

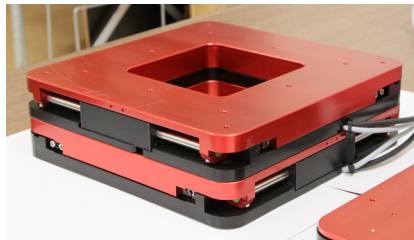
# NIPPON PULSE FOR LABORATORY AUTOMATION

Nippon Pulse offers a variety of motion control products that are perfect for the lab automation market. We offer standard and custom tin-can stepper motors, linear servo motors and linear stages, as well as electronics to drive them. Our products are designed for easy modification, in order to provide you with custom solutions at off-the-shelf prices.

## MICROSCOPE AUTOMATION

**Camera Zoom and Focus** (Linear Stepper or Linear Shaft Motor + PCL6100 Series Controller)

LinearStep motors provide the high force required for vertical movement of microscope optical components for more precise imaging. Similarly, the Linear Shaft Motor can also be used for continuous focus in scanning where the sample surface plane changes. Multi-axis control chips assist with the camera's ability to focus, while reducing the burden on the camera system's processor and external signals.



**Sample Movement** (X-Y Linear Stage + Commander core)

There are two key ways to automate sample movement: step frame and scanning. The X-Y open-frame stage is ideal for both of these movements because of its ability to move along two axes simultaneously. Stages can be driven by either a linear stepper or servo, and can be customized to meet your specifications. The powerful multi-axis Commander core hybrid IC can be operated via joystick control for ultimate flexibility.

## LIQUID HANDLING

**Digital Adjustable Pipettes** (PFC10 Stepper)

A small stepper motor like the 10mm PFC10 allows for a very compact, intelligent system for adjusting pipette location and dispensing.



**Liquid Handling Robots**

(Linear Shaft Motor + Steppers + PCL6100 and PCL6000 Series Controllers)

PCL series controller chips allow for central control of up to 32 stepper/servo axes for a multi-axis control system. Our linear motion products are capable of meeting the precision and repeatability requirements of even the most stringent liquid handling system.

**Automated Pipetting Systems** (Linear Stepper + PCD4600 Series Controller)

Centrally control the movement of up to four stepper axes with the PCD4600 chip series for a



low-cost control system. Linear steppers simplify the rotary-to-linear transition for the motion profile needed to dispense precise, equal amounts of liquid.

**Peristaltic Pumps** (Tin-Can Steppers)

Our tin-can steppers are a low-cost, simple solution for the highly precise, constant movements required by positive displacement pump dispensing solutions. Any of our tin-can motors can be customized to meet your drop-in design requirements.



**Syringe Pumps** (Linear and Rotary Steppers)

Smooth rotary and linear motion systems couple directly with the moving load for a compact design and quicker dispensing, diluting and other standard liquid handling functions.

# NPM

## Nippon Pulse

*Your Partner in Motion Control*

## SAMPLE HANDLING SYSTEMS

### Pick and Place (Linear Shaft Motor + Tin-Can Steppers + Commander Core)

The Linear Shaft Motor allows for quick, high-precision movement, while our tin-can stepper motors provide lightweight rotational movement, working together seamlessly for pick-and-place applications. Commander motion controller gets your application to market quickly.

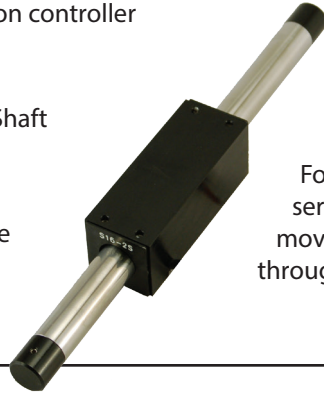
### Robotic Grippers (Linear Shaft Motors or Linear Steppers)

Whether you are designing a small gripper to move a single test tube or a gripper for a 1536-well microtiter plate,

Nippon Pulse has a motor that will fit your system. The Linear Shaft Motor allows for precise operation of the gripper and the use of force mode for greater sample control and security, while our linear steppers accomplish precise and accurate positioning. Both are ideal for driving multiple motors on a single axis, and the Linear Shaft Motor can be driven in parallel systems with one encoder and one servo amplifier.

### Drug Discovery (PCL6100 Series Controllers)

For central control with feedback, multiple PCL6100 series chip controllers allow for up to 36 axes of movement, which is perfect for the higher speed and throughput required by drug discovery labs.



## COMMANDER CORE FOR LAB AUTOMATION

Commander core is a powerful hybrid IC that bridges the gap between design-from-scratch and off-the-shelf motion controllers. Commander is secure, flexible and easy to use, and is built around Nippon Pulse's advanced PCL6000-series ASIC.

### Increase Efficiency

Quickly prove out system designs with the Commander Development Kit, then incorporate the core module itself into the final PCB design. Nippon Pulse can also custom design the PCB board to your specifications.

### Reduce Costs

For OEMs, the Commander core is a cost-effective tool for ramping up to higher-volume production with minimal design time and support. Commander is easily scalable from prototype to production with no changes to the software.

### Reduce Human Error

Commander is ready-built, so there is no need to source components, and it is free from dependency on other components' lifespans.



## ABOUT NIPPON PULSE

Since 1952, Nippon Pulse has built state-of-the-art motion control products. We provide solutions for lab automation original equipment manufacturers that include products that accomplish sample and liquid handling, microscope automation, medical robotics, drug delivery, pharmaceutical dispensing and other healthcare technologies.

Over the past 60 years, Nippon Pulse has been established as a leader in stepper motor, driver and controller technology. We want to impress you with our products and service, not just satisfy your requirements. We do this through complete system engineering expertise, individual attention and support, superior prototyping, and cutting-edge technology.

Nippon Pulse America, Inc. is a wholly owned subsidiary of Tokyo-based Nippon Pulse Motor Co. Ltd., and serves customers in North, Central and South America, and Europe.

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