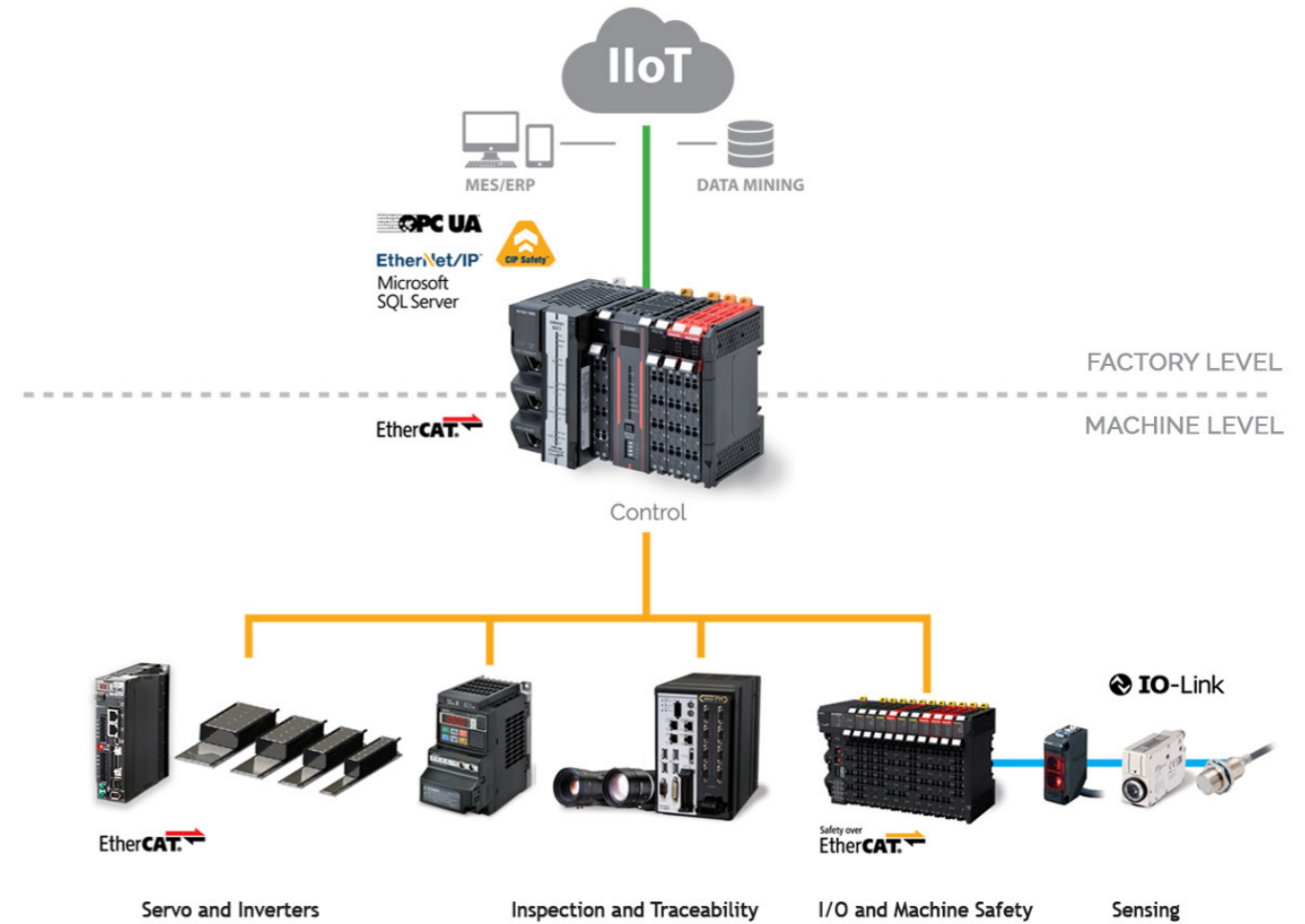
Starting automatic setting function

JOG operation

Measuring vibration/ Settings



Systemac Automation Platform



Software



Systemac Studio, the integrated software

- One single tool for logic sequence, motion, safety, robotics, vision and HMI
- Fully compliant with open standard IEC 61131-3
- PLCopen Function Blocks for Motion and Safety
- Supports Ladder, Structured Text and In-Line ST programming with a rich instruction set
- CAM editor for easy programming of complex motion profiles
- Database Connectivity Function Block library

Systemac Library

The Systemac Library is a collection of software functional components that can be used in programs for the NJ/NX Machine Automation Controllers. Sample programs and HMI screen samples are also available.

