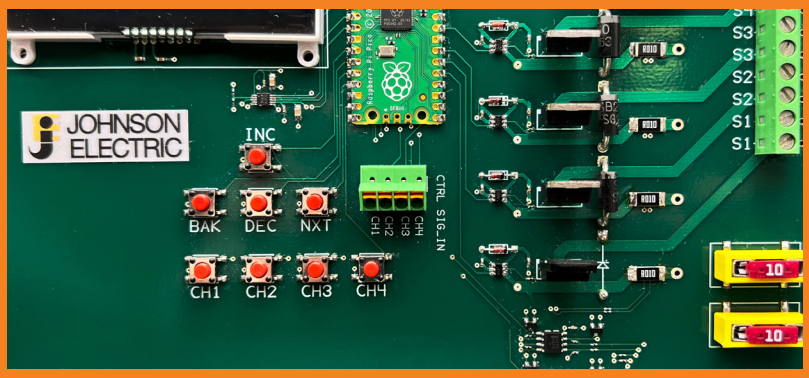
JOHNSON ELECTRIC

Solenoid Demonstration Board



Programmable. Convenient. Time-Saving.

Critical to the motion of many products, solenoids are often thought of as simple on/off actuators. While the tried and true “give it power” approach works, there are many other variables that factor into the motion of a solenoid. The addition of a few, relatively simple control schemes can optimize the performance and cost of a solenoid: size, force, temperature and power consumption.

There are three major factors design engineers must consider when sizing a solenoid: force at stroke, input power/duty cycle and size. These factors are not mutually exclusive, requiring an iterative process to find the perfect solution for each application. This process can be time consuming and expensive and is often “solved” by oversizing the solenoid. Oversizing is neither cost effective nor energy efficient.

The broad level of adaptability afforded by the solenoid demo board allows the user to expedite the solenoid selection process and application concept validation testing by allowing the testing of all input parameters in a controlled environment and without extra equipment.

A Solenoid Sandbox

The solenoid demo board provides the ability to quickly and easily test any size solenoid at various voltages, duty cycles, and power levels.

- RaspberryPi Pico, preprogrammed with Pick & Hold
- Four gate drivers
- Current and temperature sensing
- LCD Screen
- Input range: 12-48V

Ready Out of The Box and Fully Reprogrammable

All circuitry necessary to drive a solenoid is installed on the board. Users are encouraged to download code and adapt it to their needs.

Plug & Play Wiring

A terminal block interface allows users to install up to four solenoids, power, and ground.

