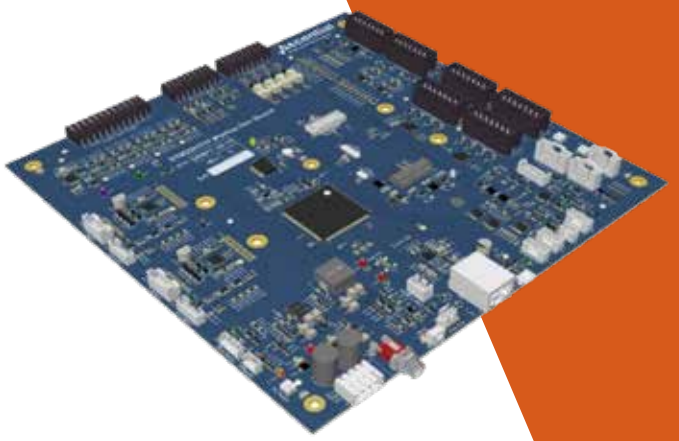
Ascential
Medical & Life Sciences

# LaunchPad Instrument Controller

**Microcontrollers are at the center of complex workflows and assays, making them essential components in life science and medical instruments. But the design and development of a custom controller board and the accompanying software could take months, negatively impacting time to market and cost.**

**The extensive design and integration effort required for a custom solution consumes valuable time that could be better spent on developing innovative features. Moreover, delays at this stage can significantly slow the commercialization of new products.**



## Our Solution

The Ascential LaunchPad Instrument Controller is a comprehensive hardware and software platform powered by the advanced STM32 H7 dual-core processor. It is designed to expedite the commercialization of life sciences instrumentation and devices by reducing development time and accelerating the path to market.

The Ascential LaunchPad instrument controller offers a comprehensive solution:

- **Rich Feature Set:** LaunchPad includes a wide range of features to meet the requirements of most life science instruments, including motion control, robotic automation, precision fluidics, thermal control, optics, and more.
- **Modular Design:** Expansion boards can be easily added to accommodate specific needs, allowing for flexible and scalable development.
- **Commercial-Ready Components:** The modular sub-systems are designed for easy integration into custom controller designs, facilitating a smooth transition to commercial-ready products.

The LaunchPad Instrument Controller is designed to streamline the development process, reduce time to market, and support the rapid commercialization of life sciences instrumentation and devices. By leveraging this platform, developers can focus on innovation and bring their products to market more efficiently.

## Feature Summary

- **Multi-Channel Support:** This includes:
  - **Digital Outputs:** Controls various peripherals (solenoids, heaters, thermo-electric coolers, LED arrays, fans, DC motors, etc.) with three configurable drive schemes (high side constant current driver, low side driver with current control, low side FET).
  - **Stepper Motor Controllers:** Supports stepper motor controllers, including encoders and home/limit sensors.
  - **Analog Sensing:** Provides signal conditioning and amplification for analog sensing.
  - **Analog Outputs:** Enables precise voltage control of peripherals (like variable speed pump, pressure regulators, variable current & voltage sources, continuous current LED driver).
  - **Digital Inputs:** Supports a variety of on/off sensors (like level sensing, optical or mechanical limit switches, physical UI buttons).
  - **Analog Inputs:** Provides a variety of continuous level sensors (like temperature, pressure, liquid level, weight).
- **Graphical User Interfaces:** The system supports LCD touch displays.
- **High-Speed Interfaces:** Includes high-speed interfaces for inter-process communication with other PCAs, peripherals, and host computers.
- **Wireless Communication:** Enables wireless communication via WiFi and BLE, which can be expanded through the M.2 card interface.
- **Universal Programming and Debug Port:** Offers a versatile interface for programming and debugging.
- **Scripting Capability:** Enables quick development and testing by end users, including systems engineers, scientists, and researchers.
- **Logging Infrastructure:** Provides standardized data collection for effective troubleshooting and development.
- **Standard Configuration Files:** Facilitates rapid design interaction with interfaces, environment, and peripherals.
- **Unified Firmware Development Platform:** Utilizes common standardized modules for streamlined development.

The LaunchPad Instrument Controller is engineered to significantly reduce the time required to develop a proof of concept or engineering prototype. It is architected with modular subsystems of hardware, firmware and software that can be easily ported to a final commercial design, thereby accelerating the overall development timeline.

To learn more about the LaunchPad or speak to one of our experts, **contact us today.**

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Impossible? Done.