Please download it from following URL and install to Systemac Studio.
http://www.ia.omron.com/systemac_library/

FEATURES



1 High Payload

High-density coil design given our actuator capability to carry high load object. Suitable for high-speed transportation of large-volume objects.

**Max. Payload
up to 90kg**

2 High Repeatability

Zero backlash actuator that is able to meet a high repeatability.

Comparison of actuators accuracy	Linear motor module	Ball screw module	
	Resolution 0.01µm optical encoder	C7 ballscrew	C5 ground ballscrew
Repeatability	±1µm	±5µm	±3µm

	Encoder Option			
	Digital 1µm	Digital 0.1µm	Analog	Absolute 0.05µm
Repeatability	±2µm		±1µm	

3 Stroke Available

Standard stroke up to 1240mm. Customise stroke available with your requirement without any limit.

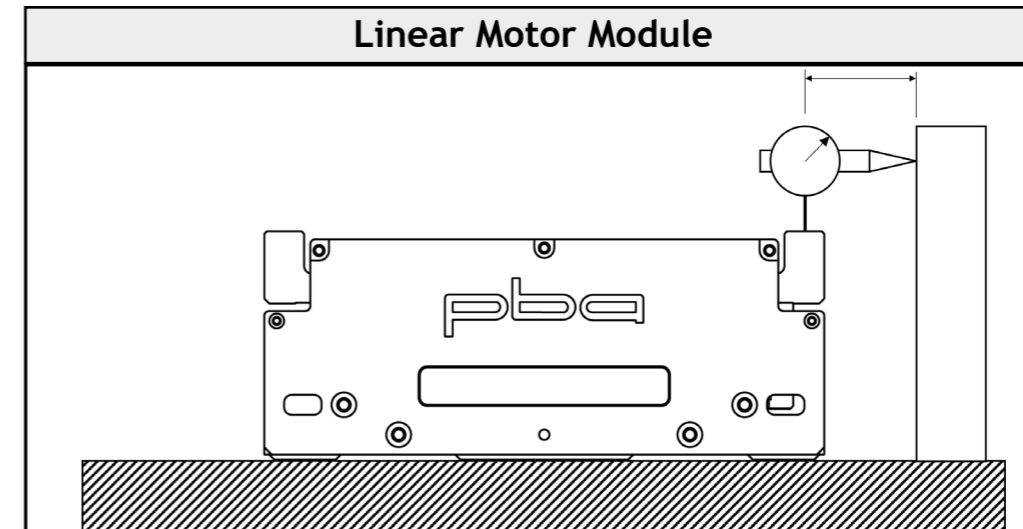
PIX motor

**Max. Stroke
1192 mm**

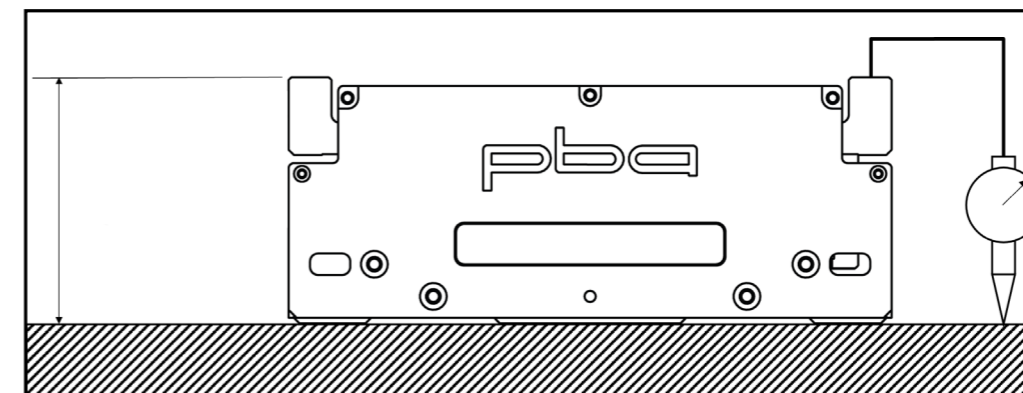
DX motor

**Max. Stroke
1240 mm**

4 Straightness & Flatness



**Straightness
2µm/100mm**



**Flatness
4µm/100mm**

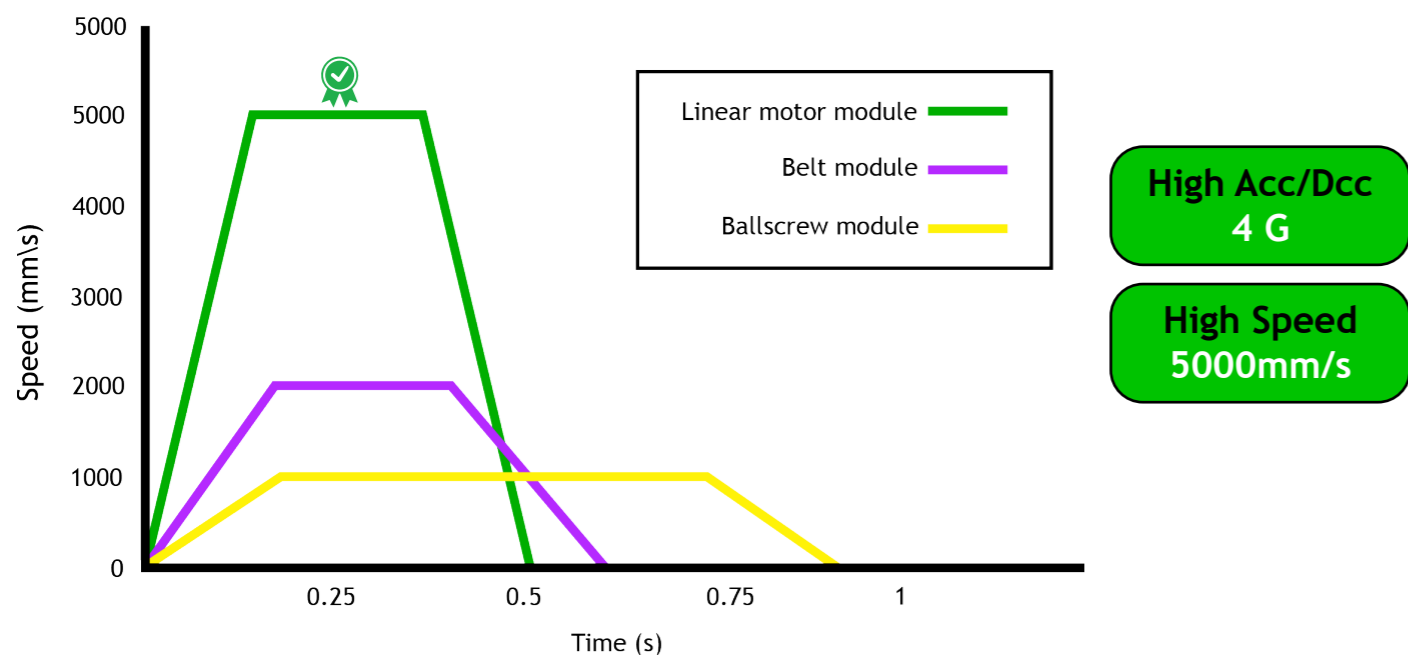
**Can be
customised
according to
request**

5 Stable Movement with Low Cogging

For high-stability applications, our actuator is the best choice. As it specially-designed to suppress the velocity ripple during operation.

6 High Speed & Acceleration

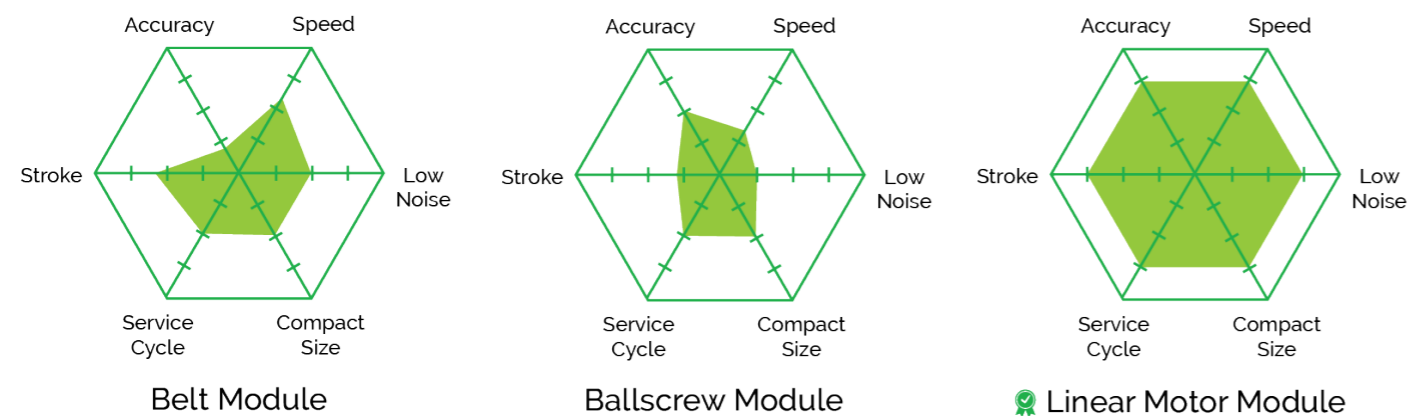
The linear motor can achieve maximum acceleration and deceleration of 4 G and maximum speed of 5000 mm/s, which greatly shortens the reciprocating movement time and increases the production efficiency of the equipment.