Computer Connection for Data Logging

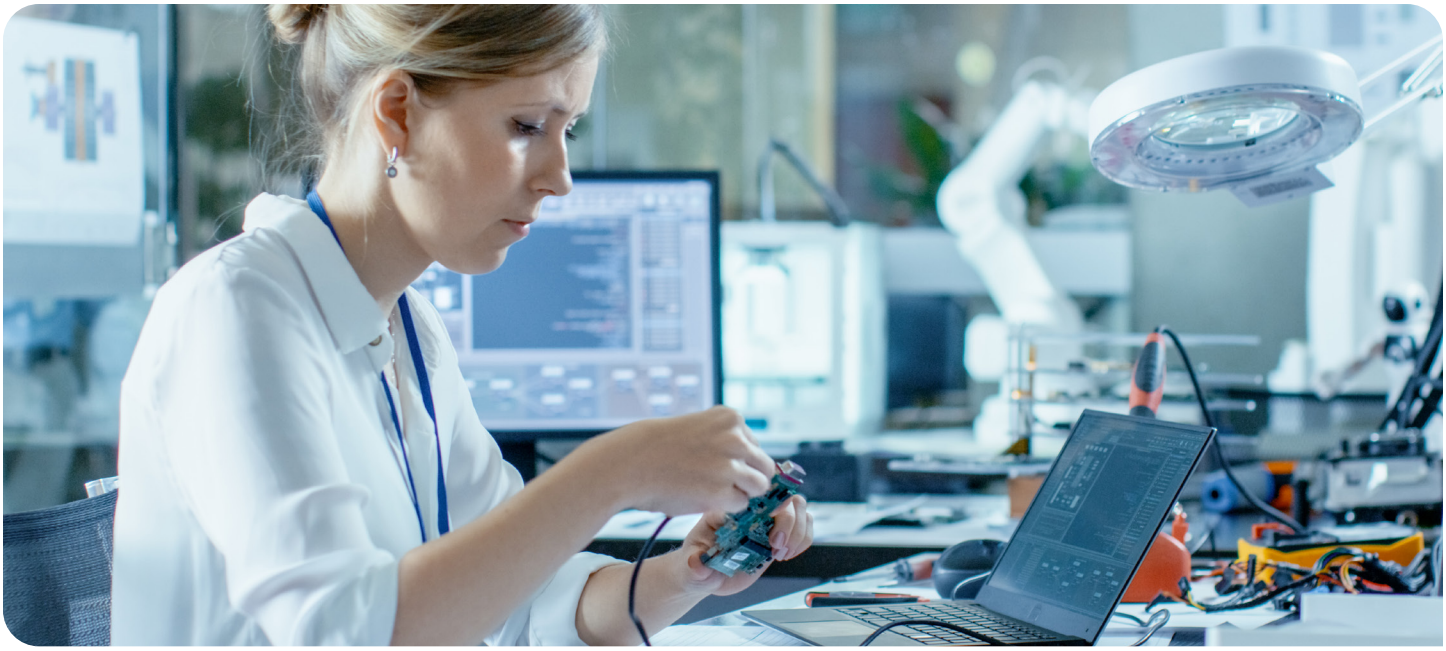
Digital input with remote channel control for automated testing. Data can be saved for all 4 channels.

Intuitive GUI

User-friendly menu navigation and parameter input.

Why Pick & Hold?

Applications with linearly increasing load profiles, like springs, are well served by using a Pick & Hold control scheme. This is because a spring’s force increases linearly and the solenoid’s magnetic force increases exponentially with the stroke. Therefore, at longer strokes, a spring generates more force than a solenoid, but at shorter strokes the magnetic force overcomes the spring force. A control scheme that pulses a solenoid with higher power while the plunger is at its maximum stroke can avoid this problem.



Tests a Wide Range of Parameters

Pick & Hold - using Pulse Width Modulation (PWM) to better distribute power to the solenoid, reduce heat, increase actuation time and afford access to a wider range of forces at a given stroke.

Multiple Channels and Wide Voltage Range - voltage range from 12V to 48V with simultaneous support for up to four solenoids.

Temperature and Current Sensing - monitor temperature and current of each solenoid.

Audible Noise - if quiet operation is a factor, noise level can be minimized by changing the operating frequencies.

Performance Optimization

The solenoid demo board is an easy-to-use tool to confidently test and track key performance factors for a specific application. It is ideal for energy sensitive, footprint constrained and sustainably focused applications, but can help optimize performance for any project. Don't leave cost, efficiency, heat generation or battery life to chance, find the most successful approach.

Available through distribution.

COMPLETE SOLUTIONS FROM ONE DOMESTIC PARTNER

Our Ohio-based engineering team has the largest portfolio of reliable motion solutions in the industry at their fingertips. Comprehensive design and manufacturing resources are also available to support unique needs. Other customizations can also be developed to your exact performance and unit cost objectives, with fast prototype turnarounds or custom models. Contact us to discuss your specialized requirements.

WHY JOHNSON ELECTRIC?

Johnson Electric invented the rotary solenoid and still knows it best, with an ongoing foundation of innovation spanning more than 80 years.

Today, Johnson Electric is the leader in motion subsystems. Technological leadership, application expertise, and a global footprint make Johnson Electric your ideal solution partner for differentiated product development projects and supply chain excellence.

JOHNSON ELECTRIC

801 Scholz Drive
Vandalia,Ohio 45377
engineering.us@johnsonelectric.com

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