7 High Durability & Low Maintenance

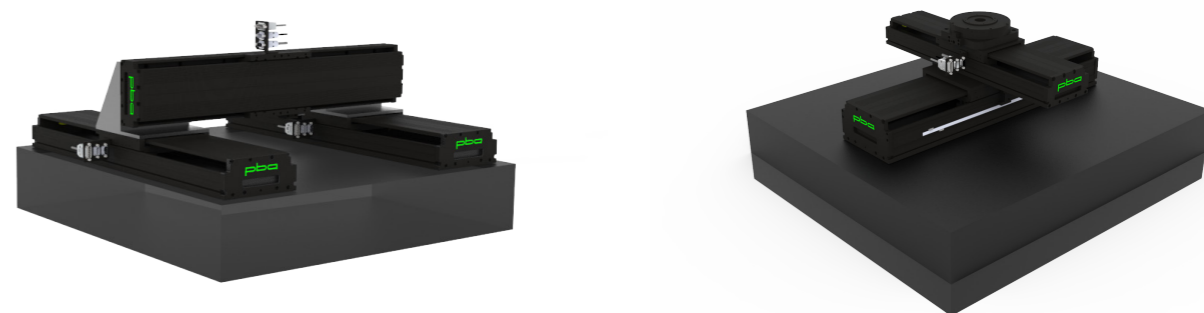
Generally, the actuator is driven by the ball-screw and belt and the ball-screw will be damaged after long-term use. The belt type actuator needs to be tightened at a fixed time each year to maintain accuracy. The linear motor actuator has no drive components to wear and can maintain the system accuracy of the whole machine for a long time.

8 Achievement of Optimal Performance



9 Multiple Choices & Flexible Customisation

Possess the flexibility to mix and match to form the desired design that suite your application with compact size.

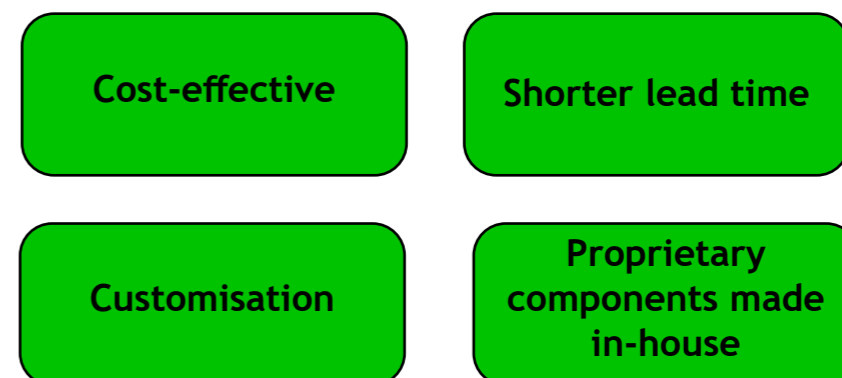


Capability to have multiple carriages on a single axis. Traditional ballscrew does not have the option to do so. It will need at least 2 ballscrews to achieve this application which will increase the cost significantly.

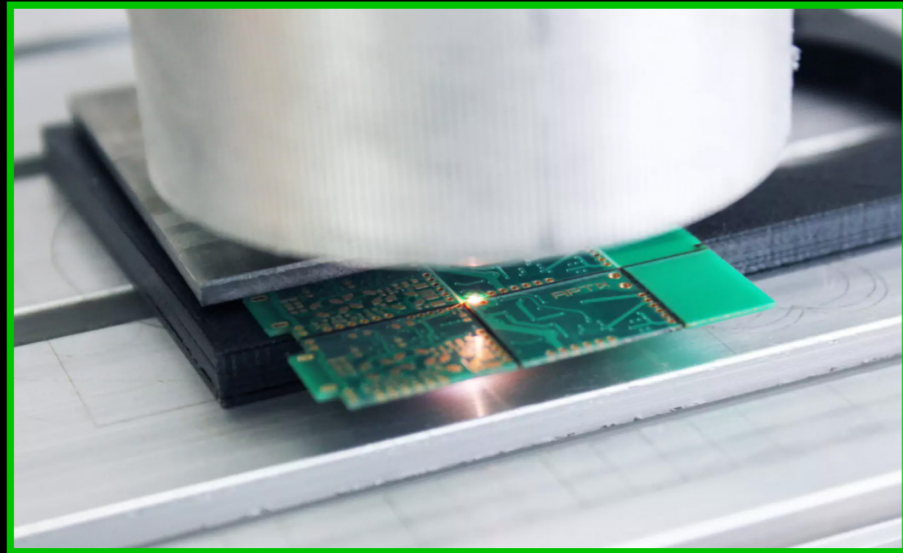


10 Low Cost/Performance Ratio & Shorter Lead Time

We provide faster delivery with effective lead time for all our proprietary actuators and linear motors, due to most components being designed and built in our manufacturing facilities - with effective cost control, on top of ISO-certified quality control, resulting in delivery of optimal value with cost-effective solutions.



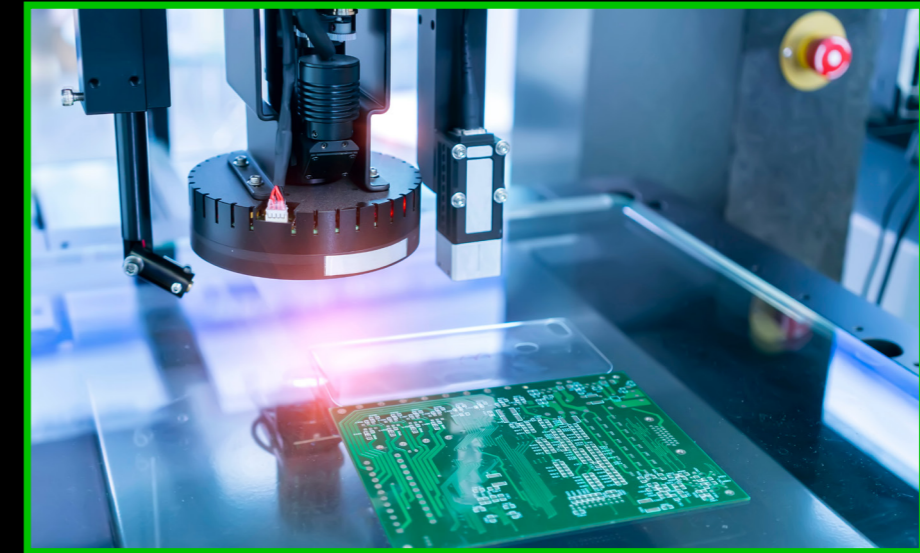
APPLICATIONS



Laser Cutting Machine

Mount Laser Head on to the axes and move around XY axes for cutting the PCB into pieces. Constant velocity is required for the process.

*Recommended Model: PLA180-DX30F & PLA220-DX50F



Inspection Machine

Vision Inspection applications require high-stability movement for good image-capturing to prevent error in inspection due to blurry image, especially in on-the-fly scanning processes.

*Recommended Model: PLA180-DX30F & PLA220-DX50F



PCB Assembly Machine

Multiple components are being soldered to PCB board, therefore a multiple carriage system mounted with end effector can highly increase your productivity with fast pace to insert the component to the PCB board for soldering.

*Recommended Model: PLA180-PIX & PLA220-PIX



Dispenser Machine

Dispensing process requires high accuracy and repeatability to ensure good distribution of precise micro fluid. Zero backlash system is a must in the application is a must. By mounting the dispenser head to the actuator and forming XY axes can provide a high-speed system with high-accuracy and high-repeatability features.

Recommended Model: PLA180-PIX & PLA220-PIX



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